

cases individual fabrics or groups of fabrics. The Mayen-type wares, w-6, 9, 12, 17 and probably 16, are quite distinct from the other fabrics. But this group is also macroscopically, because of its distinct tempering elements, relatively easily identifiable.

The chemical characteristics of several other fabrics overlap to such an extent that no clear-cut division can be made. The fabrics w-1, 2, 3, 4, 8 and 10 come from the same region; the Vorgebirge. Some of these individual fabrics seem to represent more than one production centre, as shown by the heterogeneity of the fabrics and the differentiation in the rim types, already stated in the Hoogstraat publication. Moreover, the samples of the Pingsdorf-type ware fit into this complex, and the distance between Pingsdorf and, for instance, Badorf is only a few kilometers. In some cases the provenance was not traceable. It remains uncertain where fabric w-11, 13, 14 and 15 were produced; they are, with the exception of one sample from fabric 15, chemically quite distinct from the fabrics from the production centres in the German Rhineland. The possible provenance of these fabrics, suggested in the literature as local or regional, could not be denied nor confirmed.

It is a pity that no samples from fabric w-18 were analysed. This is not a 'real' fabric but a group of fabrics and/or types, that fell outside the limits of the classification system of the Hoogstraat 1 excavations. Some of these types were found more frequently in other parts of the settlement. They belong partly to the oldest occupation phase, and are of Late Merovingian origin. It would be interesting to know if wares from the early phase came from the same or different production centres. The hitherto unrecognised fabric that Bardet identified and named w-19 may well be one of these early products. In addition, only a few sherds of the handmade wares were analysed.

In summary, it must be said that the results of the archaeometrical analyses are somewhat disappointing. Most of the rather ambitious objectives could only partly be answered. This is partly caused by the hopes which archaeologists place on archaeometrical analyses as a means of determining pottery provenances being at this moment perhaps too high. In addition, in this case the criteria used to select the samples from the Dorestad material were not clearly enough defined. The sampling method depended too much on the Hoogstraat 1 fabric classification system, in which some of the fabrics, because of the limited use of different criteria in the fabric identification, are too heterogeneous. Furthermore, because of the limited number of samples per fabric from both Dorestad and the production centres, it was not possible to define the characteristics of each fabric with statistical rigour.

There may still be many questions and problems left to be answered on this subject, but it seems worthwhile to verify the apparent evidence from these archaeometrical analyses. It is in this respect important that the recent adaptations in the typologies, and the latest developments in fabric classification systems and new finds from production centres are all taken into account. In addition, to give these kind of analyses a clear statistical value, sample numbers need to be larger, and more diverse fabrics tested. This investigation was, as Bardet indicates in the title of the article, an *Exploratory* Archaeometrical Analysis.

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Robert M. van Heeringen and Frans Verhaege, 'Het aardewerk' (pp. 145–169). **Frans Verhaege**, 'Het Vroeg-Middeleeuwse geglazuurde aardewerk

uit Oost-Souburg' (pp. 155–169). in: R. M. van Heeringen, P. A. Henderikx and A. Mars (eds.), *Vroeg-Middeleeuwse ringwalburgen in Zeeland*. (with a summary in English, pp. 229–244), De Koperen Tuin, Goes and ROB, Amersfoort, 1995. ISBN 90-72138-41-4, 260 pp, including plates (b/w) and figures, 1 map 303 x 217 mm. Price Dfl. 59,90 + 12,50 p+p, De Koperen Tuin, Gasthuisstraat 12–14, 4461 JS Goes, The Netherlands.

see also Internet: <http://www.archis.nl/ROB/htdocs/publics.html>.

The recording of archaeological remains of the 9th and 10th centuries in the Lowlands is a journey into the unknown. Remains of the period from the collapse of the Carolingian Empire in the early 9th century until the rise of the first towns in the early 12th century are scarce. The countryside was thinly populated; there were a few *emporia* along the main rivers and the coast. Constant raids by the Danes on the coastal settlements in what is now Zeeland and Flanders during the second half of the 9th century, forced the local powers to protect their people, cattle and land. Under the rule of Count Boudewijn II (879–918) many ring forts were erected in Flanders (West-Francia), and along the whole North sea coast between Den Burg on the present isle of Texel (NL) and Saint Omer (NW France). In the present province of Zeeland five fortresses were constructed, but only one at Oostburg, in Zeeuws-Vlaanderen, was built south of the river Scheldt, and four on the islands. The plan of the town of Middelburg indicates the location of the circular ramp. In Domburg the fortress was fully covered with dune-sand, and only circular earthworks of Burgh on the Isle of Schouwen and Oost-Souburg on the isle of Walcheren are still visible. All fortresses still bear the toponym '-burg'. The building of fortresses north of the river Scheldt (County of Lorraine) is radiocarbon-dated to the last quarter of the 9th century.

The first part of the book is historical and archaeological. The sources are studied by Professor **Peter Henderikx**, the historian and toponymist of the County University of Amsterdam. An overview of the archaeological investigations is given by **Robert van Heeringen**, the former provincial archaeologist of Zeeland and now acting in the same function in the province of South-Holland.

The second part of the book deals with the excavation of Oost-Souburg, of which all features and material are discussed. During the post-war period in the Netherlands, the severely damaged area of Zeeland was reconstructed, and investigations were carried out at Middelburg, which was shelled in 1944. In the late 60s the important site of Oost-Souburg was threatened by the building of a supermarket and extensive excavations were undertaken under the supervision of J. A. Trimpe-Burger, the former provincial archaeologist. The fortress was restored in 1994 and is now well worth a visit.

Excavations were conducted within the rampart of Oost-Souburg, in the moat and outside the fortress. Eleven theoretical layers were excavated, and some 11,000 sherds were found. Attention was mainly given to the shape of the buildings and the structure of the ring earthworks and gates, but little attention was paid to the finds which were not collected in a proper stratified sequence. This affected research on the material.

In the first part of the article **Robert van Heeringen** and **Frans Verhaege** from the University of Leuven (B), deal with the various kinds of ceramics found on the site, including Rhineland wares such as Paffrath, Pingsdorf and

Badorf wares, the Meuse-area white-wares and the local globular pots. The material is recorded by ware and form and in thin sections. The authors conclude that even although no dated typology of Pingsdorf ware has yet been established, only a few forms occur in Oost-Souburg. The amount of Pingsdorf ware in relation to the local products seems to increase in the 10th century. Paffrath ware is present in the 10th century and also occurs on other sites in the Netherlands. The range of forms includes cooking pots in Paffrath, Pingsdorf, Hunneschans and Badorf wares; beakers are found only in Pingsdorf ware and storage vessels in Badorf wares. The 'Meuse' white-wares form 4.7% of all ceramics and consist mainly of jugs. The local globular vessels occur as cooking pots and as skillets. The most unusual category is the 'local redware', an imitation of Dorestad-type WIIC (van Es and Verwers). The pots have a buff colour, a coarse temper, rouletted decoration and are occasionally painted red. The imported wares make up 60.3% of the ceramics, the local wares 39.7%. In the *emporium* of Tiel the ratio is about 85:15 for the same period (Oudhof forthcoming). The most important 'fossil' of the 10th century, Duisburg ware storage vessels, are not found or may be mistakenly regarded as globular pots 'with a flat base'. It is also somewhat strange that 10th-century 'Mayen' wares are not present. The first part of the article was left out of the English summary. It nevertheless gives a good overview of the ceramics from the period 900-975 in a defensive coastal settlement.

The second part of the article is written by **Frans Verhaege** who discusses the history of research into medieval white-wares, the state of present-day knowledge and the goals for the future. He most cautiously links the finds from Oost-Souburg to the provenance of the ceramics and the status of the site.

The fragmentation of the Oost-Souburg pots is remarkable, and might result from the usage of the site, a settlement without waste-pits and with many cattle. The forms and technology of the pots are discussed — mostly wheel-thrown, hard-fired wares where the tempering is fine because the clay was sieved. The glaze was applied in one of two ways; the dry glaze was sprinkled, or the liquid glaze was brushed onto the pots. The forms are small amphorae, pitchers, beakers and lids. The number of rims is too small for detailed analysis, but no 'manchet' rims are present. The decoration is block-roulette, applied reliefs or strap-bands. The finds are comparable to those from Antwerp, Bruges, Douai and London. From the features of the pots their origin can be assigned to two regions, the Meuse valley and North-West France. No real typo-chronology could be established because the stratigraphy was lacking.

The dogma in Lowlands ceramic studies that all glazed white-wares come from Andenne or the region nearby and date from the 11th century onwards is being dealt with. Braat's theories, proposed in 1932 and then neglected, are now accepted as a result of serious research (Braat 1932). Provenance and sites of production are discussed, as well as the geographical distribution of the finds, the function of the forms and the socio-economic distribution. The Meuse area of Belgium has various production sites, and the number and knowledge of them is increasing; Huy appears to be the main centre of production in the 10th century. As the finds from Andenne remain badly recorded there is no other option but to date these from 1025 onward. The kilns in the French Meuse area are less known, but probably very important. Verhaege gives a useful overview of the finds from NW France, and discusses the distribution in the Lowlands, Belgium, coastal France and England, together with the question why comparable English whitewares, such as Stamford-type ware, are not

found on the continent. The production of glazed wares starts in France c.850, and this marks a turning point as kilns were set up in the French and Belgian Meuse areas, forming closely comparable groups. The fabrics, glaze and decoration are much alike because the technology was limited. The quantity of pottery produced was relatively small, because the period 850-1000 marks the transition from the so called 'household-level' of production to 'specialised' production. The pots were transported along the local and regional trade-networks. The diffusion of the finds north of the Scheldt river, into Holland, North-Germany and Scandinavia, is different from the Flemish-French distribution. On all consumption sites in the 10th century, only pitchers and beakers are found, while cooking pots are absent, though they were produced. The white-wares served as tableware and are mainly excavated from castles, fortresses, *emporia* and abbeys, sites that can be linked to the elite. It must be said that few ordinary settlements from this period have been excavated. From other finds, such as the deer-antler combs, it can be concluded that the Oost-Souburg site was used by the social elite. Although the fortresses were first meant to protect the cattle from the raiding Vikings, they were later probably inhabited by elite groups, which actively participated in the market to purchase pottery. The fortresses can be compared with the castles and early towns. The reason why an inter-site analysis between these sites cannot yet be carried out is simple: much of the material was not studied in the right way. Future goals are to (re-)study large stratified complexes from different sites and to examine kiln material.

Verhaege's clear view and eminent knowledge of this field is rewarding and sets the standard for the coming generation of researchers in this period. I suggest that this article should be translated into English very soon, although we are still waiting for order to be brought to the interpretation of Rhineland wares. This whole book is a perfect contribution to the interdisciplinary study of history and archaeology during one of the most obscure medieval periods.

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G.Krause (ed.), *Stadtarchäologie in Duisburg. 1980-1990, Duisburger Forschungen Band 38*, Schriftenreihe für Geschichte und Heimatkunde Duisburgs. ISBN 3-87096-049-3, Walter Braun Verlag, Duisburg, 1992. 560 pp.

At the heart of modern Duisburg, situated at the confluence of the Rhine and the Ruhr, lies its historic Altstadt, the 'oppidum Diusburh' occupied by Danish Vikings in the year 883/4. The medieval palace which developed from the