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Wheel-thrown pottery of the Merovingian and Carolingian periods at Wijnaldum

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THE EXCAVATIONS AT WIJNALDUM

VOLUME 2:
HANDMADE AND WHEEL-THROWN POTTERY
OF THE FIRST MILLENNIUM AD

Annet Nieuwhof (editor)

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The Excavations at Wijnaldum

Volume 2:

Handmade and Wheel-thrown Pottery of the first Millennium AD

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University of Groningen / Groningen Institute of Archaeology
& Barkhuis Publishing
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Terpen en Wierden land

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Preface

Wijnaldum is nowadays an unassuming rural village in the north of the province of Friesland, no more than a small dot on the map of the Netherlands. But during the Early Middle Ages, this was a lively political centre, a kingdom, with intensive contacts with other kingdoms along the North Sea coasts, and with the Frankish realm to the south.

The search for the king that resided at Wijnaldum was the major goal of the excavations that were carried out at the terp Wijnaldum-Tjitsma between 1991 and 1993. These excavations yielded a wealth of information, although tangible remains of the king or a royal residence were not found. The first results and an overview of the habitation phases were published in 1999: Volume 1 of *The Excavations at Wijnaldum*. However, major material categories such as animal bones, metal objects and pottery were left waiting until a next volume. As time went on, researchers became occupied with other work, and Wijnaldum faded into the background.

In 2014, a grant from the Dutch *Waddenfonds*, in the context of the project *Terpen- en Wierdenland. Een verhaal in ontwikkeling* (The terp region. A developing story) made it possible to resume the analysis and publication of the results of the excavations at Wijnaldum, and publish a second volume on the ceramic assemblage. Resuming the analysis of the pottery was by no means easy. The digital archive had become partly inaccessible, and the first drafts of texts, which seemed of topical interest at the time, had lost their relevance due to advancing insights, and needed updates and additions. As one of the authors, Ernst Taayke, wrote to me: The Wijnaldum project is like a pot that has fallen to pieces; the broken pot is being reconstructed as completely as possible now, after 25 years, although we do not have all the shards anymore.

Despite some missing shards, we did succeed in completing this volume. It not only includes major chapters on the pottery of the Roman Period and the Early Middle Ages (Chapters 2-7), but also an extensive overview of the research carried out in Wijnaldum (Chapter 1), an illuminating account of new survey research at Wijnaldum, which provides additional information on the habitation history (Chapter 8), and a synthesis, which presents an overview of the habitation history at Wijnaldum, with special attention to the search for the king on the basis of finds of precious metals and of the pottery assemblage (Chapter 9).

Several organisations financed and successfully cooperated in the Waddenfonds project *Terpen- en Wierdenland. Een verhaal in ontwikkeling*: the Terp Research group of the Groningen Institute of Archaeology (University of Groningen), the Province of Fryslân (Friesland), the Province of Groningen, Landschapsbeheer Groningen, Landschapsbeheer Friesland, the Museum Wierdenland at Ezinge, and the municipalities of De Marne and Eemsmond (now merged into the municipality of Het Hogeland), and Delfzijl. The present book was financed by this project. We thank these organisations for their generosity.

We would also like to thank all those who allowed us to use illustrations: the Fries Museum at Leeuwarden, Johan Nicolay, Saartje de Bruijn, Frans Andringa, Beeldredactie Leeuwarder Courant, Frans de Vries (Toonbeeld), the Northern Archaeological Depot at Nuis (notably Jelle Schokker for all kinds of help, and Henk Faber Bulthuis who made photos), Peter Vos and Sieb de Vries (Deltares/TNO), and Mirjam Los-Weijns and Siebe Boersma of the Groningen Institute of Archaeology (GIA, University of Groningen), who made and edited many object drawings. Siebe Boersma designed the layout of the book. Johan Nicolay read an earlier draft of the synthesis and gave valuable comments. Xandra Bardet not only read and corrected the English texts, but also pointed out inconsistencies. We owe them all our sincere gratitude.

On behalf of the authors,
Annet Nieuwhof
Editor

5. Wheel-thrown pottery of the Merovingian and Carolingian periods at Wijnaldum

Jan de Koning, Danny Gerrets and Annet Nieuwhof

5.1 Introduction

Numbers

A large part of the pottery excavated at Wijnaldum consists of wheel-thrown pottery, especially coarse ware of the late-Roman/Merovingian period, and a smaller amount of smooth-walled pottery, that is biconical fine ware. The amount of Merovingian wheel-thrown pottery, almost 82 kg of sherds, is impressive. Within the total ceramic assemblage of Wijnaldum, however, only 7.8% by number of fragments are Merovingian wheel-thrown pottery (n = 5,564; Chapter 2, table 2.1). By weight, 10.3% belongs to this group. Most of these fragments are body and base fragments from unidentified pots: at least 4,042 fragments, weighing almost 55 kg. The remaining 1,522 rim fragments belong to a minimum number of 598 individual pots (MNI), 13.5% of the total number of pots from Wijnaldum.

Within the total pottery assemblage, 5% of the number of fragments (n = 3,510) are of Carolingian wheel-thrown ware. By weight, 3.9% or just over 30 kg belongs to this group. Most of these sherds are body and base fragments which only in some cases could be attributed to a specific type of pot, but in most cases come from unidentified pots: at least 3,035 fragments, weighing almost 23 kg. The remaining 360 rim fragments belong to a minimum number of 264 individuals (MNI), 6% of the total number of pots from Wijnaldum.

Purpose and classification

During and right after the excavations our minds were set on the chronology of the terp, hence dating was the primary purpose of the pottery. The imported Merovingian pottery and the available typochronological studies on material culture based on the substantial data from late-Roman *castella* and Merovingian cemeteries in Germany were a promising basis for dating our material. For the late-Roman period, typochronological studies include the pottery from well-dated Roman *castella* such as Qualburg and Alzey, from the Kaiserthermen and other sites in Trier, from Echternach and from the Neue Markt in Duisburg.¹ For the Merovingian period,

the most important typochronological studies are based on material from cemeteries.² Although this material is well dated by seriation, the classification is less useful for pottery from settlement excavations.³ The classifications by Pirling, Böhner and Siegmund are based on complete vessels, whereas in settlement excavations we are usually dealing with very fragmented material.

To understand the characteristics of early-medieval wheel-thrown pottery from the Wijnaldum settlement, we therefore created a tailor-made typology of rim fragments for the large amount of coarse ware, largely based on the categories that Van Es and Verwers defined for the pottery from the Dorestad-Hoogstraat excavations.⁴ The general classification of the Dorestad material is based on a combination of the shape of the pot and morphological characteristics of the rim. Fabrics, which were often typical of certain types of vessel, are classified separately in the Dorestad typology (see section 5.4 below). For Wijnaldum, the often variable fabrics are described per type.

Classification on the basis of rims presupposes that rims are diagnostic features of potteries. It implies that the potters working in the pottery industry of the Merovingian period gave their pots standard rim shapes for some time and that trends in rim shape make it possible to date the pots. Yet there may be functional reasons behind these shapes. This is especially so when galleries and grooves were made on the inside of rims to hold inset lids.

The origins of the wheel-thrown pottery

Dating was the primary purpose of the Wijnaldum material, but, of course, pottery has wider potential. Wheel-thrown pottery was not produced anywhere near Wijnaldum. The major production centres of Merovingian pottery are found in the German Lower Rhine (*Niederrhein*)⁵ area in the vicinity of Cologne (the German *Vorgebirge*) and Koblenz (Mayen), although many smaller production sites are known even within the Netherlands.⁶ With the exception of one of the largest

1 Bakker 1981; Hussong & Cüppers 1972; Krause 1996; Von Petrikovits 1937; Unverzagt 1916.

2 Böhner 1958; Pirling 1966; Siegmund 1989; 1998.

3 Redknap 1988.

4 Van Es & Verwers 1980; 2009; 2015.

5 Below, *Niederrhein* is used in relation to specific typologies: the geographical area is referred to as Lower Rhine area.

6 Verhoeven 1993.

production centres around Mayen in the Eifel region, wheel-thrown pottery is hard to attribute to a specific place of production. Products of the smaller potteries like those in the vicinity of Nijmegen or in Limburg have never been identified outside their regions. Verhoeven concluded that they produced pottery mostly for the surrounding area.⁷

The products of the large potteries in the Mayen region were distributed throughout the Dutch coastal area (*Frisia*) and beyond. As early as the 5th century, but especially in the 6th and 7th centuries, pottery from Mayen ended up around The Hague, Old Rhine area (Koudekerk, Leiderdorp, Valkenburg, Rijnsburg, Oegstgeest, Katwijk), Kennemerland (Bloemendaal-Groot Olmen, Velsen, Uitgeest, Heiloo) and Texel (Den Burg-Beatrixlaan).⁸ Besides Mayen ware, a lot of wheel-thrown pottery from other production centres has been found in these settlements. In these coastal regions, no clay suitable for this kind of pottery was available, so we assume this type of wheel-thrown pottery came from Frankish production centres probably somewhere in the Lower Rhine area around Cologne. So far, no other production centres besides Mayen have been identified for this period. In the second half of the 7th century, however, potteries in the Vorgebirge, notably Badorf, Eckdorf and Walberberg started producing typical and quite large pots, which we know from the production sites⁹ as well as from some late-Frankish cemeteries like Walsum and Stockum.¹⁰ However, comparable pots also originate from other, still unknown production sites.

Trade and socio-political networks

Provenance and prevalence of imports might reveal something about long-distance contacts, about the role of trade, and about socio-political networks. Moreover, wheel-thrown pottery is not spread evenly outside the regions where it was produced. The distribution of imported wares is related to access to this material. First, a larger number of finds may be expected along transport routes, mostly waterways. Secondly, access was probably regulated by the political elite. Wijnaldum and its surroundings is thought to have been a supra-regional political centre during the Early Middle Ages.¹¹ It was located beside watercourses that gave access to the southern part of the Netherlands and beyond, to the Meuse and Rhine regions in Belgium and Germany. Therefore a relatively large number of imported wares can be expected here, compared to other settlements in the northern Netherlands. Wijnaldum may have served as a centre for the distribution of imported pottery. The systematic study of wheel-thrown pottery in this region is still in its infancy, not

least because the number of finds is small compared to the large amount of handmade pottery that was produced in the terp region well into the Late Middle Ages.¹² Study of the imported wheel-thrown pottery of Wijnaldum may substantially contribute to the debate on the political role it played during the Early Middle Ages. This subject will be further discussed in Chapter 6.

In the following, first the Merovingian wheel-thrown ware is described, in two parts: on coarse ware and on biconical fine ware. The latter part of this article is devoted to Carolingian wheel-thrown pottery.

5.2 Merovingian coarse ware

The Merovingian coarse ware found at Wijnaldum comprise 5,290 fragments, from at least 560 pots (MNI), weighing 79,177 g. Within the Merovingian wheel-thrown pottery, coarse ware accounts for 95% of the number of fragments, 93.6% of the minimum number of individuals, and 96.8% in weight. The remainder belongs to biconical fine ware.

Origin and production

The Merovingian coarse-ware industry has its roots in late-Roman production centres. These are to be found in the Eifel region around Mayen. The classification of coarse ware started with the study of the material from the late-Roman *castella* Niederbieber and Alzey; this was described systematically for the first time in the early 20th century by Oelmann in 1914 and Unverzagt in 1916. This classification systematised the mass-produced, standardized pottery typical of the Roman period. Standardization and mass production make it possible to recognize and identify specific types, not only complete specimens but also smaller rim sherds. Both *castella* were occupied over a specific period so the pottery could be dated accordingly.

This pottery was made at two known production sites, Urmitz and later Mayen. Production at Urmitz was dated between AD 180 and 260, but recent studies suggest a longer, extended period of production, maybe into the 4th century.¹³ In the course of the 3rd century, Mayen completely overtook Urmitz.¹⁴ Both potteries produced the same kind of ceramics, with similar shapes, even similar rim shapes, but in different fabrics. Mayen is a well-known, large production centre of which the chronology of production is established.¹⁵ Production started in the late 3rd century and continued into the Late Middle Ages. In the Merovingian period, workshops produced pots similar in

7 Verhoeven (University of Amsterdam), lecture “Aan het einde van de wereld”, at the symposium ‘*Historici en archeologen*’ on February 24th, 2012 in Amsterdam.

8 Dijkstra 2011 (Old Rhine area); in prep.; De Koning 1992; 2015; 2016; in prep.a; Magendans & Waasdorp 1989.

9 Keller 2004a and b.

10 Siegmund 1998, Tafel 192-213; Stampfuß 1939.

11 Nicolay 2014.

12 Knol (1993) provides an overview of imported early-medieval pottery from the terp region; Thasing & Nieuwhof (2014) published the wheel-thrown pottery of an important comparison site, the terp settlement of Ezinge (prov. of Groningen). A survey project has started in 2015, aimed at mapping the distribution of wheel-thrown wares in the terp region of the northern Netherlands (Kaspers & Sibma 2017; see Chapter 8).

13 Friedrich 2015.

14 Kiessel 2018.

15 Redknap 1999.

shape to those of the Late Roman period, although there is a small gap around the middle of the 5th century.¹⁶

Two forms of Merovingian coarse ware are well represented throughout the Netherlands: a narrow-mouthed pot with a gallery on the inside of the rim (type Alzey 27) and a wide-mouthed variety with a ridge on the shoulder (type Alzey 33). Both types were represented in Alzey, but they were not found among the older Niederbieber material. Alzey 27 was numerous at Alzey, but the wide-mouthed form of Alzey 33 was represented by just six sherds, suggesting an introduction of this type in the final phases of the *castellum*.

The typical gallery on the inside of the rim was probably created to hold a lid, although hardly any lids have been found. However, for the predecessor of Alzey 27, type Niederbieber 89, lids have been found, which Oelmann classified as type Niederbieber 120.¹⁷

Both types have been found at the production site of Mayen, showing a continuous development throughout the Merovingian period. Potters throughout these periods (5th–7th centuries) made the same shapes over and over again with hardly any alteration, although fabrics did change.¹⁸ It seems that the same shapes kept being produced out of habit or tradition, but some features lost their original function. It has also established that different potteries produced very similar-shaped pottery even with similar-shaped rims. This is also the case with the aforementioned types Alzey 27 and Alzey 33. This pottery, also called 'Eifelkeramik',¹⁹ is known in very different fabrics. At sites such as Gennep-Stamelberg, Alphen-Kerkakkers but also Den Burg-Beatrixlaan, 5th/6th-century examples of these types were found in a fabric that was characterized by small pits in the surface, probably imprints of limestone particles that had been added to the clay and were burned out during the firing process.²⁰ Despite the similar shapes, this points towards a totally different region of origin, for example the Meuse Valley around Huy.²¹

Trends in pottery thus transcended individual potteries. They even survived the transition from the Roman period to the Early Middle Ages. What probably did change during the Merovingian period was the emergence of many smaller potteries besides Mayen, giving rise to a wider range of pots and rim shapes. It is this variety of slightly different fabrics, slightly different surface treatments and slightly different rim shapes that makes this pottery hard to classify. During the late 7th century, larger pottery centres with recognisable, more mass-produced

products appear, for instance in the Rhenish Vorgebirge (Badorf, Walberberg).²²

Classification

The classifiable Wijnaldum material consists of rim sherds rather than of complete pots. This means that the typologies of Siegmund and others for the cemeteries of the Lower Rhine area are hardly applicable here. As was mentioned in the Introduction, we have therefore defined a typology tailored to the material found at Wijnaldum. This typology of rim fragments is largely based on the categories that Van Es and Verwers defined for the pottery from the Dorestad-Hoogstraat excavations,²³ which combines pot shapes with morphology of the rim.

When classifying this material, we became very much aware that a typochronology is the product of the archaeologist who wants to describe a finds assemblage. Types are described as being mutually exclusive, but in reality morphological variability is a continuum. There are rims with clearly distinctive characteristics, which are easily classified, but also fragments with traits of two or more pottery types. Dominant pottery centres like Mayen, with large, industrialized production and a huge distribution network were probably copied by smaller ones. During the Carolingian Period, the same development can be observed, as if there were specific rules and regulations for the production of pottery. This may also have been the case in Merovingian times. Pottery production was probably not only limited by technical developments, but also by tradition and by the socio-political framework in which the potteries operated. Such regulated production would fit in with the hierarchical Frankish society. In the end, considering the evolution of early-medieval wheel-thrown pottery, we see very little variety and a rather limited range of shapes, showing a decidedly conservative tradition.

Since the Merovingian pottery from Wijnaldum was classified on morphological characteristics first, the sequence of the identified pottery types does not represent a chronological order. In the literature on this material, a distinction is usually made between late-Roman and Merovingian wheel-thrown wares. In this study, however, both groups of pottery are referred to as Merovingian pottery, because the late-Roman pottery is relatively small in number and because there is a clear, continuous morphological development from one group to another. The dating of the late-Roman material is extensively discussed because it plays a major role in the discussion about continuity or discontinuity in the habitation history of this settlement.²⁴

As most fragments are rim sherds, which do not tell us much about the complete shape of pots, the division into subclasses such as cooking pots, bowls, etc., should not be taken too strictly. There are indications in the Wijnaldum material that the 'cooking pots' were indeed often used as such because food residue or soot was found

¹⁶ Idem, 28.

¹⁷ Oelmann 1914, 80.

¹⁸ Redknap 1999, 22, table 1.

¹⁹ Hiddink 2010, 230.

²⁰ De Koning 2005; in prep.a.

²¹ This idea of a late-Roman production centre around Huy was suggested by Giertz (1996) and is still hypothetical. Nevertheless, late-Roman and early-medieval pottery show a clustering along the river Meuse. Adding pieces of chalk to the clay is also a characteristic of later wheel-thrown pottery from the Carolingian period. White chalk-like particles can be recognized on burnished ware of Dorestad type WVI and fabric w14. These fabrics can also be associated with Huy (Giertz 1996; also De Koning in prep.b).

²² Siegmund 1998, 227.

²³ Van Es & Verwers 1980; 2009.

²⁴ See Gerrets & De Koning 1999.

on the potsherds. However, these imported wheel-thrown pots may have been used as containers for transportation or as storage vessels prior to their use as cooking pots. This classification must be regarded as a typo-chronological one, based on morphological features, rather than as a functional one.

When not only the rim but also a large part of the body was available, it was possible to reconstruct the shape of the pot. This is important because within the category of bucket-shaped coarse ware, a clear development from rather wide-mouthed pots in the 5th and 6th centuries towards more narrow-mouthed and globular ones in the late 7th and early 8th century can be observed.²⁵ In between, in the 6th and 7th centuries, we find ovoid or barrel-shaped pots with fairly steep walls.²⁶ However, there always are exceptions, fragments that seem to contradict these chronological trends. More-or-less globular pots occur even in the 6th century and lenticular bases, which are typical of Carolingian pottery, already occur in Merovingian ware.

Main shapes and function

Within the category of Merovingian Wheel-thrown ware (MW), four main shapes are distinguished. A fifth possible category, of plates, is not represented at Wijnaldum.

1. MWI: The largest group, consisting, medium-sized or large, tripartite pots. Subtypes are distinguished by added letters and numbers.
2. MWII: Significantly smaller varieties of type MWI.
3. MWIII: Jugs.
4. MWIV: Bowls.

The four main shapes also indicate different uses.

- MWI was used for cooking and storage.
- MWII was possibly used for drinking or storage.
- MWIII was used for pouring liquids and was part of the tableware.
- MWIV may have been used for eating or presenting food and was probably part of the tableware.

The shape of the rim versus the shape of the pot

Most subtypes are found within the group of coarse-ware cooking pots of type MWI.

Subtypes are based on the morphology of the rim: there is a huge variety in rim shapes. Pot shapes changed over time, but these changes were rather subtle. Siegmund could establish significant chronological differences only after measuring a huge amount of complete pots, most of them from burial contexts and associated with other finds like buckles. These differences were summarized by various formulae abstracting the shapes of the pots. Through these measurements, chronological trends could be established within coarse ware. An early group was classified under Wwt 1.1 and 1.2 (Wwt stands for *Wölbwandtopf*). Younger pots fall under Wwt 2.1 and

even younger pots under Wwt 2.21 and 2.22.²⁷ The early types were relatively low and wide-mouthed, while the later ones were more barrel-shaped. The youngest coarse-ware pots in this classification are taller and steep-walled; many of these were found in the late-Frankish cemeteries of Walsum and Stockum.²⁸

Siegmund's formulae only describe complete pots. With features like just the shape of the rim or even the diameter of the pot, it is even harder to establish chronologically significant developments. Although size did matter in this classification (types Wwt 2.21 and 22 are significantly larger than the other types), this could only be established for complete specimens. Diameter, which can be measured on larger rim sherds, only tells us something, and only in some cases, about the basic shape of the pot, whether it is wide- or narrow-mouthed, barrel-shaped or globular; such basic characteristics are hardly significant for chronological purposes.

Siegmund distinguished seven different rim shapes for this pottery. Six of them were chronologically significant and could either be linked to earlier types (Wwt 1.1 and 1.2) or to the later group (Wwt 2).²⁹ Only one kind of rim was common in both of these groups of coarse ware. Hence the shape of the rim does seem to have chronological significance in most cases. The Wijnaldum rim shapes will therefore be compared with those distinguished in the German Lower Rhine area.

Forms

Although most of the forms such as jugs and bowls are easy to distinguish, the definitions of MWI and its smaller variant MWII are not so clear. As we saw above, changes over time within the coarse ware are quite subtle, creating a confusing amount of terms describing the same kind of pottery. Terms such as barrel-shaped, lantern-shaped, globular, ovoid, wide- and narrow-mouthed are all, in their own way, descriptive, but they may be confusing. German scholars have solved this problem by introducing the term '*Wölbwandtopf*' ('curved-wall pot'). This term covers the whole development of this kind of pottery, from the earliest late-Roman examples up to the Carolingian thin-walled and hard-fired globular pots from the Vorgbirge and Mayen, which in the Netherlands are known as '*bolpot*' or Dorestad type (C)W-III pots.³⁰

Although most of the coarse ware can be classified under '*Wölbwand*' pots, differences in size and shape can be chronologically significant. As said, Siegmund caught these differences in formulas, which made it possible to distinguish earlier from later (younger) types. Two chronologically significant groups were defined, Wwt 1 and Wwt 2 (Wwt stands for *Wölbwandtopf*). Both groups were divided into several subgroups. Within the first group, consisting of rather small and often wide-mouthed pots, the three subtypes (Wwt 1.1 to 1.3) are not

25 Siegmund 1998. This trend was already noticed by Böhner (1958), Pirling (1966) and others.

26 See for example Van Es 1964.

27 Siegmund 1998, 136-143. Also Müsseseimer *et al.* 2003, 63-64.

28 Siegmund 1998; Stampfuß 1939.

29 Siegmund 1998, 137-138.

30 Van Es & Verwers 1980, 81.

chronologically significant. They are rather wide-mouthed pots and narrow-based, which is defined by the angle from base to body.³¹ With Wwt 1.1 this angle is less than or equals 71 degrees. For type Wwt 1.2, the angle is between 71 and 77 degrees, and for Wwt 1.3 the angle is greater than 77 degrees. All three are represented in Siegmund's Niederrhein phases 3 to 5 (460-590). Within the second group the pots are higher, somewhat larger and more slender. The distinction between types Wwt 2.1 and Wwt 2.2 lies in the diameter of the base relative to the height of the pot. For types Wwt 2.1, 2.21 and 2.22 the ratio between the diameter of the base and the height of the pot is chronologically significant.³² For type Wwt 2.1, this ratio equals or is larger than 0.48. For type 2.21 the outcome equals, or is smaller than 0.48. This type can also be identified by measuring the widest diameter divided by the height of the pot, when the outcome equals or is larger than 0.98. If the outcome is smaller than 0.98, the pot can be classified as type Wwt 2.22. Thus type Wwt-2.1 pots are less tall and wider, while type-Wwt 2.2 pots are higher and more slender. Within type Wwt-2.2, a wider variant (Wwt 2.21) is distinguished from a higher and more slender variant (Wwt 2.22). The chronology of these later types is quite clear. Type Wwt 2.1 is restricted to Niederrhein phases 6 to 8 (590-670). Type Wwt 2.21 belongs in phase 9 (670-710); type Wwt 2.22 in phases 9 and 10 (670-740);³³ the later types are still used in the 8th century: type Wwt 2.22 until the middle of the 8th century.

There is a clear trend, from rather small, wide-mouthed pots in the 6th century to broader-based and larger, barrel-shaped pots in the 7th century. From the late 7th century on, pots are higher but also larger, as known from late-Frankish cemeteries such as Walsum and Stockum.³⁴ In these cemeteries, many pots have Carolingian characteristics such as globular shapes and lenticular bases, which is not surprising because most of these pots were probably made in the potteries of the Vorgebirge like Badorf and Walberberg.³⁵ These late Wwt 2.2 types overlap with the Dorestad-classification made by Van Es and Verwers for the Hoogstraat excavations.³⁶

The early type Wwt 1 might be called wide-mouthed. This is defined by the ratio of the largest diameter of the belly and the mouth opening of the pot. If the latter is equally large or larger, the pot is wide-mouthed. Barrel-shaped pots are most similar to type Wwt 2.21 and 2.22. In this case the widest belly diameter is hardly larger than the diameters of the base and the opening, as in a barrel. A (Chinese) lantern-shaped pot has a somewhat wider belly, larger than the base and the opening. A steep-walled form has much in common with the barrel shape, but may have a smaller base. In narrow-mouthed pots, such as the

Fig. 5.1 Fitting fragments of four different pots with different colours, caused by different matrices after deposition. Photos: J. de Koning.

Chinese-lantern form, the mouth opening is smaller than the largest diameter of the wall. Within this definition some variation exists: narrow-mouthed pots may have a high shoulder and a smaller base, or may be more barrel-shaped.

The coarse-ware pots classified under MWI are Merovingian 'Wölbwand' pots, predating the Carolingian examples of type CW III mentioned above. Type MWI covers early wide-mouthed as well as much later globular pots. Sizes and complete shapes cannot be established because no complete specimens were found at Wijnaldum. However, the mouth of the pot (inner rim diameter) could often be assessed. The inner rim diameter of the coarse-ware pots of type MW I ranges from 10 to 22 cm, with an average of 12 to 15 cm. Smaller pots with an inner rim diameter under 10 cm are classified under type MWII.

Fabrics

Because of the wide variety in fabrics and probably different origins of the coarse ware, we have tried to describe the main characteristics as objectively as possible. Colour is described according to the codes in Munsell Soil Color Charts,³⁷ hardness was measured by scratching with minerals of known hardness according to Mohs³⁸ and the size and amount of inclusions were measured with the help of 'a percentage inclusion estimate chart' as presented by Matthew and others.³⁹ Although we have tried to describe the fabrics as objectively as possible, these descriptions do not necessarily correctly represent the appearance of the pots in the past. The colour especially may have changed due to post-depositional processes. Different soil conditions may cause different colours, as some fitting sherds clearly show (Figure 5.1).

31 Müssemeier *et al.* 2003, 63; Siegmund 1998, 136.

32 Müssemeier *et al.* 2003, 63-64; Siegmund 1998, 142.

33 Müssemeier *et al.* 2003, 64.

34 Siegmund uses these sites as reference sites. Stockum was published by Siegmund (1998). For Walsum, see Stampfuß 1939.

35 See for example Keller 2004 a and b.

36 Van Es & Verwers 1980; 2009; especially type W III, W IX, X and W XIV.

37 Munsell color charts 1994 revised edition, New Windsor.

38 Mohs' scale of mineral hardness was created by German geologist Friedrich Mohs in the 19th century. Hardness is measured by scratching the surface of a sherd with minerals of different hardness from a geological box.

39 Matthew *et al.* 1991.

Fig. 5.2 Subtypes of Merovingian coarse ware of type MW1A. Scale 1 : 4. Drawings: J. de Koning.

Types

Type MW1: Cooking or storage vessels

Type MW1, the cooking pot or storage jar, is the largest category, with a MNI of 388. Within the total amount of Merovingian pottery (coarse and fine ware) this is 77.9% of the Merovingian pots (MNI = 498).

Subtype MW1A: Narrow-mouthed pot with lid groove and gallery (Alzey-27 varieties)

Type MW1A (Figure 5.2) is a direct descendant of late-Roman coarse ware, beginning with the 3rd-century cooking pots with a heart-shaped rim profile, which is known from the *castellum* Niederbieber as type Niederbieber 89.⁴⁰ The slightly younger *castellum* Alzey provided a chronological follow-up on this type with the 4th-century type

40 Oelmann 1914.

Alzey 27, a narrow-mouthed cooking pot with a sickle-shaped rim profile.⁴¹ Later research made it quite clear that such pots were quite common, and were found in many *castella*. Von Petrikovits used the Alzey terminology for the material from the late-Roman *castellum* of Qualburg-Schneppenbaum, and Fellmann for late-Roman *castella* in Switzerland.⁴² Both authors tried to understand the chronological development of these late-Roman coarse-ware cooking pots. Most of their material could be dated to the 4th century, although Fellmann's classification seemed to go beyond the 4th century and at least into the first quarter of the 5th century. Relevant in this discussion is their type with a 'sickle-shaped' rim, Von Petrikovits' type 27e and Fellmann's type Alzey 27D. Fellmann's type 27E is characterised by only a groove, and is dated into the first quarter of the 5th century.

Given the numerous and well-stratified finds from the excavations at the Trierer Kaiserthermen (especially the *Umbaukeramik*, dated around 430), and the finds from the Barbarathermen, dated around 420-450, the Alzey classification was stretched further into the 5th century.⁴³ Bakker goes even further by dating some of his Alzey-27 fragments 'mit verkummerten Randern' from Echternach to around the middle, or even into the second half of the 5th century.⁴⁴

Several authors noticed the continuous development from the late-Roman ceramic traditions into the Early Middle Ages.⁴⁵ Roth-Rubi in particular has attempted to follow this development into the 6th, and even the 7th century by studying pottery from graves as well as production centres. Gross followed with an article presenting well-dated, complete Alzey-forms from the Early Middle Ages.⁴⁶ He argues convincingly that some pots with classical 'sickle-shaped' rims, for instance, could be dated into the first half of the 6th century.⁴⁷ In 1999, Redknap published a large typochronological overview on the pottery from Mayen based on pottery from the production centres around Mayen and from settlements with Mayen ware.⁴⁸ He distinguished eight different fabrics, which were more or less specific for the Late Roman, Merovingian and Carolingian periods. Relevant to the present discussion is his distinction within late-Roman coarse ware⁴⁹ (Mayener *Tontyp* R and coarse-ware Mayener *Tontyp* A).⁵⁰

It is quite clear that, although the late-Roman production centres (Mayen-Koblenzer Straße and Auf der Eich) were at different sites than the early-medieval ones (south of the centre - Siegfriedstraße), there is no clear

gap in forms.⁵¹ In his chronology, Redknap distinguishes eleven periods (*Stufen*) of which the first six are relevant here. Production started in the late 3rd century and at the Roman production sites ended in the early 5th century (period 2). The earliest production in the Merovingian production centres started at the end of the 5th century (period 3),⁵² so, although there is no clear gap in pottery forms, there is a clear gap of half a century which separates the coarse ware of late-Roman times from the Mayener coarse of early-medieval times. In both periods, Alzey 27-like pots were produced, *Form R1* in the Late Roman period until the early 5th century; *Form A4* in the Merovingian period from the late 5th century well into the 7th century. A close inspection of the rim fragments of Wijnaldum shows that many of these show similarities with the late-Roman *Form R1* as well as with the Merovingian *Form A4*, which makes them difficult to date.

Several Dutch archaeologists have tried to understand the chronologically significant features among the rim fragments. Thijssen presented a range of rim fragments, showing the development from the Niederbieber 89-like heart-shaped rim profiles to the sickle-shaped Alzey-27 profiles from Cuijk.⁵³ When 21 Alzey 27-like fragments from a single assemblage relating to an early-medieval farmhouse at Bloemendaal-Groot Olmen in the Dutch western dune area were compared with rim fragments depicted in the studies of Gross and Siegmund, this resulted in a series of probable dates, starting in the last quarter of the 5th century.⁵⁴ This result was to some extent supported by a peat layer that stratigraphically predated habitation layers, and was radiocarbon-dated to AD 420 and 600.⁵⁵

Several other western settlements where this kind of pottery has been found, such as Uitgeest-Dorregest and Den Burg-Beatrixlaan, have been - or are about to be - published.⁵⁶ These studies confirm a more or less similar date for the Alzey 27-like rim fragments, probably starting in the last quarter of the 5th century.

MWIA1: Narrow-mouthed, high-shouldered pot with heart-shaped rim profile

Only two rim sherds can be attributed with certainty to this type (Figure 5.2). Burned residue on the inside indicates that it was a cooking pot. The shape of the rim was created by folding it back horizontally. The rim is roll-shaped with a groove and gallery in the inside, creating a roughly heart-shaped profile. It shows many characteristics of type Niederbieber 89, the predecessor of type Alzey 27.⁵⁷ A fragment from a much smaller pot (Figure 5.2, 6813.a) might be of a similar type. This has a heart-shaped rim but is broken off at the shoulder.

41 Unverzagt 1916.

42 Fellmann 1952; Von Petrikovits 1937.

43 Hussong & Cüppers 1972, 80 and 93; Krause 1996.

44 Bakker 1981, 335, fig. 245, 27-29.

45 Hussong & Cüppers 1972, 109; Roth-Rubi 1991; Stamm 1962, 125; Willems 1981, 167.

46 Gross 1992, 245.

47 Gross 1992, fig. 1, 1-2.

48 Redknap 1999.

49 In Dutch archaeology, the term Merovingian coarse ware is generally used for all Merovingian coarse wares from different production centres, as well as late-Roman wares.

50 Redknap 1999, 22.

51 Redknap 1999, 23, fig. 2.

52 Redknap 1999, 28.

53 Thijssen 2011, 174.

54 De Koning 2015, 253.

55 De Koning 2015, 82, table 4.3, M3-1.

56 De Koning 2016; in prep.a.

57 Oelmann 1914, 72; Redknap 1999, 152, Form R1, fig. 12, R1.1, 2, 3, 5, 16-20.

Fabric

Fragment 6704.d is made of a very coarse fabric (stone grit temper content between 20 and 30 percent). The size of the inclusions is small (< 1.0 mm). The large amount of temper makes it difficult to measure the hardness, but it is estimated to be between 6 and 7 on the Mohs scale. The colour is light olive-brown (2.5YR5/3).

Chronology

The heart-shaped rim profile is represented at the *castellum* of Niederbieber (dated between AD 190 and 260).⁵⁸ It was found at the *Kellergange* of the Trierer Kaiserthermen (300-375), but is lacking at the Alzey *castellum* (AD 330-410).⁵⁹ Von Petrikovits assumes a typological development from the heart-shaped rim to the sickle-shaped rim during the late 3rd and early 4th century.⁶⁰ This type is dated by Bakker to the second half of the 3rd century.⁶¹ Thus a date between 250 and 325 seems most likely. Fragment 6704.d was found in a large ditch, feature 1233, which was probably used as a dump (see Chapter 6). It contained more than 1600 fragments (over 17 kg) of Merovingian pottery, mostly imported wheel-thrown wares.

MWIA2: Narrow-mouthed, high-shouldered pot with sickle-shaped rim profile and raised lid gallery

This type is represented by five rim fragments. The earlier heart-shaped rim profiles have evolved into sickle-shaped rim profiles, while the groove for the lid has diminished in size; the lid gallery on the inside is slightly higher.⁶²

Fabric

The five sherds differ considerably in colour, temper and hardness, suggesting different origins. One sherd (Figure 5.2, 5235) is greyish brown in colour (2.5 YR5/2; Mohs' hardness is 2.5). This fragment is shell- or limestone-tempered with a temper content of around 5% and grain sizes between 0.5 and 2 mm.⁶³ In a preliminary study on pottery production at Huy, in the Meuse valley in Belgium, Giertz has argued that, although Huy (and surrounding places such as Andenne) are well-known for the medieval production of pottery, this production probably reached back into the Late Roman period, just as at Mayen.⁶⁴ Characteristics of a Carolingian-period fabric from Huy, known in the Dorestad-typology as fabric w14, are the dark grey colour and temper consisting of

small particles of limestone. According to Giertz, this was deliberately added to the clay as temper at the production site. In many cases white specks are visible on fragments in this fabric. In acidic soil, the calcium has usually disappeared, leaving tiny shallow pits in the surface, known in German literature as '*blasiger Oberfläche*'. Fragments in this fabric of type Alzey 27, of the wide-mouthed Alzey 32/33 and of Alzey 29 bowls have been found at Den Burg-Beatrixlaan.⁶⁵ Similar fragments are also known from 5th-century 'Germanic' sites in the south of the Netherlands such as Gennep, Alphen-Kerkakkers and probably Heesbeen.⁶⁶ In the Late Roman period, this fabric seems to be quite common in the south of the Netherlands. The shapes of rims and pots in this fabric are similar to wheel-thrown pottery from Mayen. A second fragment (Figure 5.2, 883) is reddish brown (5YR7/8) and has a hardness of 4.5 on the Mohs scale. The amount of temper is between 5 and 10%, and grain size varies between 0.5 and 1 mm. A third fragment is reddish (10R 4/3) and has a hardness of 6 on the Mohs scale (Figure 5.2, 11671). The amount of temper (stone grit) is between 10 and 15% and varies in grain size between 0.5 and 2 mm. The temper almost protrudes from the surface, but is still covered by a thin slip layer. The final two sherds (Figure 5.2, 5088 and 6704.b) are pale yellow (2.5Y8/3 and 8/4). The temper amounts to about 10-20% and varies in grain size between 0.5 and 2 mm. The hardness of both fragments is 6.5 on the Mohs scale.

Chronology

These rims are vertically elongated, while compared to MWIA1 the groove on the inside has diminished in size. Comparable shapes from Alzey are dated to between AD 330 and 410, but the Wijncaldum pots seem to be younger. A fragment from Bergeijk could be linked to a dendrochronological date of around 390, which provides a *terminus post quem* for the pottery.⁶⁷ A similar type is also represented in the Trierer *Thermen-Umbaukeramik* (ca 430) and in the youngest ceramics from the Barbarathermen (420-450).⁶⁸ Such rims are dated by Bakker to the first half of the 5th century.⁶⁹ This type can be compared to Von Petrikovits type Alzey 27e and Fellmann's type Alzey 27D. There are no similar shapes within the late-Roman *Form R1* in Redknap's typology of the Mayen pottery. Among the related Merovingian *Form A4*, there is only one comparable rim fragment with a similar inner rib.⁷⁰ Hardly any of the A4 rim fragments depicted by Redknap have an inner rib, which suggests a date slightly earlier than this type (end of 5th century). A date for MW1A2 around the middle of the

58 Idem.

59 Hussong & Cüppers 1972, 27-28, table 8, 68a; idem 59, table 13, 89a; Unverzagt 1916.

60 Von Petrikovits 1937, 333-334.

61 Bakker 1981, 334.

62 See: Bakker 1981, fig. 245, 26-29; Hussong & Cüppers 1972, table 17, 42a; Unverzagt 1916, 33 fig. 21, 34 and table 11, 27; Redknap 1999, 180, Form A4: *Topf mit Deckelfalz*. There is a similarity to fig. 28, A4.1 but also to many late-Roman specimens of Form R1 (fig. 12, R1.49 and fig. 13, R1.60).

63 Slightly different in fabric, but probably also limestone tempered is a sickle-shaped rim from Echternach (Bakker 1981, 335 and table 245, 24).

64 Giertz 1996. For Andenne the study of Borremans & Waginaire is still relevant (1966).

65 De Koning in prep.a.

66 Personal communication A. Verhoeven (University of Amsterdam); De Koning 2005.

67 Personal communication A. Verhoeven, (University of Amsterdam).

68 Hussong & Cüppers 1972, 80, fig. 38; idem, 93, table 27.

69 Bakker 1981, 335.

70 Redknap 1999, 181, fig. 28, A4.29.

5th century is likely. The publication of Gross depicts no pots with similar rims.

MWIA3: Narrow-mouthed, high shouldered pot with rounded rim profile and shallow groove

MWIA3 has a groove for a lid that is less deep than in MWIA2. The rim is elongated, just as in type MWIA2, and somewhat rounded on the outside. Three fragments (Figure 5.2, 2057, 8084 and 5808.b) show that the shape of the pot is similar to types MWIA1 and 2, with a high shoulder starting directly below the rim. The minimum number of individuals of this subtype is eight.

Fabric

Fabrics differ considerably in colour, hardness and temper. Colours vary from light red (10R7/6) and shades of yellow (10YR8/2 and 8/6) to darker colours like dark greyish brown (10YR5/2) and dark grey (2.5Y4/1). The dark fabric has a thin dark slip layer on the surface and is lighter in colour at the core. The 5 to 10% temper of this fabric is fine (0.5-1 mm). This fabric resembles those of biconical pots or *Knickwandtöpfe*, which have a similar thin slip layer on the outside and a slightly lighter colour at the core. The hardness of all fabrics is 5.5 except for one rim that is 3.5 on the Mohs scale.

Chronology

Rims of this type were produced over a long period of time. They share some traits with Fellmann's type Alzey 27E, also with shallow grooves, which are dated by Fellmann to between 375 and 425. Stamm dates them to the first half of the 5th century.⁷¹ This type seems to be absent at Echternach, but is described by Gross and dated to the period straddling the second half of the 5th and first half of the 6th century.⁷² Its feature in the typology of Mayen ware as type A4, dated between the late 5th and 7th century.⁷³ Similar fragments have been found at Bloemendaal-Groot Olmen, probably dating from the last quarter of the 5th century.⁷⁴

MWIA4: Narrow-mouthed barrel-shaped pot with rounded rim profile and shallow groove

Eight rim fragments belong to this type (Figure 5.2). The shape of the rim is similar to type MWIA3. There is a faint lid gallery at the transition from shoulder to rim and only a shallow groove. Two fragments are large enough to show the shape of the pot. This type does not have a high shoulder as in the previous types, and seems to be more barrel-shaped.

Fabric

Fabrics vary considerably. Three fabrics can be distinguished:

1. A soft oxidized fabric (5YR7/6; Mohs' hardness 3) with a small amount (about 5%) of temper, which is small in size (0.5-1 mm). Medium-soft fabrics (3.5-4), grey on the inside and with a thin, dark grey slip layer on the outside. The grain size of the temper is somewhat larger than in the first group (n = 2).
2. Slightly harder fabric (Mohs' hardness 4-5) with a considerable amount (20-30%) of fine temper; varying in grain size between 0.5 and 2 mm (n = 4).

Chronology

According to Gross, this type of rim is characteristic of the second half of the 6th and first half of the 7th century.⁷⁵ Many similar fragments can be found in the catalogue of Mayen ware under Merovingian type A4, dating from the late 5th into the 7th century.⁷⁶ In Bloemendaal-Groot Olmen, several comparable fragments were found with an earliest date in the late 5th century, but probably dating to the 6th century.⁷⁷ Settlement 3 of Bloemendaal-Groot Olmen consists of a farmstead comprising a pond and a farmhouse that was rebuilt at least six times on roughly the same spot. The beginning of peat growth in the pond was dated, resulting in an earliest possible date of the bottom of the pond in AD 420. It provides a *terminus post quem* for the coarse ware and other settlement debris that was found overlying this layer in the pond, and for all the pottery and settlement features in the vicinity of the pond. For the pottery, which consists largely of coarse-ware globular pots, some wide-mouthed and some narrow-mouthed, a starting date at the end of the 5th century is most likely.

MWIA5: Narrow-mouthed globular pot with shallow groove and inward pointed rim

This type is very homogeneous in shape and fabric. The only difference with the rims of type MWIA4 is the incurved lip (Figure 5.2). It is not clear whether this difference has any chronological significance. As far as can be established from the eight fragments of this type, the body of the pots is globular, or at any rate less steep than the barrel-shaped MWIA4 pots.

Fabric

All fragments are of a very soft, oxidized fabric (Mohs' hardness 2.5-3). The grain size of the temper is generally very small (< 0.5 mm), which makes it hard to estimate its quantity. The colour is reddish brown (5YR7/6, 7.5YR6/7). The fairly uniform fabrics suggest they all have the same provenance.

⁷¹ Fellmann 1952, 168; Stamm 1962, 103.

⁷² Gross 1992, 426, fig. 1, especially 1-3.

⁷³ Redknap 1999, 181 and 183; most of the rims in figs. 28 and 29 are similar to type MWIA3, but also to type MWIA4-6.

⁷⁴ De Koning 2015, 257-258, pots 4, 6 and 8.

⁷⁵ Gross 1992, 427.

⁷⁶ Redknap 1999, 181 and 183.

⁷⁷ De Koning 2015, 257-258, pots 5, 7, 10 and 11.

Chronology

This type shows similarities to Type 166 from Krefeld-Gellep, which is dated by Pirling to Böhner's phase V (8th century), and with Hussong and Cüppers' Frankish pottery type 9, which is dated to Böhner's phase IV (7th century).⁷⁸ Janssen regards the globular shape of the body as an indication for an 8th century date.⁷⁹ Within group A4 of Mayen pottery, similar fragments can be recognized, dating at least into the 7th century.⁸⁰ Since type MWIA5 seems to be a further development of type MWIA4, which is dated to the 6th century, it may be dated to the 7th and 8th centuries. In Chapter 6, however, a slightly earlier starting date, before 600, is suggested by multiple earlier context dates.

MWIA6: Narrow-mouthed, globular pot with thickened, round outer rim profile

This type is represented by eight rim fragments from seven pots. The rim and wall fragments suggest a rather globular shape of the body just like that of type MWIA5. Characteristic off this type is the thickened, round outer rim profile.

Fabric

The fabrics of this type are variable. One fragment is smooth-walled (Figure 5.2, 1366) without visible temper. Two fragments (Figure 5.2, 1370 and 3871), probably from the same pot, have a proportion of temper between 5 and 10% and a grain size between 0.5 and 1 mm. The hardness can be estimated at between 5 and 6 on the Mohs scale, the colour is dark grey (7.5YR4/1). Rim fragment 6704.e (Figure 5.2) has a pinkish white colour (7.5YR8/2), an estimated amount of temper between 10 and 20% and a grain size between 0.5 and 1 mm. The fabric is rather hard, between 7 and 8 on the Mohs scale. Two more fragments, probably from the same pot, have a brown colour (7.5YR4/2), an estimated temper content of around 20% and a temper grain size between 0.5 and 1 mm; their hardness too lies between 7 and 8.

Chronology

There seems to be a difference in date between pots with a high shoulder, comparable to those of type MWIA1-3, and more globular pots like the types MWIA4 and 5. The pots with a high shoulder (Figure 5.2, 6704.e and 6208.c) can be compared to examples presented by Gross, which he dated between AD 450 and 550.⁸¹ The more globular fragments may be compared to those which Gross dated somewhat later, between 550 and 650.⁸² Among MWIA4-type examples from Mayen too, comparable fragments can be found, suggesting a date from the late 5th and into the 7th century.⁸³

Subtype MWIB: Barrel-shaped pot with sharp transition from neck to shoulder

Typical of pots of this type is the sharp transition from the neck to the body of the pot. This was probably created by undercutting the neck on the outside just below the rim. In German there is a perfect word for it: *gekehlt*. The profile of the pot somewhat resembles a question mark. The pots are wide-mouthed and barrel-shaped, the outer diameter of the rim is almost the same as the widest diameter of the body. The fabric is generally hard to very hard, with a large amount of coarse temper visible at the surface. Most pots show traces of fire from their use as cooking pots. The rims show similarities to the typical rolled-over, rounded rims of Carolingian pottery.

MWIB1: Small barrel-shaped pot with sharp transition from neck to shoulder and flattened snout-shaped rim profile

All rims are bevelled on the outside. Some rims are slightly pulled outwards. Seven rim fragments belong to type MWIB1 (Figure 5.3).

MWIB2: Barrel-shaped pot with sharp transition from neck to shoulder and flattened snout-shaped rim

The only difference from type MWIB1 is the size of the pot: this type is larger. The rims are similar in shape. Three rim fragments belong to these larger barrel-shaped pots (Figure 5.3).

MWIB3: Barrel-shaped pots with sharp transition from neck to shoulder and rounded rim profile

This type is related to type B1 and 2, albeit with a subtle difference in shape. The sharp transition or the undercut rim has almost disappeared, and the rim is much more rounded than those of the MWIB1 and 2 types. Ten rim fragments can be assigned to this type. There seems to be some variation in size. Most are rather small (Figure 5.3, 11672, 3132, and 10821) while one specimen is quite large (3268).

Fabric

The fabric of type MWIB is quite homogeneous. Characteristic is the relatively large amount of temper, between 20 and 30%. The grain size is variable, but in most cases is between 0.5 and 2 mm. Mohs' hardness varies between 4.5 and 7. Because of soot on the outside, the colour is not always easy to determine. Most fragments have oxidized fabrics with colours varying from yellow (10R7/6) and reddish brown (5Y/R6/6) to very pale brown (10Y/R8/2).

Chronology

Böhner dates his similar barrel-shaped pot D12 to the 7th century.⁸⁴ Pirling does the same for her type 158.⁸⁵ Barrel-shaped pots with snout-shaped rims have been found in

⁷⁸ Pirling 1966, 144 and 166 (table 13).

⁷⁹ Janssen 1987, 476.

⁸⁰ Redknap 1999, 183, fig. 29, A4.72

⁸¹ Gross 1992, 426.

⁸² Gross 1992, 427.

⁸³ Redknap 1999, 183, e.g. A4.80.

⁸⁴ Böhner 1958, 55, table 5, 6 and 7.

⁸⁵ Pirling 1966, 142, table 13, 158.

Fig. 5.3 Subtypes of Merovingian coarse ware of type MW1B. Scale 1 : 4. Drawings: J. de Koning.

many settlements throughout the Netherlands.⁸⁶ They are usually dated to approximately the same period, the 7th century. Pottery with rims that resemble types MW1B1 and 2 is also known from Walberberg-Kitzburger Straße, dated by Keller to the last quarter of the 7th, and first quarter of the 8th century.⁸⁷ Siegmund dates similar pots, his types Wwt 2.21 and 2.22, to phases 10-11, AD 670-740.⁸⁸ The shapes of the rims and the pots suggest that this type may be the predecessor of the globular Carolingian pots of Dorestad type III.⁸⁹ The coarse-ware MW1B also resembles early groups within the Dorestad typology, such as the steep-walled pots of type W IX and the slightly earlier 'Walsum' pots of type W XIVD.⁹⁰ These rim shapes seem characteristic off late-7th- to early-8th-century pots.

Subtype MW1C: Wide-mouthed pot with ridge on the shoulder (Alzey 32/33)

Overall, the wide-mouthed pot of type MW1C has a slightly curved body profile with the widest diameter at the shoulder. A ridge under the neck is typical of this type. The ridge was created from the inside of the pot where a matching groove can be seen. This type is usually referred to as Alzey 32 or Alzey 33. In that classification,

a distinction was made between a sharp shoulder ridge (Alzey 32) and a rounded one (Alzey 33).⁹¹ Both types are only represented by a few specimens at Alzey: one and six fragments, respectively. It indicates that this type was newly introduced around the time that habitation in the *castellum* of Alzey came to an end, around AD 430. The difference between the two types has hardly any chronological significance, so in later studies, like that of Willems, the two types were combined.⁹² The Wijnaldum material, in which this type is common, permitted a clear morphological distinction.

Pots with these characteristics seem typical off the coarse-ware pots of types Wwt 1.1 and 1.2 in the Niederrhein typology, dated to between 460 and 590 with a preference for the first half of the 6th century.⁹³ However, it should be noted that coarse ware of this kind already circulated for a while before it appeared in burials. It was found in settlements from the early 5th century on. In the early phases of the Frankish cemeteries of the German lower Rhine area, coarse ware is very rare.⁹⁴

MW1C1: Wide-mouthed pot with ridge on the shoulder and out-curved snout-shaped rim

This type is characterized by a snout-shaped rim that is slightly curved outward (Figure 5.4). This type is represented by 18 fragments (MNI), 17 of which were found together (Figure 5.4, 7572). They were probably part of a ritual deposit.

86 For example Wageningen (Van Es 1964, 265, fig. 89, 6-70); Kootwijk and Hoog-Buorlo (Bitter 1984, fig. 14-15); Leiderdorp-Samsonveld (De Koning 2009, appendix 6.1, fig.1, V31 en V10); Bloemendaal-Groot Olmen (De Koning 2015, 248).

87 Keller 2004a, 127, fig. 1, 3, 5, 6.

88 Siegmund 1998, 137. Phase 9-10 in Müssemeier *et al.* 2003.

89 Van Es & Verwers 1980, 81.

90 Van Es & Verwers 1980, 99 (W IX); 2009, 151 (W XIVD). See also De Koning 2012, 176-177. For the original publication on Walsum, see Stampfuß 1939.

91 Unverzagt 1916, 35-36.

92 Willems 1981, 169, cooking pots with cordoned rim (type 3).

93 Müssemeier *et al.* 2003, 63; Siegmund 1998, 139.

94 Siegmund 1998, 135.

Fig. 5.4 Subtypes of Merovingian coarse ware of type MW1C. Scale 1 : 4. Drawings: J. de Koning.

Fabric

The colour of all fragments is reddish yellow, varying between 7.5YR 7/6 and 5YR 7/8. Temper ranges between 0.5 and 2 mm in grain size and varies in quantity between 10 and 20%. Mohs' hardness is generally ca 4.5 and 5. All fragments show black inclusions, probably volcanic in origin, suggesting a provenance in the Eifel region around Mayen.

MW1C2: Wide-mouthed pot with shoulder ridge and near-circular or rounded rim profile

This type is represented by 27 rim fragments (MNI) and characterized by a thick, rounded or almost circular rim profile (Figure 5.4). The typical ridge on the shoulder seems less pronounced compared to type C1, which might be of chronological significance. This type may be slightly

Fig. 5.5 Subtypes of Merovingian coarse ware of type MW1D. Scale 1 : 4. Drawings: J. de Koning.

younger than type MW1C1. Most pots show traces of soot from being placed on an open fire as cooking pots.

Fabric

Type MW1C2 shows much variation in fabrics, unlike type C1. Colours range from light reddish brown (2.5YR7/4) and very pale brown (10YR8/4) to dark grey (10YR4/1). Many fragments show a different colour at the core, for instance bluish grey (2G7/8, 5/5.5) or light greenish grey (2G/10BG6/7). The amount of temper varies between 5 and 20% but in most cases is between 10 and 20%. Most fragments show black glittering inclusions, suggesting an origin in the Eifel region. Grain size varies mainly between 0.5 and 2 mm. One fragment was tempered with tiny pebbles, some particles larger than 5 mm. Some pots were fired at a temperature high enough for certain crystals to melt. Mohs' hardness varies between 4.5 and 6.5.

Chronology of types MW1C1 and 2

As said above, type Alzey 32/33 is present during the last phase of the *castellum*, but only in very small numbers, showing that this type originated in the early 5th century. In Böhner's typology, such pots belong to type D8,

which is dated between 450 and 525.⁹⁵ The same pot is in use even before AD 450.⁹⁶ Bakker states that type Alzey 32/33 developed at the beginning of the 5th century.⁹⁷ Bakker and Gross assume that the ridge became less pronounced around the middle of the 5th century and disappeared in the second half of that century.⁹⁸ According to the Niederhein typology, such rims belong to the oldest Wwt pots 1.1. and 1.2, which were dated between 460 and 590. This variant probably dates from the second half of the 5th century.

MW1C3: Wide-mouthed pot with less pronounced ridge on the shoulder

The ridge under the rim has almost disappeared in this type. It is represented by five rim fragments (MNI) (Figure 5.4). Three rims are blackened on the outside, showing that they were used as cooking pots.

⁹⁵ Böhner 1958.

⁹⁶ Pirling 1966.

⁹⁷ Bakker 1981.

⁹⁸ Gross 1992.

Fabric

All four fragments have an oxidized fabric. Colours range from very pale brown (10YR8/3) to reddish brown (5YR6/6). The amount of temper varies between 5 and 15% and is between 0.5 and 4 mm in grain size. All sherds show black glittering inclusions, indicative of an origin in the Eifel region. Mohs' hardness is between 6 and 7.

Chronology

This type follows MWIC2 and can be dated slightly later, probably to the second half of the 5th century and the early 6th century.

Subtype MWID: Pot with thickened, triangular rim profile

The general characteristic of this type is a thickened rim that is more or less flattened on top and on the outside, resulting in an angular, mostly triangular shape of the rim profile. Four subtypes are distinguished; it is not clear whether the distinction has chronological relevance.

MWID1: Pot with thickened, angular rim profile

This type, represented by 17 rims, is characterized by a triangular, sometimes square rim profile which is rounded at the corners (Figure 5.5). One fragment is large enough to reveal a barrel-shaped body (10777). The other fragments are too small to reconstruct the shape of the pot.

Fabric

Most of the fragments show traces of secondary burning. In far as can be established, the original colour varies from reddish yellow (5YR6/6) to light grey (10YR7/1). The hardness varies between 4 and 6 on the Mohs scale. Four fabrics can be distinguished, based upon variation in type, size and amount of temper, and finish:

1. Coarse ware, with an amount of temper between 5 and 10% and grain size between 0.5 and 1 mm (n = 5).
2. As 1, but with larger grain sizes, between 0.5 and 3 mm (n = 5).
3. Coarse ware, with an amount of temper between 10 and 20% and grain sizes between 0.5 and 2 mm (n = 3).
4. A rather fine fabric without visible temper, reminiscent of smooth-walled fabrics like those of biconical ware, although the surface of these pots was not smoothened (n = 2).

Chronology

Comparable rims were found at Dorestad-De Geer.⁹⁹ They display some similarities to those of Böhner's types D8, D10 and D11, which are dated to the 6th century.¹⁰⁰

MWID2: Wide-mouthed pot with triangular rim profile and a low ridge on the neck

This type is characterized by a low ridge on the neck that is part of the triangular rim (Figure 5.5). The type is

represented by ten rim fragments; most of them seem to belong to wide-mouthed pots, with the greatest diameter at the shoulder.

Fabric

This type of pottery is found in only one kind of fabric, comparable to the fine fabric of type MWDI(4). Colour varies from reddish yellow (5YR7/8) to pinkish grey (5YR7/2). The amount of temper varies from almost invisible to 5%. Temper grain size is between 0.5 and 3 mm, the hardness is between 4 and 5 on the Mohs scale.

Chronology

Comparable rims have been found at Dorestad-De Geer¹⁰¹ and the Trierer Kaiserthermen.¹⁰² Hussong and Cüppers see a development within this type from late-Roman coarse ware (*Umbaukeramik* type 43) through the 5th century (Barbarathermen type 29b-Table 27) to type 10 of Frankish pottery, which is dated to the 7th, and even the 8th century. This continuous evolution makes it difficult to date the Wijnaldum specimens. The wide-mouthed variety probably dates to the 6th century. The barrel shape might be later.

MWID3: Barrel-shaped pot with a short, pointed, triangular rim profile

This type is characterized by a short, pointed rim (Figure 5.5). At least three fragments show the barrel shape. One fragment of MWID1 with the same shape shows that within the subtype MWID the barrel shape is not restricted to MWID3. There are 13 or perhaps 14 fragments of this type. Some seem to have a very shallow groove on the inside, possibly a throwback to a type with a lid like Alzey 27.

Fabric

The fabric is similar to that of type MWID2.

Chronology

Similar rims have been found at Dorestad-De Geer.¹⁰³ There is some resemblance to type MWIA5 in fabric as well as rim shape. However, the rims of type MWID3 are shorter and the groove is absent. Comparison with Hussong & Cüppers' type 9 of Frankish pottery ends up in the same chronological debate as that elicited by type MWID2. A link with the late-Roman Alzey-27 type is likely. A starting date of type MWID3 in the early 6th century is plausible. It is more difficult to establish the end date of this type. It was probably produced far into the 7th century.

Subtype MWIE: Pot with thickened, rolled-up rim

The main characteristic of this type is a rolled, rounded rim that is almost circular or oval in profile. It occurs on wide-mouthed as well as barrel-shaped pots. Four subtypes can be distinguished, based on different rim shapes.

⁹⁹ Bakker 1997, type IA9: wide-mouthed steep-walled pot with an oval-shaped thickened rim that is slightly folded outwards.
¹⁰⁰ Böhner 1958, 53-54.

¹⁰¹ Bakker 1997, type IA13: wide-mouthed steep-walled pot with a thickened oval rim profile.

¹⁰² Hussong & Cüppers 1972, 110, fig. 54, 3-5, table 22, 10a.

¹⁰³ Bakker 1997, fig. 40, 13-14, type IIA4: narrow-mouthed cooking pot with a rudimentary groove.

Fig. 5.6 Subtypes of Merovingian coarse ware MW1E1 and 2. Scale 1 : 4. Drawings: J. de Koning.

Following the trend as described by Siegmund, these rim shapes appear on wide-mouthed pots probably dating to the 6th century as well as on later, 7th-century, barrel-shaped pots. The chronological significance of this type of rim seems rather small.

MWIE1: Barrel-shaped pot with rolled, round rim profile

This group consists of 17 fragments of 16 pots (Figure 5.6). Its principal characteristic is the round rim profile, with a sharp transition from rim to body. Most fragments come from barrel-shaped or even globular pots. Some sherds seem to belong to fairly large pots with an inner rim diameter of ca 20 cm (e.g. 1650.a), but there are fragments

of much smaller ones too. One fragment is completely covered by thin horizontal grooves (10997.a).

Fabric

The variation in fabric within this type is wide. At least nine fabrics can be distinguished.

1. No. 6208.f has a rather coarse fabric with a small amount of temper (5%) with a grain size between 0.5 and 5 mm. Cracks and pits in the fabric were probably caused by secondary fire exposure. Mohs' hardness is between 3 and 4; the colour is greyish brown (10YR5/2).
2. No. 1650.a has a proportion of temper between 20 and 30% with a grain size between 0.5 and 4 mm. This fabric is rather soft (2-3 on the Mohs scale).
3. No. 10997.b has 10% of temper, with a grain size between 0.5 and 5 mm. The colour is reddish yellow (5YR7/8); hardness is between 4 and 5 on the Mohs scale.
4. Three fragments have between 5 and 10% of temper with a grain size that varies between 0.5 and 2 mm (e.g. 3467). The colour is dark grey (N4); hardness is between 5 and 6 on the Mohs scale.
5. No. 1561 has 30% of temper but it is almost invisible (very small grain size, between 0.1-0.5 mm). This fabric is light brown (7.5YR6/3) and between 6 and 7 on the Mohs scale.
6. Three fragments (1562.a; 7761; 2655.d) have a fabric with a small amount of temper (5%) of small grain size (0.5-1 mm). The colour is grey (7.7YR6/1), Mohs' hardness is between 6 and 7.
7. Three fragments (3911.a and b; 6704.l) have a fabric with a small amount of temper (1-5%), that is almost invisible (grain size up to 0.5 mm). The colour is reddish yellow (7.5YR7/6), Mohs' hardness is between 5 and 6.
8. Two fragments (5087 and 5357.b) have a particularly coarse fabric with a large amount, 20-30%, of fine (0.5-1 mm) temper. Their colour is white (7.5YR 8/1), Mohs' hardness is between 6 and 7.
9. No. 3445 has a hard fabric (7-8 on the Mohs scale), and 10% of temper with a grain size between 0.5 and 2 mm.

Chronology

The barrel shape, when this could be reconstructed from a rim fragment, could be linked to Siegmund's types Wwt 2.21 and 22, which can be dated from 670 to the middle of the 8th century. Repeated earlier dates from Wijnaldum contexts (Chapter 6) indicate that this type may have been produced as early as the first part of the 7th century. The variety in fabrics points towards multiple different production sites, but in itself has no chronological significance.

MWIE2: Pot with thickened, rolled oval rim profile

Although the main characteristic is an oval-shaped rim, a differentiation could be made into three groups: MWIE2a, b and c, that seem to be more or less uniform in fabric, size and shape.

Group MWIE2a comprises ten fragments from six pots with a flowing, curved profile and a sharp transition from rim to body (Figure 5.6). The pots are rather wide-mouthed.

Fabric

The fabric is reddish yellow on the outside of the vessel (7.5YR7/8) and dark grey at the inside (4/4). The amount of temper, consisting mainly of quartz, is between 10 and 20%; temper grain size varies between 0.1 and 2 mm; the hardness is between 5 and 6. One fragment is pale brown (10YR6/3) and less coarse with a temper content between 5 and 10% and temper grains smaller than 0.5 mm.

Group MWIE2b consists of 24 rims from 21 pots with a flowing, curved profile and a sharp transition from rim to body (Figure 5.6). The rims are smaller than those of type MWIE2a. A neck is absent, completely rolled up into the rim. The pots are medium-sized with diameters between 14 and 16 cm. The larger fragments are of barrel-shaped pots with the widest diameter around the shoulder.

Fabric

The fabric is rather fine with only a small amount of temper (1-5%) and a small temper grain size, between 0.1 and 0.5 mm. Most fragments are reddish yellow (7.5YR6/6). Three fragments are dark bluish grey and somewhat paler at the core. This fabric is quite soft, between 2 and 3 on the Mohs scale.

Chronology

Although there is no ridge on the shoulder, this type has much in common with type Alzey 32/33 and Wijnaldum types MWIC2 and 3. These types seem to be the precursors of types MWIE1 and 2, the barrel-shaped as well as the wide-mouthed variants. The huge variety in fabrics within this type can be interpreted as evidence of many different production sites, although the predecessors of types MWIC2 and 3 seem to have been mostly produced at Mayen. According to Siegmund's typochronology, there is a remarkable gap in the use of *Wölbwandtöpfe* in graves in the second half of the 6th century. In settlements, however, no such gap occurs. Comparable fragments were found at Dorestad-De Geer.¹⁰⁴

According to the different rim types that were distinguished by Siegmund for the *Wölbwandtöpfe* of the Lower Rhine area, the rims of type MWIE2b fall into his first group, which represents the earliest pots (Wwt 1.1 and 1.2), dated between 460 and 590.¹⁰⁵ For most fragments the shape of the pot could not be reconstructed, making it difficult to date them. In the chronology of the Lower Rhine, a distinction is made between small wide-mouthed pots

104 Bakker 1997, type IA2: wide-mouthed steep-walled pot with thickened coiled up round rim profile.

105 Siegmund 1998, 137-8, Randform 1: "Der Rand ist nach außen gelegt und verdickt; außen weist er eine leichte Kehlung nach innen auf, unterhalb derer er mit einer leichten Ritzlinie vom Hals abgesetzt ist."

Fig. 5.7 Merovingian coarse ware of type MW1E3 and 4. Scale 1 : 4. Drawings: J. de Koning.

dating to the 6th century and fairly tall, barrel-shaped pots from the 7th century. A date in the 6th and early 7th century is probable for MW1E2.

Group MW1E2c consists of twelve fragments from nine pots (Figure 5.6). These are fairly large pots with diameters around 20 cm and the widest diameter probably around the shoulder. These pots have a flowing, curved profile

Fig. 5.8 Subtypes of Merovingian coarse ware of type MW1F. Scale 1 : 4. Drawings: J. de Koning.

with an oval rim, with a sharp incised line (*Ritzlinie*) between rim and body.

Fabric

Fabrics vary from fine to coarse, with a temper content between 20 and 30% and temper grains of fine sand around 0.1 mm. The most common colour is reddish yellow (7.5YR7/6).

Chronology

This type has much in common with the Frankish pottery from the kilns found at Krefeld-Gellep,¹⁰⁶ which was compared to Böhner's type D11 and dated to his Stufe III (AD 525-600).¹⁰⁷

MWIE3: Wide-mouthed pot with flowing, curved profile and thickened rim

This type is represented by eleven fragments from eight pots (Figure 5.7). The rim is thickened and barely everted. The transition from rim to body is flowing. One large pot with a diameter of ca 29 cm is almost archaeologically complete (2655.e/3188/3801.b/2946). The other pots are medium-sized, with diameters of ca 16 cm.

Fabric

Most pots of this type seem to come from the Eifel region around Mayen. Volcanic inclusions are clearly visible. The colour is reddish yellow to strong brown (7.5YR6/6-5/6). The fabric is rather coarse, with an amount of temper of around 20% and a grain size between 0.5 and 3 mm. The hardness is between 5 and 6 on the Mohs scale. The large pot has a yellowish 'patina' on the inside of the base, with many coarse inclusions, as if an extra layer of slip

¹⁰⁶ Pirling 1960, 152.

¹⁰⁷ Böhner 1958, 54.

was applied to roughen the surface – such a finish is also known from mortars.

Chronology

This type can be compared to Böhner's type D11, dated between AD 525 and 600.

MWIE4: Wide-mouthed pot with thickened rim, flattened on the outside

This type is represented by 18 fragments from 15 pots (Figure 5.7). The flattened outer edge of the rim distinguishes this type from type MWIE3. Most rims have diameters over 20 cm.

Fabric

Three fabrics can be distinguished. A rather coarse fabric similar to that of type MWIC1 (7572.p and q), a fabric with a large amount of fine temper (over 30%) with a few larger inclusions up to 3 mm (9025), and a fine fabric with about 10% of quite small particles up to 1 mm (6704.m).

Chronology

This type is so similar to type MWIE2c and MWIE3 that a 6th-century date is most likely.

Subtype MWIF: Cooking pot with thickened, outcurved snout-shaped rim

The main characteristic is a snout-shaped rim profile that is more or less curved outwards. Although most rims have somewhat pointed lips, it is only a small step towards rims that lack this feature. Given the similarities in fabric, colour and pot shape of these fragments, we have opted to lump these different rim shapes under this one heading.

MWIF1: Barrel-shaped pot with snout-shaped rim that is slightly curved outwards

This type is represented by 21 fragments, showing great variety in fabric and shape (Figure 5.8). This pot is medium-sized, with an interior diameter between 14 and 24 cm. It displays many similarities to type MWIC, yet without the ridge on the shoulder. Most pots seem to be barrel-shaped rather than wide-mouthed like type MWIC.

Fabric

Colours range from pale brown (10YR8/4) to light red (2.5YR6/6) and grey (2.5YR5/1). The outside of the pot often has a different colour from the inside; in general, the outside surface shows oxidizing conditions while the inside lacked oxygen during firing. However, some fragments show the opposite. Hardness varies between 3.5 and 7 on the Mohs scale. The amount and size of temper too are variable. One fragment has a very fine fabric without visible temper. Most fragments have a temper content between 5 and 20% and a temper grain size between 0.5 and 2 mm.

Chronology

Böhner and Hussong & Cüppers classify similar types as 'D11' or 'type 10' respectively, adding that these types are

hard to date.¹⁰⁸ Pots of this type appear immediately after the late-Roman wares.¹⁰⁹ The direct relationship with late-Roman type MWCI was already mentioned. A date in the 6th century is likely.

MWIF2: Narrow-mouthed pot with a thickened rim that is slightly curved outwards

This type has much in common with MWIF1 and is represented by five fragments (Figure 5.8).

Fabric

Both depicted rims have a yellowish colour (10YR7/4 and 10YR6/4). One of them is tempered with grog besides several stone grit. Grain size varies between 0.5 and 3 mm, while the amount of temper is 10 to 20%; hardness is 6.5.

Chronology

This type as well as type MWIF1 can be compared to Böhner's type D13: a pot with an S-shaped profile, which is dated to the 7th century.¹¹⁰ Pirling does not distinguish type D13, but dates more globular pots with similar rims to the 7th and 8th centuries.¹¹¹

MWIF3: Wide-mouthed pot with thickened rim that is strongly curved outwards

This type is similar to both type MWIF1 and 2, apart from the rim. It is represented by eleven fragments (Figure 5.8).

Fabric

There is a great variety in fabric, although the amount of temper is always between 20 and 30%. Grain size varies between 0.1 and 1 mm, though some fragments include bigger grains, between 0.5 and 3 mm. The colour is reddish yellow (7.5YR7/6; 5YR6/8) to yellowish brown (10YR6/4). Two fragments have a greyish core. Hardness is between 5.5 and 7 on the Mohs scale.

Chronology

Some pots are clearly wide-mouthed. This difference is probably relevant for dating these pots to either the 6th (wide-mouthed) or the 7th century (barrel-shaped).

MWIF4: Wide-mouthed pot with thickened angular, outcurved rim

This type is represented by six fragments. The main characteristic distinguishing it from the other MWIF types is the flattened, angular rim (Figure 5.8).

Fabric

Four fragments were fired under oxidizing conditions. Their colours are reddish yellow (7.5YR6/8 or 7.5YR6/6), while one rim is light grey (10YR7/1). Mohs' hardness varies between 5.5 and 6.5. The amount of temper varies

¹⁰⁸ Böhner 1958; Hussong & Cüppers 1972, 110.

¹⁰⁹ Böhner 1958; Hussong & Cüppers 1972, 100.

¹¹⁰ Böhner 1958, 55/56, tables 5 and 16.

¹¹¹ Pirling 1966, 142-143, type 142.

Fig. 5.9 Subtypes of Merovingian coarse ware of MW1G. Scale 1 : 4. Drawings: J. de Koning.

considerably, with 5 to 20% of almost invisible, fine temper. Its grain size is smaller than 1 mm.

Chronology

The wide-mouthed variety can probably be dated to the 6th century.

Subtype MWIG: Medium-sized pot with outcurved rim

This type shows some similarities to type MWIF3, but the rim is pulled outwards further down, creating a sharp transition between rim and body. The same variations in shape can be observed as in type MWIF. Some large fragments show that some pots were wide-mouthed, while others tend to a barrel- or even a globular shape.

MWIG1: Wide-mouthed pot with a strongly outcurved rim

This type is easily distinguished and is represented by 21 rim fragments (Figure 5.9). At least two fragments belong to wide-mouthed pots (10767 and 1267). Another might be barrel-shaped but still with a rather wide opening (1031). Most rims have an inner diameter around 20 cm.

Fabric

Most fragments were fired under oxidizing conditions. Five fragments are of a quite fine fabric with 5-10% temper of grains smaller than 1 mm. The colour of these sherds varies from greyish (10YR5/1-6/1) to brownish (5YR7/6-5/4). Other fragments have a larger content of temper, between 10 and 20%, with grains smaller than 2 mm. Only one fragment has a larger content of temper, over 20%, consisting

mainly of quartz grains (4342). The fine wares have much in common with the fabrics of types MWIA5, MWID2 and 3, and MWIE2b. Shapes too are similar to MWIE2b, as is the shape of the rim. This suggests a common origin.

Chronology

Because of the slight differences in shape between wide-mouthed and fairly wide-mouthed to probably barrel-shaped, the whole group cannot be dated more closely than to the 6th and 7th centuries. The wide-mouthed variant is probably early within this period, in the 6th century, while the barrel-shaped variant belongs to the 7th century.

MWIG2: Bevelled, outcurved rim

The rim is shaped like rim type MWIG1, but its lower part is rounded. This makes it less obvious that the rim was folded back inwardly. This type is represented by seven rim fragments (Figure 5.9).

Fabrics

Two sherds are smooth-walled with a visible temper content of less than 5%, with grains smaller than 0.5 mm. One of the sherds is grey (10YR6/1), the other is reddish yellow (7.5YR7/6) on the outside and dark grey on the inside. Three more rims are reddish yellow (5YR6/6), with an amount of temper of 5-10%, grain size varying in size between 0.5 and 2 mm.

Chronology

As type MWIG1.

Fig. 5.10 Subtypes of Merovingian coarse ware of type MWIH. Scale 1 : 4. Drawings: J. de Koning.

Subtype MWIH: Pot with thickened, everted, oval rim profile

This is a large group of differently sized and shaped pots with the shape of the rim as their only common characteristic.

MWIH1a: Large, wide-mouthed pot with thickened, everted oval rim with sharp transition

This type is represented by ten fragments from seven pots. The inner diameter in most cases is ca 20 cm, which is large compared to subtype MWIH1b (Figure 5.10).

MWIH1b: Medium-sized wide-mouthed pot with thickened, everted, oval-shaped rim with sharp transition

This type is represented by 16 fragments from 14 pots. The main difference from the previous subtype is size.

Fig. 5.11 Subtypes of Merovingian coarse ware of type MWIJ. Scale 1 : 4. Drawings: J. de Koning.

The inner diameter of most fragments, when it could be measured, is ca 16 cm (Figure 5.10).

Fabric of MWIH1a and b

The colour is a quite homogeneous light grey (10YR7/2) or very pale brown (10YR7/4) with a grey core. The amount of temper varies between 5 and 10%, while the size of the grains is between 0.5 and 2 mm. Hardness or indeed softness is between 3.5 and 5.5 on the Mohs scale.

Chronology of MWIH1a and b

The close similarity to type MWIE2c makes a similar date, between AD 525 and 600, probable. Siegmund dates his rim type 1, which is very similar but has a very low ridge as a relic from type Alzey 32/33, to Niederrhein phases 3 to 5, hence between approximately 460 and 590. As type MWIH1 lacks any ridge at all under the rim, this type may be dated to the 6th century.¹¹²

MWIH2: Medium-sized pot with slightly thickened, everted oval rim

The main difference between types MWIH1 and H2 is the more flowing transition between rim and body in the latter (Figure 5.10). The rim is only slightly thicker than the wall. The shape of the pot is not clear. Most specimens appear to be wide-mouthed. The biggest fragment, however (3055), shows a globular shape. MWIH2 is represented by 26 fragments (MNI). One fragment has a secondary perforation directly below the rim.¹¹³ The inner rim diameter varies between 11 and 22 cm. Some of these pots may have been big bowls (10773; 3050; 787).

Fabric

The fabric is quite heterogeneous. Most of the fragments are in an oxidized fabric. Ten fragments are grey (10YR6/1) or greyish brown (10YR5/2). There is finer ware with less than 5% temper and a temper size smaller than 1 mm. Other fragments are quite coarse with a temper content between 10 and 20%, albeit with fairly small particles with a maximum size of 0.5 mm. Most specimens are rather soft (2.5-5.5 on the Mohs scale).

Chronology

A date comparable to that of type MWIH1, in the 6th century, is likely.

(Subtype MWII: skipped to avoid confusion with MWIJ)

Subtype MWIJ: Pot with a shallow groove at the inside and a faceted rim

This type is divided into many subgroups with quite specifically shaped rims. Because these rims have such particular shapes they are easily recognized and compared to parallel fragments from other sites.

MWIJ1: (Small) pot with triangular-shaped rim hollowed on the inside

This type is represented by eleven rim fragments (Figure 5.11). The rim has a hollow surface on the inside and is flattened twice, on top and on the outside. The fragments are too small to allow reconstruction of the shape of the pot. Comparable complete examples from Wageningen and Köln-Porz show that these pots are just like the other subtypes MWIJ2 to MWIJ7, globular or lantern-shaped vessels.¹¹⁴ These pots are also similar in size, with inner rim diameters between 11 and 14 cm.

Fabric

The fabric of at least five fragments is quite hard, between 6 and 7 on the Mohs scale and rather coarse with an amount of temper between 20 and 30%, of fine grains between 0.5 and 1 mm. Colour varies from pinkish white (7.5YR8/2) to light brownish grey (2.5YR6/2).

Chronology

The lantern-shaped pots from Wageningen belong to late-Frankish coarse ware and were used as cinerary urns. They are dated to the beginning of the 8th century. This type of pottery is well known from the cemetery of Walsum, which was dated to the late 7th and early 8th century.¹¹⁵ Comparable fragments were found at House IV in Köln-Porz, dated to the 8th century.¹¹⁶ Similar sherds were also recovered in the Kitzburger Straße at Walberberg, which Keller dated to the late 7th and early 8th century; in kiln 40 at Eckdorf, which could be dated to the 8th century; and at Waldorf, a small village south of the range of better-known production sites in the Vorgebirge.¹¹⁷ Comparable fragments were found at Driel-Oldenhof.¹¹⁸ At Bloemendaal-Groot Olmen some findspots were strewn with many similar fragments.¹¹⁹ The shape of these pots seems to vary from somewhat steep-walled to somewhat globular. A date from the late 7th century to well into the 8th century is quite likely.

MWIJ2: Globular, narrow-mouthed pot with neck and triangular rim profile

This type is represented by six fragments (Figure 5.11). The type can be distinguished from type MWIJ1 by the narrow mouth and distinct neck of the pot. The inner rim diameter is ca 10 cm. A similar pot was found in kiln 10 at Walberberg.¹²⁰ Five comparable fragments were found at Den Burg-Beatrixlaan.¹²¹

¹¹⁴ Janssen 1978, 457, fig. 20, 2-6; Van Es 1964, 267, fig. 91, 1.

¹¹⁵ Stampfuß 1939.

¹¹⁶ Janssen 1978, 476.

¹¹⁷ Keller 2004a, fig. 1, 11-12, Phase A and 128, fig. 2, 1, Phase B.

Janssen mentions Eckdorf as probable production area (Janssen 1978, 476). For Waldorf see Keller 2012, 216, fig. 4, 7 and fig. 1.

¹¹⁸ Willems 1981, fig. 41, especially 10.

¹¹⁹ De Koning 2015, 246-247, especially findspot 1, fig. 9.7. B.

¹²⁰ Weidemann 1964, table 5, 4-5.

¹²¹ De Koning in prep.a.

¹¹² Siegmund 1998. For an update of the Niederrhein phases, see Müsseseimer *et al.* 2003.

¹¹³ Find no. 7035/3449, not depicted.

Fabric

Fabrics of this group are fairly uniform and comparable with that of type MWIJ1. They have an estimated ca 10% of temper with grain sizes between 0.5 and 1 mm. The fragments are pink (7.5YR3/4) and hardness was assessed as between 6 and 7 on the Mohs scale. Given the uniform fabric and the similar fragments from kiln finds at Walberberg, this is probably the provenance of these pots.

Chronology

Taking into account the similarities to type MWIJ1, in fabric as well as shapes, a similar date is probable.

MWIJ3: Narrow-mouthed pots with triangular rim profile, flattened on top

Only three rim fragments can be assigned to this type. It is quite similar to type MWIJ2, but the rim is flattened on top. The inner rim diameter varies between 11 and 14 cm (Figure 5.11).

Fabric

Two fragments are similar in fabric to those of type MWIJ2, pointing to a 'Walberberg' origin. The other fragment (1336) has a softer fabric (4-5 on the Mohs scale), a temper content of ca 5%, and a grain size between 0.5 and 2.0 mm. Its colour is pinkish grey (7.5YR7/2).

Chronology

This type like type MWIJ1 can be compared to specimens from Köln-Porz, which are dated to the early 8th century.¹²² A comparable fragment of a narrow-mouthed pot was found in a stratified pond fill at Bloemendaal-Groot Olmen, together with a MWIJ1-like fragment; it was dated to the 7th or early 8th century. Older layers at this site included fragments of small, wide-mouthed MWIE-type pots.¹²³

MWIJ4: Globular pot with everted, flattened rim and shallow groove on the inside

The difference between this type and the preceding one, MWIJ3, is small. However, the rim of this type is not flattened horizontally but obliquely, and the sharp groove of type MWIJ3 is now a shallow groove. This type is represented by six fragments. Type MWIJ3 has much in common with type MWIA4, albeit with some slight differences. It is unclear whether this has any chronological significance. The largest pot is decorated with horizontal grooves on the shoulder (Figure 5.11, 11095.d/11148). Its inner rim diameter is 12-13 cm.

Fabric

The fabric is a reddish yellow (5YR7/8), rather soft (between 3 and 4 on the Mohs scale), and tempered with about 10% of fine grains, smaller than 0.5 mm. This fabric is comparable to at least one of the fragments of type MWIA4.

Chronology

The closest parallels can be found among the lantern-shaped pots at the cemetery of Wageningen.¹²⁴ Therefore a date in the late 7th or early 8th century is quite likely. The similarities in rim shape and fabric to type MWIA4, dated to the 6th century, do not exclude the 7th century as a possible date for this kind of pottery.

MWIJ5: Globular pot (or jug) with rounded rim with shallow groove

The only difference from type MWIJ4 is the rounded rim. The shape of the pot, the flowing curve of the body and shallow groove on the inside of the rim are the same. This type is represented by seven fragments. The inner rim diameter is 13 cm (Figure 5.11).

Fabric

The largest fragment has the same fabric as that of type MWIJ4; it is reddish yellow (5YR7/8), has a small amount of temper (5-10%), but with variable grain sizes between 0.5 and 4 mm. The other fragments are light grey (7.5YR7/1) and finely tempered (10-20% of temper, small grains 0.5-1 mm).

Chronology

See MWIJ6.

MWIJ6: Pot (or jug?) with stretched, rectangular rim profile and sharp edge on the inside

This type is comparable to type MWIJ5, but it has a rectangular, stretched and more angular faceted rim. Another clear difference is the sharp edge on the inside. This type is represented by five rim fragments (Figure 5.11). The size of this type and inner rim diameter is comparable to that of type MWIJ5.

Fabric

The fabric is a light reddish brown (5YR6/3) with an amount of temper less than 10% and temper grain size smaller than 0.5 mm. The hardness is estimated at between 5 and 6 on the Mohs scale.

Chronology

Unlike the other MWIJ types, fragments comparable to MWIJ5 are known from earlier sites like Frankfurt, where it is among the Frankish *raue graue Ware*, which Stamm dated between AD 525 and 700.¹²⁵ Three comparable fragments were found at Den Burg-Beatrixlaan, two of which appeared in sunken huts.¹²⁶ In Bloemendaal-Groot Olmen, a comparable fragment was found in a foundation trench of longhouse 3, which was dated to the 6th century.¹²⁷ From the same site but another findspot, an almost complete, rather bulbous example was found in an older layer, in association with a wide-mouthed

¹²² Janssen 1978, 457, fig. 20, 2-3 and 476.

¹²³ De Koning 2015, 131, fig. 7.11.

¹²⁴ Van Es 1964, 267, fig. 91, 2 and 3.

¹²⁵ Stamm 1962, table 12.

¹²⁶ De Koning in prep.a.

¹²⁷ De Koning 2015, 144, fig. 7.22.

Fig. 5.12 Merovingian coarse ware, small pots, type MWII. Scale 1 : 4. Drawing: J. de Koning.

MWIE-type pot.¹²⁸ Type MWIJ6 is represented at both sites, Den Burg-Beatrixlaan as well as Bloemendaal-Groot Olmen. A fragment from Den Burg has an attached spout which brings to mind the jugs and jar types of the Niederrhein typochronology.¹²⁹ The best parallel to types MWIJ5 and 6 is Niederrhein type *Kan* 2.2, dated to phase 11, between 710 and 740. Another clear comparison can be made with examples from kiln 40 at Eckdorf, dated by Keller to Phase B, ca 725/750-800.¹³⁰ These types clearly gave rise to the globular pots with handles and spouts we know from Dorestad as type W IIIB.¹³¹ That type has even sharper-edged rims and features in the present typology as type MWIJ7.

MWIJ7: Globular, thin-walled pots (or jugs) with triple-faceted rim

This type is represented by eight fragments (MNI) and can clearly be distinguished from the other types by fabric as well as shape. Although the shape of the individual rims varies, they are all faceted on top, on the outside and on the inside (Figure 5.11).

Fabric

The fabric is a reddish yellow (5YR7/6-7/8) and it is rather hard (5-6 on the Mohs scale). The estimated amount of temper is between 10 and 20%, with grain sizes between 0.5 and 1 mm.

Chronology

Comparable multifaceted rims are present among the Dorestad material and the Frankish *grobgemagerte gelbgrautonige Ware* of Frankfurt.¹³² This type of pottery seems to precede the 'Carolingian' pottery, especially the medium-sized globular pots of Dorestad-type W III. This type probably belongs to the Dorestad group W IIIB, which sometimes has spouts and handles attached. Decoration with horizontal grooves or even rouletted squares, which is common on Dorestad-type W II, also appears on this type of pot. A date in the early 8th century is likely.

Type MWII: Small pots

Besides sherds of relatively large pots of the MWI group, fragments of considerably smaller pots were found. These

were distinguished by a smaller rim diameter under 10 cm. Some of these are small versions of MWI types: two fragments with traits of type MWIB, three of type MWIE and six of type MWIH. Eleven fragments belong to small pots without such characteristics. All these fragments are subsumed under type MWII (Figure 5.12).

Small pots are not only smaller in diameter, but also have thinner walls. Often it was not possible to estimate the actual dimensions of the complete pot from the small fragments that were excavated at Wijndaldum-Tjitsma. The difference from 'normally'-sized pots was not always clear. Because of their smaller size, these smaller pots were probably not used for cooking but, for instance, as beakers or for storing special substances. For the pottery of Dorestad, where globular pots were classified under type W III, smaller pots were classified as type W IV. However, no diameter was mentioned to define this type. Most of the small pots of Dorestad have a rim diameter around 8 cm.¹³³

Type MWIII: Jugs and pitchers

Jugs and pitchers are easy to distinguish from (cooking) pots or (storage) jars when they include fragments of spouts, handles or a pouring lip. However, for most fragments it is much harder to distinguish pots from jugs. Fortunately, the typochronological overviews that exist today, like that of the Lower Rhine area and of course all the studies that preceded them, show complete examples of all kinds of jugs, jars and even ceramic bottles (German: *Flasche*).¹³⁴ Most of these typical shapes come with typical rims, which make it possible to recognize a jug, jar or bottle by its rim. This was done, for example, by Dijkstra for Merovingian pottery from Utrecht-Leidse Rijn and later also by the first author for a comparable site, Utrecht-Vikingrijn.¹³⁵

Subtype MWIIIA: Trefoil jugs ('Kleeblattkrüge')

This type is represented by 13 fragments (MNI). These are easy to distinguish by the unthickened rim without any faceting and of course by the trefoil shape of the mouth (Figure 5.13).

Fabrics

Fabrics within this type are rather variable. The amount of temper varies from 5 to 25%, while the size of the grains varies between 0.5 and 3 mm. Mohs' hardness ranges from 2.5 and 6.5, but mainly around 4.5.

Chronology

This type is already present at the Niederbieber *castellum* and also appears as type *Kan* 1.1/2 in the second phase of Siegmund's Niederrhein chronology up until phase 4, between AD 440 and 525.¹³⁶ Böhner dated these jugs until the 7th century.¹³⁷ One more or less complete jug

¹²⁸ *Idem*, 124, fig. 7.5.

¹²⁹ Müssemeier *et al.* 2003; Nieveler & Siegmund 1999, 19-20.

¹³⁰ Keller 2004a, 128, fig. 2, 7-11.

¹³¹ Van Es & Verwers 1980, 83-85.

¹³² Van Es & Verwers 1980, 85, fig. 37, 12 and 16; Stamm 1962, table 14, 180-185, Gruppe 11.

¹³³ Van Es & Verwers 1980, 88.

¹³⁴ Müssemeier *et al.* 2003, 66.

¹³⁵ Dijkstra 2009; De Koning in prep.c.

¹³⁶ Müssemeier *et al.* 2003; Oelmann 1914, 75.

¹³⁷ Böhner 1958, 38.

Fig. 5.13 Merovingian coarse ware, jugs, type MWIII. Scale 1 : 4. Drawing: J. de Koning.

could be determined as Böhner type D2, which was dated between 525 and 600. According to Pirling, this type may also be dated earlier, in the second half of the 5th century. Siegmund puts the slender jugs before the 7th century, while jugs with a more globular body probably belong to phase 8 (AD 610-640).¹³⁸ Siegmund distinguished two types of ‘Kleeblattkannen’, based on two different shapes of the foot. In the Wijnaldum material, this distinction could rarely be made; hence *Kan* 1.1 and *Kan* 2 are usually combined. These are the slender jugs dated between 440 and the beginning of the 6th century. The difference between *Kan* 1.1 and the much later jug of type *Kan* 1.2 lies in the ratio of the diameter of the belly to the height of the pot. This type is dated from Niederrhein phase 5 to phase 7 (565-620).

Subtype MWIIIB: Single- or two-handled jugs with thickened rim (‘Ein- oder Zweihenkelkrüge’)

A number of small rim fragments can be assigned to this type of jug. The shape of the rim and its slightly oblique position to the body is typical of such jugs, which makes it possible to identify even small fragments. At least seven fragments belong to this type (Figure 5.13). At least one jug was two-handled; the handles were attached to the lower part of the rim.

Fabric

The amount of temper varies between 10 and 20%. Temper particles are sometimes visible at the surface and sometimes completely smoothed away. Mohs’ hardness is 4.5-6. In most cases, the core has a different colour than the

surface. One fragment is greyish (7.5YR5/1) while others are light red (5YR5/2), yellow (7.5YR7/6) or reddish grey (5YR5/2). The colour of the core varies from bluish grey (2G6/5PB) to dark bluish grey (2G4/5PB).

Chronology

This type of jug is already present at Alzey (AD 330-410) and can be identified as type D4a/b and D6a in Böhner’s typology and as Pirling’s types 153 to 156.¹³⁹ For the Mayen examples, the distinction between the late-Roman ware (*Ware* MR) and Merovingian ware (*Mayener Irdenware*-MD) is relevant. Within the late-Roman ware, we find comparable jugs under type R19: a two-handled jug also called amphora.¹⁴⁰ Within the Merovingian ware, comparable jugs are classified as type A3.¹⁴¹ The fragments from Wijnaldum have more in common with the latter, which Redknap dates to between the late 5th and the late 7th century. Siegmund makes a clear distinction between narrow-mouthed examples (S-Kru 1.1) of the transition period from phase 5 to 6, ca AD 580 to 620,¹⁴² and wide-mouthed jugs (S-Kru 1.2) which are dated much earlier, to the 5th and early 6th century (phases 1 to 3). The two or three-handled jugs are divided into three types, S-Kru2.1 (dated 610-680), 2.2 (680-710), and 2.22 (680-750).¹⁴³ At Bloemendaal-Groot Olmen, three examples of such small

¹³⁸ Müsseseimer *et al.* 2003, 66, the difference between *Kan* 1.1/2 and 1.2.

¹³⁹ Böhner 1958, 38-39; Pirling 1966, Typentafel 13; Unverzagt 1916, 35, type 30.

¹⁴⁰ Redknap 1999, 164 and 167 (R19), 178-179 (A3).

¹⁴¹ Redknap 1999.

¹⁴² Müsseseimer *et al.* 2003, 65.

¹⁴³ Müsseseimer *et al.* 2003, 65.

jugs were found together with Alzey-27 and 32/33-type pots, making a date in the 6th century quite possible.¹⁴⁴

Subtype MWIIIC: Narrow-mouthed jug with cylindrical mouth and long, everted, unthickened rim

This type is represented by seven individuals. The main difference from type MWIIIB is the unthickened rim. The difference from type MWIIIA is the absence of a large pouring lip. Only in one case was a small pouring lip present.

Fabric

Mohs' hardness is 5.5. The amount of temper varies between 10 and 20%, with grain sizes between 0.5 and 2 mm. The colour is pale brown (10YR8/4).

Chronology

The closest parallel is Böhner's type D4a, but this type has a thickened rim; it is dated between 450 and 525. According to Pirling, this type was common even before 450.

Subtype MWIIID: Jug/amphora/bottle with faceted rim and shallow groove on the inside

This type is represented by five fragments (MNI = 5). Stampfuß, who first described this material more extensively, distinguished jugs, amphorae and bottles.¹⁴⁵ One fragment was decorated on top of the rim with a roller stamp (Figure 5.13).

Fabric

This pottery is generally described as 'early Badorf' ware. The amount of temper varies from 20 to 30%, with a grain size less than 0.5 mm. Four rims are reddish yellow (5YR7/6). The fifth fragment is a light bluish grey (10B8/1). Mohs' hardness varies between 5.5 and 7.

Chronology

This kind of pottery was first described by Stampfuß for the late-Frankish cemetery of Walsum.¹⁴⁶ For the Lower Rhine area, Siegmund made a distinction between 'old Walsum' (670-710) and 'new Walsum' (710-750), based on fabrics.¹⁴⁷ The 'old Walsum' ware has more and rougher temper and was produced at Walberberg and Eckdorf, among other places.¹⁴⁸

Van Es and Verwers included this 'Walsum' amphora as type W XIVA in their Dorestad typology.¹⁴⁹ They made the same distinction in older, coarse ware, fabric w21, and in Badorf and Walberberg wares, especially fabrics w1 and w3. These amphorae, bottles and jugs are dated accordingly to the late 7th or early 8th century. Comparable but larger fragments of 'Badorf-like' bottles were also found at Bloemendaal-Groot Olmen, especially at findspot 14.¹⁵⁰

The 'Walsum' amphora can be considered the predecessor of the *reliefband* amphora of the Carolingian period.

Subtype MWIIIE: Single-handed jugs or bottles (Flaschen) with triangular rim

There are five fragments (MNI) that can be assigned to this type (Figure 5.13). These fragments are characterized by a vertical neck, ending in a short, thickened, triangular rim, obliquely flattened on the top. At least two of the sherds were decorated with horizontal grooves and ridges, a type of decoration that according to Siegmund is mostly found on jugs and bottles.¹⁵¹ This type is related to type MWIIID but lacks the shallow groove inside the rim.

Fabric

Five rims are of a quite dark fabric (10YR4/1-5YR4/2). One fragment has a light brown colour (7.5YR6/3). The amount of temper varies between 5 and 20%, while the grain size is between 0.5 and 2 mm. Mohs' hardness is 6.5-7.5.

Chronology

This type of rim displays similarities to Siegmund's types of bottles and jugs such as type *Kan* 2.1 and *Fla* 2.1, which both are dated to phase 9 (AD 670-710).¹⁵²

Type MWIV: Bowls

Bowls are quite rare at Wijnaldum-Tjitsma. All bowls seem to have had flat or lenticular bases. There are no footrings or footed bases among the finds.

Subtype MWIVA: Shallow bowl with incurved, unthickened rim

This is a type that belongs to the Alzey 29 group. At least four fragments belong to this group (Figure 5.14).

Fabric

The colour varies from pinkish grey (76.5YR7/2) to reddish yellow (5YR7/6). The amount of inclusions differs considerably; one fragment contains less than 5% of temper, while the others contain between 10 and 20%. The size of the particles is between 0.5 and 1 mm. Mohs' hardness is 4-6.

Chronology

This type is presented at the Alzey *castellum* as type 29. It is also among the *Umbaukeramik* at Trier (ca AD 430). Bakker dates these bowls, described as plates, to the late 4th, and the first half of the 5th century.¹⁵³

Subtype MWIVB: Bowl with internally thickened rim

This type is represented by four fragments. It is related to type Alzey 28 but there is some variety within this group. One specimen has a pointed flange on the outside,¹⁵⁴ the

¹⁴⁴ De Koning 2015, 266-267.

¹⁴⁵ Stampfuß 1939.

¹⁴⁶ Stampfuß 1939.

¹⁴⁷ Müssemeier *et al.* 2003, 64-65; Siegmund 1998, 145-149.

¹⁴⁸ Keller 2004a, 128-129, fig. 2, 11.

¹⁴⁹ Van Es & Verwers 2009, 148.

¹⁵⁰ De Koning 2015, 284.

¹⁵¹ Müssemeier *et al.* 2003, 66; Siegmund 1998, 153.

¹⁵² Müssemeier *et al.* 2003, 64 and 66; Siegmund 1998, 145 and 153.

¹⁵³ Bakker 1981.

¹⁵⁴ Find no. 7752/2974, not depicted.

Fig. 5.14 Merovingian coarse ware, bowls, type MWIV. Scale 1 : 4. Drawing: J. de Koning.

other is slightly everted, although the rim is still thickened on the inside (5632.b).

Fabric

The colour is light red (2.5YR6/6). Mohs' hardness is 6.5, while the temper content ranges between 5 and 10%. Grain size is 0.5 to 1 mm.

Chronology

Generally no distinction is made between bowls of Alzey 28 type with or without a groove below the external flange on the rim.¹⁵⁵ The type of bowl described here features also among the Trier material (*Kellergange* as well as *Umbau*), which suggests a date after AD 330.¹⁵⁶ Yet this type of bowl is, still in use in the 6th century.¹⁵⁷ The groove below the flange seems to have disappeared from the 6th century onwards. Pirling bowl type 172 too is dated between 450 and 600. Within the Mayen typology this type is represented by Form R2, all with a groove below the flange among the MR ware, and dated from the late 3rd into the early 5th century.¹⁵⁸ Smaller examples with the same shape and groove below the flange can be found among the coarse Mayener *Irdenware* (Ware MD) as type A1, in use from the late 5th century and throughout the 6th century.¹⁵⁹

Subtype MWIVC: Bowl with internally thickened rim and pointed flange on the outside

This type is represented by only one rim fragment (Figure 5.14). The form developed from the Niederbieber type 108 and Alzey 28.

Fabric

The colour is light red (2,5YR6/6). Mohs' hardness is 6.5, while the amount of temper ranges between 5 and 10%; grain size is 0.5-1 mm.

Chronology

Generally, no distinction is made between bowls of Alzey 28-type with or without a groove below the external flange of the rim.¹⁶⁰ The occurrence of this type at Alzey, Trier-Kellergange and Trier-Umbau suggests a date after AD 330. However, this type of bowl remains in use into the 6th century and possibly even later, as is shown by Gross.¹⁶¹ The groove below the flange seems to have disappeared from the early 6th century onwards. Pirling's bowl of type 172 too is dated between 450 and 600.¹⁶²

Subtype MWIVD: Bowl with long, outcurved, slightly thickened rim and carinated shoulder

Seven sherds from different contexts belong to a single bowl of this type (Figure 5.14). The bottom is flat and not pinched out on the outside. The transition from body to neck is sharp.

155 Bakker 1981, 340-341, figs. 247-248, especially 67-70.

156 Hussong & Cüppers 1972, fig. 34 and table 16, 35a.

157 Gross 1992, 433-434 and fig. 4.

158 Redknap 1999, 156-157.

159 Redknap 1999, 178-179.

160 See e.g. Bakker 1981, 340 and figs. 247/248, especially nos. 67-70; Hussong & Cüppers 1972, fig. 34 and table 16, 35a.

161 Gross 1992, 433-434 and fig. 4.

162 Pirling 1966.

Table 5.1 Distribution of Merovingian wheel-thrown coarse ware at Wijnaldum, based on the minimal number of individual pots (MNI). Dates are based on the literature as presented in the text.

Group	Type	Subtype	MNI	%	From	To	Chronology
MWI	A	1	2		250	325	Late Roman Period
MWI	A	2	5		450/475	600	First group
MWI	A	3	8		475	600	First group
MWI	A	4	8		550	650	First/second group
MWI	A	5	8		600	700	Second group
MWI	A	6	7		475	650	First group
MWIA total			38				
MWI	B	1	7		650	750	Third group
MWI	B	2	3		650	750	Third group
MWI	B	3	10		650	750	Third group
MWIB total			20				
MWI	C	1	18		450	550	First group
MWI	C	2	27		450	550	First group
MWI	C	3	5		500	600	First group
MWIC total			50				
MWI	D	1	17		500	600	First group
MWI	D	2	10		500	625	First group
MWI	D	3	14		500	650	First/second group
MWID total			41				
MWI	E	1	16		670	750	Third group
MWI	E	2a	6		500	700	First/second group
MWI	E	2b	21		500	550	First group
MWI	E	2c	9		525	600	First group
MWI	E	3	8		525	600	First group
MWI	E	4	15		500	600	First group
MWIE total			75				
MWI	F	1	21		500	650	First/second group
MWI	F	2	5		600	700	Second group
MWI	F	3	11		500	700	First/second group
MWI	F	4	6		500	600	First group
MWIF total			43				
MWI	G	1	21		550	700	First/second group
MWI	G	2	7		550	700	First/second group
MWIG total			28				
MWI	H	1a	7		500	600	First group
MWI	H	1b	14		500	600	First group
MWI	H	2	26		500	600	First group
MWIH total			47				
MWI	J	1	11		675	725	Third group
MWI	J	2	6		675	725	Third group
MWI	J	3	3		600	725	Second group
MWI	J	4	6		525	725	First/second group
MWI	J	5	7		525	700	First/second group
MWI	J	6	5		525	700	First/second group
MWI	J	7	8		700	750	Third group
MWIJ total			46				
MWI total			388	84.3			
MWII	B		2		650	750	Third group
MWII	E		3		500	700	First/second group
MWII	H		6		500	700	First/second group
MWII			11		500	700	First/second group
MWII total			22	4.9			
MWIII	A		13		440	620	First group
MWIII	B		7		500	625	First group
MWIII	C		7		450	525	First group
MWIII	D		5		650	750	Third group
MWIII	E		5		670	710	Third group
MWIII total			37	8.0			
MWIV	A		4		400	450	First group
MWIV	B		4		475	600	First group
MWIV	C		1		450	600	First group
MWIV	D		1		450	525	First group
MWIV	E		3		600	700	Second group
MWIV total			13	2.8			
MW coarse ware total			460	100			

Fabric

The fabric is very coarse (20-30% temper, grain size 0.5-3 mm). Its hardness is difficult to establish because of the coarse surface particles.

Chronology

This bowl is comparable to Böhner's type D16a, which is dated to *Stufe* II (450-525).¹⁶³

Subtype MWIVE: Bowl with long, outcurved, slightly thickened rim and more or less sharp transition from body to neck

At least three rim fragments belong to this type. The rim is generally everted, but sometimes more vertical. The shoulder is rudimentary.

Fabric

The rims vary in colour between reddish yellow (5YR6/6) and black, but are predominantly dark. One sherd showed that the lower part of the body had been lighter. One sherd has an amount of temper of only 5%, the others contain 20% of temper; grain size is less than 1 mm. Mohs' hardness is 5.

Chronology

This type resembles type WXB from Dorestad, dated to the 7th and early 8th century.¹⁶⁴ The same type of bowl is found in the cemetery of Krefeld-Gellep, where Pirling placed it in *Stufe* IV (600-700).¹⁶⁵

Chronology of coarse-ware pottery

At least 460 individual imported coarse-ware pots were identified in the Wijnaldum material (Table 5.1). Most of these, 388 pots or 84.3%, belong to cooking or storage pots of regular size, type MWI. The remaining 72 pots, 15.6% of the total, belong to small type-MWII varieties, jugs or pitchers of type MWIII, and bowls of type MWIV.

In terms of chronology, the distinguished types in most cases do not provide clear dates. Many types are chronologically not very specific and are dated to the 6th and 7th centuries, the Merovingian period. Nevertheless, it was possible to distinguish chronological groups, starting with the beginning of the production of this pottery. Types are assigned to the chronological group that largely coincides with their assumed dates. The *first group* clearly is a continuation of Roman coarse-ware pottery and can be dated to the 5th and 6th centuries. Whether early-5th-century coarse-ware pots made their way to Wijnaldum is doubtful, but an occasional early appearance is possible. The *second group* coincides with the 7th century. In as far as can be established, this group comprises mostly barrel-shaped and somewhat larger and taller pots, while in the previous period the pots were shorter and more wide-mouthed. This is in concordance with the Rhineland typology of types Wwt 1 (first group) and 2 (second group). The *third group* can be considered the forerunner

of Carolingian pottery and coincides with the 'Walsum ware' known from late-Frankish cemeteries; this group is similar to Rhenish type Wwt 2.2. This third group can be dated to between 670 and 750.

In the next chapter (Chapter 6) we shall take a closer look at some contexts with large assemblages of MW ware. These contexts provide test cases for the chronological attribution made in this chapter, which are based on the literature.

5.3 Merovingian fine ware: biconical pots (*Knickwandtöpfe*)

Introduction

Merovingian fine ware was classified and dated according to the classification and chronology of grave finds from the German Lower Rhine area and the northern part of the Eifel region drawn up by Siegmund and updated and expanded by Nieveler, Plum, Pöppelmann and Müssemeier.¹⁶⁶ This group is distinguished from Merovingian coarse ware by its fabric.

Fine ware is smooth-walled; in most cases the surface is burnished, giving the pots a shiny appearance (especially when new, which we, archaeologists can only imagine). We know this fabric in most cases from so-called biconical pots with roller-stamp ornament on the shoulder. Some other forms in this fabric, for instance bowls, are also known. Many fine-ware biconical pots are known from excavated cemeteries. In settlements, fine ware is usually far less prevalent than coarse ware.

At Wijnaldum at least 274 fragments, weighing 2,596 g, could be classified as Merovingian fine ware, belonging to biconical pots. The Minimum Number of Individuals is 38. Sherds from at least 30 different pots showed identifiable characteristics. These could be classified within the scheme that Siegmund constructed for the biconical pottery of the Lower Rhine area and subsequent studies elaborating on Siegmund's basic scheme.¹⁶⁷ At Wijnaldum, only a small part of Merovingian wheel-thrown pottery, 7.6% of the minimum number of individuals, belongs to biconical fine ware.

The classification of the biconical pots of the Lower Rhine area according to Siegmund

As for the coarse ware, various chronologically significant relationships were identified for this ware by Siegmund (1998), from which he established five basic shapes (Figure 5.15). First, a division was made between three main shapes on the basis of the ratio of heights to the widest diameters of pots. These three main shapes were divided into five groups or basic shapes (*Grundformen*), by comparing the mouth opening and the widest diameter of the pot. Then a separate division was made into four groups. The first group (Kwt 1) is defined by a concave upper part of the body. A second group (Kwt 2) consists of biconical

¹⁶³ Böhner 1958, 57 and table 6, 7.

¹⁶⁴ Van Es & Verwers 1980, 103 and fig. 57:3.

¹⁶⁵ Pirling 1966, 145, type table 13, 169.

¹⁶⁶ Müssemeier *et al.* 2003; Nieveler & Siegmund 1999; Siegmund 1998.

¹⁶⁷ Müssemeier *et al.* 2003; Siegmund 1998, 128.

Table 5.2 Overview of biconical fine-ware fragments from Wijnaldum. Abbreviations: Kwt: *Knickwandtopf*; g: smooth surface; r: coarse surface; red: reduced; ox: oxidized; z: soft. See Figures 5.16 and 5.17.

Find no.	Type Kwt	Fabric	Remarks	From	To	Reference
2684	Kwt 3.22/23		Ridge	610	680	Siegmund 1998, 131
3945	Kwt 3.22/23	gred	Ridge	610	680	Siegmund 1998, 131
1356	Kwt 3A	gred	Horizontal lines	510	590	Müssemeier <i>et al.</i> 2003, 59
7448.v,w,x	Kwt 3AB	gred	Horizontal lines	510	590	Müssemeier <i>et al.</i> 2003, 59
8013	Kwt 3AB	gred	Horizontal lines	510	590	Müssemeier <i>et al.</i> 2003, 59
1443	Kwt 3B	gred	Ridge, horizontal lines	510	590	Müssemeier <i>et al.</i> 2003, 59
7760	Kwt 3B	gred	Ridge, horizontal waves	510	590	Müssemeier <i>et al.</i> 2003, 59
594	Kwt 5A	gox	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
1112	Kwt 5A	gred	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
1521.b	Kwt 5A	gox	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
2583	Kwt 5A	gox	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
5148	Kwt 5A	gred	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
5933	Kwt 5A	gred	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
6026	Kwt 5A	gox	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
6553	Kwt 5A	goxz	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
6766	Kwt 5A	gred	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
7448.y	Kwt 5A	rox	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
9445	Kwt 5A	gred	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
10790	Kwt 5A	gred	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
11138.a	Kwt 5A	goxz	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
11138.b	Kwt 5A	goxz	Single row rouletted squares	565	620	Müssemeier <i>et al.</i> 2003, 60
1048.b,c	Kwt 5B	gox	Double/multiple row rouletted squares	565	650	Müssemeier <i>et al.</i> 2003, 61
1178	Kwt 5B	gred	Double/multiple row rouletted squares	565	650	Müssemeier <i>et al.</i> 2003, 61
1579	Kwt 5B		Double/multiple row rouletted squares	565	650	Müssemeier <i>et al.</i> 2003, 61
8216	Kwt 5B	gredz	Double/multiple row rouletted squares	565	650	Müssemeier <i>et al.</i> 2003, 61
1048	Kwt 5GH	gred		565	650	Müssemeier <i>et al.</i> 2003, 62
1076.b	Kwt 5GH	gred		565	650	Müssemeier <i>et al.</i> 2003, 62
2198	Kwt 5GH			565	650	Müssemeier <i>et al.</i> 2003, 62
3061	Kwt 5GH	gred		565	650	Müssemeier <i>et al.</i> 2003, 62
3402	Kwt 5GH	goxz		565	650	Müssemeier <i>et al.</i> 2003, 62
5634	Kwt 5GH	gred		565	650	Müssemeier <i>et al.</i> 2003, 62
6704.r	Kwt 5GH	gox		565	650	Müssemeier <i>et al.</i> 2003, 62
6712.b	Kwt 5GH	gred		565	650	Müssemeier <i>et al.</i> 2003, 62
7206	Kwt 5GH	gred		565	650	Müssemeier <i>et al.</i> 2003, 62
7448.z	Kwt 5GH	goxz		565	650	Müssemeier <i>et al.</i> 2003, 62
7448.aa	Kwt 5GH			565	650	Müssemeier <i>et al.</i> 2003, 62
9024.a	Kwt 5GH	gredz		565	650	Müssemeier <i>et al.</i> 2003, 62
9024.b	Kwt 5GH	gox		565	650	Müssemeier <i>et al.</i> 2003, 62
9298	Kwt 5GH	goxz		565	650	Müssemeier <i>et al.</i> 2003, 62
10334.c	Kwt 5GH	gred		565	650	Müssemeier <i>et al.</i> 2003, 62
9679	Kwt					

pots with a straight upper body, a sharp transition between the upper and lower part of the body, no ridge on the shoulder and no roller- but single-stamp decoration. A third group (Kwt 3) comprises biconical pots with a straight upper body, a sharp transition between the upper and lower part of the body, roller-stamp decoration and/or a ridge on the shoulder. The fourth group consists of various biconical pots with specific characteristics that did not fit in the scheme above, such as coarse biconical pots (Kwt 4.52). A fifth group was added (Kwt 5), consisting of biconical pots with a straight upper part; and even a sixth group was created for specimens with two ridges on the shoulder.¹⁶⁸ A subdivision is made for variations in decoration. The Niederrhein chronology had two

updates. One, by Nieveler and Siegmund, presents a new Niederrhein chronology by combining Siegmund's results with the Franken AG Kölner-Bucht chronology.¹⁶⁹ Later on, these chronologies were extended by the new data and chronology of Merovingian grave finds from the left bank of the Lower Rhine and the northern Eifel area.¹⁷⁰ In these latest versions (Figure 5.15), many types of pottery, especially among the biconical pots, were reassigned and renamed. The main groups (Kwt 1 to 6) are maintained; some subclasses like Kwt 2.43 or 4.52 were not changed but an S- (for Siegmund) was added to them. Others were changed, adding a letter instead of a double digit. For example Kwt 1.11 became Kwt 1a, Kwt 1.12 became Kwt 1b.

168 Mussemeier *et al.* 2003, 60–63.

169 Nieveler & Siegmund 1999.

170 Mussemeier *et al.* 2003.

Fig. 5.15 Groups of biconical ware, according to Siegmund (1998, 128), with the addition by Müsseseimer *et al.* (2003).

Update 2003
(Müssemeier
et al. 2003)

Kwt 1A

Kwt 1B

Kwt 1C

horizontal
grooves

straight
upper part

S-Kwt 2.43

Kwt 2A vertical multiple
rectangles with
rosette stamps

Kwt 2B multiple rectangles
with horizontal
grooves

Kwt 2C multiple rectangles
no grooves

Kwt 3A horizontal
grooves

Kwt 3B horizontal grooves
and waves

Kwt 4A undecorated

Kwt 5A single rouletted rectangles

Kwt 5B multiple rouletted rectangles- normal body

Kwt 5C multiple rouletted rectangles-slim body

Kwt 5D rouletted opposite triangles

Kwt 5E rouletted long rectangles

Kwt 5F complex rouletting interrupted

Kwt 5G complex rouletting -normal body

Kwt 5H complex rouletting -slim body

S-Kwt 4.3

S-Kwt 4.52

In this overview of the Wijndaldum pottery, the fine ware is first of all classified according to decoration with the aid of the Siegmund codes, since the majority of the finds are decorated wall sherds. For example, single-stamp decoration fits within group 2, while roller-stamp decoration belongs in group 3. This chronology was useful in about thirty cases for smaller fragments of biconical pots.

Biconical fine ware at Wijndaldum

Table 5.2 and Figures 5.16-17 present the biconical fine-ware fragments found at Wijndaldum. Biconical pottery of the first and earliest group Kwt 1, the concave-necked pots, was not found at Wijndaldum. Biconical pots with single stamp decoration group Kwt 2 is also completely absent, except for a fragment that is probably Carolingian (Dorestad type WVII-fabric 16, which is related to biconical ware).

Fragments from biconical pots with horizontal line or wave pattern

Of the third group, Kwt 3, two examples were found with a ridge high on the shoulder. In the latest classification by Müssemeier and others of 2003 this characteristic seems to have been dropped. In Siegmund's original version, these ridges (or *Wülste* in German) have chronological significance in types Kwt 3.22 and 23, dating them to the 7th century (AD 610-680).

Another fragment consists of a rim-and-wall sherd of a wide-mouthed biconical pot with a horizontal wave pattern (7760); this is the only find with this type of decoration. This vessel, however, also has a *Wulst* on the shoulder. For its wide-mouthed shape it should be classified as Kwt 2.31, dating to the second half of the 6th century (Niederrhein phase 5).¹⁷¹ In the update of this chronology the fragment can be classified as Kwt3B.¹⁷² This type has ridges on the shoulder of narrow- as well as wide-mouthed pots, with horizontal or wavy lines. This type is dated to phases 4 and 5, which cover a major part of the 6th century (510-590).¹⁷³ Another quite wide-mouthed biconical pot (1443.a) is decorated with horizontal lines and belongs to a similar type of pot (Kwt3B) with a similar date. Several other fragments of biconical pots were decorated with horizontal lines, that could belong to types Kwt3A or B (one rim fragment, 1356.f; four wall fragments from at least two pots: 8013, 7448.y, z and aa). No sherds of the fourth group of biconical pottery (type Kwt 4) were identified.

Most fragments could be classified into three main groups within type Kwt5: a group with single rows of rouletted small squares (type Kwt5A), a group with multiple rows of rouletted squares (Kwt5B) and a large group of pots decorated by various roller-stamp patterns (type Kwt5GH). Because of the small sizes of the sherds, no division could be made between wide biconical pots (Kwt5G) and more slender specimens (Kwt5H).

At least twelve fragments could be classified under Kwt5A with patterns of gridded squares and show greyish

¹⁷¹ Siegmund 1998, 129. Siegmund & Nieveler 1999, 13.

¹⁷² Müssemeier *et al.* 2003.

¹⁷³ Müssemeier *et al.* 2003, 59, 77, 105.

Fig. 5.16 Merovingian fine ware, types Kwt 3.22/23, Kwt3A and B, Kwt5A. Scale 1 : 3. Drawings: B. Donker.

reduced fabrics as well as reddish (oxidized) fabrics. One example was of a coarse fabric (7448.bb). These variations occur in the Niederrhein area in phases 5 and 6, dating from the second half of the 6th and early 7th century (565–620).¹⁷⁴

Three fragments could be classified under Kwt5B, showing a double rouletted pattern. These patterns occur on biconical pots from phases 5, 6 and 7, dating from the

early 6th century until the end of biconical ware around the middle of the 7th century (565–650).¹⁷⁵

Thirteen fragments belong to biconical pots of Kwt5GH, showing various complicated roller-stamp patterns consisting of vertical rectangles, diagonal lines, triangles, and x-crosses. These fragments occur in the same phases as Kwt5B, dated to between 510 and 650.

¹⁷⁴ Müsseseimer *et al.* 2003, 61.

¹⁷⁵ Müsseseimer *et al.* 2003.

Fig. 5.17 Merovingian fine ware, types Kwt5B and GH. Scale 1 : 3. Drawings: B. Donker.

w2 flat basefragments

w2 lenticular base fragments

Fig. 5.18 Carolingian pottery, bases in fabric 2. Drawings: J. de Koning.

5.4 Wheel-thrown pottery from the Carolingian period

Introduction

Within the overall pottery assemblage, 4.8% of the number of fragments ($n = 3,387$) consists of Carolingian wheel-thrown pottery (CW). By weight, 3.7% or just under 30 kg belongs to this group. Most of the sherds are body and base fragments (Figure 5.18), which only in some cases can be assigned to specific types of pot. A large part of this assemblage could be classified according to the typochronology of fabrics of the Dorestad-Hoogstraat excavations.¹⁷⁶

A much smaller part could be attributed to a specific type; identified rim fragments belong to a minimum number of 264 different pots (MNI).

In the Carolingian period, the potters from the Vorgebirge and Mayen made pots that we now consider classical Carolingian wares. In these production centres, the same kinds of pots were mass-produced. These were globular pots with lenticular bases, sometimes decorated with rows of rouletted squares; taller pots with typical spouts; and huge, sometimes over 60 cm tall, so-called *reliefband amphorae* (Figure 5.19). These 'Carolingian' pots were the result of a much older tradition. Pottery production in the Vorgebirge such as in Badorf and Walberberg started even around 625. At Mayen, as was discussed above, pottery was made as early as Roman times. These

¹⁷⁶ Van Es & Verwers 1980, 2009. Also Besteman 1974.

Fig. 5.19 Fragments of reliefband amphorae (Type CWI) found at Wijnaldum. Photo: Archive, University of Groningen, Groningen Institute of Archaeology.

Carolingian forms followed the Merovingian wares. The most common Carolingian pot, the medium-sized globular pot, was just the latest development of the coarse-ware *Wölbwand* pot. Also the fine-ware biconical pots have a Carolingian successor in the ‘Dorestad-type W VII’: a biconical pot with a tripartite body with a high neck and a lenticular base. The surface is smoothened and decoration consists of individual stamps, just as on some of the fine-ware biconical pots. These pots too were produced at Mayen and in the Vorgebirge potteries.

Fabrics and origin

In the Carolingian period, unlike in the Merovingian period, it is possible to attribute fabrics to specific production centres. Eighteen different fabrics are distinguished on the basis of four macroscopic aspects: tempering, hardness, treatment of the surface, and colour. These fabrics could be linked to at least four known pottery centres: Badorf, Pingsdorf, Walberberg and Mayen.¹⁷⁷ In 2009, two more fabrics were added especially for ‘Walsum’-like pottery: fabrics w20 and 21 are in fact the coarse- and fine-ware fabrics of Merovingian pottery.¹⁷⁸

177 Van Es & Verwers 1980, 56-59. Sixteen fabrics are relevant (w1-16). One fabric, W 17 (*rotgestrichen*), is extremely rare in the Netherlands. Fabric w-18 is a group of mixed fragments that could not be classified.
178 Van Es & Verwers 2009, 148.

Table 5.3 Main fabrics of Rhenish wares according to the Dorestad classification (after Verhoeven 2016, 171).

	Soft	Middle	Hard	Origin
Fine-tempered	w1	w2	w10	Badorf/Pingsdorf
Intermediate	w6	w9	w12	Mayen
Coarse-tempered	w3	w4	w8	Walberberg

Rhenish wares (*Vorgebirge and Eifel ware*)

The most common fabrics can be attributed to the three main pottery centres Badorf, Mayen and Walberberg. For each, three variations in fabric are distinguished, based on hardness and tempering. A simple scheme show these variations (Table 5.3).

All these fabrics originate in the German Rhineland. Badorf, Pingsdorf (only fabric w10), Eckdorf and Walberberg are situated in the Vorgebirge and at walking distance from each other. Mayen lies 60 kilometres to the south and in the once volcanic Eifel area. Pottery was produced here on a very large scale. A huge amount of output was transported to Dorestad, where it ended up in then riverbed of the Rhine that we now know as the Hoogstraat site. This area probably served as the main distribution centre for the western and northern Netherlands. From here, it was traded downstream along the Rhine. A lot of this pottery ended up in places like Valkenburg-De Woerd and especially Leiderdorp in the province of South-Holland, where over 488 kg of wheel-thrown pottery has been excavated.¹⁷⁹

Grey wares

Less common and of different origin are the grey fabrics w13, w14, w15 and w16. Fabrics w13 and w14 seem to be related. Both are typical of a flat-based ‘*Wölbwand*’ type of pot. In a preliminary study, Giertz suggested an origin for a large part of these fabrics (W13, 14 and 15) in the vicinity of Huy in the Meuse Valley.¹⁸⁰ Although there is no direct evidence for this provenance, there are clear similarities in fabrics and shapes from production and kiln sites at Huy and settlement contexts in the Netherlands. This applies to bowl fragments with slightly everted rims from the 8th century, and also for late 8th- and 9th-century fragments of bowls with inturned flanged rims at Wijk-Veilingterrein (Dorestad) and Susteren-St Salvator.¹⁸¹ The origin of these fabrics could not be established by chemical analysis. In her study of the Dorestad fabrics, Bardet did not analyse samples from the Meuse valley.¹⁸²

Tating and Mayen burnished ware

Fabrics w15 and 16 are grey fabrics which could be linked to specific types. Fabric w15 is also known as ‘Tating ware’ and especially known from the Tating jug (Dorestad-type W VIII). Fabric w16 is typical of a relatively late kind of

179 Verhoeven 2016, 153.
180 Giertz 1996, 41.
181 Giertz 1996, 40; De Koning 2012, 187; De Koning, in prep.b.
182 Bardet 1995; also discussed by Verhoeven 2016, 185.

Table 5.4 Distribution of Carolingian fabrics at Wijnaldum-Tjitsma.

Fabric	Number of fragments	%	Weight in g	%
Badorf				
w1	314	9.3	3,874	13.5
w2	1,046	31.0	9,095	31.7
w10	112	3.3	863	3.0
total	1,472	43.6	13,832	48.2
Mayen				
w6	51	1.5	382	1.3
w9	784	23.2	5,650	19.7
w12	588	17.4	4,695	16.4
total	1,423	42.1	10,345	37.4
Walberberg				
w3	19	0.6	96	0.3
w4	123	3.6	1,043	3.6
w8	151	4.5	1,203	4.2
total	293	8.9	2,342	7.8
Grey ware				
w13	34	1	280	1
w14	33	1	504	1.8
w15	5	0.1	24	0.1
w16 (Mayen)	17	0.5	66	0.2
total	89	2.6	874	2.1
Coarse ware				
	64	1.9	572	2.0
Total	3,375	100	28,697	100

biconical pot with a lenticular base (type W VII). Both wares do not occur in large quantities and especially the Tating ware is seen as a luxury product, in particular the tinfoil-decorated jugs. Although fabric and type are linked in most cases, there are indications that similar jugs and biconical pots were made at various pottery centres. Examples of types W VII and VIII from the Vorgebirge were found at various sites around Dorestad¹⁸³ but also at the monastic site of Susteren-St Salvator in the province of Limburg.¹⁸⁴

However, most biconical pots of type W VII were made in fabric w16, which is comparable to the smoothed ware from Mayen.¹⁸⁵ Type W VII is comparable to Form D42 from Mayen, a *kugeliger Topf mit Knickwand oder gerundetem Umbruch, Halswulst und Einglätterverzierung*.¹⁸⁶

The origin of Tating ware is still unclear. Chemical analysis of various Tating jugs demonstrated that some undecorated jugs could be attributed to Mayen. For most of the jugs the origin is still unclear.¹⁸⁷ For Tating ware in fabric w15, Giertz pointed also to Huy as probable place of origin.¹⁸⁸ At Susteren-St Salvator a burnished, rather coarse fragment (fabric w14) with tinfoil decoration was recovered.¹⁸⁹ For this fabric an origin from Huy is quite

¹⁸³ Both examples were found at Dorestad. WVII at Wijk-Veilingsterrein (De Koning 2012, 168). A typical spout with a decorated bridge to the rim in Vorgebirge ware (w1) was found at De Engk (De Koning 2016, 41)

¹⁸⁴ De Koning, in prep.b.

¹⁸⁵ Redknapp 1999, 22.

¹⁸⁶ Idem, 248.

¹⁸⁷ Stilke *et al.* 1998.

¹⁸⁸ Giertz 1996, 41.

¹⁸⁹ De Koning, in prep.b.

Table 5.5 Distribution of all diagnostic sherds of Carolingian types from Wijnaldum-Tjitsma.

Main type	Description Van Es & Verwers 1980	Alternative description	Number of fragments	%	Weight in g	%
CWI	Reliefband		63		2,190	
CWIA	amphora		1		85	
total			64	8.9	2,275	18.7
CWII	Badorf pot		146		2032	
CWIIA			5		75	
CWIIIB			2		45	
CWIIIBx			1		27	
CWIIIBz			1		44	
CWIIIC	Badorf pitcher		22		437	
CWIIICy			9		262	
CWIIly			5		119	
total			191	26.6	3,041	25.0
CWIII	Cooking pot	Globular pot	117		2209	
CWIIIA			126		1947	
CWIIIB			4		56	
CWIIIC			12		48	
total			259	36.0	4,260	34.9
CWIV	Small-sized pot		41		266	
CWIVA			40		224	
CWIVB			1		9	
CWIVC			6		48	
total			88	12.4	547	4.5
CWV	Medium-sized flat based pot	Coarse greyware	28		207	
CWVA			5		114	
total			33	4.6	321	2.6
CWVI	Medium-sized flat based pot	Burnished, Gittermuster	41		530	
CWVIA			2		18	
total			43	6.0	548	4.5
CWVII	Biconical pot	Smooth-walled	9	1.3	118	1.0
CWVIII	Tating jug		-		-	
CWIX	Steep-walled pot	Wwt 2.22	17	2.4	390	3.2
CWX	Bowl		8		611	
CWXA			1		35	
CWXC			1		33	
total			10	1.4	679	5.6
CWXI	Jug	Burnished	2	0.3	14	0.1
CWXII	Carolingian painted ware	Hunneshans	1	0.1	7	0.1
Total			717	100	12,200	100

likely, and for the first time the use of tinfoil could be associated with a specific place of origin. Although only circumstantially, this points to Huy as a possible place of origin for the tinfoil-decorated Tating jugs.

Considering the distribution of fabrics it is clear that most of the imported pottery at Wijnaldum can be traced to the German Rhineland (Table 5.4). At least 95.1% of the sherds and 93.6% in terms of weight derives from this area. Within this category, 42.6% (number) and 37.9% (weight) could be attributed to the Eifel region (Mayen). The provenance of the remaining fabrics - w13, 14 and 15 - might be the Meuse Valley around Huy.

Types

In the typology of the Dorestad-Hoogstraat pottery (about 22,000 fragments), twelve main types of pottery were distinguished among the wheel-thrown pottery, types W

Fig. 5.20 Carolingian pottery, types CWI and CWII. Scale 1 : 4. Drawings: J. de Koning.

I to W XII.¹⁹⁰ For Hoogstraat sites 0, II, III and IV, new types were added under W XIV, mostly late-Merovingian ‘Walsum’-like ware. For each type the general characteristics were described, the variability within the type and the chronology. These types and their occurrence at Wijnaldum are recorded in Table 5.5. Not all types present at Dorestad were represented in the Wijnaldum-Tjitsma assemblage. To distinguish the Carolingian from Merovingian wheel-thrown types (MW), a C (for Carolingian) is added to the Dorestad types here; for instance, W I has become CWI.

Reliëfband amphora (CWI)

The *reliëfband* amphora is a large ovoid vessel with a height up to 60 cm and a lenticular base. The upper parts of these pots are decorated with applied strips, which in most cases are decorated with a rouletted ornament consisting of a double line of square or rectangular impressions

(*reliëfband*, Figure 5.19). Other common designs on these strips are single round stamps with a grid-like pattern of squares, rosettes, or fingertip impressions. The applied strips start with a horizontal band just above the middle of the pot. From there, semi-circular bands are applied in arcs just touching the outer rim. This is the most common pattern. Many variations occur.¹⁹¹ Later examples have strap handles attached to the rim, making them actual amphora. However, these handles could hardly have been used for actual handling because they are attached too close to the pot for lifting them by. Perhaps a rope was drawn through the handles, or they served for securing a lid. When full of liquids, or whatever the contents may have been, they must have been impossible to transport without extra packaging with soft and strong padding material.

At Wijnaldum, this type reflects the normal variations in decoration of the *reliëfband*. Most common is the rouletted pattern of squares, which was found on nineteen fragments. Single round impressions appear on five

¹⁹⁰ Van Es & Verwers 1980, 60ff. Type W XIII is a mixed group of unclassifiable fragments.

¹⁹¹ Van Es & Verwers 1980, 63; De Koning 2012, 140ff.

fragments, fingertip impressions on just one fragment. Two rather coarse fragments (Figure 5.20, 756 and 11169, not depicted) have undecorated applied strips. Almost all fragments originate in the Vorgebirge (fabric w1: 15 fragments, w2: 37 fragments, w10: 5 fragments). One rather coarse and hard-fired fragment is probably also Vorgebirge ware, but from Walberberg. Two sherds are probably from Mayen, one with fingertip impressions and one with a rosette-like stamp on the applied strips.

Several subtypes are distinguished, based on the shape of the rim. The only rim fragment found at Wijnaldum belongs to type CWIA (Figure 5.20, 115). If rim fragments are taken as point of departure, the minimum number of amphora thus is one, which is literally a minimal number. The actual number of *reliefband* amphorae that ended up at Wijnaldum-Tjitsma was undoubtedly much higher, as is clear from the range of wall fragments of this type with different decoration and in different features across the settlement.

Although most fragments of *reliefband* amphora could be dated between 750 and 850, some are probably somewhat later, in the second half of the 9th or the early 10th century (Figure 5.19). The study of the pottery from Tiel and especially from well-stratified layers there showed that amphorae from this later period can be recognized by their carelessly applied strips and rather haphazardly applied stamps.¹⁹²

Chronology

Reliefband amphora were produced from the middle of the 8th century until the 11th century, mainly in the Vorgebirge but also at Mayen. Examining complete specimens, Giertz showed the development of these amphorae within this period, starting with a relatively small example from Medemblik with applied strips decorated with fingertip impressions.¹⁹³ He dates this type to around the middle of the 8th century. A next development shows the classical Carolingian ovoid amphora with neatly applied strips decorated with rouletted squares. This is Dorestad-type WI A, dated to between 750 and 850. Later types of amphorae are bigger and have more than one decorated zone on the upper part of the body. Also these later amphorae have applied handles attached to an upright bottleneck-shaped rim. The decoration on these amphorae seems to be less fine than on the earlier types. Some of the wall fragments at Wijnaldum probably belonged to such amphorae.

Badorf vessels (type CWII)

The Badorf vessels of type CWII (Figure 5.20), which in size sit between the *reliefband* amphorae of type CWI and the globular cooking pots of type CWIII, are divided into various classes: large pots up to 30–35 cm high (CWIIX), lower and wider pots up to 20 cm high (CWIIZ) and spouted pitchers (CWIY) up to 25–30 cm high.¹⁹⁴ Rims are further divided in subtypes A–D. A roller-stamp

decoration with various (in most cases, two) rows of rectangular impressions on the upper half of these pots is the common characteristic, although such decoration can be found on globular cooking pots as well.¹⁹⁵

At least 105 fragments, weighing just over 2,000 g, were found with the typical roller-stamp decoration. These fragments are probably all from Badorf vessels. Vorgebirge fabrics predominate. Only four fragments are of Mayen fabric (w9). Five rim fragments are with certainty from Badorf-vessel type CWIIA, all from the Vorgebirge (fabric w2). Most rim fragments are of type C, which seems to be associated exclusively with Badorf pitchers (CWIICy). At least 22 fragments could be from pitchers because of the shape of the rim and a ridge in the neck of the pot (CWIIC). With the exception of two fragments from Mayen (w9), all of these are from the Vorgebirge, probably Badorf (fabric w1 and 2). Nine fragments by the type of rim as well as the presence of spouts and handles could be linked to the Badorf pitcher (type CWIICy). All but one had been produced at Badorf.

Chronology

Among the Badorf vessels, there are some slight chronological differences. Type CWIICy, the spouted vessel was produced from 750 on; type CWIIB, somewhat later, in the 9th century. A study of a huge number of complete Badorf vessels showed that production of these pots must have ended around 950.¹⁹⁶

Globular cooking pots (type CWIII)

The globular cooking pots of type W III are the most common vessels in the Hoogstraat material and at any other site or settlement with Carolingian pottery such as Wijnaldum-Tjitsma. With an average height of about 20 cm, this type of pot is significantly smaller than the Badorf vessel. The pots show a huge variation in fabrics; for the Hoogstraat assemblage, Van Es and Verwers identified at least twelve different fabrics, although most of them were made in Mayen and the Vorgebirge potteries. This type of cooking pot looks like the wheel-thrown counterpart of the handmade globular pot (*Kugeltopf*). The similarities in size, shape and age are quite clear. The earliest wheel-thrown examples are probably from the early 8th century, the very same period when the first handmade globular pots developed from the ovoid HIII and Hessens-Schortens ware (see Chapter 7).

At Wijnaldum, at least 117 fragments in six different fabrics probably belong to undecorated globular cooking pots (CWIII) from Mayen (78 fragments) and the Vorgebirge (24 fragments; Figure 5.21). At least 126 fragments come from type-CWIIIA cooking pots with short, thickened, and folded-out rims. Most of them were made at Mayen (97 rim sherds); the remainder come from the Vorgebirge. Four fragments belong to type-CWIIIB pots. Type CWIIIC, with an unthickened, on the inside slightly

¹⁹² Dijkstra 1998.

¹⁹³ Giertz 2000, 44.

¹⁹⁴ Van Es & Verwers 1980, 70.

¹⁹⁵ Van Es & Verwers 1980, 82, fig. 36-nos 3, 5, 7, 11, 17 and 85, fig. 37-no. 19.

¹⁹⁶ Kottmann 2015.

Fig. 5.21 Carolingian pottery, subtypes of CWIII. Scale 1 : 4. Drawings: J. de Koning.

concave everted rim, was represented by twelve specimens, all in fabric w12 (Mayen).

Chronology

Type-CWIII pots are considered to be part of the classic Carolingian pottery, together with the Badorf vessel (CWII), the amphora (CWI) and a small variant of globular pottery (CWIV). All these types can be dated between 750 and 850. There is some debate about CWIII variants that could have started earlier, around 725. This may apply to some Walberberg sherds, but this ware can be dated generally from 750 until at least 850.¹⁹⁷ The end date of around 850 is hard to demonstrate. In the supply of consumer sites along the Dutch coast, political instability must have played a role. That Dorestad came to be ruled by Danish Vikings of course affected the distribution of, among many other things, pottery. Hardly any Frankish pottery reached these sites after approximately 850.

Small globular pots (type CWIV)

The small-sized pots of type CWIV (Figure 5.22) in many

ways are similar to the CWIII cooking pots, but have an average rim diameter of around 7-8 cm. Most fragments have similar lenticular bases. Flat bases, however, are also quite common for this type. Van Es and Verwers describe this type in the material from Deventer as belonging to 'Badorf tableware', with a pitcher (CWII) and a cup (CWIV).¹⁹⁸ Its use as tableware would explain the flat bases.

At least 88 fragments weighing 547 g belong to this type; 64 of them are from the Vorgebirge (Badorf w1 and 2, Pingsdorf-w10), the rest from Mayen (w6-9-12). Several subtypes are distinguished on the basis of rim shapes.¹⁹⁹ At least 40 fragments could be classified under type CWIVA, which has a short, unthickened and snout-shaped rim that is folded back horizontally. Only a few other rim shapes could be distinguished. One fragment could be classified under type CWIVB and six under type CWIVC, all of them Vorgebirge fabrics (w1 and 2).

Chronology

See discussion on the chronology of type CWIII above.

¹⁹⁷ See De Koning 2012, 155, referring to Keller 2004a, 128.

¹⁹⁸ Van Es & Verwers 1985.

¹⁹⁹ Van Es & Verwers 1980, 88-90.

Fig. 5.22 Carolingian pottery, subtypes of CWIV. Scale 1 : 4. Drawings: J. de Koning.

Coarse, grey, flat-based pot (type CWV) and its burnished variety (type CWVI)

Since the first publication on grey wares in 1980, much has been said about these grey Carolingian fabrics and their unknown origins (see above). These fairly globular but flat-based pots have much in common. The investigation of the grey ware from Leiderdorp-Plantage yielded new information regarding the chronology but also the diversity of this material. Small-scale mineralogical research showed that it had different origins.²⁰⁰ Of the Dorestad grey wares that were examined (w11, w13 and w15), only w13 is represented at Wijnaldum. Unfortunately, fabric w14, also found at Wijnaldum, was not included in the mineralogical study of the Leiderdorp grey wares. The result of this study were five different groups, one of them represented by just a single sherd. Verhoeven concluded that at least five different potters produced the same forms of pottery with similar rim shapes. This is not surprising because there are many similarities in pottery shapes from Badorf, Walberberg and Mayen. Different provenances have also been proposed for Tating ware, one of them being Mayen, one of them Badorf and one of them still unknown, possibly Huy.²⁰¹ The same applies to the biconal ware of type CWVII.²⁰²

Only 33 fragments, weighing 321 g could be classified under type CWV (Figure 5.23). Its rather coarse grey fabric and its shape are hard to distinguish from Merovingian coarse ware. The fabric (w13) is dark on the surface and lighter at the core, just like fabric w14 of type CWVI. At least 43 type-CWVI fragments, weighing 530 g, were found. Two rim fragments point toward the most common type CWVIA. Among the eight base fragments, all flat, two are footed (Dutch: *standvoet*), which is typical of this kind of pottery.²⁰³

Chronology

Since the Dorestad publications, the Carolingian grey wares have been seen as an early group within the Carolingian pottery. Recent studies on pottery from better stratified sites like Susteren -St Salvator²⁰⁴ and Leiderdorp-Plantage,²⁰⁵ however, have shown that this pottery is contemporaneous with the classical Carolingian wares, just between AD 750 and 850. Indeed it is likely that the grey wares were still being produced after 850, but no longer reached the Dutch coastal sites after the fall of Dorestad.

²⁰⁰ Verhoeven 2016, 189.

²⁰¹ See the section on fabrics (Tating and Mayener burnished ware)

²⁰² Van Es & Verwers 1980, 95; see also De Koning 2012, 168.

²⁰³ See the complete specimen from the Hoogstraat (Van Es & Verwers 1980, 92-fig. 49:3)

²⁰⁴ De Koning in prep.b.

²⁰⁵ Verhoeven 2016.

Fig. 5.23 Carolingian pottery, types CWV, VI, VII, IX and X. Scale 1 : 4. Drawings: J. de Koning.

Carolingian biconical pots (type CWVII)

Carolingian biconical ware was found in at least two fabrics: w16 (Mayen burnished ware) and w1 (Badorf ware). This type of pottery seems to be related to Tating ware. The fabrics of both types are quite fine and the surface is smoothened. The only macroscopic difference is the colour of the core, which for fabric w15 (Tating) is light grey and for w16 (burnished Mayen) is reddish or pink. Most fragments of w16 are distinguished in the first place by the decoration of 'eingeglättete Linien', which was probably applied to the upper half of the pot by rubbing with a polishing stone.

Only nine fragments of this type were found, weighing 118 g. One of them comprises a large part of the upper part of the body, including the ridge on the shoulder, with a decoration of a diagonal grid of crossing *eingeglättete Linien* (Figure 5.23). This pattern is quite common for type D42 from Mayen, which is dated to the end of the 7th and early 8th century.²⁰⁶

²⁰⁶ Redknap 1999, 249

Fig. 5.24 Bowl of Badorf ware, CWIX (see also Figure 5.23), find no. 7445. Photo: J. de Koning.

Tating jugs (type CWVIII)

No fragments that certainly belong to Tating jugs were found. Only a few undecorated wall fragments were classified as fabric w15, the Tating fabric. However, without the typical tinfoil decoration, or morphologically characteristic fragments from the spout, vertical rim or straight handle, this fabric can easily be confused with that of smooth biconical ware. Tating ware is dated after 800.

Steep-walled pots (type CWIX)

This type of pots is morphologically related to the Merovingian barrel-shaped, coarse-ware pots, but not in fabric. At the site Dorestad-Hoogstraat I, the few base fragments that could be linked to this type were flat.²⁰⁷ Most fabrics are rather soft varieties from the potteries of Badorf (w1), Walberberg (w3) but also Mayen (w6). Some fragments are decorated with rouletted lines of squares. For the other Hoogstraat excavations (O, II, III and IV), a large variety of these rather high, steep-walled pots was classified under type CWXIVD, which is related to 'Walsum'-like pots, and often decorated with wavy lines.²⁰⁸ The steep-walled pots of type CWIX are smaller and probably younger.

At least 17 fragments weighing 390 g could be classified under type CWIX (Figure 5.23). The minimum number pots is smaller because at least five fragments belong to the same pot, which was probably made at Mayen (fabric w6). Most of the other steep-walled pots were probably made there as well (fabrics w6-w9, nine fragments), a small number of fragments have a Badorf fabric.

Chronology

Type CWIX can be seen as the smaller variety of Walsum pottery, which in 2009 was incorporated in the Dorestad typology under type WXIVD.²⁰⁹ These large pots are comparable to Siegmund's Wwt 2.22. The smaller type CWIX pots can be dated to the 8th century.

Bowls (type CWX)

The bowls from Dorestad had flat or lenticular bases.²¹⁰ They could be distinguished from their Merovingian counterparts by their fabrics. At least seven fragments and one complete specimen, weighing 611 g, come from bowls (Figures 5.23 and 24). At least six different subtypes have been distinguished, based on the shapes of the rims at Dorestad. Only two of these subtypes were found at Wijnaldum.

One fragment with an unthickened, vertical rim could be classified under type CWXA; another fragment, with a slightly outcurved rim, belongs to type CWXC.

Jug (type CWXI)

This type seems to be an imitation of the Tating jug in a different fabric (w14). Of this type only a very small, decorated wall fragment was found. It is decorated with a horizontal cordon with wavy grooves, typical for jugs of this type. In view of the fabric, the same date applies as for the grey wares.

Painted ware (type CWXII)

Several different groups of painted pottery are combined under Dorestad-type W XII, including so-called *Hunneshans* ware, as well as Carolingian painted wares that are quite exceptional outside Dorestad. At Wijnaldum, Carolingian painted costrels or flasks (type W XIIA) and painted Mayen jugs (type W XIIB) are lacking. One fragment might belong to type W XIIC: *Hunneshans* ware.²¹¹

This type of pottery connects Badorf and Pingsdorf products, by combining the rouletted lines of the former with the painted decoration of the latter. There is a difference in paint between the paint on costrels and that on *Hunneshans* pottery: the former is quite thick and orange, the latter is more ferrous, thinner and darker red.

There is a clear overlap with the Pingsdorf ware described below. *Hunneshans* pottery as well as various rim fragments of Pingsdorf pottery from Wijnaldum could be dated to period 2 that Sanke defined for Pingsdorf ware, between AD 860 and 910.²¹²

5.5 10th-century and late-medieval pottery

At least 432 fragments, weighing 2,778 g, belong to late-medieval pottery groups. For the largest part, this material consists of Pingsdorf ware (71.7% and 71.1% in terms of number and weight, see table 5.6). The remainder belongs to seven different groups.

Pingsdorf ware

Only fifteen rim fragments of Pingsdorf ware were found, probably from eight different pots (Figure 5.25). Most of the rims are similar to Sanke's material from periods 2

²⁰⁷ Van Es & Verwers 1980, 100.

²⁰⁸ Van Es & Verwers 2009, 148-151.

²⁰⁹ Van Es & Verwers 2009, 150-151.

²¹⁰ See complete examples in Van Es & Verwers 1980, 102 but also De Koning 2012, 182-183.

²¹¹ Van Doesburg 2009, 167, referring to Van Es & Verwers 1975, 15-161.

²¹² Sanke 2002, 69.

Table 5.6 Late-medieval pottery found at Wijncaldum.

Pottery group	Produced between	n	%	Weight in g	%
Pingsdorf	860/870-1200	307	71.7	1,955	71.1
Paffrath	900-1200	8	1.9	36	1.3
Meuse ware	875-1300	5	1.2	23	0.8
Grey ware	1200-1500	3	0.7	30	1.1
Stoneware	1300-	30	7.0	159	5.8
Proto-stoneware	1200-1250	13	3.0	83	3.0
Kugeltopf (handmade)	900-1300	47	11.0	341	12.4
Red-glazed	1200-1500	6	1.4	37	1.3
Indeterminable		9	2.1	87	3.2
Total		428	100	2,751	100

and 3, dated between 860/870 and 970.²¹³ One rim fragment with paint (2338, Sanke rim type 1.3) is typical of Carolingian spouted pots, but most of the examples of this type shown by Sanke are of the *Hunneshans* kind, decorated with rouletting and paint,²¹⁴ and some fragments are undecorated.²¹⁵ Rim type 1.3 belongs to Sanke's period 2 (860/870-919). Two other rim fragments of type 1.5 (2961 and 1981) belong to the same group of spouted pots. Rims of this kind date to period 2 (860/870-910) as well as period 3 (910-990). Another rim fragment (1804), probably from a high cup (Sanke 3.8), can be dated to Sanke period 3. The fabric of most of these fragments is quite fine and smooth, which is a characteristic of early Pingsdorf pottery, as we know from 10th-century sites such as Tiel-Koornmarkt and Tol-Zuid.²¹⁶ Another fragment (2028) is also from a cup. On the inside, paint was applied in a pattern of pendant triangles. A comparable fragment can be found in Sanke period 2.²¹⁷ The sixth rim (3006) is more or less square in profile, but still with a groove on top and concave on the inside. Only some small spots of paint are visible on this fragment. Its shape is comparable to the spouted pots of period 3.²¹⁸ Inasmuch as can be established, all fragments of the Pingsdorf pottery found at Wijncaldum are from the earliest phases of production. Later Pingsdorf types do not occur. The amount of Pingsdorf ware relative to other groups of late-medieval pottery (see table 5.6) shows that this assemblage can be chronologically linked to the Carolingian period and continuing habitation at least into the 10th century.

Pottery from the Meuse Valley

Two small rim fragments from the Meuse Valley (Belgium) can be dated in the 10th century (736 and 5293). Both were associated with much younger pottery such as tobacco pipe fragments.

Paffrath ware

The small amount of Paffrath ware is remarkable

Fig. 5.25 Pingsdorf pottery. Scale 1 : 4. Drawings: J. de Koning.

compared to the amount of Pingsdorf pottery. The production of both wares took place in the same timespan from the 10th century until the early 13th century. Only very small wall fragments of Paffrath ware were found. In most cases these were in association with handmade globular pots, Pingsdorf ware and in many cases much younger pottery like red-glazed ware. The explanation of the rarity of this kind of pottery is probably in part a matter of chronology. In coastal regions like the province of North-Holland in the west of the Netherlands, Paffrath-type pottery can be dated to the 12th century.²¹⁹ Most of the Pingsdorf fragments are probably older.

Medieval red-glazed and grey ware

Only a small number of fragments could be classified as medieval red-glazed ware. This kind of pottery was made from the beginning of the 13th century on. Early examples are only partially glazed, mostly on the inside. Most fragments of this ware were so small that it was almost impossible to distinguish the early types from much younger, and even modern ones. Most sherds come from the highest excavated layers without clear stratigraphical context, and have been classified as post-medieval pottery. The few fragments of grey ware, which is contemporaneous with medieval red-glazed ware, show that material from this period was probably brought to the terp with manure from the farmsteads, which by then had moved off the mound.

Proto-stoneware and medieval stoneware (Siegburg ware)

Proto-stoneware and stoneware proper, probably from Siegburg, were found in small numbers. Since these wares are dated to the 13th and 14th centuries, they could not be linked to excavated settlement features. These quite resilient, hard fragments do not readily disintegrate even after centuries of ploughing. Like most post-medieval wares,

213 Sanke 2002, 69-70.
214 Sanke 2002, 320.
215 Sanke 2002, 185.
216 Dijkstra 1998.
217 Sanke 2002, 185.
218 Sanke 2002, 186.

219 It is part of the blue-grey pottery in the Deventer-system: Bitter et al. 2012.

Table 5.7 Various groups of post-medieval pottery.

Pottery group	Number of fragments	Weight in g
Glazed redware	206	1,004
Stoneware (S1)	29	131
Westerwald (S2)	5	25
Industrial stoneware (S3)	3	15
White-glazed	30	144
Faience (Delftware)	39	199
Tobacco pipes	32	151
Porcelain	24	120
Bricks & tiles	4	45
Indeterminable	89	450
Total	461	2,284

these fragments were probably brought onto the terp with manure. The late-medieval settlement could have been in the vicinity of the terp and near the present farmhouse.

5.6 Post-medieval pottery

At least 461 fragments, weighing 2,284 g could be classified as post-medieval pottery (Table 5.7). The assemblage is quite varied, with 16th century salt-glazed stoneware, faience (Delft ware), clay tobacco pipes, glazed redware and even 19th-century mineral-water bottles and recent building materials such as broken roofing tiles. None of these fragments come from closed contexts. The average weight of the fragments is 5 g. It is likely that most of these too came to the terp with manure.

5.7 Discussion and conclusion

Imported, wheel-thrown pottery of Wijnaldum-Tjitsma mainly emerged from 6th- and 7th-century features. This war accounts for a considerable share of the settlement's pottery of this period, especially in Period IV (AD 550-650; see Figure 9.3), when the percentage of wheel-thrown pottery amounts to 63.7%.

This chapter is mainly about the typology and chronology of the wheel-thrown pottery that was found at Wijnaldum. Since these pots were produced on a large scale in well-organised potteries in the Rhineland and the Eifel area, some degree of standardisation can be expected. Many fragments are indeed highly similar in fabric as well as rim shape. For many forms, parallels can be found elsewhere. However, the lack of well-stratified sites with Merovingian wheel-thrown ware is striking, with a 'stretched' chronology as a result. In most studies, Merovingian coarse-ware cooking pots were dated only roughly, between 500 and 700. From the struggle with the chronological evidence (or the lack of it) about types and subtypes during the analysis of the pottery, three chronological groups emerged. The first group coincides with Rhenish type Wwt1 and is dated to the 5th and 6th centuries, or rather, between 460 and 590. Only a small amount of pottery belongs to the second and third groups. The second group largely falls into the 7th century, more precisely between 590 and 670, and the third group between 670 and 740/750. Table 5.1 shows that the vast majority of

the coarse ware from Wijnaldum-Tjitsma can be assigned to the first group, hence to the late 5th and 6th century.

Although the importation of wheel-thrown pottery belonging in the first chronological group may in theory have started as early as AD 460, this seems unlikely. Most coarse-ware pots that fall within the first group can be dated to the late 5th or the 6th century. The late 5th century is probably also when the importation of Merovingian coarse ware began. The arrival of wheel-thrown ceramics seems to have put an end to the tradition of Migration-period handmade pottery (Anglo-Saxon style or undecorated). It was replaced by much coarser types of handmade ware: the chaff- or grass-tempered Tritsum ware, and the mostly rather saggy or pouch-shaped, grit-tempered pots of the Hessens-Schortens ware.

The biconical pottery of Wijnaldum is limited to a relative small number of types, compared to the range of types that are distinguished in the Lower Rhine area. It is striking that various kinds of biconical pots that are quite common in Rhenish cemeteries are lacking in Wijnaldum-Tjitsma. Although the terp was undoubtedly inhabited in the 5th century, as is indicated by the considerable amount of Anglo-Saxon style and 5th-century undecorated handmade pottery that was found there (see Chapter 4), no contemporary biconical pots did end up here. If we take the typochronology of grave finds in the German Lower Rhine area as a lead, the earliest biconical pots at Wijnaldum can be dated to the 6th century (*terminus post quem* 510). However, most of them date from the second half of the 6th century (*terminus post quem* 565).

The wheel-thrown Carolingian pottery fully bridges the gap between the Merovingian period and the 10th century. The younger types of bucket-shaped coarse-ware pots of Lower Rhine type 2.22,²²⁰ variants of which can be found among types MWIE, -F, -G and -H, can be directly linked to the earliest types in the Dorestad-Hoogstraat typology such as W IX, steep-walled pots. The medium-sized, flat-based greyware (CWV) overlaps with Merovingian pottery. There is no evidence of a gap or hiatus in the late 7th or early 8th century.

The next chapter analyses and discusses several features containing Merovingian-period ceramics. It will also attempt to identify what prompted the importation of wheel-thrown wares from the Frankish realm.

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²²⁰ See also earlier discussion in this text and Siegmund 1998, 136-143, on the typochronology of the globular pots.

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Wijnaldum is nowadays an unassuming rural village in the north of the province of Friesland, no more than a small dot on the map of the Netherlands. But during the Early Middle Ages, this probably was a lively political centre, a kingdom, with intensive contacts with other kingdoms along the North Sea coasts, and with the Frankish realm to the south. The search for the king that resided at Wijnaldum was the major goal of the excavations that were carried out at the terp Wijnaldum-Tjitsma between 1991 and 1993. These excavations yielded a wealth of information, although tangible remains of the king or a royal residence were not found. What was found was a lot of pottery. The ceramic assemblage from the first Millennium consists of local handmade and imported wheel-thrown pottery, revealing contacts with the wider world.

The first results and an overview of the habitation phases were published in 1999, in Volume 1 of *The Excavations at Wijnaldum*. The ceramic assemblage, and its consequences for the habitation history of Wijnaldum, are the main subjects of this second volume of *The Excavations at Wijnaldum*.

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