Chapter 7

General conclusions

The primary aim of this study was to develop a better understanding on the adoption, function, and functional variation of pottery of the Swifterbant Culture (c. 5000 – 4000/3400 cal. BC) in the Dutch wetlands, Northern Europe, and to analyse its relationship to the changing subsistence strategies through the Neolithisation process in the region. Although the relationship between changes in subsistence strategies and the function of the early pottery has been extensively studied in other regions of Northern Europe, there has been a gap in terms of extensive and detailed research on pottery function of Swifterbant culture. This study aims to fill this gap in knowledge and provide first direct evidence on the function of Swifterbant pottery through lipid residue analysis.

The main research questions of this study were “What was the function of Swifterbant pottery?”, “Which was the drive behind its adoption into the Swifterbant culture?”, and “Was there any functional variation in the use of Swifterbant pottery?”. This study addressed these research questions by the first systematic application of lipid residue analysis to Swifterbant pottery coming from seven Swifterbant sites in the Netherlands: Polderweg, De Bruin, Brandwijk and Hazendonk in the Lower Rhine-Meuse area (c. 5000-3800 cal BC) and Swifterbant type sites S2, S3, and S4 in Oostelijk Flevoland (c. 4300-4000 cal BC) as well as one transitional site in the Lower Saxony, Germany which is in reference to the Swifterbant culture chronology: Hüde I (c. 4700-3500 cal BC).

The functional analysis of Swifterbant pottery and its relationship to -changing- subsistence strategies through the Neolithisation period formed the basis of the first two case studies (Chapter 3 and 4) presented in this study. The first case study focused on the functional analysis of Swifterbant pottery from three Swifterbant type sites, S2, S3, and S4 dating between c.4300-4000 cal BC. The main discussion on the functional analysis of Swifterbant pottery was also supported with sub discussions on the relationship between form and function, a comparison between pottery function and the other evidence for subsistence strategies and variation in pottery use between these three neighbouring sites. In addition, a foundation was set up for a wider discussion on comparison of Swifterbant pottery and Ertebølle pottery that had been extensively addressed in Chapter 6.
This first analysis of lipids from these three Swifterbant type sites demonstrated that the pottery was exclusively and heavily used for processing aquatic food resources, specifically freshwater fish. Even though a previous study that had been carried out on a different data set from S3 distinguished two functional groups within the Swifterbant pottery (see Raemaekers et al. 2013), the results of the lipid residue analysis contradict this, indicating no variation in pottery function. Swifterbant pottery from these three type sites was used for processing freshwater fish regardless of vessel form, size, decoration, or temper. Moreover, the use of Swifterbant pottery in all three sites did not indicate any differences despite the presence of much varied subsistence economies or possible differences in site functions. This case study implies that this new material technology was incorporated into daily life as a specialised tool which was only used for processing one specific food resource which is freshwater fish.

Interestingly, a somewhat similar pattern of pottery use emerged in the second case study. This case study was focused on the functional analysis of pottery from four Swifterbant sites (Polderweg, De Bruin, Brandwijk, and Hazendonk) in the Lower Rhine-Meuse Area, dating between c. 5000-3800 cal BC. The overall results of the lipid residue analysis of the Swifterbant pottery from these four sites indicate that Swifterbant pottery from this area was also heavily used for processing freshwater resources. The combined results coming from these two case studies show that processing aquatic resources, exclusively freshwater fish, was the main use of Swifterbant pottery in the Dutch wetlands. It appears as a consistent and deliberate choice which also continued during and after the introduction of animal husbandry and cereal cultivation into the region.

Surprisingly, along with a clear continuation on the processing of aquatic resources in the Swifterbant pottery, this second case study presents two other important outcomes on the use of Swifterbant pottery. A temporal change in the use of Swifterbant pottery starting from its first appearance at c. 5000 cal BC till the end of 5th millennium BC, was illustrated here. The results of the analysis illustrated that while the earliest Swifterbant pottery from Polderweg (beginning of the 5th century BC) was exclusively used for processing freshwater fish, there is a clear evidence for processing terrestrial animals in the pottery from De Bruin, Brandwijk and Hazendonk (mid and late 5th century BC). In addition to the continuous exploitation of freshwater resources, we see that processing ruminant foodstuff became an important part of pottery use in the mid-5th millennium BC in De Bruin. This was followed by the first appearance of dairy in the pottery. By the late 5th millennium BC, there was another shift in the use of pottery as the ruminant animal fats completely disappeared from the pots and were replaced by porcine fats, specifically in Brandwijk and Hazendonk. Although it requires further research, this kind of temporal shifts in the use of Swifterbant pottery might be explained as a reflection of changing human-animal relations in the region during the
Neolithisation period as well as a direct evidence for different sub-cultural responses to the food preparation and consumption in the Swifterbant Culture.

Finally, this study forms a significant contribution to the wider discussions on the adoption, function, and the functional variation of pottery in the hunter-gatherer-fisher societies in Northern Europe throughout the Mesolithic-Neolithic transition. It does not only represent the first direct evidence for the function of the Swifterbant pottery in the Dutch wetlands but also builds up a synthesis of pottery use by comparing this Swifterbant Culture dataset with the late Ertebølle and early Funnel Beaker datasets to understand regional differences of pottery use and its relationship to the subsistence strategies during the Neolithisation period in Northern Europe (Chapter 6).

On the basis of the Swifterbant and Ertebølle datasets, this study concludes that hunter-gatherer groups of Swifterbant and Ertebølle cultures represent two very different approaches towards the adoption of pottery and its function in Northern Europe. It is evident that they did not share the same motivation to adopt this new material technology into their daily lives. While Swifterbant pottery was primarily and continuously associated with the processing of freshwater fish throughout the 5th millennium BC, Ertebølle pottery was used to process a much wider range of food resources including terrestrial and aquatic foodstuffs. This clearly shows that the function of early pottery in Northern Europe was not necessarily shaped by the subsistence economies but reflected strong cultural preferences varied in different sub-regions (also see Courel et al. 2020).

Interestingly, being established as two different pottery cultures, Swifterbant pottery in the Dutch Wetlands and late Ertebølle pottery in Southern Scandinavia present similar trajectories towards the Neolithisation period and its relationship to the pottery use. While Swifterbant pottery presents a clear evidence for continuity in its culinary traditions after the introduction of domesticated animals and cereals into the region, pottery assemblages in Southern Scandinavia indicate a similar kind of continuation in the culinary practices during the Ertebølle-Funnel Beaker transition in the region. Despite the similarities, it is important to mention here that the Neolithisation process in both regions followed in their own separate timelines which were shaped by different cultural preferences and unique regional conditions.
Implications for further research on Swifterbant pottery: What else is needed to be done?

This study has made a significant contribution to our knowledge of the adoption, function, and functional variation of Swifterbant pottery in the Dutch Wetlands by presenting the first direct evidence of its function through the first systematic application of lipid residue analysis. The results presented in the core chapters of this study, Chapters 3-6, are significant not only on a regional scale, but also in the light of wider discussions on hunter-gatherer-fisher pottery in Northern Europe. However, in the course of answering previously designated questions through the case studies, this study also generated a new set of questions and further research ideas that are presented below.

First of all, this study highlights the importance of the application of lipid residue analysis on a much wider dataset, not only by increasing the sample numbers per site but also sampling from other key Swifterbant sites located both in the Dutch Wetlands and the surrounding areas. This is important in order to broaden our knowledge on the function of Swifterbant pottery and to illustrate possible sub-cultural and regional differences in pottery use that might emerge within the Swifterbant culture. In addition, as this study was the very first attempt to apply lipid residue analysis on Swifterbant pottery, the sampling strategies were somewhat dependent on having as clear information on the characteristics of pottery as possible in order to create a valid correlation between form and the function of the pottery. In this regard, although the consistency of the results provides the needed confidence on the reliability of the conclusions this study has driven, this study can still be considered as a pilot study which needs a wider dataset to expand its grounds.

Another very crucial area that needs more attention is detecting the presence of plant remains in the pottery. As it was explained in Chapter 2 and mentioned in all case studies, plants have low lipid content, and their lipid signals might be easily overprinted by animal fats in the sample. As a result of this, it may be very difficult to detect them through lipid residue analysis (Colonese et al. 2017, Hammann and Cramp 2018). Interestingly, the only indication of presence of plant processing in the Swifterbant pottery comes from an earlier study that applied Scanning Electron Microscope (SEM) on the carbonized surface deposits (foodcrust) collected from pottery of S3 (Raemaekers et al. 2013). SEM analysis on the carbonised surface deposits is a highly effective methodology to examine the charred plant and cereal residues possibly preserved in the crusts through the cooking process. Because the combination of lipid residue analysis on pottery and SEM analysis on the carbonised surface deposit collected from the same pottery is proven to be an effective way for getting an insight on possible plant processing in the Swifterbant pottery, L. Kubiak of BIAx and I have started a pilot research project focusing on analysis of six pottery fragments from S4.
through the application of both lipid residue and SEM analyses in 2019 and are currently working on the results.

As it was discussed in Chapter 4, the dairy residue found in the Swifterbant pottery seems to be associated with flask-like vessels which have small rim diameters and are decorated with bird bone impressions around the neck, rather than the typical S-Shaped cooking pots of the Swifterbant culture. This indicates that further lipid residue analysis on more flask-like vessels found in the Swifterbant contexts as well as petrographic analyses of these assemblages is needed in order to test the results of this study with a bigger dataset and also distinguish whether these “dairy pots” were produced on site or were vessels that were brought to the site, with their specific content.

Finally, the results on the functional analysis of Swifterbant pottery and its relationship to the subsistence strategies during the 5th millennium BC, through the Neolithisation period in the Dutch Wetlands create the need of expanding the dataset in time and conduct lipid residue analysis on the Swifterbant pottery that is coming from the sites which are dated after c. 4000 cal BC such as Schipluiden (c.3630–3380 cal BC), the earliest known year-round settlement in the Lower Rhine Meuse area (Jongste and Loiwe Kooijmans 2006) and Schokland-P14 (c. 3900–3400 cal BC) (ten Anscher 2015). At Schipluiden, it is proposed that the cattle were kept for both meat and dairy (Kamjan et al. 2020), and lipid analysis might support or falsify this hypothesis of dairy use. This kind of research would allow us to develop a better understanding of the function and the role of the pottery in the Swifterbant Culture during and after the Neolithisation period in the region.

While there is still a lot to be done, this study has made a significant contribution to the knowledge of adoption, function, and functional variation of Swifterbant pottery in the Dutch Wetlands. The overall results have demonstrated that Swifterbant pottery is well-preserved for lipid analysis. It has been primarily and continuously used for processing aquatic resources, almost exclusively freshwater fish which continued after the introduction of domesticates into the Swifterbant culture. It also contributed to the wider discussion on adoption, function, and functional variation of early pottery in Northern Europe by presenting the regional differences in the use of early pottery which highlights the need of adopting a regional approach to assess pottery and culinary practices rather than considering Mesolithic pottery as a single entity.
References


