The domestic sphere of the Corded Ware Culture: a functional analysis of the domestic implements of three Dutch settlements

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Chapter 1. The enigmatic Corded Ware Culture

1.1 The Corded Ware Culture: The state of affairs

The Corded Ware Culture (CWC) was a cultural phenomenon that extended from the Black Sea to the North Sea between 2900 and the 2400 cal BC, covering practically the same territory as their predecessors, the Funnelbeaker (*Trechterbekercultuur* or *TRB* in Dutch) groups. The traditional definition of the CWC distinguished an early horizon, the A-horizon, characterized by homogeneity in material culture, from a second phase characterized by cultural variability (Siemen 1997). It was because of this variability, that the CWC received different names in different regions (Furholt 2014; see Chapter 2). In the case of the Netherlands, it was defined variously as Single Grave Culture, Battle Axe Culture (as in the case of Denmark and northern Germany), and/or Protruding Foot Beaker Culture (Lanting 1973; see Chapter 2). In this thesis, the term Corded Ware Culture (CWC) will be used.

Both the Corded Ware and the Single Grave Culture are mainly known by their funerary architecture and ritual. The typology of burials is very similar across Europe; however, the quantity and distribution of burials differ, from isolated graves to concentration of barrows or proper Corded Ware cemeteries (Rudnicki and Włodarczak 2007; Włodarczak 2004). Barrows and single graves are found all across Europe with similar burial rituals, such as the burial of bodies with at least one vessel and three or four objects. The culture was named after the type of decoration found on pots in the graves, or after the battle-axes found on the male graves. The vessels were decorated with impressions of cords, usually located on the neck of the beaker. Experiments have shown that the cord was made of a bast-fibre, maybe flax, and it was impressed on the pot when the clay was still fresh, before firing (Grömer and Kern 2010). Males were mainly buried with battle-axes, arrowheads and flint daggers while female graves were characterized by the presence of ornaments and pottery (Vandkile in Westermann 2007). Men were buried with their head to the west, lying on their right side and facing south. Women were placed with their head to the east, on their left side, also facing south. Men's graves are more frequent than women's burials and children's graves are a minority (Butrimas 1990; Furholt 2014; Lohof 1994; Mischka 2011; Rudnicki and Włodarczak 2007).

The origin of the CWC was traditionally linked with assumed migrations from the east, bringing new traditions and the Indo-European language. The battle-axes deposited mostly in male burials were interpreted as the symbol of a warrior society based mostly on agricultural practices, where males formed a warrior aristocracy within a patriarchal structure (Childe 1958). However, the theories related to the CWC started to change in

parallel with a major archaeological paradigm change: the arrival of the New Archaeology from the early 1960s onwards. A group of young Anglo-Saxon researchers tried to develop a new archaeology, different from the European historicism. The researchers were influenced mainly by anthropology and sociology, but also by psychology and diverse branches of natural sciences. In addition, the new theories were backed up by several technical improvements, such as the first computer systems and more reliable dating methods. A scientific method was used, and instead of a pure descriptive analysis a deductive approach was employed. Settlements, activity areas and the social networks started to be researched. And finally, cultural diffusion started to be questioned and evolutionary perspective became more popular. The conception of the European Neolithic would be strongly influenced by Processual archaeology (see Trigger 1989 and Johnson 1999 for a more detailed discussion of the subject).

The new way of research and the new data available produced several changes to the perception of the CWC. First, the role of the previous TRB groups in the formation of the CWC was taken into consideration. Migration theories started to be abandoned and the first papers proposing a local origin of the CWC, or at least an important role of the TRB groups, were published (Lanting and van der Waals 1976). However, there are some exceptions to this, and the migration factor was still considered in the 1990s (Kristiansen 1991) and even in the twenty-first century (Czebreszuk 2003; Haak *et al*. 2008). The violent character and the patriarchal organization of the groups were also reviewed. Battle-axes were starting to be considered as symbols instead of actual weapons (Malmer 1992) and the idea of the Indo-European origin was abandoned. Finally, the evolutionary ideas were the basis of one of the main theories of the late 1980s. The emergence of the "*Secondary Product Revolution*", characterized by the use of the plough but also with the emergence of some milk-derivative products and of wool (Sherratt 1983, 1986), dominated the economic approaches to the CWC groups. New discoveries and ^{14}C dates suggested that the plough was already known in the IV millennium (Halstead and Isaakidou 2011; Sherratt 2006). However, burials and settlements have always been studied separately and an extended comparison between settlements and burials on terms of material culture is still lacking. Although some articles centred on the social interpretation of settlements have appeared (Hecht 2007; Hogestijn 1992, 1998; Müller 2003), the main publications and topics discussed at congresses and scientific meetings are still centred on burials.

In recent decades, significant advances have been made through the application of new techniques. Skeletal remains have been studied to understand pathologies, sex, diet and genetic affiliation (Włodarczak 2008); the ritual and ideological identity of the

groups has begun to be questioned from diverse points of view, such as: the relation of the bodies with the objects (Van der Linden 2003, 2012), the spatial distribution of the burials and barrows (Bourgeois 2013) and their meaning in the landscape (Doorenbosch 2013); flint and stone have also been analysed from the point of view of networking, technology and use (Van Gijn 2010; Wentink 2006, *in preparation;* Wentink and Van Gijn 2008). However, the main advances produced during the last 15 years are related to the construction of a better chronological sequence (Beckerman 2012a; Fokkens 2012; Furholt 2003a, 2003b, 2014; Włodarczak 2006, 2009). The conception of cultural uniformity, which defined cultural phenomena until then, has lost ground in favour of the diversity generated by local traditions and groups (Furholt 2014).

1.2 The European Corded Ware society: General characteristics

Despite obvious regional variations, research in recent decades has provided a general interpretation of CWC societies:

a) The CWC society was based on nuclear, familial groups, an interpretation supported by evidence of the small settlements with houses and structures of less than 10m in length (Hecht 2007). Furthermore, the genetic analysis of the skeletons from the Eulau burial revealed the existence of nuclear families, as inferred from the genetic link between the male skeletons (Haak *et al.* 2008; Meyer *et al.* 2009).

b) The CWC groups based their subsistence on a '*mixed economy*'. Although the economic diversity of the groups varied from region to region and from site to site, there were some common traits for the economy of the groups, which was based on cereal production, husbandry, fishing, fowling and the collection of shells, wild fruits and plants.

The production and consumption of cereals in these groups is proven by the presence of archaeobotanical remains and pollen samples, and shown by the presence of cereal processing tools. Additionally, some of the settlements were partially established on rich agricultural soils (Hecht 2007). Naked barley, wheat and emmer are the best represented botanical remains, along with wild fruits such as raspberry, flax and apples (Herbig and Maier 2011; Kadrow 2008; Klassen 2005; Kirleis *et al.* 2012; Witkowska 2006). Pollen analyses also show a high level of deforestation in Europe during the third millennium BC, suggesting that forests were cleared to produce land for pasture. Faunal remains at several domestic sites provide evidence for the importance of animal husbandry. Pigs, cattle, sheep/goat and occasionally dogs are the most numerous zoo-archaeological remains found at the settlements (Kolář *et al*. 2012; Müller *et al.* 2009; Zeiler 1989a, 1997; Zeiler and Brinkhuizen 2012, 2013). In addition, anthropological analyses of skeletons have confirmed a diet rich in animal proteins (Hecht 2007; Kolář *et*

al. 2012). Finally, traces on some skeletons from burial contexts show pathologies related to work as herdsmen (Hecht 2007).

Hunting, fowling, fishing and shell collection complemented the Corded Ware Culture's diet. Wild animals, fish, birds, and shells are present at the settlements. Some arrowheads have been found in settlement contexts probably related to hunting. Wild animals and fish were probably also exploited to obtain skins, teeth and bones. Skins could be used to produce several types of clothes, while the use of bone and teeth to produce tools and ornaments has been documented in several wetland settlement sites (Pétrequin 1989; Van Heeringen and Theunissen 2001; see Chapters 4, 5 and 6).

c) The CWC society had a high degree of social inequality affecting the structure of the group. This social inequality implied a division of labour based on gender, sex and age, explored in the following paragraphs. The main consequences for the society were the existence of elites that occupied a preferential position within the groups and the CWC society.

Variation in the percentage of male and female burials has been interpreted as indicating a predominant role of male individuals in the society. However, and without denying the possibility that the CWC society was stratified by gender, it is also necessary to take into account several other possibilities. First, barrows and single graves could perhaps have coexisted with other burial practices. This possibility is supported, in the first place, by the occasional reuse of TRB megaliths by the CWC communities and, secondly, by the ethnographic documentation of burial rites that do not leave material traces. The archaeological interpretation of the preserved burials must also be considered. Gender classification has not always been determined by the anthropological analysis of the skeletons, but by the associated grave goods. When objects, traditionally associated with males, were present in the grave the burial was classified as a male grave (Drenth 1992). However, in recent decades, some archaeologists have proposed that the existence of two genders is a modern concept that follows a patriarchal conception of the society, and have argued that the existence of a third gender and its role within the groups should be considered (Sofaer and Stig Sorensen 2013).

The discrimination related to age is mainly based on two observations: the low number of infants and elderly people present in the graves. Infant burials make up less than 8% of the total number of burials from the CWC (Drenth 1992); however, the identification of child burials was not always based on the study of the skeletal remains (Drenth 1992). Ethnographic studies show several examples of children buried in different places from the rest of the community. These differences were usually related to

a different concept of the position of infants within the society (see Kamp 2001 and Baxter 2008 for an extended review). When settlement contexts are analysed, children are usually underrepresented and the case of the CWC is no exception. Their role both in the formation of the archaeological record and in their community is undervalued. However, since the 1980s the role of children in prehistoric societies has been discussed from diverse perspectives in archaeology (Baxter 2005, 2008; Kamp 2001; Lally and Moore 2011). In addition, the economic tasks performed by children should not be forgotten. They played an active role in small agricultural communities where they were responsible for simple tasks: water supplying and herding are among the ethnographically documented activities performed by children (Kamp 2001).

The low percentage of elderly people buried in the graves is contradictory. While elders had traditionally played an important role in theories of social group composition in prehistory (Kertzer *et al.* 1984; Welinder 2001), they are underrepresented in the human remains. Beside the diversity of burial practices discussed earlier, other possibilities have been suggested. The mobility associated with the CWC groups would be an impediment to older people following the group (Van der Linden 1992). Consequently, elderly and diseased individuals would be abandoned or would voluntarily leave the community (as documented in Inuit communities).

According to this view, a new social inequality based on the existence of an elite within the society would eventually develop. This premise is supported by two main arguments, the first of which is related to the demography of these groups and the percentage of the population represented in the burials. It seems clear that only a small percentage of the society had access to the ritual of burial in barrows and Single Graves. The time and energy needed to build the barrows and the graves and to acquire the grave goods would have required communal effort by a large group, even though the end-result, that is the construction of the barrows and graves, was only enjoyed by, or directed towards, a small percentage of the society.

CWC groups have traditionally been interpreted as violent populations, and their material assemblages were always linked to different kinds of violence: first through the idea of Indo-European populations imposing their culture on the more peaceful TRB people (Childe 1958; Kristiansen 1989); and secondly by giving the grave goods a functional interpretation related to violence. For instance, battle-axes and daggers were interpreted as warriors' weapons. The popularity of this image of a violent population has decreased during recent decades (Westermann 2007), and some authors have proposed an alternative explanation for the group structure of the CWC (Vander Linden 2003, 2007, 2012). However, lately some archaeological analysis has pointed out the importance of violence in these communities. Some earlier authors contemplated the

existence of a '*secret society*' consisting of a male elite distinguished by the material culture (Czebreszuk 2003: 21). A violent episode in the lives of these CWC inhabitants was inferred from the analysis of the data obtained from the multiple burial of Eulau. However, the issue of whether violence was a general aspect of life or whether Eulau is an isolated episode is still being discussed (Haak 2008; Meyer *et al.* 2009).

The general characteristics of the CWC are still under debate and, therefore, the study of domestic assemblages permits a better comprehension of the daily organization of the groups. Current knowledge of the social composition of the CWC is mainly based on the study of burials and depositions, and the number of settlement studies is still low. In this context, in 2009 the Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO) project '*Unlocking Noord-Holland's Late Neolithic Treasure Chest*' started. The analysis of three settlements from the Dutch wetlands was a point of departure to compare the social interpretations of burials and depositions with those acquired from domestic contexts.

1.3. The NWO-Odyssee project: Unlocking Noord-Holland's Late Neolithic Treasure Chest

1.3.1 Introduction

In the second half of the past century, and largely between the late 1970s and the early 1990s, several settlements dated to the CWC were discovered and excavated in the Noord-Holland province (Van Heeringen and Theunissen 2001). The excavations revealed the exceptional quality of the sites, especially due to the good preservation of the organic materials. In an inventory published in 2001, 37 sites were listed, most of which were dated to the CWC (Van Heeringen and Theunissen 2001). Some of these sites, such as Keinsmerbrug, Zeewijk, Kolhorn, Mienakker, Aartswoud and Zeewijk, were considered *unique* (Van Heeringen and Theunissen 2001). However, the analysis of the excavation data and finds was uneven; a lot of the finds were never studied in detail, and very few international publications were available, so the relevance of the excavated settlements was not known to the larger scientific community.

1.3.2 Aims of the project, sample, methodology, the team and research questions

The aims of the project were threefold: to generate a new corpus of data in order to expand current knowledge about the domestic life of the CWC in the Noord-Holland province; to test and develop models of CWC subsistence and settlement variability; and to provide a basis for the development of management approaches to and public appreciation of the CWC heritage (Theunissen *et al.* 2012, 2013, 2014). In order to

achieve these goals, three settlements were selected using several criteria: the accessibility to the excavation documentation; the availability and quality of the materials and the representativity of the excavated area; and the settlement size and/or type. Originally, the selected sites were Keinsmerbrug, as an example of a small site without structures; Mienakker, as an example of a medium-size settlement with one house structure; and Kolhorn, as an example of a large site with several dwellings/domestic structures. However, during the analysis of Kolhorn, several anomalies related to the data storage impeded a proper analysis and the site had to be excluded from the study. In order to follow the original idea of the project, Zeewijk, a domestic site with similar characteristics, was selected to replace Kolhorn.

The project was arranged around three main aspects: settlement variability, landscape use and material culture. The study of settlement variability focused on the identification of differences between sites. For this, it was necessary to characterize the settlement size, the intra-site spatial organization and the functional variability, as well as the duration of occupation (permanent versus seasonal). The study of landscape use focused on the ways CWC people exploited natural resources and structured the landscape, and the study of the use and role of material culture was directed towards the identification of the production processes of the objects. This study required an integral approach to the Single Grave material culture *chaîne opératoire* (see Chapter 3).

For this purpose, a team was formed, composed of different research specialists from Leiden University and Groningen University, several archaeological companies (Kenaz Consult, BIAX CONSULT, Archaeobone) and the Cultural Heritage Agency of the Netherlands. Five main research areas were formed:

1) spatial analysis, which began with the digitalization of the excavation plans. Afterwards, Nobles (2012a, 2012b, 2013a, 2013b, 2014a, 2014b) performed the spatial analysis of the excavated areas, following the analysis of the material culture. The combination of the different results obtained could answer some questions related to the formation of the sites, the internal organization of the space and the functionality of some of the structures interpreted at the settlements;

2) archaeobotanical studies performed by Oudemans and Kubiak-Martens (2012, 2013, 2014), Brinkkemper and Van den Hof (2014) and Van Haaster (2012) analysed and published both the data already available and new samples. The results of this analysis were crucial to understanding the relation of the groups with their natural environment, and to reconstruct the diet of the CWC in the Noord-Holland province.

3) archaeozoological studies directed by Zeiler and Brinkhuizen (2012, 2013, 2014) analysed all taxa of the three selected sites, and provided information about subsistence patterns and settlement variability;

4) pottery analysis was performed by Beckermans (2012b, 2013, 2014, 2015) and focused on the functional and chronological differentiation of the assemblage. In addition, the analysis of organic residues allowed the team to infer the function of vessels and provided new insights towards the reconstruction of the diet of the CWC inhabitants (Kubiak-Martens and Oudemans 2012, 2013, 2014); and, finally,

5) the analysis of flint, stone and bone implements is the subject of this thesis (García-Díaz 2012, 2013, 2014a), while the amber ornaments from Zeewijk were analysed by Van Gijn (2014a). The results of these analyses contributed to the discussions on site formation, as well as settlement function, group composition, settlement variability, resource exploitation and the social and ideological significance of objects.

The main research questions addressed by the project were (Kleijne *et al.* 2013; Smit *et al*. 2012; Theunissen *et al.* 2014):

1. What is the spatial extent of settlement areas and how can any intra-site differentiation be characterized?
2. What is the functional nature of structures and features?
3. What indicators exist for occupation length and seasonality?
4. Which activities are represented in the artefact assemblages?
5. What variability exists in the '*cultural biography*' of objects?
6. What is the possible origin of inorganic resources?
7. Which activities are represented in the archaeozoological and archaeobotanical remains?
8. Which ecological zones are represented in the archaeozoological and archaeobotanical assemblage?
9. What evidence exists for group composition?
10. How do the characteristics of the CWC settlements in Noord-Holland compare to Corded Ware phenomena in the wider geographical setting?

The results of the analysis were published in three site monographs (Kleijne *et al*. 2013; Smit *et al*. 2012; Theunissen *et al*. 2014), and also comprise the core of three doctoral dissertations including the current thesis (Beckerman 2015; Nobles 2016; see this volume).

1.3.3 Research questions of the current thesis

The main objective of this research is to understand the domestic life of the Corded Ware inhabitants of the North-Holland province and the social implications of the actions and decisions of these groups. The domestic implements of the CWC communities are considered to be the practical reflection of their social actions (Dobres 1994, 2009; Miller 2009) and are therefore an essential source of information on the social composition of the archaeological groups. The research presented in this thesis combines raw material, technological and use-wear analysis of CWC artefacts (flint, stone and bone implements and amber ornaments). Departing from this methodological approach, some specific questions can be examined:

1. What is the relationship between the CWC Groups and their landscape? What are the strategies used by the inhabitants of each site to obtain their raw materials? Which raw materials are selected for tool production? Is it possible to observe exchange networks based on analysis of the raw material acquisition?

2. What is the character of the technology employed by the inhabitants of the three sites? How can this technology be interpreted? Does this technology show a pattern related to a seasonal pattern of habitation or to a permanently occupied site?

3. What is the function of the tools in the three study sites? Which economic activities are practiced in the sites and how are these tools incorporated in the economic activities? Are these activities different from site to site? Are the imported materials being used for the same activities? Following the actual interpretation of the sites, do the smaller sites represent specialized camps? What is the functionality of the structures identified during the excavations and the new analysis? How is the space used? Is it possible to identify activity areas?

The results of this analysis will also be used to understand the relationship between the CWC and other groups previously occupying the region, such as the TRB, and the Vlaardingen group. Although it is commonly accepted that the CWC had strong

ties with the TRB communities (Fokkens 1986; Van Gijn and Bakker 2005; Van der Waals 1964, 1984), an association between the material culture of both groups has not yet been identified. Tools used in daily activities play an important role in understanding the processes that resulted in the evolution from the TRB to the CWC. Secondly, the relationship between the Single Culture group and other contemporary groups such as the Vlaardingen group is still not well defined. Although the two groups coexisted for at least 400 years, a clear correlation between both groups is based mainly on the study of the pottery assemblage (Beckerman 2012a). The study of the domestic implements of the CWC and their comparison with the Vlaardingen communities could be the key to understanding the main relationships between both groups and the role that Vlaardingen communities played in the formation of the CWC. Finally, the results will be placed in a wider context: a comparison will be made between other CWC settlements in the Noord-Holland province and the results obtained from the study of CWC graves, barrows and depositions found in the Netherlands. In addition, the settlements under study will be considered in their European context.

1.3.4 The structure of the thesis

Although the study of Corded Ware settlements is still limited, information is available about several European contexts in the international literature. A comparison between the data available within Europe would permit a better understanding of the economic and social practices of the groups, and their social composition. In **Chapter 2**, an overview of the domestic contexts and implements from other Dutch and European Corded Ware sites is presented.

To understand the importance of the analysis of the CWC domestic implements, it is necessary to understand the social implications that the implements had for Neolithic societies. In **Chapter 3** presents the theoretical and methodological framework adopted in this analysis. Tools are understood not only as products of an economic system, but also as the reflection of choices made by the groups in relation to their landscape and the available resources. Therefore, to understand the role of the implements within a community, the production processes of the assemblages have to be studied in their totality. The analysis of archaeological implements should deal, then, with the study of the *chaîne opératoire* of the different implements: the raw material acquisition, the technological approaches used to produce the tool, its use and its final discard.

Chapter 4 deals with the analysis and the interpretation of the artefacts found at Keinsmerbrug. The assemblage studied was small and mainly consisted of flint implements. In addition, a small number of stone implements and amber ornaments

were also studied. The small assemblage permitted a complete analysis of the material, and methodologically, it served as a test model for bigger sites, such as Mienakker and Zeewijk. During the spatial analysis of the archaeological features identified during excavation, several of these were interpreted as house structures (Nobles 2012b). Thanks to the integration of the spatial analysis and the use-wear analysis of flint and stone artefacts, interesting intra-site information was obtained that helped the team to understand the specific activities performed at the site.

Chapter 5 presents the analysis of the assemblage from Mienakker, consisting of flint, stone, amber and bone artefacts. This is considerably larger than the assemblage from Keinsmerbrug. However, during the analysis of the materials, some issues occurred. In the first place, the number of flint implements available for the current study did not match the number documented in a previous study (Peeters 2001a). During the previous analysis 1218 flint implements were recorded (Peeters 2001a: 522), among which various implements made from non-local raw material, such as Grand-Pressigny and Rijckholt flint. However, during the current analysis, it was noted that, most of the Grand Pressigny flint was missing. And, despite the efforts, it was not possible to locate the missing material. Secondly, Bulten (2001) published a study of the amber beads and pendants, but the materials were also missing, and only the splinters and the production waste were available for the current study. Finally, even though the collection of bone materials was almost complete, the preservation of the implements was not as good as expected. Bone is a soft and delicate material, and post-depositional alterations damaged the surface of several implements. Spatial analysis of the features and structures documented during the excavations led to the identification of the remains of a new structure (Nobles 2013b). Spatial analysis was, in this case, less productive than in Keinsmerbrug. Although no activity areas could be inferred, the distribution of the material culture provided information about the site formation, and about the function of the identified structures.

Chapter 6 is dedicated to the analysis of the assemblage from Zeewijk, which consists of a large amount of flint implements (more than 10,000), stone and bone. All the implements were analysed typologically and technologically. However, due to the large quantity of the available material, a sample was selected for use-wear analysis, using the expertise gained during the study of the previous sites. In addition, numerous amber ornaments were collected and studied at Zeewijk. The data obtained from the analysis, performed by Van Gijn (2014a), is introduced and discussed in this chapter. Unfortunately, while conducting the analysis of the assemblage, some difficulties arose and the spatial analysis of the flint and stone implements could not be performed. The

lack of materials in the selected areas made analysis impossible and limited the interpretation of the potential activity areas present at the site.

Chapter 7 presents the main conclusions derived from the analysis presented in the previous chapters, and places these results within their broader Dutch and European context.

In **Chapter 8**, a synthesis of the results reached through the analysis of TRB and Vlaardingen settlements is presented. The chapter focuses on the information obtained from the analysis of the material culture obtained from both old and new excavations around the Netherlands. Emphasis is placed on the results from the technological and use-wear analyses of the material culture.

Finally, in **Chapter 9** the main conclusions of this book are summarized.