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The articulation of a "New neolithic"

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Citation

Raemaekers, D. C. M. (1999). *The articulation of a "New neolithic"*. Retrieved from <https://hdl.handle.net/1887/13516>

Version: Not Applicable (or Unknown)

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Note: To cite this publication please use the final published version (if applicable).

5 The process of neolithisation

5.1 Introduction

This chapter brings together the interpretative context of chapter 2, the data set on the Swifterbant Culture presented in chapter 3 and the cultural context of chapter 4 to answer the subtitle of this study: the meaning of the Swifterbant Culture in the process of neolithisation in the western part of the North European Plain. In order to assess the possible explanations for the process of neolithisation in the study area, not only the 5th-millennium BC transformation in this study area is of relevance, but also the transformations elsewhere from which the various aspects of the Neolithic subsistence base were derived. A third area incorporated in this analysis is Denmark, whose Ertebølle Culture occupants came into contact with the Neolithic communities at the same time as the people of the Swifterbant Culture, judging by the surface finds of perforated wedges in both areas (see below). The people of the Ertebølle Culture may be characterised by a different attitude towards the new Neolithic ideas on man-nature relations than the people of the Swifterbant Culture (Raemaekers 1997). An analysis of the different developments of the Swifterbant and Ertebølle Cultures in the 5th millennium BC may provide insight into the process of neolithisation in both areas. Furthermore, the detailed information about the Danish Ertebølle Culture may serve as a test for the applicability of descriptive and explanatory models to the Swifterbant Culture: if models cannot be tested against the Danish data, the Swifterbant case will provide even fewer clues. The presented trajectories of change during the 5th millennium BC in these three areas focus on farming systems, the relative importance of wild and domestic animals and mobility strategies. Next, explanatory models of the process of neolithisation are discussed, incorporating these archaeological data.

5.2 Three trajectories of change

5.2.1 TRANSFORMATIONS OF THE CENTRAL-EUROPEAN NEOLITHIC

The first stage of the Central European Neolithic is the *Linearbandkeramik* (LBK), which in northwestern Europe is dated between 5300 and 4900 BC. LBK settlements consist of a varying number of houses (Modderman 1970, 100-120), in some instances surrounded by a palisade (Modderman

1988, 103). The LBK settlements were permanently inhabited and rebuilt on the same location. The subsistence base was equally permanent, with small-scale, permanent fields (intensive horticulture) on the loess plateaus, in which emmer wheat and einkorn were grown (Bakels 1991, 280), and a focus on domestic animals, especially cattle (Clason 1967, table 49) (section 4.2.2).

The Rössen Culture constitutes the second stage of the Central European Neolithic, dated between 4900 and 4400 BC. As a rule, the settlement size decreases; there even are settlements which comprise a single house (Dohrn-Ihmig 1983, 18-44). This decrease in the number of houses is to some extent balanced by the increase in house size, which prompted Lüning (1982, 32) to suggest that the LBK single-family households were replaced by multi-family households in the Rössen Culture. The Rössen habitations were probably as permanent as LBK sites. Agricultural activities were still restricted to the loess zone and took the form of intensive horticulture. The spectrum of cultivated cereals still included emmer wheat and einkorn, but naked wheat and naked barley were grown as well (Bakels 1990; 1991b). The mammal bone spectra are more varied than in the LBK period. All in all, the roots of the second stage of the Central European Neolithic are clearly found in the LBK period (section 4.3.3). The third stage of the Central European Neolithic presents a large contrast with the preceding periods. Not only are the remains of the Michelsberg Culture (4400-3500 BC) found both on and off the loess (Whittle 1985, 210), the nature of the settlement system seems different as well. The longhouse tradition is replaced by a tradition of small rectangular buildings (Last 1996, 36-37; Whittle 1985, 210), while the clusters of contemporary houses are in some areas replaced by single house sites (Sherratt 1990, 159; Wansleben/Verhart 1990, 398-399). These sites were probably abandoned after the life span of the house and/or a number of soil-exhausting agricultural cycles (Wansleben/Verhart 1990, 398-399). The same cereal types were cultivated as in the Rössen Culture, but now also outside the loess zone. Domestic animals are again predominant in the bone spectra, both in settlements and in enclosures (section 4.4.2). The intermediate position of the Bischheim Group between the Rössen and Michelsberg Cultures is not only reflected in its material culture

(pottery, flint, house plans), as indicated in section 4.3.3, but also in its site location: while the settlements of the Rössen Culture are restricted to the loess zones, the occupation of neighbouring areas is already documented for the Bischheim Group (Lüning 1982, 15).

5.2.2 THE CASE OF SWIFTERBANT

In the following discussion of the mutual influences of the people of the Swifterbant Culture and their Central-European neighbours, the three major stages of the Central-European Neolithic are used as an interpretative framework. During the LBK stage, contacts with the inhabitants of the western part of the North European Plain might be deduced from the open association of Late Mesolithic flint scatters with LBK material culture: LBK pottery, points and adzes are found within a range of some 70 km beyond the loess (section 4.2.4). The wide spectrum of relations which may be reflected by these contact finds were presented in section 4.2.3 where it is suggested that food stuff, commodities and labour may have been exchanged. It is even possible that the Late Mesolithic people became acquainted with crop cultivation and animal husbandry, but these new food resources (and man-nature relations) were probably not incorporated into their subsistence base.

During the period of the Rössen Culture, a change appears to have occurred in these contacts: while the LBK finds outside the loess zone are restricted to a zone extending some 70 km from the loess, the perforated wedges dated to the period of the Rössen Culture are found throughout the study area and beyond (section 3.7.3 and fig. 3.35). This suggests that the Mesolithic communities in the western part of the North European Plain were to a large extent engaged in (indirect) exchange relations with people of the Rössen Culture, and that knowledge of crop cultivation and animal husbandry may have penetrated into communities throughout the study area. Pottery production in Swifterbant style started in this period and seems to have found technological and morphological inspiration in its Rössen counterpart (section 4.3.5). By the end of this stage, both domestic cattle and sheep/goat were incorporated in small numbers into the traditional broad spectrum subsistence of the hunter-gatherer communities, while it is likely that the latter retained their residential mobility.

The third stage of the Central European Neolithic and the contemporary Swifterbant Culture seem to reveal a convergence of the two opposed life-styles (Louwe Kooijmans 1998; Thomas 1996b, 320; Whittle 1996, 207-208). This convergence is most explicit in Thomas's words, who states that this period may be characterised by both the neolithisation of northwestern Europe and the mesolithisation of Central Europe (Thomas 1996b, 320). Nevertheless, a closer look at the subsistence and mobility strategies of the peoples of the

Michelsberg and Swifterbant Cultures makes it clear that important differences remained. The people of the Swifterbant Culture incorporated crop cultivation and domestic pig-rearing into their broad spectrum subsistence base, adopting a set of domestic plants and animals also found in sites of the Michelsberg Culture. Nevertheless, at all sites of the Michelsberg Culture the importance of domestic animals is greater than at any site of the Swifterbant Culture (compare section 4.4.2 and table 3.51). This might be explained by environmental conditions (Gehasse 1995, 209), but the mammal bone spectrum from P14 suggests that the limited importance of domestic animals is a cultural trait of the Swifterbant Culture: the area of this boulder-clay outcrop would have allowed extensive animal husbandry and crop cultivation. Apparently, these options were not pursued (section 4.5.2.3). In other words, it may well be that the extended broad spectrum subsistence is a cultural characteristic of the Swifterbant Culture, irrespective of the natural environment. I would propose that the structural difference in mammal bone spectra between the Michelsberg and Swifterbant Cultures is the result of different subsistence strategies: while the people of the Swifterbant Culture deliberately exploited a wide range of food resources of which the domestic animals were only one aspect, the people of the Michelsberg Culture focused their subsistence strategies on domestic animals. Besides these differences in subsistence, one may point to the differing mobility strategies of the peoples of the Michelsberg and Swifterbant Cultures. Although the settlement permanency of the earlier stages of the Central European Neolithic may have been abandoned by the people of the Michelsberg Culture, their single-farm sites were probably occupied for many consecutive years, in contrast to the seasonal settlement sites of the Swifterbant Culture occupied in a residential mobility system (section 3.8.4). On the basis of this comparison, I conclude that while the differences between the Central European Neolithic and the Swifterbant Culture are clearly smaller than they were during the previous stages, they still remain structural differences. The late phase of the Swifterbant Culture (3900/3800-3400 BC) embodies new developments. First of all, the stylistic differences between the southern and northern Groups defined for the middle phase increased (sections 3.8.2.3 and 4.4): in the south, the Hazendonk 3 Group presents a distinct material expression, while the rare finds in the north indicate a continuation of the Swifterbant tradition and limited participation in the stylistic evolution of the early (pre-*Tiefstich*) Funnel Beaker Culture (section 4.5.1.4). Secondly, the scarce subsistence data on the Hazendonk 3 Group suggest that the logistic mobility strategy of the Vlaardingengroep may also characterise the Hazendonk 3 Group. Lack of data prevents similar interpretations of the late phase of the Swifterbant Culture.

Introduction

The analysis of the Ertebølle Culture in this study is based on the notion that the people of southern Scandinavia took part in exchange relations which (indirectly) also involved people of the Rössen Culture. These contacts are reflected in the recurrent finds of perforated wedges across northern Germany, Denmark and southern Sweden (Fischer 1982, fig. 3). This places the Ertebølle Culture in a position similar to that of the Swifterbant Culture: as a result of the contacts with Neolithic communities, knowledge of crop cultivation and animal husbandry was available far beyond the actual hunter-gatherer/farmer frontier. The archaeological record suggests that the people of the Swifterbant Culture and the Ertebølle Culture responded differently to these new ideas. It is thought that by means of a comparison of the archaeological records in the two areas, these different responses may be understood. This could result in a better understanding of both the Ertebølle and Swifterbant trajectories of change in the 5th millennium BC.

The following discussion of the Ertebølle Culture focuses on Denmark, because of its excellent evidence. I realise that this fails to do justice to the regional differences within the Ertebølle Culture (cf. S.H. Andersen 1993, 67; Midgley 1992, 18; Tilley 1996, 21-22): a comparison of the data on southern Sweden with the Swifterbant case would probably reveal less clear-cut differences and would therefore be less suited for marking out the distinct differences between the Swifterbant Culture and the Ertebølle Culture. A description of the disparity in material culture is found in Ten Anscher in prep. and Raemaekers 1997.

Mobility and subsistence strategies

There appears to be a scientific consensus on the mobility and subsistence strategies of the Ertebølle Culture. This consensus is based on a limited number of influential archaeological studies of which Bailey's evaluation of the nutritional value of shell food was the first. He concluded that molluscs are over-represented in the archaeological record because

mollusc shells stand a good chance of being represented in midden deposits in more or less the quantities originally collected, whereas the animal bone is subject to a heavy toll of destruction by human butchery practices and the scavenging activities of domestic dogs and wild animals (1978, 48).

Moreover, the nutritional value of molluscs is limited, which suggests that they were consumed as close as possible to the source of supply. This hypothesis results in expectations regarding the settlement types to be encountered: residential sites with access to a diversity of marine and terrestrial resources (and whose site location was not based on the availability of shell food alone) and special-activity sites which

focused on shell-food exploitation or other specific subsistence activities (ibid., 41-42). Bay-Petersen suggests that vegetable foodstuffs, birds and freshwater fish were relatively unimportant in the subsistence base of the people of the Ertebølle Culture, while elk, red deer, roe deer, wild pig and aurochs were the major mammal species on the menu (1978, 116-117). Rowley-Conwy's 1983 article on the degree of sedentarity of the Ertebølle Culture is discussed next. After referring to Binford's models of residential *vs.* logistic mobility (1980; section 3.8.4.2), Rowley-Conwy suggests that sedentary hunter-gatherers (such as the people of the Ertebølle Culture) with a logistic mobility system "live in areas where several species of migratory mammals, birds and fish appear in places closely adjacent to one another — but at different times of the year" (Rowley-Conwy 1983, 112). The sequential seasonal concentration of these species allows large-scale transport of resources to the residential sites and large-scale storage. A subsistence strategy in which seasonal resources are procured one after the other may be called a sequential specialised subsistence strategy, which is what Rowley-Conwy indeed proposes for the Ertebølle Culture. On the basis of a dozen Jutland sites, he is able to distinguish two groups: large residential sites in generalised locations, occupied the year-round, and small special activity sites in specific locations aimed at the seasonal exploitation of specific resources. These two groups correspond to Bailey's findings. A third important article is Rowley-Conwy and Zvelebil's discussion of risk-reducing mechanisms. They propose four responses to seasonal and interannual variation: mobility, diversification, storage and exchange (social storage). While exchange is not further discussed, diversification is seen as an inappropriate response because "the effects of bad years tend to pervade much of the [high-latitude] ecosystem" (1989, 45). This leaves two risk-reducing mechanisms: mobility and storage. The authors suggest that sparse and distant resources prompt mobility, while storage is a better mechanism if it is possible to exploit food resources from one residential site (ibid., 47-48). This division clearly echoes Binford's residential and logistic mobility systems. The authors continue to discuss the evidence for storage on the basis of two archaeological correlates: resource specialisation and mass-capture technology. The presented data on storage are minimal and in my opinion inconclusive: there are no traces of storage facilities and mass-capture technology such as fish traps may also have functioned in mobile societies without storage. Nevertheless, the Danish Ertebølle Culture may be characterised by its logistic mobility system and sequential specialised subsistence strategy.

Complexity

I have tried to avoid the term 'complex' in the above description, although it is a term which is generally believed to

apply to the Danish Ertebølle Culture (Jennbert 1988, 14; Price 1996, 348-349; Rowley-Conwy 1983, 112; Thorpe 1996, 87; Zvelebil 1986b, 173; 1996, 332). The central place of this concept in explanatory models of the process of neolithisation in Denmark (see below) requires an extensive discussion of the term. It has to be realised that in the debate on the Ertebølle Culture, complexity is only considered within a neo-evolutionist paradigm, that is, the discussion focuses on the complexity of social organisation. This specific interpretation of complexity in the Ertebølle discourse may be clarified by various citations. For example, Zvelebil defines complexity as “a degree of sedentism, high population density, more intensive food procurement, technological elaboration, development of exchange networks, social differentiation, and the emergence of territorial claims” (Zvelebil 1996, 331). While such a long list of attributes seems useful, Arnold seeks a meaningful distinction between complex hunter-gatherers and other hunter-gatherers on the basis of differences in social organisation. She states that complex hunter-gatherer societies are “societies possessing social and labor relationships in which leaders have sustained or on-demand control over non-kin labor and social differentiation is hereditary” (1996, 78). It may come as no surprise that on the basis of her definition of complexity, the Danish Ertebølle Culture fails to qualify (*ibid.*, 90-91). I would like to stress that since an all-inclusive list of archaeological correlates is impossible, it is necessary to identify the major attributes of a complex society in terms of social organisation. For this reason, we may return to Arnold’s definition. Within the processual debate about the Ertebølle Culture, we might infer control over non-kin labour from residential group size, while hereditary social differentiation may be identified through burial ritual. I shall start with group size. In order for leaders to control non-kin labour, the social group needs to be larger than a nuclear or extended family.¹ On the basis of the Meilgaard shell midden, Bailey proposes a residential group of some 40 individuals (1978, 48). Of course, if one doubles the nutritional contribution of the molluscs this figure decreases to 20, while discontinuous occupation of the site may double or triple the group’s size. Rowley-Conwy arrives at 80 persons, starting from cross-cultural anthropological observations of band size among non-complex hunter-gatherer (1983, 116). This residential group size is clearly much larger than the groups inhabiting a single house site of the Michelsberg Culture or the various sites of the Swifterbant Culture. Nonetheless, it has to be reckoned with that in these latter cases the social group must have consisted of many residential groups, as reflected in the central causewayed enclosures of the Michelsberg Culture and the regional stylistic traits of Swifterbant pottery (section 3.8.2.3). In the case of the Danish Ertebølle, the number of residential

groups that constituted a social group may have been considerably smaller.² The limited and ambiguous information on group size suggests that it is impossible to identify control over non-kin labour.

A discussion of burial ritual as an indication of hereditary social differentiation has to include theoretical considerations about the possibility of inferring the latter from the former. First of all, it has to be realised that the burial group probably did not include all members of a social group. It is clear that children’s burials especially are underrepresented, while the limited number of burials suggests that not all adults were buried either. In other words, the archaeological record presents a selection of the population. The social processes which caused this selection remain largely hidden: do the burials represent segments of society (lineages, elites) or is the burial group representative of the social group? The impossibility of answering such questions is a serious problem in the interpretation of burial ritual.

Nevertheless, a short presentation of burial ritual in the Ertebølle Culture may provide further insight into the presence of hereditary social differentiation. If we restrict our discussion of burial ritual to the Danish Ertebølle Culture, the 22 burials from Vedbæk Bøgebakken are the principal source of information, because they form the largest group of burials in the area (Albrechtsen/Brinch Petersen 1976). A comparison of the Vedbæk cemetery with other Danish Mesolithic burials (Kannegaard Nielsen/Brinch Petersen 1993) reveals that the wide diversity of the Vedbæk finds is characteristic. The cemetery comprises one empty gravel, sixteen single burials, two double and one triple burial. Both double burials consist of a female and an infant, perhaps women who died in childbirth. The triple burial yielded two adults and a one-year-old child. While all individuals except one were buried in a supine position, other aspects of the burials were varied and related to age and sex. The five children’s burials all contain ochre, while of the seven women’s burials two have no grave goods at all and three others only ochre. One woman was buried with a flint blade and various roe-deer bones, another woman was buried in a dress decorated with pendants of red-deer and pig teeth alongside small perforated shells. It appears that the age of the women determined the grave goods: the mature women received no grave goods apart from ochre, while the sole adult woman in the cemetery received a blade and bones of a roe deer. The richest burial of Vedbæk is that of one of the juvenile women, who was buried together with a baby on a swan’s wing. Seven of the nine male adult burials contained one or more flint blades, often in association with other goods: ochre (seven times), an antler axe (twice), a bone tool (twice), pig-tooth pendants (twice) or a core axe (once) (Albrechtsen/Brinch Petersen 1976). The men were clearly more often accompanied by grave goods, but it has to be

realised that five of the nine male burials are of mature men; only one is an adult (ochre is the only item) and there are no juvenile male burials. It may well be that the observed differences between men's and women's grave goods is the result of the predominance of mature men in the burial group, perhaps younger males would have received fewer grave goods. On the basis of the Vedbæk finds, various authors suggest status differences within the Vedbæk group: the distinction between male and female items suggests articulated gender differences (Tilley 1996, 38-41), while the presence of young women is seen as an indication of inherited status (Whittle 1985, 125). Older men achieved "greater than average status" during life while the status of the young women was derived from their family or kin group (Champion *et al.* 1984, 109). On the basis of two rich burials of young children at another Danish site, Kannegaard Nielsen and Brinch Petersen (1993, 80) conclude that there may have been a "heritage system in society", a description coming close to Arnold's definition of complexity. A different position is taken by Tilley, who concludes that

the cemetery evidence does not indicate that great status differences existed between individuals within these late Mesolithic communities, what seems to be far more important is differences between groups sharing similar sets of beliefs and social practices (1996, 59-60).

While the archaeological record shows clear differences in burial practice between young and adult, and men and women, I believe it remains difficult to interpret these differences in terms of hereditary status differential.

On the basis of this discussion on group size and burial practice, I would conclude that complexity remains a problematic criterion, since it is difficult to ascertain the presence of control over non-kin labour or ascribed status differences on the basis of the archaeological record of the Ertebølle Culture. It may be clear that in the case of the Swifterbant Culture, this is equally impossible. The impossibility of identifying the Ertebølle and Swifterbant Cultures as complex does not mean that these archaeological cultures were marked by a similar social organisation. After all, the Ertebølle Culture is different from the Swifterbant Culture in its logistic mobility system and sequential specialised subsistence strategy. Rather than distinguishing between 'complex' and 'non-complex' societies, I would suggest that the observable differences in mobility and subsistence strategies be used to draw distinctions between various hunter-gatherer (-farmer) societies in the archaeological record.

The process of neolithisation

In northern Germany, the process of neolithisation is similar to that reflected in the archaeological record of the Swifterbant Culture (fig. 5.1): the production of pottery started at

about the same time (Meurers-Balke/Weniger 1994, fig. 25), while the incorporation of domesticates in the hunter-gatherer subsistence base occurred from around 4300 BC onwards in small numbers, creating an extended broad spectrum subsistence base (section 4.5.1.2). An important difference is that while the incorporation of Neolithic elements into the Swifterbant Culture occurred within one cultural tradition, the evidence from northern Germany assigns the introduction of pottery to the Ertebølle Culture and the adoption of crop cultivation and animal husbandry to the early stage of the Funnel Beaker Culture, a process which is also found in Denmark, albeit with a time lag. This chronological correlation of developments in material culture and subsistence base suggests that the incorporation of domesticates in a hunter-gatherer subsistence base may be an important aspect of the creation of the Funnel Beaker Culture.

The Danish Ertebølle followed a different trajectory of change (fig. 5.1). Pottery production started later here than in northern Germany (Meurers-Balke/Weniger 1994, fig. 26), while domesticates occur as a package of new elements in the subsistence base from the start of the Funnel Beaker Culture onwards, around 3950 BC (Meurers-Balke/Weniger 1994, 280, fig. 26). While the presence of domesticates is ascertained from this period onwards, their importance in the subsistence base seems limited (S.H. Andersen 1991, 90; Price 1996, 349; Tilley 1996, 96). This may be illustrated by the kitchen-midden sites of Norsminde and Bjørnsholm, which both have occupation traces from the period of the Ertebølle Culture and early Funnel Beaker Culture. The Bjørnsholm mammal bones include two of sheep/goat (6%), which are the only certain bones of domestic animals (Bratlund 1991, table 3). In the case of Norsminde, cattle is identified as well (S.H. Andersen 1989, 39). The limited importance of domestic animals leads S.H. Andersen to suggest that "the new subsistence activities (farming and agriculture) were rather supplements than substitutes to the "old" Mesolithic ones, i.e. hunting, (fishing) and gathering" (1989, 38). On the basis of these observations, the early Funnel Beaker Culture subsistence base may be typified as an extended broad spectrum subsistence. The nutritional contribution of crop cultivation seems to have been limited as well. It seems to have been practised in small fields abandoned after a short period of cultivation (S.Th. Andersen 1993; Madsen 1982, 224, 226). Einkorn, emmer wheat, naked and hulled barley were all cultivated in the early Funnel Beaker Culture, but emmer wheat seems to have been especially important (S.Th. Andersen 1993, 88). The changes in material culture and subsistence base from the Ertebølle Culture to the early Funnel Beaker Culture are to some extent paralleled in the settlement system. While the special activity sites of the Ertebølle Culture frequently retained their function, the residential sites were located in

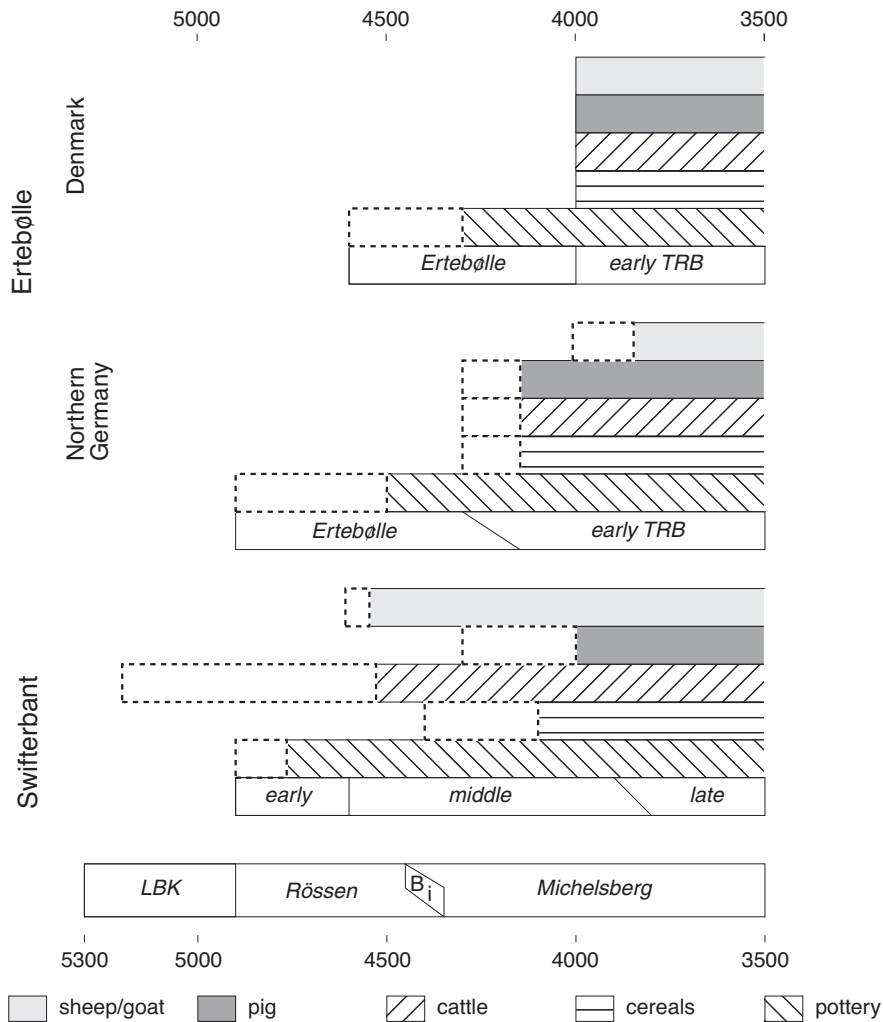


Fig. 5.1. Trajectories of the incorporation of pottery and various domesticates in the Swifterbant case and the Ertebølle case (northern Germany and Denmark). Drawing P. de Jong.

new settings characterised by a diverse natural environment, presumably to allow the extension of the subsistence base, combining crop cultivation with other food-procurement strategies. In this way, the logistic mobility system of the Ertebølle Culture was maintained (Madsen 1982, 222-227; Midgley 1992, 477; Rowley-Conwy 1983, 125).

A final consideration regarding the issue of complexity remains. The difference between complex and non-complex societies may be related to the difference between immediate-return and delayed-return systems and the adoption of crop cultivation and animal husbandry. This conceptual link is made explicit by Woodburn (1988: 57-58), who proposes that “delayed-return hunter-gatherer systems are pre-adapted

for the development of agriculture and pastoralism”. This notion is based on the long-term sedentarity of delayed-return hunter-gatherer societies, which is thought to be similar to that of farming communities. This similarity in sedentarity and delayed-return subsistence is believed to facilitate the adoption of farming. The delayed-return character of the agricultural mode of subsistence could, in this view, compared to the preserving of nuts, berries, fish and meat as stored foods in hunter-gatherer societies with a delayed-return system (see section 3.8.4.2 for terminology). By contrast, mobile, immediate-return hunter-gatherers are considered less likely candidates for the adoption of farming because of the incompatibility of lifestyles (see Arnold 1994,

83-86 for an overview). It may be no surprise that these theoretical notions have influenced archaeological interpretations of the Ertebølle Culture. According to Price, “agriculture appeared initially among more sedentary and complex groups of hunter-gatherers” (1996, 359-360; Jennbert 1988, 19). This interpretation bypasses the specific character of the Danish archaeological record: while the knowledge of crop cultivation and animal husbandry may have been present from 4900 BC onwards, the transition to farming did not occur until around 4000 BC (see above). It appears that Price’s interpretation is to a large extent based on anthropological theory rather than archaeological data. Rowley-Conwy suggests the opposite: the transition to farming was delayed in those areas inhabited by complex hunter-gatherer societies (1983, 125; Zvelebil 1986b, 181; Zvelebil/Rowley-Conwy 1984, 123; 1986, 88). Not only the Danish data are in accordance with this notion, those on the Swifterbant Culture also fit in with Rowley-Conwy’s interpretation: in contrast to the Ertebølle Culture, the Swifterbant Culture represents a society with a residential mobility strategy and an extended broad spectrum subsistence base; here the Mesolithic-Neolithic transition clearly took a different trajectory, with a gradual and piecemeal incorporation of Neolithic elements. Both the Danish Ertebølle and the Swifterbant experiences therefore suggest that Woodburn’s generalisations do not match the archaeological evidence.

The above descriptions of the process of neolithisation in the cases of Swifterbant and Ertebølle refute the expectation that the transition to farming was swift. Zvelebil and Rowley-Conwy expect “a relatively rapid appearance of an economy based on farming, with hunting coming to play a subordinate role” (1984, 112; Madsen 1986, 235). This expectation is based on the Danish evidence which shows a clear break from the Ertebølle Culture to the Funnel Beaker Culture material culture without a transitional ‘semi-agricultural’ phase (see above). Zvelebil elaborates this expectation when he states that

the substitution phase will in typical cases be relatively short, because of scheduling problems and the labour costs of maintaining a balanced hunting-farming economy. Ethnographic sources support this argument: subsistence societies tend either to depend heavily on agriculture or to engage in it only to a negligible extent (1996, 326).

In their 1984 article, Zvelebil and Rowley-Conwy suggest that Finland is an exception to this rule with a substitution phase of 2000 years. The Swifterbant Culture is another exception: clearly it is possible to combine the labour demands of crop cultivation and hunting/gathering. Even the Danish case is less straightforward than Zvelebil and Rowley-Conwy suggest. In the first stage of the Funnel Beaker Culture, wild food resources were still important (see above). Zvelebil and Rowley-Conwy’s interpretation of a substitution phase of

several hundred years as “more rapid” (1986, 86) seems to ignore the fact that such a period covers many generations. Apparently, also the people in Denmark were able to cope with the combined labour demands of crop cultivation and gathering. It is concluded that the ethnographic studies cited by Zvelebil give a general outline that does not agree with this specific archaeological record: in contrast to Zvelebil’s ethnographic data, the archaeological evidence suggests that labour demands for crop cultivation, hunting and gathering were successfully combined for a long time.

5.3 Explanatory models

5.3.1 INTRODUCTION

Models of the transition to farming in the cases of Swifterbant and Ertebølle may be grouped into externalist and internalist models. In the first group of models discussed below, the change in subsistence strategies is interpreted as an externally derived answer to societal stress in hunter-gatherer communities resulting from environmental deterioration and/or population growth. The following section presents models that focus on the internal motivations for this subsistence change (see section 1.3). The discussion of the models incorporates data on both the Ertebølle and Swifterbant Cultures.

5.3.2 EXTERNALIST MODELS

Two examples of externalist models are presented here. First is Rowley-Conwy’s model in which the extinction of oysters in the Baltic is presented as the trigger for the transition to farming in southern Scandinavia (Rowley-Conwy 1981, 53; Zvelebil/Rowley-Conwy 1984, 110). In this model, it is assumed that oysters formed a major seasonal food resource: during the spring no nutritional alternatives were available. In this model, the disappearance of the oysters prompted the people of the Ertebølle Culture to adopt agriculture. There are three problems with this model. First of all, oysters were of importance only in coastal parts of some regions within the Ertebølle Culture, while the transition to farming occurred over a much larger area (cf. Madsen 1986, 235; Midgley 1992, 394; Price 1996, 354). Secondly, the Bjørns-holm kitchen midden makes it clear that the start of the Funnel Beaker Culture in this area predates the change from oyster-dominated to cockle-dominated layers (S.H. Andersen 1991, 74). Thirdly, the end of the Ertebølle Culture appears to be diachronous, ranging from around 4300 BC in northern Germany to 3900 BC in Sealand (Meurers-Balke/Weniger 1994, fig. 32), which is also difficult to reconcile with the sudden disappearance of the Baltic oyster. Moreover, it seems unlikely that there were no nutritional alternatives for shellfish. The data suggest that the abrupt change from the Ertebølle Culture to the Funnel Beaker Culture may not be explained by the disappearance of the Baltic oysters.

Population pressure may also be proposed as a trigger for the transition to farming: in areas with a growing population, crop cultivation and animal husbandry may have raised their carrying capacity above that of hunting and gathering. A classic Danish case study is presented by Paludan-Müller (1978). On the basis of continuous population growth in the estuaries, ideally suited for residential sites because of their high biomass, he proposes a (seasonal) overflow of people into neighbouring, less plenteous areas. Eventually the regional carrying capacity is reached and further population growth has to be met by new subsistence strategies: crop cultivation and animal husbandry (1978, 152-156). A comparable scenario is presented by Gehasse for the case of Swifterbant (1995). She suggests that as a result of the Holocene sea-level rise, the Flevoland region became unsuited for hunter-gatherers by 5100 BC. These groups moved further inland where population densities subsequently increased, as did the pressure on the natural food resources. The intensive use of the natural environment led to diminishing returns, to be answered by either increased residential mobility or the introduction of agriculture. On the basis of the supposed similarities in social structure between semi-sedentary hunter-gatherers and farming communities, Gehasse suggests that the introduction of agriculture was the most likely alternative (1995, 195-198). This is a clear example of the use of the model of complex hunter-gatherers for the Swifterbant situation, which, as was shown in section 4.1.4, seems inappropriate. Population pressure has recently been less popular as an explanatory model for the transition to farming, first of all because of the lack of archaeological data supporting it (Price 1996, 352-354; Thorpe 1996, 89). A second reason is that with the shift from processual to post-processual archaeology, the focus of explanatory models has shifted from ecological to social explanations.

5.3.3 INTERNALIST MODELS

Introduction

Following the bipartition of explanatory models presented in section 1.3, the second group of explanations may be labelled *internalist*, because they focus on social processes within the hunter-gatherer communities to explain the adoption of crop cultivation and animal husbandry. In some instances, this attention to internal social processes is limited to a descriptive level of analysis and the Mesolithic-Neolithic transition is simply described as the adoption of a Neolithic package, as in the case of the Danish Ertebølle Culture (for example Thomas 1988), or the incorporation of Neolithic elements in the Swifterbant subsistence base (Louwe Kooijmans 1993a, 134; Whittle 1996, 206; Zvelebil 1986b, 182; Zvelebil/Rowley-Conwy 1986, 78). Although these publications do not present explanations for the shift in subsistence, the recognition of hunter-gatherer behavioural alternatives is

a major step forward in the analysis of the Mesolithic-Neolithic transition.

The social competition model

On the explanatory level, there seems to be a consensus that social competition within the Late Mesolithic hunter-gatherer communities prompted the adoption of crop cultivation and animal husbandry (Bender 1978; Fischer 1982, 11; Madsen 1986, 232; Price 1996, 358; Price/Gebauer 1992, 109; Thorpe 1996, 92; Zvelebil 1986a, 10; 1986b, 183; 1996, 335-338). Price (1996, 355-355) states that this competition occurred between individuals. This gives individual social action a central role in societal change (similar remarks may be found in Fischer 1982, 11; Price/Gebauer 1992, 109). The importance of social competition is based on the Danish finds of the Ertebølle Culture discussed above. In Zvelebil's terms, these communities may be described as socially and economically complex, with

logistic and specialized procurement of resources, the investment in mass-capture facilities and other labour-intensive technology, the evidence for food processing and storage, and the indications of management of woodland and its resources [Furthermore,] there is evidence for status differentiation, [...] linked, perhaps to the control of material assets: food resources and exotic artefacts [...] All this suggests the delayed-return male-dominated social structure (1996, 332).

The review of the Danish Ertebølle Culture in section 5.3.2 made it clear that the central concept in this list of attributes is complexity. Not only is it difficult to find archaeological correlates for this concept; the evidence for many of the attributes is marginal when studied in detail: storage facilities are unknown, there is no reason why specialised procurement equipment has to be restricted to complex hunter-gatherers, evidence for status differential in burial ritual is limited, etc. These problems relating to the attributes of allegedly complex Ertebølle communities make it difficult to accept that social inequality within these communities was such that social competition prompted the change from the Mesolithic Ertebølle Culture to the Neolithic Funnel Beaker Culture in Denmark. In any case, there are no direct archaeological clues that social competition was an important aspect of these communities at all (cf. Price 1985, 358; Price/Gebauer 1992, 110). I would suggest that the low population densities may have prohibited the establishment of ascribed social status differences: fissure probably remained a plausible answer to individuals who aimed at personal accumulation of wealth and prestige (cf. Whittle 1996, 208). Indeed, the description of these societies as essentially competitive may tell us more about the social context of the researcher than about the researched archaeological past (Lee 1988, 258). If the social competition model is rejected for the Danish situation, how does it stand in the case of Swifterbant? The

lack of data relating to status differences is certainly overwhelming: the few burials contain almost no grave goods, while the positioning of the body is uniform as well. Of course, this absence of evidence may be interpreted either way: it might be argued that social competition was denied in the burial ritual, or that this truly was a basically egalitarian society. I would suggest that the last option is more likely, on the basis of various arguments.

The primitive communism model

While the social competition model is widespread in the debate about the Mesolithic-Neolithic transition (and of course in numerous other archaeological issues), there are a few authors who stress that not individual (see above) but group agency triggered the subsistence change (Thorpe 1996, 92-93; Tilley 1996, 68-69). The importance of group consensus leads Tilley to suggest that the communities of the Ertebølle Culture should be described in terms of 'primitive communism' (1996, 68). A list of attributes presented by Lee (1988, 253) places early communism in opposition to complexity, since he describes it as "small-scale kin-based social groups [with] collective or common ownership of land and resources, generalized reciprocity in the distribution of food, and relatively egalitarian political relations". The difficulty of establishing the complex character of the Ertebølle and Swifterbant Cultures might be interpreted as a first clue that these were societies which are more easily described in terms of primitive communism.

A second indication of the importance of social consensus in societal change is provided by the perspective on society presented in section 2.3. It was suggested that while change may have been initiated by influential individuals, it is the social acceptance of this new non-normative behaviour by the social group which sanctions the new behaviour and implements it into the social structure. Historical circumstances operate as an important precondition to this process of change (fig. 2.1). According to Ingold:

[the individual] enjoys an autonomy of intention and action, but this is not an autonomy preconstituted in advance of his entry into social relations, rather it is constituted by his involvement in the whole. For him there is no contradiction, no conflict of purpose, between the expression of individuality and his generalized commitment to others (1986, 240).

Thirdly, the inability of individuals to initiate change on their own is also reflected in the archaeological record as the archaeological practice reveals that conservatism (resistance to change) is a major factor to reckon with in society. Since the chronological resolution of material culture (archaeological phases) concerns considerably longer periods than the life-span of (prehistoric) human beings (see also section 3.8.2.1 of this study), it appears that the norm of material culture

was more often reproduced than reconstructed. This suggests that for the participants, material culture was generally considered to be traditional rather than open to manipulation. This has clear implications for the discussion on individual versus group agency presented above and in section 2.3. The conceptual link between material culture and society, as proposed by post-processual archaeology, suggests that conservative material culture production may be equated with a society in which the spectrum of potential social actions is severely restricted in social practice. The absence of observable change in material culture during many human life-spans suggests that the structure of society was equally conservative. In other words, tradition is generally the norm, while change is often slow and restricted in amplitude (section 2.2).

The generally conservative character of prehistoric societies is not only revealed in the poor chronological resolution provided by material culture changes, it is also observable on a more conceptual level. In the analysis of medium-term and long-term developments, the concept of *mentalité* (In English-language texts often referred to as world view) provides an excellent example of an approach that might provide archaeological information on the subject of agency (Bintliff 1991, 10-13; Knapp 1992, 8). World view refers to group ideologies and beliefs, which not only are reflected in social practice but also in material culture. The time-depth of *mentalité*, or more precisely the conservatism of social practices, allows archaeology to identify this phenomenon in the form of different long-term developments in different geographical areas. In the cases of Swifterbant and Ertebølle, such an analysis reveals that while the people of the Swifterbant Culture gradually incorporated the Neolithic subsistence strategies into their broad spectrum subsistence, the people of the Ertebølle Culture rejected these new subsistence strategies for many generations (Raemaekers 1997). It appears that the people of the Swifterbant Culture had a different world view regarding the Neolithic subsistence activities than the people of the Ertebølle Culture: while the developments of the Swifterbant Culture in the 5th millennium BC reveal that the new subsistence strategies were perceived as opportunities for a new hunting-gathering-farming subsistence base, the contemporary developments in Denmark reveal that there the new subsistence strategies were rejected and perhaps had a negative connotation. This difference in world view lasted for many generations until the adoption of crop cultivation and animal husbandry in Denmark around 4000 BC. In other words, while the Neolithic food items and subsistence strategies must have been known to the communities of the Ertebølle Culture for hundreds of years and were therefore available for social competition, the social action of adopting them did not occur. In my opinion, this suggests that the possibilities of

individuals or groups to use these items for social competition was counteracted and made impossible by social consensus against their incorporation into existing subsistence strategies.

In conclusion, there are four arguments in favour of the primitive communism model as the explanatory model for the transition to farming in the Swifterbant and Danish Ertebølle cases. First of all, it proved impossible to find evidence of complexity in the social organisation of the Ertebølle and Swifterbant Cultures, which suggests that the social competition model, based on the notion of complexity, may be dismissed. Secondly, I propose a perspective on society in which individuals are embedded in conservative social groups and restricted in behavioural alternatives leading to societal change. While the first argument is negative and the second more of a conceptual nature, the final two arguments are based on the archaeological record and therefore of prime importance. It was concluded that the chronological resolution of material culture developments encompasses many lifespans, which suggests that lack of change rather than change characterised material culture production. The conceptual link between material culture and society then leads on to suggest that society itself was of a conservative character. Moreover, the continuous rejection of the available Neolithic subsistence strategies in the Danish Ertebølle Culture is an indication that the scope for individuals or interest groups to engage in social competition was counteracted by social group consensus against the incorporation of new subsistence strategies. These arguments together suggest that the social competition model has to be rejected as an explanatory model for the Mesolithic-Neolithic transition in the cases of both Swifterbant and Danish Ertebølle, in favour of a model which focuses on the consensus of social groups on behavioural alternatives. In the case of the Swifterbant Culture, the proposed residential mobility may be put forward as another argument against the development of social inequality, as may the absence of a clearly differentiated burial ritual. In other words, I would argue that the primitive communism model offers a better understanding of the trajectory of change in the cases of both the Danish Ertebølle and the Swifterbant Culture.

Since the anthropological discussion about primitive communism is focused on hunter-gatherer communities, this may prompt the question whether it is valid as a model for communities which also practise crop cultivation, such as the people of the Swifterbant Culture. If not, the above model might be dismissed as irrelevant. According to Barrett:

there exists an unwarranted assumption that, because cultivation requires the maintenance of field plots, then the appearance of cultivars [...] must also herald the emergence of a predominant concern with the social control of portions of land surface (1994, 143).

In other words, does the claim on land not automatically entail the end of general reciprocity and the start of differential wealth accumulation? This seems not to be the case, which saves the validity of the primitive communism model for the Swifterbant Culture. Small-scale extensive cultivation ('forest fallow' and 'bush-fallow') seems to be correlated with a general right of all members of the social group to use the cultivated plots, while at the same time, the use of specific plots may be limited to specific households (Barrett 1994, 143; Boserup 1965, 79). The general right of all members of the social group on the cultivated plots, the collective ownership, certainly must have encompassed communal rights on (parts of) the crops produced on these plots.

Evaluation

The arguments in favour of primitive communism may have shocked the reader. I certainly hope so. While the textual sequence may suggest that I prefer this model over the social competition model, this is incorrect. First of all, I would like to point out that the archaeological arguments for social competition are not conclusive and the incorporation of social competition in the explanation of the Mesolithic-Neolithic transition in the cases of Ertebølle and Swifterbant is indicative of the view we have on (contemporary) society. We simply cannot imagine societies in which social competition is of little importance. Secondly, it is equally impossible to prove by the archaeological data that social competition is absent and that therefore these were concerns societies characterised by the primitive communism model. We have to realise that archaeology (and science in general) often does not provide us with self-evident data, and that multiple, contradictory interpretations are possible, as in the cases presented above.

Yet this need not leave us empty-handed. It was suggested above that individuals play an important role in the initiation of societal change. This role might be described in terms of social competition. On the other hand, the strong conservatism ingrained in the social structure may be interpreted as indicative of primitive communism. It is the continuous interplay between the actions of a progressive individual or segment of society and the conservative consensus of the social group which creates society (see section 2.3). In the case of the Ertebølle Culture, the continued rejection of the Neolithic subsistence strategies may be interpreted as an indication of the power of the conservative forces in society, until eventually influential individuals and/or segments in society found an opportunity to initiate the incorporation of domesticates in the subsistence base, thus effecting the Mesolithic-Neolithic transition.

5.4 Conclusions

An archaeological discussion on development easily focuses on change, because observed chronological differences

clearly require explanation. It is less often realised that lack of change equally needs explanation in terms of social behaviour (Last 1995, 152). During the period of the LBK, it is therefore the absence of Neolithic elements in the Late Mesolithic hunter-gatherer communities which needs explaining. If one tries to understand why these new subsistence strategies were not adopted, the contrasting characteristics of the LBK and Late Mesolithic in subsistence base and mobility strategies have to be considered. The LBK practice of intensive horticulture in permanent settlements with a focus on cattle-herding stands in stark contrast to the broad spectrum subsistence strategies adhered to by the mobile Late Mesolithic hunter-gatherer communities of the western part of the North European Plain (section 4.1.4). In other words, the LBK lifestyle of sedentism and intensive agriculture was incompatible with the mobile broad spectrum lifestyle of the Late Mesolithic hunter-gatherers. Apart from these difficulties, there was one more major hindrance to the adoption of elements of crop cultivation or animal husbandry by the hunter-gatherer communities of the western part of the North European Plain: the different cultural roots of the communities concerned. Even if part of the LBK people were of indigenous stock, their cultural expressions clearly derived from the southeast, while the hunter-gatherer communities had their cultural roots in the Mesolithic and Late Palaeolithic of northwestern Europe. More than the difference in mobility strategy and the doubtful suitability of the LBK cereal types beyond the loess, it may have been this difference in attitudes which had to be bridged before Neolithic elements could be adopted by the native communities (Louwe Kooijmans 1993a, 136-137; 1998). In this light, the LBK finds in Late Mesolithic assemblages (section 4.2.4) may be interpreted as indicative of a wide spectrum of social relations between the two communities, which gradually narrowed the gap in attitudes.

While the 'revisionist debate' (section 4.2.3) was one of the sources of inspiration for this study, the long-term relations between hunter-gatherers and farmers seem to be of greater importance for the period preceding the start of the Swifterbant Culture, the LBK period. As a result of the anthropological evaluation of the importance of contacts between hunter-gatherers and farmers, more data have become available on the various aspects of these contacts. It appears that even though these contacts may be intensive, the hunter-gatherer communities will retain their mode of subsistence; a notion which may explain the archaeological data on the LBK period. Although there is evidence of contacts (adzes, LBK points, Limburg pottery), the hunter-gatherer communities did not adopt Neolithic subsistence strategies.

The outcome of the contacts between hunter-gatherers and farmers becomes archaeologically visible from 4900 BC onwards, during the period of the Rössen Culture. From this

moment onwards, pottery production and cattle herding become characteristics of the hunter-gatherer communities of the western part of the North European Plain, defining the start of the Swifterbant Culture. It appears that the residential mobility of the Late Mesolithic was retained in this process of incorporation. In the light of the above-mentioned discussion of explanatory models, it is assumed that the social practices in which these changes were sanctioned were based on social consensus. The historical circumstances may be of crucial importance in this adoption of Neolithic elements: as a result of long-term interaction, pottery production and cattle-herding may have become less alien concepts. At the same time, some Rössen sites are marked by a smaller role for domestic mammals, which seems partly to bridge the difference in subsistence base. In any case, the developments within the Central-European sequence are an important aspect of the Mesolithic-Neolithic transition (Louwe Kooijmans in press a). In the case of the Ertebølle Culture, the Neolithic alternative remained unattractive, perhaps as a result of the sequential specialised subsistence strategy, incompatible with agriculture in Rössen style: intensive horticulture and animal husbandry. As in the case of Swifterbant (Louwe Kooijmans 1993a, 136-137), differences in social organisation and world view should be considered as well.

During the third phase of the Central European Neolithic (the Michelsberg Culture), crop cultivation was included in the residential mobility strategy of the Swifterbant Culture from at least 4100 BC onwards. The start of crop cultivation in the area of the Swifterbant Culture indicates that potential problems relating to the shift of cereal cultivation from loess to sandy soils, were resolved at the latest around this time. In this respect, it may be significant that the oldest cereal finds in a Swifterbant context are contemporaneous with the expansion of the Michelsberg Culture to the sandy areas. This may again be an example of specific historical circumstances: the development of new agricultural techniques (the ard?) by people of the Michelsberg Culture (and Bischheim Group) (Louwe Kooijmans 1993a, 137) enabled the people of the Swifterbant Culture to incorporate crop cultivation into their subsistence base. It is crucial to realise that the incorporation of Neolithic food resources into the subsistence base of the people of the Swifterbant Culture was completed shortly before the Mesolithic-Neolithic transition occurred across large parts of northern Europe and the British Isles. In my opinion, explanations of this transition should take into account the historical trajectory in which the people of the Swifterbant Culture operated: in contrast to the Danish and British Mesolithic, the people living in the western part of the North European Plain were actively involved in the articulation of a new kind of Neolithic: an extended broad spectrum subsistence base combined with a residential

mobility strategy. I would suggest that this new Neolithic with an extended broad spectrum subsistence base might have been more attractive to the hunter-gatherers of both the British Isles and Denmark than the Central European traditional Neolithic with its site permanency, intensive horticulture and focus on cattle-herding. The articulation of a new Neolithic by the people of the Swifterbant Culture may have influenced their Michelsberg neighbours further inland. In this perspective, the cultural roots of the early Neolithic of both Britain and southern Scandinavia in the Central European tradition were perhaps combined with an extended broad spectrum subsistence base derived from the Swifterbant Culture. In other words, one might suggest that the moment of transition to farming in the British Isles and northern Europe was in part the outcome of developments in the Swifterbant Culture: the articulation of a new Neolithic in the Swifterbant Culture was completed at the latest around 4100 BC, shortly before the start of the Neolithic in Denmark and Britain. Both Midgley (1992, 401) and Ten Anscher (in prep.) suggest an even larger role for the Swifterbant Culture. According to them, it played a role in the creation of the Funnel Beaker Culture.

From around 3800 BC onwards, the Danish and the Dutch evidence shows increasing congruence: the logistic mobility strategies of the Hazendonk 3 and Vlaardingen Groups are more similar to the strategies of the Danish Ertebølle Culture and early Funnel Beaker Culture than to the residential mobility of the Swifterbant Culture. From 3400 BC the material expression of the West Group of the Funnel Beaker Culture finds a place in a larger northern cultural tradition,

which included the area formerly occupied by people of the Ertebølle Culture.

The traditional role of the Swifterbant Culture as a western variant of the Ertebølle Culture in the discussion of the Mesolithic-Neolithic transition in Northern or Atlantic Europe is ready for revision. Detailed analysis of the archaeological data on the Swifterbant Culture reveals that the Swifterbant Culture constitutes a distinctly different archaeological unit of analysis. Its specific *longue durée* history of the 5th millennium BC suggests that the Swifterbant communities were actively engaged in the articulation of a new Neolithic, not typified by site permanency, intensive horticulture and cattle-herding, but instead characterised by residential mobility and an extended broad spectrum subsistence base. It is this new type of Neolithic which later is also found in other areas such as the British Isles and northern Europe.

notes

1 In this context, the term social group identifies a group of people who pool labour resources (for example for the construction of houses or collective hunts).

2 Rowley-Conwy suggests that the large size of the Ertebølle residential groups is compensated by a smaller number of such groups in a 'minimum mating network', which he holds constant at 475 for complex and non-complex hunter-gatherers alike (1983, 116).