

The Beginning of the Neolithic – Assimilation or Complex Change?

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In recent years studies dealing with the introduction of agriculture in South Scandinavia have shown a greater interest in the Late Mesolithic than in the Early Neolithic. There may be at least three reasons for this: first the rejection of the invasion hypothesis forwarded by most earlier writers, next the advent of radiocarbon dating which separated the two periods in question, and finally the general trend of modern archaeology to investigate processes and to explain culture change. For all three reasons the interest is being directed towards the possibility of a gradual development of agricultural practices and husbandry within the Ertebølle Culture of the Late Mesolithic.

Anders Fischer (1982) and Kristina Jennbert (1984) advocate the view that the preconditions for the neolithic transition lie in the existence of an exchange network, which among other things enabled the diffusion of Late Danubian perforated axe-hammers to the North. Others seek evidence for a concentration of settlement and for increasing sedentism in the late Ertebølle Culture (Rowley-Conwy 1983) or present theories for a growth in population during that period (Paludan-Müller 1978). Environmental factors such as climatic deterioration and fall off in coastal resources at the time of the Atlantic – Subboreal transition have also been mentioned as possible causes of changing subsistence strategies (Zvelebil & Rowley-Conwy 1984:110). A survey of recent work on the subject is given by P. Rowley-Conwy in the foregoing issue of *JDA* (1985).

I would like to address my comments especially to two theories recently put forward: 1) the theory by Jennbert (1984 and 1985) on the prolonged process towards farming promoted by external contacts, and 2) the three stage development described by Rowley-Conwy (in Zvelebil & Rowley-Conwy 1984). Both of these writers introduce new concepts that deserve attention and provoke discussion.

The idea of a growing process within the Ertebølle Culture towards a farming economy, stimulated by the acquisition of 'fertile gifts' through exchange with neighbouring farming communities on the Continent (Jennbert 1984), calls for the concept of a transitional period with a mixed economy, for which neither the term 'Mesolithic' nor 'Neolithic' are adequate. Jennbert bases her interpretation of the archaeological evidence on this concept. In opposition to this, I should like to present the hypothesis that the Ertebølle and the early Funnel Beaker (TRB) Cultures represent two incompatible cultural systems, and that the introduction of the 'Neolithic' way of life meant a change of great consequence for all aspects of society. As I will try to show in the following, most of the available archaeological sources seem to be in favour of this view.

The settlement pattern, material equipment, and the associated fauna of the Ertebølle Culture indicate that the people were predominantly living by aquatic resources. Whenever an Ertebølle tool assemblage is found in a settlement context, the site is situated close to open water: sea, lake or fjord system. Hunting and collecting activities which added part of the diet and provided necessary raw materials, were organized from base camps always situated on the shore. Nothing in the conventional archaeological record signifies that the Ertebølle Culture took possession of inland areas for agricultural purposes. The pollen evidence is in support of this as far as South Scandinavia is concerned. Bones of domesticated animals have not yet been found in pure and sealed Ertebølle contexts. As far as can be judged from finds made of durable materials the Ertebølle people possessed a modest capacity for the storage of food. The range of ceramic types was limited and the amount of pottery found at the settlements is small. This should be seen in connection with the extremely confined settlement zone between open water and dense forest occupied by this culture which caused the pile up of refuse at the dump areas of the settlements being used repeatedly through centuries. These facts ought to be borne in mind when combining the elements of sedentism, group size, and storage capacity in an attempt to classify the Ertebølle among the advanced sedentary hunters – an attempt which may not be wholly irrelevant but which tends to exaggerate the clues.

As shown by Peter Vang Petersen (1984) there was a regional and a local differentiation within the Ertebølle Culture reflected in the spatial variation of certain artifact types. It seems to indicate smaller, territorial units within the otherwise uniform material continuum of the culture as a whole.

Within the narrow coastal and lakeside area occupied by the Ertebølle Culture a variety of ecological niches were exploited. Fishbones and fishing gear show the practice of both freshwater, inshore, and deep sea fishing as well as the use of fish traps. Dwelling sites may have been chosen in a way that different fishing methods could be employed at the same time (i.a. Tybrind Vig, Andersen 1985, and Ertebølle, Enghoff 1986). Hunting for seals took place at some stations (Sølager, Skaarup 1973). The probability that larger sea mammals were pursued at certain favourable locations has also been pointed out (Vængesø, Andersen 1975a). Hunting comprised a variety of species and hardly two Ertebølle sites show the same composition of the game. There are inland lakeside settlements where hunting was the predominant occupation (Ringkloster, Andersen 1975b). Seasonal camps with an eye to bird hunting are also known (Aggersund, Andersen 1979). Beside the ample evidence of molluscs being collected, food gathering is a less well documented activity but may have included a variety of plant food. The Ertebølle hunter-fisher-gatherer was thus extremely mobile and highly capable of adjusting himself to different environments. He performed a series of techniques that were complementary throughout the year and made him move with the seasons within a fairly large territory.

Long after the introduction of farming and husbandry the hunting and fishing activities continued to exploit the same natural resources as before, using much the same techniques and locations as the Ertebølle people had done. However, in

other respects the life-style had become fundamentally different. Settlement was no longer confined to coastal or lake-side environments, but was now mainly situated on high ground. Right from the outset of the Subboreal period we may speak of a dual economy chiefly centered in permanent, inland residence sites but supplemented by activities at the now secondary extraction camps situated in the coastal zone formerly occupied by the people of the Ertebølle Culture (cf. Madsen & Jensen 1982). The shift in emphasis towards stock raising and consumption of terrestrial resources can be deduced from the measurements of the C 13 isotope in human bones, showing a decline from the beginning of the Subboreal. In contrast to the fishers' menu the first neolithic settlers enjoyed a predominantly terrestrial diet (Tauber 1981, 1983). Such profound readjustments of the settlement pattern and subsistence strategy may well have affected the whole behavioural pattern of the people.

It is an important point that animal husbandry changes the annual cycle. Livestock and the labour connected with it ties part of the family to home quarters during winter. Livestock also provides part of the diet during this season, as do the stored grains of cultivated cereals. Thus, a series of animal and plant food stuffs available throughout the year creates new dietary habits and requires new home crafts. The idea to accumulate food for storage may also have changed the way certain wild products were handled – meat, fish, berries and fruits. Facilities for storage may certainly have resulted from the desire to make better drinks. Access to a constant milk supply would soon affect conditions for infant survival. A different health situation would evolve from this, possibly affecting family size and mortality rate.

Settled life imposes a new social order. Possession and care of animals and land requires new rules of labour, of division of labour within both family and community, of internal group relationship, and of inter-group contact and commerce.

It is important that the archaeological evidence is in accordance with the concept of multiple and complex change. It does not sustain the idea of a long transitional period of gradual adaptation to the new economy. Imprints of cereals found in sherds of Ertebølle vessels at Löddeborg do not prove that cereals were actually grown in the Ertebølle period. They may be seen merely as support for Jennbert's idea of a long distance traffic in various commodities including articles for consumption during the time before the actual change in economy. Bones of domesticated animals found in an Ertebølle context might be interpreted similarly, if we put things to extremes. As long as there are no further indications in the archaeological record of a self-supplying food production under development, how can we assume that changes happened?

What were the circumstances, then, under which the new economy was finally introduced? The answer to this depends on the way we define the first period of the Neolithic in terms of archaeological context. There is no unanimous agreement on this issue among Danish and Swedish archaeologists. It is mainly due to a confusing series of radiocarbon dates for the period c. 3100–2800 bc. Both the Volling Group (Ebbesen & Mahler 1980, Madsen & Petersen 1984) and the Early Neo-

lithic A- and B-Groups as originally defined by Becker (1947, 1955) aspire to be the earliest on the scene.

In the greater part of the area settled by the Ertebølle people there is good reason to maintain the priority of the A-Group ('Oxie-Group' in Swedish terms, cf. M. Larsson 1984). The ceramics of the A-Group are simpler and more similar to continental pottery than other EN pottery groups in South Scandinavia. Early C 14 dates are claimed for A-pottery found at Rosenhof in eastern Holstein in an interesting but probably accumulated deposit containing Ertebølle sherds and vessels of Michelsberg and Baalberge types (Schwabedissen 1972, 1979a, 1979b) – thus indicating some of the possible 'donor' culture systems for the early farming communities north of the Baltic.

In Denmark and South Sweden the A-pottery is found associated with early, pointed-butted flint axes, and the two kinds of artefacts share a confined distribution with the highest frequency in Sjælland and Scania (Nielsen 1985). If we disregard sites with a problematic stratigraphy (i.e. sites of 'Löddeborg character' for Scania, cf. Jennbert 1984) contemporaneity between the late Ertebølle Culture and the A-Group has not been demonstrated. It appears, however, from the distribution maps that there is an overlap between the territory occupied by Ertebølle sites and that occupied by A-sites. In most parts where Ertebølle sites are numerous, A-material has also been found. An interesting pattern emerges from the distribution maps of Scania shown by Jennbert (1984 figs. 65–69). They show a typical clustering of Ertebølle sites along the shores of the sea, the fiords, and the inland freshwater lakes. Near most major concentrations of Ertebølle sites there is a scatter of early agricultural settlements and finds of pointed-butted flint axes, which however also covers the wide, adjacent areas of high ground.

At the same time, these distribution patterns provide the most convincing argument for a local development of the new economy in South Scandinavia, as opposed to immigration. Furthermore, it seems clear that the initial process of clearing land and introducing farming was carried through simultaneously and consistently within the whole social territory of the Ertebølle Culture. The distribution of finds reflects the change of emphasis with regard to economy. The base camps (or residence sites) are now to be found on high ground and the coastal sites become – most often – secondary extraction camps. It is noteworthy that artefact material of the Early Neolithic (and of later periods, too) have been found at nearly all Ertebølle sites investigated. If the change in economy and settlement was due to immigrant farmers, how would we explain the continued occupation in the EN at exactly the same hunting and fishing stations as were used in the Ertebølle period?

From the relatively scarce find material from the base camps of the A-Group we gain just enough evidence to prove the existence of a varied farming economy right from the outset. Analyses of grain imprints in A-vessels show the cultivation of naked barley, club wheat, Einkorn and Emmer (Helbæk 1955, Hjelmqvist 1970, Nielsen 1985). A small sample of animal bones indicates a mixed husbandry at this early stage

consisting of domestic cattle, sheep, and pig (Nielsen 1985).

Production based on these domestic resources would call for adequate means of storage and processing of food. This need explains the fully developed set of pottery types employed by the people of the A-Group. We assume that the pottery technology and the specific range of household ware was closely connected with, and conditioned by, the methods of preparing and storing animal and plant edibles. The uniformity of the early TRB pottery over wide tracts of Europe must reflect common ideas of how food was handled and consumed. In an attempt to assess the communication lines along which this new food technology reached the North, the author has found that the A-pottery combines both eastern and western elements of early TRB pottery traditions (Nielsen 1985). The A-pottery is not copied from any specific ceramic tradition outside its area of distribution. While form and function of the pottery were preconditioned by the mode of food production adopted, the style and technical details give the pottery an individual character which justifies the term 'Northern Group' of the TRB Culture from the beginning.

An analysis of the flint inventory at the Early Neolithic sites shows a continuity of some of the principal artefact types of the Ertebølle Culture. However, there are technical and probably functional differences from the typical Ertebølle tool kit, probably due to a series of new activities, and the relative frequency of the individual tool types is not the same. Most important is that the first farmers inherited the skills of producing the specialized tool kit already adjusted to the local environment and its raw materials. This is another clue to a continuity of traditions and of working methods from the Mesolithic to the Neolithic.

Moving from the level of food production and artefact manufacture we meet new activities that can only be understood in terms of social adjustment to new life forms – the practices of animal and human sacrifice disclosed by finds recovered in bogs (Bennike & Ebbesen 1986). The beginning at an early stage of this practice and of the custom of depositing single vessels (with food) in or near water, marked the beginning of a ritual behaviour that was to outlast the EN period. Whether the performance of sacrifice or feasting was the more essential, the regularity of finds indicates a rapidly established ritual institution.

Another early fixed pattern of regularity, and probably also ritualized, is the deposition of hoards with flint tools (Nielsen 1977, Rech 1979). Almost all hoards with pointed-butted flint axes belonging to the EN A have been found in Scania, distributed in the south-western part where natural flint resources are known to have been systematically exploited from the beginning of the Neolithic (Olausson, Rudebeck & Säfvestad 1980). The production and diffusion of flint axes rose to a grand scale during the EN. The axes are supposed to have had an important function in the exchange system and were most likely valued as symbols of status and wealth (Nielsen 1977, 1984).

From this it transpires that on different levels, from the basic food production to the ritual and social life, the fundamental structure was rapidly shaped in the first stage of de-

velopment of the Neolithic society. The cultural behaviour determined by the events of the neolithisation process changed very little through the centuries succeeding the first period of the Neolithic.

Returning to the concepts 'substitution phase' and 'consolidation phase' used by Zvelebil and Rowley-Conwy, I feel that they do not exactly reflect the evidence. It becomes doubtful whether a 'substitution' of the economy would represent a phase of any length. Substitution implies that a function, or a behaviour, is replaced with another.

From this point of view Jennbert's idea of a long temporal overlap between an Ertebølle Culture being already half Neolithic and an Early Neolithic system of settlement and land use combines conflicting elements. It allows cultural aspects to be coexistent that should rather be viewed as the opposing strategies of two differently organized, cultural systems. The 'mixed sites' with Ertebølle and TRB material show a spatial overlap between these different subsistence and settlement patterns but they hardly indicate a temporal overlap.

In a narrow sense of the word we may, however, use the term 'substitution phase' as a designation for the time during which the new economy disseminated over the geographical area in question. Here we may profit from Jennbert's concept of 'a fertile gift' to explain the circumstances leading to the introduction of agriculture and husbandry. Imprints of grains in Ertebølle pottery, such as were discovered at the site of Lödödesborg, may be evidence for food being part of the exchange between hunter-gatherers and farming communities south of the Baltic or in areas of South Scandinavia already carrying a farming population. The advantage of food production in periods of crisis was thereby easily perceived by the people dependant on natural resources alone. The possession of livestock may have been an active power in such situations. Rather than a war between two different populations we would envisage a competition between local groups to acquire the means of self-supply.

Necessary preconditions for the change may well be sought within the sphere of inter-group 'commerce'. The transition phase would have been one of intense traffic in livestock and cereal products demanding new controls and standards of exchange. One of the effects of this was the vanishing of the old social territories of the Ertebølle Culture and the establishment of new and larger ones, as reflected by the local stylistic groups emerging during the EN. Even wider lines of communication were established on the symbolic level by the take over of male status objects like the battleaxe of common European type, i.e. the perforated axe-hammers of Jazdzewski's type X, anchored in the EN A context in the male burial at Dragsholm (Brinch Petersen 1974).

The significance of the Mesolithic-Neolithic transition lies in the fact that the emerging Neolithic society formed a highly integrated, functional system right from the outset. The way production, exchange, and social organisation was ruled and regulated throughout the Early Neolithic and part of the Middle Neolithic seems to have crystallized during the very process of establishing the first food producing economy.

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