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On the Economy and Subsistence of the Battle-Axe Culture in Finland

The archaeological literature of Finland shows clearly the central position of the Battle-Axe (Corded Ware) culture in Stone Age studies ever since the 1920s. The name of Aarne Äyräpää is undeniably a central one in this connection (Äyräpää 1922, 1930, 1933, 1939, 1952, 1956). He was the first to set out a tentative framework for the Battle-Axe culture with respect to the decriptive analysis of artefacts, relative chronology and economic structure. Äyräpää formed an image of the Battle-Axe culture in Finland, whereby it was based on an agricultural population that had migrated from the south across the Gulf of Finland and settled in an area lying south-west of a line running from Viipuri via Tampere to Vaasa. This view of the Battle-Age culture has become an established one and is generally accepted (cf. however Edgren 1970). Äyräpää's arguments for his agricultural theory are, however, based on indirect archaeological evidence. Nevertheless, they rely on ecological observations, such as the links between the culture and certain kinds of terrain and soils as well as climate, a line of inquiry rare in archaeology in the 1930s.

In 1969 this author, together with Pentti Alhonen, attempted to shed further light on the problem by carrying out pollen-analytical studies at the wellknown Corded Ware site of Perkiö in Hauho one of the biggest ones in Finland (Edgren 1970; Alhonen 1970). The aim was to find Cerealia pollen from a bog in the immediate vicinity of the site. The analysis showed, in the form of several cultural indicators, that forest had been cleared at the site just before the spread of fir *(Picea)*. On the other hand, there were no indicators of actual agricultural activity, such as the pollen of cereals. The results suggested open terrain, characterized by use as pasture.

Ever since then this problem has been the subject of study by some exellent paleobotanists. In this connection it may however be called for to note that a single observation of a Cerealia pollen and a stray find of a battle-axe from the same parish do not bring much more light on the problem of the subsistence of the Battle-Axe culture. Nor can the Battle-Axe culture be proven to have been an agricultural culture merely by combining observations of the above kind with references to Ella Kivikoski's brief general work in English on the prehistory of Finland (e.g. Aalto et al. 1980). More concrete evidence and increased co-operation between archaeologists and botanists are required.

In 1981 and 1982 the author had the opportunity of carrying out additional excavations at two previously known Battle-Axe sites. The excavations were partly funded by the Academy of Finland and partly by the National Board of Antiquites and from the beginning they were combined with a study project on agricultural history funded by the Academy of Finland. All paleobotanical analyses related to the study have been carried out by Merja Seppä-Heikka of the University of Oulu.

The first site to be studied was Dalamalm in Siuntio (sw. Sjundeå) in Western Uusimaa where some 15 years previously the author had investigated a grave of the Battle-Axe culture (Edgren 1970, 81). Previously a battle-axe of type II a and a

cross-bladed axe had been found at the site. Another battle-axe, type Ic, had been found at a distance of less than half a kilometre from the site, in topographically similar conditions and at the same elevation above the present sea level. The grave contained a vessel decorated with diagonal lines in heering bone pattern and with a diminutive base (definition according to Malmer 1962, 8; cf. Edgren 1970, 28) as well as a low wide-ridged East Karelian even-bladed adze of type A2 (Heikkurinen 1980, 12). The excavation area, located in a field that has been under cultivation for long, encompassed 105 m² and the finds included 1200 pot sherds, 5 quartz scrapers, 55 quartz flakes and 2 flakes of flint. The culture layer, though weakly coloured, contained finds and 19 samples were taken of it varying from three to four litres from depths of 25 to 75 cm according to its thickness in various places. Three overlaying samples were taken from one grid square. The samples were analyzed by sieving (sieve sizes 2, 1, 0.5 and 0.25 mm).

The plant remains from the samples consist mainly of carbonized, but also of some uncarbonized, seeds. There were also needles of juniper *(Juniperus communis)* and some nut shellfragments *(Corylus avellana)* which were also found in the excavation. Close to 2100 seeds were identified and the amount per sample was directly proportional to the sampling depth of the culture layer in that the number of identified seeds grew less in the deeper layers. The most common species were *Chenopodium album* (1755 specimens – all samples), *Polygonum aviculare* (74 specimens), Carex (11 specimens), Poacae (11 specimens), *Scleranthus annus* (8 specimens), *Spergula arvensis* (9 specimens) and *Juniperus communis* (33 seeds in addition to carbonized needles). A total of 31 species were identified, of which rushes are also to be mentioned. Samples 7 and 10 contained two carbonized grains of barley (Hordeum) and sample 11 one carbonized grain of wheat (Triticum). These were found at depths of 20–40 cm below the surface.

This analysis would easily suggest that the inhabitants of the Dalamalm site had cultivated barley and wheat as indicated by the carbonized grains. The explanation is however not unequivocal: the site is in a field and the grains were found in the upper sections of the culture layer. In the western part of the excavation area an oblong pit ca. 2.5 metres long and 1.5 metres deep was investigated. The pit had been dug into the bottom sand layer and contained a large amount of charcoal and charred wood. The wood consisted of branches the thickness of a finger and larger pieces of wood. A grinding stone was found in the upper part of the pit. In addition a Migration period spearhead had previously been found in the field. The three C^{14} datings from the charcoal give a uniform result (Hel-1646 620 ± 100; Hel-1647 600 ± 100; Hel-1648 540 ± 100), with a difference of only 80 years between dates. The mean dating is 1350 a.d. The datings were made of pieces of charcoal of different thickness collected at different depths and the difference of 80 years in the results can well reflect the ages of the trees. Even if the construction of the pit showes some traces similar to graves of the Battle-Axe culture its function is still unknown. It does, however, indicate that the place had been in use in Medieval times, possibly in connection with the settling of the area. Thus, source-critically the three above-mentioned grains cannot be connected with the Battle-Axe culture. Also the topography of the site suggests otherwise.

The site is at a maximum elevation of 25 m asl which means that during the time of the Battle-Axe culture it was at a distance of less than 100 metres from the shoreline. The shore zone was a meadow on muddy ground that had only recently risen from the sea. The lower limit of the nearby Tallmalmsåsen site dated to phase III: 1 of the Comb Ceramic Culture is 23.5 m asl. Therefore, according to the results of this

analysis agriculture was not practised at the Dalamalm site in Middle Neolithic times.

The above result is also supported by a recent study of grain impressions in ceramics, which with respect to Stone Age material is the first of its kind in Finland. Of the 1200 sherds from Dalamalm, which form a stylistically uniform whole, viz. there are no cordimpressed vessels – only pottery with heeringbone motif –, a total of 27 impressions of some part of a plant were found. Of these seven were of the stalk and were hard to define as were three seed impressions. Sixteen impressions are most probably those of the seeds of elder *(Sambucus racemosa)*. The only seed impression that could be defined with certainty was that of *Chelidonium majus*. There was not a single cereal grain impression in the material, whereas in Europe they are not uncommon in Neolithic pottery. The results are unequivocal: they show in a concrete manner that the Dalamalm population apparently did not practise cultivation. The results are also of interest from the point of view of botany and cultural history. Elder is known to be a companion to man and the flowers of the black elder have been used for medicinal purposes and the berries are edible. *Chelidonium majus* is a species that is known to thrive near human settlement. It is common i.a. near prehistoric fortifications, which has been interpreted as evidence of its use as a medicinal plant. The milky sap of the plant contains alkaloids and it has been used in the treatment of eye diseases, jaundice and scabs, among other disorders. According to Merja Seppä-Heikka, the impression in the Dalamalm material is the first paleobotanically observed occurrence of the plant in Finland.

The second site studied was the site Tengo Nyåker in Kirkkonummi (Edgren 1970, 66), where Aarne Äyräpää excavated an area of 60 m² in 1926 (Äyräpää 1922, no. 146). In 1982 78 m² were excavated. The total excavated area is 138 m², which is about 3/4 of the total extent of the site. Over 8000 pot sherds have been found at the site and, along with the rest of the material, it displays a more varied and many-sided nature than the Dalamalm material. The grain impression study of the ceramic material is still in progress and no results are as yet available. It can, however, be mentioned that the site is situated close to Lake Lappböleträsk from which there is a pollen profile published by K. Tolonen, A. Siiriäinen and A-L Hirviluoto (Tolonen et al. 1979, 10). There are however no indications of agriculture as early as the above; the first Cerealia pollen are from as late as the Roman Iron Age.

Because the Tengo Nyåker site is previously known i.a. because of the find of a ceramic spoon, which may be interpreted as an artefact connected with agriculture, it is to be mentioned that such a spoon was also found in the 1982 excavations (Fig. 1). It is of the same type as the previously found one (Edgren 1970, 66 and fig. 14 c). The bowl of the spoon is 65 mm long and the handle, which is broken, formed a direct continuation of the bowl. The excavation finds also include a fragment of a small battle-axe formed of clay, with a parallel in the material from the Perkiö site in Hauho (Edgren 1970, fig. 15 and p. 92). It is interesting to note that spoons and miniature axes of clay of about the same age are found only in two areas, the Corded-Ware group of Oberlausitz (Coblenz 1952, 1954; Höckner 1957) and the Balanovo group, the easternmost division of the Fatyanovo culture (Häusler 1969). In Balanovo, however, the form and orientation of bowls and handles of the spoon are different and the miniature axes of clay are from children's graves (Bahder 1963). The distribution seems to indicate that both artefact forms belong to the original common heritage of the Battle-Axe cultures in the same way as cordimpressed and »short-wave moulded» pottery (Becker 1955; Edgren 1958; 1970, 25) and underline

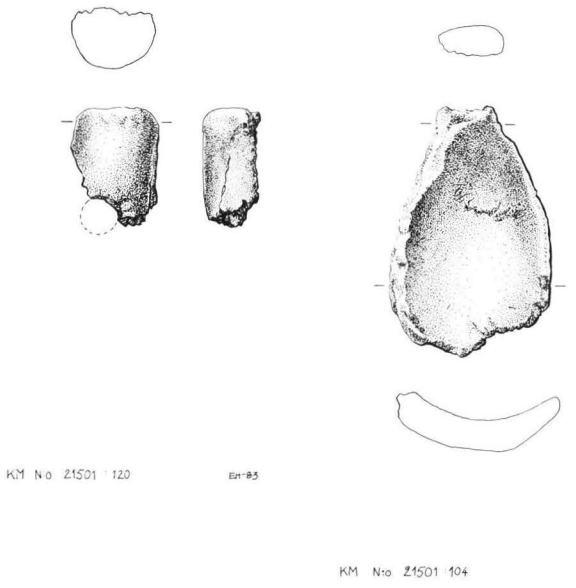

Fig. 1. Fragments of a miniatyre battle-axe and a spoon from Tengo Nyåker i Kirkkonummi. Both burnt clay. Length of the spoon 65 mm.

the general European and at the same time archaic nature of the Battle-Axe culture of Finland.

If in the above cases we keep to the positivist viewpoint – which may still be indispensable in archaeology – viz. that reliable knowledge can only be based on that which can be positively achieved through observation and achievement, the Dalamalm results do not support the agricultural theory. Suffice it to add that also J. Donner and C. F. Meinander have come to similar conclusions regarding the nonagricultural status of the Battle-Axe culture in reviewing present pollen studies (Session of the *Societas Scientarum Fennica,* 21. 3. 1983; cf. also Meinander 1984).

A discussion of the north-east boundary of the Battle-Axe culture, mentioned at the beginning of this paper, is also called for. Äyräpää regarded this as mainly a climatic boundary effected by farming but also, as he states, »a boundary between nationalities at the same time» (Äyräpää 1952). Previously I have myself been of the same opinion and I have furthermore stated that the north-east boundary of the Battle-Axe culture is at the same time the south-west boundary of the Pöljä asbestos ceramic group and of fir, spreading from the east. However, if all three phenomena are combined in the same map, it can be seen that the issue is not as unequivocal as assumed (Fig. 2). The demographic nature of the boundary can be seen only in Southern Ostrobothnia. The whole of the Finnish lake region is nearly devoid of evidence and the nearest Pöljä sites are further away than the western boundary of the growth of fir.

Ari Siiriäinen has recently dealt with this problem, among others, in his studies on Stone Age economic structure in Finland (Siiriäinen 1981, 1982). Supporting his arguments mainly with the numbers of Middle Neolithic sites, Siiriäinen has assumed that a clear demographic drop began in the early stages of phase III: 1 of the Comb Ceramic and was at its lowest during phase III: 2 and the Pyheensilta phase and that this was caused by a sharp drop in the seal stock. The decline was not only

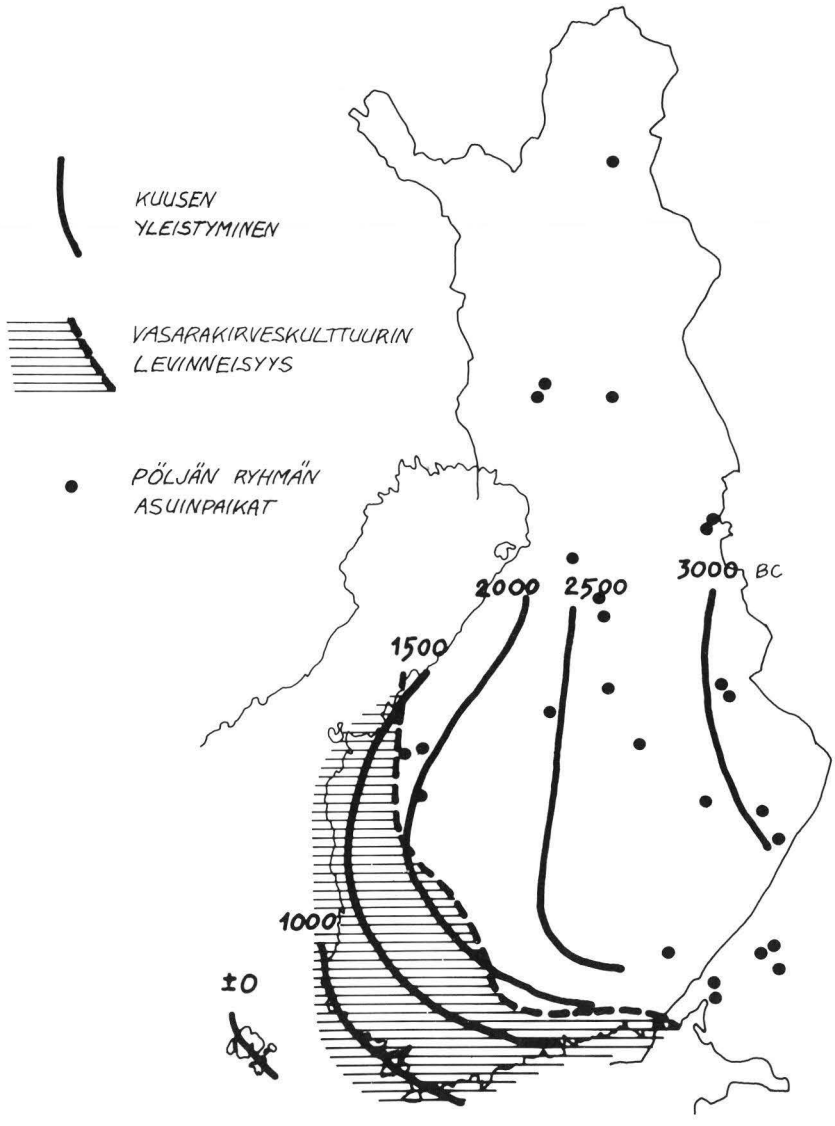

Fig. 2. Map showing the distribution of the Battle-Axe Culture in SW Finland, the spread of fir and the distribution of sites belonging to the Pöljä asbestos ceramic group.

demographic but could also be observed in the »level» of culture. Moreover, Siiriäinen is of the opinion that the arrival of the agricultural Battle-Axe culture could have been the result of this lack of settlement while the hunting-fishing population which was still strong in the inland and in East Finland prevented the spread of the culture northwards. It was only by ca. 2000 BC that the western boundary of fir reached the northern boundary of the Battle-Axe culture. The model is, no doubt, interesting but is also contains considerable sources of error. There are no other indications of the assumed drop in the seal stock in the Baltic than the assumed demographic decline, which in turn is based on the assumed decline in the seal stock.

The demographic estimates are in turn based on a list of sites from 1969, to which have been accepted only a part of the coastal dwelling sites. Thus, phase III: 1 is represented by only 12 sites, whereas in Anne Vikkula's recent study the corresponding number is 35, nearly triple (Vikkula 1981, 52). It must be stressed, however, that this is still only about one fifth of the number of Battle-Axe culture sites. Also the large and expansive Pitted Ware sites in Central Sweden and on the Åland islands were based on real hunting and indicates that there was no decline in the seal stock in the Baltic. On the contrary the seal may have dissapeared from the inland lakes exc. for the Päijänne and Saimaa Basins as a result of extensive hunting and chanched ecological conditions. This may have caused a temporary decline in the population and movements to the coastal regions.

Nor can we know how the number of hunter-fisher sites can be used for demographic conclusions, because the seasonal mobility of the hunting/fishing population, due to its means of livelihood, is an unknown factor (cf. Edgren 1982). For example, it can be assumed that a population group of the Typical Comb Ceramic phase, which changed sites often, left behind more site finds than a corresponding group of the Late Comb Ceramic in the same amount of time. Some phenomena seem to support assumptions of such a settlement pattern. What then is the situation regarding the »content» of the culture? In my view, the Pyheensilta sites and for example the recently found bog site of Järvensuo in Humppila are clear indications to the contrary. Technologically speaking they are on quite a high level. These are of course extreme examples, but the main course is clear. The Comb Ceramic population was after all as fare as we know a little smaller during the Late Comb Ceramic than previously.

Äyräpää stressed the peaceful co-existence of the Comb Ceramic and Battle-Axe populations without economic conflicts due to the differing natures of the respective economies. As it is now quite obvious that the Battle-Axe culture did not practise agriculture, the assumption arises that the decline of the Comb Ceramic population may have possibly been caused by the invasion of the Battle-Axe population and that co-existence was in fact less peaceful. This is suggested also by other evidence than the negative analysis results from Dalamalm. The analyses of bone materials from the Jönsas site in Vantaa need to be mentioned especially in this connection (Forstén & Blomqvist 1977). Jönsas is the only Battle-Axe culture site with enough osteological material preserved to facilitate determinations. The results do not in any way differ from the characteristic features of the coastal sites of the Comb Ceramic hunting-fishing population. There is a large amount of seal bones, both *Phoca hispida* and grey seal with beaver as the next abundant species of mammal. Possibly knowledge of the abundancy of seal led the Battle-Axe population to move to Finland, where it had to compete with the Comb Ceramic culture for available resources.

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