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BEYOND POST-HOLES: AN INVESTIGATION OF PRE-ROMAN HOUSE REMAINS AT MICKELS IN ESPOO, S. FINLAND

Abstract

The starting-point of this article is the problem of defining the floor-plan of a prehistoric dwelling investigated in trial excavations at the site of Mickels in the city of Espoo, S.Finland. Reconstructions of plan on the basis of post-holes are not always convincing and with the lack of them are altogether impossible. At the Mickels site the distribution of daub from the walls of the building was used in connection with methods of recording and documentation that were more detailed and precise than normally. Statistical and cartographic methods were used to outline the form of the walls with the result that there was originally a four-sided construction (or constructions) at the site. Ceramic finds date Mickels to the Pre-Roman Iron Age and the site was also a locus of contact for ceramic traditions of the coastal regions and the inland.

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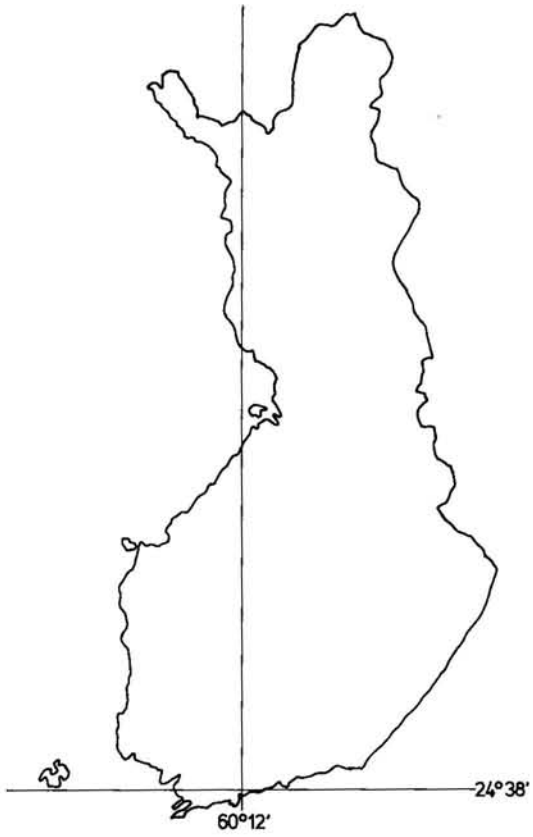
"Snart sagt i alla tider tycks det ha funnits både runda, fyrkantiga och rektangulära hus, och det har verkligen inte så stor betydelse vilketdera som är fallet."[1] – Mats P. Malmer (1976 43).

INTRODUCTION

Extensive trial excavations were conducted in 1978 at the prehistoric site of Mickels (Fi. Mikkelä) in Espoo due to planned housing construction. The site is approximately one kilometre from the centre of Espoo and covers ca. 700 × 400 metres in area (Fig. 1). The excavation was conducted partly by earth-moving machinery and partly by hand. In addition to smaller areas of finds it was possible to locate a concentration of daub and sherds that was dense with limited boundaries. The daub and the special features of the ceramics suggested a dwelling site of the beginning of the Iron Age, although the elevation of the area relates to Late Neolithic shorelines (cf. Meinander 1954 67–68). On the basis of these results it was necessary to conduct a detailed excavation of the site the following season.

The trial excavation had already raised the question of identifying the shape of the building by archaeological methods. At the time archaeological reconstructions of the floors and plans of prehistoric dwellings were mainly based on so-called post-holes and these results were extensively criticized (Meinander 1976; cf. Matiskainen & Jussila 1984). The trial excavations at Mickels did not reveal any features that indicated post-holes. In planning the 1979 excavations it was necessary to employ a different approach. The basic question in this respect was, what happened to clay lining and daub when the dwelling or building was burnt; in archaeological terms only ceramified daub remains in addition to soot and charcoal where these are preserved. This led to the basically simple assumption that

[1] "Briefly put, there appear to have been both round, square and rectangular houses in all periods and it is really of not much importance which of these the case in question is."



Location of the Mickels site

in a fire most of the daub would fall by the walls, although definite sources of error must be taken into account, such as the falling of the walls inwards or outwards, the construction of a new building on the ruins, recent disturbances etc. Accordingly it could be possible, at least in principle, to outline the shape of the walls and thus the whole dwelling through statistical and cartographic methods.

This in turn led to the question of the field methods to be applied. The chief aim was to record the finds with such precision and detail that statistical noise could be minimized. The system of recording and measuring had to be flexible and of a routine nature, as the schedule for the salvage excavation was limited. Of the standard techniques, the conventional 2 × 2 metre square and even the alternate 1 × 1 metre square were too large. On the other hand, the measuring of coordinates for each find of daub would have been too laborious and entailed the possibility for error. A solution was reached whereby all of the finds at Mickels were recorded and documented in 10 × 10 centimetre units (or cells) within 2 × 2 metre excavation squares. This method is naturally a painstaking one and there is not much reason for its use unless there are definite aims and goals set for the excavation.

THE MICKELS SITE, EXCAVATION RESULTS AND FINDS

The site of Mickels is on a southern incline gently sloping towards the Espoonjoki River. According to a map from 1698 by the surveyor Samuel Broterus (Archives of the National Board of Survey, Helsinki) the site was under cultivation already at that time. Precise levelling carried out in 1978 (Hiekkanen 1978; 1979) showed the dwelling site to be on a small hillock rising slightly from the surrounding terrain (Fig. 1). This is a lenticular feature of fine yellow sand measuring ca. 30 × 40 metres and surrounded by clayey soil. The sand changes into clayey soil at an elevation of 18.1 metres above sea level on the side of the river. The dwelling site extended to only the south-east part of the sandy feature as shown by the distribution of finds and cultural layer.

The cultural layer was patchy and relatively thin (15–20 cm). Along with clay daub two kinds of features were discovered – hearths and refuse pits. There were two or three hearths depending on whether one can interpret two adjacent and partly concentric concentrations of stones as one or two hearths. One of the hearths was approximately 8 metres to the south of the dwelling in the clayey zone. It was of round regular form and approximately one metre in diameter. The stones were fire-cracked with soot in between them.

A total of six features interpreted as refuse pits were found. Of these three were in the area analyzed in closer detail and marked in the map in Fig. 9. The refuse pits were in different parts of the site, but most of them appear to have been outside the dwelling. The pits measured 1–2 metres in diameter and 0.3–0.5 metres in depth (measured from the boundary of topsoil and cultural layer). Containing a large amount of soot, the pits were clearly distinct from the surrounding light-coloured and broken cultural layer. The pits also contained more fragments of ceramics and daub than the surrounding areas, which was especially evident in a large refuse pit in the north-west part of the excavated area (Fig. 9). The finds from the site include ceramics, daub, stone artefacts, quartz flakes, fragments of burnt bone and a flake of flint. Table 1 shows

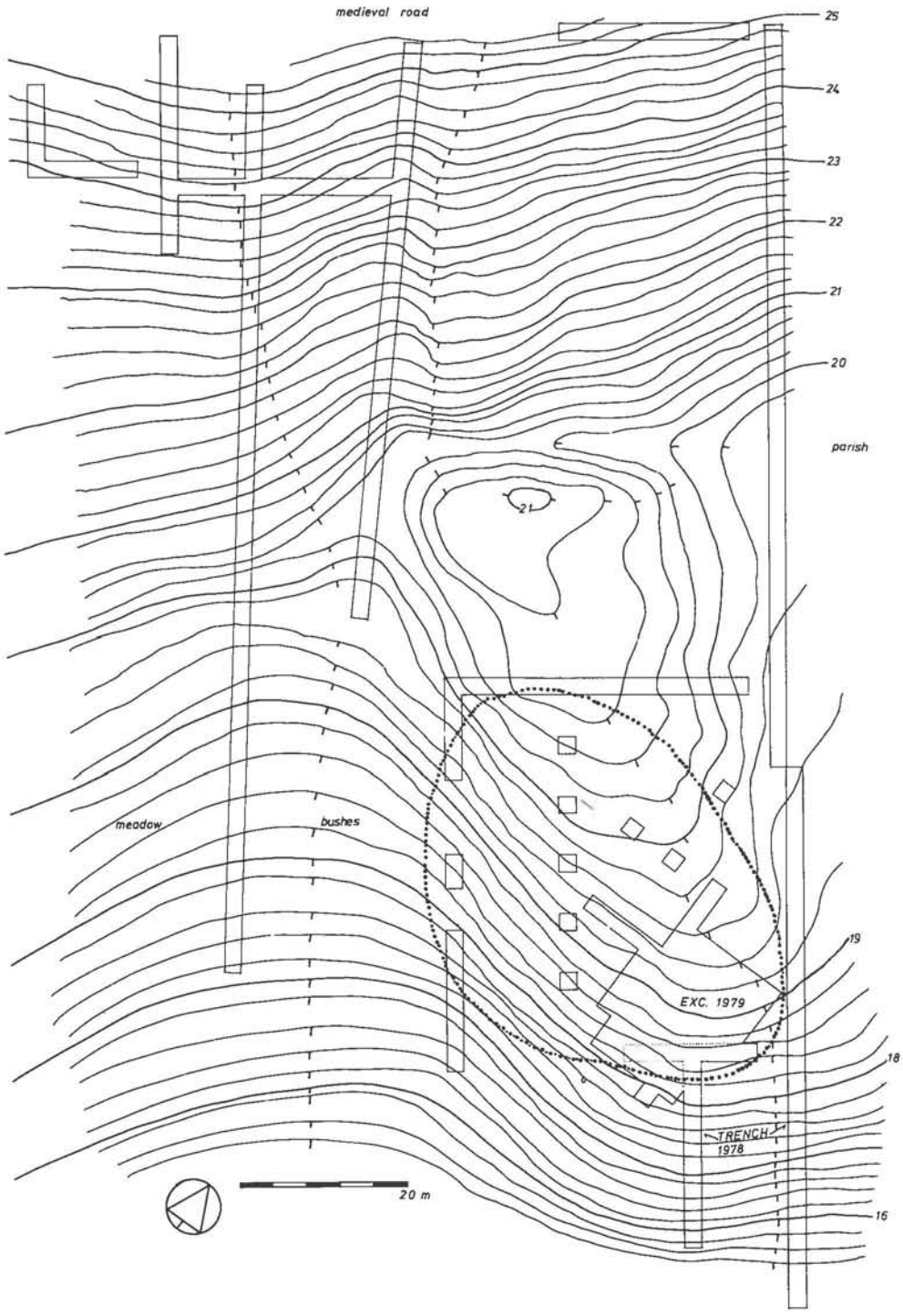


Fig. 1. Areas excavated at the Mickels site in Espoo in 1978 and 1979. The map shows trial trenches opened in 1978, the area excavated in 1979 and the sand/clayey soil boundary. Contours at 20 cm intervals. Drawn by P. Honkanen, T. Seger & M. Hiekkanen 1978–1979. City of Espoo/ National Board of Antiquities.

Table 1. Frequencies and weights of the various find categories of the investigated area.

	DAUB		CERAMICS		QUARTZ		FRAGMENTS OF TOOLS		BURNT BONE	
	N	Grams	N	Grams	N	Grams	N	Grams	N	Grams
Top-soil	2268	7690	602	1491	21	262	3	447	3	1,5
Cells	1701	7501	364	1284	10	350	5	1115	10	7
Total	3696	15191	966	2775	31	612	8	1562	13	8.5

the distribution of finds between the topsoil layer and the cultural layer. It can be noted that the mean weight of the fragments of pottery and daub from the topsoil layer was considerably less than that of corresponding material from the cultural layer. Centuries of field cultivation had crushed the sherds in the topsoil and they had also been affected by weather. The excavations also revealed that despite the working and ploughing of the field the topsoil finds displayed little lateral translocation. This was demonstrated by the refuse pits; the composition of the topsoil was clearly anomalous at the locations of the latter. Also in the topsoil there were considerably more potsherds and fragments of daub at these locations.

With the exception of ceramics the finds do not display any marked features. Quartz was found only in flakes and it was impossible to analyze the fragments of burnt bone due to their minute size. The stone artefacts are mainly large hand-held grinding and polishing stones of irregular form. A blade fragment of an adze was also found which may be classified among the gouges of the so-called Kiukainen type (Meinander 1954a 102–103).

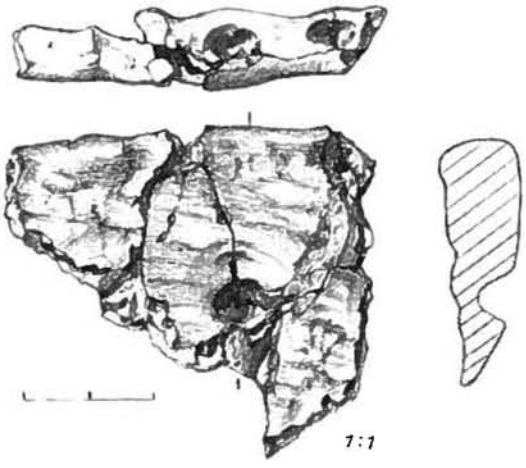


Fig. 2. Pottery of Bronze Age type from Mickels with pit decoration. NM 20602:171. Drawing by R. Ahola/National Board of Antiquities.

The potsherds found at the site are all of post-neolithic date and fall into two main groups. In the first group the temper consists mainly of crushed feldspar along with other lithic materials. The vessels were of even base and in many cases they had a distinct neck part. The rim is of even width and is often bent slightly outwards. The surface is smoothed ("scratched") either on the inside or the outside with what appears to have been a bunch of straw (cf. Jaanusson 1981 43): in some of the sherds the outer surface had weathered away, a feature evident in ceramics of the same type elsewhere (e.g. Edgren 1969 22). At least one of the vessels was made on a textile surface as indicated by impressions on a base sherd. There are no textile impressions on any of the wall sherds.

The vessels were sparsely decorated and ornamentation was limited to three parts: below the rim, the widest part of the vessel and the upper surface of the rim. The motifs applied to the surface consisted of different stamp impressions such as short comb and oval impressions and pits. In two of the vessels there was a single row of pits below the rim (Fig. 2) which can be interpreted as a feature of Bronze Age pottery (Meinander 1954b 171–173). In at least two of the vessels the widest part is covered by a band design possibly of comb stamps with rows of pits below and above it (Fig. 3). In some cases the decoration displays a rhythmic application of motifs (Figs. 4 & 6).

The upper surface of most of the rim sherds is decorated with irregular impressions that are hard to interpret in any further detail (Figs. 2, 4–6). There are also rim sherds with distinct pit

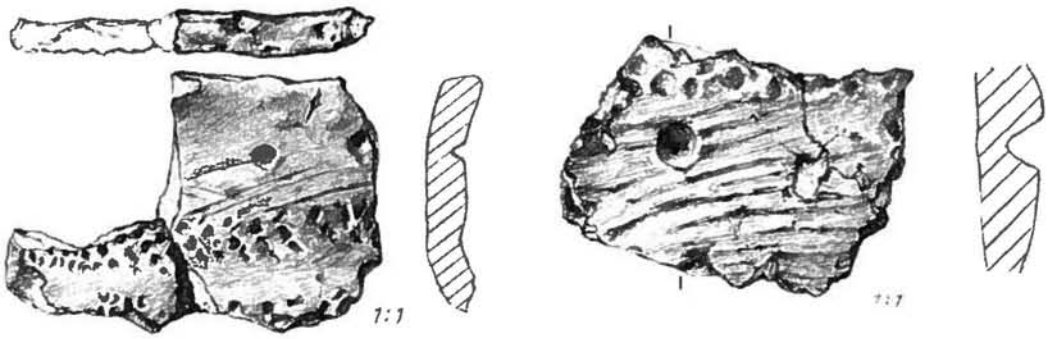


Fig. 3. Morby Ware from Mickels. Decoration consists of pits, comb stamp impressions and indistinct impressions. NM 20602:461, 850. Drawing by R. Ahola/National Board fo Antiquities.

impressions (Fig. 2). Decoration of the upper surface of the rim can also be found in vessels that are otherwise undecorated (Fig. 5).

The temper, form, surface technique and decoration of most of the pottery of this group permit its classification as Morby Ware, dated to the Pre-Roman Iron Age (Meinander 1954b 173–177; 1969 40–47). Some of the sherds can be defined as being of Bronze Age *type* on the basis of their pit decoration (Meinander 1954b 171–173).

Differing completely from the above are approximately twenty extremely thin sherds with smooth surfaces and finely crushed asbestos temper. Two of these are decorated. One of the decorated specimens, a rim sherd (Fig. 7), has a design below the rim consisting of two diagonal comb stamp impressions above a horizontal band drawn with a comb stamp and with a pit impression. The upper edge of the other decorated sherd (Fig. 8) displays part of the above band below which are four vertical comb stamp impressions next to each other. In the lower part of the outermost impressions are two diagonally incised comb stamps. – This asbestos-tempered pottery belongs to the so-called Luukonsaari group of the inland regions of Finland and was in use from the latter part of the Bronze Age to the Roman Period of the Iron Age (Meinander 1969 59–63). A few sherds of Corded Ware were found in the northernmost trench at an elevation of 25 m. a.s.l.

The ceramic material from Mickels indicated two different traditions. The first ceramic

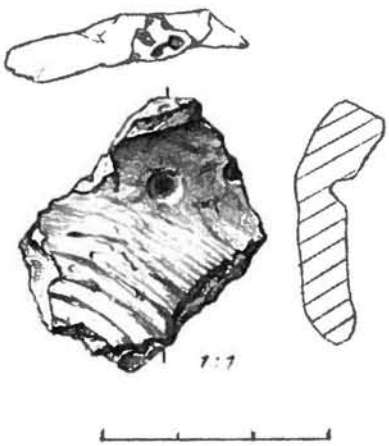


Fig. 4. Morby Ware from Mickels. Decorated with pits (note grouping) and indistinct impressions on the rim. NM 20602:197. Drawing by R. Ahola/National Board of Antiquities.

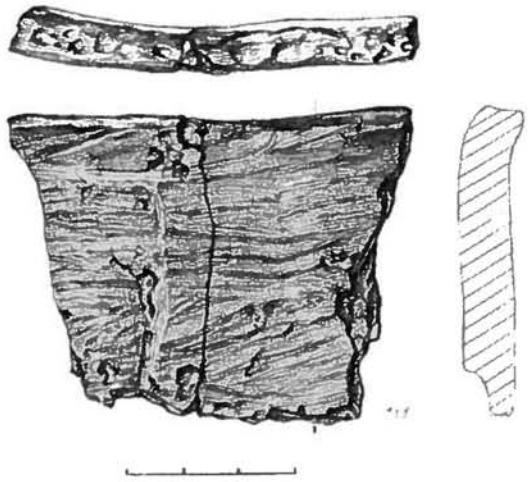


Fig. 5. Ceramics with scratched surface from the Mickels site. Decorated with indistinct impressions on the rim. NM 20602:771. Drawing by R. Ahola/National Board of Antiquities.

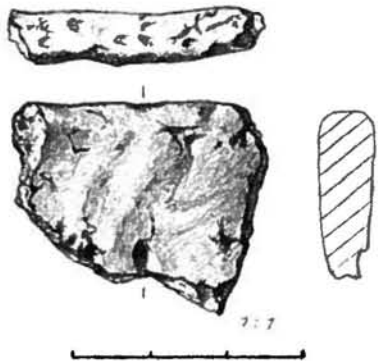


Fig. 6. Morby Ware from Mickels. Decorated with rhythmically applied "cat's paw" impressions. NM 20602:1035. Drawing by R. Ahola/ National Board of Antiquities.

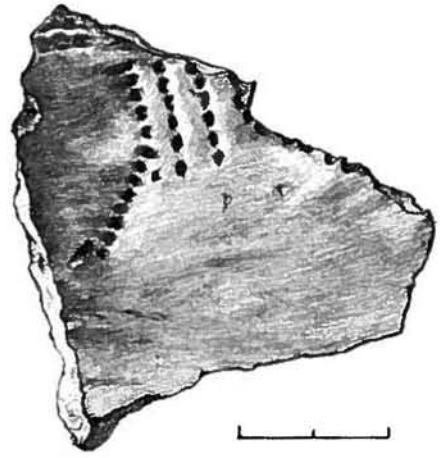


Fig. 8. Luukonsaari Ware from Mickels. Decorated with comb stamps and drawn comb impressions. NM 20602:1275. Drawing by R. Ahola/National Board of Antiquities.

tradition is that of Morby Ware and the closely related West Finnish Bronze Age of the coastal regions and connected with early farming populations (Meinander 1969 48–55). The second tradition is that of the Luukonsaari group, in turn connected with the hunting-fishing population (Meinander 1969 55–60).

The site is a rarely encountered locus of contact between the coastal and inland regions (see e.g. Meinander 1954b). A site of this kind indicating exogamic practices may also provide suggestions concerning the mechanisms by which slash-and-burn cultivation spread at this time to the lacustrine regions of Häme in the inland (cf. Donner 1984; Tolonen 1984).

As mentioned above, the elevation of the site corresponds to late Stone Age shorelines. The datable artefacts on the other hand are clearly of the early Iron Age, which must be regarded as the decisive criterion for dating. During its period of use the site of Mickels was not on the shore, but at a distance of several hundred metres from Espoonlahti Bay with an intervening area of clayey soil – an indication in turn of means of livelihood based on cultivation and husbandry.

ANALYSIS

As no post-holes were observed in the excavation, the only way of seeking an answer to the problem of the plan of the dwelling(s) at the site was through analysis of the distribution of the

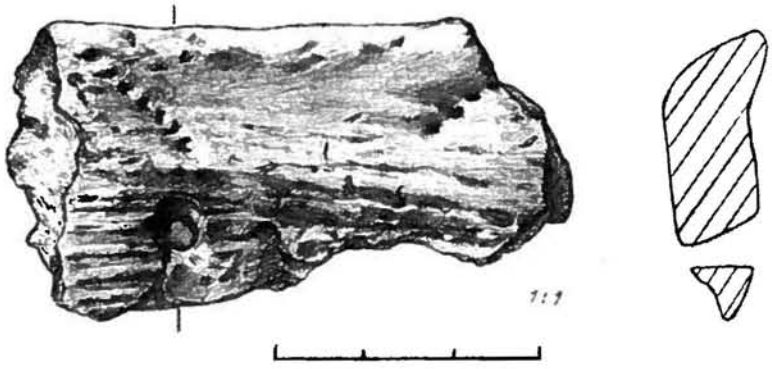


Fig. 7. Luukonsaari Ware from the Mickels site. Decoration consists of comb stamps, pits and drawn comb impressions. Rim undecorated. NM 20602:847. Drawing by R. Ahola/National Board of Antiquities.

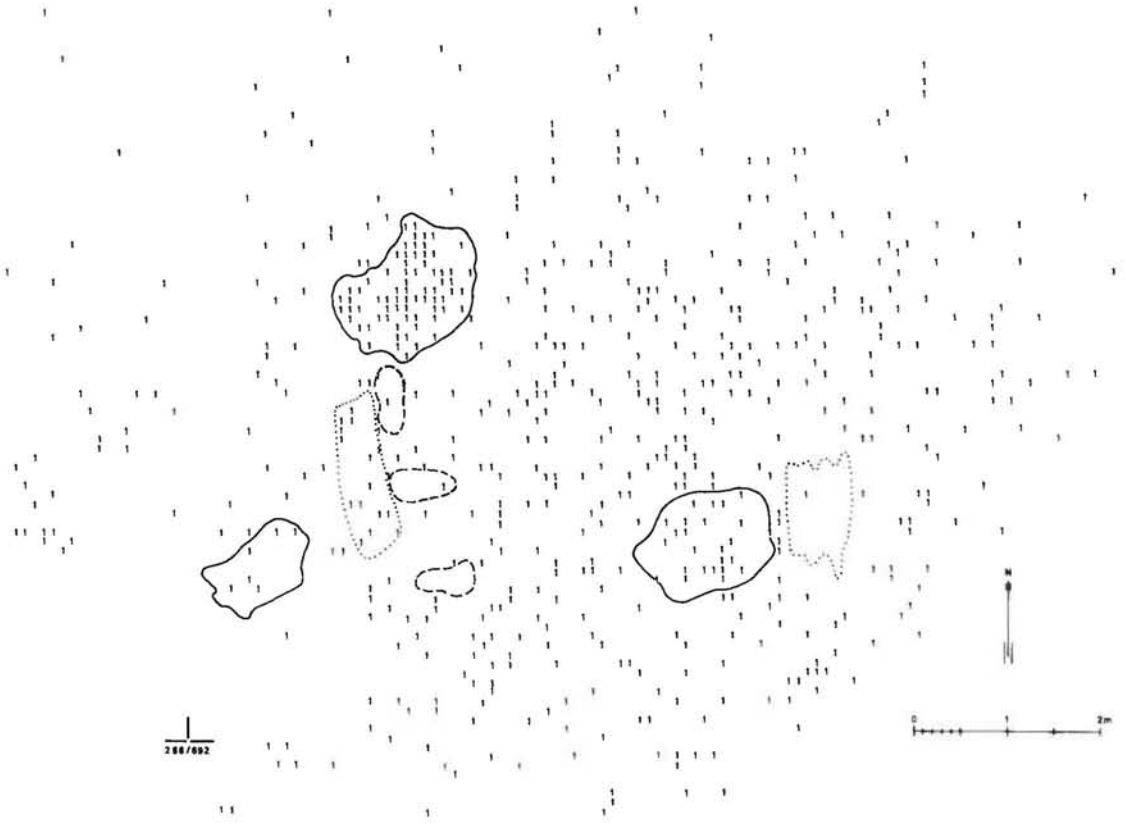


Fig. 9. Unweighted distribution of daub. Cells with daub marked with the figure 1. The map also shows refuse pits (unbroken lines), three stone settings (dashed lines) and two recent disturbances (dotted lines). Of the latter the one to the west is a contemporary pit for slaughter waste and the one to the east a disturbance apparently made by the back wheel of a tractor. Grid coordinates (266/692) marked in the SW corner of the map. Drawn by T. Seger.

finds and especially the fragments of daub. The detailed analysis was limited to the above-mentioned clearly demarcated area (ca. 100 m^2) with its concentration of daub. The frequencies and weights of the find categories in this area are given in Table 1.

This procedure entails several potential sources of error:

(1) The investigated area was a field where the topsoil had been disturbed by ploughing.

(2) Especially the largest of the refuse pits indicated two phases of construction. This feature contained dark discoloured soil, sherds, quartz flakes and a large amount of burnt daub, which suggests the possibility that after the first (?) stage of construction had been destroyed by fire the remains were cleared into the refuse pits.

(3) It can be assumed that upon falling down, a wall of wattle-and-daub does not leave a trace in the ground that is straight or perfectly circular.

The topsoil finds were excluded from the analysis. On the other hand, the underlying cultural layer appeared to be untouched with the exception of a couple of recent disturbances that were small in area and clearly limited (Fig. 9) and analysis concerned this layer.

At the outset it can be thought that the analysis could be based on a simple points distribution for each of the finds. In the planning of the excavation it was decided however to record all of the subtopsoil finds in 10 × 10 cm units or cells. This technique has the distinct advantage of permitting quantification in units by both *frequency* and *weight* which in turn facilitates more varied statistical approaches.

At first the frequency and weight of daub fragments of all of the excavation layers of each cell were summed. This provided quantitative measures to be used as variables in analysis. The question that arose in this connection was whe-

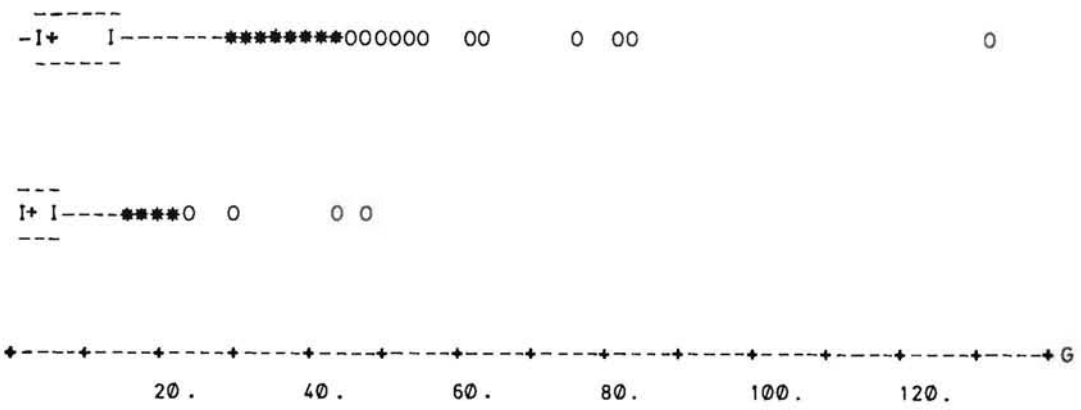


Fig. 10. Distributions of daub (upper) and ceramics (lower) in cells presented as box plots. The axis indicates grams, the + symbol the median; the I's hinges and the *'s and O's outliers. Drawn by T. Seger.

ther to use counts of frequency or weight as the relevant values.

For this reason the correlation between the number of daub fragments and their weight was computed and it turned out to be significantly negative ($r = -0.081847847$, $N = 627$). This shows that in the case at hand weight is a more reliable criterion of distribution that the number of fragments and also demonstrates the reason why a points distribution map would not have been suitable. The decisive factor is naturally the volume of daub in each of the cells and not its degree of fragmentation (see also Orton 1980 156–178).

The simplest possible graphic presentation of distribution employing computer methods is a map based on a binary code where the zero indicates empty cells and the figure 1 cells containing daub (Fig. 9; zeros deleted). The map also shows the refuse pits in the area concerned, three small stone settings and the above-mentioned recent disturbances. The overall impression of the map is confusing. With the exception of the large refuse pit forming a distinct concentration of finds in the north-west part of the area the distribution does not permit one to discern any structural shapes (the straight boundary at the south-east corner is due to the fact that here the excavated area bordered on a trial trench of the 1978 excavation which was not documented or recorded with the same techniques). The above indicated that a mapping of unweighted distribution was insufficient for the set aims.

A density contour map (e.g. Seger & Nieminen 1983) was not suitable in this connection, either. Interpolated curves formed around the units clearly provide no answer to the question of the linearity or curvature of the walls of the prehistoric dwelling.

The most suitable alternative appeared to be a weighted distribution map which preserves the cells as such; in other words each cell is given a

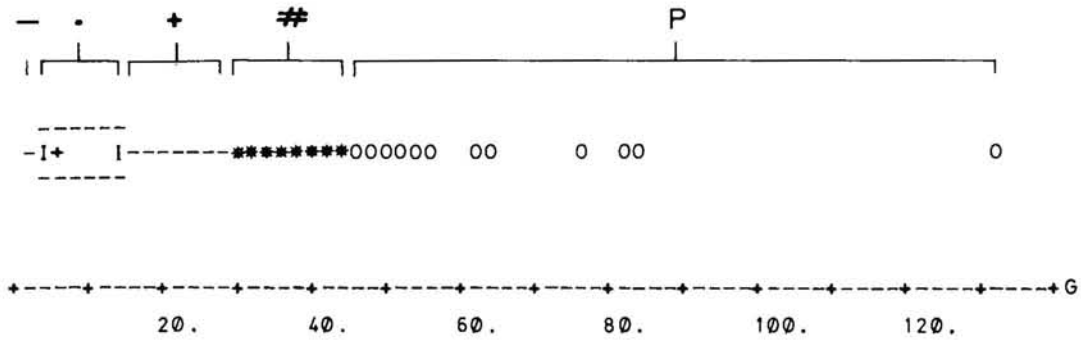


Fig. 11. Classes with code symbols used in the statistical analysis marked above the box plot displaying the distribution of daub. Drawn by T. Seger.

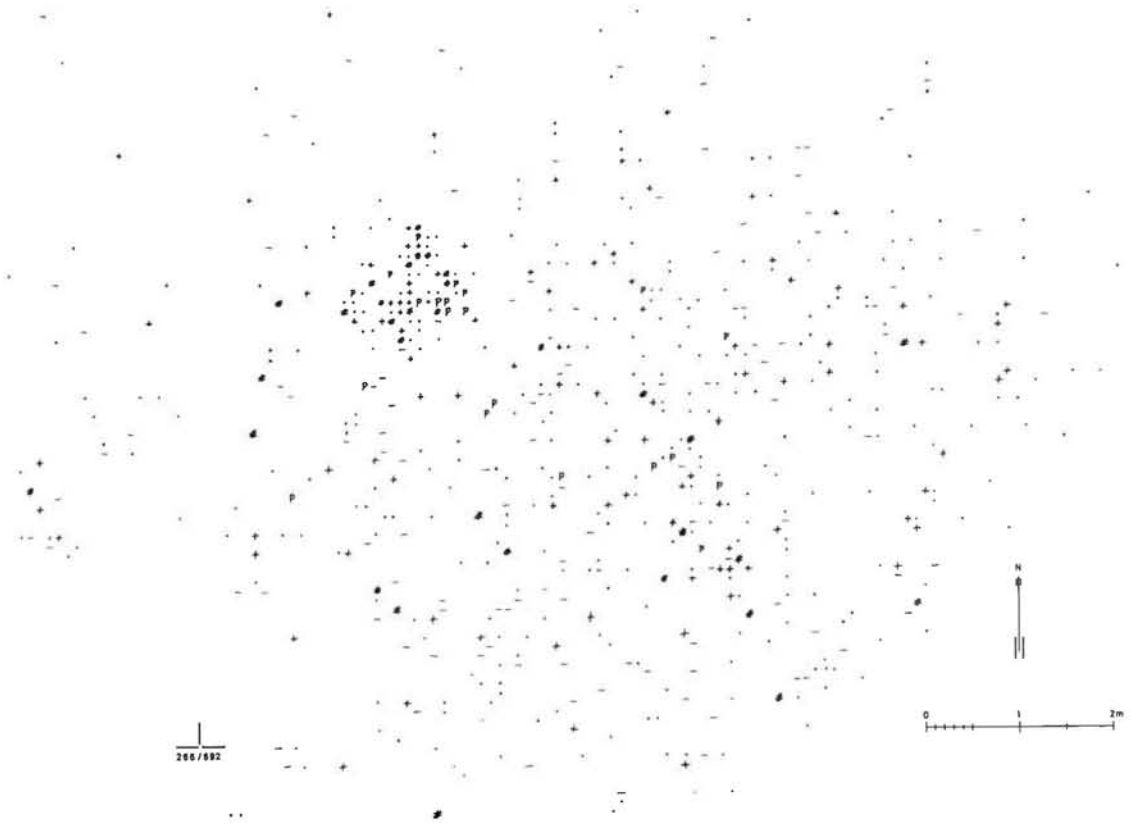


Fig. 12. Statistically weighted coded map of the distribution of daub. All cells with daub included. Drawn by T. Seger.

certain coded designation in relation to the total weight of daub found in it. A tabular map with numeric values would not have been very useful – psychological studies show that only 7 to 9 figures can be properly grasped at the same time (Miller 1956). For these reasons it was necessary to combine the unit weights into quantitative classes and to mark these with coded symbols. The resulting map attemps to show whether the units with large amounts of daub form discernible patterns.

In order to select a suitable order of classes of cell weights we must consider the nature of the distributions. The weight distributions of daub and, by nature of comparison, ceramics are given in Fig. 10 as box plots (Tukey 1977; McGill et al. 1978; Velleman & Hoaglin 1982; Ryan et al. 1982; Seger 1985). The box plot is one of the most simple and graphic means of representation in EDA (Exploratory Data Analysis). The main quantities considered are the median of the cell values, dividing the values placed in running order into two parts of equal number, and the so-called hinges (in practice quartiles; see Tukey 1977, in turn dividing the halves around the median into similar parts). In practice half of all of the cell values remains inside the box (i.e. within the hinges). A quarter remains to the left of the lower hinge and the remaining quarter to the right of the upper hinge. The values indicated with asterisks and zeros are those differing clearly from the whole (outliers).

The distributions of daub and ceramics are very skewed and resemble each other closely despite their absolute differences. Criteria of classification used e.g. in phosphate surveys such as the mean and the standard deviation and their derivatives are bound to normal distributions and are not suitable in collections of material that differ from the Gaussian distribution to such a degree as the present one (e.g. Seger & Nieminen 1983).

The methods of EDA suggest suitable criteria for the construction of classes. A coded table

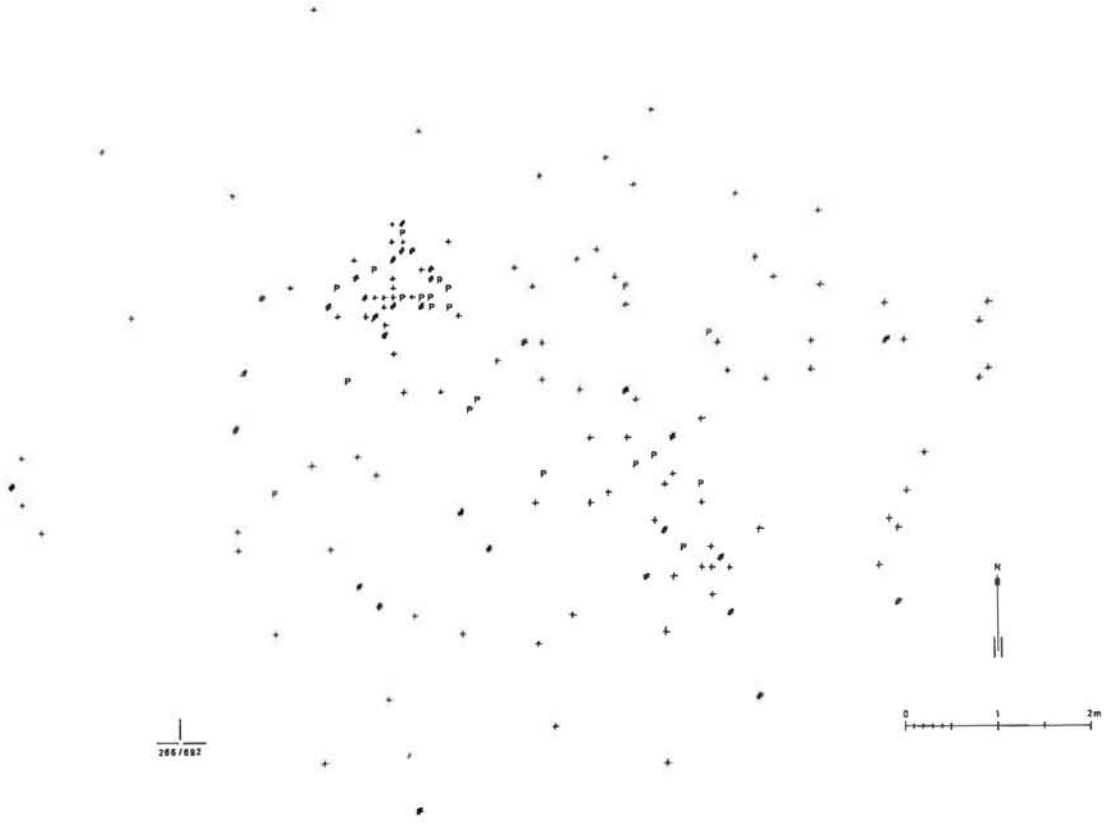


Fig. 13. Statistically weighted coded map of the distribution of daub. Only cell values higher than the upper hinge included. Drawn by T. Seger.

Fig. 14. Statistically weighted coded map of the distribution of daub. Only exceptionally high values (outliers) are included. Drawn by T. Seger.

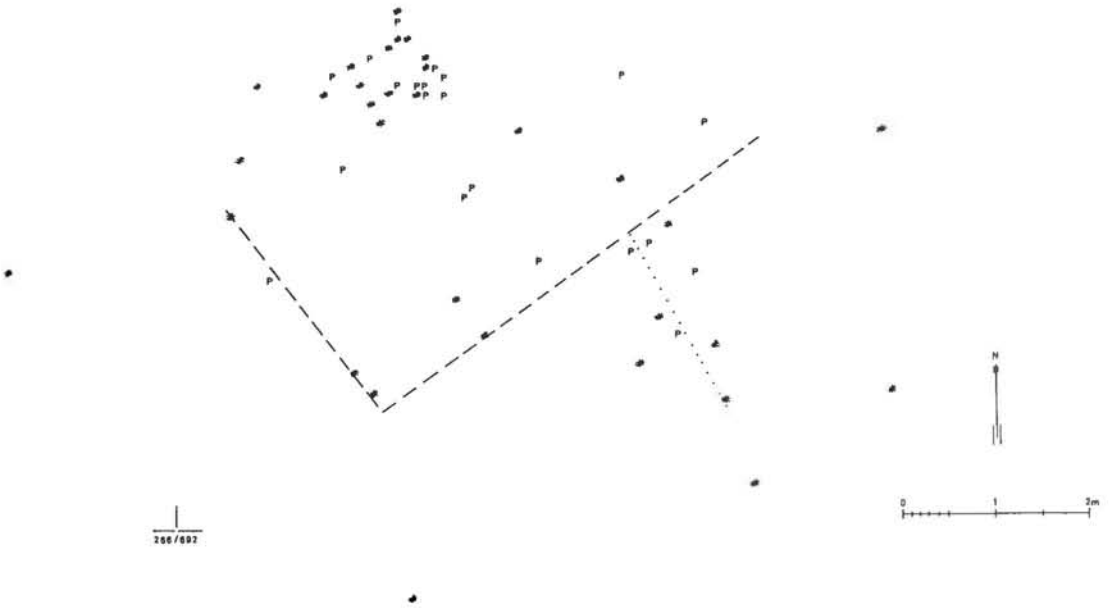


Fig. 15. The most probable directions of the walls (dashed line) and the wall of a possibly earlier stage of construction (dotted line) marked on the map in Fig. 14.

(Tukey 1977; Velleman & Hoaglin 1981), or in this case a coded map, can be applied. Here, the classification employed is based on the median and derivatives and the form of distribution of the material does not affect the results in the same way as when using means etc. Fig. 11 shows the distribution of cell weights as a box plot with the classes used in analysis and their symbols marked above.

The mathematic analysis was worked by computer using the MINITAB statistical package (Ryan et al. 1982). EDA, like other median – based methods requires ordering of the material by size. As there were 627 cells with daub in the area investigated analysis by other means would have been laborious.

Fig. 12 presents a distribution map weighted according to the above classes and marked with code symbols. It can be seen that it bears much more information than the unweighted map. However, it still has too many details that prevent the higher values from being clearly displayed.

In the following stage all values less than the upper hinge were omitted (Fig. 13). Together with an even more reduced map showing only the exceptionally high values (Fig. 14) the result permits the outlining of the structures concerned. By comparing the maps we can observe two "straight" lines of cells with large amounts of daub crossing at right angles and indicating the corner of a four-sided construction (Fig. 15). In addition to these a third line can also be observed extending SSE from the NE-SW line of the wall. This may be the remains of an earlier building.

The distribution of daub does not permit any further-going interpretations. The results can, however, be tested with the aid of other categories of finds. The distribution of ceramics does not provide much further information; potsherds correlate closely with the distribution of daub. However, there were more cells with sherds to the south and south-east of the dwelling, viz. around the hearth mentioned above, which in itself is logical. Support for the reconstruction is also provided by the other finds despite their small number (Fig. 16). The southernmost grouping of finds corresponds to a considerable degree to the above "simulated" walls (the northern concentration of finds belongs to the above-discussed large refuse pit).

CONCLUDING REMARKS

In conclusion it can be stated that the excavation of the Mickels site in Espoo revealed the re-

Fig. 16. The map in Fig. 15 with finds of quartz (1), fragments of stone artefacts (2) and burnt bone (3) added. Drawn by T. Seger.

mains of a dwelling which can be dated to the Pre-Roman Iron Age on the basis of associated finds of ceramics. The dwelling was of wattle-and-daub construction and the impressions in the daub fragments indicate that the largest pieces of wood used were approximately the thickness of one's wrist. There appear to have been at least two stages of construction that were destroyed by fire.

The house of the best preserved stage of construction appears to have been of four-sided plan, which also applies to the other constructions as well; there were no features that could be reconstructed as parts of an arc. The house was oriented NE-SW. The distribution of daub provides such a fragmentary image that it is impossible to assess the size of the dwelling. All in all there are sparse finds of ceramics and other artefacts.

Reconstruction of house-floors on the basis of post-holes is not the only available possibility. The above results could not have been obtained without two basic starting-points: firstly, fieldwork was conducted with a clear idea of why and consequently how to excavate and secondly statistical analysis employed methods specific to the nature of the material.

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ABBREVIATIONS

FM = Finskt Museum
SM = Suomen Museo
SMYA = Suomen Muinaismuistoyhdistyksen Aikakauskirja