

Mesolithic dwelling places in south Scandinavia: their definition and social interpretation

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In this paper the author assembles the evidence for Mesolithic dwelling places surviving as posts, floors and assemblages. This evidence can be used to show how space was organised, where men and women slept, and how some of the implied family relationships anticipated Neolithic practice.

Keywords: Mesolithic, Scandinavia, dwelling spaces

Introduction

There has long been controversy in Danish research over the recognition of Mesolithic dwellings. Some researchers state that there are no convincing dwellings known from the Danish Mesolithic, while others will accept a series of features as characteristic of dwelling-remains. A central point of disagreement has been whether the large concentrations of worked flints that are in most cases found to coincide with the presumed dwelling-floors can actually have been deposited inside dwellings (Bokelmann 1989; Grøn 1995; Stapert 1994; Sørensen 1996). The present paper argues that they were, but accepts that the inhabitants did not walk around on, sit on or sleep on heaps of razor-blade sharp pieces of flint. One must take the complex and socially regulated depositional processes of material inside the dwellings into account to reach a more nuanced and credible picture of what happened. As such problems are widespread in early prehistory, this discussion should be of general interest.

Spatial behaviour within the dwelling-spaces of hunter-gatherers should generally be organised in accordance with sets of culture-specific rules reflecting the social 'positions' of the individuals as well as the cosmic aspects of the dwelling-space. It is strange that such a general cultural/behavioural trait – with a few exceptions – has been given so little attention in archaeology, in spite of the massive documentation that has existed for a considerable time (e.g. Leem 1767; Ränk 1951). In cases where such spatial patterns can be reconstructed on the basis of archaeological finds, they afford direct insight into the social organisation of the groups that inhabited the dwellings (Grøn 1995; Grøn & Kuznetsov – in print). Spatial organisation within a dwelling reports a different aspect of life to specialised ritual contexts such as burials but may be equally ritualised. The type of behavioural rules we discuss here regulate not only the placing of the individuals in the dwelling-space, but also how they deal with artefacts and waste.

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An analytic focus on the spatial and temporal aspects of the depositional processes in the supposed dwelling-pits, in combination with the development of excavation and recording methods suited for this type of approach, have been successfully applied to the south Scandinavian Mesolithic material in recent years (Grøn 1995). By demonstrating repeated patterning in the spatial organisation of the material in the suggested dwelling-pits, we have been able to identify single- or multi-family dwellings, as well as lighter summer dwellings or large winter houses with central posts (Grøn 1990, 1995). The changes of the dwelling-types through time have in combination with indications of the general settlement layout (e.g. number of dwellings on the settlements, distance between them), facilitated the distinction of what seems to be long-term changes in the social organisation of south Scandinavian Mesolithic society, some appearing to anticipate Neolithic practice (Grøn 1998a).

This case study leads on to a more general discussion on dwelling-organisation as a means of elucidating cultural and social developments in hunter-gatherer societies.

Evidence for dwelling-places

Isolated floors

A number of Mesolithic 'bark floors' (which often include twigs and branches) have been found in the peat-bogs during the last 100 years. At Ulkestrup I, Zealand, Denmark, belonging to the Maglemose Culture, the best-preserved part of the floor consisted of bundles of branches 25 cm long and 5-6 cm thick. Between these were found smaller branches, twigs, remains of leaves, and leaves of Marsh Fern (*Thelypteris palustris*) (Andersen *et al.* 1982:12) (Figures 1, 2). At Duvensee, northern Germany, five Maglemosian bark floors were found, one on top of the other, the lowest one resting on a kind of *platform* made up of twigs and thick, straight branches, probably a kind of foundation in the damp peat area (Schwantes 1925:174-175). Several other floors are known from the area (Bokelmann 1971, 1981a, 1981b, 1986, 1989, 1991, 1995; Bokelmann, Averdieck & Willkomm 1985). At the submerged Ertebølle site Møllegabet II, the remains of a layer of bark, twigs, and bracken leaves (*Pteridium aquilinum*) (Sarah Mason, pers.comm.) were found in a 5.2 x 3.2 m large and up to 20 cm deep dwelling-pit with the lower parts of some wall stakes preserved at its edge. The northern side of the dwelling was taken up by a 10-15 cm high earth-built platform with its front supported by a structure of parallel hazel branches and two stakes placed in the dwelling's long axis. Two hearth zones appear to have been located adjacent to the platform and the two inner stakes. The entrance seems to have been in the western end on the border between the platform and the 'floor' in the southern part of the dwelling where the main part of the lithic waste was concentrated (Grøn & Skaarup 1995; Grøn – in print) (Figure 3).

Some of the 'floors' were observed only as thin and sometimes very fragmented layers of bark (Becker 1945; Bokelmann 1986, 1989, 1991, 1995; Bokelmann, Averdieck & Willkomm 1985; Johansson 1990:15-17; Schwantes 1939:89; Welinder 1971:50). In one case cloven boards were used as a frame for such a floor, while in another they seem to have formed an integral part of it (Andersen *et al.* 1982:11; Bokelmann 1971:11, 1981a:181). The presence of boards may well depend on the preservation conditions. Larger bark pieces might represent less well-preserved boards. It seems likely that layers of parallel branches of some diameter and in some cases possibly cloven-out boards were used as a basis for dwelling floors in damp locations.



Figure 1. The south corner of the floor from Ulkestrup dwelling I consisting of bark and bundles of branches.

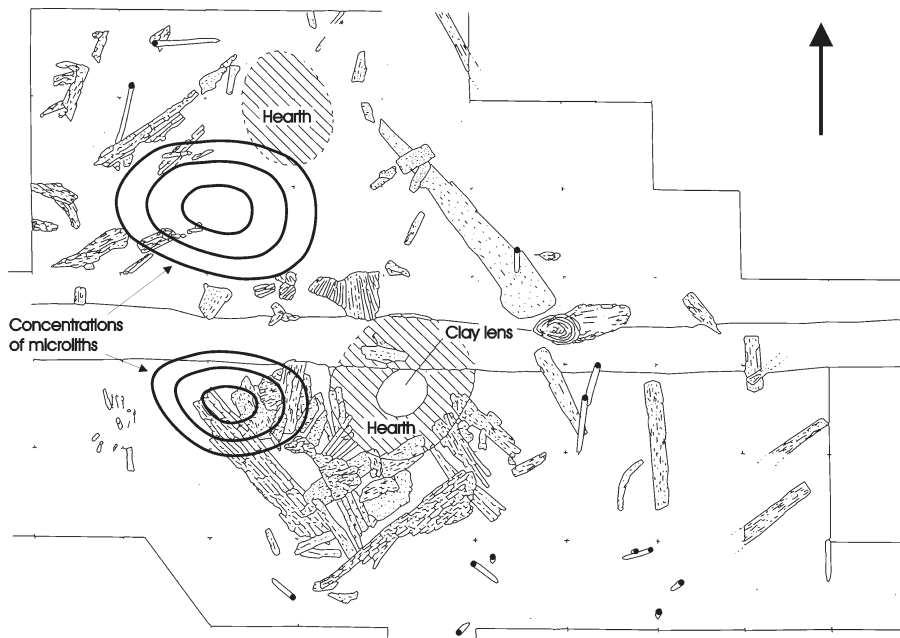


Figure 2. The 6 x 4m large floor of branches and bark from dwelling I at the Maglemose site Ulkestrup I, Zealand, Denmark (Andersen et al. 1982; Gron 1995).

The observations of remains of Bracken, Marsh Fern, twigs, branches and bark from structures with good preservation such as Ulkestrup I and Møllegabet II indicate that these materials were used for the flooring itself and/or 'beds' more often than many sites reveal.

The Mesolithic *hearths* found on floors often consist of diffuse amounts of sand and charcoal so broad that they appear to be an integrated part of the flooring (Andersen *et al.* 1982; Bokelmann 1971, 1986, 1989; Schwantes 1925:175). Since sand on many of the peat sites is a foreign element, this reflects that sand was deliberately transported to the settlements. Bokelmann's detailed observations of a 'roasting-place' from the Maglemose site Duvensee W.6 show how sand in substantial quantities was used in the process of hazelnut roasting (Bokelmann 1981a:182-183).

The use of floors constructed of bark and branches is not restricted to the Mesolithic. At Muldbjerg, Troels-Smith excavated such a floor from the Early Neolithic (Troels-Smith 1960). One should also be aware of the large number of such floors from 'Neolithic' hunter-gatherers excavated at Sarnate in Latvia by L.V. Vankina (Vankina 1970).

Structural features of dwellings

A dwelling, even a heavy structure such as a log cabin, may leave a few post- or stake-holes not necessarily located along its outline, or no subterranean traces at all (e.g. Rogers 1967:18-20; Ränk 1951:43-44; Vasilievich & Smolyak 1964:638-639). Therefore the absence of traces of a superstructure does *not* prove that there was none. In a number of cases, stakes or stake-holes from *wall stakes* have been observed on the periphery of dwellings from the cultures in focus here: the two Ulkestrup huts (6 x 4 and 4 x 4 m), the Møllegabet II dwelling (5 x 3 m) (Figure 3), the recently excavated two Early Mesolithic dwellings from Mörby (both 2 x 3 m), and the three Late Mesolithic ones from Leksand and Högby (two 6 x 4 m and one 3.5 x 3 m) (Andersen *et al.* 1982:10-20; Carlsson *et al.* 1999; Grøn 1995:14, 18, 26-28; 1999; Grøn & Skaarup 1995; Larsson 1994). At Ageröd I:HC, a 6 m long U-shaped row of stakes was observed. According to the section published by Larsson and the plans published by Larsson and Althin (Althin 1954:133; Larsson 1975:13, 1978:145), this structure was open to the NW. Since the distance to the edge of the excavated area in this direction is only about 4 m, one must take into account the possibility that the NW side of the structure is located outside the excavated area. Accordingly, interpretations of this structure as a 'lean-to' should be treated with some caution. At Lollikhuse, Sørensen found a 5.5 x 4 m large and approximately 30 cm deep, rectangular dwelling-pit from the Ertebølle Culture with stake- and post-holes along its northern, southern and eastern sides. In the pit a reddish brown lenticular layer up to 15 cm thick was observed (Sørensen 1996). At Nivå 10, Lass Jensen found a 2.3 x 3.2 m large and 35 cm deep dwelling-pit from the Early Ertebølle Culture. Around the pit, which according to the sections published seems to contain a platform, were found four holes for poles. At Åtoften, he furthermore excavated what seems to be a 3 x 2 m large Kongemose dwelling surrounded by poles (Lass Jensen 2001, 2002).

In an increasing number of cases (that may reflect increasing awareness of the phenomenon), *internal stakes or posts* are found to combine with wall stakes: for example, in the Late Mesolithic dwelling from Møllegabet II (Figure 3), in the two dwellings from Siljan, and in at least one Tågerup. From the Early Mesolithic this feature is known only from dwelling 1 at Mörby (Carlsson *et al.* 1999; Cronberg 2001; Grøn 1990, 1995; Grøn & Skaarup 1995; Karsten &

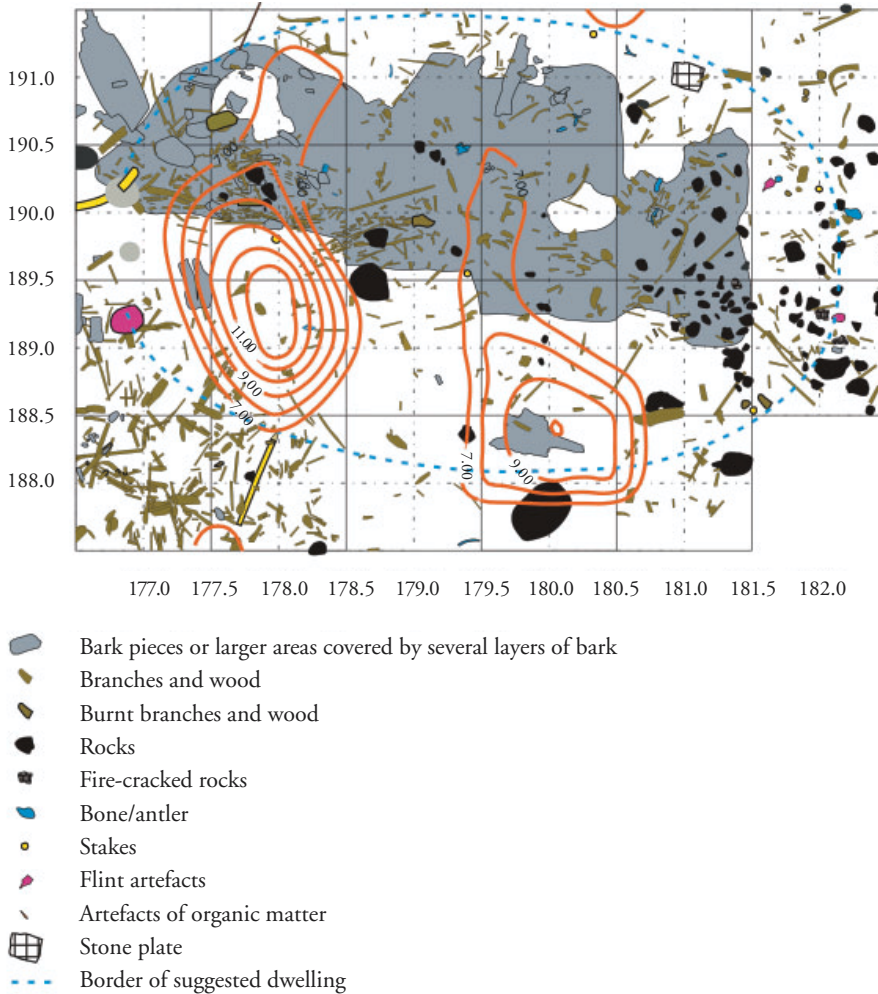


Figure 3. The 5.2 x 3.2m large dwelling from the Ertebølle site Møllegabet II, Funen, Denmark, excavated 4.5m below sea level outside Ærøskøbing (Grøn & Skaarup 1995; Grøn – in print). North is upwards. The red lines are equidistant density curves showing the density of arrow points in the interval 7-12 per square metre.

Knarrström 1999; Larsson 1994). In other cases, traces are found of what may be *central supports* not combined with observations of traces of wall stakes: in Denmark at Svanemosen 28 from Southern Jutland and at Flådet on Langeland (Figures 4, 5) and in Sweden at Saxtorp no.11, Skateholm I, and Tågerup 2 (Cronberg 2001; Grøn 1990:82-3, 1995:73-76; Larsson 1975:9, 1985:198). The 7.0 x 16.0 m large structure Tågerup 2 interpreted as a long-house with a row of internal posts fits into the picture of large Mesolithic houses suggested by Grøn (Cronberg 2001; Grøn 1990; 1998a; Karsten & Knarrström 1999). One should not exclude the possibility that some of these large structures may have been regular log cabins, as has been suggested for Flådet (Grøn 1987). On the basis of the observations of inner stakes and a platform at Møllegabet II, an apparent platform at the Ertebølle dwelling-pit from Nivå 10 (Grøn & Skaarup 1995; Grøn in press; Lass Jensen 2002), and the flooring preserved in half of Hylteberga dwelling-pit

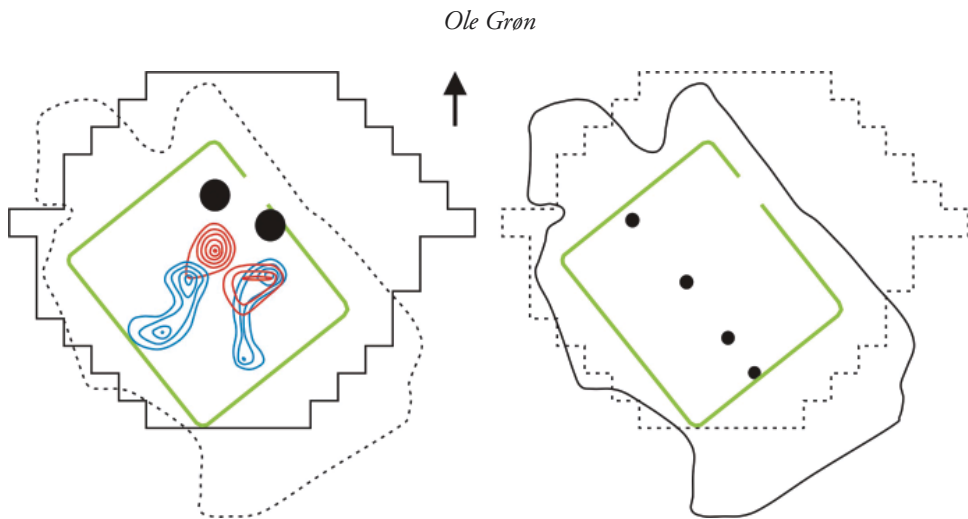


Figure 4. The Maglemose site Flådet on Langeland, Denmark. Left: The concentrations of microliths (blue iso-lines), the concentrations of scrapers (red iso-lines), and the concentrations of burnt flint (black filled circles) interpreted as two hearths. Black outline is the border of the 1973 excavation. On the basis of its distribution patterns, topographical position, and micro-wear analysis of some of the artefacts, the feature was in 1987 interpreted as the remains of a 7 by 8m large log cabin (green outline). Right: The post-holes (black filled circles) observed during the re-excavation the same year (see figure 8) inside the suggested dwelling-outline. Black outline is the border of the 1987 excavation. No features reflecting a wall line were observed (Grøn 1987, 1990; Skaarup 1979).



Figure 5. The northernmost of the four post-holes dug into stiff moraine clay observed during the 1987 excavation (see figure 7) with a diameter of 50cm and 12cm deep. Two holes after stones in the filling have been filled by peaty plough-soil and are visible as dark blotches. Ploughing has reduced the depth of the features since the 1973 excavation (Grøn 1990; Skaarup 1979). Photo: Ole Grøn.

9 (Larsson 1975), it cannot be ruled out that the appearance of inner stakes/posts in the long axis of several Atlantic dwellings (Leksand, Saxtorp no. 11, and Skateholm I) may have supported or marked the front of a platform on one side of the dwelling.

As old holes from stakes and smaller poles can be difficult to observe and furthermore difficult to distinguish from root-holes, and as the possibilities for observing structures were often less than optimal due to the excavation technique employed in earlier days, it is most likely that numerous stake- and post-holes have often been overlooked.

Wall ditches are rarely found around structures interpreted as Mesolithic dwellings. At Bredasten, Scania, Mats Larsson excavated what seems to be a wall ditch belonging to a 5 x 6 m large, oval to rectangular dwelling from the Ertebølle Culture. The ditch was 50-100 cm broad and 10-40 cm deep (Larsson 1986). Less significant features that may represent ditch fragments were observed to coincide with the outline of dwelling 2 at Mörby (Carlsson *et al.* 1999). The traces of a very shallow wall ditch from a Mesolithic tent structure were observed at Friesheim in Southern Germany (Schönweiss & Werner 1977).

Tent rings of stones are not traditionally accepted as part of the Maglemosian repertoire. That may be one reason why so few have been registered through time. Meanwhile, they have begun to appear. At Deepcar in England a D-shaped stone ring was excavated, being approximately 4.5 m broad and 3.5 m deep, and containing early Maglemosian material (Radley & Mellars 1964).

A similar structure, only 3.5 m broad and 2.5 m deep, D-shaped to trapezoid, was excavated at Hjemsted, Southern Jutland, by Per Ethelberg and the author (Figure 6). Since no dating artefacts or charcoal were present, a sample of sand from the culture layer was TL-dated to 7800 BC \pm 700 and OSL-dated to 6650 BC \pm 500 (R-862701), indicating a date around 7100 BC. Due to the

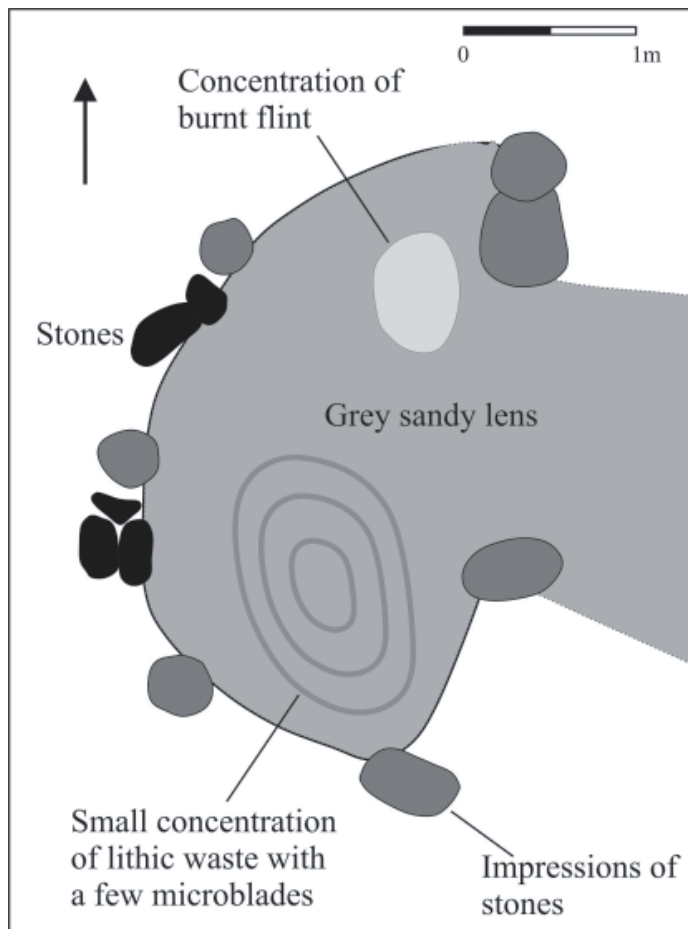


Figure 6. The 3 x 2 m large tent ring from the Maglemose site Hjemsted I, Southern Jutland, Denmark (Grøn 1988, 1995).

microblades found in the structure, this Maglemosian dating was no surprise. Another sample that was OSL-dated to 3508 BP \pm 300 (R-862702) is regarded as polluted by a Medieval plough-zone found immediately above the culture layer. This dating is obviously far too late (Grøn 1988, 1995:69).

A structure interpreted as a Maglemosian tent-ring, Øerne I, approximately 3 m in diameter, has been excavated by Keld Møller Hansen on Northern Zealand. The material dates it to the middle of the Maglemose Culture (Møller Hansen 1992:123 and personal communication). A possible D-shaped tent ring from the late Maglemose Culture, 5 m in diameter, was excavated by Jens Bech at Granholmen on Funen (Bech 1966). These two structures are not as clear in shape as one could wish. At Wierzchowo 6 in Poland, Zbigniew Bagniewski excavated what looks like a rounded, rectangular tent ring measuring approximately 6 x 5 m and containing a concentration of typologically pure and relatively late Maglemosian material (Bagniewski 1990).

Pits and hollows

Pits or depressions, both shallow and deep, seem to be one of the most persistent indicators of dwellings in the South Scandinavian Mesolithic. On dry-land sites, they often appear as sandy greyish/brownish or sometimes black homogeneous lenticular thickenings of the culture layers, 4-10 m in diameter and 10-50 cm thick, which according to the reports often 'contain the majority of the finds'. Such lenses have been observed at Klosterlund 1W, Stallerupholm, Rude Mark, probably at Bare Mosse I, and at numerous other sites (Blankholm, Blankholm & Andersen 1968:63; Boas 1987:14; Grøn 1995:64; Welinder 1971:185). Märta Strömberg has excavated several such small lenticular culture layers from the Maglemose Culture and the Neolithic in Scania (Strömberg 1976:16, 1978, 1986, 1988) and C.J. Becker has excavated several on Bornholm at Melsted and Nørre Sandegaard (Becker 1952:99,104).

A closer study of the two layers at Lundby II also gives the impression that they may represent one lenticular structure formed during one phase only and containing the remains of one or two hearths and of a presumed bark floor. That the two layers to the west were separated by a thin sterile layer of peat and gytta (Henriksen 1980:56-58) could reflect that parts of the upper layer of such a lenticular structure were at one time lifted up like a floating island, as apparently was the case at Ulkestrup I and II and Mullerup 1900 (Andersen *et al.* 1982:13-16; Grøn 1995:15-25, 27-28, 77-78). Unfortunately the site has not been subjected to a detailed geological analysis. At Vængesø, Andersen excavated a concentration of lithic material on a flat plateau measuring approximately 6 x 4 m, apparently dug into the side of a little hill. The culture layer appeared as a 30 cm thick lenticular feature with a length of 5 m. It contained a significant concentration of lithic artefacts (Andersen 1975:11-18). The tent ring at Hjemsted coincided with such a lens, which contained nearly all of the finds (Grøn 1995:69). At Deepcar, a sandy, grey horizon contained most of the occupation remains. This 'grey soil' was deep inside the ring of stones and lensed out over the upright flags (Radley & Mellars 1964:3,5).

The central parts of Mesolithic peat sites such as Barmosen I, Bare Mosse I and II, the Duvensee sites, Møllegabet II, Ulkestrup I and II generally appear as lenticular thickenings of the culture layers containing large amounts of sand (e.g. Bokelmann 1971, 1981a; Grøn & Skaarup 1995; Johansson 1990:12; Schwantes 1939:89-90; Welinder 1971:66, 181-186).

Due to the better preservation, the descriptions in such cases have tended to focus on the different organic elements contained in the lenses and to pay less attention to the fact that compact lenses of cultural material tend to conjoin with features that probably represent dwellings.

At Møllegabet II, the dwelling-outline indicated by the 'outer stakes' followed the edge of a 20 cm thick and 5.2 x 3.2 m large lens of greyish sand, which contained remains of flooring, two hearths, and most of the cultural remains (Figure 3) (Grøn 1999; Grøn – in print). The Ertebølle dwelling at Lollikhuse appeared as a 5.5 x 4.0 m large and 30cm deep pit containing reddish-brown sandy cultural soil with a significant concentration of finds (Sørensen 1996).

The Ertebølle dwelling at Nivå 10 (Figure 7) appeared as a 3.2 x 2.3 m large and 35 cm deep pit containing grey sandy cultural soil with a concentration of finds related to the habitation (Lass Jensen 1998, 2001). At Agerød I:HC, the south-eastern border of the lens of grey occupation layer, which contained the majority of the finds, seemed to conjoin with the stake-structure (Larsson 1975).

At Saxtorp no. 11, the more than 50 cm deep and 5 x 4 m large pit contained black and dark brown deposits which held the majority of the cultural objects found. The pit contained four internal post-holes (Larsson 1975). The 10.7 x 6.5 m large structure at Skateholm interpreted as a large house appeared as a 20-30 cm thick, black, homogeneous lens. It also contained post-holes with a central position in the pit (Larsson 1985). At Tågerup the three Ertebølle houses (1,2, and 'W') appeared as lenticular coloured features with the maximum depths of 17, 20, and 31 centimetres. They all conjoined with significant flint concentrations (Cronberg 2001). At Svanemosen 28 with four features interpreted as inner post-holes on a line close to its long axis, the majority of the material was found in a 6 x 4 m large and 30 cm deep pit containing a grey homogeneous sand filling (Grøn 1995:73-76).

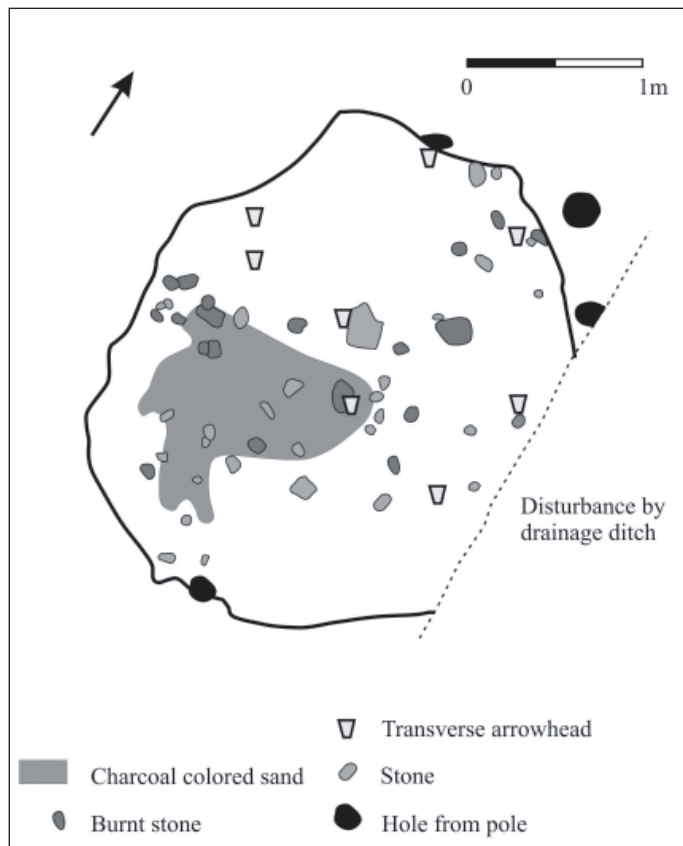


Figure 7. A dwelling-pit, 3.2 x 2.4m large, from the Early Ertebølle Culture at the site Nivå 10, Zealand, Denmark (Lass Jensen 1999, 2001).



Figure 8. A dwelling-pit from the later Kongemose Culture under excavation in 2002 at Nivå 10, Zealand, Denmark. Photo: Ole Lass Jensen.

According to the published section, the culture layer inside the wall ditch of the Bredasten dwelling must be described as more or less lenticular, with its greatest thickness in its centre. Other parts of the culture layer with a certain thickness seem to be related to other features such as feature 2, a hearth, and feature 20, an apparent extension of the rounded, rectangular wall ditch (Larsson 1986). These other features are not necessarily contemporaneous with the dwelling.

The rectangular feature with a wall ditch that Schönweiss and Werner excavated at Friesheim in Southern Germany coincided with a slightly coloured lens, 5 x 5 m in area and approximately 40 cm deep. The lens contained a concentration of flint artefacts, bone fragments and hazelnut shells. An entrance zone seemed visible (Schönweiss & Werner 1977). The circular dwelling excavated by Woodman at Mount Sandel appeared as a shallow pit surrounded by stakes (Woodman 1985:133-135). The 40 cm deep pit of the dwelling excavated in Northern Germany by Diekmann contained sand coloured by cultural activities. It contained a clear concentration of artefacts (Diekmann 1941).

From Norway and Northern Sweden it is a quite normal feature that the dwellings of Mesolithic and 'Neolithic' hunter-gatherers are located in shallow or deeper pits containing concentrations of finds (e.g. Boaz 1999; Bjerck 1991; Fuglestedt 1995; Helskog 1983; Loeffler 1998; Loeffler & Westfal 1985; Lundberg 1985; Schanche 1995:180).

The sections from the many intact Neolithic bark floors from Sarnate in Latvia demonstrate clearly that the bark floors, the vertical stakes, the hearths, the concentrations of sand and other cultural remains conjoin in very significant lenses up to 1m thick (Vankina 1970:22, 38, plan between 44 and 45, 66, 69, 77, 80, 82, 83). It does not seem unreasonable to assume that the dwelling types used on these peat sites were similar to those earlier used by the Mesolithic populations in Northern Europe.

In general it appears to be a quite common feature that dwellings are located in pits of varying depth. With many peat-sites, the 'depressions' in which the lenticular features are often located are more likely due to compression than to excavation of pits into a moist substratum.

How the deposits form

Apart from accepting them as the filling of pits and depressions, it is informative to study how the lenticular thickenings of the culture layers were formed. To imagine that people in the Mesolithic scooped out shallow pits in the subsoil, to walk and sit directly on the ground, seems strange and is not in accordance with the archaeological evidence, as we shall see, whereas the ethnographical descriptions of the use of twigs and boughs as flooring in dwellings are numerous (e.g. Gubser 1965:71; Gusinde 1937:382; Leem 1767:90,104; Rogers 1967:32; Speck 1940:29).

In one of the lenses excavated by Strömberg (Hagestad 6:2A,3), the microlith concentration was located in the top of the lenticular layer, and the hearth could (according to the section published) be observed from the bottom to its top (Strömberg 1986:60-62). At Svanemosen 28, the majority of the finds seem to derive from the upper 15 cm of the 30 cm deep pit (Grøn 1995:75). A second Ertebølle structure of approximately the same size as the house from Skateholm, and half a metre deep, is located at Lollikhuse, Northern Zealand. The lower 10-15 cm of the filling in the pit has a considerably lower find density than is found above this zone (Sørensen, personal communication). In the Nivå 10 Ertebølle dwelling-pit *below* the horizon assumed to represent the 'living-floor' of the dwelling, the bottom was covered by a light grey layer of sand and clay that contained very few finds (Lass Jensen 1998, 2001). At Ulkestrup I, where the floor of bark and branches was preserved, the main part of the flint could be seen to lie on top of it (Andersen *et al.* 1982:12).

On Møllegabet II, where the sand lens contained parts of a floor of bark and branches, 65 per cent of the flint weight derives from the upper 10 cm of the 20 cm deep pit. Where the large concentrations of waste flint were, in the southern part of the structure, the amount of flint weight deriving from the upper 10 cm locally increased to 74 per cent. Woodman in his discussion of the number of occupations represented in a Mesolithic hut at Mount Sandel mentions that 'on the northern edge the microliths usually occur in the middle of the occupation soil' (Woodman 1985:141-142). On the basis of these vertical distributions of finds, it seems probable that there was a flooring of bark, branches and twigs, also in the dry-land dwellings, that stopped the main part of the lithic waste from penetrating to the ground surface. The main part of the lithic waste found in the lenticular features can have been deposited shortly before the sites were abandoned, when the lower part of the floor was filled up by sand carried in for the hearths and sand carried in, in clothes and foot-wear. Clearing out – at least of the larger pieces of waste – after flint-knapping inside a dwelling that was still going to be inhabited is no more than one would expect.

For the Atlantic dwellings the existence of a *platform* seems to play a role in the horizontal distribution of the material. In the Møllegabet II dwelling the lithic waste was located at a 10-15 cm higher level in its northern side where the platform was (Figure 3). That the main part of the lithic waste was located in the dwelling outside the platform indicates that flint knapping was generally not carried out on the platform. The two sections from the Ertebølle

dwelling excavated at Nivå 10 indicate the existence of a regular platform in the SE part of the dwelling-pit. The larger pieces are mainly found outside this structure (Lass Jensen 2001). The southern half of the area interpreted as a Kongemose dwelling at Aggemose was scooped out to form a feature that could be observed as a 10 cm deep pit below the plough-soil, indicating that the northern half of the suggested dwelling-area may have been an earthen platform. The main part of the lithic waste was located in the pit (Grøn & Sørensen 1996; Grøn 1998b).

In contrast, at dwelling 1 from Högby and the two dwellings from Mörby, the dwelling-area appears as a zone with no significant concentration of lithic material compared to its immediate surroundings. At Øerne I and the two habitations at Leksand, the main concentration of flint was found outside the dwelling-areas (Carlsson *et al.* 1999; Larsson 1994; Møller Hansen 1992; personal communication). At Holmegaard IV, where Becker excavated several bark floors, one of them was covered by an up to 5 cm thick, compact layer of hazelnut shells, but very little lithic waste (Becker 1945). Finds like Hjemsted and some of the small Swedish Maglemose sites from Tobisborg and Hagedsted (Grøn 1995:69-70; Strömberg 1976; 1986) consist of shallow pits containing relative concentrations consisting of very little lithic material (Becker 1945).

Sites containing only a few lithic objects are probably heavily underrepresented in the excavated material, whereas those with large amounts of material are equally over-represented due to their higher visibility. Traditionally it has been regarded as 'profitable' to excavate where large concentrations of material were found. It must be kept in mind that the conditions of preservation will often make it difficult to distinguish between overlapping settlement phases. This represents a restriction in our possibilities for direct observation of combinations of features which with certainty can be said to be related to one single habitation phase. Therefore it is important to distinguish combinations of features which repeatedly appear together.

Interpretation: character of Mesolithic dwellings

This review has attempted to bring together the different features recorded from Mesolithic deposits and argue that they comprise a dwelling place.

Figures 9 and 10 represent basically the same data, a number of features that are found to occur together a number of times in 38 Mesolithic sites. The sites have been chosen on the basis of their preservation and the quality of the recording of the features.

Concentrations of lithic material show an obvious tendency to associate with floors of bark and branches (in eight cases out of a possible maximum of ten), with wall stakes and tent rings (13 out of 13 possible), with hearths (26 out of 27 possible), with systematic patterning of the artefact distributions and other features (see below) (15 out of 15 possible), with dwelling pits or lenticular thickenings of the culture layer (31 out of 32 possible) and with the presence of central posts or stakes (nine out of nine possible).

The expectation is not that all of the features distinguished should always have occurred together when the dwellings were in use. Even though variations in the 'visibility' and preservation of the different types of features plays an obvious role, one must accept the contemporaneous use of different dwelling-constructions in one culture (Grøn 1995). The point is, meanwhile, that each of the features studied here shows a clear tendency to coincide with the other features.

		Floor of bark/branches	Wall stakes/posts/fent ring	Flint concentration	Hearth/hearths	Systematic patterning	Dwelling pit/lense	Central posts/stakes
Duvensee 13 (1986)	M	X		X	X			
Duvensee 13 (1989)	M	X			X			
Klosterlund 1 E	M			X	X	X		
Barmosen I	M	X		X	X		X	
Ulkestrup I	M	X	X	X	X	X	X	
Ulkestrup II	M	X	X	X	X	X	X	
Duvensee 6	M	X		X	X	X	X	
Duvensee 8	M	X		X	X	X	X	
Duvensee 13 (1985)	M	X		X	X	X	X	
Hylteberga nr.9	K?	X						
Hjemsted	M		X	X	X	?	X	
Deepcar	M		X	X	X	X	X	
Lollikhuse	E		X	X	X		X	
Nivå 10	E		X	X	X	X	X	
Ageröd I:HC	M/K		X	X	?		X	
Rude Mark	M			X	X	X	X	
Klosterlund 1W	M			X	X	X	X	
Stallerupholm	M			X	X	?	X	
Vængesø	M			X	X	X	X	
Tobisborg 1:1975	M			X			X	
Tobisborg 2:1975	M			X			X	
Tobisborg 3:1975	M			X			X	
Hagestad 6:2A,1	M			X	?	?	X	
Hagestad 6:2A,2	M			X	X		X	
Hagestad 6:2A,3	M			X	X	X	X	
Hagestad 6:2A,4	M			X			X	
Hagestad 44:8A	M			X			X	
Møllegabet II	E	X	X	X	X	X	X	X
Bredasten	E		X	X	X		X	X
Leksand I	K/E		X	X				X
Leksand II	K/E		X	X				X
Svanemosen 28	M			X	X	X	X	?
Flaadet	M			X	X	X		X
Saxtorp nr.11	K			X	X		X	X
Skateholm I	E			X	X		X	X
Tågerup 1	E		X	X	X		X	X
Tågerup 2	E			X	X		X	X
Tågerup 'W'	E		X	X			X	

Figure 9. Table listing the dwellings in the sample and the features observed on them. Maglemose Culture = M, Kongemose Culture = K, Ertebølle Culture = E.

To the discussion of whether concentrations of worked flint can signify dwelling-areas or not, and whether the floors of bark and branches, the stake structures and the tent rings we know are consequently the remains of dwellings – or not – it must be added that the majority of the suggested dwelling-structures coincide with concentrations of flint and that no other type of structural remains have been found that can be interpreted as Mesolithic dwellings.

Ethnographic and experimental parallels for the use of Mesolithic dwellings

The existence of culturally specific rules for the spatial organisation of the dwelling-space is known from almost all recent hunter-gatherers. The basis for such organisations seems deeply rooted in the social psychology of the spatial organisation of small groups (Grøn 1989, 1991). Ethnographically and in our ethno-archaeological studies, such patterns are often found legitimated by mythology and/or by a conceptualisation of the dwelling-space as a micro-version of the cosmos containing a local ‘centre of the world’ (Eliade 1983:212f.; Grøn & Kuznetsov – in print; Holmberg 1922; Ränk 1951:141; Schmidt 1935, 1941:67-70; Yates 1989).

The dwelling-space is separated into a series of ‘personal’ areas that in a very dynamic way can be opened or closed for communication with one or several of the other ‘cells’. An area is open for communication if its ‘inhabitant’ is open for eye contact. If not, he/she can maintain a state of isolation for days without any involvement in social activities. Binford has observed a general tendency that the hunters in hunting and gathering societies use their ‘beds’ as areas for personal isolation (Binford 1983:163-64). A fine description of the phenomenon is given by Jean Briggs based on her own experiences (1970:77):

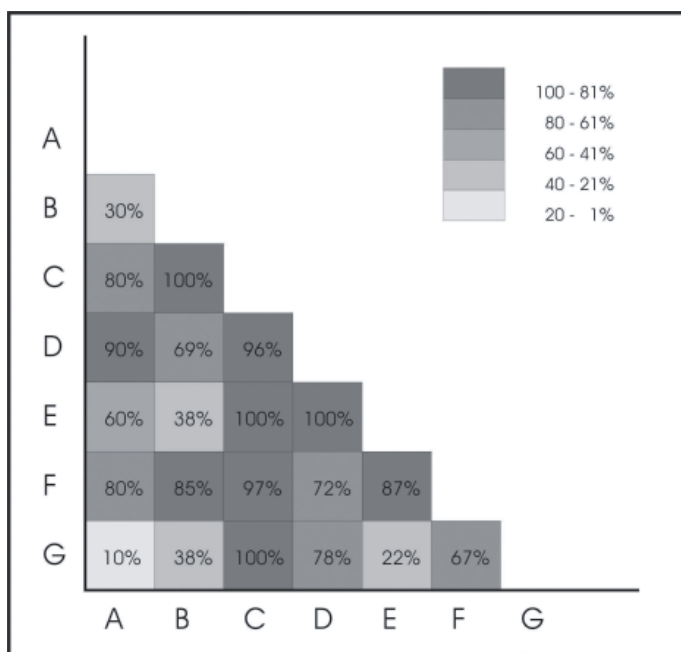


Figure 10. Table showing how often two of the features studied coincide in the chosen sample. The features are: A – flint concentration, B – dwelling-pit/lenticular thickening of the culture layer, C – hearth/hearths, D – systematic patterns, E – wall stakes/tent ring, F – floor of bark/branches, G – central posts/stakes. The percentages reflect how often two features coincide in relation to the number of cases in which the least frequent of them appears in the sample.

“That spot, just the length and breadth of my sleeping bag, very quickly became my home, in a real sense. I possessed my spot, and from it I always looked out on the same view. The sameness of it gave me a sense of stability in a world of shifting dwellings, a feeling of belonging in a family; it even gave me a sense of privacy, since no one ever encroached on my space without permission, and sitting there I could withdraw quietly from conversation into an inner world, reading or writing, or observing the doings of the rest of the family and their friends without disturbance.”

The borders of the personal areas in a dwelling may have no physical manifestations at all or they can each – or several together – be confined by logs placed on the floor or even by small ‘sleeping tents’ mounted inside the dwelling (e.g. Manker 1935:100-101; Steller 1973:149; Yates 1989). According to the social-psychological results, it looks as if the personal areas in the dwellings of hunter-gatherers are generally organised spatially to support maintenance of the emblematic roles/positions in the household and minimise its number of conflicts. To avoid conflicts, developing males and females belonging to different couples are for instance not placed beside each other in multifamily dwellings (Grøn 1981, 1991; Tanner 1979:84). The distances between the inhabitants of a dwelling and their orientations reflect their relations to one another. On the basis of the Eurasian material Ränk states about dwellings (1951:141):

“... in an symbolic sense the organisation of space on the small scale depicts the structure of the total society of the people concerned. It reflects a concentrate of all observable relations between the different generations, age groups, classes of the community, kin, and the division of labour between these. Since this system of order so to say has grown in an organic way from an economic-social basis as well as from numerous religious conceptions, this means that it must be perceived as a function of economic-social and spiritual life.”

The considerable number of sources describing this type of spatial organisation has largely been ignored in archaeological interpretations, except for a few cases such as Childe’s interpretation of the Scara Brae dwellings (Childe 1946:28-32). Whereas social anthropologists generally have little difficulty seeing it as a universal feature of indigenous cultures that they have rules for how their dwellings should be organised (e.g. Grøn & Kuznetsov – in print), it has been extremely difficult to gain archaeological acceptance for the idea that it should be worth looking for patterning related to such spatial behaviour in the archaeological material. One part of the problem is undoubtedly the way the spatial organisation of a household is reflected in the finds. Different observations show that objects larger than 4-5 cm are much more frequently cleared out from the central living-areas than smaller objects (Binford 1978:153; Hayden 1981:142; O’Connel 1987). That means that the chances of finding object types that reflect the spatial organisation of prehistoric dwellings increase with decreasing size of the objects. Floors of branches will serve as traps for smaller items left in position. The distributions of the larger types such as cores, scrapers and knives mostly do not show significant and repeated small-scale patterns, whereas such patterns are generally found in the distributions of the microliths (Figures 1, 3) (Grøn 1995). This is consistent with the size factor.

For the Maglemose Culture, the material within the lenticular parts of the culture layers is often organised in accordance with repeated spatial patterns that are also found inside structures with stake walls and branch/bark floors preserved (Figures 9-11). This is significant for the microliths and the hearths. They tend to appear in the dwellings in one or two sets each consisting of one concentration of microliths and one hearth.

With regard to the two later Mesolithic phases, the Kongemose and the Ertebølle Cultures, a modification can be observed in the dwelling-organisation (Figure 11). Whereas the smaller dwellings with one concentration of arrow points and one hearth seem closely related to those from the Maglemose Culture, those with two sets (apart from Møllegabet II, Vængesø is regarded as belonging to this category) seem to have had the indwellers arranged in couples with their front against the entrance at the one end of the structure (Figures 3, 11, 12) (Grøn – in print).

In contrast to the Maglemosian pattern with a diagonal separation of the dwelling-space, the new way of organising the dwellings has no limits with regard to the number of 'units' it can contain. The change of pattern

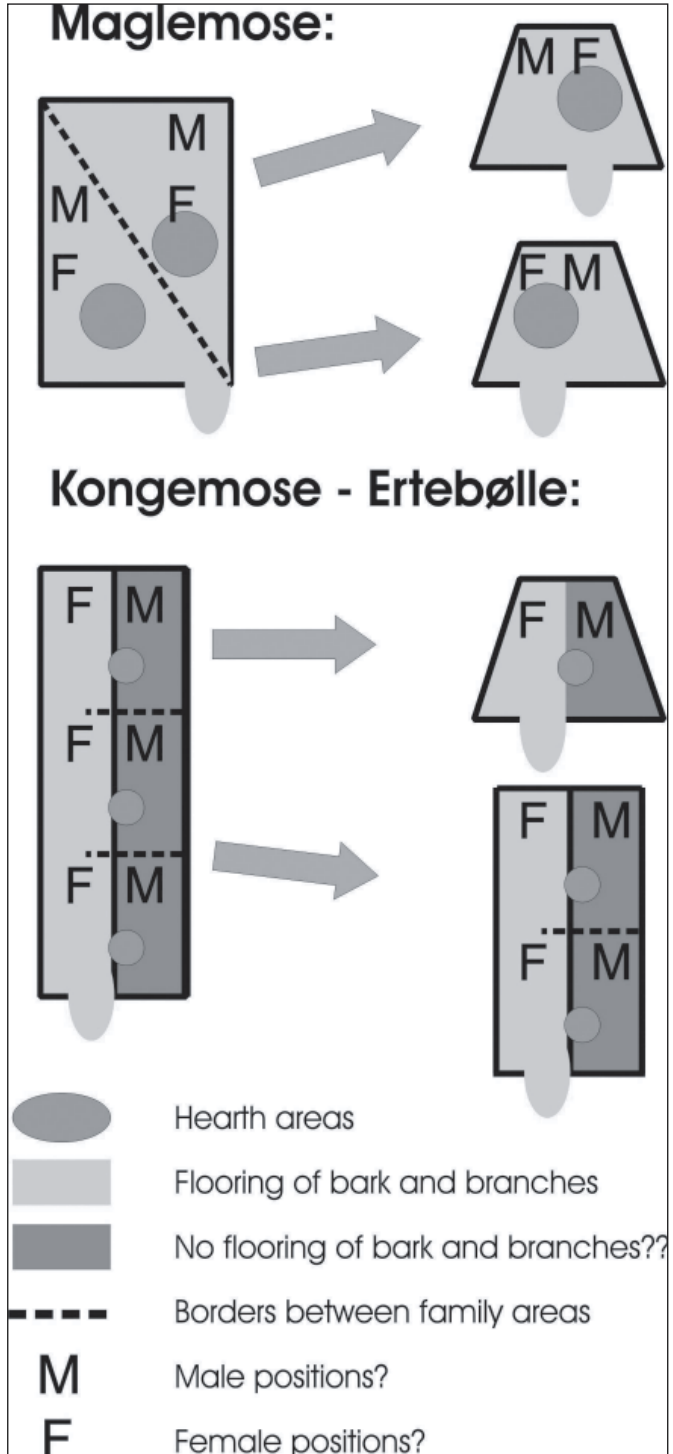


Figure 11. A schematic representation of the suggested development of the spatial organisation of the Mesolithic dwellings in Southern Scandinavia (Grøn 1999).

may therefore reflect an increase in the number of nuclear families in the households, as is indicated in figure 11 (Grøn 1998, 1999, – in print; Grøn & Skaarup 1995; Grøn & Sørensen 1996).

The interpretation of the handling of arrow points in the dwellings as a male activity and hearth-related activities as a female activity does not necessarily mean that the men were ‘hunters’ and that the wives were ‘housewives’ in the world outside the ritualised dwelling-space. One must distinguish between a

person’s formal social role and his/her real role in the group. According to my own observations, the more traditional of the Evenki in Siberia in their *duktchars* (tipi type of tents) and modern canvas tents maintain an organisational pattern where the kitchen storage area (*Tjungal*) is inside the entrance in the women’s side of the dwelling. Thus the formal organisation of the dwelling-space clearly relates the women to food preparation. Meanwhile it is quite normal that women hunt – even big game – and in some families the wife is actually the family’s main hunter.

What we are able to observe in the distributions preserved are the positions of persons engaged in their everyday activities. For Atlantic dwellings with platforms it seems a bit strange that the night-pattern should be the same as the one reflecting the daily activities: the women on the platforms and the men on the ‘floor’. Like the Evenki, who during the day maintain a male and a female side of the dwelling, but where the couples during the night sleep together in its male part (Grøn & Kuznetsov – in print), it is not unlikely that the Kongemose/Ertebølle people operated with a male and a female side of the dwelling, but that the couples slept together in the female side – on the ‘platform’ – at night (Figure 12).

Because the repeated small-scale distribution patterns generally occur in conjunction with concentrations of lithic waste, pits/lenticular thickenings of the culture layers, and the other features which seem to signify dwelling-areas, it is difficult to think of other areas in the settlements that should be organised so strictly in accordance with repeated spatial patterns. That systematic small-scale patterning has been observed only in 15 of the 38 sites featured in figures 9 and 10 is mainly due to the absence of information about the distributions or appearance of so few arrow points in the assemblages that significant patterns cannot be distinguished.

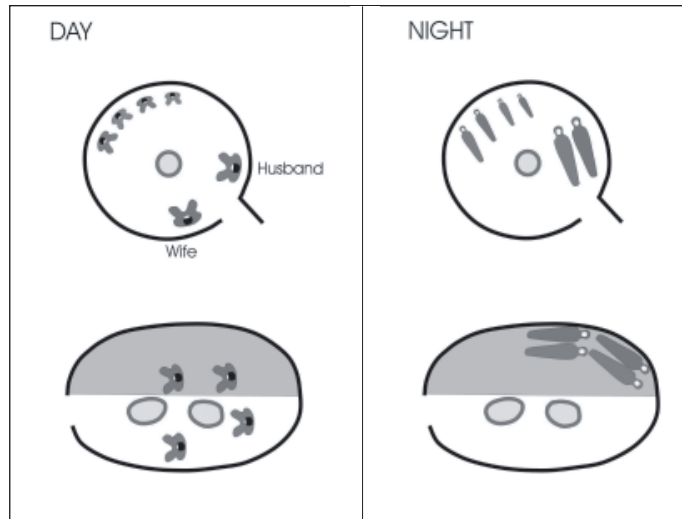


Figure 12. Day and night patterns for organisation of dwelling-spaces. Upper: the day and night pattern for the Evenki hunter-gatherers. Lower: the suggested day and night pattern for two-family dwellings of the Ertebølle Culture with a sleeping-platform in the one side (shaded grey).

Discussion

A central point in this paper is that spatial distributions in Mesolithic deposits will often be significant even when no floors or other structures are preserved. This provides an improved possibility for identifying and interpreting dwellings in areas with less favourable preservation conditions.

That such patterns appear in connection with concentrations of lithic waste should not make us reject the possibility that they represent dwellings, but should rather stimulate an interest in understanding in detail the complicated spatial/horizontal as well as the stratigraphic aspects of the site formation. The relations between different types of data presented here, hopefully, can show that this may be a fruitful way to go.

The artefacts and the waste are not distributed at random. Their horizontal as well as stratigraphic positions reflect directly the activities carried out by the prehistoric inhabitants in the settlements we study. Different artefact and waste types have different dynamics. Apparently, items of a size of up to a few centimetres are less 'sensitive' to general cleaning than the larger items – as one should expect from the ethno-archaeological data (Binford 1978:153; Grøn 1995; Hayden 1981:142; O'Connell 1987), whereas they may be sensitive to small-scale removal from seating places, etc. (Grøn 2000; 1987; Grøn – in print). One should also take into account that disposal of some waste categories may be regulated ritually in ways that may have different effects on where they are located inside the dwellings as well as outside (Grøn and Kuznetsov – in print).

The general results presented in Figure 11 apart from being a purely typological development also contain information about the organisation of the households in the prehistoric hunter-gatherer societies. The figure reflects directly the changes in the 'stereotypes' of the small-scale social organisation of prehistoric hunter-gatherers in an everyday context. It is obvious that such information may have other implications than just the typological ones. To what degree does similarity in the way dwellings are organised reflect cultural similarity? and to what degree can analysis of the changes in dwelling-organisation elucidate the cultural dynamics in processes of cultural change – e.g. Neolithisation?

The two patterns in figure 11 interpreted as representing a single nuclear family are not different with regard to the relative positions of the individuals. In a Mesolithic context this pattern is found in the zone expanded by Southern Scandinavia, Southern England, Belgium, and Northern Germany (Crombé 1998a, 1998b; Grøn 1995; Wenzel 2002). It is a very basic pattern that will probably also be found outside this geographical zone as well and its Mesolithic appearance is most likely not its first (Jöris & Terberger 2001).

What is interesting is that the Early Mesolithic and the Late Mesolithic multi-family patterns combine the basic nuclear-family pattern in two significantly different ways (Figure 11). The Early Mesolithic multi-family pattern of the Maglemose Culture is found in the zone extended over Southern Scandinavia and Southern Germany as a minimum (Grøn 1995; Schönweiss & Werner 1977). The Late Mesolithic multi-family pattern has so far been observed in Southern Scandinavia in a Mesolithic context, but one should be aware that what may be the same pattern can be related to the remains of the Finnish 'log-built' pit dwelling at Kärnelahti in Puumala, eastern Finland, dated to 3500-2500 BC cal. (Katiskoski 2002). This admits the interesting possibility that the 'Late Mesolithic' pattern continues in the Finnish and Swedish pit dwellings of the Baltic Late Mesolithic and Neolithic hunting-gathering cultures (Pesonen 2002; Loeffler & Westfal 1985).

It is thus obvious that the dwelling-patterns observed exceed the known borders of the ‘archaeological cultures’ and thus can be said to indicate the existence of cultural relations between groups with different material cultures. Such an idea is in good accordance with ethnographic and ethnoarchaeological observations from, for instance, the Evenki hunter-gatherers in Siberia. Some aspects of the material culture, the spiritual culture, and/or the language may display significant small-scale variations within what must be regarded as one cultural/ethnic grouping (Barth 1969; 1987; Grøn *et al.* 2002; Grøn *et al.* – in print; Shirokogoroff 1935:12-39), whereas on the other side my own ethnoarchaeological observations from Siberia – so far – indicate that patterns of dwelling-organisation are one of the most constant and far-reaching expressions of cultural affiliation.

Another interesting change appears through the Maglemose Culture. In its early phases the one-family units seem to dominate totally. In the period from 7000-6000 cal. BC, meanwhile, the units interpreted as ‘two-family dwellings’ make up 67 per cent of the sites with identified patterns (Grøn 1995:51).

The interpretation of the change from the Early Mesolithic to the Late Mesolithic multi-family pattern as related to an on-going increase in the number of nuclear families in the households (3.2) fits this latter observation as support for the idea of some kind of force that increases the household size throughout the Mesolithic in Southern Scandinavia.

According to the indications we have of the number of separate units in the settlements, it is likely that many Early and Late Mesolithic settlements consisted of several contemporaneous dwellings. What seems to decrease is the distance between them, whereas there is little concrete evidence that people became more sedentary (Figure 13) (Grøn 1987, 1998a). An increase in the number of

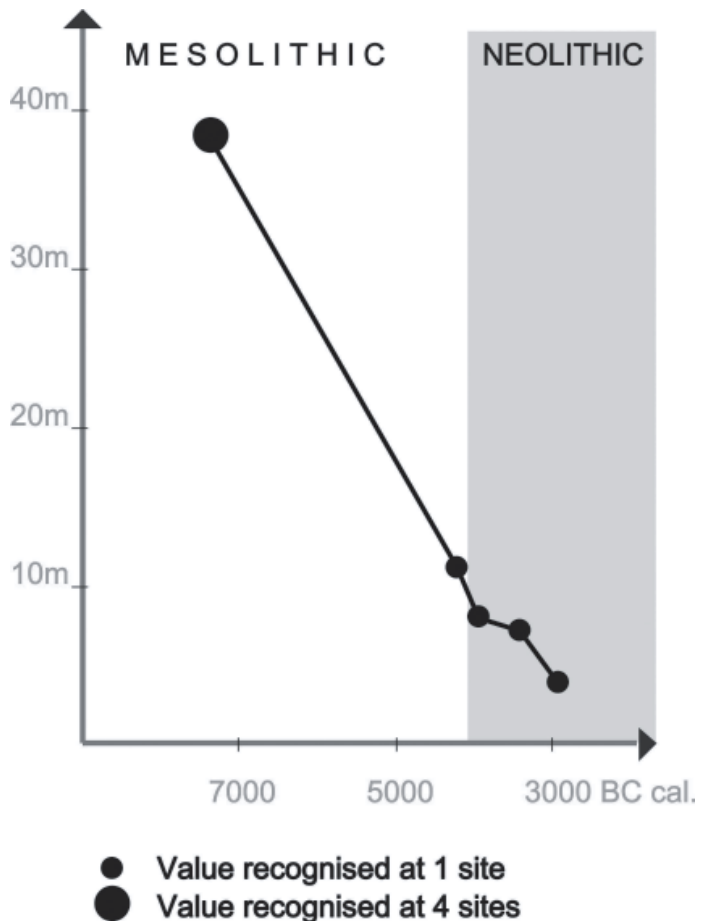


Figure 13. The average distances at a number of settlements between features that may be contemporaneous and represent dwellings or fixed locations of social units during a visit. Based on: Andersen 1991, 2001; Grøn 1987, 1998a; Larsen 1958; Skaarup 1972, 1985a, 1985b; Strömberg 1988; Winther 1935, 1938.

nuclear families in the households and a decrease in the distance between their dwellings in the settlements seems to signal an increase in the ‘passive contact’ between the individuals and thus an increase in the social control in the extended social units (Festinger *et al.* 1963).

There is no obvious economic reason why the same people should not have been able to make a successful living in settlements where they maintained a distance of approximately 40m between dwellings with only one nuclear family in each. The changes in household size start well before the climatic changes of the Atlantic Transgression which altered what remained of the Preboreal and Boreal plains into a landscape with focus on marine resources in the highly productive coastal zone around 5000 BC (Figure 14)(Andersen 2001; Christensen 1995; Grøn 1998a).

The question arises whether the observed changes in Northern Europe are partly or exclusively the result of natural ecological changes, as I have earlier suggested (Grøn 1998a; Tringham 2000) or reflect an impact of Neolithic ideology long before a recognisable Neolithic economy is introduced, parallel to the situation Tringham describes in the middle and lower Danube basins. The existence should be seriously considered of a pre-Neolithic phase in Northern Europe which included experiments with Neolithic strategies on local species and on a small scale also on some introduced species prior to the ‘real Neolithicisation’ (Grøn 1998a; Jennbert 1984).

The study of dwelling-organisation in the Mesolithic, opens up a field of new information that can supplement our present picture of cultural affiliations and dynamics in prehistory. That the patterns tend to indicate the existence of cultural long-distance affiliations between groups with differences in material culture is in accordance with the observations from Siberian hunter-gatherers, where significant variations in material culture, spiritual culture, and language can be observed within what one must regard as one ethnic/cultural group (Grøn *et al.* 2002). Apparently, small-scale group identification plays a role here.

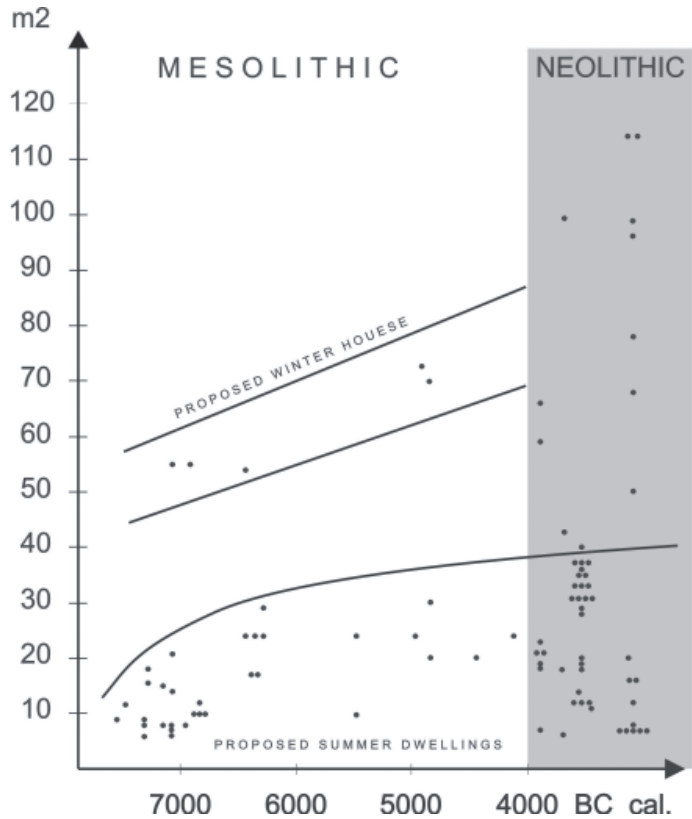


Figure 14. Estimated floor-space areas of dwellings through time in Southern Scandinavia. Based on: Andersen 1975; Becker 1953; Buus Eriksen 1992; Grøn 1995, 1998a; Kaul 1998; Kempfner-Jørgensen & Watt 1986; Larsson 1975; Larsson 1986; Nielsen & Nielsen 1986a, 1986b, 1990; Skaarup 1972; Strömberg 1976, 1978, 1986, 1988; Winther 1935, 1938. Tågerup is not included because it is difficult to estimate the sizes of the multi-phased dwelling structures

In relation to the introduction of a new economy – the process we are watching among some of the Siberian hunter-gatherers today – single individuals may not only swap between different cultural and ethnic groupings and adjust to their beliefs and behavioural code. They may also swap between different types of economy – from hunting-gathering to pastoralism, from pastoralism to farming as well as the other way round and still be accepted members of the same Evenki group.

A significant trait with small-scale cultures is flexibility, dynamics, and individual decision-making ability (Barth 1978; 1987; Grøn *et al.* 2002). A focus on the organisation of dwellings and settlements may improve archaeology's ability to cope better with some of the social and cultural complexity, which one must expect existed in a phase of economic and ideological transition such as the Mesolithic.

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