## Aggemose

### An Inland Site from the Early Kongemose Culture on Langeland

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#### INTRODUCTION

The site Aggemose on Langeland represents a small and typologically pure inland unit from the Kongemose Culture. A recent compilation and analysis of the Kongemose material of southern Scandinavia (Sørensen in press) has made it obvious that the site, both with regard to its geographical and chronological position, elucidates important aspects of the development and extension of this culture in southern Scandinavia. Furthermore, the site seems to represent a change from the organizational pattern found in the Maglemosian dwellings to a quite different pattern found in those of the Kongemose and Ertebølle Culture (Grøn 1989; 1995; in press).

#### TOPOGRAPHY

The Aggemose basin measures approximately 800 m north-south and 450 m east-west. The surface is 9.5 m above sea level and the distance to the sea is 2.2 km. Today the basin contains a bog with rather degraded (humified) peat. During the period of habitation it contained a lake with a water level 30-35 m above the contemporaneous sea level and 4-5 km from the large river or narrow brackish sound to the east (Jelgersma 1979; Wienberg Rasmussen 1975:126). Thus we are dealing with a true inland site.

The site is located close to the tip of what was, at the time of habitation, an approximately 50 m long and 10-15 m broad sandy spit jutting out ESE into the Aggemose basin from its western shore. Judging from the topography, access to the open water must have been gained to the NNE, where the shore lay only approximately 3 m away (Fig. 1).

#### THE SITE

The culture layer apparently became damaged by ploughing in 1974, and in 1975 Kongemose material was found on the site by Flemming Rieck. Later that year it was excavated by Langelands Museum under the direction of Jørgen Holm (1). The 30 cm thick layer of plough soil was sieved, square metre by square metre, through a sieve with a 1 cm mesh, and the finds were registered accordingly. The transitional zone between the plough soil and the underlying yellowish/brownish sand was excavated by trowelling, and here the exact three-dimensional position of each find was registered.

Three square-metre fields were excavated 15 m to the south, 15 m to the north and 13 m to the east of the site, respectively. In each of these fields a 30 cm thick layer of humified peat containing a few small and uncharacteristic pieces of worked flint was observed, but apparently anaerobic conditions, which promote the preservation of organic waste, did not prevail.

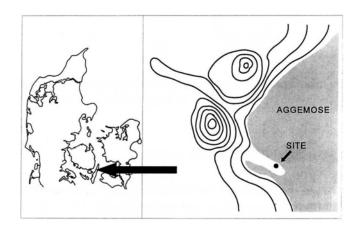


Fig. 1. The topography of the Aggemose site.

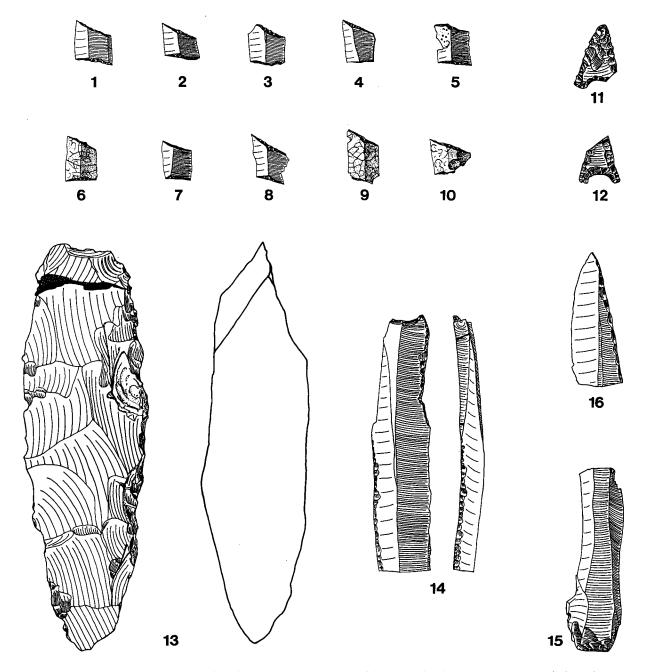


Fig. 2. Artefacts from the Aggemose site: 1-10, broad trapezes; 11-12, Late Neolithic arrow-heads; 13, the core axe with the resharpening flake in position; 14-15, burins; 16, blade-knife with straight retouched back. 2:3.

#### DATING AND ARTEFACT TYPES

Due to the technique used in producing blades and the similarity between its arrows points (Fig. 2,1-10) and the oblique transverse arrow points from the Kongemose/ Ertebølle transition, the flint material from Aggemose

was originally assigned to the later part of the Kongemose Culture. Subsequently, the distinction of the earliest phase of the Kongemose Culture, the Blak phase, made it possible to determine all 10 classifiable arrows in the material as broad trapezes belonging to this phase (Sørensen in press).

Excavations in recent years at the submerged site, Blak II, in Roskilde Fiord have produced a typologically pure and sufficiently large flint material to enable definition of the Blak phase. The most significant elements of this phase are broad trapezes, which on the basis of several characteristic traits can be distinguished from oblique transverse arrow points. The most important trait is that the rear of the point (an unretouched part of the blade from which it was made) is broader. The broad trapezes appear in three morphological versions, which in terms of chronology appear contemporaneously (Fig. 3).

Whereas other sites with broad trapezes contain all three types (Fischer 1989:2; L. Larsson 1978:75; Sørensen in press), only types 2 and 3 are present in the Aggemose material. The broad trapezes appear in southern Scandinavia at approximately 6,000 b.c. (conventional dating) together with triangular microliths in the final Maglemosian phase (L. Larsson 1978:138,144). Here, the latter show a clear dominance. Scalene triangular microliths are still present in the Blak phase, but in extremely restricted amounts relative to the broad trapezes as can be seen at Blak II, for instance (Sørensen in press).

Fig. 4 shows measurements of the broad trapezes from the Aggemose site, Blak II and the Blak phase of Musholm Bay, together with the rhombic arrow-heads from the Villingebæk phase of Blak I. A significant coincidence between the points from the three former sites is obvious. Compared to the other known sites from the Blak phase, only a very restricted spectrum of artefacts other than the broad trapezes are present in the Aggemose material. These artifacts are also few in number.

The material comprises one large core axe and one edge-resharpening flake (Fig. 2,13). The resharpening flake, which was excavated from the main concentration, fits the axe which was found on the surface in 1975.

Burins appear in three variants, represented by only one item each: an angle burin on a break (Fig. 2,15), an angle burin on a transverse retouch (Fig. 2,14) and a fragment of a dihedral burin. The two former ones are produced from large blades of good quality whereas the third one is from a somewhat smaller blade. Blade burins on a break as well as on a transverse retouch are common throughout the Kongemose Culture, but always with the former type dominating.

One intact blade knife and fragments belonging to three others were found (Fig. 2,16), with the distal ends

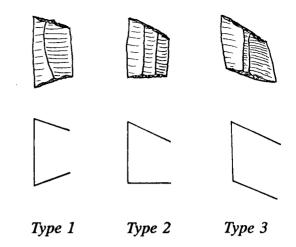


Fig. 3. On all sites from the Blak phase, apart from the Aggemose site, three morphologically different types of broad trapezes are found. They appear to have been in use simultaneously.

retouched from one side into an acute angle relative to the longitudinal axis. They represent a type common in all phases of the Kongemose Culture. Three knives made from flakes with the back partly or totally retouched were also present in the material. These are of little value for dating purposes. Unworked blades showing heavy wear and retouch from use were relatively common at the Aggemose site, as was the case at the Blak II site.

Immediately before this paper went to press, it was discovered that a large number of the blades showed clear microwear traces. A preliminary analysis was carried out by Ole Grøn with a reflected light microscope, type Zeiss Technival 2, at magnifications between x12.5 and x250. Polarized light was used. The pieces are marked using only their artefact numbers, and thus the analyst had no information about their position within the excavated area during the analysis. In spite of the fact that some of the surfaces were not ideal for observation, and thus some types of polish may have been overlooked, at least 46% (149 pieces) of the blades ( $\Sigma$ =323) showed clear polished facets from cutting some hard material running longitudinally on both edges, or in a few cases only on one edge. From a sample of 100 flakes only 5% (the most blade-like ones) had similar traces of wear. Generally the polish was only observable when the microscope was oriented directly against the edge, whereas the sides of the blades showed nothing. All of the 7 morphologically defined knives with retouch

showed similar polish along the edge. Helle Juel Jensen of the University of Aarhus has kindly inspected four blades with this type of wear. She was not able to categorize the type of polish with certainty, but the polish on the blades brought to mind that obtained when cutting hard wood/bone/antler. The three burins were apparently made from blades with a possible hard wood polish on both edges. They are thus to be regarded as tools produced from other worn out tools, rather than as "multi tools". Only the two angle burins show (possible hard wood/bone/antler) polish along their "burinedges', the one at its "point" the other on its two sides (Brinch Petersen & Juel Jensen 1985:43). The core axe and the resharpening flake both have extremely developed (possible wood) polish on the steeper side of the edge. The trapezes showed no traces of use.

Due to the bad preservation of the surfaces of the lithic material it is not possible to carry the analyses any further. The big-blade-technique, which can be traced back to the later Maglemose Culture (K. Andersen et al. 1982; Henriksen 1976; L. Larsson 1978), is a dominating feature of the earliest phase of the Kongemose Culture. The Aggemose material contains numerous large blades reaching 16 cm in length, but at the same time smaller, rather narrow blades were produced. It is characteristic that the broad trapezes were always produced from blades of the latter type whereas the ordinary blade implements generally were made from large blades. This is consistent with the fact that blades showing micro-polish on their edges were on average 18 mm broad, whereas the corresponding value for those with no observable traces was only 14.5 mm.

A fragment of a polished axe and two Late Neolithic arrow points (Fig. 2,11-12) clearly do not belong with the remaining part of the material. In the densely populated landscape of Neolithic Langeland (Skaarup

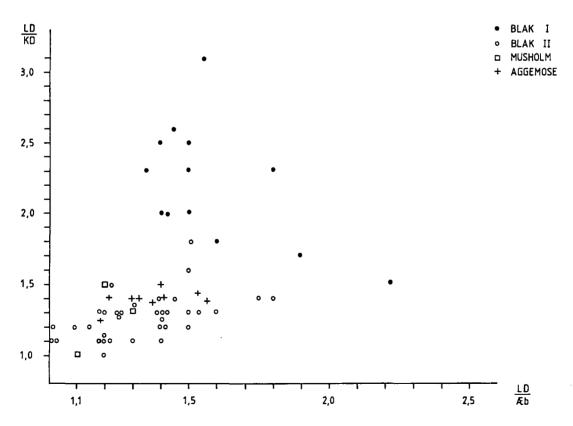


Fig. 4. The diagram compares measurings of 1) the broad trapezes from three danish locations: Blak II, Aggemose and Musholm Bay, and 2) the rhombic arrow-heads from Blak I, a small find from the Villingebæk phase of the Kongemose Culture. It is obvious that the two types separate into two groups. LD = longest diagonal, KD = shortest diagonal. The measurements are made after P. Vang Petersens system for classification of rhombic and transverse arrow-heads (Petersen 1984).

1985:341-396), a high concentration of such stray-finds can be expected around the former lakes.

In the light of the character of the Aggemose material it is obvious that a typological dating must almost exclusively be based on the arrow points. These indisputably place the site in the Blak phase, a dating that is not contradicted by other finds from the site. The exact time interval represented by the phase is not known yet. With some caution it can be said to begin at 6,000-5,700 b.c. (conventional), whereas its end can be fixed with certainty at approximately 5,400-5,300 b.c. As a consequence the start of the Villingebæk phase, traditionally dated to 5,500 b.c. (Vang Petersen 1984:10), must lie somewhat later.

## STRUCTURAL REMAINS, DISTRIBUTION PATTERNS AND SPATIAL ORGANIZATION

Apart from its chronological and geographical importance, the Aggemose site takes up a central position as a link between the Maglemosian pattern of dwelling organization and that of the Kongemose and Ertebølle Culture (Grøn in press, b). This section deals firstly with the preserved structural remains and subsequently analyzes the distribution of lithic waste and artefacts in relation to these structures to obtain information about the organization of the site.

#### The culture layer and the "pit"

During the excavation in 1975 it was observed that the majority of finds in the brown sandy topsoil derived from stripes of fine light grey sand, which had recently been ploughed up into it. Patches of this grey sand were also found in the transitional zone between the plough soil and the underlying glacial sand, heavily speckled by brownish top soil resulting from animal activity, and also here containing lithic waste and artefacts.

One larger coherent patch, measuring approximately 2 m N-S by 3 m E-W and with an irregularly rectangular shape, was found to be linked to the top of a 10 cm deep, flat bottomed pit, containing brownish light grey sand, speckled with brown topsoil brought down by burrowing animals. The pit contained some worked flint. In its eastern part, the excavator observed a further small round pit, approximately 90 cm in diameter and

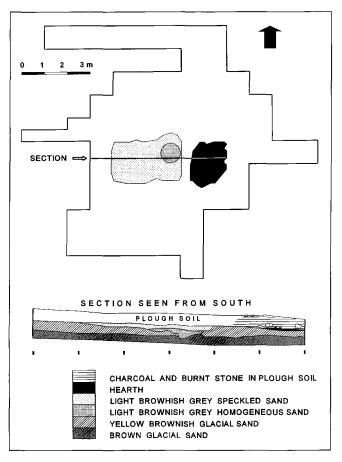


Fig. 5. Aggemose. Plan of features (above) and section (below).

20 cm deep. The latter contained brownish light grey "unspeckled" sand and a large number of small pieces of lithic waste, of which at least 50% was damaged by fire.

The only difference in the content of the "upper" and the "lower" pit is that the sand in the former is described as "speckled" with brown topsoil resulting from animal activity, whereas that from the lower is described as "unspeckled". The separation of the two structures thus seems exclusively based on the presence of later animal activity within a restricted vertical zone. The excavator describes the "lower" pit as a "pit in the pit', but does not express directly whether he regards it as a separate structure or not.

The section recorded during the excavation shows that the "speckled" light brownish sand forms a 5 cm thick zone above the top of the "lower" pit (Fig. 5). Thus the brownish light grey "unspeckled" sand is to be

seen not so much as specifically the content of the latter, but as a lower part of the fill of one large shallow pit, the upper part of which has been affected by intense animal activity. Equally intense animal activity was not observed in the glacial sand below the plough soil, in the area adjacent to the pit.

The high concentration of phosphate (2) restricted to the pit-zone (Fig. 6,F), indicates the presence of a large amount of organic matter in antiquity. This may have been the reason for increased animal activity within a restricted vertical zone. On the basis of these considerations, the "upper" and the "lower" pits are interpreted as one.

The brownish light grey sand in the pit and in the transitional zone below the plough soil, most likely represents a culture layer of restricted extent. Since ploughing of the 30 cm thick, sandy top soil can only have reduced the top level of the sandy land spit, and no geological processes are likely to have increased it, the pit must originally have been at least 40 cm deep at its centre.

The very restricted horizontal distribution of the lithic material (Figs. 6-8), indicates that earlier ploughing has dispersed the little concentration to only a very limited degree. Had the main part of the material been deposited directly on the prehistoric vegetation surface, one should expect it to be much more dispersed. It probably lay protected in a shallow pit, at least 40 cm deep, represented by the lenticular, brownish light grey sand layer (e.g. Grøn 1990:82; Strömberg 1976:16; 1986).

#### The hearth

Already in 1974, before the excavation, the hearth was observable on the surface as a dark patch of ash-rich soil associated with a large number of fire-cracked and blackened stones. During the excavation it was found to lie to the east of the main find concentration and to measure approximately 2 by 1.5 m (N-S and E-W, respectively). It had been almost totally disturbed by ploughing, and accordingly it was not possible to make observations on the organisation of the many burnt stones. Only a 5-6 cm thick layer of charcoal at its cen-

tre, directly superimposed on the underlying yellow brownish glacial sand, was left undisturbed by the plough. There is no direct evidence of the dating of the hearth, but according to its position (see below) it is not unlikely that it is contemporaneous with the other Mesolithic finds.

#### The distributions of lithic material and phosphate

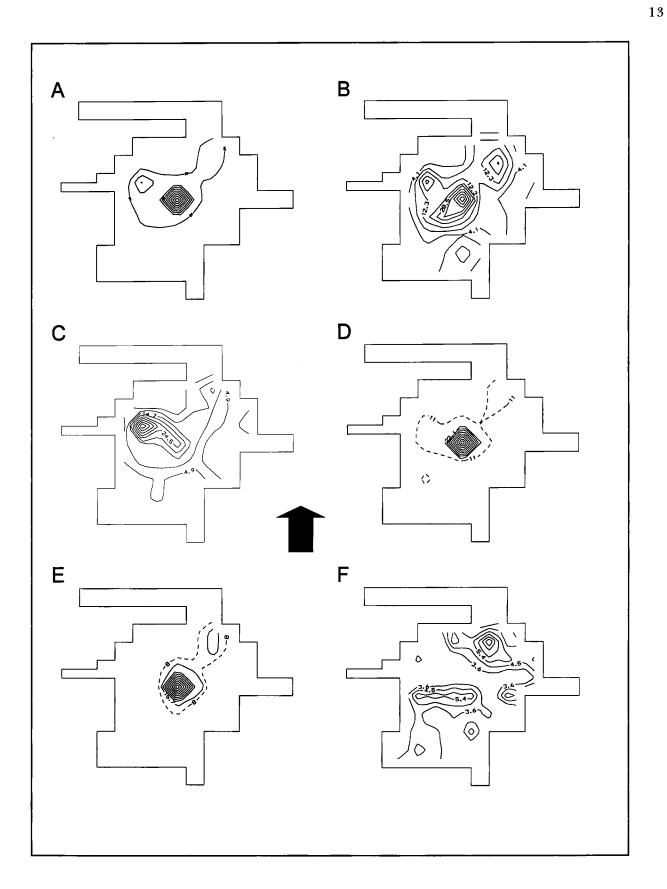
The different typologically defined artefact types appear only in restricted numbers, so the plans of their distribution must be treated with some caution. There are however some clear trends which are likely to be representative.

Since the majority of the items is registered only in terms of a particular square metre field, their location in the centre of the square gives a maximum inaccuracy of 0.7 m (the greatest distance from the centre to a corner in a square). Any other position would give even greater inaccuracies. Accordingly, a certain blurring of the original distributions must be expected, no matter how they are expressed graphically. This explains why complementary distributions separated by a wall may look as if they overlap each other by as much as 1 metre.

The "lithic waste" (Fig. 6,A) can traditionally be separated into blades, flakes and irregular pieces. Within the main concentration these three sub-categories behave differently. The blades (Fig. 6,B) appear in both an eastern and a western concentration, the flakes (Fig. 6,C) have a concentration in the east and the irregular pieces (Fig. 6,D) are found in a western one. This probably reflects the different handling of the two first categories: Many blades are used as artefacts whereas the majority of the flakes are not. The concentration of irregular pieces coincides with the concentration of burnt flint (Fig. 6,E) and owes its existence to the many irregular fire-shattered pieces. Together, these distributions make up a large coherent central concentration. The central concentration is linked to a smaller northeastern concentration by a narrow band which has a similar location for each find category (Fig. 6,B-E). The latter probably represents an opening in some kind of physical barrier, for example a wall or a screen.

The distribution of phosphate (Figs. 6,F and 8,D),

Fig. 6. Distributions of: A, total of lithic waste, equidistance 29.0, max=290; B, blades and blade fragments, equidistance 4.1, max=41; C, flakes, equidistance 4.9, max=49; D, irregular pieces, equidistance 22.1, max=111, hatched line for level=11.0; E, burnt flint, equidistance 15.7, max=157, hatched line for level=8; F, phosphate, equidistance 0.9, minimum level represented=3.6, max=8.1.



which should mainly reflect the distribution of bone and antler on the original settlement surface, shows a significant concentration in the southernmost part of the main concentration, and another accumulation with even higher values coinciding with the small northeastern concentration area.

The broad trapezes (Fig. 7,A) are represented by six pieces found in a "crescent" of six adjacent squares inside the southern part of the main concentration. Four pieces were found in the proposed waste layer and four had an apparently random distribution in the southern and eastern part of the excavated area.

The burin spalls and burins (Figs. 8,A and 8,B, respectively) each appear inside the main concentration with no more than 1 and 2 pieces per square metre, respectively. Together (Fig. 7,B), they appear within the main concentration with a maximum of 3 pieces per square metre in its north-eastern part. Intact and fragmented blades with edge polish (Fig. 7,D) cluster both within the main concentration and the small north-eastern concentration.

Collectively, the lithic material and organic waste constitute a main western concentration comprising the lenticular culture layer, within which blades, flakes, irregular pieces and burnt flint show different distributions. On the basis of the different distributions the main concentration is estimated to represent an approximately rectangular structure, measuring 3.5 by 3.5 m (Fig. 8,C and the shaded squares in Figs. 6-8). Through some kind of physical "corridor" this main concentration is connected to a small north-eastern concentration, where all of the find categories appear with nearly identical distributions. The "corridor-effect" may very well be due to the presence of an entrance, whereas the latter concentration probably represents a small accumulation of waste immediately outside the latter.

The idea that the main concentration, with the lenticular culture layer, represents a dwelling area with an entrance in its eastern side, is partly supported by the distribution of the retouched knives (Fig. 7,C). They show a distribution complementary to the main concentration. According to the micro-polish on their edges,

they appear to have had functions identical to those of the blades with polish which clearly cluster inside the main concentration (Fig. 7,D). The retouched knives may represent external activities and the unretouched pieces internal ones.

The intact blades show an extremely interesting feature. Those with no registered polish (Fig. 7,E) are clearly concentrated in the north-western part of the main concentration, whereas those with polish (Fig. 7,F) are clearly concentrated in its south-westernmost part, on the southern border of the "pit". These concentrations may represent an area of production or storage of fresh blades suited for cutting, and a collection of worn blades, respectively. Whereas the intact blades with polish only coincide within the main concentration, the fragmented blades with polish also show a clear concentration in the proposed small external waste area. Possibly, a collection of worn but intact blades was kept in a secondary easily accessible place, whereas broken ones were discarded (Figs. 7,D and 7,F).

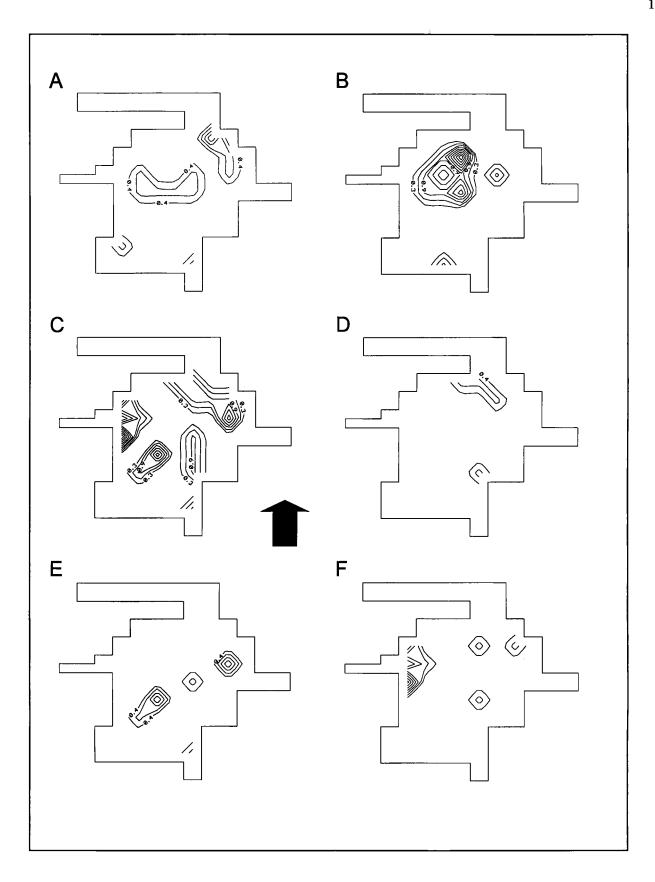
#### DISCUSSION. COMPARISON WITH OTHER SITES

It seems likely that the main concentration of waste which comprises the lenticular culture layer, supposed to represent the physical remains of an excavated depression or "pit', represents a dwelling area of approximately 3.5 by 3.5 m.

The concentrations of irregular pieces and burnt flint (Figs. 6,E and 6,D), of phosphate (assumed to represent the bone material) (Fig. 6,F), of broad trapezes (Fig. 7,A) as well as those of the intact and fragmented blades with polish (Figs. 7,D and 7,F) and the lenticular culture layer (Figs. 5 and 8,C) all are restricted to the southern half of the main concentration, i.e. the half furthest from the water.

This fits the general picture we have from other Kongemose and Ertebølle sites: One half of the supposed dwelling area contains only very few artefacts, whereas the other half contains the majority of them. Internal hearths generally seem to be located close to the border

Fig. 7. Distributions of: A, broad trapezes, equidistance 0.4, max=2; B, burins and burin spalls together, equidistance 0.4, max=3; C, knives with retouched backs, equidistance 0.4, max=2; D, blades and blade fragments with micro-polishes on their edges, equidistance 1.2, max=120; E, intact blades with no observable micro-polishes on their edges, equidistance 0.9, max=9; F, intact blades with micro-polishes on their edges, equidistance 0.7, max=7.



between these two zones (S.H. Andersen 1975:14-20; Grøn 1995; Grøn in press; L. Larsson 1975:13,15,19; 1978:197-198; M. Larsson 1987:26-30; Simonsen 1952: 202-203).

In the small, round dugout dwelling Hylteberga no.9, which has a diametre of 3 m, a depth of 0.75 m and probably belongs to the Kongemose Culture, a flooring made up of thick rods of hazelwood was observed which covered one half of the dwelling space (L. Larsson 1975:15,19). On this basis, the southern half of the main concentration at Aggemose may be interpreted either as a dwelling zone adjacent to a northern platform – or as a zone with another type of flooring than the northern one. According to the distribution of burnt flint the hearth was located in the northera zone, see Fig. 6,E.

At Hylteberga no.9 an entrance tunnel could be seen connected to the dwelling pit on the southern side, where the "platform" and the adjacent zone met (L. Larsson 1975:15). This situation corresponds nicely with the position of an entrance proposed for the Aggemose site: On the border between the two zones (Grøn in press).

The eastern hearth structure containing ashes and burnt stones may according to this interpretation, belong to another period, but judging from its position it is likely to be an external hearth, a phenomenon which seems to be rather common in the dwellings of the Kongemose and Ertebølle Cultures (Grøn in press).

The restricted number of artefacts found at the site seems to indicate that it was only inhabited for a short period. In most of the Maglemosian cases studied (Grøn 1995:10,39-41), it was obvious that only smaller objects such as microliths had avoided collection during cleaning of the dwelling floors, their distributions thus reflecting the original activity patterns. The fact that large items, such as the knives at Aggemose, have retained rather significant distribution patterns within, and immediately around, the main concentration must indicate that the site was used for so short a period, that no cleaning of the surface had taken place.

# THE AGGEMOSE SITE AND THE SETTLEMENT PATTERN OF THE KONGEMOSE CULTURE IN SOUTHERN SCANDINAVIA

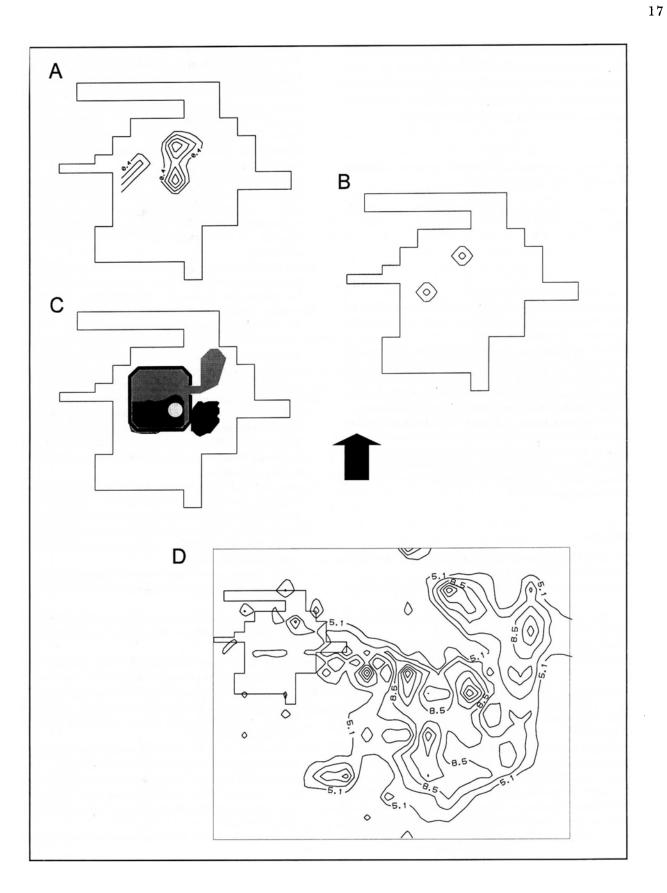
The sites of the Kongemose Culture have hitherto been known mainly from northern Zealand and Scania, Material of Kongemose character has been found at a number of large mixed sites in the remaining part of southern Scandinavia (S.H. Andersen 1971; Mathiassen 1937:94-97; 1948:146-148; Schwabedissen 1944). Only in a few cases has unmixed material from the latest phase of the Kongemose Culture been found to the west of the Great Belt (S.H. Andersen 1970). With the find of the Aggemose site, the first known representative of the early Kongemose Culture in this area, there is no reason to assume that the development here differed from that east of the Great Belt, in spite of the lack of "classical" Kongemose sites of the Villingebæk phase outside Zealand and Scania. The lack of classical sites may very well be a consequence of the fact that these were generally coast-bound and therefore are found today at some depth in the sea in the southern and south-western Danish area.

The fact that the Aggemose site seems to represent an inland site used only for a short period, fits the picture we have of a massive coastal settlement, with inland resources being exploited from small extraction camps. From this point of view it is regrettable that there are no faunal remains from the site which can give a direct indication of the economical activities carried out here and of the season(s) during which the site was used.

The group that inhabited the site must have been very limited in size. On the basis of surveys carried out around the site it is to be regarded as very unlikely that other similar habitation units are located on the same shore within a distance of 40-50 m.

#### CONCLUSION

The Aggemose site provides us with the first example from Denmark of a link between what must be regarded



as the structural remains of a dwelling and finds dating from the Kongemose Culture. It indicates a clear change in the pattern of dwelling organization at the transition from the final Maglemose Culture to the early Kongemose Culture (Grøn 1995; in press).

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#### **NOTES**

(English text revised by David Robinson)

- Langelands Museum, Rudkøbing, file no. 8609. Jørgen Holm, the excavator, is thanked for good discussions of the material and his positive help in our publication of it.
- 2. Niels Hartmann carried out a spot-test phosphate analysis on the site and his report is included in the excavation records. For each point of analysis the phosphate content was analyzed 40, 50, 60 and 70 cm below the top of the plough soil. On the basis of the colouring developed by the reaction, each sample was given a value from 0 (nothing) to 5 (maximum). The interpolated plans are based on the average of these values in each point. In the central parts analysis was made in each corner of a square meter net. Outside the excavated area up to 6 m to the north, 25 m to the east and 6-14 m to the south of it, in the corners of 2 by 2 meter squares (Fig. 8,D).

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