

# THE AHRENSBURGIAN GALTA 3 SITE IN SW NORWAY DATING, TECHNOLOGY AND CULTURAL AFFINITY

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## INTRODUCTION

Galta 3 is part of a site complex located on the north-western side of the island of Rennesøy in Rogaland, Southwest Norway (Fig. 1). This part of the island takes the shape of a peninsula facing north into the Boknafjord basin. On the Galta Peninsula, as it is called, 24 sites are known (Fig. 2). In connection with a major road construction project, sites 1, 2, 3, 5 and 48 were investigated by Mari Høgestøl in 1989-90 (Høgestøl 1995). Artifacts from the remaining sites have been discovered through surface collections, or from test pits. A shore-displacement curve of the area makes 9600 BP the upper date limit for habitation at the Galta sites (*ibid*, 96), and 9800 BP for Galta 3, making this the highest positioned site of the complex. In the early stages of the project, emphasis was placed on dating the site more precisely using geological expertise. At the same time, the high number of diagnostic "Ahrensburgian" points brought up a new issue in the study of the oldest Stone Age in Norway; how should these earliest sites be understood? Are they a direct "prolongation" of the Late Upper Palaeolithic settlement known from the northwestern plains of continental Europe? Could the term "Ahrensburg" provide a more relevant understanding of Galta's cultural context? Or is the connection to Late Upper Palaeolithic continental Europe of a more "indirect" character and therefore justifying the use of local terms like "Fosna?" In this article I will pursue the former approach, i.e. the Ahrensburgian.

The "Ahrensburg-connection" has been mooted by others than myself (cf. Fischer 1978, 34; Høgestøl 1995, 50; Prösch-Danielsen & Høgestøl 1995, 124). This connection, however, is based on an examina-

tion of projectile points. The aim of this paper is to investigate parts of the technological chains represented at Galta 3. The issue in question is whether the typification of this site as being of Ahrensburgian "origin" can be attributed based on the way blades are manufactured, i.e. to the schema opératoires typical of Late Upper Palaeolithic northern Europe. At Galta 3 a number of flake axes are also present. The presence of these artifacts raises another intriguing issue when discussing the Late Upper Palaeolithic / Early Mesolithic transition in this area; should flake axes be regarded as a purely Maglemosian / Fosna element, or should this artifact type be considered part of assemblages from younger Ahrensburgian contexts? Following the discussion of blade technology at the site and before my final conclusion, an evaluation of operational chains in the manufacture of flake axes will be conducted. First, however, a background will be laid describing dating results, geological context and excavation method.

## DATING, GEOLOGY AND EXCAVATION

Dating by artefacts. The oldest Stone Age phase in Norway, the Fosna phase, is defined as consisting of those "sites older than 9000 BP". The typical Fosna assemblage in West and Mid-Norway is characterised as including "flake and core adzes of flint, small tanged points, burins, microliths, macro flakes, unifacial blade cores and coarse macro blades" (Bjerck 1986, 107, 110). The Fosna phase is a blanket label which covers a period of more than 1000 years of development in material culture, and does not give a good

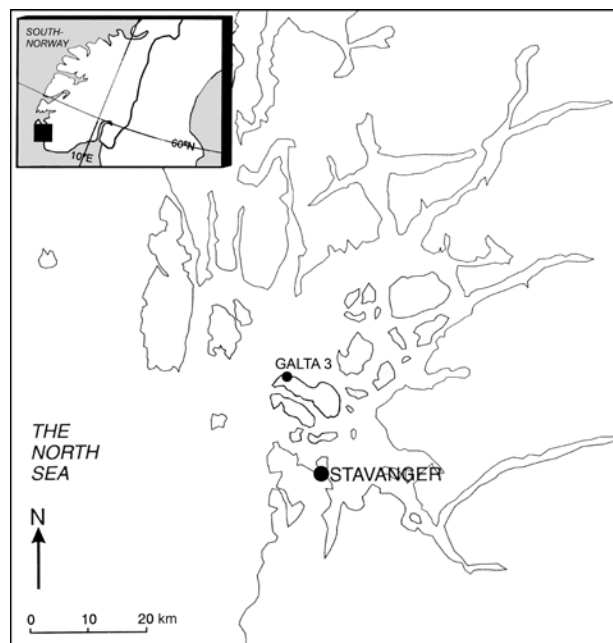


Fig. 1. Geographical position of the Galta site complex (modified after Høgestøl 1995, 23).

basis for accurate dating of the oldest settlement stage in West Norway (see Fig. 1). However, a pattern now seems to be emerging which indicates that in the period 10 000 to 9500 BP tanged points dominated in the beginning and are later succeeded, but not replaced by Zonhoven points and lanceolates. Some small elements of micro-burin technique may also occur in this period. However, microliths with microburin facets, accompanied by a high number of microburins, seem to be present at sites dated to, or younger than 9500 BP (Bang-Andersen 1990, 218f, 222; Kutschera 1999; Kutschera & Warås 2000, 69pp). On these sites tanged points are usually absent.

The tool assemblages of the Galta sites display a connection between the type of points found at the respective sites and their elevation above sea level. At Galta 3, tanged points are found in all layers, whereas Zonhoven points and lanceolates only occur in the three uppermost layers (30 cm) (ibid, 50; Prøsch-Danielsen & Høgestøl 1995, 124). Points classified as 'lanceolates' or 'simple lanceolates' are not manufactured by the microburin technique and microburins are absent from the collection.

*Dating by scientific methods.* Galta 3 is situated close

to Tranhaug hill which marks the highest point of the peninsula (Fig. 3a and 3b). The find area stretches from 16 to 20 m a.s.l. in a cove on the eastern slope of Tranhaug. Just below the cove, the bedrock forms a natural threshold toward the sea in the east (Prøsch-Danielsen & Høgestøl 1995, 124) (Fig. 4). The topographical position has caused the deposition of sediments from the Younger Dryas transgression. As a consequence, the Galta 3 find material is embedded in beach deposits. Only a short description of the material's relationship to its geological history will be referred to here:

The stratigraphy of Galta 3 consists of three units, 1) greyish till, 2) yellowish brown to rusty bed-beach gravel, and 3) yellowish brown sandy gravel (Fig. 5). Unit 1 was deposited before the area was deglaciated in 14 000, or perhaps as early as 16 000 -18 000 BP (Anundsen 1996, 208f). Unit 2 represents a lower beach phase during which the beach was not directly affected by swash processes. It may have developed subtidally during marine transgression and/or regression. Unit 3 represents an upper beach phase during which the beach was directly affected by swash. The unit is interpreted as having been deposited during a regression phase.

Dating of the sediments at Galta was based on the following information: Two samples from unit 3 were selected for thermo luminescence (TL) and optically stimulated luminescence (OSL) datings, combined with palaeomagnetic measurements. A shore-level displacement curve for Rennesøy was worked out which included a solid base of additional information and datings. The combined information drawn from these studies (sediment and shore-displacement curves) provides evidence that the beach sediments, including artifacts (units 2 and 3), were re-deposited during a transgression and/or regression phase taking place in the time period between ca. 11 200 and 9 800 BP.

During this Younger Dryas transgression, the maximum sea level was 28.2 m. Under these conditions Tranhaug (now 33.7 m a.s.l.) appeared as a small rock outcrop not suitable for habitation. The Galta 3 finds are situated at 16-20 m a.s.l. This leads to the conclusion that the occupation of Galta 3 must have been contemporary with, but most likely older than, 1) the transgression, or 2) the regression affecting the zone

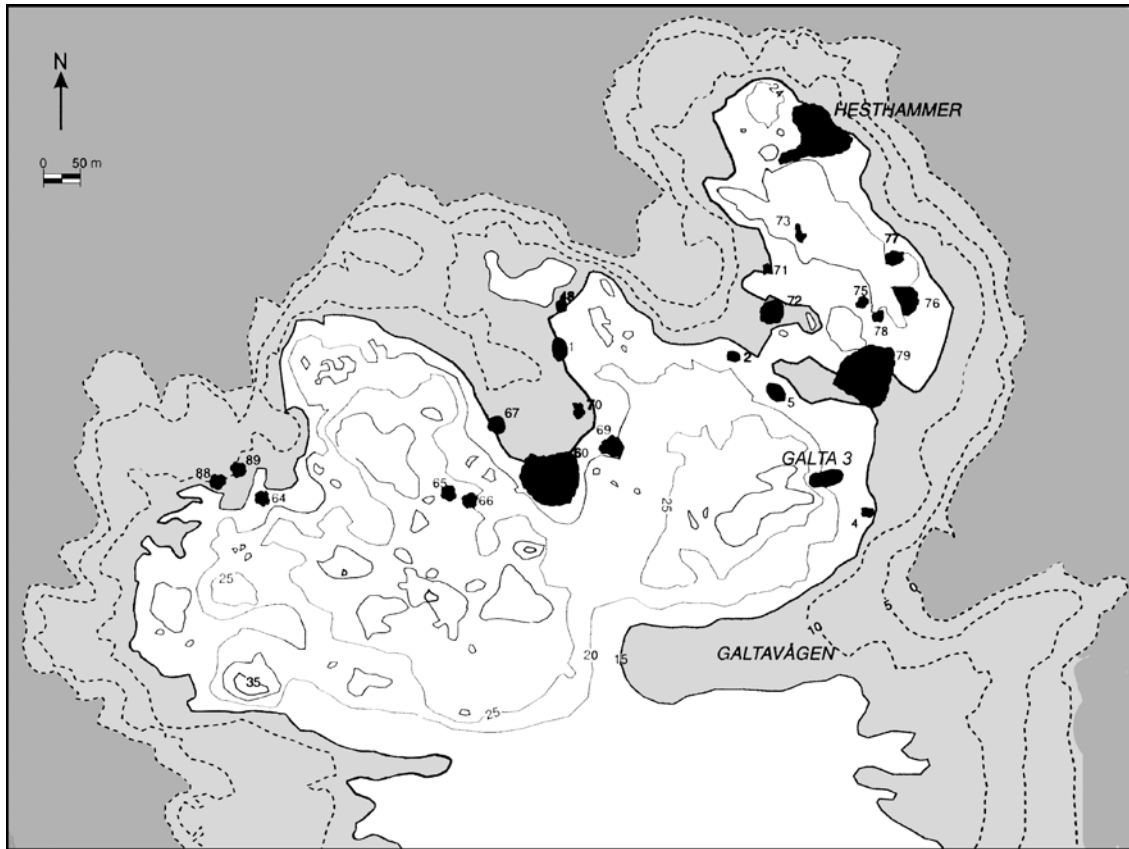


Fig. 2. Excavated and surveyed sites on the Galta peninsula. Shorelines below 15 m a.s.l. are dotted, above 15 m a.s.l. are solid lines (after Høgestøl 1995, 25).

between 16 and 20 m a.s.l. Habitation may thus have taken place prior to 11 000 BP, or in the time interval between 10 400 and 9 800 BP (for a thorough description, see Høgestøl 1995, 39-44, 47 and Prøsch-Danielsen & Høgestøl 1995, 126-129 with references).

**Conclusion concerning age.** A high number of the tanged points from Galta 3 fulfill the criteria to be classified as Ahrensburgian points (Fischer 1978, 34; Høgestøl 1995, 50; Prøsch-Danielsen & Høgestøl 1995, 124).<sup>1</sup> Furthermore, there is a group of points which can be compared with the Zonhoven points known from typologically late Ahrensburgian sites

on the Northwest European plain (Taute 1968, 183; Høgestøl & Prøsch-Danielsen 1995, 126). Overall, the entire collection of points from Galta 3 resembles those from classical Ahrensburgian sites like Stellmoor and Remouchamps (Fischer 1996, 165). Other tool categories from Galta 3 show a clear Late Upper Palaeolithic affinity (see Høgestøl 1995, 52(4)).

The Ahrensburg culture is traditionally dated to the Younger Dryas chronozone (11 000 -10 000 BP). However, nine C-14 dates from the well known type site of Stellmoor in Northern Germany, suggest occupation in the time period between  $10\,140 \pm 105$  and  $9\,800 \pm 100$  BP (Fischer & Tauber 1986, 9). According to the scientific dating of the site, the most probable habitation date of Galta 3 would have been 10 400 - 9 800 BP (Prøsch-Danielsen & Høgestøl 1995, 129). The age values of Stellmoor, however, allow us to suggest an even narrower dating of Galta 3. If we assume that the chronology between the two sites more-or-less

<sup>1</sup> The tanged points at Galta 3 do not, in this way, differ from tanged points at other early sites (predating 9 500 BP) in western Norway (e.g. Bang-Andersen 1990; Gjerland 1990; Kutschera & Warås 2000). What makes Galta 3 special is the very large number of points. This means that the Ahrensburgian element can not be overlooked and has led to a renewed focus on the "Ahrensburg-Fosna-relation".

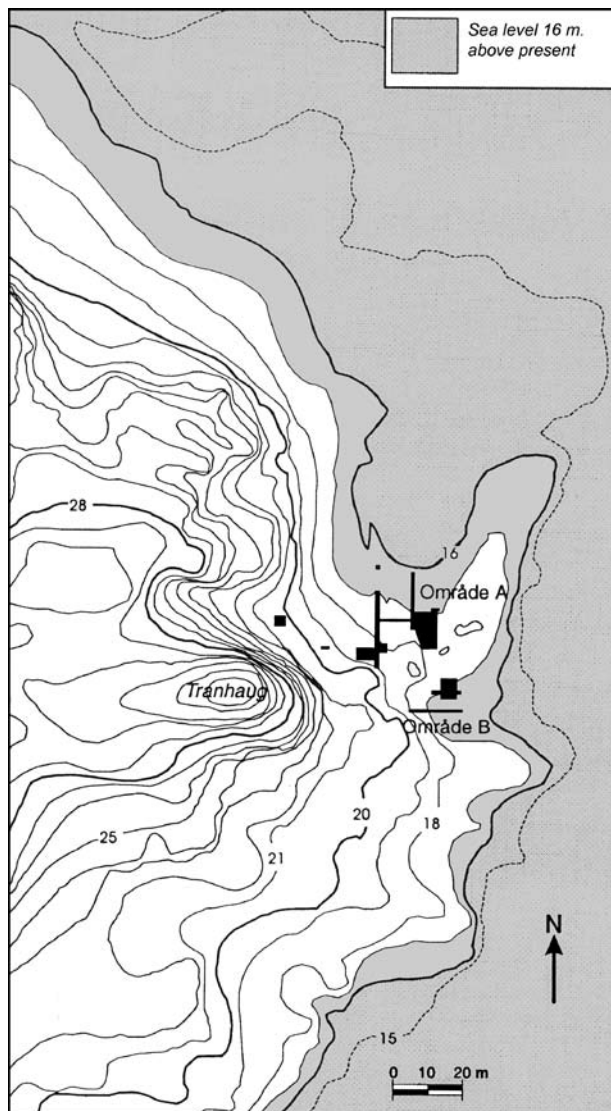


Fig. 3a. Topography at Galta 3, Rennesøy, with a shoreline 16 m a. s. l. (solid line). The excavated areas are marked in black (after Høgestøl 1995, 39).

overlapped, the time period 10 200/ 10 000 – 9 800 BP is perhaps the most likely dating of Galta 3.

Some of the artifacts are water rolled and/or patinated, while others are pristine. This indicates that the material was deposited at different times. Therefore, there is reason to suggest that there were at least two occupation phases at the site, taking place in the time period between 10 200/ 10 000 and 9 800 (ibid, 126).

## EXCAVATION, SETTLEMENT & POST-DEPOSITIONAL FACTORS

The settlement area at Galta 3 is estimated to cover about 1000 m<sup>2</sup>. Of this area 141 m<sup>2</sup> has been excavated in 5 different sections and 5 trenches (Fig. 6). Artifacts were found as deep as 90 - 110 cm within the beach sediment (Høgestøl 1995, 39; Prøsch-Danielsen & Høgestøl 1995, 124). Altogether there are 17 539 artifacts from the site (Table 1).

The material from section 1 has been the subject of a thorough refitting study. The total number of conjoined pieces is, however, low. The fact that only about 13% of the settlement area has been uncovered is probably the main reason for the lack of success in refitting.

The distribution of the refitted material indicates that most artifacts have been moved from the position where they were originally deposited. No clear activity distribution pattern seems to be preserved (Fig. 7). The disturbances would have been mainly due to the post-depositional forces which took place in connection with the regression phase at Galta. Assuming that the site represents at least two occupation phases, it is also probable that the material remains from each visit overlapped the former and that space was organised differently from one phase to the next. Material deposited during former occupation phases may well have been re-used. Disturbances at the site may thus have been the result of cultural as well as natural factors. Based on this background it is obvious that the material from Galta 3 is not well suited for intra-site analyses.

## AN "AHRENSBURGIAN APPROACH" TO GALTA 3

*Scope of the article.* The material from Galta 3 could be immediately placed under the Fosna label, and thereby perhaps contribute to a discussion of the backward limit of this tradition (compare Bjerck 1986:107 with tab. 1). Here, I would like to start from a different point of view: We have seen that Galta 3, with regards to both dating and tool material, may have an affinity with the Late Upper Palaeolithic; not necessarily in terms of absolute dating, but in terms of being part of a palaeolithic tradition and belonging to the youngest of these, i.e. the Ahrensburg.



Fig. 3b. Photograph of the excavated area at Galta 3 facing westwards, with the Tranhaug hill in the background (photo: Museum of Archaeology, Stavanger).

The scope of this article is to demonstrate that not only tools, but also the technological processes that took place, make Galta 3 a typical Ahrensburgian site. In this connection tanged points will not be taken into consideration. The proposed continental Late Upper Palaeolithic affinity will here be demonstrated primarily through blade technology. A description of a selected number of refitted series from “felt 1” (see Fig. 6) will form the basis for the following discussion, in which non-fitted material will also be brought in to deepen the understanding of the material: Flake axes have not traditionally been part of the Ahrensburg assemblage. The character and presence of 19 flake axes at Galta 3 will be given a separate description. Finally, I will discuss the results in relation to the concept of a Fosna-tradition in Norway.

*A definition of Ahrensburg.* In his article on finds from Northern Friesland in Germany, Sönke Hartz

describes the blade material of the assemblages from Ahrenshöft as being characterised by a conspicuous coalescence between remnants of the execution of an acute angle technique, a thorough reduction of the core, marginal on the platform and frequent preparation of the core edge. These features point to a soft hammer, direct percussion technique (Hartz 1987, 21; see also Madsen 1992, 120). The sites at Ahrenshöft belong to the Havelte phase of the Hamburgian culture/period, i.e. the end of the Bølling chronozone 13 000 - 12 000 BP.

In the same connection, Hartz goes on to study material from the Late Upper Palaeolithic classic sites in order to make an assessment of the technology of each phase. In his study, including sites like Teltwisch 2, Eggstedt and Stellmoor, he finds that the technology of the Ahrensburgian assemblages shows more diversity. For instance, very big blades, the so called

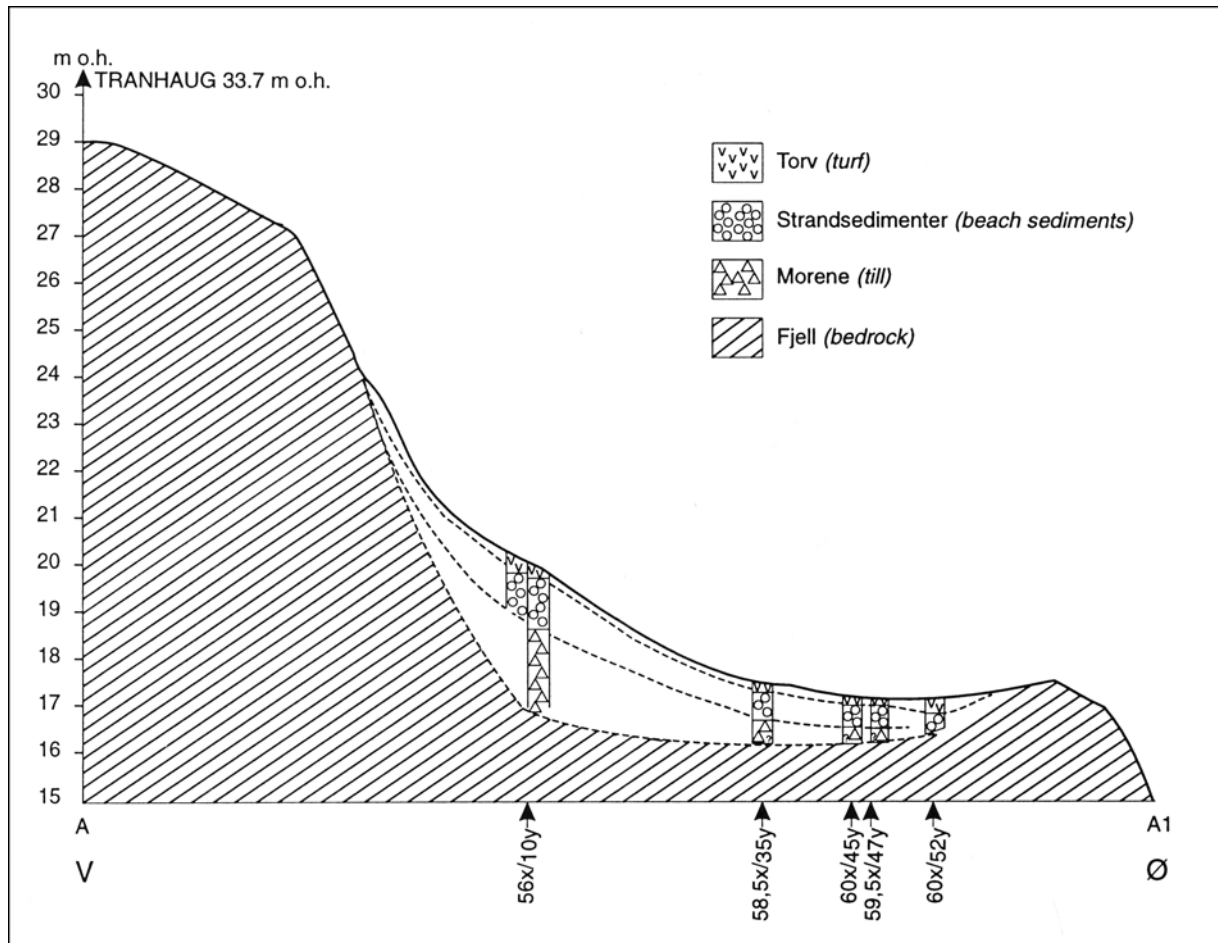


Fig. 4. A vertical cross-section, A-A1, Galta 3. (ill.: Lisbeth Prösch-Danielsen & Bjørn Ingvaldsen, after Høgestøl 1995, 53).

Riesenklingen might have been manufactured using a hard technique, and do not always show traces of core preparation on the dorsal side. However, in "normal blades", i.e. Schmalklingen/Klingen, the technology is similar to the Hamburgian way of manufacture. According to this study, characteristic artefacts and features in Ahrensburgian assemblages are: Unifacial cores with one platform, platform rejuvenation Tablets, blades struck with an acute angle of percussion ( $> 70^\circ$ ), non-parallel scars on blade dorsal surfaces, lips, small platform remnants on blades as well as traces on blades and cores / core fragments of a thorough platform edge preparation (Hartz 1987, 26, 27 abb. 9).

This assessment of the blade technique is in accordance with other appraisals of the Ahrensburgian blade technology (e.g. Fischer 1982, 92f; 1988, 17, 20;

Madsen 1996, 72; Schild 1984, 203f; Zagorska 1996, 268f). However, the cited studies point to a higher frequency of unifacial cores with two opposed platforms, and not just one platform, as in Hartz' study.

#### QUESTIONS ON THE REDUCTION SEQUENCES AT GALTA 3, SECTION 1

The efforts devoted to the refitting of the Galta 3-collection corresponded to a work period of 3-4 months. Early in the work process the collection turned out to be not very promising in terms of accomplishing complete sequences and a high refitting percentage. Altogether there are 84 refitted series, each consisting of only 2 - 8 pieces. The percentage of refitted pieces is estimated to constitute

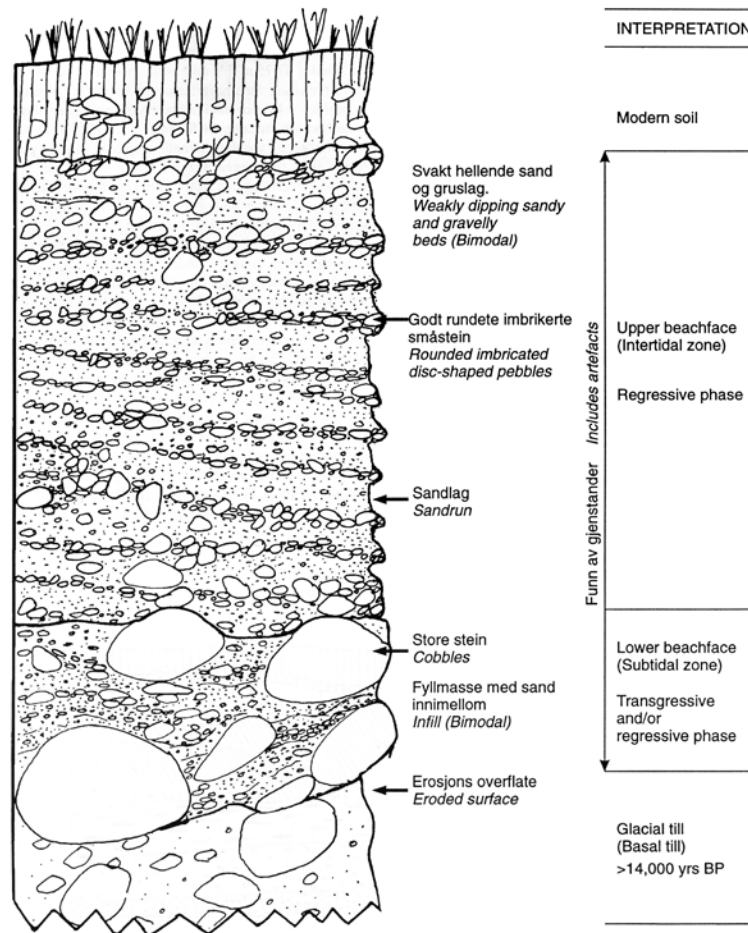


Fig. 5. Stratigraphic outline and interpretation of Galta 3 (after Høgestøl 1995, 43).

2-3 per cent of the total collection from Galta 3. The poor success in refitting is probably due to a number of different factors. The site is far from totally excavated (see Fig. 6) and as described earlier, has been strongly exposed to post-depositional movements, probably causing original activity areas – containing sets of “total” reduction sequences – to move away from their original spot (see Fig. 7). Thus, it is very likely that the “missing parts” of several reduction sequences remain in the unexcavated area of the site. Furthermore, the site has, in all probability, been visited more than once and reuse of material, trampling and clearing of soil surfaces may have erased the original arrangement of activity areas. Finally, it is possible that shortcomings in the author’s

refitting abilities may also be a factor explaining the low refitting percentage.<sup>2</sup>

Despite this background, I cannot see any reasons why the existing results should not be representative of the work chains that actually took place at Galta 3. In the study of refitted series, my questions can be formulated as the following. To which degree: (1) is the Ahrensburgian technology defined above, materially present in the Galta 3 reduction sequences; (2) do the reduction sequences show a technical competence comparable to what is documented in continental Eu-

<sup>2</sup> It should be mentioned though, that colleagues who are experienced in the field of refitting tried to help me out, but likewise judged the collection to be not very promising.

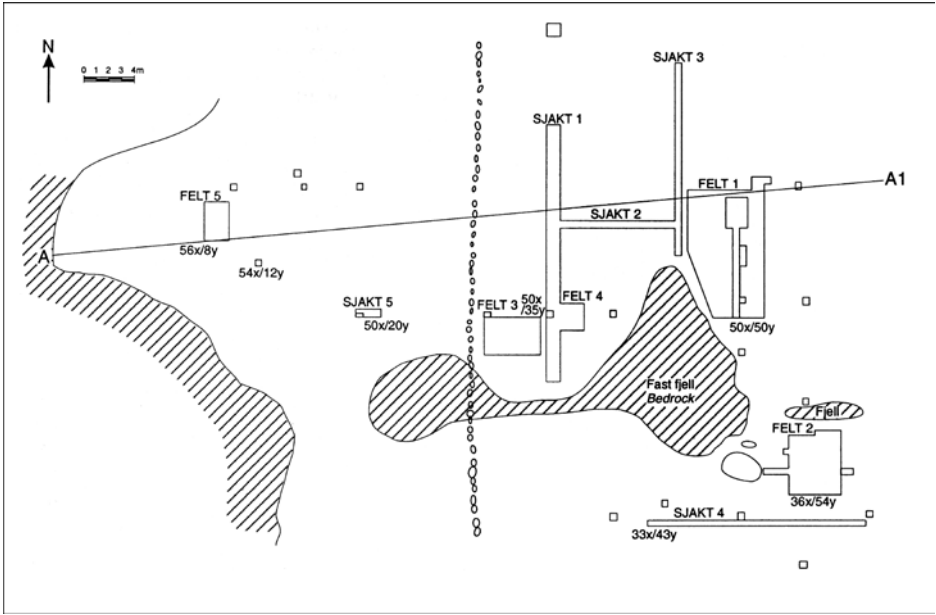


Fig. 6. Excavated sections, trenches and test-pits at Galta 3. The sections and trenches were excavated in ¼m¼ with mechanical layers of 10 cm (ill.: Evy Berg & Bjørn Ingvaldsen, after Høgestøl 1995, 41).

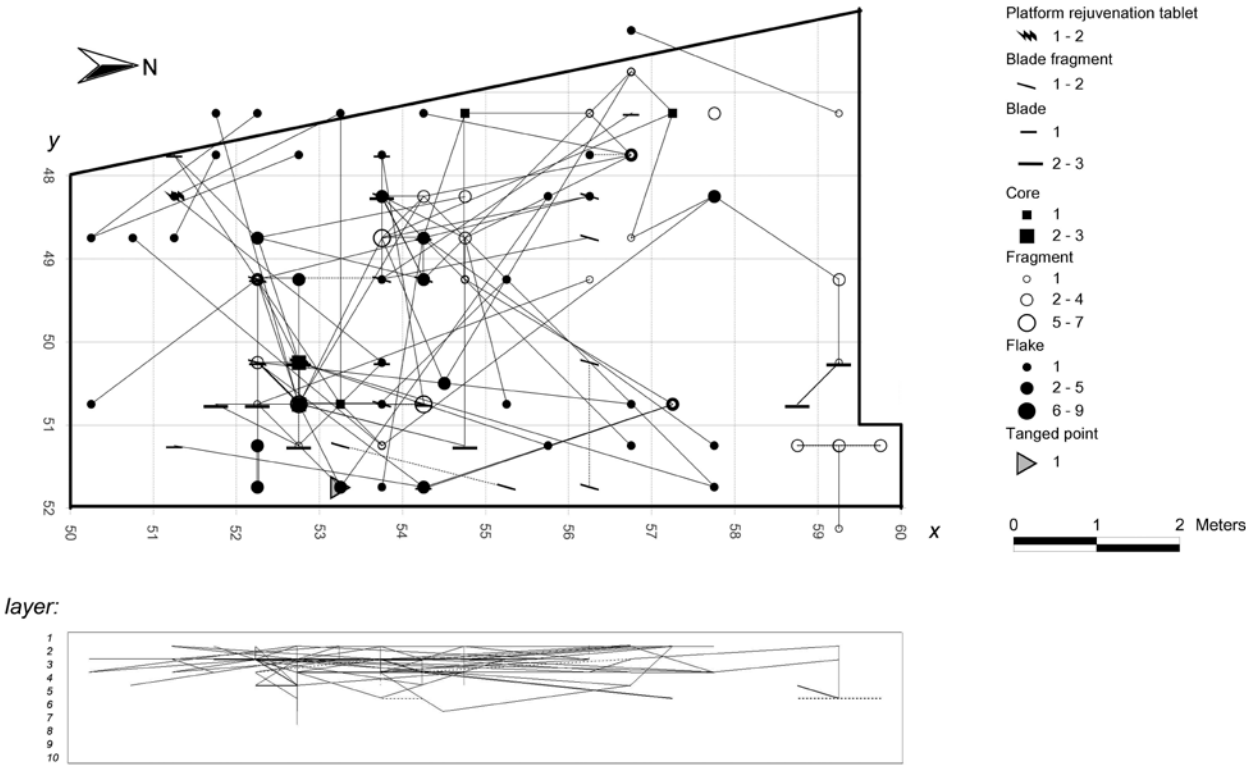


Fig. 7. Chart of refitted pieces at Galta 3, section 1 (all refits by the author, ill.: Stine Melvold).



ropean contexts; and (3) does the quality of the raw material impose limitations on the accomplishment of the operation.

With only a few exceptions (quartz, quartzite, rhyolite), the Galta 3 assemblage consists entirely of flint of varying quality. Three basic categories of flint raw material will be used in the description; a high quality senon-like flint, a coarse Danien-like flint and an intermediary type. The Senon-like category can be characterized as smooth, cryptocrystalline and usually without inclusions of coarser material. Grey, black and a brownish colour are common. The danien-like category could be described as having the type of coarseness associated with concrete cement, often consisting of smaller inclusions of better quality which give the material an irregular character throughout the core. The intermediary category is frequently opaque

and grey or brown in colour. It may have a "plastic" appearance, sometimes with smaller inclusions of a coarser material.

A selection from the refitted series will be described and interpreted in detail. This presentation aims at interpreting the intentions of the responsible flint knapper, i.e. the chaîne opératoire (e.g. Edmonds 1990, 57; Eriksen 2000) of each series. An evaluation of the technical competence displayed in each series was carried out during a work-shop in March 1997 at the Museum of Archaeology in Stavanger. The work-shop included Anders Fischer, Morten Kutschera and the author. Since the statistical basis is low for both the number of pieces in each series and the total number of series, only the basic categories competent or incompetent, although used with some variation, could be applied.

## REDUCTION SEQUENCES

*Series 1.* 2 flakes, 2 fragments, 1 blade, 2 blade fragments (Fig. 8). Flint quality: Danien. Purpose of manufacture: Blade production. Core: Unifacial, one platform. Technical competence: Competent knapper

The nodule was "opened" by the removal of two flakes which were struck from opposite directions. A blade front surface was provided represented by the one refitted blade which is positioned behind the two "opening" removals. The two refitted blade fragments bear evidence that a few (2-4?) were produced. Thus, the knapper succeeded in manufacturing a blade core and came close to the process of blade production. The viscosity of the raw material, however, placed strict limitations on how much of the core could be utilized. The primary opening of the nodule was probably carried out by the use of a hard hammer, whereas the manufacture of the blades was executed by direct percussion with a soft hammer.

*Series 2.* 1 platform rejuvenation tablet, 1 flake, 1 fragment, 1 blade, 1 core (Fig. 9). Flint quality: Danien. Purpose of manufacture: Blade production. Core: Unifacial, one platform. Technical competence: Competent knapper

The platform rejuvenation tablet attests to a previous generation of blade production and the two platform edges show evidence of being well prepared. Features of the flakes indicate the use of soft hammer percussion technique. From the second reduction sequence, only the last blade is present. After this removal the core was abandoned. An outcrop on the core made the cleavage surface uneven, and production of a good blade was impossible. Production of a blade could not have terminated in anything but a hinge. Even a highly skilled knapper working with this low quality flint could hardly have succeeded in evening out the curve on the core. The unsuccessful removal probably represents the last defiant attempt at producing a blade.

*Series 3.* 2 flakes, 1 core (Fig. 10). Flint quality: Danien. Purpose of manufacture: Probably blade production. Core: Unifacial, possibly one platform. Technical competence: Competent knapper.

The first "outer" removal contains scars indicating a well

trimmed platform edge. The platform remnant of this blade-like flake has a lip: evidence of direct soft hammer percussion technique. The intention of this removal was not necessarily to produce a blade, but to even out the cleavage surface after the previous termination had resulted in a hinge from the opposite direction, "documented" by the negative scar. A retry to even out the surface, documented by the "next" underlying flake seems to represent a last endeavor. However, a few negatives present on the outer refitted flake, and on the core cleavage front, show that the manufacture of some quite successful pieces had taken place prior to and eventually after the documented knapping sequence. Negative scars along the platform edge indicate a later shift to a hard hammer as a knapping instrument. The intention was probably to make the outward curve on the cleavage surface sufficiently convex to be able to remove it; the intended result seems once again to have been to make a straight front on the core. Removal of the outcrop was, however, not carried out. The knapper probably evaluated the platform surface as being too small and concluded that the operation would cause the core to fracture into unintended pieces. The knapper had a good knowledge of the possibilities and limitations of the raw material.

*Series 4.* 3 flakes, 2 platform rejuvenation tablets (Fig. 11). Flint quality: Danien

Purpose of manufacture: Blade production. Core: Unifacial. Technical competence: Probably a competent knapper.

The two outer cortical flakes were probably removed in order to prepare a first generation platform, represented by the "oldest" platform rejuvenation Tablet. Another generation of reduction is evidenced on the next generation platform rejuvenation Tablet. The two platform edges bear traces of being well-trimmed and the soft hammer technique seems to have been competently carried out. There is not sufficient evidence to evaluate the knapper's skill. The chaîne opératoire seems to indicate systematic planning, however, one could question how well this plan was carried out in practice. The knapper could be characterized as a person who knew the "theory" but needed to catch up on the practical side.

*Series 5.* 4 blades (Fig. 12). Flint quality: Intermediary, "Senon-like Danien"

Purpose of manufacture: Blade production. Technical competence: Highly competent knapper.

Every blade in the series is thoroughly trimmed. The quite good quality of the raw material made the intention of manufacturing a series of very good blades possible to realise. Lips are present on the platform remnant of three of the blades, and partly present on one. The series represents a soft hammer punch technique and the angle of percussion can be estimated to 70 degrees. The missing blades to follow this sequence, would have, in all probability been longer, thus filling the requirements of being classified as "real" blades. Blade production using this technique could not have been conducted in a more competent way.

*Series 6.* 2 blade fragments (Fig. 13). Flint quality: Intermediary, "Senon-like Danien", but not as good as in series 5. Purpose of manufacture: Blade production

Technical competence: Competent knapper

Blade production was carried out by an experienced knapper. The intention was probably to place the blow as marginally as possible on the platform, in order to produce thin blades. The last blade in the sequence missed the platform remnant, indicating that the blow was a bit too marginal, i.e. slightly misjudged (see also series 13).

*Series 7.* 2 blades (Fig. 14). Flint quality: Intermediary, "soft Danien". Purpose of manufacture: Blade production. Technical competence: Competent knapper

The refitted pieces are an example of blade production with a soft hammer. The angle of percussion can be estimated to 80 degrees.

*Series 8.* 1 tanged point, 1 blade, 1 core (Fig. 15). Flint quality: Intermediary, contains bryozoos but is close to Senon quality. Purpose of manufacture: Blade/tanged point production. Core: Unifacial, two opposite platforms. Technical competence: Highly competent knapper.

The series is a nice example of blade production by way of two opposed platform cores. Both platforms are well trimmed all along the edge, i.e. there are traces of a conscious use of the two opposite platforms interchangeably. The second removal, i.e. the unworked blade is thin, concave and has a small platform remnant. The well-trimmed platform edges, along with the features of the blade, give typical evidence of a soft hammer direct percussion technique. There have probably been several previous generations of platforms constituting blade fronts: the core might have been twice as long. The soft hammer technique as evidenced in these refitted pieces, is well suited to the manufacture of tanged points because the blades produced naturally run into a feather. Tanged point production is concretely confirmed by a refitted specimen: the first removed blade of the sequence. The projectile measures 2 cm. The tip of the point is manufactured on the bulbar end of the blade.

*Series 9.* 3 flakes, 3 fragments, 1 blade (Fig. 16a & 16b). Flint quality: intermediary, "soft Danien". Purpose of manufacture: Decortication, probably blade production. Technical competence: Competent knapper

The presence of platform remnants (Fig. 16a) on the three oldest cortical flakes reveals the use of a hard hammer during the process of decortication. The non-cortical straight flake, which was refitted perpendicular to this sequence (Fig. 16b), has a distal end representing remnants of a well-trimmed platform edge. This indicates the start of real blade production on a unifacial core, and not

least, the change to a soft hammer. Thus, the refitted series probably represents a fragment of a blade core's outer shell.

*Series 10.* 3 fragments, 4 flakes (Fig. 17). Flint quality: Intermediary, "soft Danien". Purpose of manufacture: Production of macroflakes / flake axes. Technical competence: Probably a competent knapper

The series represents the decortication of a fairly big nodule. Even if not directly documented by refits, blade production does not seem to have been the intention, but was rather the production of macroflakes for the further manufacture of flake axes. Ventral and dorsal sides on the flakes show that macroflakes similar to those represented in the series had been present. Distinct platform remnants containing punch scars and cone formation represent typical evidence of a hard hammer technique. The small inner flake to the right has a faint lip (not visible on the photograph) on the platform remnant, indicating the use of soft hammer technique. There is a possibility that this flake was removed in connection with surface flaking of a flake axe originating from this part of the nodule.

*Series 11.* 3 side edge flakes (Fig. 18). Flint quality: Intermediary, containing bryozoos. Purpose of manufacture: Side edge preparation of flake axe. Technical competence: Probably competent.

The series gives an insight into a limited part of the operation sequence of the preparation of a flake axe.

*Series 12.* 2 blade fragments (Fig. 19). Flint quality: Intermediary, "soft Danien"

Purpose of manufacture: Blade production. Technical competence: Competent knapper.

This small series provides a glimpse of a successful sequence of blade production. The youngest blade has a lip, however, which only covers parts of the platform remnant. Probably the same striking instrument was used to produce both blades, i.e. a soft hammer.

*Series 13.* 2 blades (1 blade, 1 proximal fragment and 1 distal fragment of the same blade) (Fig. 20). Flint quality: Intermediary, "soft Danien". Purpose of manufacture: Blade production

Technical competence: Competent knapper. The first and oldest blade of the sequence has a bulbar scar indicating it was removed either by a hard antler or a soft stone. Whenever the intention is to produce thin blades, one has to place the blow as marginally as possible on the platform. When working with viscous material, it often ends up in a "collapse" of the platform, as evidenced by the oldest blade in this sequence (see also Series 6). The second blade (the two fragments) has an uneven platform remnant, partly consisting of a lip, indicating the use of a soft hammer.

*Series 14.* 4 flakes, 1 core (Fig. 21). Flint quality: Danien. Purpose of manufacture: Uncertain. Technical competence: Possibly an incompetent knapper

The possibility of being able to manufacture good blades from this kind of raw material is almost zero. Therefore, it is hard to decide whether the reduction is due to the very bad raw material, or to incompetent technical skills. The removal of the outermost flake marks a good start. Bad trimming of the platform edge, however, could indicate shortcomings in the knapper's competence.

*Series 15.* 3 fragments, 1 core (Fig. 22). Flint quality: Danien. Purpose of manufacture: Uncertain. Technical competence: Competent knapper.

Due to a very irregular consistence, this series consists of an extremely low quality raw material. At first glance it seems almost unbelievable that anyone even tried to work it. At least 4 flakes were removed until the core was given up. Negative scars of flakes show that



Fig. 8. Series 1 (all photographs by Museum of Archaeology, Stavanger, see text for explanation).



Fig. 9. Series 2.



Fig. 10. Series 3.



Fig. 11. Series 4.



Fig. 12. Series 5.



Fig. 14. Series 7.

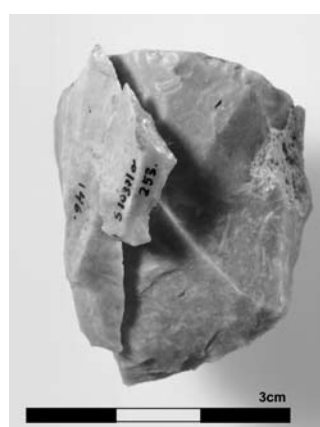


Fig. 15. Series 8.



Fig. 13. Series 6.

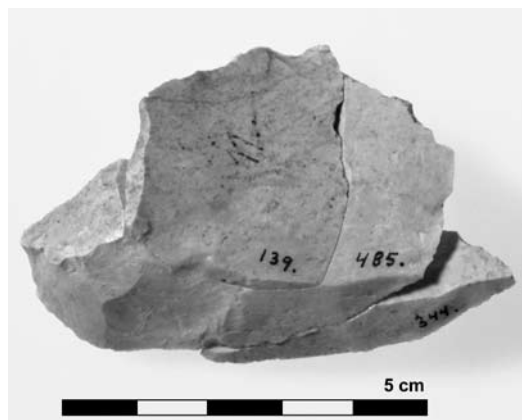


Fig. 16. Series 9.



Fig. 17. Series 10.



Fig. 18. Series 11.



Fig. 19. Series 12.



Fig. 20. Series 13.



Fig. 21. Series 14.

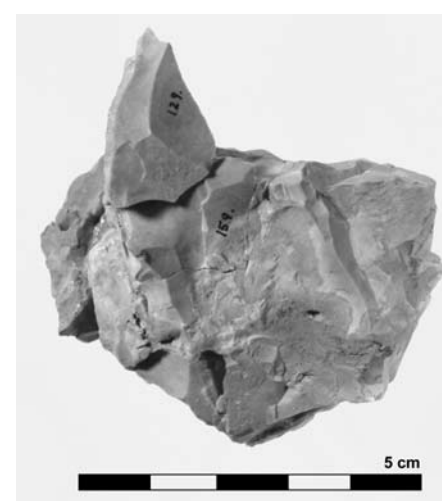


Fig. 22. Series 15.



Fig. 23. Series 16.



Fig. 24. Series 17.



Fig. 25. Series 18.

they have been struck from parts of the core containing a more even type of flint. The outermost refitted flake is representative of this. The documented sequence gives evidence of an advanced technique; the outward curving cleavage surface was successfully straightened out by removal of the next flake of the sequence. After this removal, the core parts containing a better flint quality were minimal, which probably lead to the abandonment of the operation.

*Series 16.* 2 flakes (Fig. 23). Flint quality: Intermediary Purpose of manufacture: Side edge removals, flake axe production. Technical competence: Competent knapper.

The series shows two removals of what most probably represents the working of an edge of a flake axe. The two flakes may have been struck by different instruments; the first one of the sequence with a soft hammer, the next with either a hard antler or a soft stone.

*Series 17.* 3 blades (Fig. 24). Flint quality: Danien, containing bryozoans

Purpose of manufacture: Blade production Technical competence: Competent knapper.

The blades show well-trimmed edges and contain lips on parts of the platform remnants. The extremely coarse material imposed strict limits on the manufacturing process, revealed by the existence of hinges on both ventral and dorsal sides. Two hinged scars on the

ventral side are evidence of two unsuccessful attempts in evening out the cleavage surface. The series gives an example of raw material limitations met by an experienced knapper. It is obvious that it otherwise would have represented a successful blade production sequence.

*Series 18.* 1 blade, 1 blade fragment (Fig. 25). Flint quality: Senon. Purpose of manufacture: Blade production. Technical competence: Competent knapper.

The series represents one of the few concrete examples of blade production with a dual opposed platform core. Again a soft hammer technique was used, probably with a unifacial core. The small size of the blades shows to what extent flint of senon quality have been utilized for blade production.

## DISCUSSION

*Raw material usage.* As will be commented on further below, the refitted series are dominated by coarse raw material. Refits of high quality flint are fewer and the pieces comprising series of high quality flint are generally smaller. From the examination of the refitted series, a general impression of raw material utilization can be summed up in the following way.

(1) Blade production with coarse flint ('intermediary' and Danien quality): The viscosity of the coarse raw material imposed a limit on how much of each block could be utilized. It is easy to produce uneven surfaces and they are hard to correct, even for competent knappers. Most series appear to have been created by competent individuals, who had knowledge of the possibilities and limitations of the raw material. The shape and distribution of the cortex of the cores, in relation to the size when they were abandoned, indicate that the number of blades produced from each block can be estimated to only 2-4. A general lack of blades indicates that most specimens were chosen for further manufacture, i.e. tool production. Blade production is accompanied with a frequent rejuvenation of the platform, sometimes probably one rejuvenation per blade. Cores in the coarse flint category, however, must be classified as unifacial: only one platform seems to be commonly represented. Features of the proximal end of blades (small platform remnant, weak bulb, lip) indicate that the blades were manufactured with a soft hammer direct percussion technique. In some series a direct hard hammer (soft stone or hard antler) may have been used. Impact blows from an acute angle are sometimes clearly documented.

(2) Blade production with high quality flint (Senon-

like quality): Manufacture by competent individuals is documented. Use of terms like "highly competent" is limited to refitted series of high quality flint. The few refitted series of senon-like flint indicate the use of unifacial cores with two opposed platforms. Features of proximal blade ends demonstrate the use of a soft hammer direct percussion technique. The refitted cores and blades are small, thus indicating a high utilization of the material.

A striking aspect of the refitted series from Galta 3 section 1 is the extent to which coarse flint is over-represented in contrast to high quality flint. An examination of the entire section 1 material also demonstrates how the total quantity of debris is dominated by coarse flint raw material. Debris of high quality flint comprises a clear minority and pieces are generally smaller than in the coarse material category. To this picture can be added that there is a conspicuous contrast between high flint quality on formal tools and the overall impression of coarse debris.

An obvious interpretation would be that the difference in flint quality gives an over-representation of coarse material in the archaeological record. This interpretation can be emphasized by relating more aspects of refitted and non-fitted material: The refitted series show signs several times, of work operations being abandoned due to limitations in the intermediary, but primarily in the low quality Danien-like flint category. The documented reduction sequences are mostly carried out by skilled knappers, and the early abandonment of cores cannot be ascribed to technical incompetence. The production of blades of coarse raw material thus produces a high quantity of debris, such as cores/core fragments, platform rejuvenation Tablets, blades and flakes from rejuvenation of the cleavage surface, in addition to general, unidentified debris and amorphous cores. The few refitted series of senon-like flint indicate a maximum reduction of nodules, due to the technical possibilities for intensive utilisation of this material. The presence of a few "normal sized" blades (7-8cm, compare Tromnau 1975) of senon-like flint, demonstrates the original presence of larger senon nodules at the site. At the same time, the few present cores of high quality flint are totally exhausted.

The use of different flint types might reflect a situation where flint from local and distant sources is used simultaneously. The coarse flint is probably picked

up from beach deposits close to Galta 3, whereas the high quality material mostly originates from the European continent.

## AHRENSBURG VERSUS FOSNA

The examination and discussion of the material demonstrates that the blade technology used at Galta 3 can, in all instances, be characterized as typical Ahrensburgian. This is obvious from the presence of unifacial cores (one or two platforms) and a large quantity of platform rejuvenation debris, strong evidence of frequent use of the soft hammer direct percussion technique (including some variation). The overall picture corresponds to Hartz' definition of the typical Ahrensburgian assemblage (see paragraph "A definition of Ahrensburg").

How does the Galta 3 material correspond to the definition of the Fosna assemblage? "Sites older than 9000 BP" are described as consisting of unifacial cores with one or two platforms, blades and coarse blades (Bjerck 1986, 107; Mikkelsen 1975, 26). Here, one is obviously referring to exactly the same type of blade production as described for the Galta 3 material. However, aspects related to the soft hammer technique are not recognized as being present: neither is the consequence, i.e. a close connection to continental European assemblages of the same age.

In the literature describing material of the Fosna phase, there is in my opinion a more or less implicit notion of coarseness in describing the blade technology as well as the assemblages in general (Bjerck 1986, 107, 113; Indrelid 1978, 151). This seems to be understood as an exclusively Norwegian, or rather West Norwegian phenomenon. The coarseness ascribed to the material older than 9000 BP could rather be understood, as explained in this study, as a consequence of the use of local coarse flint and the technical processes leading to an over-representation of coarse raw material in the archaeological record. When Bjerck describes macro blades of the Fosna phase as 'coarse', he is referring to the non-parallel ventral ridges of the blades (Bjerck 1986:113). When Hartz is describing Ahrensburgian blades as 'coarse faceted' ('grob facettert', see Hartz 1987: Abb.9, s.27) he is in all probability referring to an identical phenomenon.

The idea of coarseness in the Fosna assemblages

could be placed in a wider context when looking at how the Middle Mesolithic blade technology has been taken into consideration. The appearance of “regular”, i.e. blades with parallel dorsal scars, appearing in the Norwegian Middle Mesolithic period, was obviously understood as a refinement of a “bold” industry in the earlier period. Thus, blades dated to the Middle Mesolithic are described as “extremely even” (Bjerck 1986, 107). However, the present study of the Galta 3 material illustrates that blade technology of the oldest phase should rather be seen as a mere aspect of the Ahrensburgian tradition of manufacture. Soft hammer direct percussion technique requires high competence and skill and should not be attributed to a coarse “level” associated to an implicit notion of evolution in Mesolithic flint technique. It is clear that “coarseness” as a relevant concept in describing the oldest Stone Age material in West Norway, should be attributed entirely to the use of local beach flint. As a consequence of this specific raw material situation, people left behind immense quantities of coarse debris.

Previous works have pointed out an Ahrensburgian connection with the Galta 3 material on the basis of the nature of the tanged points and Zonhoven points (Fischer 1978, 34; 1996, 165; Høgestøl 1995, 50; Prösch-Danielsen & Høgestøl 1995, 124). I have so far confirmed this same connection on the basis of blade technology. The chaînes opératoires of Galta 3 point to a set of schema opératoires that do not in any way differ from the ones characteristic of the Ahrensburg group. However, before reaching a conclusion concerning the cultural affinity of this site, the presence of flake axes needs to be examined.

## FLAKE AXES

*Systems of manufacture and raw material.* The Galta 3 tool collection contains 19 axes of which the majority are classified as flake axes: 2 specimens could on a formal basis be described as core axes (see below).

At first glance the axes from Galta may give a deceptively simple impression (Fig. 26). However, a closer examination reveals that most specimens are produced according to a conscious system of manufacture (Fig. 27) (Fischer, unpublished). The most common system adhered to is what is known as the “Ertebølle system”, where side edge flaking takes

place prior to surface flaking of the axe. This operation can be carried out symmetrically as well as asymmetrically. In the Galta 3 collection both methods are represented. Furthermore two specimens could be described as being close to the “Barmose system” of manufacture, where surface flaking takes place prior to side edge flaking. One of the axes cannot be classified according to a certain system, whereas on five specimens, the original system of manufacture seems to have been erased as a consequence of intensive re-sharpening. The convex side edges of some axes are also probably due to repeated re-sharpening. The impression that the Galta 3 axes are produced according to mental schemes is strengthened by the fact that 9 out of 19 specimens have worked necks (see tab. 2).

Three axes made according to the Ertebølle system seem to have been carried out by untrained technicians. It could be interpreted as if the operation system was known “in theory” – i.e. a person having knowledge but not know-how (cf. Pelegrin 1990) – and therefore was still lacking a certain level of practical competence. This may especially be the case with specimen d, made of senon-like flint (see Fig. 27 d and tab. 3), since poor execution of the “ideal” shape” cannot be explained by low quality raw material.

The choice of raw material for flake axes is worth some comments. Respectively, specimens 9, 6 and 4 are made of intermediary, senon-like and danien-like material (tab. 3). The majority of intermediary material may somehow reflect this type of flint as a preferred material for flake axe production in this cultural historical situation. What I have defined as “intermediary” also characterises the total number of 10 axes from the Ahrensburgian site Skiftesvik loc. 142 in Hordaland (Warås 2001, 101 and pers. comm.).

*Debris from flake axe production.* Series 10 represents the only clear evidence of the use of a hard hammer technique, and the intention must have been to produce quite thick big flakes. The flakes from series 10 resemble a large number of the flakes in the Galta material. They represent the ‘macro flakes’ typical of Fosna sites in general (e.g. Indrelid 1978, 151). This artifact category is often the most noticeable element in surface collections of Early Mesolithic sites in western Norway. Series 10 and other macro flakes must be seen as related to the production of flake axes. There is no other tool category that could explain the pres-

ence of macro flakes (i.e. 'skiver'). Indeed, no direct evidence exists, such as refits between flake axe and macro flakes exists from Galta 3. A refitted connection of these elements is, however, present from the Early Mesolithic site Stunner in Akershus, Southeast-Norway (Fuglestad 1999, Fig. 4 c). Series 16 relates to a further stage of the flake axe production, i.e. the shaping of the side edges. The flakes produced by this operation exhibit a typical wing-formed shape. These are well known in South-Scandinavia from the archaeological record as well as from experimental archaeology (Johansson 1990, 24; Petersen 1993, 133).

## DISCUSSION

*Dating of flake axes.* The Galta 3 flake axes are mainly produced by a system of manufacture comparable to the much younger Ertebølle axes. A relevant question could be whether this represents a chronological phenomenon, involving the Ertebølle system of manufacture being used in the Ahrensburgian period and then later being superseded by the Barmose system of manufacture in the Early Magelmoose phase (see Fischer 1996, s. 160f, Fig. 2). In my opinion, the two systems of manufacture are not, in this context, bound to a time scale. If we consider a 'tool-maker's perspective' the two systems of manufacture represent different "routes" to a defined end: this end being a sense of how a flake axe should and could look. The Barmose and Ertebølle systems could in this way be translated to different schema opératoires of Late Upper Palaeolithic / Early Mesolithic flake axe production.

Traditionally the flake axe is not known as an Ahrensburgian element. The presence of flake axes in collections from Ahrensburgian sites in Denmark and North Germany are explained as later disturbances, due to a tradition on the North European plain in which flake axes are exclusively known as Mesolithic (Early Magelmoose and Ertebølle). At Galta 3, flake axes occur in combination with a tool assemblage and technology defined as Ahrensburgian, a fact that cannot be overlooked. Also the dating of the site covers the Ahrensburgian era (see Introduction). It is also worthwhile mentioning that a flake axe was found on the border between sediment unit 1 and 2, a position that does not suggest an age close to the younger limit of the period of habitation (9 800 BP).

Lately, the Hensbacka phase of the West Swedish Stone Age has been divided into an older and a younger phase, the first one dated to 10 500/ 10 000 - 9 700 BP (Kindgren 1995, 179). The older limit of this phase could of course be discussed (see Warås 2001, 68 pp), but what is interesting in this connection is that early Preboreal assemblages in West Sweden contain flake axes, along with artifact elements typical of the Galta 3 collection. Furthermore, flake and core axes are common elements in East-Ahrensburgian contexts in Lithuania (Zhilin 1996, s. 277). Returning to West Norway it should be worth noting that the formerly mentioned site, Skiftesvik loc. 142, has produced flake axes and core axes, the latter of the so-called Lerberg type (Larsson 1997). These elements occur in context with tanged points closely reminiscent of the so called Hintersee-type (Taute 1968, s. 12, abb. 1). The Skiftesvik site is probably younger than the Galta 3 site, according to the shore line displacement curve estimated to 9700 - 9500 BP (Warås 2001, 81). Skiftesvik and Galta are, however, only representatives of what appears to be a common trait in the first half of the Preboreal chronozone in North Europe, i.e. the co-existence of flake axes, core axes and tanged points (Ibid.).

Based on the background of evidence from Galta 3 and contemporaneous sites, it can be stated that flake and core axes should be understood as an Ahrensburgian element. It is interesting to note that at the high mountain site complex of Myrvatnet in South West Norway, no flake axes have been found (Bang-Andersen 1990). When taking into account published works, neither are flake axes represented in Ahrensburg (inland) contexts on the European continent (e.g. Fischer 1982; Hartz 1987; Rust 1943; Taute 1968; Tromnau 1975). It is thus tempting to interpret the flake axe as a coastal phenomenon within this group. However, this picture changes when actually examining the assemblages.<sup>3</sup> In the collections from Bonderup, Stellmoor and Teltwisch-Mitte, flake axes are physically present, but explained away as later elements, i.e. Barmosian or Ertebølleian (e.g. Tromnau 1975: 54).

<sup>3</sup> In October 1998 the author, accompanied by students Morten Kutschera and Tor Arne Warås from the University of Bergen, made a study trip, in order to examine various assemblages at the Nationalmuseet in Copenhagen, and at the Landesmuseum in Schleswig.



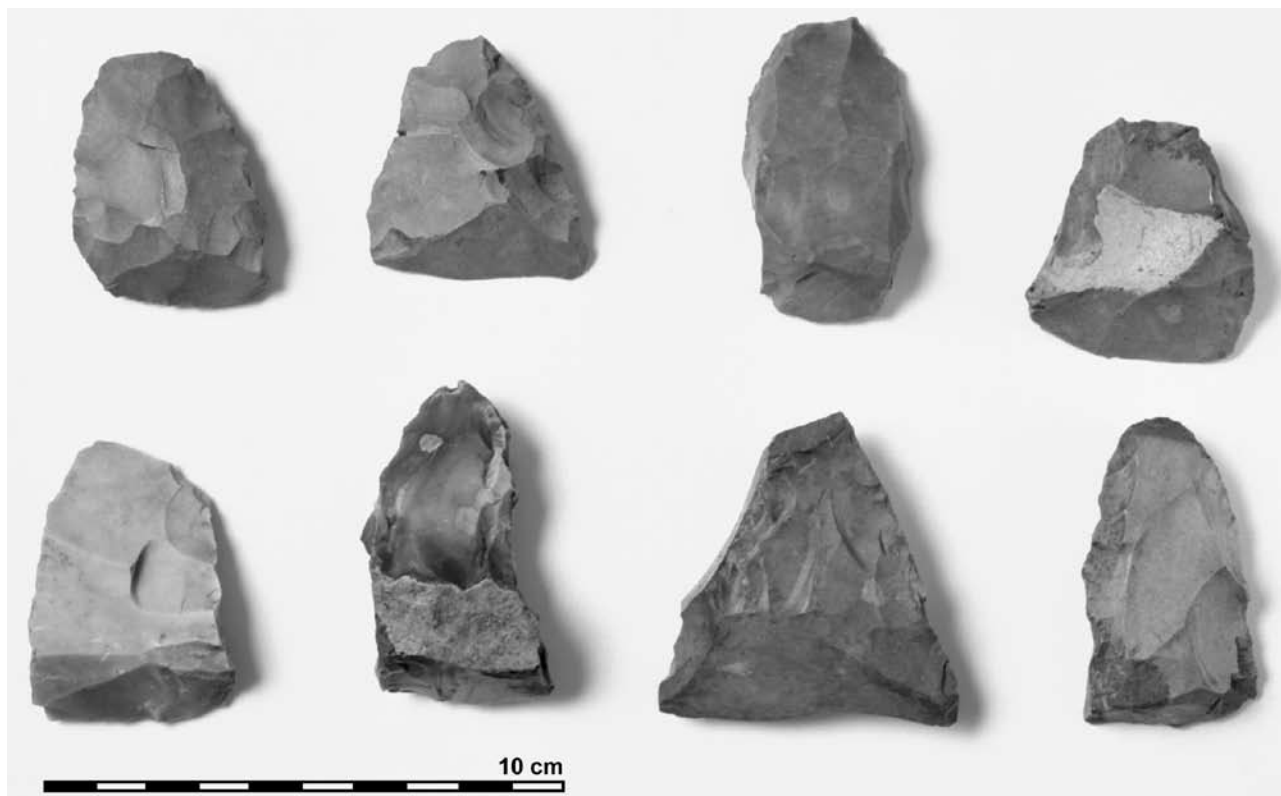


Fig. 26. A selection of flake axes from Galta 3 (see text and Table 3 for description).

A collection of stray finds from Stellmoor Hügel contains 24 flake axes (see also Warås 2001, 73p and Fig. 22). The dating of these surface finds is of course problematic. At Teltwisch-Mitte, however, a flake axe and a core axe – and two side edge flakes – were found to have proveniences within the major find concentration areas. In other words, these artifacts indicate production sequences connected to the manufacture or maintenance of axes and they are situated within the main activity area of the site (see Tromnau 1975, Abb. 23). If these elements are regarded “Mesolithic”, in the sense of Maglemosian or later, they stand alone as later disturbances at the site. This leads to the following question: How likely would it be, that younger Ahrensburgian sites were visited in later periods just for one purpose; the manufacture of flake axes?

If we tentatively conclude that flake axes are likely to appear at inland sites in South Scandinavia – as they do at coastal sites on the Scandinavian Peninsula – and simultaneously regard flake axes as a young element

within the Ahrensburg group, it gives credence to the idea that this artifact is connected to wood work. According to both local and generalized pollen curves worked out for the part of Rogaland (Paus 1988, Fig. 10; 1989, Fig. 9) where the Galta 3 site is situated, 10 000 BP marks the transition from ‘open birch vegetation’ to ‘birch forest’. The absence of flake axes from Preboreal highland sites lends credibility to this hypothesis. If we regard the flake axe as a young element, it also gives sense to this artifact’s absence at clearly older Ahrensburg sites on the continent, like Sølbjerg 1 (Petersen & Johansen 1996) and Alt Duvenstedt (Clausen 1996), along with its presumed presence at sites like Bonderup, Teltwisch-Mitte and Stellmoor.

#### AHRENSBURG VERSUS FOSNA ONCE AGAIN

Since the detection of the ‘Fosna culture’ in Norway, flake axes have been considered a typical part of

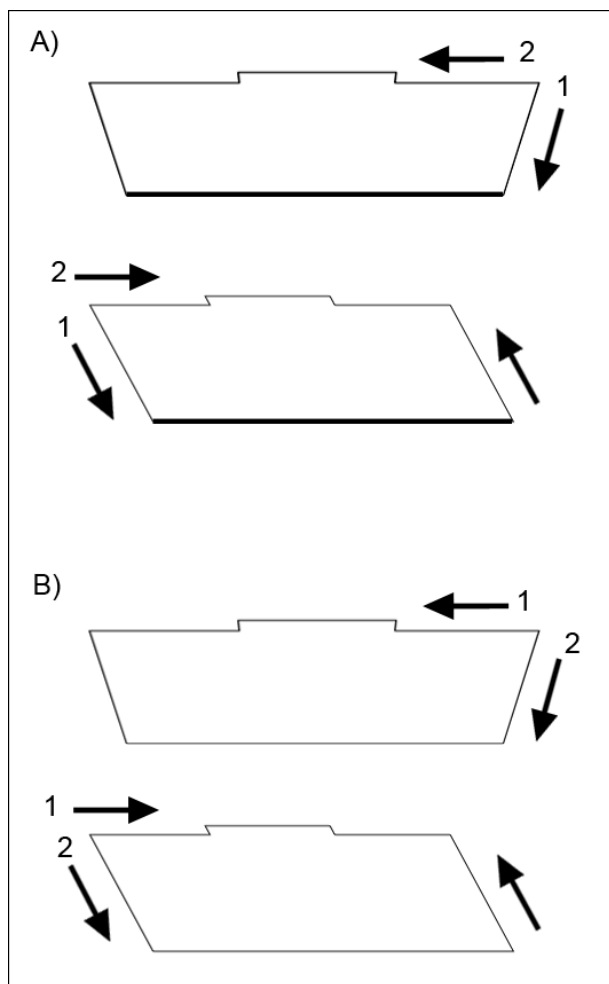


Fig. 27. Flake axe production: System of manufacture: a) Ertebølle system, b) Barmose system (Fischer unpublished, ill.: Stine Melvold).

these assemblages. However, as demonstrated here, the presence of flake axes does not make a Fosna definition of Galta 3 compelling.

Similar to the large amount of debris stemming from blade production with low quality flint, the manufacture of flake axes has produced high quantities of debris, both regarding number and the size of pieces, leading to descriptions of the Fosna phase as a period involving an "extensive use of flint" (Indrelid 1978, 151). The occurrence of this technology may have contributed to giving the sites a coarse appearance as well. In the literature 'macroflakes' as part of the Fosna definition (Bjerck 1986, 107) do not seem to be recognized

as related to flake axe production. Traditionally, the characteristic wing-shaped side edge removals (flakes) are not recognized at all. The presence of these elements as a more or less local phenomenon related to the Fosna concept, should rather, until more evidence is provided, be understood as a tool technology typical of certain geographical, or rather vegetational contexts within the Ahrensburg group's area.

*Preliminary conclusion.* It has here been stated that the differences in the Galta 3 material and probably other early sites, as compared to the classical or typical sites in North-Germany, are due to an over-representation of high quantities of coarse rest products. This is partly a consequence of 1) the use of local raw material in blade production and 2) the production of flake axes. Because of better technological possibilities for utilisation, the senon-like flint is under represented at the site. However, the fewer examples of high quality flint usage, reveals the skilled competence of the knappers and the Ahrensburgian affinity appears even clearer than in refitted series of coarser material. Coarseness in West-Norwegian material should not be understood as related to a lower, marginal or coarse technological practice.

In this article, the point of departure was the recognition that the site Galta 3 yields a tool assemblage (especially points) and a dating associated to the Ahrensburg group of the North European plain (Høgestøl 1995; Høgestøl et al. 1995; Prøsch-Danielsen & Høgestøl 1995). By examining a selection of refitted material from Galta 3, I have demonstrated that there exists a clear Late Upper Palaeolithic connection in blade technology as well. Lately, this notion of a coastal or non-continental version of the Ahrensburgian group, is more or less implicitly expressed in recent literature on the earliest settlement of Scandinavia (see Cullberg 1996, s. 188; Fischer 1996, s. 165; Høgestøl et al. 1995, s. 44; Kindgren 1996, s. 202; Nordqvist 1995, 188; Schmitt 1995, s. 168; see also Fuglestad 1999; 2001). In other words, the Ahrensburg group is extended both in space, as well as in time, since new datings make it "intrude" on the first part of the Mesolithic (>9 700 -9 500?).

Having stated that there is practically no divergence between Ahrensburgian finds in West Norway or East Norway / West Sweden, there is no reason why the Stellmoor find – or any other site in North

Germany or Denmark – should serve as a “standard” by which assemblages in the former area should be interpreted. There is, in principle, no reason why the Stellmoor find could not be described as a typical Early Fosna collection. For in Norwegian terms, this is in fact what it is (see also discussions in Warås 2001). When I prefer to use the term ‘Ahrensburg’ it is because it does not give the rather local associations as does ‘Fosna’, but rather non-regional and non-national connotations.

### WHAT EXACTLY IS THE AHRENSBURGIAN GROUP?

In this article I have used the term Ahrensburg to refer to a group of things, meaning a combination of tools and artifacts resulting from a certain technology. In conclusion, I would like to suggest that the Ahrensburgian “culture” is not only something which included a combination of objects, but a number of human beings who understood themselves as a group.

There are several ways of manufacturing flint tools, but every Stone Age tradition has certain *schéma opératoires*, or inherited skills, for accomplishing the desired results. In the daily exercising of technical practice, human beings were perpetuating and performing this tradition, which included raw material knowledge, a special motor ability, a sense of esthetics and technical experience. The regular repetition of technical methods that appear in an assemblage are, deep down, the lost fingerprints of what was once a living tradition (Madsen 1992, 94). Achieving technical ability is part of a general cultural learning process. The importance of studying technical competence, is thus a way of illustrating past people’s cultural affinity. For if technology is viewed as “a mediated understanding of how to proceed under certain circumstances” (see Edmonds 1990, 56, with references), then the normative aspects, i.e. the aspects of technology as a social practice, emerges. Thus “competence” becomes part of an embodied knowledge that connects the people of a certain site to a wider human and geographical sphere.

Part of the approach in this article has been to study technical competence. Not explicitly expressed, it was important to reveal a certain technical competence in order to link Galta 3 to the classical Ahrensburgian

sites. However, my interpretations are not solely built on the recognition of a similar technical practice in Northern Europe.

As archaeologists we do not understand the past without assumptions. Underlying the “Ahrensburgian approach” is a prejudice – in the hermeneutic sense of the word (i.e. pre-judgement, see Gilje & Grimen 1995, 148) – which views the Late Palaeolithic and Early Mesolithic as a period when human groups where highly mobile and moved over distances hard for modern people to imagine. Sites in East Norway (Fuglestad 1999; Skar & Coulson 1987), West Norway (e.g. Fuglestad 2001; Høgestøl 1995; Høgestøl et al. 1995; Nærøy 1994; 1995; 2000; Kutschera & Warås 2000; Warås 2001), as well as inland (Bang-Andersen 1990; 2003a; 2003b) all indicate short occupations, lasting perhaps only a few days. This mobility may have involved movements all the way to Finnmark in Northern Norway (see Woodman 1993; Fuglestad 2005a; 2005b; Grydeland 2005).

By using the example of Galta 3, the continental European origin of this group is confirmed by a common technological practice. Recent research reveals more examples of a Late Upper Palaeolithic / Early Mesolithic connection between the continental and non-continental parts of North Europe (Fischer 1996; Fuglestad 1999; 2001; Kutschera 1999; Warås 2001).

It is important to stress that giving the group at Galta 3 a “continental origin” is not meant to indicate a permanent immigration to West Norway took place. Rather we should view Northern Europe as a total habitation area, meaning that people were frequently returning to continental Europe. In the beginning the Northern European plain was most likely the main habitation area (Welinder 1981).

In my opinion, the Fosna concept does not provide an adequate understanding of what the earliest site material in Norway really is. It gives too much local, or rather national connotations (see Fuglestad 1999). In opposition to this, the ‘Ahrensburg culture’ – in spite of its origin in a local place – connotes and connects large areas of the North-European plain in the Late Upper Palaeolithic period. The concept of an Ahrensburg group thus provides a better understanding of the assemblages discussed in this paper. The “detection” of this formerly Late Upper Palaeolithic group (now also including the first part of the Me-

solithic) in the northern parts of Scandinavia, gives an extension of our understanding of the “Ahrensburgian” way of life. Erasing modern national borders gives a better picture of the situation, as in the Late Palaeolithic and Early Mesolithic of North-Europe, these kinds of borders did not exist. This Late Upper

Palaeolithic / Early Mesolithic group of people embodied the same schema opératoires wherever their journeys were made. Consequently they performed similar chaînes opératoires in continental Europe as they did on the Scandinavian Peninsula.

*Acknowledgements.* Mari Høgestøl kindly let me use the Galta 3 assemblage for study in connection with my doctoral work. The refitting of parts of the Galta 3-assemblage was carried out by the author during two periods in 1993 and 1996/97. This work was partly financed by the Museum of Archaeology, Stavanger and the Norwegian Research Council. The evaluation of the Galta 3 work chains was carried out in a work shop in March 1997 at the Museum of Archaeology, in which Anders Fischer, Morten Kutschera and the author participated. At the same institution a work shop studying a number of West Norwegian sites was arranged by Morten Kutschera, Tor Arne Warås, Arne Johan Warås and myself in September 1998. Lasse Jakslund, Axel Degn Johansson, Bo Knarrström, Stephan Larsson and Bengt Norqvist, attended the work-shop. Thanks to every single one of you! In connection with our research travel to the National Museum in Copenhagen and the Landesmuseum in Schleswig in October 1999, we were well taken care of by Peter Vang Petersen and Klaus Bokelman. Thanks to both of you! In addition to the persons mentioned, I would like to thank Sheila Coulson, Berit Valentin Eriksen, Lykke Johansen and Birgitte Skar for their inspiring work in this field of study.

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ARTEFACT / TOOL TYPE	NUMBER
Flake axes	19
Tanged points	82
Single edged points	89
Fragments of tanged or single edged points	17
Lanceolates	7
Simple lanceolates	35
Zonhoven points	21
Fragments of unidentified points	26
Fragments of possible points	23
Probable and possible burin spalls	17
Knives and scrapers (blades)	17
Retouched blade and blade fragments	21
Retouched flakes	45
Retouched fragments	2
Blades, flakes and fragments with working edge edges	52
Unifacial cores with one platform	36
Unifacial cores with two opposed platforms	9
Multifacial and amorphous cores	38
Core fragments, platformrejuvenation blades/flakes/tablets	193
Blades and blade fragments	682
Flakes	13 624
Fragments	1 827
Total	17 539

Table. 1. List of artifacts from Galta 3 (modified after Høgestøl 1995, 50).

FIND NUMBER	FLINT QUALITY	SYSTEM OF MANUFACTURE	WORKED NECK
a	intermediary	Ertebølle, symmetric	X
b	intermediary	Ertebølle, symmetric	X
c	intermediary	Ertebølle, symmetric	X
d	senon-like	Ertebølle, symmetric, incompetent	X
e	intermediary	Ertebølle, symmetric, incompetent	
f	danien-like	Ertebølle, symmetric, incompetent	X
g	danien-like	Ertebølle, asymmetric	
h	intermediary	Ertebølle, asymmetric	X
i	senon-like	Ertebølle, asymmetric	X
j	danien-like	Ertebølle, asymmetric	
k	intermediary	close to Barmose, symmetric	
l	senon-like	probably Barmose, asymmetric	X
m	senon-like	no special system	X
n	danien-like	? system erased, intensive resharpened	
o	intermediary	? system erased, intensive resharpened	
p	intermediary	? system erased, intensive resharpened	
q	senon-like	? system erased, intensive resharpened	
r	intermediary	transformed into "core axe" by resharpening	
s	senon-like	transformed into "core axe" by resharpening	

Table. 2. List of flake axes from Galta 3, with information about flint quality, system of manufacture and presence of worked neck.