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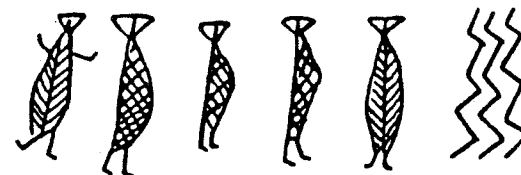
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Research Reports

RECENT MESOLITHIC-NEOLITHIC EXCAVATIONS IN THE DOKKFLØY REGION, SOUTHEASTERN NORWAY

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One of the continuing problems in the study of the Norwegian Mesolithic is a general lack of research in the interior areas. Most chronological studies (e.g., Mikkelsen 1975, 1978, Lindblom 1984, Bjerck 1987) are heavily biased towards materials from the coastal areas, as are most studies of settlement and subsistence. The interior is either treated as an unknown (Indrelid 1978) or discussed in terms of what is assumed to have been the most economical seasonal round based upon patterns of animal movements (Mikkelsen 1978).

This paper concerns recent research that is directed towards the development of a detailed understanding of how one area of interior southeastern Norway was utilized during the late Mesolithic. Through this research it is hoped to provide a foundation from which to address questions regarding the nature and intensity of the utilization of the interior. This research is being conducted in association with the the construction of hydropower facilities which will be completed in the fall of 1988.

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ENVIRONMENTAL AND GEOGRAPHIC SETTING

The Dokkføyvatn is a lake located along the Dokka River in the kommunes of Gausdal and Nordre Land in the administrative district of Oppland in eastern Norway (Map 1). Oppland is a landscape of mountains and valleys, many of which contain extremely large lakes, such as the Randsfjord. The geography of the Dokkføy area can be summarized in terms of the northern and southern regions. In the north the Dokkføyvatn is generally lower, with swampy areas that grade into the valley slopes. In contrast, the south is more constricted with the steeper valley walls grading directly into the lake. Elevations in the region are often in excess of 1200 meters above sea level. Present temperatures range between 14°C summer (June, July and August), and -14°C during the winter (December, January and February). Precipitation occurs year round, with over 8 centimeters falling during each month of winter and over 10 centimeters falling during each month of the summer (Halvorsen 1980:5). The vegetation of the area today is dominated by spruce, during the Atlantic period, however, the area is thought to have been characterized by pine and birch with alder, hazel and willow also being found. The current fauna of the area are moose and fish (perch and trout), and are likely to have been similar during the late Mesolithic (Lepiksaar 1986).

SURVEY AND EXCAVATION METHODOLOGY

The project is restricted in scope by the normal constraints of archaeological rescue investigations. By law the survey and excavations are limited to the 9 km² area to be flooded. The results of the initial surveys conducted between 1978 and 1984, before the present four year project began, were not promising for stone age research. This was primarily due to the surveying strategy, and the difficulties encountered in finding sites that are hidden by dense ground cover. A change in surveying strategy, to emphasize the use of shovel testing to locate sites not visible at the surface, in 1985 and 1986 increased the number of known sites to a total of 50 (Map 2).

During 1986 the majority of the sites were tested by the excavation of three 1 m² pits, to determine sites for more complete excavation. Therefore, it was necessary to estimate the size of each site, the types and amounts of material found, and the integrity of the deposits. Refitting of the lithics proved particularly useful in identifying which sites, and horizons within sites, were disturbed (Coulson 1987). Five sites were then chosen for complete excavation (Map 3).

In the past emphasis would have been placed upon the partial excavation of a larger number of sites, with the primary concern on the recovery of material to aid in the development of typology and chronology. Recent ethnoarchaeological investigations (Binford 1978, O'Connell 1987, Yellin 1977), as well as archaeological research at sites such as Meer (Cahen, Keely and Van Noten 1979) and Pincevent (Leroi-Gourhan and Brezillon 1966), have clearly indicated the necessity of exposing broad horizontal areas in order to better understand site formation processes, as well as coping with the often surprisingly large and disperse area that hunter-gatherer sites can occupy. As such, and in order to allow the use of analytic methods which are capable of dealing with such problems, the decision was made to opt for the complete excavation of a smaller number of sites, rather than attempting to partially excavate a larger number of sites. The sites that were chosen for total excavation are from different areas along the Dokkføyvatn and also are also the best preserved and least eroded localities.

Emphasis has been placed on obtaining comparable results from each site. A permanent square meter grid system was established for each site; individual meter squares were excavated in 1/4 m² quadrants. As the deposits are thin (i.e. 15 cm) and cultural stratigraphy is usually absent, the sites were excavated in arbitrary 5cm levels. Following the removal of the turf, each level was excavated and mapped separately; all rocks

rocks measuring larger than 5 cm were recorded. All excavated materials are water sieved through 3.5 mm mesh sieves; both the lithics and fire cracked rock from each quadrant were bagged separately.

In addition to the five primary sites chosen for complete excavation, a number of secondary sites have been and will be investigated further. This decision was made as weather conditions frequently make it impossible to excavate properly. On these days the field crews moved to the smaller secondary sites which were excavated in a single level in 1/4 m² provenience. The excavated materials were sieved and fire cracked rocks were noted but not saved.

PRELIMINARY RESULTS

The three main and two secondary sites excavated to date have yielded a variety of features and scatters of lithics. The total area excavated on these sites ranges between approximately 14 and 200 m². Due to the nature of the soils very few faunal remains have survived. However, a variety of different types of features have been recovered, including large and small hearths, a possible tent construction and large patches of ochre. The lithics from these sites include local raw materials such as quartzite and rock crystal, as well as non-local raw materials such as non-local quartzite and flint, both of which had to have either been traded or carried into the area. The sources for the non-local quartzites are uncertain at the present. However the flint must have come from a coastal area, the nearest being either the Oslofjord to the south or the Sognefjord to the west, both of which are approximately 130 km from the Dokkføyvatn. The relative percentage of the different raw material types that are present varies considerably between each site.

Ochre samples have been sent to the Danish National Museum for determination of the source of the fat used in the production of the ochre. Burnt bones have been submitted to the University of Bergen for species identification. Flotation and phosphate analyses have yet to be completed. Determinations from radiocarbon laboratories are pending.

Presently the majority of these sites are thought to reflect brief occupations, ranging from days to months, and a wide variety of activities from residential sites to more task specific locations. While the cataloguing and analyses of the excavated material is still in the preliminary stages the initial analysis of the material suggests the following results:

DR 85

DR 85 is located on a low lying promontory. Excavations at this site began in 1986 and were completed in 1987. Over 180 m² were excavated and over 6,000 artifacts were recovered. At present the material from this locality can be seen as forming three main concentrations: one to the northwest, one to the southeast and the final one to the west. In the northeast was found a possible tent structure, in addition to lithics representing a wide variety of raw material types and well preserved fireplaces which contained some burnt bone. The southeastern area contains an assemblage which represents flint microblade production. Preliminary results from refitting indicate that the flint from this area comes from a small number of cores. The final concentration consists of a mixture of flint and local quartzites and scattered hearths and covers an area of approximately 20 m².

This site is currently thought to belong to the late Mesolithic because of the predominance of debris from microblade production and the occurrence of diagnostic point types. However, ground slate points commonly associated with the Neolithic, have also been recovered.

DR 89

Excavation of this site began and was virtually completed in 1987. DR 89 is located on a small hill overlooking the Dokkføyvatn. At present approximately 120 m² have been excavated and many thousands of artifacts have been recovered. The

site is characterized by a number of small fireplaces and associated clusters of lithics. However, the most notable occurrence on this site was a large ochre feature, approximately 3 m² which is associated with hearths and high concentrations of lithic debris and tools. Again this site is thought to date to the late Mesolithic because of the predominance of the use of the microblade technique and the occurrence of diagnostic tool types.

DR 87

This small locality measures only 14 m² and is located at the base of the hill on which DR 89 is located. Less than 200 artifacts of local quartzite and burnt flint were recovered from around a scattered hearth. No radiocarbon date is yet available from this site. The results of refitting have shown that the material on this site is a distinct entity and had not merely slumped downhill from the larger site (DR 89) above it.

DR 178

Locality DR 178 is typical of the small sites located at the north end of the Dokkføyvatn. Approximately 30 m² have been excavated which contained a group of medium sized hearths associated with a small flint assemblage (200 artifacts). The technological and typological features of this assemblage indicate a late Mesolithic occupation.

DR 84

This site, which is situated on a low lying terrace near the river bank, produced mainly flint and ground slate artifacts. At present 32 m² have been excavated and the site will be completed in 1988. No local quartzite artifacts have been recovered. All diagnostic tools indicate this locality was occupied during the Neolithic.

ONGOING ANALYSIS

The primary focus in the analysis of the material from the Dokkføyvatn is upon the study of the lithics, primarily through the results provided by the methods of refitting and intrasite spatial analysis. Through the refitting it is hoped to not only illustrate within site contemporaneity of occupation, but also to learn more about the nature

of the technology and the uses of both the local and non-local materials found on these sites.

The focus in the intrasite spatial analysis will be based upon the use of quantitative clustering methods such as k-means analysis (Kintigh and Ammerman 1982) and Unconstrained Clustering (Whallon 1984).

Through the application of these methods as well as standard techniques of data analysis it should be possible to define and describe areas of differential content and density of artifacts on these sites. By considering debitage in these studies, as well as the distribution of objects grouped by size, it should be possible to begin to address questions regarding the length of the occupation, the size of the occupation and the diversity of activities that occurred at each site.

Through the application of these methods, it should be possible to develop a detailed understanding of the nature of site utilization in the Dokkføyvatn. Such an understanding can provide an important first step in the study of the nature of the utilization of the interior areas of southeast Norway during the Late Mesolithic. The ability to address such questions is critical if we are ever to be able to come to grips with the problems of variability in settlement and subsistence patterns over both time and space in the Norwegian Mesolithic.

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FIGURE 1: Location of the Dokkfløy.

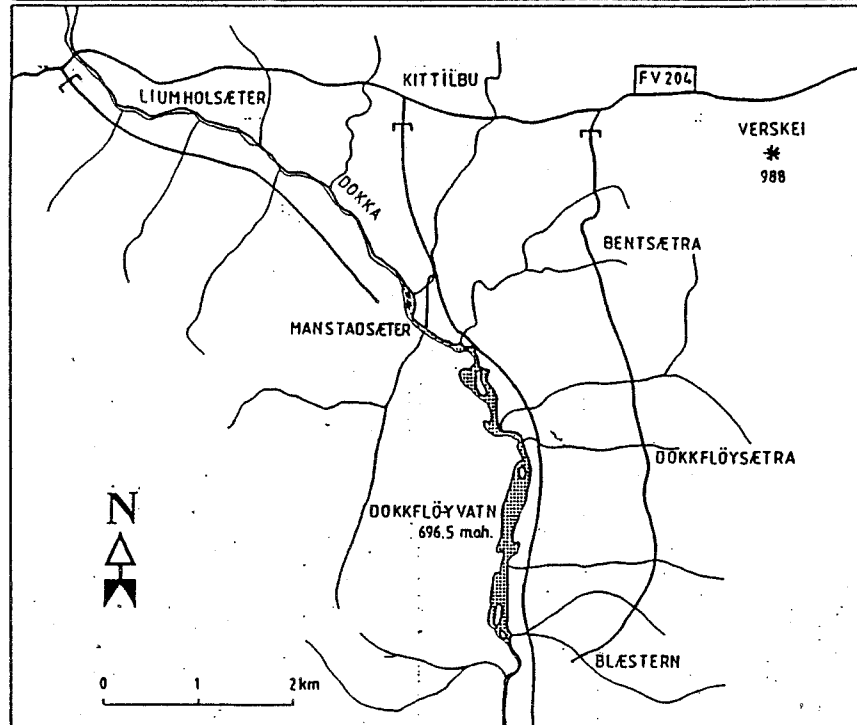
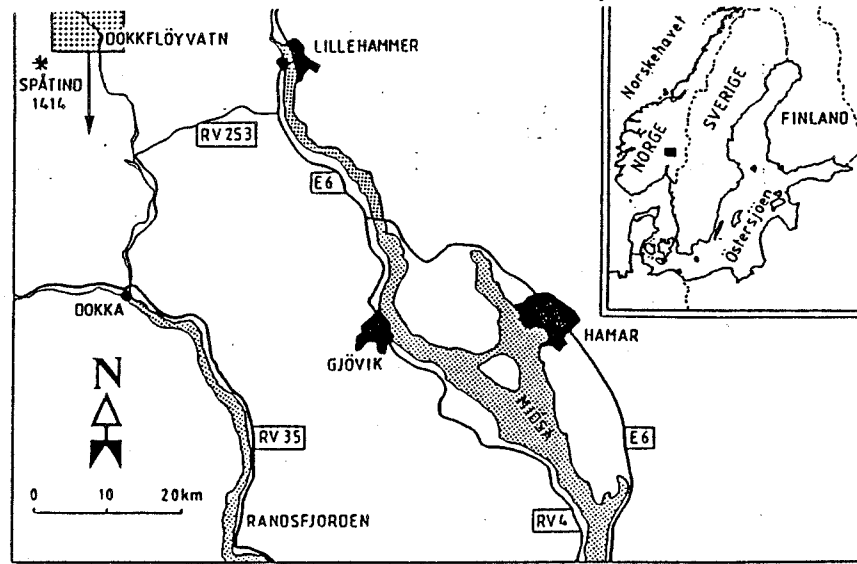


FIGURE 2: Location of Stone Age sites in the Dokkfløy

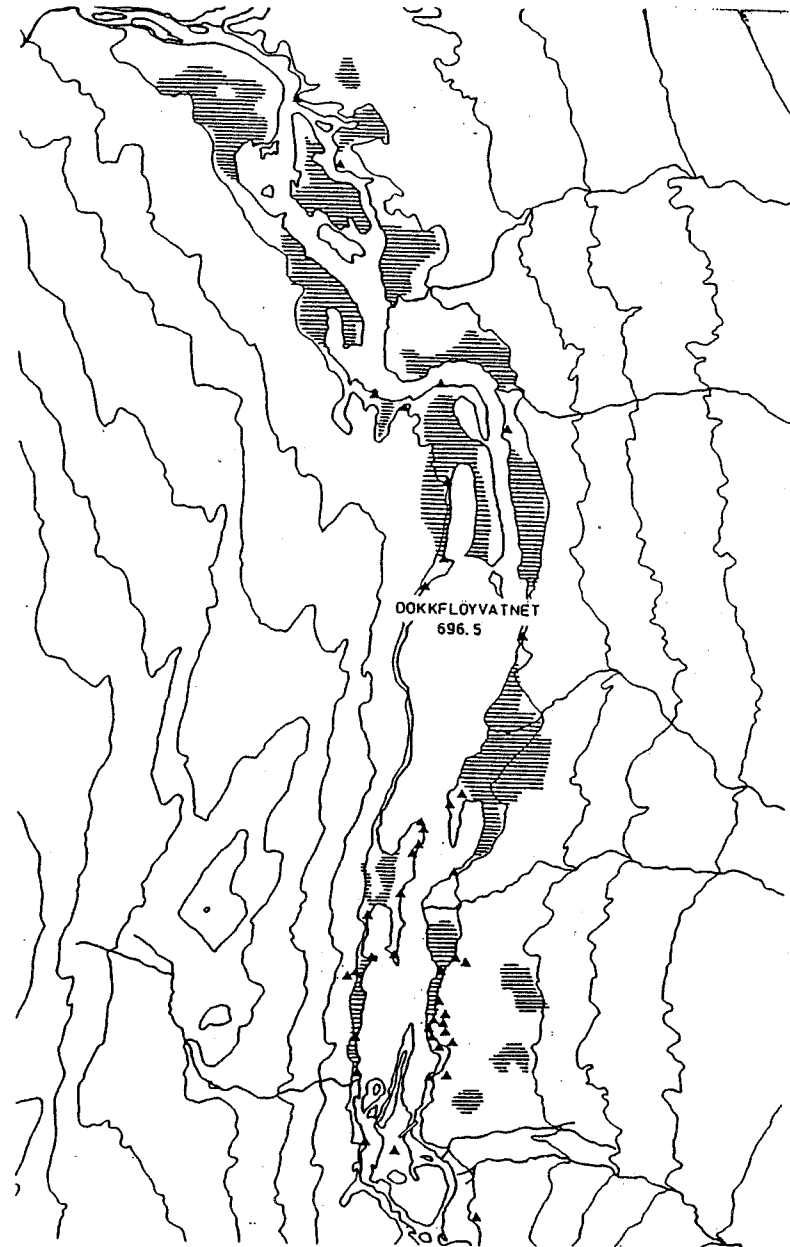
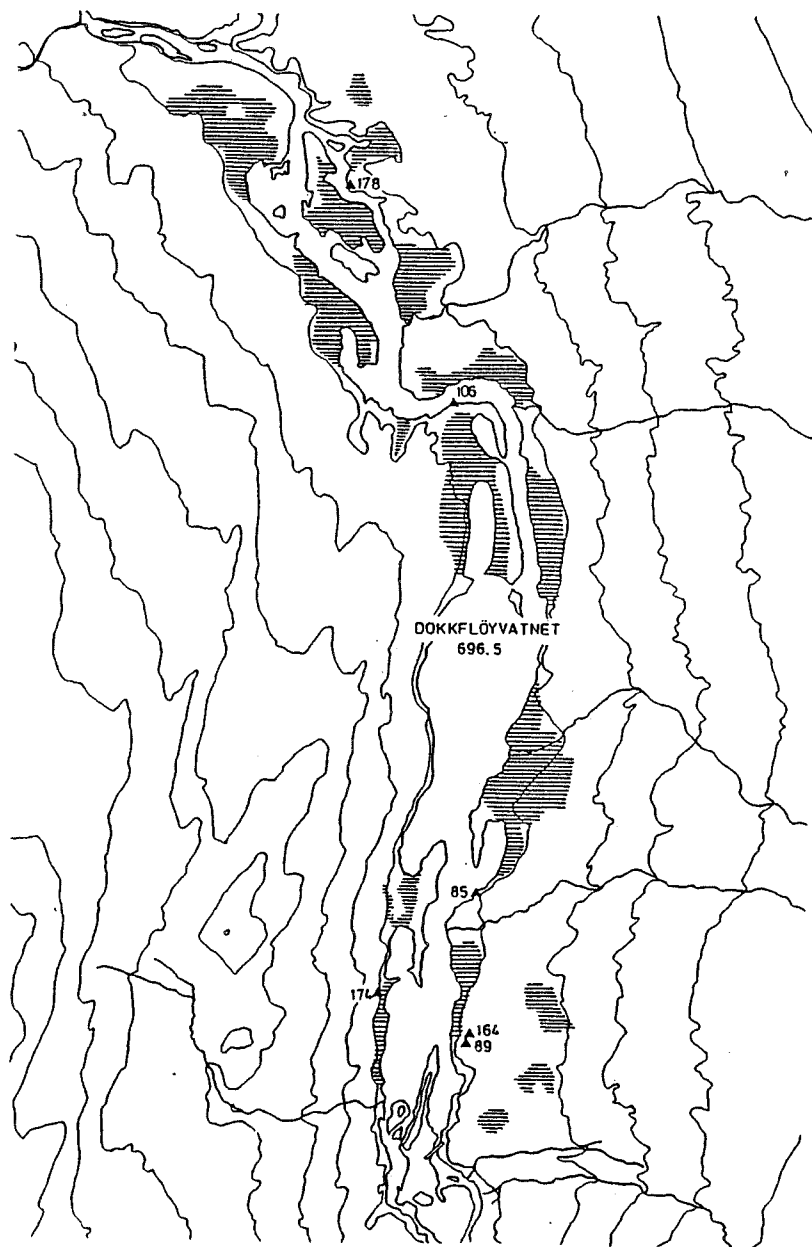


FIGURE 3: Location of Mesolithic sites chosen for complete excavation



EXPLORING SUBMERGED STONE AGE SITES IN DENMARK - OR THE FIELD OF MESOLITHIC RESEARCH IS AS DEEP AS THE OCEAN

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INTRODUCTION

The landscape of Paleolithic and Mesolithic Denmark can be compared with an iceberg: most of it is hidden below the water. In other words, large parts of the Late Paleolithic and Mesolithic hunting grounds and settlements on Danish territory are now lying below the ocean. They were submerged as a result of rising sea levels and the tilting of the earth's crust that followed the melting of the glaciers of the last Ice Age.

During the last decade a number of Late Mesolithic sites in southwestern Denmark have been investigated at depths of 1 to 4 meters below present sea level. These sites have contributed very importantly to our knowledge of tools, weapons, fishing gear, sailing vessels, etc., of that period (Andersen 1980, 1985; Skarup 1983). What was lying on even deeper parts of the sea floor could only have been guessed until very recently.

With the examination of the Argus site, however, a first and fascinating glimpse of the deeper lying and generally earlier stages of coastal habitation was obtained. The excavation revealed that this site of the early Kongemose culture (app. 4900 b.c., uncalibrated) was very similar to the majority of the better known ones of the subsequent Late Mesolithic Ertebølle culture (app. 4300 - 3100 b.c.). This applies, among other things, to its position in the landscape of its time, i.e., close to a place ideal for pond net fishing (Fischer 1987a).

THE MODEL OF SITE LOCATION

The indication of the importance of shallow water fishing for the location of Middle Mesolithic coastal settlement (c.f., Fischer & Sørensen 1983, Fischer 1987b) formed the starting point for a series of underwater surveys conducted between 1985 and 1987. The aim of this was the testing of a model for the topographic position of Mesolithic coastal settlement at hitherto unexplored depths.

According to the model, such sites are generally to be found close to topographical features, which in the experience of present day fishermen, would be ideal for pond net fishing - i.e., at the mouth of rivers, at narrow straits and at sheltered sides of necks of land jutting into the water. It was expected that such features of the now submerged Stone Age landscape in many cases could be pointed out simply with aid of commonly available maps of the present sea floor. The testing of this model and this proposition was done by a team of amateur scuba-divers and professional archaeologists under the auspices of the National Conservation Agency (Skov-og-Naturstyrelsen).

TESTING THE MODEL IN THE DEPTH OF THE OCEAN

The Småland Bight south of the island of Zealand was the first area to be surveyed. This resulted in the detection of two dozen settlements. Most of these sites are dated to the middle Mesolithic Kongemose culture (app. 5900 to 4500 b.c.) an epoch which in SE-Denmark hitherto was only represented by the Argus site.

Even though these sites were only superficially inspected, a large number of artifacts were collected and several valuable observations were made concerning the internal organization of the sites. Thus, at a site approximately 5 meters below sea level a fireplace and a workshop for the production of trapeze arrow points were located. At another site, at a depth of about 9 meters, the scattered traces of another fireplace were found on the submerged moraine surface. Some meters from here a cluster of flint flakes were located. The refitting of these flakes later demonstrated, that they represent production waste

from the manufacture of 2 or 3 core axes of Kongemose variety. Determined on the basis of the surveys in the Småland Bight the model of site location must be considered highly reliable.

Depending on the principles of evaluation, the predictions developed from the model were in agreement with the findings of the scuba-divers in 74% to 96% of the cases (Fischer 1987b).

In 1987 the under water surveys were continued west of Zealand - i.e. in the strait of Storebølt. The greater depth of this channel was expected to give us chances to trace the coastal habitation even further back in time. Until then, signs of Stone age settlement lying deeper than approximately 1 meter below present water surface had never been recorded from this part of Danish sea territory.

A dozen of the most obvious former fishing site locations were inspected by scuba-divers. These sites were lying at depths of 4 to 17 meters and traces of habitations were actually found on most of them. On the basis of typology the majority of these settlements can be dated to the Kongemose culture. Three of them may be even older.

One of the seemingly more important of the newly discovered sites of Storebølt is located 9 meters below surface. Here artifacts of flint and antler were scattered between the remnants of a drowned forest - the roots and lower parts of the trunks still standing in situ on the sea floor. Further surveys and test excavations on this site are planned for 1988.

Due to the planning of a 17 kilometer long bridge and/or tunnel connecting the islands of Zealand and Fyn the National Conservation Agency in 1987 also had the opportunity to survey a number of locations in Storebølt which according to the model should be less favorable for Mesolithic coastal habitation. Twelve sites lying 1 to 22 meters below present sea level were thoroughly inspected by underwater archaeologists. At only two of these, vague traces of habitation were found. The others were totally free of any kind of settlement residue.

CONCLUSION

All in all the diving operation so far undertaken in Danish waters supports the initial assumptions: intense coastal habitation, highly adapted to marine resources is not just characteristic of the latest centuries of the Mesolithic in the Danish area. It has now been traced backwards through time in comparable density and character at least as far as the earliest Kongemose cultures and as deep as 9 and perhaps as deep as 12 or 16 meters.

Concerning the submerged stone age habitations in Denmark as well as in the coastal regions further south we surely haven't seen the whole of the "iceberg" yet. So, for the students of the Mesolithic of Europe there still is an ocean of sites to be found. Compared to the ones already excavated, these sites will probably not be among the least interesting - neither in terms of quality and diversity of the artifacts nor in terms of information on lifeways in their full scale of economic, social, and religious complexity.

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SEX DIFFERENCES IN TOOTH WEAR AT SKATEHOLM

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Readers of Mesolithic Miscellany are familiar with the excavations at the Skateholm site by Lars Larsson and the important information this material has provided about human adaptation in the Scandinavian Mesolithic (e.g., Larsson 1983, 1984, Persson and Persson 1984). This brief report concerns differences between males and females in the relative degree of wear on the anterior teeth. Although the exact cause of the difference cannot be determined, the nature of the patterns indicates males and females were performing different functions with their anterior teeth. Presumably, this relates to sexual division of labor.

Table 1 presents comparative wear statistics for males and females in the Skateholm sample. The data were compiled on the original specimens and sexing was based on cranial or postcranial morphology, never on tooth size or tooth wear. Occlusal wear for each of the individual dentitions was recorded according to the scoring system published by Smith (1984:Fig. 3). This visual procedure grades surface attrition on a scale of 1-8, ranging from unworn (1) to complete loss of the enamel surface (8). Intermediate values depend on the extent of dentin exposure and amount of remaining enamel. After all specimens were coded, the data set was transformed to eliminate the redundancy of left and right comparisons. Consequently, when both left and right sides were present, an average between the two sides was computed. Although there is a certain amount of left/right asymmetry in dental wear at Skateholm, this effect was smoothed by the averaging procedure. Once this was done, comparisons of individual dentitions were made between the degree of wear on each separate anterior tooth (I1, I2, and C) and the attrition score for either M1 or M2 of the same jaw. The relative degree of wear for each anterior tooth initially depended on whether it was greater than, equal to, or less than the wear on M1 (or M2). Later, cases were eliminated if the wear on an I1,

I2, or C equaled the wear on an M1 (or M2), since this situation exhibited no significant variation within the sample. Thus, only cases when an anterior tooth exhibited either greater (or less) wear than the associated M1 (or M2) are reported. In the table, "n" refers to the number of comparisons where the wear on an I1, I2, or C was greater (or less) than the associated M1 (or M2). In these categories an individual can be represented more than once, since a specimen could have an I1, I2 and/or C for comparison with an M1 (or M2).

Results of this comparison of differential tooth wear show a clear difference by sex. Females have consistently more wear on the incisors and canines relative to M1 (or M2) than males. For example, in the maxilla and using the M1 comparison, 26 of 27 (96.3%) cases in females show greater wear on the I1, I2, and C, while the corresponding frequency for males is only 8 of 38 cases (21.1%). When maxillary anterior tooth wear is judged relative to M2 wear, all females show greater wear on the incisors and canines, while only 66% of the males exhibit this pattern. Overall, the pattern of greater wear on female anterior teeth (relative to M1 or M2) holds for both mandibular and maxillary comparisons, yet statistically significant differences ($p < .001$ level) using Chi-square only occur in the maxilla. It is important to note that the maxillary incisors and canines generally erupt later than their mandibular opponents, yet these teeth show substantially more wear relative to either M1 or M2. In 3 of the 4 possible comparisons, the pattern of wear between the mandible and maxilla is significantly different (Chi-square: $p < .02$ level). Thus, even though the maxillary anterior teeth are in occlusion for a shorter period of time (with respect to the mandibular incisors and canines), they show greater wear relative to M1

and M2. Although not shown in Table 1, sex differences occur at all age levels, so that even with minor wear (indicating a young age) the anterior maxillary teeth of females are in nearly every case more worn than M1 or M2. Finally, despite the greater differential wear, females do not show higher incidence of premortem anterior tooth loss or of abscess development. In fact, these pathological indicators are rare in the anterior teeth of both sexes at Skateholm.

These differences in anterior tooth wear (especially for the maxilla) most likely relate to the special kinds of activities performed by females and males at Skateholm. Because incisors and canines of either jaw are not primarily involved in mastication, it is unlikely the patterns observed are the result of different food habits. Rather, since the anterior teeth primarily function in operations involved with holding, processing, and manipulating objects (Molnar 1971, 1972), they likely correlate with specific activities. The precise functions performed are difficult to determine. In most cases wear on the anterior teeth is flat, not resembling the oblique wear attributed to skin softening by Taylor (1986). Oblique wear does occur at Skateholm, but is mostly confined to the posterior teeth and occurs about equally in males and females. Except for occasional toothpick grooves (all located on posterior teeth), the dentitions exhibit none of

the occlusal grooves characterizing fiber processing (Larsen 1985, Schulz 1977). Despite the lack of specific task attribution, differences between the sexes in relative wear signals sexual dimorphism and likely relates to sexual division of labor. Future work, incorporating SEM and other techniques, may provide more specific information.

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Table 1

Summary Wear Statistics

Wear Categories	MANDIBLE		MAXILLA	
	Males	Females	Males	Females
	n	%	n	%
I1, I2 or C > M1	6 (13.6)	7 (21.2)	8 (21.1)	26 (96.3)
I1, I2 or C < M1	38 (86.4)	26 (78.8)	30 (78.9)	1 (3.7)
I1, I2 or C > M2	15 (40.5)	18 (52.9)	31 (66.0)	30 (100.0)
I1, I2 or C < M2	22 (59.5)	16 (47.1)	16 (34.0)	0 (0.0)

Reviews

Excavations on Oronsay: Prehistoric Human Ecology on a Small Island. Paul Mellars, ed. Edinburgh, Scotland: Edinburgh University Press. 1987. 314 pp. £35.00 (cloth).

In recent years the Mesolithic period has received increasing attention in European prehistory, due to the recognition of a shift from generalized hunting to specialized foraging adaptations in the early Postglacial. This transition takes place in many parts of the world, but is perhaps best documented in Western Europe given the long history of archaeological investigations and the exceptional preservation of material remains in many areas.

The Oronsay project raises further intriguing questions about this transition and about the nature of coastal hunter-gatherer societies in general. Oronsay is a small island in the Hebrides off the west coast of Scotland. Small is perhaps too grand a term to describe this low, barren, windswept shelf of rock, gravel, and sand at the southern tip of the larger island of Colonsay. At the time of the Mesolithic occupation, when the seas stood even higher than today, Oronsay was hardly more than the size of an average college campus, with a total land area of less than four square kilometers.

A dramatic Mesolithic presence on this island, however, is evidenced by five shell middens along the former coastline. This is the largest concentration of such middens in the British Isles and one of the biggest in Europe. The middens are represented by elongated oval accumulations of mollusc shells and other remains, 20 to 25 m in diameter and up to 4 m in height. Radiocarbon dates place the occupation of these middens in the third and fourth millennia b.c., between 6200 and 5000 b.p. — toward the end of the Mesolithic period.

The investigations on Oronsay, begun in 1970 and continued through 1979 under the direction of Paul Mellars of Cambridge University, are reported in this edited volume. Part One concerns the environment and ecology, with papers on the geographical setting and environment, the Mesolithic coast, past and present vegetation, sedi-

ments and land snails in the shell middens, and a reconstruction of "Mesolithic" storm frequencies. This section contains information useful for many fields, ranging from climatology to evolutionary biology. Part Two concerns the history of research, current research goals and methodological approaches, and the radiocarbon dates from the middens. Part Three is the description of the actual excavations with emphasis on the stratigraphy, chronology, and features.

Part Four provides a model for the analysis of mammalian and human remains from shell middens. The fauna represented in the middens comes primarily from red deer, pigs, seals, porpoise, otter, and pine marten. The bird, fish, and shellfish remains are not reported in this volume. A total of 55 human skeletal fragments were recovered from three sites; the vast majority come from the largest excavations at Cnoc Coig. The human remains include four teeth, thirty-four hand and foot bones, three cranial fragments, and fourteen other pieces. Typically, this material was scattered in a very fragmentary condition throughout the midden.

One of the fascinating aspects of the Oronsay project is that all of the middens were excavated, not just one as is common in archaeology. A major question raised by such thorough and detailed investigation concerns the seasonality and pattern of human presence on the island in the Mesolithic, whether permanent or repetitive. Size differences in the otoliths of saithe from the middens point to distinct seasonal differences in the major periods of fishing. This evidence could be used to suggest almost year round occupation of the island, assuming the small group of inhabitants moved sequentially from one midden to the next. However, the data on seasonality might equally support a view which

regarded Oronsay as an outpost of repeated, short-term visits from nearby larger islands or the mainland. The large island of Jura, some 10 km to the east, contains no shell middens whatsoever and the lithic artifacts from Mesolithic sites there are singularly distinct from those on Oronsay. This question of the nature of residence on Oronsay and its relations with neighboring land masses remains most intriguing. The project provides some of the most revealing information available to date on the use and occupation of shell middens. Further information on this question hopefully will be a focus of the subsequent publications by the members of the project.

Excavations on Oronsay is thus an initial report on the project. For the moment, the volume has served to whet our appetites for more on

these late Mesolithic coastal foragers of Oronsay. The analysis of the fish, bird, and molluscan remains, the results of the sampling and spatial analysis of the midden deposits, and the characterization of the artifact assemblages will be forthcoming. In time, as well, a more general overview of results and conclusions will also appear. No doubt these too will be a significant contribution to the early Postglacial prehistory of Europe.

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Journal Announcement

The archaeological significance of the Mediterranean Sea as facilitator or barrier to culture and material culture has long been recognized. Yet no regularly-published professional journal considers the region delimited by the Mediterranean as an archaeological and geographical entity. The *Journal of Mediterranean Archaeology*, published biannually by Sheffield Academic Press, provides a medium for synthetic studies that deal with the broader archaeological and interdisciplinary issues of the circum-Mediterranean region.

Aimed at the international archaeological community, the *Journal of Mediterranean Archaeology*, will publish material that deals with local or regional production, development, interaction,

and change in the Mediterranean world, and with the assumptions that can be extrapolated from relevant archaeological data. Preference will be given to problem oriented-studies that demonstrate a sound methodological and theoretical framework. Purely descriptive excavation reports or survey results should be submitted to the appropriate regional journals. No constraints are placed upon the period of focus, from Paleolithic through Medieval. The area investigated is limited to the islands within, and the lands and regions that border or have a demonstrable impact on the Mediterranean Sea.

Mailing address (manuscripts and related correspondence)

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Conference Reports

Physical Anthropology and Prehistoric Archaeology:
Their Interaction in Different Cultural Contexts in Europe
from the Later Upper Paleolithic to the Beginning of Historical Times

Rome September 1987

A number of papers on the European Mesolithic were presented at this Conference organized by Amilcare Bietti. The titles and authors included:

Verner Alexandersen, The late Mesolithic dentition in Scandinavia.

Pia Bennike, Paleopathology of Danish skeletons from the Mesolithic and early Neolithic periods.

S.M. Borgognini Tarli, Dental microwear in the Mesolithic remains from Grotta dell'Uzzo, Italy.

Thore Constandse-Westermann, The biological and cultural relevance of Skateholm I and II compared to the rest of the Western European Mesolithic human skeletal sample.

David Frayer, Patterns of morphological variability in the Upper Paleolithic and Mesolithic: trends for regionalization.

Mary Jackes, Portuguese paleodemographic profiles.

Kenneth Jacobs, Skeletal biology of a late Mesolithic Boreal population: Olnei Ostrov.

David Lubell and Mary Jackes, Portuguese Mesolithic-Neolithic subsistence and settlement.

International Round Table:
The Neolithisation of the Alpine Region

Brescia, Italy
29 April - 1 May 1988

A number of papers on the Neolithisation of the Alpine Region were presented at this Conference organized by L.H.J. Barfield. The titles and authors included:

M. Cremaschi, Le variazioni ambientali nelle aree montane dell'Italia settentrionale nell'Olocene antico sulla base dell'evoluzione dei suoli.

J.K. Kozłowski, Les modalités de la Néolithisation: à l'est et à l'ouest des Alpes.

R. Drescher-Schneider, Human impact on the vegetation in Neolithic times as shown in the pollen diagrams of the Varese region.

A. Gallay, La place des Alpes dans la Néolithisation de l'Europe: l'impact méditerranéen.

B. Wahlmüller, Primi accertamenti di cereali mediante la palinologia

J.G. Andris, Practical and theoretical considerations in highland zone exploitation: ethnoarchaeological fieldwork in the Romanian Carpathians, Greece and Yugoslavia.

C. Baroni, P. Biagi, R. Nisbet and R. Scaife, Laghetti del Crestoso: a high altitude Castlenovian camp in its environmental setting.

S.K. Kozłowski, The preneolithic phenomenon in the Alpine Region.

R. Clark, The beginnings of agriculture in Alpine Northern Italy: integrating ecological and social theory.

A. Riedel, Remarks on some Neolithic faunas of Northeastern Italy and on the Neolithisation process.

C. Baroni, G. Barker, P. Biagi, R. Maggi and R. Nesbit, Neolithic subsistence and settlement in a Ligurian Alpine valley: the Val Pennavaira case.

A. Broglio and M. Lanzinger, Observations sur la distribution des sites Mésolithiques et du Néolithique ancien dans l'Italie du Nord-est.

L.H. Barfield, The exploitation of flint in Monti Lessini and the significance of flint extraction for settlement distribution.

O. May and M. David Elbiali, Prospection Archéologiques du Valais: un modèle de peuplement et un premier bilan.

P. Corboud, Nouvelles données sur le peuplement Néolithique du Bassin Lémanique.

M.E. Gerhardinger and A. Guerreschi, La sepoltura castelnoviana di Mondeval de Sora (Belluno-I).

L. Castelletti and G. Guerreschi, Nuovi dati sulla stratigrafia dell'Isolino di Varese.

B. Bagolini and F. Bressan, Il primo neolitico del Friuli.

R. Carezzetti, La neolitizzazione della Valle del Ticino.

P. Donnati, L'insediamento neolitico di Castelgrande a Bellinzona.

A. Pedrotti, Il complesso di Kanzianiberg: rapporti culturali fra Carinzia e Italia Settentrionale durante il Neolitico.

B. Bagolini, La necropoli Néolithique de La Vela de Trente.

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Recent Publications

Fischer, Anders. 1987. *Stenalderbopladsen på bunden af Smålandsfarvandet*. Copenhagen: Miljøministeriet Skov- og Naturstyrelsen. (In Danish with English Summary).

Large parts of the Late Paleolithic and Mesolithic hunting grounds and settlements of the Danish territory are now lying beneath the sea. They were submerged as a result of the rising of sea level and the tilting of the earth's crust that followed the melting of the glaciers of the Last Ice Age.

During the last decade a number of Late Mesolithic sites in southwestern Denmark have been investigated at depths of 1 to 4 m below present sea level. These sites have made an important contribution to our knowledge of tools, weapons, fishing gear, and sailing vessels of that period. What may be found on even deeper places of the sea floor could only be guessed until very recently.

A team of amateur divers and professional archaeologists have now proceeded further down into the sea. A model for the topographic position of Mesolithic coastal settlements was tested during two weeks in the Småland bight of southeastern Denmark. According to the model, Mesolithic sites should be found close to topographical features which in the experience of present day fishermen would have been ideal for pound net fishing, i.e., at the mouths of rivers, narrow straits, and the like. The model proved highly reliable. Depending upon the basis of evaluation, the predictions of the model were in agreement with the submarine findings between 74% and 96% of the cases.

The underwater surveys of the Småland bight resulted in the detection of two dozen settlements. On the basis of the shape and manufacturing technique on the flint artifacts, most of the sites should be dated to the Middle Mesolithic period (Kongemose 5500 - 4500 b.c.). Even though these sites were only superficially inspected, a large number of artifacts were collected and several valuable observations made concerning the internal organization of the sites. Thus at a site in 5 m of water a fireplace and a workshop for the production of arrowpoints were located. At another site at a depth of about 9 m another fireplace and workshop for the manufacture of flint axes was noted.

Due to the increasing commercial dredging of sand and gravel from the sea floor, a large proportion of the submerged Stone Age sites are threatened by destruction. If we are able to predict the location of the settlements, however, the law provides a good opportunity for protecting the settlements in the Danish sea territories. Thus the new finds and methods resulting from the project form an important aid for the future protection of our Stone Age Atlantis.

Fischer, Anders, Ulrik Møhl, Pia Bennike, Claus Malmros, Henrik Tauber, Jens Schou Hansen, and Per Smed. 1987. *Argusgrunden - en undersøisk boplads fra jægerstenalderen*. Copenhagen: Fortidsminder og Kulturhistorie. (In Danish: The Stone Age site on the Argus Bank: A 7,000 year old settlement on the sea floor of the Småland bight, southeast Denmark.)

Freyer, David W. 1988. Auditory Exostoses and Evidence for Fishing in Vlasac. *Current Anthropology* 29(2):346-349.

Cziesla, Erwin. 1986. Bericht über die Grabungen 1980 und 1983 in der Weidenthal-Höhle bei Wilgartswiesen, Pfälzer Wald. Zugleich ein Beitrag zur Untersuchung mesolithischer Artefaktverteilungen in Grabungsflächen. *Mitteilungen des Historischen Vereins der Pfalz* 84: 5-57.

Rowley-Conwy, Peter, Marek Zvelebil, and Hans Peter Blankholm (editors). 1987. *Mesolithic Northwest Europe: Recent Trends*. Department of Archaeology and Prehistory, University of Sheffield.

Contents

Zvelebil, M., J. Moore, S. Green, and D. Henson. Regional Survey and the Analysis of lithic scatters: a case study from southeast Ireland

Eng-Andersen, S. Surveying the Mesolithic of the Norwegian Highlands.

Schadla-Hall, R.T. Recent Investigations of the Early Mesolithic Landscape and Settlement in the Vale of Pickering, North Yorkshire.

Barton, N. Vertical Distribution of Artefacts and Some Post-Depositional Factors Affecting Site Formation.

Gendel, P. Socio-Stylistic Analysis of Lithic Artefacts from the Mesolithic of Northwestern Europe.

Rowley-Conwy, P. Animal Bones in Mesolithic Studies: Recent Progress and Hopes for the Future.

Dumont, J.V. Mesolithic Microwear Research in Northwest Europe.

Mithen, S.J. Prehistoric Red Deer Hunting Strategies: A Cost-Risk Benefit Analysis with Reference to Upper Palaeolithic Northern Spain and Mesolithic Denmark.

Blankholm, H.P. Maglemosian Hut Floors: An Analysis of the Dwelling Unit, Social Unit and Intra-Site Behavior Patterns in Early Mesolithic Southern Scandinavia.

Clark, G.A. and M.Neeley. Social Differentiation in European Mesolithic Burial Data.

Roberts, A.J. Late Mesolithic Occupation of the Cornish Coast at Gwithian: Preliminary Results

Woodman, P.C. The Impact of Resource Availability on Lithic Industrial Traditions in Prehistoric Ireland.

Nygaard, S.E. Socio-Economic Developments along the Southwestern Coast of Norway between 10,000 and 4,000 BP.

Blankholm, H.P. Late Mesolithic Hunter-Gathers and the Transition to Farming in Southern Scandinavia

Jacobi, R.M. Misanthropic Miscellany: Musings on British Early Flandrian Archaeology and Other Flights of Fancy.

Woodman, Peter C. 1986. Problems in the Colonisation of Ireland. *Ulster Journal of Archaeology* 49:7-16.

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Conference Announcement

FOURTH INTERNATIONAL SYMPOSIUM ON THE MESOLITHIC IN EUROPE

The Fourth International Symposium on the Mesolithic in Europe will be held at the "Katholieke Universiteit Leuven", Belgium around 20 September 1990.

Organising Committee

The Organising Committee is made up of members of the "Laboratorium voor Prehistorie":

Chairman	Pierre M. Vermeersch
Deputy Chairman	Dirk Huyge
Members	Philip Van Peer
	Annemie Van Elsen

Call for Papers

Papers on all aspects of Mesolithic studies are invited. The Symposium will however be organised in a number of sessions, with each session devoted to a particular theme or topic. Individual papers will be assigned to the appropriate session. Following sessions are suggested:

1. Cultural and/or chronological subdivisions of the Mesolithic.

The organising committee suggests that at least part of the lecture time will be devoted to reviews of large geographical areas. Colleagues, who can find time and have the background to do so, are requested to volunteer to review one of the following regions.:

- Maglemosian region from England up to Poland
- Western Europe with the Southern Netherlands, Western part of Germany, Belgium and the Paris Basin
- Southern Central Europe with Czechoslovakia, Austria, Switzerland, Southern Germany, Luxembourg
- Southern Europe with Southern France, Spain, Italy, Yugoslavia and Greece
- Eastern Europe with the northern part of the Russian Plain
- Southern Part of Eastern Europe.

- Environment and settlement: Intra-site structure; Inter-site Connections; Post-depositional site history; Fauna and Flora
- Extraction and Strategies of raw materials
- Raw material technology and tool function
- Social and demographic problems
- Physical Anthropology
- New data from recent excavations
- Theoretical approaches

Accommodation

Accommodation, meals and all conference sessions will take place in Justus Lipsius-college, a residence of Leuven University in the centre of the old town. Participants should pay for their own travel to the Symposium. Accommodation will be in single rooms. There will be a charge of about 7,000 BEF per person for Accommodation plus a conference fee, which will cover the cost of a copy of the Symposium's precirculated papers.

Registration

Those wishing to attend the Symposium are asked to complete and return the Proposal Form as soon as possible and not later than 31 October 1988, giving the provisional title and a short abstract of the paper.

Further Information

Further information about the Symposium, with a provisional outline of the programme, will be circulated to intending participants in May 1989. All correspondence and enquiries should be addressed to:

Pierre M. Vermeersch
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Redingenstraat 16bis
B-3000 Leuven
Belgium