

Colonization and use of new lands

1.0 Introduction

The landscape and climate are under constant change. We are today witnessing extensive climatic changes causing more extreme weather conditions affecting the landscape, flora and fauna.

Although these climatic alterations may seem dramatic on us, the period that followed the last ice age was even more remarkable: In addition to rapid rise in temperature and sea level, collapses of ice sheets and release of meltwater lakes led to cataclysmic changes (Burroughs 2005:19). As the ice cover receded, new lands were exposed and became available for settlement. *Colonization and use of new lands* forms the basis for the project which revolves around the topic: The earliest settlers and their relations to the surroundings. Key issues are: characterization of biotopes, level of mobility, social organization and technological traditions and traces of resource based adaptations within the archaeological record. These topics will be highlighted through different approaches.

The project focuses upon the Late-glacial–Post-glacial transition – the time of which the landscape stabilized towards the present known shape and appearance. The period is limited to ca 11,000–8000 cal. BC and comprises the Younger Dryas (11,000–9500 cal. BC) and the Preboreal, here referred to as the Early Mesolithic chronozone (9500–8000 cal. BC) (Bjerck 2008:74).

The thesis is a contribution within the frames of an existing research network on pioneer settlement studies. “The pioneer research network” was initiated by the Norwegian University museums in 2009, and consists of archaeologists and natural scientists from Scandinavia and Northern Europe. It is a part of “Universitetsmuseenes forskningsatsning”, and has received financial support by *The Research Council of Norway*. A list of members is attached (Appendix 5).

2.0 Background

2.1 Topographical and geographical setting

About 20,000 years ago an ice sheet covered northern Europe including most of the North Sea. As the ice receded, a landscape visibly scarred by the movements of the glaciers was revealed. Along rocky coastlines the ice carved out labyrinths of channels, fjords and archipelagos that can today be found in parts of Scandinavia, Great Britain, North America and Patagonia. Some of the oldest elevated shores are also found here because of a crustal rebound that ran parallel with the

deglaciation. And hence these areas give us the opportunity to study early marine societies (Bjerck 2009:16–17).

The main area of study is the coast of North-Western Norway, roughly comprising Nordmøre, Romsdal and Sør-Trøndelag. Early Mesolithic sites are found well above the present day sea level in the whole area. The region also has the advantage of being minimally affected by the Late-glacial transgression, making the conditions for detection of Early Mesolithic sites optimal (Bjerck et al. 2008:75). Today the seascape is made up by fjords, inlets and islands. The inland topography consists of steep mountains running directly into the sea, and valleys and plains resting between the mountainsides. The coastal parts of the region were ice free 13,000–12,000 cal. BC and remained uncovered through the whole Late-glacial and Post-glacial period. The seascape looked different at that time, with a greater number of small archipelagos and somewhat wider fjords. The fjords cut deeper into the land making the distance from the sea to the interior and mountains shorter. Ice still covered vast parts of the inland and mountains. The region is rich with sites from the Early Mesolithic period. The oldest radiocarbon sample is dated to ca. 9000 cal. BC (Bjerck et al. 2008:253), but the sea level curve from the area indicates that older settlements can be found.

2.2 Research history

The studies of Early Mesolithic settlements in Norway started in the beginning of the 20th century, with Anders Nummedal's discoveries of apparently primitive flint artefacts from several sites in Nordmøre (later referred to as the *Fosna culture*). This pushed archaeologists to discuss the dating of the colonization of Norway all over again, and eventually archaeologists had to agree that the country was colonized ca. 10,000 years ago.

The questions of “where did they come from, and how?” have been much debated throughout the history of archaeological research. In the early stage South Scandinavia was regarded as the most likely starting point due to the similarities between *Fosna culture* and *Ertebølle* finds from Denmark (Waraas 2001:22). This was belayed in the thought that ideas passed from one culture to another, preferably from south to north. During the next decades other more controversial hypotheses were put forward, e.g. that the technology had its origin in Poland and travelled via Lithuania (Gjessing 1945:42 and Waraas 2001:27, with reference to Kozłowski 1926), or that it was a continuation of the *Komsa culture* in Finnmark in northern Norway (Gjessing 1945:42 and Waraas 2001:27, with reference to Bjørn 1929). Today it is acknowledged that the *Fosna* tradition has its parallels in the Late-glacial *Ahrensburg* complex of the north European plain, and the Swedish *Hensbacka* (Fischer

1996, Kindgren 1996, Schmitt 1999, Kutschera 1999, Fuglestedt 1999, 2009, Waraas 2001). This has supported the view that the settlers came from the European continent, with the North Sea continent as an important link.

The connection between coastal and inland sites has also been a field of interest. The first discoveries of Fosna elements in mountain context were made in the 1950s and 1960s. In 1963 Anders Hagen claimed that the *Fosna culture* travelled to the west coast of Norway via the mountain areas (Waraas 2001:31 with reference to Hagen 1963:135). Although the number of early mountain settlements has increased over the last few decades (e.g. Fløyrlø, Myrvatn and Reinsvatnet) there seem to be a common understanding that the coast have been the most important biotope for the first settlers (Bjerck 1994, 2009, Pettersen 1999, Bang-Andersen 2003, Svendsen 2007).

3.0 Research projects

3.1 *The cultural and natural environment of the North-West coast of Norway*

The region where Nummedal recovered a great number of Early Mesolithic sites still stands before us as important – the technocomplex (*Fosna*) is named after a place in Kristiansund municipality in Nordmøre. Since the early 20th century both professional and amateur archaeologists have contributed to build a considerable collection of artefacts from this period. Several large excavations has been carried out in this area during the last decade (Aukra, Kristiansund and Averøy municipalities) complementing the assemblage. Not in any other region of Norway is a larger collection of artefacts and settlements from the Early Mesolithic period (Bjerck et al. 2008:552). This leads to the question: does Møre provide extra beneficial conditions for early settlers? A fact that seems to support this hypothesis is that the sea area off the Møre-coast has been pointed out as one of the most resourceful areas in Norway with outstanding conditions for a great diversity of marine species. Additionally the topography offers sheltered harbours and easy connection along the coast as well as into the inland and mountains via the fjords (Bjerck et al. 2008:72 with references). But there are also aspects in the present situation that can have resulted in a distorted picture of the distribution of Early Mesolithic sites: the frequency of industrial development in the region, the type of landscape or resource area in which the traces appear, and the conditions for preservation, obtrusiveness and visibility of the dwellings all affects the probability to detect Early Mesolithic sites. Finally changes in sea level and the presence of the ice would have limited the areas suited for settlement. On this basis the following issue is posed:

- *Was the northwest coast a preferred habitat for early settlers, or does the abundance of Early Mesolithic sites merely reflect favorable circumstances for making archaeological discoveries?*

The main aim of this module is to seek an explanation to why archaeological remains from the Early Mesolithic are so well represented in the region: is it due to contemporary beneficial circumstances in the surroundings, or by posterior favourable conditions? A second purpose is to characterize different biotopes, grasping the dynamics and changes, and interaction between its components. This can shed new light over topics like colonization process, social organization, economical basis, logistic and tool technology.

3.1.1 Project modules and method

Mapping of Early Mesolithic sites

Although some examples are found in younger contexts, the flake-adze is regarded as the most reliable key artefact for the Early Mesolithic period. In order to gain detailed knowledge about the distribution of Early Mesolithic sites, the locality of the recovered flake-adzes will be presented on a map. The map will give an overview of the situation on a national level. A more thorough map of North-western Norway will show how the sites are located in relation to topographical elements. The present situation, especially regarding to resource area, will be considered, as well as results from surveys carried out by the County Authorities.

Maps showing the distribution of Early Mesolithic artefacts in Møre and Romsdal are published e.g. in Bjerck 1983 and Svendsen 2007. A project in progress, initiated by “the pioneer research network”, means to give a national overview of flake-adzes, radiocarbon dates and excavated sites, and also the Tapes transgression and the receding of the ice shield.

Modeling climate, hydrodynamics and physical conditions

To understand the character and the dynamics of the marine biotope, a regional model of climate, hydrodynamics and physical conditions in the Younger Dryas–Early Mesolithic transition will be presented. The model aims to comprise factors like temperature and precipitation, fluctuation of the Polar front, glacial meltdown, seasonal freezing of water masses, isostatic rebound, changes in sea level, ocean circulation and tidal currents, nutrient content and salinity and bathymetry.

A lot of work has been done regarding sea levels, isostatic rebound and glacial meltdown (e.g. Svendsen & Mangerud 1987, Nesje & Dahl 2000). Detailed topographical data for Norway – both under and above water – does exist and can be used as a basis for further modelling. Climatic data is managed by *The Bjercknes Centre for Climate Research* in Bergen.

Results from the ongoing project initiated by the University of Tromsø "*After the Ice: Early postglacial human colonization of northern Fennoscandia*" (Jan Ingolf Kleppe, Hans Peter Blankholm and Bryan Hood) can serve as a comparative model.

The model introduced above will provide a better picture of the physical conditions of which fauna and flora established. Because of the lack of osteological evidence from this early period in Norway we will have to rely upon data from climatically comparative regions to decide which animal species were present. When it comes to botanical data we have more to conclude from: a great number of samples of pollen and macro fossils have been analyzed during the past 20 years.

Members of the existing research network (Appendix 5) will serve as partners for consulting and cooperation.

3.2 Attribute analysis of Early Mesolithic artefacts

The archaeological material from Early Mesolithic sites in Norway is restricted to lithics because of bad preservation for organic material. The technocomplex consists of a package of artefacts appearing on most sites: flake-adzes, single edged tanged points, lanceolate microliths, microburins, edge burins, one-sided platform cores and large blades. Although some differences in time and space, the technology is seen as relatively consistent and standardized (Kutschera 1999, Fuglestedt 1999, 2009, Waraas 2001, Bjerck 2008).

A great number of analyses of the archaeological record from Early Mesolithic sites in Norway have been executed, mainly regarding function, technology, chronology and geographical distribution (e.g. Helskog et al. 1976; Bjerck 1983, 1986; Johansen 1990; Fuglestedt 1999; Kutschera 1999; Waraas 2001; Callanan 2007). Others have analyzed the artefacts trying to answer questions regarding to activity patterns and social relations on an intrasite level (e.g. Bang-Andersen 1990, Skar & Coulson 1986, Olausson 1996; Nærøy 1995, 2000; Dugstad 2007). But can a comprehensive analysis of the artefact's attributes reveal different traditions in production and use of tools, answering questions

about social organization and adaption to the natural environment? On this basis two issues are posed, where the first one (2a) is:

- *Can archaeological evidence tell something about the level of mobility and social organization in an over-regional perspective?*

The formulated question is based on the assumption that the presence of a regime of specific attributes signifies the presence of a local tradition.

The aim is to find out how flexible the first settlers was regarding to the use of landscape and biotopes. Are there relations between the coastal settlements? How are the coastal settlements connected to the ones in the mountain?

Mobility and social organization has been widely discussed in the past, resulting in hypothetical models (i.e. Bjerck 1989; Bergsvik 1991, 1995; Bang-Andersen 1996, 2003). These models may serve as useful reference frames regarding level of mobility and interaction between social groups.

Apart from the lack of flake-adzes in the mountain (Bjerck et al. 2008:564) settlements the artefact repertoire from both biotopes seems to be identical: there is no obvious marine or inland adaption to the technocomplex. A striking feature is the high number of arrowheads in the inventory. The arrow is commonly associated with terrestrial mega fauna – a resource which is not characteristic to the coastal areas. Can the arrows found in this context represent a use towards other kinds of prey, for instance sea mammals or birds? The second issue (2b) of this research project is:

- *Can the same complex of tools reflect a specialized adaption to different biotopes?*

A selection of suited localities will be picked out to grasp differences and similarities within a concentrated area, between coastal settlements, and between coastal and inland settlements. Potential areas are Aukra, Averøy and Kristiansund municipalities, sites in Nord-Trøndelag, Nordland and Hordaland (coastal), Sunndal and Oppland (mountain). Archaeological remains from the recently excavated sites in Larvik, Vestfold can serve as a contrast to the artefacts from the main area.

3.2.1 Project modules and method

2a Attribute analysis on Early Mesolithic artefacts – mobility and social organization

To find features in the material that reflects local and regional traditions, the attribute analysis will focus on non-functional aspects. The material best suited for this task is debris and rest products i.e. cores, micro burins and flakes. It will be relevant look at factors like preparation and reduction of the core, traces of preparation on blades, reduction waste from axe production, micro burin technology, use of direct or indirect technique, use of soft or hard technique, use of different raw materials.

2b Attribute analysis on Early Mesolithic artefacts – different biotopes

The attribute analysis is based on the hypothesis that a marine adaption can be excluded in inland contexts. The analysis will be executed on arrowheads and microliths comprising elements like size and weight, retouch type (position, direction, and scale), processing of the tang, traces of hafting, traces of use-wear.

3.3 Comparative analysis: Bohuslän, Sweden.

Southwest Sweden has been emphasized as an important area for the colonization of the Norwegian continent. It has also been pointed out that the distribution of Early Mesolithic sites on the Norwegian coast is strikingly parallel to the conditions in West Sweden in respect to location in the landscape and nearby resources (Bjerck 2008:90, 2009:20). The relation between these areas will be investigated further in this project.

The Bohuslän region carries some similarities with the Norwegian west coast although the region doesn't have the fjords and pronounced mountain relief, but rather a complex of small islands and canals with inlets leading into an undulating landscape. As the ice receded, the region north of Göteborg appeared as a cluster of islands in the North Sea basin. It's obvious that early settlers would have had a distinct marine adaption. The district is also interesting because it differs from adjoining regions both regarding to topography and the amount of artefacts and sites from the period. Schmitt et al. (2006:20) suggests that there are more than 1000 Hensbacka sites in central Bohuslän.

The Bohuslän region is pointed out as an extremely rich biotope due to the large quantities meltwater that were mixed with streams with high salinity (Kindgren 1996:200). A detailed survey of

the marine environment has been carried out for Bohuslän and parts of the North Sea basin by Schmitt et al. 2006: by using oceanology to create models of hydrodynamics, ecosystem dynamics and tidal currents the researchers found that the area had a tidal mixing front that enhanced biological productivity and carrying capacity of the archipelago of central Bohuslän (Schmitt et al. 2006:25). Other research projects in the same area have reconsidered the isostatic uplift and changes in sea level (Lambeck 1999, Steffen and Kaufmann 2005, Schmitt et al. 2009). Due to these factors Bohuslän will be well suited as an area of comparison.

The issue to be addressed is:

- *What kind of potential lay in the natural environment of these two regions, and how did the settlers exploit the opportunities of the surroundings?*

The aim of this module is to examine the relation between the areas by searching for patterns in deployment of resources, settlement location, internal organization and use of tools and technology. Hopefully this will tell us something about colonization and marine relations.

Hein Bjerck (supervisor for this thesis) has studied the marine settlements of Tierra del Fuego, on the tip of South America, and drawn lines to the Scandinavian environment (Bjerck 2009). The seascape carries great resemblances to the coast of Nord-Møre and Romsdal. The diverse and abundant marine fauna has made a dependable resource base for marine settlers for millennia, and specialized marine adaption can be traced in the archaeological material from ca. 6200 BP (Orquera and Piana 2009, Yesner 2004, Bjerck 2009). The archaeological record from these sites can serve as a reference towards an understanding of an adaption to coastal environments.

Bjerck's work and research relations (CADIC/CONICET Ushuaia, Argentina) will be used to give expanded perspectives on the Scandinavian settlements.

3.3.1 Project modules and method

Comparing the archaeological evidence

The analysis will consider settlement location, settlement type and artefacts.

Coastal sites in Aukra, Kristiansund and Averøy will be appropriate for a further comparative analysis. An equivalent amount of suited sites will be picked out from Bohuslän.

Results from *Research project 2* will act as a background for the analysis.

Comparing the natural environments of the research areas

The topographical elements of the two regions imply that both areas would have had beneficial marine conditions, but in different ways: the underwater topography and the large amounts of meltwater pouring into the North Sea indicates completely different conditions for hydrodynamics and nutrients in the Bohuslän area than in Northwest Norway. But the outcome of the parameters could have offered equal opportunities for marine biodiversity.

The results from *Research project 1* and the data presented in Schmitt et al. 2006 and 2009 will be compared to get a picture of similarities and differences in the natural environments.

4.0 Theoretical perspectives

The idea that social structures are not static, but stand in a mutual relation to human actions, was the beginning of a new direction in the understanding of our society – most explicitly formed by the sociologist Anthony Giddens (Olsen 1997:164 with reference to Giddens 1979, 1981 and 1984). More recently this perspective is developed and shaped into a form that fits archaeological issues, based on Latour's Actor–Network–Theory (Latour 2005). The new theoretical perspective is called *symmetrical archaeology* and is founded on the premise that things are beings in the world alongside other beings, such as humans, plants and animals (Olsen 2003:88). By taking into account more than just the visible traces of the past, a more complex picture can appear. This theory is e.g. applied on the material from the Ormen Lange excavations (Bjerck et al. 2008:564pp.), and may be a fertile approach for grasping relations between humans and interaction between humans and their environment.

In his recent work on colonization of seascapes Bjerck (2009) outlines a framework for varieties of *aquatic relations* that characterize complexity of lifestyles within a diversity of aquatic habitats. The framework aims to comprise the multitude of components, factors and circumstances that makes up the building blocks in holistic and complex adaptations. Bjerck distinguishes between *lacustrine*, *littoral* and *marine relations* (Bjerck 2009:121–122). These definitions allow a more nuanced examination of aquatic subsistence patterns and will be helpful in the study of marine settlements.

A theoretical framework and *case studies* concerning the phenomenon of colonization of unknown landscapes and adaptation is provided by Rockman and Steele (eds.) 2003, and can be used as a

model or gateway to some of the more abstract and cognitive aspects of the issues. Landscape analyses, marine biogeographic approaches and ethnographic studies can all be used as models in order to gain a broader understanding of *push-and-pull*-factors in connection with colonization, transfer over short and long distances, and in response to the surroundings. Lewis Binford (1980) and Clive Gamble (1991) have also provided valuable contributions as to how to interpret living spaces of mobile people and created definitions on levels of mobility through anthropological and ethnoarchaeological approaches to mobile campsites.

In his book *Technological Choices* (1993 (2002)) Pierre Lemonnier outlines a theoretical framework where technology and techniques are seen as social productions. Technique is explained as a physical rendering of mental schemas learned through tradition – how things work, are to be made, and to be used. The mental processes that underlie and direct our actions on the material world are embedded in a broader, symbolic system (Lemonnier 1993 (2002):2–3). Because technical actions and changes in technology are in part determined or encompassed by social representations or phenomena that go far beyond mere action on matter, societies seize, adopt or develop certain technical features and dismiss others – usually in an unconscious or unintentional way (ibid.:6-7). Technology is seen as a compromise between physical constraints and the unbounded inventiveness of cultures. The theoretical framework also deals with the relation between innovation on the one hand, and exchanging of techniques between cultures on the other (ibid.:21). These perspectives can be useful in the study of technical traditions in the production of artefacts.

5.0 Literature

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