MARITIMITY IN PREHISTORIC SCANDINAVIA: COGNITIVE DOMAIN
FORMATION AND THE RECONSTRUCTION OF A MESOLITHIC MINDSET

A Thesis

by

CHRISTOPHER J. COOK

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of
MASTER OF ARTS

May 2001

Major Subject: Anthropology
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ABSTRACT

Maritimity in Prehistoric Scandinavia: Cognitive Domain Formation and the Reconstruction of a Mesolithic Mindset. (May 2001)

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Scandinavian maritime archaeologists are in agreement that the ship functioned as a powerful symbol for the peoples of the Bronze, Iron and Viking Ages, largely as an outgrowth of the nature of their seafaring society. This symbolism is a mature exemplification of ‘maritimity’, the conceptual process whereby the sum of cultural adaptations made by a coastal population becomes imbued with meaning. It is hypothesized that this conceptualization of maritimity began as early as the Mesolithic and that the rich, elaborate symbolism involving ships evident in later prehistoric Scandinavia developed in a continuous progression from these Stone Age antecedents. It is posited that this concept of maritimity and its development provided the template that ultimately enabled the ship to rise to its position of symbolic prominence. It is argued that conceptual categories, such as maritimity, form as the result of the feedback generated between the environment and a population’s adaptation to it. By examining aspects of Mesolithic settlement and subsistence systems from southern Scandinavia, maritimity is shown to be operating as a functioning category of conceptualization among prehistoric coastally adapted populations. Furthermore this is then used to illuminate aspects of Mesolithic art and ornamentation to provide an interpretive framework for reconstructing their meaning. Additionally, it is felt that the investigation of meaning need no longer be the enterprise of the philosopher but that a proper perspective and focused methodology can enable progress to be made towards an empirical investigation of meaning.
To my Mother:
For a will to wonder and the sense for why.
ACKNOWLEDGEMENTS

The people to whom I am indebted for the inspiration, motivation and ultimate completion of this project are far too numerous to mention. Several of them however, by virtue of extra effort or simply because they are who they are, deserve particular mention. First and foremost I would like to thank my family for support (both emotionally and physically) during the last few years during which I labored under the burden of this thesis, often at the cost of civility. Next, Dr. Fred Hocker for gambling on a student of nautical archaeology whose fundamental questions were neither nautical nor archaeological. Dr. Bruce Dickson and Dr. Colin Allen both deserve thanks for their role as committee members for this project; they both offered more help than I accepted. Dr. Lori Wright, Dr. Harry Shaeffer and Dr. Norbert Dannhaeuser, all provided me with much intellectual stimulation and meaningful course work for which I am truly indebted. Also, Angie Shaeffer deserves mention for proving to be an invaluable asset for a frustrated graduate student seeking administrative assistance.

The generosity of the M.L.T. Jordan Institute for International Awareness was instrumental in enabling the research for this thesis. My Jordan Fellowship, supplemented by a travel grant from the Institute of Nautical Archaeology, allowed travel to the Center for Marine Archaeology in Roskilde, Denmark during the fall and winter of 1997-1998. The researchers and staff of the Center for Marine Archaeology in Roskilde, Denmark deserve special mention as it was their warmth, candor and guidance that helped facilitate my research and enabled me to formulate the central theme of this work. I would like especially to thank Dr. Ole Crumlin-Pedersen, and Dr. Jan Bill for guidance and assistance whenever needed and for freely giving their time and opinions. Søren Andersen was of immense help and I am eternally grateful for his guidance and his agreement to sit on my committee. Finally, to all those not mentioned by name: “Tak for øl, tak for mad, tak for De og Jeg håber vi kan ses igen!”

Finally, my peers and colleagues all deserve special mention but space is a premium. You are, without a doubt, some of the most interesting, cool, quirky, funny
and generally awesome people I have ever met: for all the parties, bitch-sessions, jobs, projects, food, companionship and just plain patience I love you all. You can do it!!!

On a personal note, I would like to thank Bill and Jen Burke for years of unquestionable friendship, hospitality, good times and thoughtful moments; give old Scooter some jam for me. Also, I'd like to acknowledge Valerie Samantha Buford for being as caring and supportive as she has been. You're one in a million Val and I love you. To anyone else I forgot to mention, or simply ran out of space on; forgive me. Such is the way of things that I give freely all credit and reserve fully all blame.
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CHAPTER I

INTRODUCTION

This thesis grew from a paper written for a graduate seminar in the history of seafaring on the mythological and cultic aspects of Viking Age watercraft. In it, it was asserted that the Viking Age mind-set concerning ships and their symbolic connotations was the result of the imposition of an exogenous world-view onto a pre-existent technological framework. In the case of this particular region and time-period it was the application of an Indo-European mythological framework to the ship. Ultimately it was hoped that the phenomenon of boat-burial in Northern Europe could be attributed to this assimilation. More specifically, burial in a boat was seen as an aspect of status expression based on the substitution of the ship (or boat) for the cart or wagon seen in Central European burial ritual. In short it was felt that boat-graves resulted from the appropriation of an indigenous technological tradition (the boat) by an intrusive ideological and social system (Indo-European warrior elites).

It stands to reason that there must be a connection between a people’s ideology (whether expressed as myth, religion or folklore) and the environment in which it developed, to say nothing of the technology that that group of people produces. We know for example that similar adaptations appear in similar areas such as irrigation in arid climates and sewn-skin clothing in artic areas. Therefore to investigate aspects of a particular ideological stance, say one in which the ship was a sacred vessel, it makes sense to investigate the various cultural, technological and environmental factors that can be assumed to have impacted it and shaped its development. To this end then, I set out to investigate the relationship between the settlement history of Northern Europe and the well attested occurrence of boat-burials there. The nucleus of this argument stemmed primarily from indications from linguistics and myth studies. For instance, there is no apparent uniformity among the Indo-European words pertaining to nautical themes.

This thesis conforms to the formatting requirements of Acta Archaeologica.
For example, the word for ship in the Germano-Scandic languages appears as *skip* (or similarly structured words such as the Danish *skib*, German *schiβ*, and so on) essentially the English word *ship*. The Greek word however is either ναυς (naus) or πλοιον, ¹ (ploi – on); these two sets of words obviously do not share a common root. Discrepancies are to be found as well in the word for sea itself. ² Furthermore, from all that is known about the origins of the peoples who spoke Proto-Indo-European languages (hereafter designated PIE), it seems unlikely that they would have been acquainted with the sea. ³ In addition, no boat remains from any PIE cultural component are known. ⁴ If it is assumed that the ship represented a functionally indispensable item of technology for peoples living along a coast, then its adoption by new migrants seems warranted. This adoption by peoples intrusive to such regions as Scandinavia and Greece accounts for not only the discrepancies observed in the vocabularies but also for the mythical associations found with ships. This mythological framework is especially pronounced in Scandinavia with the dichotomy between the Aesir and the Vanir.

The Scandinavian myths concerning the Aesir and the Vanir have clearly defined ship connections. This refers primarily to the battle between the Aesir and the Vanir in which the Aesir took Hostage several of the Vanir. ⁵ These hostages were Frey, Freya

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¹ This is interesting since the Germanic languages also have two words for watercraft; ship and boat (*schiβ*, *skibet*, and *boot*, *boden*) although it should be pointed out that the Greek word for boat is more correctly ἄμπρος or σκάφη. Information on the Indo-European vocabulary discussed is taken from C.D. Buck, *A Dictionary of Selected Synonyms in the Principal Indo-European Languages* (University of Chicago Press 1949) 726 – 31.

² Buck, (*supra n. 1*) 36 – 7; Take for example the N. European *see* (and its cognates) versus the Latin *mare* or Greek *θαλάσσα*. Buck points out that these words tend to be derived from terms that denote attributes such as *flat*, *salty*, *wide*, etc., that could be applied easily to any large body of water.

³ J. P. Mallory, *In Search of the Indo-Europeans: Language, Archaeology and Myth* (Thames and Hudson 1989) 186; Mallory marshals a large amount of information and theories that generally support the location of the PIE "homeland" to the region known as the Pontic-Caspian steppe.

⁴ Since the possibility exists that the Indo-European homeland was contingent with the Black and Caspian Seas however, the likelihood of discovering early PIE watercraft seems good; an interesting prospect indeed.

⁵ For general information on this mythical war see E. Polomé, "Approaches to Germanic Mythology," in G.J. Larson, C.S. Littleton and J. Puhvel, eds., *Myth in Indo-European Antiquity* (University of California
and Njord, all of whom had ship connotations whilst none of the Aesir did. In fact Freya was strongly associated with a fertility cult of which ships played a part and appears to be the deity for whom the Oseberg ship burial is dedicated. These associations are viewed as more than coincidental and are taken to indicate a conceptual bond with the sea strong enough to warrant internment in watercraft. Since the possibility exists that the boat-burial custom originated in the Mesolithic, it seems likely that other aspects of sea-symbolism stretch back to this time as well.

Through consultation with Søren Andersen, at the Center For Marine Archaeology, I gradually became aware that the issue was not so much how boat-graves originated, but rather why they existed at all and more importantly what it signified, in a broad cultural sense, to ritually elaborate the dead through interment in watercraft. After further research, I discovered what I felt was the key to understanding the development of not only boat graves, but of the ship and its symbolic conceptualizations throughout Scandinavian prehistory. In short, what was realized was that all of these symbolically elaborated activities, from boat-graves to the ship depictions on bronze razors, could be subsumed under the conceptualization of ‘maritimity’ and its resultant elaboration.


6H. R. Ellis Davidson, Scandinavian Mythology (Paul Hamlyn, London 1969) 88; See also the entries for Njörðr (pp. 233–5) and Nóatun (p. 235) in R. Simek, Dictionary of Northern Mythology translated from the German by Angela Hall (P.S. Brewer, Cambridge 1993) 233–5.


CHAPTER II

SPEAKING THEORETICALLY

INTRODUCTION

Prehistoric Scandinavian peoples considered the sea, and more importantly their adaptation to it as very meaningful. The formulation of the resultant conceptual category, maritimity, which began at least as far back as the Mesolithic, provides a coherent framework from within which to explore the specific acts of symbolic ship associations wherever encountered. By understanding the mechanisms whereby a functional item becomes imbued with meaning one can begin to understand that meaning. It is hoped that the establishment and explication of ‘maritimity’ enables progress to be made in our understanding of the complexity and prevalence of the ship as a symbol in Scandinavia as well as our understanding of the mechanics whereby meaning, material objects and mindsets all interact.

Since this thesis explores the reconstruction of systems of meaning from the material record, a preliminary discussion of pertinent theoretical and methodological issues must be undertaken. Primarily this entails establishing the paradigm under which the work falls. This involves an understanding of not only the theoretical framework from within which it operates but also the development of that framework. Given that this work is a Masters thesis, it is neither desirable nor possible to discuss all aspects of theory building or the development of methodologies. It is however necessary, in order to place it in a proper perspective, that several key developments are explicated. First and foremost are the understanding of material culture in general and the basic propositions of cultural ecology and cultural materialism, which have shaped it. This leads to a discussion of the antagonism between processual and postprocessual archaeologies. Finally these archaeological systems are discussed in conjunction with current paradigms such as cognitive archaeology and ‘eco-psychology’ in order to establish the interpretive paradigm applied in this thesis.
Interpretation in the sense being employed here does not imply an 'anything goes' relativism. Rather it is taken to mean the application of reason to observable phenomena. In this way interpretive archaeology, far from consisting of squabbles over opinion, actually involves making legitimate connections between disparate sets of data in order to explain past behaviors. Not simply by describing them or showing statistical correlations among various cultural variables but by actually addressing the activities of ancient peoples from the vantage point of their own subjective experience. Although not by any means foolproof, the practice of interpretation needs not be abandoned with distaste simply because errors have been made, and in fact will continue to be made, concerning judgments of the past. The archaeological record is a text, a text composed of the material remains of the authors. As such it can be interpreted and 'translated' provided the right stance is adopted. This stance involves an understanding of the processes whereby the material record is constructed both in the past and in the present. Additionally it requires an appropriate sense of scale. The level of the individual may never be able to be resolved in prehistory. Since this individual was part of a social system, and that system obeyed 'rules' however, the understanding, obtained on the part of an individual in reference to their experience can be illuminated.

THEORETICAL STANCES

The current state of archaeology is one of flux and accommodation. Multiple, often competing theoretical frameworks interact with methodologies in an attempt to explain various observable data. Over the course of the 20th century, archaeology in general (and specifically Anglo-American archaeology) has become increasingly concerned with the explanation of developments in the past as opposed to the practice of simply describing them. This transition can best be observed in the shift around the middle of the last century away from Cultural-Historical concerns towards a more integrated understanding of the past involving an emphasis on factors related to ecology.

Several key developments took place throughout this time; most notably embodied in the works of Leslie White and Julian Steward. White is primarily
responsible for neo-evolutionism and attempting to address culture from the standpoint of its material composition. He felt that all cultures pass through stages of increasing complexity according to the law of cultural evolution (universal cultural evolution) wherein a people’s culture is equal to their energy (harnessed per capita) multiplied by their technology \((C = E \times T)\).\(^9\) White maintained that culture was organized in layers with technology and economy as the base (and ultimate causal determinant of the pyramid) with social and political organization on top, all crowned by ideology.\(^10\) In this way culture can be constructed (and reconstructed, in the case of the past) on the basis of understanding the technological and utilitarian adaptations people made and how these shaped their social and ideological systems.

Julian Steward took White’s ideas and ‘corrected’ them for their lack of account for the environment and its role in shaping the particularities of a given culture’s development. Steward founded cultural ecology and argued that ecological adaptations were crucial in understanding a cultures development since a particular culture is the product of a particular geographical area. Steward referred to his form of cultural evolutionism as ‘multi-lineal’ and White’s as ‘universal’ and the debates that raged between these two are legendary.\(^11\) Ultimately, the chasm between the ‘generalist’ and the ‘particularist’ arguments was bridged by Sahlins and Service, by arguing that these views represent ‘complementary’ rather than ‘antagonistic’ systems since the ‘generalist’ stance was concerned with progress (in an evolutionary sense) while the ‘particularist’ stance was concerned with adaptation.\(^12\) What all of these systems have in common is a belief in the importance of the material aspects of a culture as the basis for its understanding and development. Marvin Harris is perhaps the best known advocate of a materialist framework within anthropological archaeology. Arguing over the course of

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\(^11\) Erickson and Murphy (supra n. 10) 118 - 9.

\(^12\) Trigger (supra n. 9) 292; Erickson and Murphy (supra n. 10) 119.
his career that material considerations, (technology, subsistence, demography and so on) are the ultimate causal components of culture, he formulated cultural materialism, an "unabashedly scientific perspective."

Although formulated within anthropology in order to understand culture, this framework has had tremendous impact on the development of current archaeological thought. Harris's cultural materialism argues for an integrated understanding of the development of culture from within a framework relying on an analysis of that cultures infrastructure, defined by Harris on the basis of their mode of production in terms of subsistence economies. For Harris, culture can be schematized by interlocking modes, consisting of production and reproduction, domestic and political economy and the behavioral superstructure, all of which form a universal pattern. These elements are organized, according to Harris into various combinations of mental and behavioral domains and 'emic' and 'etic' frameworks. The concept of 'emics and etics' refers to the fields of subject and object respectively. Adapted from the linguist Kenneth Pike, emic refers to an actor oriented, subjective point of view (that comprised of the 'native' view of a given thing and therefore more relative) whereas etic refers to an external, outside view of the thing and is therefore purported to be more absolute (within the bounds of the instrument of measuring and the expertise of the analyst). Essentially Harris has addressed the subject/object dichotomy from a social science standpoint by structuring epistemological categories to distinguish between what people actually do and what they think, or say they do.

The important points concerning Harris, and cultural materialism in general, consist primarily of three related issues. The first involves the deterministic nature of Harris' infrastructure in which the modes of reproduction and production are seen as the

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13 Erickson and Murphy (supra n. 10) 121.

14 Erickson and Murphy (supra n. 10) 123.

15 Erickson and Murphy (supra n. 10) 123.


17 Erickson and Murphy (supra n. 10) 122.
primary factors in a cultures development. In this way, things such as household organization, kinship structures and even belief systems can be traced to the adaptations made by a population to their environment. Harris generalizes this in the introduction to *Cannibals and Kings* when he states: “By a deterministic relationship among cultural phenomena, I mean merely that similar variables under similar conditions tend to give rise to similar consequences.”\(^{18}\) Next is the organization of the different structures according to the framework of emic and etic factors.

For Harris the modes of production and reproduction are grouped under the etic behavioral *infrastructure*; domestic and political economies, under the etic behavioral *structure*; the behavioral superstructure under the etic behavioral *superstructure*; and the mental and emic *superstructure* rest on top.\(^{19}\) In this way categories of thought and belief systems are held to derive from adaptive behaviors relating to ecological constraints and opportunities.\(^{20}\) Lastly is his faith in positivism, in so far as he is concerned with making our understanding of culture ‘scientific’ by recourse to clearly measurable components, be they actones, subsistence economies or emic discourses while asserting that, “…free will and moral choice have had virtually no significant effect upon the directions taken thus far by evolving systems of social life.”\(^{21}\)

These previous developments have helped steer the direction taken by Americanist archaeology. The idea that culture exists ‘out-there’ in an objective sense and is waiting to be discovered is a logical deduction from a materialist framework. After all, if the defining factor in a cultures constitution is its infrastructure, and the material record is composed of the physical remains of that infrastructure, then evaluating or explaining a particular culture is a matter of recovering the evidence and interpreting it. Since archaeology is primarily concerned with material culture, what better way to proceed than by developing methodologies geared towards maximizing the


\(^{19}\) Erickson and Murphy (supra n. 10) 123.

\(^{20}\) Harris (supra n. 18) 289.

\(^{21}\) Harris (supra n. 18) xiv.
amount of information able to be recovered? This copious and 'scientific' information can then be analyzed to demonstrate the organization of the infrastructure and identify component parts in order to explain the culture.

During much of the existence of archaeology, science has been a major source of inspiration. It was believed (following the positivist framework) that through science and technology, utilized to gain increasing amounts of quantifiable data, the questions of the past could be addressed solely by analyzing material remains. This approach was characterized by an unlimited optimism that saw science as the key to unlocking the past. Great volumes of data were collected and ever finer levels of resolution reached in the analysis of past material remains. It was soon realized however, that science and modern technology, although ideally suited for calculating the age of a bone or the chemical trace residue in a bit of bronze, was not bringing us any closer to an understanding of the people that gnawed that bone or cast that bronze. Issues began to be raised about the lives of ancient peoples that couldn't be answered by raw, quantifiable data. Archaeology had come of age, as it were, and lost its innocence.

REACTIONS

This loss of innocence refers primarily to the schism between 'processual' and 'post-processual' archaeologies. Simply put, processual archaeology, or the 'New Archaeology' of Binford, Schiffer and D.L. Clark, among others, sought to analyze the material record through positivistic, empiricist methodologies in an attempt to discover the processes whereby cultures develop. To this end, great reliance was placed on science in the analysis of the archaeological record in an attempt to objectify the past. Such things as formation processes, technologically based analyses of material data sets and the desire to explain changes in past systems (instead of simply cataloging them) to allow for the formulation of broad generalizations concerning human social development were some of the key developments of processual archaeology. Ultimately, processual archaeologists believe that change occurs as the result of a process and that the material record is able to be examined and analyzed, often with recourse to 'hard' science, in
order to discover this process. Overall, processual archaeology allowed for the possibility of reconstructing past cultural systems with a fair degree of accuracy and scientific credibility.

Postprocessual archaeology, as the name implies, developed as a critique of the scientifically orientated, objectively focused “New Archaeology” in order to call attention to the inherently subjective nature of archaeology in general. Originally advocated by Ian Hodder and Mark Leone, postprocessualism drew from theories and methods developed in fields such as literary criticism and historiography in order to argue against any attempts to structure the past (and the people in it) according to some kind of empirico-determinist scheme. Taking inspiration, and concepts, from Hermeneutics, Post-Structuralism and Critical Theory, the postprocessualists asserted the primacy of the individual in the formation of the archaeological record and the unsuitability of positivistic, empirically orientated investigative strategies for the understanding of such things as symbolism, myth and cognitive systems. Fundamentally, postprocessual archaeology seeks to explain socio-cultural change through a general theoretical framework that places primary emphasis on social relations. Ecology then is viewed as a constraining factor, not a controlling one and innovations in technology are seen not only as a response to social and economic changes, but also as a determinate of them.

Recently, postprocessualism has evolved into 'interpretive archaeologies' that, while deriving ultimately from the postprocessual critique of processual archaeology, now see themselves as complementary to the empiric investigation of the past, as opposed to superseding it. Fundamentally, postprocessual / interpretive archaeologies have called attention to the fact that such things as meaning, significance, intention, in

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22 This moniker is by no means uncontested. In fact it has come to be viewed as slightly derogatory and is falling out of favor. Apparently the preferred nomenclature is interpretive archaeology. See M. Shanks and I. Hodder, "Processual, postprocessual and interpretive archaeologies," in *Interpreting Archaeology* (New York 1995) 3.

23 Trigger (*supra* n. 9) 339.

24 Trigger (*supra* n. 9) 340.
fact the conceptualization of ‘the past’ itself, are all constituted in the present and therefore inherently subjective. This creates an insidious danger in the act of doing archaeology that allows for pandering to particular social, national, even racist agendas. It also allows for lapsing into dogmatic pre-conceptualizations about what the past was and what it meant for those in it, based largely on how the past is envisioned and ‘felt’ now. An extremely pertinent example of the problematical nature entailed in the ‘reconstruction’ of the past can be seen in the use of archaeological material by the National Socialists in Germany in the early part of the last century in order to substantiate claims of Aryan supremacy.\textsuperscript{25}

Before moving on, it should be stated that the above discussion of processual and postprocessual/interpretive archaeologies is by no means exhaustive.\textsuperscript{26} In addition, several recent developments have emerged in an attempt to synthesize in some way these two equally valid ways of viewing archaeology. Colin Renfrew has developed a potential synthesis that clearly has several advantages over earlier paradigms, an approach he calls “cognitive-processual” archaeology.\textsuperscript{27}

Of importance for Renfrew is the possibility allowed by ‘cognitive-processual’ archaeology for investigating the role of symbols throughout the process of change.\textsuperscript{28} Briefly put, this approach views the workings of the human mind as a biological machine subject therefore to processual ‘rules’ that should operate for all possessors of mind in the same way. This allows therefore for an investigation of things such as meaning and symbols in a scientifically legitimated way (by virtue of cognitive science)

\textsuperscript{25} Trigger (\textit{supra} n. 9) 164 - 6.

\textsuperscript{26} Several good general sources are available for further understanding of the processual-postprocessual debate. They include, but are by no means limited to: B.G. Trigger, \textit{A History of Archaeological Thought} (Cambridge 1989); C. Renfrew and P. Bahn, \textit{Archaeology: Theories, Methods and Practice. 2nd edition} (London 1996); I. Hodder, \textit{Reading the Past: Current approaches to interpretation in archaeology.} (Cambridge 1986); L.R. and S. R. Binford, eds., \textit{New Perspectives in Archaeology} (Chicago 1968); I. Hodder, et al., \textit{Interpreting Archaeology: Finding meaning in the past} (London 1995)

\textsuperscript{27} Renfrew and Bahn (\textit{supra} n. 26) 469-473; cf. also C. Renfrew, \textit{Towards an Archaeology of Mind} (Cambridge 1983).

\textsuperscript{28} Renfrew and Bahn (\textit{supra} n. 26) 471.
while at the same time not detracting from the role of the subjective ‘will’ in the symbol’s constitution. After all, such things as binocular, color vision and dreaming are inherent properties stemming from our biology and the mechanical working of our brains. At the same time, the choice to carve a wooden totem about those dreams or the natural phenomenon just witnessed, as opposed to building a stone circle is largely governed by resources and contextual variables.

Steven Mithen, in the course of several publications has expanded upon this basic idea and formulated an approach labeled ‘eco-psychology’.29 This can be succinctly stated as the belief that, “... decision making processes [of individuals] are seen to derive from an interaction between the common biological endowment of the human species, providing them with propensities to think and act in one way rather than another, and their environment, defined as their own unique historical, social and physical context.”30

The ‘common biological endowment’ refers to the understanding that the baseline human perceptual system is hardwired and not culturally variable.31 This holds that human beings, in so far as they are biological entities, have the same basic dispositions for thought. This owes its origins ultimately to evolutionary psychology and its concern with the development of our modern ‘modular’ minds.32 Several theories have been advanced recently to explain the origins of modern cognition in view of the light it may shed on understanding how people are living today. One of these, the idea of an ‘environment of evolutionary adaptedness’ or EEA, holds that the minds of modern peoples evolved in the context of a hunter-gatherer way of life and as part of Humanity’s


31 Mithen (supra n. 29) 47.

32 S. Mithen, *The Prehistory of the Mind: The cognitive origins of art, religion and science* (London 1996) 43; Of course ideas concerning the homogeneity of man are not by any means novel e.g. Psychic Unity; Kant’s Transcendental Unity of Apperception; “Reason for all is universal,” and the like.
evolutionary package stresses the universal nature of human traits. Unfortunately things are never this simple and the EEA, with its emphasis on the universal nature of the evolutionary heritage of human beings, doesn’t fare so well when confronted with the fact that the modern hunter-gatherer way of life evolved during a period of marked geographical diversity. Essentially, the EEA, while correctly stressing the importance of understanding adaptation as an evolutionary process, places too much reliance on the assumption that human beings are not adapted to any environment that has developed since the close of the Pleistocene and furthermore, fails to take into account evidence from human phylogeny or the pace of evolution. Iron’s offers another explanation, one he calls the ‘adaptively relevant environment’ or ARE. Irons states that the ARE involves: “... a large number of special purpose adaptations, each interacting with only a part of the organisms environment. Thus, when a particular element in an environment changes, it is likely to affect some adaptations but not others.” This model deals with the relationship between adaptation and environment (in a broad sense) and calls specific attention to evidence supporting an organization of the human mind consisting of multiple specific purpose domains and some general, inclusive domains, all of which act to confer a reproductive advantage to the organism.

In other words, in order to be successful, in terms of adaptation, an organism must confront and deal with problems related to specific features in the environment. Irons goes on to say that: “When long term changes occur in the environment of a population and the population survives in the new environment, those adaptations having changed [through] ARE’s undergo evolution ... More important, the best way to


34 Foley (supra n. 33) 202.


36 Irons (supra n. 35) 194; emphasis mine.

37 Irons (supra n. 35) 194.

38 Irons (supra n. 35) 198.
elucidate the design features of adaptations is to study them in both their relevant and novel environments.\textsuperscript{39}

Mithen, in \textit{Prehistory of the Mind}, takes the modularity concept from evolutionary psychology and argues for the existence of specific domains relating to general intelligence, social / linguistic intelligence, natural history intelligence and technical intelligence.\textsuperscript{40} These various domain fields are comprised of specialized sets of information gathered as the mind wrestles with problems arising from adaptation. Mithen's central argument is that art, science, religion, and all the more 'abstract' human cognitive patterns, are the result of an increasing tendency for these domains, and the knowledge in them, to overlap. The 'explosion' of Palaeolithic art, for example, is the result of this increasing 'cognitive fluidity' brought on by a previously undeveloped ability to connect the domains of technical, social and natural history intelligences.\textsuperscript{41}

These differing views on treating the archaeological record have great import on the investigation at hand. In the main they illustrate the subjective nature of meaning since to believe in something (in this case a particular archaeological agenda) implies non-belief in something else (its opposing 'school of thought'). One cannot hold that the past is subjectively constructed in the present and also that it is objectively constituted in the past in the same way in the same manner. Therefore to construct a reading of the past in which an object's or idea's function in a particular context is held to be knowable to the archaeologist in the present, in the same sense as it was known in the past, is absurd. However, the object or idea was meaningful in the past to its user, and is meaningful in the present to the archaeologist. These two senses of meaning cannot be held to be equivalent. Yet the same object is operating simultaneously in two systems of meaning. One, the referential framework from within which the archaeologist is working wherein it is deemed legitimate to attempt to understand an object from the past and the other the system in the actual past that the object operated in. The object's use in the latter case

\textsuperscript{39} Irons (\textit{supra} n. 35) 198.

\textsuperscript{40} Mithen (\textit{supra} n. 32) 69.

\textsuperscript{41} Mithen (\textit{supra} n. 32) 162.
only exists as a reconstruction or extrapolation however, since it is the archaeologist that is creating (and applying) meaning to the object both in the present and for the past.

THE BIG PICTURE

It is from the basic development of these theoretical issues that this thesis takes shape. The paradigm being employed derives from a synthesis of the key factors presented above. It takes as its starting point the idea that the past is patterned according to principles that operate on a level appropriate for scientific observation. Therefore it partakes of the positivist stance that objectivity is obtainable. Furthermore it understands culture to be an abstracted system developed in order to facilitate adaptation to the environment (defined as the total of an organism’s ‘field of interaction’ comprised of natural, social, and technological factors). In so far as this system is abstracted from the environment or the set {natural world} material concerns are taken to be paramount. This material determinism is held in line with Harris’ belief that similar conditions will produce similar circumstances. It however agrees more with Mithen that individuals constitute the fodder of culture in so far as particular eco-psychological decisions act to alter the set {natural world} giving rise to increasingly complex, interconnected feedback loops. This is due to the existence of cognitive structures that exist universally for human beings (as basic propensities). Furthermore, the idea of these cognitive structures being organized into nodes of specialized intelligences, most importantly those of natural history and technology, is of paramount importance. These propensities are held to operate in a patterned and therefore observable way within the confines of a subjectively constituted, contextually bound system. In this way, problems resulting from the conflict between an ‘objective’ past constituted by ‘subjective’ individuals are avoided. In so far as objects and ideas exist within a particular context, itself constructed by means of the interaction between a series of variables derived from the interplay of cognitive frameworks with the environment, the existence of a real past is held to obtain. However subjective the process of interpretation might be, the objects and ideas of the past were real and intelligible for the inhabitants of the past. This thesis, as an attempt to
investigate the origins of the symbolism ascribed to the ship in later Scandinavian Prehistory by means of an examination of the matrix of environmentally determined, contextually bound variables deriving from the adaptation of Mesolithic populations to a maritime way of life, seeks to build an integrated theoretical methodology that will allow for an empirical investigation of past belief systems.

Since it is believed that the assignment of meaning to an object or idea is the result of a feedback loop created between cognitive domains and the environment and furthermore, the symbolic elaboration observed in later Scandinavian prehistory did not erupt spontaneously, the origins of the cognitive system whereby the ship was able to be symbolized must have occurred at some time prior to its actual symbolization. It is hypothesized then that the rich, elaborate symbolism found in later Scandinavian Prehistory had its roots far back in the Stone Age with the development of the conceptual category 'maritimity' during the Mesolithic.
CHAPTER III

WHAT IS \textit{THAT} SUPPOSED TO MEAN?

THE ISSUE AT HAND

The central concern of this thesis is the definition of ‘maritimity’ and its establishment as an operant conceptual category among Stone Age populations in southern Scandinavia. By focusing on aspects of prehistoric material culture relating to subsistence practices, settlement patterns and social organization during the Mesolithic in southern Scandinavia, it seeks to demonstrate that prehistoric peoples in this region came to rely increasingly on the sea and in so doing, came to regard it as meaningful. Furthermore, it attempts to understand and demonstrate this process. In short what is being investigated is the development of a world-view expressed by a specific group of people (the prehistoric inhabitants of Southern Scandinavia) during a certain time period (the Mesolithic) in response to a particular set of environmental circumstances (adaptation to coastal resource exploitation).

By ‘maritimity’ is meant a reliance on the sea, as an essential component, for numerous cultural activities such as subsistence procurement, exchange networks, communication channels, acquisition of prestige items and group identity. Meaning then in this case entails the act of attributing to something a value, one which may transcend its actual functional worth.\footnote{The idea of value being assigned in an “extra-functional” sense draws inspiration from B. Varenius’, \textit{Det Nordiska Skeppet: Technologi och samhällsstrategi i vikingatid och medeltid} (Stockholm 1992) 134 - 139; Varenius states that the acceptance of a technology is fundamentally an ideological process. It is held here, in agreement with Varenius, that this is true and furthermore that the item of technology itself is the result of an ideological process, namely the perceived need to adapt.} Maritimity as so defined represents more than just the sum of these life-ways. It functions as the conceptual template, derived from functional operations and imbued with meaning, whereby the subsequent symbolic elaboration of maritime motifs, most notably the ship, can be made intelligible.
The question then becomes is there any evidence in the material record which would indicate that this conceptualization was indeed extant? Can the existence of maritimity be substantiated as a specific domain of thought within a particular prehistoric population? Furthermore can it be shown to have acted as the template for such a rich symbolic tradition so well attested to from later prehistoric and Medieval evidence; i.e., the Ship in Scandinavia? Great progress could be made towards understanding the highly visible and richly elaborated role ship symbolism played in later Scandinavian prehistory by placing this symbolism in context, one consisting of definable correlates and patterned processes. Establishing the origin of the conceptual template that enabled the ship to become symbolic through the assignment of meaning to the process of adaptation to coastal resource exploitation by Stone Age populations may provide such a context.

In addition, the establishment of maritimity as a conceptual category, one that can be defined archaeologically, is held to be significant in and of itself. By evaluating maritimity, and exploring the interplay of culture and ecology responsible for its development, insight into the process of world-view formation in general can be gained. Specifically, insight into the relationship held to exist among a population's perceived need for adaptation to a specific ecological niche, the technological trajectory taken to meet that need and the resultant conceptualization of the process. It is hypothesized that this relationship does in fact exist and more importantly, that the variables determining it are observable in the material record. In other words, the ways that human beings meaningfully construct symbolic realities can be documented through an analysis of the particular ways in which adaptation to a specific ecological niche is accomplished. This means that these symbolic realities are contextually bound by the environmental variable set that they are constructed from. For the work at hand, this takes the form of an investigation into the earliest settlement of southern Scandinavia with an emphasis on coastal occupation. It stands to reason that if in fact symbolic reality construction derives directly from interaction with the environment (defined in the broad sense) then evidence for it should be able to be obtained from the material record. After all, the
material record is comprised of the by-products of environmental interaction (e.g., tools, remains of subsistence activities and so forth). By establishing a pattern of marine resource utilization and documenting evidence for symbolic interaction among Stone Age populations in southern Scandinavia, the existence of maritimity will be shown.

This enterprise rests on two fundamental premises. The first is the observation that the ship was indeed symbolically elaborated by Scandinavian populations from at least the Bronze Age up through the Christian Period. This assertion can readily be substantiated by a perusal of the Scandinavian archaeological material extant for this time period. The second and somewhat more troublesome, although in some ways more integral premise, is that the assignation of meaning is a universal, human activity that adheres to a specific set of conditionally operant principles able to be reconstructed from the material record. Meaning is asserted to be the process of valuation, which results from a feedback loop generated by the creation of adaptive strategies (such as technology) as a reaction to a specific set of ecological circumstances.

THE SHIP AS SYMBOL

The first premise is based upon current research into the widespread symbolism of the ship in later Prehistoric Scandinavia. The belief in the supra-natural essence of the ship was sufficiently coherent and widely accessible enough to allow its consistent elaboration as a symbol across a wide geographic area over a relatively long time. The Ship as Symbol in Prehistoric and Medieval Scandinavia, published by the Center For Maritime Archaeology of the Danish National Museum, was devoted exclusively to an examination of this symbolization.

One aspect covered was the use of boats and ships in burial custom, an aspect of ship symbolism that is well established. Pertinent examples of this type of symbolic elaboration were explored in such contexts as the Oseberg,43 Haiðaby and Ladby44 ship burials as well as in less ritually elaborated examples such as the boat-grave fields from

43 Ingstad, Ship as Symbol (supra n. 7) 139 - 146.

Slusegaard\textsuperscript{45} and Sebersund.\textsuperscript{46} Burial practices were not, however, the only functional category of ship symbolism evaluated.\textsuperscript{47}

It is understood that the conceptualization of the ship as symbolic also permeated the profane social structure as well as the mythology of the period. Iconographic representations of ships, or parts thereof, abound from many sources including churches, threshing floors and old water-mills\textsuperscript{48} as well as from particular (and perhaps more overtly ‘ritualised’ objects) such as Ranveig’s casket and the Bryggen stick (Fig. 1) which implies a certain cognitive schemata wherein the ship was a socially functional, value-laden symbol.

Additionally, ships play an important role in the Pre-Christian mythology of the period as indicated by such mytho-poetic constructs as $skidblaðnir$\textsuperscript{49} and the connection between ships and the fertility cult of Freya.\textsuperscript{50} The importance of the ship, at least its symbolic expression in Iron and Viking Age Scandinavia is well attested, as is the cultic aspects associated with it in the Bronze Age.


\textsuperscript{47} In addition to the boat-grave issues discussed in \textit{The Ship as Symbol} including M. Müller-Wille, “Boat-graves, Old and New Views,” \textit{Ship as Symbol} (Copenhagen 1995) 101-109; mention should also be made of Müller-Wille’s seminal work: \textit{Bestattung im Boot: Studien zu einer nordeuropäischen Grabsitte} Offa 25/26, (1968/1969); in which he catalogs and evaluates all extant boat-burials from Northern Europe.


\textsuperscript{50} Ingstad, \textit{Ship as Symbol (supra n. 7)} 139 - 146.
During the Bronze Age, a tremendous proliferation of ship iconography is apparent. Fleming Kaul has recently investigated ship depictions on bronze objects and has concluded that these images represent a complex mythology involving the sun and its diurnal journey across the sky and nocturnally under the earth/water.\textsuperscript{51} Kaul has much of interest to say concerning the extrapolation of belief systems from iconography. His reconstructed belief system is in the main believable and it shows quite clearly the way in which a complex system of belief can by symbolized and more importantly what factors can influence such symbolism. Of particular merit are the linkages explored between Bronze Age centers of wealth, especially the area around the parish of Flemløse, the factors that contributed to their formation, and the distribution of the ship

\textsuperscript{51} F. Kaul, “Skibet og solheden: Om nye fund af bronzealderens religiøse kunst,” Nationalmuseets Arbejdsmark 1997. 108-110; It is of interest that Kaul goes on to say: “Det er næppe muligt at bygge bro mellem bronzealderens og jernalderens hellige billede. Selvom der fra den sene jernalder og vikinetid ses en interesse for skibet i den religiøse kunst, så blev skibet aldrig igen det altfavnende symbol som i bronzealderen. Også bronzealderens solhest forsvar.” (113) (Emphasis mine). Obviously the development indicated here implies an evolving conceptual process that although it maintains certain key elements, in this case the ship, shifts from the sun based cultic aspects of the Bronze Age to the more socially overt, general symbolism seen in the Viking Age. This fact combined with the complexity of the Bronze Age cultic aspects associated with the ship clearly argue for a continual developmental process of symbolism, as opposed to a temporally specific ‘inceptive’ type.
depictions.\textsuperscript{52} In addition to being a well-researched investigation and catalog of Bronze Age ship iconography, Kaul's work also functions as a tentative attempt to, in his words, "... gain a fragmentary understanding of some of the mechanisms that preserved and sustained Nordic Bronze-Age ideology and religion – and to understand yet another aspect of the role of the ship as the paramount symbol of this period."\textsuperscript{53} In this respect the present work stands related to Kaul's work if not in substance at least in spirit.

Ships also appear depicted on rock carvings throughout Scandinavia (Fig. 2),\textsuperscript{54} as well as in the stone outlines of the numerous 'ship-settings' dotting the Scandinavian landscape (Fig. 3).\textsuperscript{55}

\textbf{Fig. 2. Rock art ships from Scandinavia. From Hedengren 1995.}


\textsuperscript{53} Kaul, (supra n. 52) 157.

\textsuperscript{54} I. Hedengran, "The Shipwrecked and their Rescuer," \textit{Ship as Symbol} (Copenhagen 1995) 76 - 84; Other examples of rock carvings of ship images from rock art are well known in the literature and include the Gotland Stone, the carvings at Namförsen in Norway and the numerous other carving fields from Bohuslän.

These stone ellipses in the shape of ships are not yet fully understood except as expressions of a sea going people.\textsuperscript{56} Kaul asserts that the rock images of ships, with their associated motifs, function as markers of cultic ritual, employed in conjunction with the bronze ship depictions, which function as symbols of belief.\textsuperscript{57}

Finally, such boats as Hjortspring and Nydam, among others discovered in bog contexts and construed as ‘ceremonial,’ add another dimension to the symbolic aspects of the boat in Late Prehistoric Scandinavia. \textsuperscript{58} These vessels are important not only because they provide valuable detail about the construction of actual ships in late prehistoric Scandinavia, but also in so far as they indicate a complex level of ritual and belief bolstered by an 'ideological economy' rich enough to afford the offering of complete ships. \textsuperscript{59} This trend reaches its zenith with the elaborate Viking Age ship burials mentioned earlier.

\textsuperscript{56}Capelle (supra n. 55) 75.

\textsuperscript{57} Kaul (supra n. 52) 20 – 30.

\textsuperscript{58} F. Rieck, “Ships and Boat’s in the Bog Finds of Scandinavia,” Ship as Symbol (Copenhagen 1995) 125 - 129.

\textsuperscript{59} For more specific information on these two finds see F. Rieck, Jernalderkrigernes Skibe. Nye og gamle udgravninger i Nydam Mose (Roskilde 1994); and C. Engelhardt, Nydam Mosefund 1859 - 1863 (København 1865); also F. Rieck, “The Iron Age Boats from Hjortspring and Nydam - New Investigations,” In C. Westerdahl ed., Crossroads in Ancient Shipbuilding; Proceedings of the Sixth
The previous limited and selective treatment of the extensive body of scholarship dedicated to northern European ship symbolism is by no means meant as an exhaustive literature review of the symbolic importance of the ship in prehistory. It is meant rather to call attention to recent investigations undertaken specifically in order to explore aspects of ship symbolism and to establish that the ship indeed functioned as a category of symbolization from the Bronze Age through the Viking Age, a period of at least 2,500 years. Given the complexity of the symbolic associations of the ship throughout this time, and the contexts in which it was construed as meaningful, it seems naive to purport that the ideology of 'sacred ship' symbolism sprang up, fully formed in the Bronze Age, bereft of antecedents. Assuming then that this is so, what factors are responsible for its development? How did it evolve into the powerful, ubiquitous icon discussed above? What in fact does it mean that the ship was symbolically elaborated as opposed to a wagon, a cart or some other utilitarian implement? It is in an attempt to answer these questions that the importance of positing the second premise becomes clear.

Symbols function essentially as a shorthand system for the conveyance of meaning. In this respect they are the expression of meaning, not meaning itself. In some ways, the concept of 'meaning' is intuitive. Human beings do in fact attribute meaning to both objects and concepts. It is this capacity for the assignment of meaning which in turn allows for symbolization and elaboration. It was the value perceived as inherent in the ship during the Bronze and Iron Age's that enabled the maintenance and proliferation of the elaborate symbolic systems reviewed above. Much literature has been devoted to symboling and aspects of symbolism, indeed to the investigation of 'meaning' in general. It is necessary therefore to explain the specific concepts of meaning being used in this thesis and provide a general background of their development.


THEORETICALLY SPEAKING

Investigations among anthropologists and archaeologists into the nature of symbols and the systems whereby they are constituted have always been a sensitive issue. How can a researcher working at the dawn of the Third Millennium AD attempt to understand the meaning of a symbol in use by people from the Third Millennium BC, let alone during earlier periods, such as the Mesolithic? Is it in fact at all possible to investigate past belief structures and ever hope to conclude more than vague generalities about the existence of symbols, to say nothing of their meaning?

The definition of symbol set forth by Kobyliński is taken as the starting point for the development of meaning being discussed here. He states:

A symbol is a specific sort of sign, which although not identical with its referent, shares its attributes and can represent it, bringing before us that which is inaccessible because of its immateriality, distance or remoteness. The symbol therefore makes possible contact with that which is unattainable in any other way. The symbol is a revelation - the expression of something inexpressible.⁶¹

Symbols, in this sense, function as a notation system for the conveyance of concepts for which no other adequate operational system exists. Symboling then involves two component parts: the existence of a concept to be symbolized and the physical symbol itself.⁶² Symbols cannot function, nor for that matter exist at all, without recourse to a system whereby they are generated and construed as ‘symbolic’. To say of something that it is a symbol involves elevating it from the sphere of functional activity and placing it in the sphere of conceptual awareness. This doesn’t mean however that the object needs to cease operating in a functional capacity. After all, we can be sure that ships were symbolically important in Viking Age Scandinavia, but even a cursory evaluation of Scandinavian society during this time clearly shows


⁶² White (supra n. 60) 312.
utilization of ships in the functional sense (much to the dismay of numerous monastics). Neither does it mean that the functional aspects of an object are not conceptualized. It simply means that there can be differing ‘layers’ in which an object operates. This ‘multi-vocality’ is a defining characteristic of symbols in general. In this sense something behaving as a symbol will occupy a different cultural niche than an object that is not a symbol. Furthermore, to be construed as a symbol requires a framework from within which to view the symbol. One that at once communicates the existence of the symbol qua symbol and that also provides for its intelligibility.

Symbols are here taken to be any act performed for which the conceptual component expressed is greater than the functional utilization exhibited. In this way the embellishment of tools, ornamentation, burial rites and evidence of ritual activity can all be construed as symbolic since simple functional objects and basic necessary tasks in no way require elaboration or ornamentation in order to be utilized or performed. That simple utilitarian tasks were meaningful is taken for granted. The fact that they were necessary for survival and adaptation makes them valuable and therefore meaningful. Symboling however is taken to indicate a greater likelihood that a given object or activity was understood as meaningful by the participants of a given symbolic system.

The immediate groundwork for investigations of this type stems from Lévi-Strauss’ application of Saussurian linguistic principles to culture. Of particular importance is Saussure’s assertion that the understanding of language requires analyzing the underlying system whereby speech is possible, not the actual, specific utterances of speech themselves.

By taking Saussure’s conceptualization of ‘semiotics’ (broadly the study of signs) and the principles derivable from it, Lévi-Strauss sought to expose the inherent structure by which he believed culture to be constituted. Lévi-Strauss felt that the

63 Kobyliński (supra n. 61) 9.


65 Tilley (supra n. 64) 6.
anthropologist should analyze institutions and customs just as a linguist would analyze words. The linguist explicates the 'phonetic reality' of language based on an analysis of the phonemes constituting the words. The anthropologist therefore should investigate culture in order to extract an underlying principle of interpretation that, as in the case of the phonemes for language, provides insight into the structural reality of the human social experience. It is felt, following Saussure, and Lévi-Strauss's application of his work to culture, that symbols (and their systems) operate in the same manner.

Therefore to gain an understanding of a symbol or symbolic phenomenon (in this case, ships in Prehistoric Scandinavia) it is necessary to analyze the system that enables the specific symbol in question to function as a symbol. In order to allow for any sort of reasonable interpretation of a symbol to be offered it is necessary to attempt to understand the individual components comprising the system in which the symbol operates in addition to the actual structure of the symbol itself. This is in accord, at a fundamental level, with the writings of Paul Ricoeur who states that, "...interpretation is not simply a matter of uncovering the double meaning of symbols, because it also consists of a process through which the universal, temporal and ontological features of human existence...are theorized and thematized." 

This double meaning refers to Ricoeur's assertion that symbols are composed of a primary meaning, which always alludes to a secondary meaning, one that is never revealed and requires interpretation. In so far as the process of symboling itself goes, the distinction between 'primary' and 'secondary' appears valid. That is to say, strictly defined, a symbol's 'primary' meaning is its value as a symbol whereas its 'secondary' meaning is the actual idea or meaning the symbol embodies.

It is held that the systems of meaning created from the adaptation of an organism to its environment act as the domain fields from which not only the symbols themselves


68 Moore (supra n. 67) 87.
but also the things symbolized, derive. What is of primary concern in this work is the construction of maritimity as a conceptual category resulting from a cognitive process. The fact that this process exists at all, and indeed exists universally across a vast span of time emerges as a very significant issue. In order to develop a symbol at all, there must first exist something to be symbolized. Furthermore for something to be symbolized there must exist an abstraction, in the mind of the symbolist, which warrants the utilization of a symbol. This abstraction and the resultant process of symbolization stems from the universal tendency of human beings to assign meaning.

Alexandra Alexandri, although not concerned with meaning *per se* is concerned with the ways the search for meaning, and the forms it takes, are constructed and interpreted. She states, in response to the perception that current archaeological paradigms, specifically postprocessual ones, deny the existence of universal principles, that: “Postprocessual archaeology rejects, not all notion of universals, but rather those paradigms which leave little scope for understanding and explaining the particularities of and differences among cultures.” She also refers to a distinction, proposed by Hinde, between universal characteristics (which are in some way ‘hard-wired’) and basic propensities, which function as templates of sorts and are dependent upon context and environment for their ultimate realization. Meaning can be seen to reside in the choices of individuals operating from a basic template on variable, context dependent factors. In this way the problems inherent in previously held innate (e.g. Psychic Unity) versus learned behavioral dichotomies are avoided in favor of an interplay between organism and environment.

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70 Alexandri (*supra* n. 69) 61.

71 Examples could include beliefs in the inferiority of ‘southern races’ based on natural law or the belief that certain symbols are universally connoted the same way as with water equaling fertility. It would seem tenable however to assert that certain characteristics are ‘hard-wired’ in a universal way, such as breathing, bipedalism or color vision.

72 Alexandri (*supra* n. 69) 61.
The use of a symbol by a symbolist (either a particular person or group) to symbolize a meaningful concept is viewed as a system, one which operates as a social process. This process involves the choice of individuals in the system to partake of the meaning of the symbol, modify the symbols meaning or negate the meaning of the symbol. In all of these the symbol still functions as a symbol although its particular contextual values may exhibit variance. Ultimately, a symbol derives meaning from a cognitive process in which the participants in the system for which the symbol functions associate aspects of the conceptual category, which the symbol represents, with the object now functioning as a symbol. The key elements here are that symbols are made meaningful through an operation involving the encoding of a concept from within a framework that allows the symbol to encode that meaning. This is in turn a conscious process on the part of the participants for whom the concept is viewed as meaningful. By ‘conscious’ it is meant the act of being aware of the symbol in its operation as a symbol within its particular contextual system, i.e., world-view. This is not to say that one can always tell what functions as a symbol in a given situation or furthermore what the exact symbolic connotations of an identifiable symbol are. However, for members of a group in which a symbol is constructed as meaningful, the function of the symbol qua symbol will be readily apparent although the exact relationship of the symbol to the concept symbolized in all cases may not be. It should however be able to be evaluated in terms of its field of meaning based on the relationships established above.

In order then to examine such issues as the nature of meaning and the mechanics whereby meaning is assigned and communicated, it is necessary to identify factors that signify an object as meaningful. In studies of material culture it is generally agreed upon that evidence of decoration or elaboration (including painting, incising, carving, inclusion in graves, evidence of ritual et cetera) is a reasonable indicator of some sort of value being assigned to an object or idea.\(^73\) Therefore objects that are in fact elaborated were valued by the person or group elaborating them. In this way archaeologists can

posit the existence of a perceived value obtained for an object in the mind of the decorator of that object. This is not to say that the exact nature of that value can be determined, but rather that it is possible to say that this object had some value, in essence meant something, to the individual (or group) that took the time to elaborate it. The specific value of an object or idea may not be able to be fully known to the archaeologist in the present (in the same way it was known in the past) but a certain level of resolution is able to be achieved by examining the various component parts that comprise the structure of the valuation system in which the object or idea existed. In other words, the initial value of a tool is obviously its utility, based on its functional importance in terms of its success in enabling adaptation to a particular environment. In addition, elaboration is taken to be an indication of ‘special value’ being assigned to an object. Therefore, it stands to reason that functional objects that are elaborated can be assumed to have been perceived as more valuable than functional objects that were not. Furthermore, the differences in value between a plain tool and an elaborated tool can be evaluated and determined, not with absolute certainty with regards to subjective, emic, behavioral standpoints but certainly with a much clearer picture with regards to the objective, etic, mental one.

Using the ship as an example, several categories of value can be at once proposed. On the one hand the value of the ship as a ship, in the sense of mode of transport is readily apparent and constitutes the functional value of the object: \{ship\}. It functioned as a ship and therefore had a primary category of value as a ship. On the other hand, it had another value deriving from the act of crafting it. This is abundantly clear in prehistoric Scandinavian ship construction. The amount of craftsmanship lavished on the design and production of these vessels was truly amazing. As Varenius points out, this workmanship can be broken down into two categories, what he calls extra and ultra functionality.\(^{74}\) For this discussion they both can just as easily be lumped together into a meta-category called supra-functionality. This then is the act of craftsmanship \textit{en todo}. The primary value of the ship for the shipwright is one of \textit{praxis};

\(^{74}\) Varenius (\textit{supra} n. 42) 135.
it represents creation. It still has value as a ship in the functional sense but now also as a product of a specific design and labor. To the craftsman, the product means much more than purely its function.

Viewed in terms of this framework, several categories of value can be defined for any given object. An object then could have one or more of these categories as the 'primary' field of value depending on the relationship established between the object and the conception of the object in the mind of the user. These categories of valuation (for the object \( \text{ship} \)) could be broken down as follows:

1) Functional (mode of transport)
2) Productive (craft or \textit{praxis})
3) Possessive (ownership, captaincy)
4) Participatory (crew, belonging)

These differing values are not all mutually exclusive, nor are they necessarily interdependent. Different individuals or groups may hold differing categories of conceptualization in relation to the same object. Although they may not have the same actual conceptual 'value' in each case, they all exist as conceptual relationships. This is relatively easy to see in terms of the more concrete of the above categories, such as Functional or Productive. We can recognize the functional use of an artifact in the material record because it exists there. If we recover a stone tool, we may be in some confusion as to whether that tool was used to butcher elk or to cut up plant material, but there can be no doubt that it served a functional purpose as a tool. The same thing applies for \textit{praxis}. The existence of the artifact itself implies its production. That it had a value must be inferred, although it seems ludicrous to assert that anyone making a stone tool, one that related fairly directly to the enterprise of eating, would not 'value' that tool.

The values held to obtain for the Possessive and Participatory category are harder to grasp. Essentially these involve the ascription of value through ownership and
identification respectively. In the case of the ship, this is fairly straightforward. It seems that the past was little different from the present with regards to 'in-group' dynamics. To own a vessel (or tool) signifies not only the ability to perform activities that require the object but also establishes a baseline of 'have' or 'have not.' Additionally, to belong to something (as, for example, ships crew) implies a sense of value; "I belong to this ship." The value derived from participation as part of a ships crew (or a team or school or any other sort of cohort) is not the same value that derives from owning it. Both can possibly be rightly labeled 'pride,' but in the case of the owner it is Possessive and for the crew, Participatory. These two categories of value can cross over each other fairly easily as in the case of worker-owned companies or military officers where a blurring between the values assigned to belonging and owning occurs.

For example, a company commander is in charge of his platoons, in a sense he 'owns' them. He also is part of the Army from which his command stems; it 'owns' him. Additionally, his role as captain is functional in the sense that it enables him to support himself and possibly his family. For the captain himself, his uniform and all of its regalia symbolizes all of these things as well as such ephemeral concepts as duty, honor, and sacrifice. The 'primary' value the captain derives from his captaincy then is not readily determinable. In fact it could be, and most probably is, the meta-category 'Captaincy' which involves all of the abovementioned categories of value.

To talk then of the meaning of an object or idea requires an understanding of the various categories of value assigned to that object or idea not only for the individual actors themselves, but also the group they comprise. All of the members of a prehistoric population required sustenance. They therefore had to make and utilize tools to acquire it. These tools were valuable to the individuals making them, the families (or nuclear units) surviving by using them and the group that was able to adapt because of them. To understand the 'meaning' then, of a given tool, one must understand the various values that tool was assigned. Meaning is taken to represent the total of all the categories of value that apply to a given object. This involves both the level of the particular (individual actor) and the general (group of actors).
Meaning, on the level of the individual then, is the total sum of all the particular categories of value into which a given object falls. A prehistoric hunter needed to be able to hunt. This required tools. Assuming organized specialization of tool production didn’t exist, he probably made it himself. We can further assume that his ability to manufacture tools of the hunt, and to subsequently use them to hunt, allowed him to participate in the community. The meaning of the hunting tool (let’s say harpoon) then becomes, for the hunter, the product of its function, production, ownership and the participation it facilitates in the larger social-system.

For the group (in this case defined as the non-hunting population) the meaning of the harpoon is not as easily determined. They can’t collectively be responsible for its manufacture (in a direct way). Neither can they be expected to value it in a possessive way. They do participate in the social-system for which the harpoon produces sustenance though and as such can be said to value the tool accordingly. Ideally the value of the harpoon for the group could be determined by simply totaling the values assigned to the harpoon by all the individual members of the group. This is archaeology however and that level of detail in the material record (at least for Stone Age populations) is not obtainable. What is obtainable though is a composite value based on the understanding that the relationship of individuals to groups is one of aggregates. Individuals comprise groups and groups are comprised of individuals. Therefore, the options available to an individual derive from the option set defined by the group that is in turn derived from the individual choice sets. This isn’t as facile of an observation as it appears. It establishes a relationship of individuals to groups that allows for an actual understanding of the meaning given an object. The meaning of an individual harpoon simultaneously resides in the particular value of that harpoon for an individual hunter using and fashioning that harpoon as well as in the general value assigned by the group to the adaptation that harpoon allows, in this case the ability to get food. Therefore, meaning is a system wherein value is assigned to an object by individuals or groups, based on the particular contexts in which that object operates. In this way the value of production (in the sense of praxis) may be individual, while the value of participation may be group. The
harpoon is valued by the hunter, because he can hunt with it. If the hunter hunts successfully with the harpoon, thereby enabling adaptation, it is valuable to the group. The more successful the hunter, and the better adapted the group, the more meaningful the harpoon becomes. The more meaningful it becomes, the greater the likelihood for elaboration along lines such as prestige or perhaps ‘pride.’ Elaboration itself is a form of representational conceptualization, since in order to engage in representation there must exist in the mind a concept to be represented. The elaboration of material culture, through the representation of concepts is the act of symboling. The object so elaborated is then a symbol.

The preceding reasoning is largely intuitive. As far as we know, human beings seem biologically pre-configured with a set of functional capacities of which the assignment of meaning is one. In so far as this is the case, broad, general principles governing the ascription of meaning by human beings qua human beings can be derived. Although meaning is inherently a subjective system, since it actually obtains primarily on an individual level, it is viewed as a process, which operates fundamentally the same for all people by virtue of the fact that they are people, thereby having in common biologically identical cognitive abilities and neurological networks. Since the process of meaning operates in a structurally ‘universal’ way, what remains to be examined are the variables that constitute these systems of meaning.

These variables are here being considered the totality of the environmental aspects within which the ‘disposition for meaning’ operates. In short, meaning is the process whereby human beings, through the application of a predisposition inherent in the organism *Homo sapiens*, attribute conceptual value, selectively and consciously to an object or class of objects based on a framework of variables, which are examinable in the archaeological record.

**CONCLUSION**

From these general concepts and considerations several conclusions are being derived. Symbols function as a system for the conveyance of meaning. The symbol itself
acts as the container for the concept symbolized and as such becomes meaningful, but only in a secondary sense. It is the thing *symbolized* that contains the actual conceptual meaning. The symbol simply represents that concept. One concept can have many different symbols just as one symbol can embody many different concepts. Each of these symbols and their connections to the concepts they represent form a system of meaning. The sum total of these systems of meaning forms the larger system, or 'world-view,' by which the symbol is made intelligible. Although the world-view is the larger system that provides the context in which symbols function, its formation is in turn dependent on the generation of the conceptual linkages created between a concept and its representation. Furthermore the relationship of the symbolist, symbol, and thing symbolized is viewed collectively as constituting a process. This process may not be fully recognized by the participants in the system, nor for that matter would they necessarily be involved directly in the construction of it. Whether aware or not of the specific associations adhering to a symbol, and more importantly the reasons for those associations, participation within the larger world-view in which the process is contextually constituted implicitly verifies and gives legitimacy to the symbol.

The key to understanding a symbol is to examine the particular contexts in which that symbol functioned and delineate the trajectory of that symbols use in those contexts. In this way a reading closer to the actual value of the symbol can be obtained. This procedure stands in contrast to the assignation of value to a symbol that derives from perceived similarities with other cultures or time periods or worse, an intuitive feel about the symbol on the part of the archaeologist.

This type of inquiry involves the investigation of a set of components linked directly to an ancient population's adaptation to a specific environment. How was the utilization of the sea by Mesolithic populations undertaken and how did it develop? In what ways did it differ from the utilization of terrestrial resources, if at all? What is the effect of environmental adaptation on ideology and vice versa? Is the interaction between ideology and technology traceable archaeologically? Can the static material
record of past behavior be used to expose the dynamic ideological world that must have been an integral component of that behavior?

For the prehistoric inhabitants of Scandinavia the ship existed. Furthermore, it was also symbolized. The existence of a symbolic ship then requires a synthesis of the object {ship} and the concept the object represents. This synthesis is viewed as a system of meaning constructed by means of a process of valuation. The value of the ship varies from context to context but the system it operates in does not. The cognitive domains of the human mind and the material structure of the physical world both act to limit the choices available. The relationship between the cognitive structures of the mind and the limitations of the material world give rise to conceptual categories which act as facilitators for symboling. These conceptual categories at once provide both the understanding of the world necessary to make the object as well as the ability to assign it meaning. In the case of prehistoric Scandinavia, a particular conceptual category can be identified: Maritimity. The origins of which lie far back in the Stone Age.
CHAPTER IV

THE STAGE IS SET

INTRODUCTION

Unlike various other parts of the world that boast of human occupation often spanning hundreds of thousands of years Scandinavia, due to glaciation, has had a relatively recent settlement history. What follows is a brief discussion of the earliest known human occupation of Scandinavia starting with the retreat of the Weichselian Glacier and spanning the roughly 4,000 years following until the beginning of the first phase of the Mesolithic, the Maglemose, at around 9,000 BP.

This time period witnessed the first substantial occupation of the region by roving bands of game hunters migrating into newly available territory on the heels of the herds they depended on for their livelihood. This chapter will focus on establishing a chronology and exploring issues of subsistence, settlement and technology among the early Post-glacial inhabitants of southern Scandinavia. This overview seeks simply to establish a human occupation in this region and to delineate broad patterns of subsistence strategy and technological adaptation during this time. Of particular interest is the possibility of Late Palaeolithic maritime adaptation and the implications it holds for the development of the proposed conceptual category ‘maritimity.’ Although the focus of this work is on the Mesolithic it is strongly held that context is everything and therefore no discussion of the Mesolithic would be possible without first understanding the historical antecedents which set the stage for it.

NATURAL ECOLOGY

Around 13,000 BP, the Weichselian Glacier began its retreat from the Scandinavian landmass. This time period, known as Dryas I, starts the process of the

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glacial retreat, and by the Bølling period, southern Scandinavia was ice-free.\textsuperscript{76} Table IA located in Appendix A, displays an amalgamated chronological table for the end of the Weichselian Period through the beginnings of the Mesolithic.\textsuperscript{77} Although this time period is extensive and the cultural sequences discussed cover much of Northern Europe references to specific fauna, sites and settlement patterns can be assumed to be referring to Denmark unless otherwise noted.

The post-glacial landscape of prehistoric Scandinavia was characterized by a gradual maturation process involving the reclamation of the barren, frigid wastes left by the retreat of the glacial front. This arctic tundra was dominated by dwarf willows, tundra grasses and small plants adapted to conditions of low temperatures, poor soils and intense light.\textsuperscript{78} Ice was still abundant and overall the climate was arctic and most likely inhospitable for humans.\textsuperscript{79} Paleontological remains from this period show a typical pattern of glacial fringe ecology with game birds and marine mammals in abundance from Dryas I while other large game mammals such as reindeer and elk are not much in evidence prior to the Allerød.\textsuperscript{80}

\textsuperscript{76}Eriksen (\textit{supra} n. 75) 9.

\textsuperscript{77} The chronological information for this chapter comes from a selection of sources including J. Jensen, \textit{The Prehistory of Denmark} (London 1982) 31; and J.G.D. Clark, \textit{The Mesolithic Settlement of Northern Europe: A Study of the Food-Gathering Peoples of Northern Europe During The Early Post-Glacial Period} (Greenwood Press, reprinting 1970) 53; Additional sources used to obtain dates are listed with the table in Appendix A. Where possible all dates are given in years before the present (BP) unless otherwise noted.

\textsuperscript{78}Jensen (\textit{supra} n. 77) 12.


CULTURAL ECOLOGY

The earliest cultural sequences from the late Pleistocene to the early Holocene period are thought to correspond to highly mobile and adaptable populations that moved into the regions of northern Germany and Denmark almost as soon as they were ice-free.81 This cultural component is termed Hamburgian and is characterized by a typical Late Palaeolithic tool industry composed of regular crested blades with bi-directional dorsal scarring struck from narrow cores with oblique platforms showing evidence of faceting during platform preparation (Figure 4 illustrates the general progression of tool types from the Hamburgian through the Late Arhensburgian.)82 The Hamburgian is typically separated into two phases, an earlier shouldered point phase and a later tanged-point phase.83 Hamburgian sites are known from Germany, Poland, the Netherlands, Denmark and south Sweden.84 This ‘culture’ is thought to have already been present in northern Germany by 20,000 BP and to have ultimately descended from much earlier Magdalenian industries.85

The Hamburgian complex is known from Denmark from at least the Bølling Period with finds coming from such sites as Slotseng, Jels, Bjerlev Hede and Sølbjerg,86 although in the main it seems to have been a continental development with its nexus located to the south of Denmark.

81 Eriksen (supra n. 75) 8-9.

82 B. Madsen, “Late Palaeolithic Cultures of South Scandinavia - Tools, Traditions and Technology,” Early Settlement (Stockholm 1996) 64-5.


84 Bratlund (supra n. 83) 28.


The next discretely discernible cultural phase is known as the Federmesser. Apparently there is no general consensus as to the origins and affinities of this techno-complex. Some authors claim linkages to the central European Magdalenian\(^{87}\) while others, noting that the foraging strategies and resource exploitation systems vary markedly with that of the Magdalenian, propose a more territorially reliant settlement pattern marked by a broader subsistence base and a rather generous, uneconomic usage of flint.\(^{88}\) In general, the Federmesser complex is distinguished on the basis of broad bi-

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\(^{87}\) Eriksen (supra n. 75) 18; Eriksen does however point out that there is really not enough known about this group to allow for a proper perspective.

\(^{88}\) Holm (supra n. 86) 57.
directional, sub-cylindrical or conical cores with plain or largely faceted platforms. Federmesser sites are scattered throughout Northern Europe with the area of major concentration being to the south of Denmark.

Often grouped with the Federmesser Culture is the Bromme Culture. First recorded at Bromme, near Sorø on Sjælland by Erik Westerby in 1944, this culture is regarded as a predominantly south Scandinavian phenomenon. It is characterized by heavily trimmed cores of the same general shape as Federmesser cores, with a knapping technique that produced heavy, straight blades seemingly based on high consumption but low utilization of raw materials. This reduction sequence lends support to Holm’s assertion that the Federmesser and Bromme Cultures are opposed to the Magdalenian derived Hamburgian Culture by their “obvious waste and extravagance” in terms of their lithic consumption.

The final Late Palaeolithic cultural complex is termed Arhensburgian and is characterized by tanged points, reindeer antler striking weapons and barbed, basally spade-shaped harpoon points. Figure 5 illustrates the distribution of the Late Palaeolithic populations mentioned in this section. By this time period, between the Allerød and the Younger Dryas (~11,500 - 10,000 BP) the area of southern Scandinavia was characterized by a mixture of tundra, shrub tundra and birch forest with the retreating ice sheet somewhere in the middle of the Scandinavian landmass.

89 Madsen (supra n. 82) 71.

90 Holm (supra n. 86) 43; It should be noted that according to A. D. Johansson, “A Base Camp and Kill Sites from the Bromme Culture on South Zealand, Denmark,” Earliest Settlement (Stockholm 1996) 90, that Stoksbjerg Vest, discovered in 1930 and published in 1941 by Hakon Berg predates Westerby’s publication by three years.

91 Madsen (supra n. 82) 65-7.

92 Holm (supra n. 86) 57.

93 Holm (supra n. 86) 54.

94 Burdukiewicz (supra n. 85) 39.
Sites from the so-called tanged-point techno-complex are known from throughout Denmark from this time (Fig. 6).\textsuperscript{95} This techno-complex is also found in Norway and Sweden and is referred to there as Fosna and Hensbacka respectively. These are of particular importance in that they are, according to Fischer, coastally adapted.\textsuperscript{96}

\textsuperscript{95} Jensen (supra n. 77) 36-7.

\textsuperscript{96} A. Fischer, "At the Border of Human Habitat, The Late Palaeolithic and Early Mesolithic in Scandinavia," The Earliest Settlement (Stockholm 1996) 169-172.
Fischer makes several well argued points for the importance of coastal settlement systems during the Late Palaeolithic, and concludes that this type of settlement system, as evidenced from the Norwegian and west Swedish Ahrensburgian finds, needs not be viewed as an exceptional pattern. In fact, it may represent the typical pattern of migration and settlement into Scandinavia though much of this evidence is lost due to the rise in sea level brought about by the melting polar ice at the end of the Weichselian glaciation.\textsuperscript{97}

![Map of Denmark showing distribution of tanged-points](image)

Fig. 6. Distribution of tanged-points in Denmark. From Jensen 1982.

It is with these early cultural phases that the settlement of Scandinavia was begun. Given the lithic industries present during this time as well as the evidence from faunal remains it would seem reasonable to conclude that the earliest settlement of

\textsuperscript{97} Fischer (\textit{supra} n. 96) 168 – 173.
southern Scandinavia was indeed “classic.” That is to say undertaken by small bands of mobile forager/hunters following patterns of game into the newly ice-free Scandinavian landmass. Although Hamburgian and later sites have been located in Denmark, the faunal profile for large terrestrial game animals remains thin. This raises the possibility of coastal settlement or at least migration during the early Post-Glacial Period.

COASTAL TOPOGRAPHY AND PALAEOLITHIC SETTLEMENT

The time span from the retreat of the Weichselian ice sheet to the appearance of the Maglemose Culture witnessed drastic changes in the topography of northern Europe. As a result of changes in the ice sheet and climate, sea levels were constantly in flux creating ever changing landforms. In addition to the changing coastline, land bridges also occurred at this time connecting northern Sjælland with Skåne (Fig. 7).

This continual fluctuation must have made the coastal regions extremely unstable. It would be reasonable to assume that southern Scandinavia during this time of change resembled some of the more sub-arctic regions of the world today. Large, recently calved icebergs more than likely floated in frigid waters around which newly freed land began to be re-vegetated as migratory animals slowly expanded northwards.

Fig. 7. Land-bridge between Sjælland and Skåne. After Björck 1995.
Of critical importance in understanding this turbulent time and the material record created during it, are isostatic uplift and subsidence. Isostatic uplift is the process in which landmasses, which have been compressed due to the extreme weight of glacial ice, begin to rise. The obverse of this is subsidence, which entails large areas becoming inundated as a result of this decrease in pressure. These phenomena are analogous to the effect of pressing down on a waterbed. The area immediately under the point of pressure ‘sinks’ while adjacent areas rise. The reverse happens when the pressure is removed. This is due to the elastic nature of the Earth’s crust. Figure 8 illustrates the isostatic uplift and subsidence of Scandinavia after the glacial maximum.

Fig. 8. Isostatic rebound in Scandinavia. After Fischer 1995.
It is because of these phenomena that Denmark has the ‘tilt-line’ that separates northern Jylland and Sjælland which continue to rise and southern Jylland, Lolland and Fyn that continue to sink. This also accounts for the high number of coastal sites located in western Norway and Sweden, areas that have risen substantially since the retreat of the Scandinavian ice sheet.\(^{96}\)

Although no evidence from Denmark for coastal occupation dating back to the late Palaeolithic has been found, since these areas are now underwater or had been covered by ice, evidence for relatively early coastal adaptation elsewhere in Scandinavia has been discovered. Such sites as Galta in southwest Norway, which has been determined to be culturally Ahrensburgian, clearly indicate a coastally adapted cultural component by 11,000 - 9,500 BP.\(^{97}\) Interestingly, this site produced 277 points from the excavation of only 14% of the site, producing an estimated total point yield of over 1,000, making Galta one of the richest Ahrensburgian sites known.\(^{98}\) Also, mention should be made of the preponderance of Hensbacka cultural material that is coastally situated, an observation that has led L. Schmitt to postulate that this sequence may represent a maritime expression of the Ahrensburgian culture.\(^{99}\)

Evidence of coastal exploitation, or at least a familiarity with marine resources is substantiated as far back as the Palaeolithic, in the form of depictions of marine creatures on caves and portable art. The swimming great auks from the Upper Palaeolithic Cosquer cave in France and the Magdalenian flatfish engraving from Le Mas d’ Azil, southern France, clearly indicate some-sort of coastal contact very early on (Figs. 9 and 10).\(^{100}\)

\(^{96}\) Björck (supra n. 79) 170.

\(^{97}\) L. Prosch-Danielsen and M. Høgestøl, “A coastal Ahrensburgian site found at Galta, Rennesøy, Southwest Norway,” Man and Sea (Exeter 1995) 123.

\(^{98}\) Fischer (supra n. 96) 168-9.


\(^{100}\) Fischer (supra n. 96) 171-2; and F. D’errico, "Birds of the Grotte Cosquer: The Great Auk and
The fact that Palaeolithic peoples from inland France were sufficiently familiar with marine resources to allow depictions of them to appear in cave art, suggests early coastal exploitation, or at least contact. This possibility gains support from the existence of the submerged North Sea Coastal plain. This vast inundated area has produced numerous artifacts dredged up from the sea floor. Evidence of early contact with the sea and the existence of the submerged North Sea plain allow for the possibility that coastal settlement played a much larger role in the peopling of Scandinavia than previously assumed. There is no reason, other than absence of evidence which in no way is

evidence of absence, that the first peoples into Scandinavia proper could not have been
costally adapted fisher-foragers who paddled their way into these newly opened frigid
waters along coastlines no longer extant. For example, it is known from ethnographic
sources that reindeer (caribou) hunters in the contemporary and historic North American
Arctic would often hunt herds by means of watercraft. Waiting concealed in their boats
by fording spots along rivers and inlets the hunters would dart out and dispatch
swimming caribou at specific points in the crossing. Perhaps this scenario could explain
the rock art images from Skogerveien, Drammen in Norway, which the author identifies
as Elk (our Moose) and traps for elk.101 Viewed in this context however the carvings
may very easily be seen as boats used in hunting elk (Fig. 11).

![Fig. 11. Elk and traps. After Mikkelsen 1986.](image)

Mikkelsen further states that all inland carvings are located near rivers, rapids or
lakes along migration routes.102 Additionally, a marine orientated migration system has
been proposed for the Americas dating to at least the Paleo-Indian Period, which is
contemporary with the Late Palaeolithic- Early Mesolithic period in Northern Europe.

101 E. Mikkelsen, "Religion and Ecology: Motifs and Location of Hunters' Rock Carvings in Eastern
Norway," in G. Steinsland, ed., *Words and Objects: Towards a dialogue between Archaeology and
History of Religion*. Institute for Comparative Research in Human Culture (Norwegian University Press,
Oslo 1986) 133.

102 Mikkelsen (*supra* n. 103) 133.
What is lacking however from the late Palaeolithic and very early Mesolithic is evidence for true coastal sites. It may well be that the roots for the proposed conceptual category 'maritimity' came into the area with the earliest inhabitants. If so, why does it take so long to manifest? Why is there no apparent evidence for maritimity from other areas known to be coastal during the late Palaeolithic - early Mesolithic boundary?

THE PROBLEM OF PALAEOLITHIC MARITIME ADAPTATION

As discussed above, a definite archaeological presence can be noted for this region from the end of the Weichselian Glaciation up until the present. The pattern appears to be one of mobile, opportunistic foraging strategies with a reliance on stone tool kits comprising a typical assemblage of scrapers, burins, points and blades. Although some antler tools are extant, notably the harpoons of the Ahrensburgian Period, most of the remains are lithic. This more than likely represents a sampling bias due to the amount of time spanned and the poor preservation habits of organic materials such as wood or bone. This combined with the loss of landmass due to post-glacial rises in sea level makes locating and identifying coastal sites extremely problematic.

The idea of maritimity depends on substantiated coastal exploitation. The lack of definitive, coastally adapted sites from the Palaeolithic effectively confines the investigation of maritimity to the late Mesolithic when sites that have a high percentage of marine indicators are visible archaeologically. These indicators consist of three main functional parameters. The first is the total subsistence yield of marine resources utilized. This parameter is based on the percentage of marine resources as opposed to terrestrial resources occurring at a given settlement location. The second is evidence of specific technological adaptations suited for marine resource procurement with the third being simply location. Additionally it should be pointed out that even if a site can be classed as maritime according to these indicators, it may not exhibit maritimity in the conceptual sense being discussed in this work. Maritimity is the expression of the conceptual importance assigned to these indicators, not necessarily the indicators themselves.
If it is in fact possible to isolate these factors and thereby define sites based on these categories it could then be possible, by examining the degree of expression of these indicators at a particular site to determine that sites maritime reliance index (MRI). This would then make possible progress towards exploring such issues as degree of reliance placed on maritime resources, technological adaptation strategies and even ‘ethnic’ identity based on maritimity across cultures and throughout time. As Price points out, “Future comparison of coastal and inland subsistence and settlement patterns likely will be very rewarding.” The key to this fruitful comparison is the establishment of a basis of measurement whereby sites can be evaluated, in reference to each other, in terms of the degree to which they exhibit potential maritimity.

D.R. Yesner, in an article published in 1980 discusses maritime paleoecology and defines maritime hunter-gatherers as peoples for whom marine foods contribute the largest share of calories or protein in the diet. Yesner also lists ten diagnostic criteria for defining maritime populations including coastal settlement (5), technological complexity and cooperation in resource exploitation (7) and territoriality (10).

Sites presently located on the coast would not necessarily have been coastal during the Palaeolithic. In fact sites found at the seashore now would, in all probability have been inland sites. Exceptions to this are to be found as with the Norwegian sites discussed earlier however. This is due to landmass rebounding. For sites in the now submerged North Sea Plain, which would include a large part of Denmark, such is not the case. It would be immensely profitable to be able to locate and excavate sites from this region with the goal of substantiating a definite post-glacial maritime utilization pattern.

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105 Yessner (supra n. 106) 28 – 32.
Coastally adapted cultures are known from around the world. Places such as the west coast of Africa, the Pacific Northwest and the islands of the South Pacific all provide examples of adaptation to a maritime way of life. R. G. Whitlam investigated coastal environments and their settlement from an archaeological perspective and defined several criteria for investigating them. Of importance here are his distinctions between mobile and sedentary states in terms of temporal organization and extensive versus intensive subsistence orientation. He states that multiple, short-term, seasonal sites characterize mobile systems often having low artifact density of an often-limited functional type. Sedentary systems are characterized by a large array of functional tools, tend to be long term and exhibit more uniformity in distribution and size.106 Extensive versus intensive subsistence systems are then characterized primarily on the faunal resources exploited and the tools used to exploit them. Extensive systems tend to show numerous and highly variable faunal remains indicating a number of different environmental exploitation niches complete with tool kits that allow for a wide range of procurement activities. This is opposed to intensive systems that show a small number of tool types and a tendency to focus on one (or several closely related) species that show up with high frequencies and general uniformity over sites.107 Whitlam concludes then that coastal settlement systems tend to be mobile and extensive.108 This being the case, sites located that were coastal sites in the Palaeolithic would show sparse settlement remains combined with a high diversity of faunal remains and tool types. This appears not to be the case with the known Palaeolithic sites from the region. Sites that perhaps could be located in submerged regions would have to be searched for using a probability model for general location and a sampling strategy based on the identification of these factors; namely high diversity of resources utilized, predominately marine, and a highly adaptable and broadly functional tool kit. A concrete example for the purposes of this


107 Whitlam (supra n. 108) 99 - 100.

108 Whitlam (supra n. 108) 129 - 132.
thesis would be a site located along a Palaeolithic shoreline (obtainable from geomorphological data), containing remains of marine fishes, fishing gear, harpoons and watercraft. This would most assuredly exhibit a high (MRI).

In what follows, a coding system and scale are proposed in order to allow an exploration of maritimity. Although by no means perfect, the system being proposed offers a fairly straightforward and relatively quick way to classify and order these kinds of sites. In order to explore maritimity in a conceptual sense it is first necessary to establish the existence of a clear pattern of marine orientation. To this end a system is offered which allows for the scaling of various cultural entities (sites, tribes, techno-territories what have you) in order to facilitate comparisons across space and time. It would certainly be advisable to expand the proposed system and to apply it on a site-by-site basis in order to average the results into a composite (MRI) for a given culture. However given the inherent limitations of a Master’s level inquiry, it appears sufficient to demonstrate the validity of the approach and to determine general trends observable by its application. Since any comparison of prehistoric populations is likely to suffer from incomplete data, the methodology employed in constructing this system derives from a textual analysis of relevant archaeological literature.

THE MARITIME RELIANCE INDEX

As discussed earlier, the idea of maritimity is derived from the assignment of meaning to a material culture set exhibiting a decidedly maritime cast although it should be stated that maritimity does not require that all components of the maritime index be present. What is important is the relative strength of the total of the indicators. Therefore it seems necessary to develop a coding and scoring system in order to classify sites according to their potential for exhibiting maritimity, in the conceptual sense.

It is being proposed here to breakdown the components of a particular site along the lines discussed above, namely subsistence, settlement and technology. To each of these components a score is assigned, from 0 to 3 depending on the criteria established for each category. These scores are then tallied and checked with the key to yield a
general, overall indication of the importance placed on maritime resources. They key is fairly simple with high scores (8 - 9) being indicative of high marine resource utilization while low scores (2 - 3) indicating low marine resource utilization. It this way, cultures can be compared in order to show their degrees of reliance on marine resources. What follows is the basic scale for this system.

Two caveats need stated at this point. The first concerns representational accuracy and the second, the idea of maritimity itself. In discussing issues of conceptualization and the ways in which it may or may not be discernable in the material record, representationality is of critical importance. The (MRI) can be calculated for any site or settlement or group, anywhere during anytime. However, one cannot establish maritimity on the basis of a few individual sites that are not known to be permanent or for which only incomplete data sets are available. These kind of assessments must be made on a cultural level. For example, a site may yield a high (MRI) score and yet only be a temporary extraction camp for a larger group for which maritimity is not operant. Conversely, a society may score fairly low and yet still have extremely deep and meaningful ties with the sea, in a conceptual sense. This brings up point number two. Although it seems ludicrous to hold that a site with a high (MRI) score was populated by individuals who were not partaking of maritimity, the fact of the matter is that this concept, maritimity, requires more for its substantiation than simply evidence of resource utilization. After all, simply because an apartment contains a large number of pizza boxes, doesn’t mean that for the inhabitants pizza means anything other than pizza, which, although obviously important as a food resource, isn’t likely to be elaborated ritually or embellished conceptually. These two points are important to keep in mind. In order for maritimity to be substantiated in the way it is defined here, the evaluation must include a large number of individual sites and it must incorporate some tangible evidence for the ascription of meaning. It is these manifestations of meaning, discussed in Chapter I, which, when combined with the evidence for a high (MRI), ultimately establish maritimity, in its conceptual sense. ‘Embellishment’ is used herein as a general manifestation of meaning. It is being intentionally left out at this point, however, since
the task at hand is simply to illustrate the system of calculating a (MRI) score. It will be addressed in a later chapter after the discussion of Mesolithic cultures.

Below is the list of variables and their descriptions being used in this calculus. Abbreviations have been taken from initial letters in order to simplify the operations. Although perhaps ultimately making complex a simple problem, this calculation of a culture’s (MRI) is held to be of critical importance for the inquiry at hand. For all categories, (M) is used to denote marine and (T) to denote terrestrial.

CALCULATING THE MARITIME RELIANCE INDEX

Subsistence Type (ST)

This is the measure, in terms of pure resource utilization, of what percentage of the protein intake of the population derives from marine resources. It is being assumed that faunal remains at a given site correspond closely with the resource utilization activities conducted there. Although it is understood that utilization practices and preservational factors can skew the data set, all things being equal, the faunal profile is taken to be representative of the general pattern of resource utilization at the site. In other words, it is deemed unlikely that populations at a site that has only one cod bone for every ten of pig were deriving a significant proportion of their caloric intake from the sea.

\[
\begin{align*}
\text{ST } &\geq 70\% \ (M) & = 3 \text{ pts.} \\
\text{ST } &\geq 30\% \ (M) \text{ but } \leq 70\% \ (T) & = 2 \text{ pts.} \\
\text{ST } &\geq 70\% \ (T) & = 1 \text{ pt.} \\
\text{ST where } \%(M) & = \{\emptyset\} & = 0 \text{ pts.}
\end{align*}
\]

Settlement Pattern (SP)

This is the coded preference for settlement locations. It signifies not only the location of a settlement but also the duration of occupation. Although spending three months out of the year by the sea still signifies some level of importance, it doesn’t
necessarily qualify as evidence of maritimity, as opposed to, say, taking a vacation. For
the following code:

\[ S' = \text{sites placement} \]
\[ D = \text{duration} \]
\[ 1, .5, \text{ etc } \ldots = \text{ parts of year, in terms of time}. \]

\begin{align*}
\text{SP1: } S' (M) \text{ and } D &= 1 \quad = 3 \text{ pts.} \\
\text{SP2: } S' (M) \text{ and } D &< 1 \text{ but } > .5 \quad = 2 \text{ pts.} \\
\text{SP3: } S' (M) \text{ and } D &< .5 \text{ but } > .25 \quad = 1 \text{ pt.} \\
\text{SP4: } S' (M) \text{ and } D &< .25 \quad = 0 \text{ pts.} \\
\end{align*}

This scale works conversely for (T) sites, i.e.,

\begin{align*}
\text{SP5: } S' (T) \text{ and } D &= 1 \quad = 0 \text{ pts.} \\
\text{SP6: } S' (T) \text{ and } D &< 1 \text{ but } > .5 \quad = 1 \text{ pt.} \\
\text{SP7: } S' (T) \text{ and } D &< .5 \text{ but } > .25 \quad = 2 \text{ pts.} \\
\text{SP8: } S' (T) \text{ and } D &< .25 \quad = 3 \text{ pts.} \\
\end{align*}

\textit{Tool Kit (TK)}

This rates the overall composition of the tool assemblage in terms of diversity
and specialization of tools. It is assumed that, within certain parameters, different
resource sets (marine versus terrestrial) require different tool kits. Such is obviously the
case with fishing, although saline versus freshwater fishing kits may be
indistinguishable. This category therefore is slightly more complicated than previous
categories. It is resolved by building in consideration of the subsistence base while
calculating TK values. In other words, fishing equipment is broken down according to
the subsistence remains of the site. Since fishing equipment appears not to be specialized
according to fresh versus saltwater uses it is allowed that, unless otherwise indicated
(such as cases where \{ST > 70\% (T)\}; \{S' (T) and D = 1\}; etc . . .) evidence of fishing
technology is scored in favor of marine resource utilization.

This category is based on the total assemblage (TA) of a site. This is considered
the overall combined frequencies of tool types occurring throughout the site and is taken
to indicate the type of activities engaged in at the site as well as the types of resources utilized. This obviously is meant in a general sense since very little detailed information is available on the differentiation and specific uses of the various tool types found in Mesolithic settlements. This is due largely to the traditional typological ‘pigeon-holing’ of artifacts based on similarities of form as well as the dearth of micro-wear analyses for Mesolithic northern European data sets. ¹⁰⁹ Ultimately what is being evaluated is the degree of specialization (if any) exhibited by particular tool assemblages.

TK1: 3 pts.

(TA) > 70% aqueous technology + ST > 70% (M)
(TA) > 70% aqueous technology + ST > 30% (M) but < 70% (T)
(TA) > 70% aqueous technology + S*(M) and D = 1
(TA) > 70% aqueous technology + S*(M) and D < 1 but > .5

TK2: 2 pts.

(TA) > 30% but < 70% aqueous technology + ST > 70% (M)
(TA) > 30% but < 70% aqueous technology + ST > 30% (M) but < 70% (T)
(TA) > 30% but < 70% aqueous technology + S*(M) and D = 1
(TA) > 30% but < 70% aqueous technology + S*(M) and D < 1 but > .5

TK3: 1 pt.

(TA) < 30% aqueous technology + ST > 30% (M) but < 70% (T)
(TA) < 30% aqueous technology + ST > 70% (T)
(TA) < 30% aqueous technology + S*(M) and D < 1 but > .5
(TA) < 30% aqueous technology + S*(M) and D < .5 but > .25

TK4: 0 pts.

(TA) < 30% aqueous technology + ST where % (M) = {∅}
(TA) < 30% aqueous technology + S*(M) and D < .25
(TA) < 30% aqueous technology + S*(T) and D = 1

What this scoring system is attempting to do is to establish criteria whereby a sites (MRI) can be calculated. It can be shown, by means of this simple system that indicators of maritime reliance increased throughout the Mesolithic. As is demonstrated later, this is very important in order to substantiate the claim that maritimity developed as a conceptual category throughout the Mesolithic.

Several problems with this type of calculus are readily apparent. First and foremost is the obvious absence of assigned values for other possible scenarios. It is held that in cases not covered above, such as where less than 30% of a (TA) is adapted for aqueous environments but over 70% of the ST is marine that either preservational biases, errors, or other defined factors would account for the discrepancies. Additionally, it suffers from incomplete data sets and ambiguities in the archaeological record. These problems aren’t germane to this inquiry alone however. Archaeology constantly must deal with larger and more amorphous sets of data than would be preferred and very often the resultant interpretation represents at best a system of averages and at worst a pastiche of ‘jumbled, inaccurate information.’

Still and all, it represents a base system to quickly code and manipulate sites for purposes of comparison and contrast as well as progress towards substantiating maritimity.

By way of illustration, two sites here are preliminarily coded to show the application of this system. Although not Palaeolithic, they serve as good examples of this process. The first is the west Swedish site of Rottjärnslid, a settlement site that was located on the coast of a small island. The other, Balltorp, is also a coastal site although it exhibits a greater reliance on terrestrial species. After a brief description of the sites, their (MRI)’s will be computed and comments made on the resultant values.

Rottjärnslid, dating to approximately 5500 BP, was situated on an island between two fjords. Wigforss points out however that the island was large enough to have tree

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cover and also probably support large mammals. The economy was largely focused on the sea, as was the recovered artifact set.\textsuperscript{112} This site, it would be expected, would exhibit a high (MRI).

From another perspective there is the site of Balltorp, a mainland settlement from the west coast of Sweden dating to approximately 8785 BP.\textsuperscript{113} Balltorp is located right on the coast and would be assumed to exhibit a high (MRI) as well.

![Table]

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Fig. 12. Schematic representation of computed MRI values for two Swedish coastal sites.

The values shown in Figure 12 were computed based on the information provided by Wigforss. In discussing Rottjärnslid, the ST was given a value of 3 since most of the faunal material recovered was marine in origin including at least 50% of the bird species represented as well as 460 out of 477 fish bones which belonged to cod and ling.\textsuperscript{114} SP was valued at 2 and classed as SP2 since the site was located coastally but was occupied for only about half of the year.\textsuperscript{115} TK was given a value of 2 as a result of the high level of aqueous technology recovered: 15 fishhooks and 1 harpoon out of a total of 29 implements.\textsuperscript{116} This equals about 52% which when combined with the ST value based on the faunal remains places it in the TK2 range.

\textsuperscript{112} Wigforss (supra n. 113) 202-3.

\textsuperscript{113} Wigforss (supra n. 113) 200-1.

\textsuperscript{114} Wigforss (supra n. 113) 205.

\textsuperscript{115} Wigforss (supra n. 113) 203

\textsuperscript{116} Wigforss (supra n. 113) 202.
Values for Balltorp on the other hand show a decidedly different pattern. The ST was valued at 1 as a result of the high number of terrestrial species represented. Even though some marine species were present, including some seal and cod remains, the overwhelming majority was terrestrial, including aurochs, red deer and wild boar.\textsuperscript{117} Although definite percentages are not know, it is assumed that (ST $> 70\%$ (T)). The SP value arrived at comes from the scant indication of seasonality (confined mostly to the autumn).\textsuperscript{118} Although located on the coast and therefore eligible for high points, the lack of extended occupation yields a low score ($S'$ (M) and $D < .25$). Finally, the TK value is set by the absence of technologies geared towards marine resource exploitation and the high proportion of microflakes.\textsuperscript{119} In fact no substantial tool assemblages were recovered from Balltorp. Therefore Balltorp is classed TK4 as $(TA) < 30\%$ aqueous technology and $S'$ (M) and $D < .25$.

Obviously this isn’t as tight a comparison as is possible. It shows, however, the feasibility of this sort of coding system as well as indicates a clear distinction between Balltorp and Rottjärnslid, in terms of their disposition towards maritimity. Although the prospect of Palaeolithic maritimity is very exciting, it is beyond the purview of this thesis and must be left alone for now. It is hoped that future work, especially in regards to sites from the now submerged North European Plain, will shed more light on this tantalizing possibility. For now, we must turn to the Mesolithic, wherein clearer, more consistent indicators of maritime adaptation can be found.

In the following chapter an evaluation of Mesolithic subsistence and settlement patterns is undertaken with the goal of showing a general increase in the utilization of marine resources from the Late Palaeolithic until the Neolithic. This is then used in conjunction with evidence of manifestations of meaning in order to argue for the existence of maritimity, in the true conceptual sense, during the Scandinavian Stone Age.

\textsuperscript{117} Wigforss (supra n. 113) 210 -3.

\textsuperscript{118} Wigforss (supra n. 113) 201.

\textsuperscript{119} Wigforss (supra n. 113) 200 - 1.
CHAPTER V

OF FISHES AND FORESTS

INTRODUCTION

Understanding the Mesolithic and its transition from the Palaeolithic and into the Neolithic, especially in Northern Europe, is a major focal point in Old World Prehistory. This has not always been the case however and much of this endeavor has been plagued by shortcomings both in terms of paradigmatic viewpoints as well as limitations on data collection and analysis. What scant material evidence for this period there is therefore tends to be either in the form of biased data sets, antiquated, often untranslated excavation reports, and paradigmatically untenable hypotheses. The introduction to Mesolithic Northwest Europe: Recent Trends, points out several general problems concerning the recent past of Mesolithic studies. Among them the authors call particular attention to preservational biases, geographical/locational biases and paradigmatic biases.\textsuperscript{122}

Preservational biases function to skew the material record due to differential aspects of organic decay which provides a distorted view of the past, based on the low percentage of organic material recovered; past behavior is at best indirectly related to excavated material.\textsuperscript{123} Geographical/locational biases have played a much larger role in the past than they do currently, especially with the florescence of underwater archaeology and the advances being made towards the location and excavation of submerged settlement sites e.g. Tybrind Vig. These developments also are helping close the gaps in the Mesolithic data set by providing much needed evidence of organic materials including artifacts of wood and fiber. These particular biases have played a role in the understanding of the Mesolithic as a whole however, since previous


\textsuperscript{123} Rowley-Conwy, et al., (supra n. 122) 3.
excavations have often focused on a limited region or area often in the proximity of the research center conducting the excavation. This has led to a rather patchy distribution of data, which may not in fact be indicative of the actual area that the prehistoric behavioral system in question occupied.\textsuperscript{124}

Finally, paradigmatic biases have in one way or the other colored most major investigations into the Mesolithic. The authors identify three major contributing factors to the conventional wisdoms' 'minimalistic' view of the Mesolithic. First is the fact that the Mesolithic was the last of the major European periods of prehistory to be defined and resulted from the perceived need to fill the chronological gap from the Palaeolithic to the Neolithic.\textsuperscript{125} The second is evidence taken from palynology, which showed how resource 'poor' the Atlantic forests were for human occupation.\textsuperscript{126} And the last, which consists of arguments from anthropology, concerns the organization of Mesolithic populations into band units of hunter-gatherers. The understanding of the Mesolithic then stems more from historical chance and misappropriated conclusions than on an actual evaluation of the data at hand.\textsuperscript{127}

In general then, the Mesolithic represents a period of extreme significance. Not only does it represent the phase in which Palaeolithic hunting systems gave way to more specialized and regionally focused exploitation strategies, paving the way for sedentism and the development of social complexity, but it also provides an area of study for which the prospects of making significant contributions are very real. It is certainly true that in order to understand the complex marine symbolism being discussed in this work one must first understand the nature of this development and explore the various factors that contributed to it. Although by no means complete and certainly fraught with peril, what is known of the Mesolithic provides the first real evidence of the adaptation to a

\textsuperscript{124} Rowley-Conwy, \textit{et al.}, (supra n. 122) 2 - 3.

\textsuperscript{125} Rowley-Conwy, \textit{et al.}, (supra n. 122) 2 - 3.

\textsuperscript{126} Rowley-Conwy, \textit{et al.}, (supra n. 122) 2 - 3.

\textsuperscript{127} Rowley-Conwy, \textit{et al.}, (supra n. 122) 2 - 3.
maritime way of life, and more importantly a concrete way of conceptualizing it: maritimity.

Given the complexities of the archaeological record and what little is known for sure concerning the Mesolithic in this region, an obvious place to start is with the geological and paleoecological background. From there it makes sense to move into subsistence issues and settlement patterns in order to establish a visible pattern of marine resource utilization. If, from an evaluation of a core of literature pertaining to the Mesolithic in southern Scandinavia it can be shown that the utilization of marine resources was indeed a major component of Mesolithic life-ways, then building the case for 'maritimity' is fairly straightforward. If on the other hand, no support can be gathered for subsistence, settlement or technological factors deriving from a maritime source, then it must be concluded that maritimity did not exist as a conceptual category for Stone Age populations in southern Scandinavia.

NATURAL ECOLOGY

Throughout the preceding millennia, small groups of tundra adapted hunters slowly populated southern Scandinavia as the ice-sheet began its retreat. As was discussed in the previous chapter, no clear evidence for water-borne migration is available. Therefore it is safest to conclude that these populations came into the area on foot, following the herds they were dependent on, as soon as it was ice-free. In time however, the climate and terrain-form these people were adapted to changed. In fact it changed quite drastically. It was these changes in landform and climate and the resultant restructuring of the eco-system, which brought an end to the Upper Palaeolithic way of life. This new milieu, the Mesolithic, sees not only new technologies and adaptative strategies, designed to meet this new eco-system, but the first real evidence of maritimity.

Scandinavia during the time from the end of the Allerød until the beginning of the Atlantic period was characterized by the growth of forests. During this time, the tundra and cold-scrub which had characterized northern Europe for millennia slowly
gave way to a denser more mature forest environment. Precipitated by a climactic warming trend, the old dwarf willow and tundra flora gradually changed into a forest dominated by birch, aspen and pine. This period, known as the Pre-Boreal also saw a landform and faunal composition very different than either the preceding Allerød or the future Boreal or Atlantic periods. In fact the time period from the beginning of the Pre-Boreal until the beginning of the Atlantic period (a span of some 2,500 years) witnessed not only a vegetation shift from light birch and pine forests to full, mature, forests dominated by lime, oak and ash, but it also saw a drastic reduction in the land-mass available for occupation (Fig. 13). \(^{128}\)

![Fig. 13. Denmark around 9000 BP. From Jensen 1982.](image)

Just as the climate was responsible for the changing vegetation patterns, so too was it responsible for the loss of land area due to rising sea levels. As the landmass of northern Europe changed as the result of climactic variations affecting forest growth and coastline, the faunal composition changed as well.

\(^{128}\) Jensen (*supra* n. 77) 17-9.
The large mega-fauna of the earlier Dryas and Bølling periods gave way to more ‘modern’ forms. Reindeer herds gradually retreated northward following the ice sheet while some species simply died out altogether. The defining characteristic of faunal assemblages over this time is the shift from tundra species to forest species, to the point of total dominance of forest species by the end of the Mesolithic. Among the new roster of fauna can be seen aurochs, elk, red and roe deer, pigs, and various other forest animals such as bear, martens and beavers. Another interesting feature of the faunal composition of the Mesolithic is the greater frequency of marine species found in archaeological contexts, including seals, whales, dolphins, cod, flounder and spur-dog as well as numerous marine birds.

This was a Denmark very different from the vast tundra plain of northern Europe that Palaeolithic man had inhabited. It was warmer, more thickly vegetated, smaller and home to more diverse species than previously. In this ‘new’ northern Europe, old technologies and life-ways gave way to new subsistence practices and settlement patterns, often involving the utilization of complex resources through increased technological specialization. It is with the utilization of these resources and the technologies necessary to do so that this chapter is concerned.

**CULTURAL ECOLOGY**

The Mesolithic in northern Europe is commonly divided into three stages. In Denmark, these are the Maglemose, the Kongemose and Ertebølle, respectively. Beginning with the Maglemose culture in about 10,300 BP (8,300 BC), the cultural transformations brought on by the drastic changes in climate facing northern Europe began to be felt. Over the next several thousand years, these climactic changes and the

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131 Clark (supra n. 129) 51.

132 Table IB, in Appendix A provides a chronological overview of the Mesolithic in Northern Europe.
adaptations made to them would lay the groundwork for the development of increasingly complex societies in which maritimeity would come to play a major part.

This brings us to a very sharp thorn in the side of this enterprise. Namely, was there a difference between coastal and inland exploitation strategies? Furthermore, and more importantly, how can these differences be categorized and reconstructed? After all, an investigation into the conceptual importance of marine resource utilization can’t get very far without evidence for substantiated coastal exploitation and occupation. Identifying differing subsistence and settlement patterns in the archaeological record constitutes a major step towards reconstructing the ideologies developed around them.

It seems to be the case with prehistoric archaeology that, despite discussion of settlement and subsistence as separate issues, there really is no separation. After all, you can only settle where you can live (as defined by staying alive) which requires subsistence, which, for the time period under discussion cannot be stored or readily transported large distances. Therefore, settlement seems to coincide with where one eats, or at least where one is in range of things to eat. Of course, when one is a mobile, adaptable, hunter-forager, with a broadly functional tool kit, settlement locations are virtually endless.

Jensen discusses two models that appear pertinent to the investigation at hand.\textsuperscript{133} The first is a scenario in which base camps were moved throughout the year in response to seasonally varied resources; in other words, a semi-sedentary roving subsistence strategy. The second is one in which base camps were permanently located near key eco-zones affording exploitation of several biotopes by smaller ‘off-shoot’ foraging units. These two systems of adaptation correspond to Whitlam’s mobile-extensive and sedentary (although un-nucleated) - extensive subsistence orientations respectively. Jensen further states that the time period between the glacial retreat and the advent of agriculture shows a gradual transition from the first to the second although the evidence is still too sparse to conclude this with certainty.\textsuperscript{134} It seems clear by this time however,

\begin{flushleft}
\textsuperscript{133} Jensen (\textit{supra} n. 77) 31.
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\textsuperscript{134} Jensen (\textit{supra} n. 77) 34.
\end{flushleft}
that the previous hunting-foraging strategy of the earliest inhabitants was now giving way to a more stable, seasonally varied subsistence base in which fishing, marine hunting and collection played much larger roles. All of this is not to say however that during this time settlements were becoming nucleated. Nor is it to say that one can accurately talk of ‘marine folk’ or ‘terrestrial folk’ for this period.

Returning to Whitlam we find several important points to consider when discussing the settlement patterns and subsistence activities of these populations. It is especially noteworthy what he says concerning the material record composition for these differing settlement and subsistence systems. His correlations between the functional organization of a populations activities and the resultant pattern in the archaeological record appear to have potential for resolving some of the more recurrent problems facing Mesolithic data interpretation. Most importantly they create observable links between subsistence activities, settlement patterns and the faunal and artifactual assemblages resulting from them.\textsuperscript{135} Whitlam delineates several criteria for recognizing these differing settlement-subistence systems in the archaeological record. These are based on the location and distribution of settlement sites upon the landscape as well as the faunal evidence and tool assemblages recovered.

Whitlam’s differentiation between intensive and extensive adaptations for example indicates a difference in patterning in the material record based on the differences in the resources exploited and the tools required to exploit them. Extensive systems are characterized by sites in differing environments and contain very different tool kits associated with the procurement of various resources and have a broad diversity of species represented. Intensive exploitation on the other hand is indicated by a focus on the procurement of a few species by means of specially adapted procurement technologies, therefore the faunal assemblages should be dominated by a single or at most a few species combined with tool kits for this species’ utilization and sites located in an environment conducive to acquiring the prey species.

\textsuperscript{135} A complete table of Whitlam’s correlates is found in Appendix B.
Another important issue is the distribution of subsistence resources and the strategies adopted to exploit them. A mobile subsistence / settlement strategy is found most often among groups exploiting coastal resources that are greatly varied in their seasonal availability / distribution or are dispersed widely.\textsuperscript{136} Conversely, sedentary subsistence / settlement strategies (Whitlam’s nucleated form) tend to occur where there is a clustering of abundant, productive resources.\textsuperscript{137}

He classes Scandinavia as MNI (mobile nucleated intensive) on the grounds that it is characterized by a pattern of adaptation to a set of resources able to exploited by a given subsistence technology and related set of tools which exhibit an increasingly sophisticated technology over time (sea-mammal hunting).\textsuperscript{138} However, it may be the case that Scandinavia, at least southern Scandinavia during the Mesolithic could be classified as an MDI (mobile dispersed intensive) system.

Mobility, according to Whitlam, is evident through a differing pattern of land-use across an area characterized by multiple, short-duration, seasonally occupied sites spread across a region.\textsuperscript{139} Dispersion can then be indicated by the presence of exotic material or faunal remains from distant environments reflecting economic ties that would bind various settlements into a functioning community.\textsuperscript{140} Intensive systems, as discussed before, involve highly abundant, productive and predictable resources combined with the specialized tool kits to extract them.\textsuperscript{141} He goes on to say that MDI systems can be recognized in the material record through the presence of numerous small settlements distributed across a landscape in essentially one environmental zone which produces low

\textsuperscript{136} Whitlam (\textit{supra} n. 108) 83.
\textsuperscript{137} Whitlam (\textit{supra} n. 108) 84.
\textsuperscript{138} Whitlam (\textit{supra} n. 108) 124 - 5.
\textsuperscript{139} Whitlam (\textit{supra} n. 108) 96.
\textsuperscript{140} Whitlam (\textit{supra} n. 108) 98.
\textsuperscript{141} Whitlam (\textit{supra} n. 108) 87.
visibility overall yet has a tendency to produce highly visible special purpose sites, such as cemeteries, which act to link dispersed occupation sites into a community.\textsuperscript{142}

It would seem to be the case that during the Late Palaeolithic and Early Mesolithic periods, due to changes in climate, flora and fauna, no real argument could be made for nucleated or sedentary patterns exploiting productive, focused, non-variable resources. The extant material is much more in line to support mobile systems where subsistence resources were exploited on a seasonal basis in order to take advantage of the widest possible nutrition base. Throughout the Mesolithic however, as the forests matured and the climate stabilized, evidence of local and increasingly specialized subsistence economies becomes clear. Furthermore, as will be shown, the distribution and organization of Kongemose and later Mesolithic sites lends support for an MDI based system. The following map (Figure 14) shows the locations of the principal sites discussed in the text.

\textbf{THE MAGLEMOSE}

A fair amount is known about the earliest Mesolithic phase in northern Europe. According to Clark, Maglemove (which means 'big bog' in Danish) is an appropriate name for this culture, which favors settlement along bogs, fens and other low-lying places.\textsuperscript{143} He further goes on to note that due to the preference given by these people to settlement areas near water, fishing and fowling must have played a large role in their subsistence economy.\textsuperscript{144} Although much work has been done concerning the life-ways of Maglemove people, nothing is known for sure about the specifics of their settlement patterns or subsistence systems. In fact, the single biggest issue concerning this stage of the Mesolithic, and the one most pertinent to the investigation at hand, namely the utilization of separate inland as opposed to coastal sites, remains inconclusive.

\textsuperscript{142} Whitlam \textit{(supra n. 108)} 73.

\textsuperscript{143} Clark \textit{(supra n. 129)} 86.

\textsuperscript{144} Clark \textit{(supra n. 129)} 89.
Fig. 14. Location of sites discussed. 1, Bjørnsholm; 2, Ertebølle, (l.c.); 3, Meilgaard; 4, Ringkloster; 5, Norsminde; 6, Tybrind Vig; 7, Møllebakken; 8, Svaerdborg; 9, Holmegård; 10, Halsskov; 11, Musholm Bugt; 12, Mullerup; 13, Øgarde; 14, Kongemose (l.c.); 15, Ulkestrup; 16, Gislinge Lammejord; 17, Blak I and II; 18, Ølby Lyng; 19, Carstenminde; 20, Bloksbjerg; 21, Vedbæk; 22, Vænget Nord; 23, Vilingebæk Øst A; 24, Visby; 25, Ire; 26, Skateholm I and II.
Overall, the Maglemose culture exhibited a striking uniformity of technology and subsistence practices.\textsuperscript{145} Although quick to point out that the material is far from abundant enough to support ‘sweeping generalizations,’ Jensen characterizes the Maglemose as having a mobile settlement pattern wherein segments of the band seasonally exploit different niches; illustrated by a varied tool assemblage including fishhooks, spearheads, wood-working tools and various axes.\textsuperscript{146} Significantly, he mentions that the boat is only known from the fringes of this ‘techno-territory.’ Clark also addresses Maglemose settlement and subsistence and concludes that they operated in small, seasonal bands subsisting on fishing, fowling and hunting with a preference for settlement on promontories near water.\textsuperscript{147} Although fairly convinced that these groups migrated seasonally, he warns against assuming that their material culture varied with the seasons, since no conclusive evidence of specialization has been observed.\textsuperscript{148} This is borne out by the uniformity of tool assemblages from both inland and coastal sites.\textsuperscript{149}

The Maglemose tool kit seems designed around a variable subsistence strategy. Tool forms and technologies show morphological similarities with Upper Palaeolithic tool kits although certain implements and technologies appear to be derived from Proto-Mesolithic groups for the purposes of exploiting new ecological niches.\textsuperscript{150} For the most part, Maglemose tool assemblages are comprised of typical Stone Age technologies, most notably core (\textit{kernbeil}) and flake (\textit{skivespalter}) axes, microliths, and various bone and antler implements of which fishhooks and bone points are the most

\textsuperscript{145} Jensen (\textit{supra} n. 77) 39.

\textsuperscript{146} Jensen (\textit{supra} n. 77) 41.

\textsuperscript{147} Clark (\textit{supra} n. 129) 90-2.

\textsuperscript{148} Clark (\textit{supra} n. 129) 90; (\textit{supra} n. 130) 104 - 5.

\textsuperscript{149} S. H. Andersen, personal communication, 11 Nov 98.

\textsuperscript{150} Clark (\textit{supra} n. 129) 131; and Clark (\textit{supra} n. 130) 106.
salient feature.\textsuperscript{151} Additional tools, such as \textit{nätstickor} and sleeves for axes and adzes seem not really in evidence from the early Maglemose and will be dealt with later.

Axes are a major diagnostic component of Maglemosian culture. These tools are generally divided into two types, the \textit{kernbeil} or core axes, made from flaked cores and the skivespalter, or axes made from large flakes. These tools are taken by Clark to represent the forested environment of the Early Mesolithic.\textsuperscript{152} It is interesting that skivespalter occur only infrequently at Maglemosian sites, always outnumbered by kernbeil whereas the situation is reversed during the later Ertebølle period.\textsuperscript{153} Additionally, there is some doubt as to whether axes of the skivespalter type were ever hafted, a prominent feature of kernbeil.\textsuperscript{154} In general, an increase in axe frequencies can be observed from the Palaeolithic through the Mesolithic. In fact, no axes are listed by Kozłowski as having come from Hamburgian, Federmesser or Arhensburgian assemblages. The situation is much different for Mesolithic tool kits however. Axes comprise approximately 10 percent of Svaerdborg tools; 28 percent of Kongemose tool assemblages and 35 percent of tools from Ertebølle assemblages.\textsuperscript{155}

The microliths of the Maglemose are fairly simple, oblique or edge blunted, triangular in form, and most often used as part of composite tools as evidenced by the microliths recovered from the aurochs at Vig.\textsuperscript{156} Clark mentions a definite distinction between the microlith types from Sjælland, which tend to be scalene in form and those from further south such as at Duvensee, near Lübeck, which are more triangular.\textsuperscript{157}

\footnotesize
\begin{enumerate}
\item \textsuperscript{151} Clark (\textit{supra} n. 129) 92-123.
\item \textsuperscript{152} Clark (\textit{supra} n. 129) 102; and Clark (\textit{supra} n. 130) 106.
\item \textsuperscript{153} Clark (\textit{supra} n. 129) 104.
\item \textsuperscript{154} Clark (\textit{supra} n. 129) 104.
\item \textsuperscript{155} J. K. and S. K. Kozłowski, \textit{The Upper Palaeolithic and Mesolithic in Europe: Taxonomy and Palaeohistory}, Polska Akademia Nauk - Oddzial W Krakowie, Prace Komisji Archeologicznej Nr 18 (Wrocław, Poland 1979) 100 -6.
\item \textsuperscript{156} Clark (\textit{supra} n. 130) 137 - 8.
\item \textsuperscript{157} Clark (\textit{supra} n. 129) 94.
\end{enumerate}
Additionally, it should be noted that trapezes, a typological indicator of Post-Maglemose phases occur only rarely and most likely represent out of provenience finds.\textsuperscript{158} In the
main, the microliths from Sjælland, as a group, demonstrate a more evolved form than
other microliths from the Maglemose area.\textsuperscript{159}

Although microliths do occur earlier (among Hamburgian and related
Palaeolithic groups) the frequencies are much smaller than at later Mesolithic sites. For
example, in Kozlowski’s sample of Hamburgian sites and assemblages, microliths
account for only 7.7 percent of the assemblage while from the Ahrensburgian they
comprise 20.1 percent.\textsuperscript{160} From the Maglemosian assemblages of the Svaerdborg group,
they comprise 64.7 percent, obviously a noticeable increase.\textsuperscript{161} Disparities are observed
among the frequency of burins encountered in assemblages also. Burins account for
approximately 21 percent of Federmesser assemblages and 35.8 percent of Lyngby
assemblages whereas they only constitute 4.8 percent of Svaerdborg assemblages.\textsuperscript{162}
Accepting the convention that tool types correspond most often to subsistence related
activities, at least prehistorically, changes in the subsistence patterns of northern
European populations seem clear. This is further illustrated by the proliferation of
’specialized’ subsistence tools such as bone points and fishhooks.

Maglemose bone points are highly visible archaeologically. Not only do they
exhibit pronounced variations of form but they also indicate high levels of skill in bone
working, (Fig. 15). These points are interpreted by Clark to be the prongs of fishing
leisters or bird-catchers.\textsuperscript{163} He bases this on finds of these points in clusters, trace

\textsuperscript{158} Kozłowski \textit{(supra n. 155)} 68; Clark \textit{(supra n. 129)} 94.

\textsuperscript{159} Clark \textit{(supra n. 129)} 94.

\textsuperscript{160} Kozłowski \textit{(supra n. 155)} 88 - 90.

\textsuperscript{161} Kozłowski \textit{(supra n. 155)} 100.

\textsuperscript{162} Kozłowski \textit{(supra n. 155)} 88 - 100.

\textsuperscript{163} Clark \textit{(supra n. 129)} 115; Clark \textit{(supra n. 130)} 130 - 36, contains a more detailed investigation
concerning harpoons versus spear-points in which Clark again asserts that the bone points known from
Maglemosian assemblages are mostly spear-points (130 - 1).
evidence of binding, and ethnographic examples such as the salmon spear from a grave in Tutilik, East Greenland (Fig. 16). This interpretation seems reasonable although Clark’s denial that these points represent harpoons seems contradictory to the evidence for harpoons from much earlier periods, such as those known from Azilian and Magdalenian assemblages.

Fig. 15. Types of Maglemose bone points. From Clark 1970. (not to scale)

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164 Clark (supra n. 129) 115 - 23.

Clark does however concede that 'Törning type' points (Fig. 15, no. 9), may have sometimes been used as harpoons and proposes possible winter camps by the sea in order to harpoon seals and whales.\textsuperscript{166}

It does seem possible that Azilian and Magdalenian groups used some of these points as leisters and bird-catchers. Conversely, Maglemose groups likely used harpoons. Clark's point types 1 - 6; 14 - 15 surely seem to be designed for fish and bird-catching while types such as 7 - 11 and 20 - 25 seem much better suited for penetration, with or without attached line. These artifacts, and ones like them discovered in the future could benefit from micro-wear and residue studies in order to demonstrate specifically what activities they were used for. At this point it seem safest to conclude that fish and birds were definitely being harvested by means of these types of implements and there seems no compelling reason to deny harpooning as a possible subsistence activity.

Fishhooks are clearly an indicator of aqueous subsistence technology. Although tantalizing evidence for marine exploitation during the Palaeolithic is available, no conclusive finds are yet known. In any case, no fishhooks have been found. It seems then that this implement first appears with the Maglemose. This stands to reason given the nature of the changes taking place in southern Scandinavia during this time. Clark states that barb-less fishhooks (Fig. 17) are a staple feature of Maglemose material

\textsuperscript{166} Clark (supra n. 129) 115 - 17.
culture and points out that period II hooks are generally larger and coarser than those known from Ertebølle sites.\textsuperscript{167}

![Fig. 17 Maglemose barb-less fish hooks. After Clark 1970.](image)

Clark’s Mesolithic period II corresponds to the Kongemose (discussed below) for which fishing is well documented although apparently not by means of hook and line. Andersen states that fishhooks are only known from the middle and late Ertebølle period.\textsuperscript{168} Additionally, Sørensen, although mentioning the importance of marine resources (including marine fishes) during the Kongemose period doesn’t mention any finds of fishhooks either.\textsuperscript{169} It should be kept in mind however, that absence of evidence is not evidence of absence.

Knowledge of the Maglemose annual territory and their dwelling patterns, although limited, is available. Sites identified as ‘summer’ camps, made primarily by inland fresh-water streams and lakes, have yielded the floor-plans of a number of small rectangular huts apparently built of branches rammed in around the floor and pulled together at the top to make a roof.\textsuperscript{170} What little is known for sure about the specifics of

\textsuperscript{167} Clark (\textit{supra} n. 129) 113; Clark later asserts (\textit{supra} n. 130) 143, that fishhooks were a novel feature.

\textsuperscript{168} S. H. Andersen, "Coastal adaptation and marine exploitation in Late Mesolithic Denmark - with special emphasis on the Limfjord region," in \textit{Man and Sea} (Exeter 1995) 56.

\textsuperscript{169} S. A. Sørensen, \textit{Kongemosekulture i Sydskandinavien}. Udgivet af Egnsmuseet (Færegården 1996) 115.

\textsuperscript{170} Jensen (\textit{supra} n. 77) 40.

Maglemose settlement patterns (in terms of the organization and distribution of the huts themselves) seems to indicate family groups of 6 - 9 individuals organized for purposes of subsistence activities.\textsuperscript{171} Interestingly, according to Blankholm, the huts seem to have been built according to a pattern although they show no significant regional or internal differentiation.\textsuperscript{172} More recent work has yielded some evidence that indicates variation in seasonal occupation patterns as well as social differentiation in the location and composition of the huts however. Grøn is able to demonstrate size differences between proposed summer and winter dwellings as well as a tendency for differing orientation with regards to the prevailing wind direction.\textsuperscript{173} He also finds evidence in the patterning of the hearth areas and debitage to support the assertion that Maglemose huts were constructed around principles of internal organization.\textsuperscript{174} Grøn, in a later article, citing a tendency for decreased distance between habitation units and a change in their internal organization concludes, tentatively, that a restructuring of the resource base led to this seasonally varied settlement cycle.\textsuperscript{175}

Although the original cultural components, which led to the development of the Maglemose remain inconclusive, it seems safe to conclude that it represents an outgrowth of northern European Late Palaeolithic groups adapting to conditions of changing climate, landforms and resources. As these changes progressed older forms of tundra adapted hunting and foraging strategies gave way to more localized and varied exploitation patterns. The changes in tool kits and faunal remains clearly indicate a shift towards more coherent resource utilization groups which become more specialized and nucleated as time goes on. Although evidence for coastal exploitation and marine

\textsuperscript{171} Blankholm (\textit{supra} n. 170) 118.


\textsuperscript{173} Grøn, (\textit{supra} . 172) 182.

\textsuperscript{174} Grøn (\textit{supra} n. 172) 184 - 5.

\textsuperscript{175} O. Grøn, “Social and Ecological Aspects of the Mesolithic - Neolithic Transition in Denmark,” in D. Król, ed., \textit{The Built Environment of Coast Areas during the Stone Age} (Gdansk 1997) 30 - 1.
resource utilization is recognized during this time, it is not until the next period, the Kongemose, that clear intensification of marine resource use is evident.

THE KONGEMOSE

The Kongemose culture represents a relatively recent development in our understanding of the Mesolithic. Clark originally paid very little attention to it, and Jensen, although placing it in perspective, states that the material is far too scanty and incidental to allow for any coherent picture of settlement or subsistence systems to be formulated.  

Recent work however has allowed a finer resolution to the development and patterning of this culture, one that shows a much more pronounced maritime component than the previous Maglemose.  

Previously designated ‘Gammel Kystsikultur’ (Old Coast Culture), the Kongemose has been recognized and isolated for only about 35 years.  

Sørensen’s work is very valuable in its identification of the salient features of this ‘new’ culture as well as in its investigation of Kongemose origins and affinities. This period spans roughly 1000 years from the end of the Maglemose at around 8600 BP until the advent of the Ertebølle around 7400 BP.  

It is broken down into three distinct phases, Blak, Villingebæk, and Vedbæk, on the basis of point typologies. Unfortunately, in a work such as this sufficient attention cannot be paid to all aspects of all phases. Therefore the Kongemose

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176 Clark (supra n. 129) 128 - 31 sees a particular type of Maglemose tradition on Sjælland; Clark (supra n. 130) 163 - 71, does however address the idea of a discrete Kongemose Phase as transitional between the Maglemose and the Ertebølle and it should be pointed out that Kongemose (l.c.) wasn’t discovered until 1952; Jensen (supra n. 77) 43.

177 Perhaps the best, and certainly most current, work on the Kongemose culture is that of Sørensen (supra n. 169); In it he defines the culture and discusses its distribution, tool technologies, subsistence and settlement patterns as well as ornamentation, art and social systems. As such it is the primary source utilized for information concerning this period and I am responsible for all translations.

178 Sørensen (supra n. 169) 48.

179 Sørensen (supra n. 169) 93.

180 Sørensen (supra n. 169) 107.
will be dealt with *en todo*, unless specific details corresponding to particular phases are necessary.

Given the relatively recent development of the Kongemose culture as a discrete entity the possibilities for significant research remain very high. In discussing the Kongemose and its identification, Sørensen isolates several key elements, based on tool technologies, which act as diagnostic features for this culture. They include *kærnøkser* (*kernbeil* or core-axes), broad trapeze-form points (which also include oblique points or *skævpile*, as a sub-class) and flakes with straight or convex retouch and edge flaking.\(^{181}\)

In general this period is characterized by both the production of large flakes (*storflækkeproduktion*) and lipped flakes characteristic of soft-hammer percussion (*bløde teknik*).\(^{182}\) This type of organizational approach based on lithic production technology is in keeping with traditional archaeological methodology although Sørensen is clear to point out that he prefers the idea of 'material culture,' in a broad sense to that of the more traditional, narrowly proscribed 'techno-complex.'\(^{183}\)

Kongemose axes appear in several forms, most notably *kærneøkser* (*kernbeil* or core axes (Fig. 18, A and B), *skiveøkser*, (*skivespalter*, or flake axes (Fig.18, C)) and *spidsøkser*, or pointed axes. *Kærneøkser* are generally the most common form of stone axes found during the Kongemose and constitute the majority of axes from this period.\(^{184}\) Except for *kærneøkser* that show evidence of specialized edge treatment it seems impossible to show any definite chronological distinctions among the

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181 Sørensen (*supra* n. 169) 51.

182 Sørensen (*supra* n. 169) 52 - 3; although *storeflækkeproduktion* originated in the Maglemose, it reaches its high-point during the Villingebæk phase.

183 Sørensen (*supra* n. 169) 47; In fact Sørensen states, "Bortset fra at ordet teknokompleks er knapt så værdiladet som begrebet kultur..." He goes on to say that "... jo flere elementer man inddrager i definitionen, desto snævrere vil afgrænsningen normalt blive..."  

184 Sørensen (*supra* n. 169) 60.
arrangements of core axe types.\textsuperscript{185} Skiveøsker are also found from Kongemose sites although they are clearly not as prevalent as kærneøsker.\textsuperscript{186}

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\textbf{Fig. 18.} Examples of Mesolithic axe types. A, B, Core axes; C, Flake axe. After Clark 1970. (A,B = 2/3; C = 3/4)

Spidosker occur frequently on Kongemose sites although they tend to occur more frequently towards the end of the period.\textsuperscript{187} Spidosker are less massive than kærneøsker and often give the impression of having been made from kærnøksler.\textsuperscript{188} In

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\textsuperscript{185} Sørensen (\textit{supra} n. 169) 60.

\textsuperscript{186} Sørensen (\textit{supra} n. 169) 60.

\textsuperscript{187} Sørensen (\textit{supra} n. 169) 61.

\textsuperscript{188} Sørensen (\textit{supra} n. 169) 61.
contrast to *kærneøkser*, hafted examples of *spidsøkser* are never found, greatly complicating a precise interpretation of their function.\textsuperscript{189}

Although nothing can be deduced for certain concerning the functions of the various axe types found throughout Kongemose sites, it would appear that they exhibit a patterning in their distribution and function. Perhaps they vary along the lines of ‘form equals function’ with the more frequently hafted *kærneøkser* being employed for heavier activities than the more delicate *skiveøkser*. Before moving on to the other diagnostic elements of Kongemose material culture, one other axe type needs mentioned.

*Trindøkser*, (Fig. 19) or ground-stone axes, appear to be commonplace throughout the whole of the Kongemose culture.\textsuperscript{190} These axes, which appear in the earlier Maglemose (albeit infrequently) appear most prominently during the Kongemose period and into the Ertebølle. Sørensen makes two important comments concerning *trindøkser*.

\begin{center}
\textbf{Fig. 19. Illustration of typical Kongemose ground-stone axes.}
After Sørensen 1996.
\end{center}

\textsuperscript{189} Sørensen (*supra* n. 169) 61.

\textsuperscript{190} Sørensen (*supra* n. 169) 66.
One is that they appear most frequently among sites from Sjælland and Skåne and the other is that they most often occur at coastal sites.\textsuperscript{191} In fact by the Ertebølle period, there is a distinct difference in the distribution of axe types in general with 'Limhamn' greenstone axes predominating in eastern Denmark (particularly Sjælland and Skåne) whilst T-shaped red deer antler axes dominate Jutland and Fyn (Fig. 20).\textsuperscript{192} This is a very important point since Bryan has found that in general, the global distribution of these types of ground-slate industries is associated more with maritime adaptations than with inland hunting patterns.\textsuperscript{193}

\textsuperscript{191} Sørensen (\textit{supra} n. 169) 66 - 7.


Kongemose bone and antler technique consists of ‘splinter and groove’ production and appears in contrast to the coarser Arhusburgian struck flake technique.\textsuperscript{194} This technique, which involves grooving a channel in a long bone (most often red or roe deer metatarsals) and then splintering it off, is probably the most common form of bone working technique attested to in later prehistory. The bone and antler implements from the Kongemose are comprised primarily of assorted points, knives, ‘stilettos’ and various axe handles and hafting implements.\textsuperscript{195} The first type, \textit{Flintægspyd}, or ‘flint-edged points’ are known from throughout Sjælland from at least the Maglemose.\textsuperscript{196} These points are comprised of slotted bone slivers inset with microliths and can take various forms. In general \textit{flintægspyd} can be attested to from the Maglemose and the Kongemose (the majority of points from Sjælland dating to the latter) although the disposition of \textit{flintægspyd} for the Ertebølle period is much less certain.\textsuperscript{197}

\textit{Flintægdolke}, are fairly frequently observed from Sjælland with only 2 examples known from west of the Storebælt and in the form of pieces from various fragments found in Skåne.\textsuperscript{198} It is difficult to fix the chronological distribution of these objects to a specific culture but the evidence suggests the same general chronological framework as that of \textit{flintægspydene}.\textsuperscript{199} Perhaps the most interesting aspect of this class of implements is the tendency they exhibit to be ornamented. Of the 26 known Danish finds of this type, 21 are decorated.\textsuperscript{200} Although decorated artifacts are known from the Maglemose,

\begin{itemize}
  \item \textsuperscript{194} Sørensen (\textit{supra} n. 169) 68; He does point out, however, that it is difficult to ascribe this technique to the \textit{Kongemosekulturer} as a whole since secure finds from the span between the Arhusburgian and the Kongemose periods are lacking and categorizations such as ‘cruder than,’ or ‘strike and shatter’ are not conducive for the development of objective typological criteria.
  \item \textsuperscript{195} Sørensen (\textit{supra} n. 169) 70 - 7.
  \item \textsuperscript{196} Sørensen (\textit{supra} n. 169) 70.
  \item \textsuperscript{197} Sørensen (\textit{supra} n. 169) 72 - 3.
  \item \textsuperscript{198} Sørensen (\textit{supra} n. 169) 73.
  \item \textsuperscript{199} Sørensen (\textit{supra} n. 169) 73.
  \item \textsuperscript{200} Sørensen (\textit{supra} n. 169) 73.
\end{itemize}
Sørensen doesn’t feel that the evidence warrants the assertion of a continuous tradition of ornamentation as the motifs and styles of the two periods differ.\textsuperscript{201} The ornamentation of Mesolithic artifacts will be discussed in greater depth in a later section.

Bone knives and ‘stilettos’ are known from throughout the Kongemose area with good examples of the former coming from several localities such as Roskilde fjord, Skellingsted Bro in Amosen and Segebro in Skåne. These knives are generally long, thin and double-edged and most likely were fashioned by the splinter and groove technique. The knife designated D.O.I nr. 183 apparently had some evidence of decoration, in the form of finely incised hatching.\textsuperscript{202} These bone daggers are found rarely during the Maglemose but they appear with much greater frequency by the Ertebølle.\textsuperscript{203}

The *beneprene* (Fig. 21), most often of roe deer meta-tarsals, are among the most numerous bone artifacts recovered from Kongemose sites and are known from all the major Kongemose sites such as Kongemosen (*l.c.*), Blak I and II, Gislinge Lammefjord as well as Vedbæk (Boldbaner).\textsuperscript{204}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{beneprene.png}
\caption{Beneprene from Kongemose Period. After Sørensen 1996.}
\end{figure}

\textsuperscript{201} Sørensen (*supra* n. 169) 73.

\textsuperscript{202} Sørensen (*supra* n. 169) 74.

\textsuperscript{203} Clark (*supra* n. 129) 113.

\textsuperscript{204} Sørensen (*supra* n. 169) 75.
Examples of prene made from bird bones are much rarer although they are represented by finds from Kongemosen (l.c.), Gislinge Lammefjord and Blak II during this period.\textsuperscript{205}

From the Kongemose / Ertebølle transition, the bird-bone prene disappear from Sjælland, whereas they continue on during the Ertebølle in Jutland.\textsuperscript{206} The literal translation of ‘prene’ is stiletto, although in terms of form and most probably function, these tool seem to be closer akin to needles. These could therefore be the nätstickor, mentioned by Clark. In fact, most of the examples Clark sites are dated from his Mesolithic period II (which corresponds to the Kongemose) and are interpreted by him, following Childe’s interpretation of similar finds in Britain, as netting-needles.\textsuperscript{207}

Antler axes and hafts for axes (or adzes) are known from the Kongemose as well. The axes are often decorated and exhibit typological differences across the Mesolithic, both in terms of ornamentation and form. Kongemose antler axes tend to be longer and thinner than earlier Maglemose antler axes with ornamentation tending towards the ‘Kongemose style,’ characterized by wider, ‘pitting’ type ornamentation.\textsuperscript{208}

Since a great many of the known antler axes come from stray finds, it is extremely difficult to identify antler axes belonging to one period or another, especially between the Kongemose and the Ertebølle, although during the Ertebølle in western Denmark, a new form, the T-shaped axe occurs.\textsuperscript{209} Numerous antler shafts are also

\textsuperscript{205} Sørensen (supra n. 169) 75.

\textsuperscript{206} Sørensen (supra n. 169) 75.

\textsuperscript{207} Clark (supra n. 129) 114; Clark (supra n. 130) 148, points out however that no real evidence of plait work is known from the western Baltic area. Some German authors prefer the term fischschuppemesser or ‘fish scaling knives.’ Sørensen (supra n. 169) 75; states that theses prene, are normally 10 - 15cm although many are worn down to less than 5cm which seems rather small for scaling fish. Ethnographic examples of similar implements among higher latitude groups indicate possible use as needles to facilitate the stringing of fish however. See for example “The Search for the First Americans,” The Infinite Voyage Video (WQED Pittsburgh 1978) 2minutes 25seconds - 2minutes 42 seconds; 2 minutes 34 seconds.

\textsuperscript{208} Sørensen (supra n. 169) 76; “Kongemosekulturens økser er som regel længere og slankere end Maglemosekulturens økser…” and “… ofte ornamentik, som kan være udført i to forskellige teknikker. Dels den bredt indskårne ornamentik…”

\textsuperscript{209} Sørensen (supra n. 169) 76 - 7.
known from various Kongemose sites and although their use is not clear, they can be distinguished from the antler hafts of the previous Maglemose by the absence of bore holes.\textsuperscript{210}

Finally, the use of wood for tool making during the Kongemose is indicated by finds of various tools including fish-traps, fishing leisters, and fragments of a bow and a paddle.\textsuperscript{211} Bow fragments, often made of elm, occur on various Kongemose sites such as Blak I, and the Swedish site Ageröd, and span the entire culture's chronology.\textsuperscript{212} The fish-traps and leisters clearly indicate aqueous resource adaptation and although the fish-traps can't be substantiated from the Maglemose, it seems reasonable to postulate their existence.\textsuperscript{213} Leister prongs (made from wood), although well attested from the Ertebølle, appear on only one Kongemose site, and since it is from Skåne and an inland site, it's not of much use here.\textsuperscript{214} Perhaps the most interesting wooden artifact from the Kongemose is a fragment of an elliptical wooden paddle. It seems significant that this paddle type is known from the earlier Maglemose and the later Ertebølle periods even though no boats are known from earlier than the Ertebølle.\textsuperscript{215}

The subsistence system of the Kongemose period shows marked diversity of resource exploitation consisting of the utilization of marine and terrestrial fauna, including the first intensive gathering of shellfish.\textsuperscript{216} It should be noted that aquatic resource procurement was not solely confined to coastal exploitation however.\textsuperscript{217}

\begin{itemize}
\item \textsuperscript{210} Sørensen (supra n. 169) 77.
\item \textsuperscript{211} Sørensen (supra n. 169) 80.
\item \textsuperscript{212} Sørensen (supra n. 169) 81.
\item \textsuperscript{213} Sørensen (supra n. 169) 80.
\item \textsuperscript{214} Sørensen (supra n. 169) 80 - 1.
\item \textsuperscript{215} Sørensen (supra n. 169) 80.
\item \textsuperscript{216} Jensen (supra n. 77) 43.
\end{itemize}
Although evidence for coastal exploitation exists from at least the Maglemose (if not the Upper Palaeolithic) it isn’t as definable or extensive as it appears during this period. The fact that so relatively little is known about the subsistence practices from this phase of the Mesolithic however causes some problems in substantiating a definable dichotomy between marine and terrestrial resource utilization. It is known, for example, that on Sjælland during this time period red deer come to replace both elk and aurochs in terms of their economic importance although they still remain archaeologically visible in Jutland and Skåne.\textsuperscript{218} The vanishing of large game species that had played important roles in the Maglemose subsistence economy is not surprising given the drastic changes in landform and geography during this time. The warming trend observed throughout the Mesolithic accelerated the growth of increasingly dense forests and set up the ecosystem (warmer, nutrient rich estuaries) that set the stage for a restructuring of the subsistence base.\textsuperscript{219} These kinds of environmental changes clearly affect populations as dependent on naturally recurring subsistence resources as Mesolithic man. This is seen not only in the evidence for increasingly specialized aqueous tool technologies, but also in the faunal material recovered as well.

Species represented from the Blak Phase include red and roe deer, wild pig, beaver and various fish species such as plaice, flounder, eel, salmon, garfish and turbot.\textsuperscript{220} Throughout the Kongemose period evidence suggests that numerous species, such as elk, aurochs, bear, badgers and lynx, all of which are attested to from Maglemose sites during the Boreal period, gradually vanish.\textsuperscript{221} This leads then to an increased reliance on red deer (with reliance to a lesser degree on roe deer and wild pig) throughout the course of the Kongemose although a distinct decline in the quantity of

\textsuperscript{218} Sørensen (supra n. 169) 85.


\textsuperscript{220} Sørensen (supra n. 169) 113.

\textsuperscript{221} Sørensen (supra n. 169) 113.
red deer antler material is observed on Sjælland between the Maglemose and the Ertebølle.\textsuperscript{222}

During the Kongemose, fishing is well documented for the first time as shown by numerous finds of fish bones, fishing traps and through $\delta^{13}C$ values derived from Mesolithic skeletal samples.\textsuperscript{223} The analysis of $^{13}C$ isotopes is based on the differential absorption rates of various oxygen isotopes that obtain from marine and terrestrial sources.\textsuperscript{224} Animals relying heavily on a diet of marine resources will show such a reliance in their $^{13}C$ values. Significantly, Noe-Nygaard reports that the bones from the Mesolithic in her sample showed $^{13}C$ values that indicated a dietary composition of 80\% or more marine subsistence (although it should be pointed out that all of the samples came from coastal sites).\textsuperscript{225} Over all, the evidence for this period supports the interpretation that marine resource utilization during the Kongemose, compared to that of the earlier Maglemose, came to play an increasingly important role.\textsuperscript{226} This reorganization of the Mesolithic food resource system doesn’t only change the food resources available and the technologies required to procure those resources. It also affects the settlement patterns of the population that is now exploiting those food sources.

Unfortunately, there seems to be some discrepancies concerning Kongemose settlement patterns. This is apparently due to the paucity of clearly defined and thoroughly excavated sites from this time period. In general sites from this period can be identified from coastal as well as inland areas. The problem lies with the seasonality and

\textsuperscript{222} Sørensen (supra n. 169) 115.

\textsuperscript{223} Sørensen (supra n. 169) 115.


\textsuperscript{225} Noe-Nygaard (supra n. 217) 139; The one sample reported from Holmegaard, an inland Maglemose period site, showed $^{13}C$ values clearly reflecting a terrestrial diet.

\textsuperscript{226} Sørensen (supra n. 169) 85.
the extent to which either type of site was used. No evidence is conclusively available to substantiate disparate populations either. In other words it isn’t known for sure whether these various sites were occupied seasonally by the same group of people, or if they represent different groups occupying varied ‘preferred’ foraging areas. Jensen states that both inland and coastal sites are known from the Kongemose period with the evidence for seasonality indicating summer occupation in both cases.\(^{227}\) He is very careful however to point out that a complete picture of Kongemose settlement patterns is unable to be formulated due to scanty and incidental evidence.\(^{228}\) Noe-Nygaard, while arguing for two populations (one terrestrial and one marine) during the Mesolithic mentions winter occupation at Kongemosen (\(l.c.\)) and exploitation of that site’s habitat year round.\(^{229}\) To complicate matters further, Sørensen discusses both winter and summer settlements, which alternate between open coast or inland sites and the shores of fjords and streams.\(^{230}\)

Still, despite slightly conflicting accounts, the general trend of settlement and resource exploitation seems to favor a shift towards marine components during this time. However, as stated earlier, reliance on a particular resource does not necessarily correspond to increased significance being applied to that resource. In fact, Sørensen draws a distinction between low and high prestige resources. He characterizes high prestige resources as those that exhibit great mobility, widespread distribution and uncertain supply but provide a large amount of calories and useable by-products given the risk involved in their exploitation.\(^{231}\) Low prestige resources then are characterized by the opposite; namely low mobility, great concentrations and secure yields off-set by

\(^{227}\) Jensen (\textit{supra} n. 77) 43.

\(^{228}\) Jensen (\textit{supra} n. 77) 43.

\(^{229}\) Noe-Nygaard (\textit{supra} n. 217) 140.

\(^{230}\) Sørensen, (\textit{supra} n. 169) 152.

\(^{231}\) Sørensen (\textit{supra} n. 169) 148; Sørensen adapts this from M. Jochim, \textit{Hunter-Gatherer subsistence and settlement} (New York 1976) 53 - 4.
low caloric out-put and low risk exploitation.\textsuperscript{232} Sørensen continues with an in-depth investigation of the relationship between these two resource categories and settlement placement. Pointing out that high prestige resources (such as roe and red deer and wild pig) are found at all coastal sites on which faunal preservation occurs, he argues for their importance to the overall economy (other than subsistence) and that therefore they are not a determining factor in settlement placement.\textsuperscript{233} Perhaps then it is low prestige resources that act as the determining factor for settlement placement? He first discusses shellfish utilization, as they have all the characteristics of low prestige resources, and concludes that they cannot be a determining factor for site placement (in the Kongemose) since clear utilization of shellfish (in any great numbers) isn’t visible until the Kongemose - Ertebølle transition.\textsuperscript{234}

Next he discusses fishing which proves to be a much more promising factor. There can be no doubt that the utilization of ichthyian resources and the technology needed to do so proliferates throughout this time. In general, the trends observed in the earlier Maglemose continue with an increasingly focused and specialized subsistence economy characterized by a greater proportion of technologies adapted for aqueous resource exploitation. Sørensen sees these technologies as possible determinants of settlement placement since they seem to be, in the main, stationary technologies.\textsuperscript{235}

Therefore, trap fishing would provide a relatively low-maintenance subsistence return and greatly facilitate more stable settlements. The faunal material seems to support this assessment since the majority of fish bones recovered from Mesolithic sites are from small, coastal fishes.\textsuperscript{236} The scant evidence for species such as Spurdog and Porbeagle perhaps indicate hook and line fishing although the evidence is far from

\textsuperscript{232} Sørensen (supra n. 169) 148.

\textsuperscript{233} Sørensen (supra n. 169) 149.

\textsuperscript{234} Sørensen (supra n. 169) 149 - 50.

\textsuperscript{235} Sørensen (supra n. 169) 150.

\textsuperscript{236} I. B. Enghoff, “Fishing in Denmark during the Mesolithic Period,” in \textit{Man and Sea} (Exeter 1995) 72 - 3; Most of the material reviewed dated from the Ertebølle however although Sørensen says the same: “...at fiskeriet overvejende har bestået af rusefiskeri på forholdvis lavt vand.” (Sørensen (supra n. 169) 150.)
conclusive. Additionally, net fishing is poorly documented for the Kongemose as well. Evidence for nets in the form of net stones and braided material occurs in the Ertebølle but the evidence for it earlier than this is scarce and consists primarily of a fragment of willow bast net with pine bark floats and stones attached found in Finland and dated to 11,000 BP. Clearly if net fishing existed during the Boreal around the Baltic then there is no reason to assume it didn’t exist in Denmark 4,000 years later. Continuing on in his investigation of resource potential and settlement location Sørensen makes an argument for seal, specifically Grey Seal, as another significant resource. Since Grey Seal pups are unable to swim for the first two months or so, they are able to be procured fairly easily, making them a low-prestige resource and therefore qualifying them as a settlement location determinant. The faunal material from Sjælland and Skåne demonstrates that Grey Seal is by far the most important economic resource during the Atlantic Period and up into Historic times. On the basis of these ‘economic’ factors then Sørensen makes a case for the placement of settlements heavily favoring coastal occupation during the Kongemose. In fact he points out that coastal sites outnumber inland sites during this period by 30 to 1 and he feels that this cannot be accounted for solely on the basis of variations in food resources.

There certainly is a change in settlement pattern observed from the early Hambourgian reindeer hunters through the later Ertebølle. The increasing productivity of

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237 Enghoff (supra n. 236) 72 - 3; Sørensen (supra n. 169) 150 - 51; Clark (supra n. 130) 143.

238 L. Pedersen, “7000 years of fishing: stationary fishing structures in the Mesolithic and afterwards,” in Man and Sea (Exeter 1995) 75; and Sørensen (supra n. 169) 151; Pedersen states the date of the net as 9300 C14 years which would equal about 11000 years BP, whereas L. Zaliznyak, “The Ethnographic Record, and Structural Changes in the Prehistoric Hunter-Gatherer Economy of Boreal Europe,” Harvesting The Sea (Sheffield 1998) 49; dates the Antrea net at 7280 bc which yields an adjusted date of around 9280 BP, possibly indicating an error in Pedersen’s quoting of the date.

239 Sørensen (supra n. 169) 156 - 8; He points out also that the other seal species may constitute high-prestige resources due to their scattered distribution.

240 Sørensen (supra n. 169) 158.

240 Sørensen (supra n. 169) 156.

241 Sørensen (supra n. 169) 156.
the coastal biotope combined with the changes in landmass and forest composition can certainly be construed as determining factors accounting for changes in subsistence and settlement. These changes, although not fully understood due largely to incomplete data sets, are observed throughout the Kongemose and by the following Ertebølle are unmistakable.

THE ERTEBØLLE

Although numerous factors ultimately contribute to the perception of the increasing reliance placed on coastal exploitation during this time, not least of all geological factors such as the inundation of coastal regions, it seems clear that coastal exploitation did in fact increase over this time period. Over all the prehistoric Scandinavian maritime eco-system was incredibly nutrient-rich. Abundant banks of shellfish, a profound diversity of fish as well as sea mammals all contributed to a stable, seasonally varied, immensely productive subsistence base. Much more is known about coastal exploitation and settlement during this period due largely to the intensive research projects that have concerned themselves with Ertebølle settlement and subsistence systems over the years. This period, the terminal Mesolithic, acts as the pivot-point for the transition to farming at the beginning of the Neolithic as well. The early settlement and subsistence patterns, which evolved in Mesolithic Denmark, were no doubt the result of the profound ecological and environmental changes taking place in post glacial Scandinavia. Rises in sea level continued to claim land that was once habitable while land bridges, which at one time linked areas such as Skåne and Sjælland, disappeared. All of this contributed to a resource rich, fairly hospitable landmass riddled with streams, bays, islands and fjords.

Prehistoric Denmark at this time contained a vast coastline (Fig. 22), something on the order of thousands of kilometers, full of bays and sounds, fjords and coves.\textsuperscript{242} It is little wonder then that coastal occupation is highly visible by this time. The Ertebølle Period exhibits a fully developed maritime economic system replete with boats,
multiple fishing technologies and a clear preference for coastal settlement. This cannot result purely from a sampling bias.

Not only does the Ertebølle culture show a marked increase in coastal exploitation but it also provides the best evidence for the elaboration of marine related accoutrements. Such items as the wonderfully decorated paddles from Tybrind Vig and the harpoon point from the Swedish Ertebølle settlement / cemetery Skateholm II, beautifully illustrate the fact that something is going on conceptually concerning the importance of these essentially marine orientated artifacts in the minds of the users of these objects.

Fig. 22. Coastline of Denmark during Ertebølle Period. From Jensen 1982.

In general Ertebølle tool types comprise a broad and sophisticated assemblage. Pottery first appears during the Ertebølle and signifies certain storage capability.
Microlith technology is common throughout the Mesolithic and the Ertebølle points tend to be of the *petit tranchet* type (Fig. 23).²⁴³

![Fig. 23. Ertebølle transverse arrowheads. After Jensen 1982.](image)

Axe types have been discussed earlier and it is significant that the types of axes represented show a definite pattern of change over time from a dominance of *kernbiel* to one of *spalter*.²⁴⁴ Significantly a preponderance of *trindøker* is observed as well. These pecked and ground stone axes are much more frequently observed during the later Mesolithic than earlier and represent, according to Clark, "...an indigenous product of the northern forest civilisation."²⁴⁵ Sørensen clearly states that these axes occur more frequently on coastal sites than inland sites.²⁴⁶

Another interesting change observed from the Maglemose to the Ertebølle is in the frequency of antler axes or adzes. From the Maglemose to the Ertebølle a definite shift from perforated antler sleeves towards perforated antler axes is observed.²⁴⁷ Over all, the observed frequency of axes in general goes from fairly negligible in the

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²⁴³ Clark (*supra* n. 129) 142.

²⁴⁴ Clark (*supra* n. 129) 102 - 4; 142

²⁴⁵ Clark (*supra* n. 129) 148.

²⁴⁶ Sørensen (*supra* n. 169) 66.

²⁴⁷ Clark (*supra* n. 129) 149 - 50.
Maglemosto around 28.1% in the Kongemose to 35.7% in the Ertebølle. Burins as well make up a definitely observable component of Ertebølle tool technology. The frequencies observed among burins increases from 4.8% during the Maglemosto to 12.2% during the Ertebølle.

In the main, the Ertebølle results from a development of local, regional adaptation patterns established in the earlier Mesolithic. In fact, Clark calling attention to the continuity between the Maglemosto and Ertebølle directly points out the traits that Ertebølle populations were indebted to the earlier Mesolithic for, including barb-less bone fishhooks and ‘crude bone points.’ In addition to the well documented finds of fish traps and weirs from this period there is abundant evidence of hook and line fishing, leisters and boats. In discussing bone fishhooks Clark states that they tend to be smaller in the Ertebølle than in the earlier Maglemosto. This is a problematic statement since neither Sørensen nor Andersen mentions fishhooks occurring any earlier than the Ertebølle. Fishing during the Ertebølle is better understood than during any earlier period. Although fishing exhibits regional variation in the species represented this appears related to what was available in the economy and not preferential harvesting.

As discussed earlier, the composition and frequency of the faunal material indicates a ‘catch-all’ economy dominated by small fishes which combined with the abundance of fish traps argues for stationary fishing near the settlement site with

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248 Kozłowski (supra n. 155) 100 – 106
249 Kozłowski (supra n. 155) 100 - 106.
250 Clark (supra n. 129) 153; Clark (supra n. 130) 160 - 1.
251 Clark (supra n. 129) 150.
252 Sørensen (supra n. 169) 150 - 51; S. H. Andersen, Man and Sea (supra n. 168) 56.
253 Andersen (supra n. 168) 52.
secondary importance being assigned to hook and line fishing.\textsuperscript{254} Additionally, no purely deep-water species are known from Danish waters.\textsuperscript{255}

Fish traps and weirs are known from throughout Denmark and span from at least the end of the Kongemose until modern times.\textsuperscript{256} The fish traps recovered from the Kongemose settlement at Villingeback (7280 BP - 7040 BP) and those from Halsskov (geologically dated to the Mesolithic) and the Erteballe trap from Lille Knabstrup clearly indicate the complexity of fishing technology available since at least the middle Mesolithic (Fig. 24).

![Fish traps from Hasskov (L) and Lille Knabstrup (R). Hasskov from Pedersen 1995 and Lille Knabstrup from Andersen 1995.](image)

Although not conclusively demonstrating a sedentary life way or even increased social complexity, the existence and utilization of fairly complex and semi-permanent subsistence technologies certainly indicates a more developed understanding of the resource base than would be indicated otherwise. This in turn implies a more intimate conceptual understanding of the environment. Interestingly, most of the known stationary fishing structures come from Sjaelland (Fig. 25).

\textsuperscript{254} Enghoff (\textit{supra} n. 236) 72 – 3.

\textsuperscript{255} Andersen (\textit{supra} n. 168) 52.

\textsuperscript{256} Pedersen (\textit{supra} n. 238) 75 - 6.
Fishhooks are well represented from the Ertebølle. In the main they seem to be of the barb-less variety and variations in size have been documented and interpreted as possibly representing different usages.\textsuperscript{257} Several sources indicate the existence of fishhooks earlier however. Clark assigns the occurrence of barb-less fishhooks to the Maglemose and remarks that they are generally not as large or coarse during the Ertebølle as earlier.\textsuperscript{258} Additionally, Zaliznyak (in addition to citing Clark about the

\textsuperscript{257} Andersen (\textit{supra} n. 168) 56.

\textsuperscript{258} Clark (\textit{supra} n. 129) 113.
hooks from Maglemosian sites such as Svaerdborg, Mullerup and Ulkestrup) mentions examples from Lower Veretye I in north-east Russia and Kunda in Estonia, which date from the Boreal Period (Maglese time frame).\textsuperscript{259} If fishhooks do in fact appear around the Baltic during the Boreal Period, the perception of their 'invisibility' in the subsistence activities of early to middle Mesolithic populations may be the result of a sampling bias. Regardless, they most definitely occur in the Ertebølle and are not demonstrated from the Palaeolithic. This indicates a development over the Mesolithic.

Net fishing as well can be clearly demonstrated from the Ertebølle. Numerous finds of floats, net weights and net material itself show a wide distribution of this technology by the later Mesolithic. Examples such as the net floats from Møllegabet and Tybrind Vig as well as the finds of bark floats and netting from the eastern Baltic (Fig. 26) leave little doubt that these populations were exploiting aqueous resources with a wide range of techniques.

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\textsuperscript{259} Zaliznyak (\textit{supra} n. 238) 49.
In fact, based on the interpretation of the differing techniques of manufacture of woven fishing technologies (weirs, nets, weels etc.) consisting of different methods of twining and lath composition, it has been suggested that two different fishing traditions were in existence around the Baltic since at least the middle of the Mesolithic.\textsuperscript{260}

Leisters and various fish prongs comprise another well-documented category of later Mesolithic aqueous resource exploitation. These tools are found abundantly throughout the middle and late Ertebølle in Denmark although none are known from the Kongemose.\textsuperscript{261} Andersen does mention that bone points such as those found at Tybrind Vig (Fig. 27) could have been used in leisters or fish spears.\textsuperscript{262}

\begin{center}
Fig. 27. Bone points recovered from Tybrind Vig. After Andersen 1995. (2/3).
\end{center}


\textsuperscript{261} Andersen (\textit{supra} n. 168) 57 - 59; Andersen does point out that leisters are also known from other North European coastal sites and that two leister prongs have been found at the Kongemose site Ageröd V in Sweden.

\textsuperscript{262} Andersen (\textit{supra} n. 168) 59.
Clark classes the majority of bone points found from Maglemose sites as prongs for fish spears and leisters. The occurrence of decorated bone points from Middle Magdalenian assemblages in continental Europe may perhaps indicate this type of subsistence technology at a very early stage (Fig. 28). In any case, we can say with certainty that leisters and fish prongs were in existence during the Middle and Late Ertebølle phase in southern Scandinavia and that they were therefore perceived as important in the subsistence quest.

![Fig. 28. Middle Magdalenian bone point. After Kozłowski 1979. (2/3).](image)

Harpoons represent a very interesting aspect of Ertebølle culture. They occur reasonably frequently and can be taken as an indication of the importance of marine mammal hunting. Harpoons are generally made from antler (either red or roe deer) or whale bone. Harpoons are known from the Azilian, tanged-point and Hamburgian and may in fact have been part of the hunting package since the 13th millennium BC. On the basis of typological differences, Andersen has clustered the dominant Ertebølle

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263 Clark (supra n. 129) 115 - 19.

264 Kozłowski (supra n. 155) 143; These motif patterns bear a striking resemblance to motifs which show up much later on in Northern Europe and although the archaeological material is certainly far from conclusive about Magdalenian subsistence and settlement patterns (especially with regards to aqueous exploitation) these examples certainly hint at a the possibility of fairly early adaptation to this type of resource pattern.

265 Andersen (supra n. 168) 59 - 60.

266 Andersen (supra n. 168) 59.

267 Kozłowski (supra n. 155) 51.
harpoons into four types (Fig. 29). The first is made of red deer antler or whalebone and is characterized by a relatively straight, symmetrical, rounded point with one to three barbs and a line-hole in the base.\textsuperscript{268}

![Diagram of harpoons]

Fig. 29. Andersen's typology of Ertebølle harpoons. From Andersen 1995 – 1996.

Type B harpoons are made from red deer antler and are bow-shaped with one to four barbs along a concave edge with a basal borehole, although at a point closer to the middle than Type A harpoons.\textsuperscript{269} Harpoons made of roe deer antler tending to have flared longitudinal axes and sides chipped into oblique surfaces with acute angled points and no bore holes are classed as Type C harpoons and were evidently lashed by a line secured around the basal knobs.\textsuperscript{270} Finally, Type D harpoons are characterized by short,


\textsuperscript{269} Andersen (supra n. 268) 65.

\textsuperscript{270} Andersen (supra n. 268) 65.
broad and triangular points with many close-set, short, little barbs and are generally made of red deer antler.\textsuperscript{271}

In addition to these types of harpoons from the Ertebølle, Andersen makes mention of several peculiar types known from, among other places, Bloksbjerg. The point in question, belonging to the Kongemose, contains fine hatching marks along its surfaces and is made from a swordfish bill (Fig. 30).\textsuperscript{272}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{swordfish_bill.png}
\caption{Swordfish bill bone point with hatching from Bloksbjerg. After Andersen 1995. (1: 2)}
\end{figure}

Furthermore, Bloksbjerg contained an example of a legitimate harpoon in the form of a tip of a bone point made from a red deer metatarsal and having three barbs.\textsuperscript{273} The ‘sword’ from Bloksbjerg and various other long, tapering, barb-less points have been called by Andersen ‘lances’ and are assumed to have played a role in sea-mammal hunting (Fig. 31).\textsuperscript{274}

\begin{footnotesize}
\begin{enumerate}
\item Andersen (\textit{supra} n. 268) 66.
\item Andersen (\textit{supra} n. 268) 67.
\item Andersen (\textit{supra} n. 268) 67.
\item Andersen (\textit{supra} n. 168) 60.
\end{enumerate}
\end{footnotesize}
This assessment seems logical especially in light of ethnographic information which shows lance like spears being employed in seal hunting (Fig. 32). What is important here is the clear occurrence of harpoons as a functional tool type by the Ertebølle with evidence available for the technology itself existing much earlier.
The evidence for technologies adapted to aqueous resource utilization in the Ertebølle doesn’t end here however. Another functional technology well represented from at least the Late Mesolithic is boats. Obviously boats in and of themselves do not indicate marine resource utilization. They do however clearly demonstrate the ability to float and if a boat can float, it can float on water be it fresh or salt.

Evidence of watercraft comes from finds of boats themselves as well as paddles. The paddles recovered from Stone Age sites exhibit great variation in form (Fig. 33).

Fig. 33. Variations in Mesolithic paddles. After Christensen 1990.

Clark mentions a paddle recovered from the site of Holmegård and claims it to be one of the oldest known.\(^{275}\) Sørensen states that paddles are known from the Maglemose but doesn’t mention which sites.\(^{276}\) He does however mention an elliptical bladed paddle recovered from Kongemose (i.e.) and adds that boats aren’t known from phases earlier than the Early Ertebølle.\(^{277}\) This sentiment is echoed by Andersen whose chart of fishing technology (Fig. 34) shows no paddles or boats earlier than this phase either. Christensen,

\(^{275}\) Clark (\textit{supra} n. 129) 107.

\(^{276}\) Sørensen (\textit{supra} n. 169) 80.

\(^{277}\) Sørensen (\textit{supra} n. 169) 80.
in discussing Stone Age boats reports that of the 51 known boats, 14 were found in marine contexts. A notable example of boat technology, from a marine context, is the material recovered from Tybrind Vig. This consisted of the finds of three lime wood canoes wonderfully preserved and several richly decorated spade shaped oars (Fig. 35).  

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These canoes contain some interesting features, most notably the fireplace in the stern of boat I and the evidence of repair on boat II.\textsuperscript{280} These features are known from other Stone Age boats such as the hearth on the boat from Øgårde III and the repairs done to the boat recovered from Verup II.\textsuperscript{281} In discussing the construction of the boats, Andersen points out the adze marks observed and states that the production scars seem to indicate the use of flake-adzes instead of core-adzes.\textsuperscript{282}

The distributional differences observed between core and flake type technologies (i.e. the prevalence of skivespalter over kernbeil as the Mesolithic progresses) combined with the dearth of boats from earlier than the Ertebølle, could perhaps indicate the development of this technology during this time with axe or adze types representing a necessary technological shift in order to facilitate this type of working. Of course the existence of boats earlier than the Ertebølle argues against this sort of ‘cause and effect’ scenario. Clark cites a dugout canoe from Perth that dates from the Boreal during his period II (8800 - 7000 BP), which clearly (if correctly dated), shows boat technology

\textsuperscript{280} Andersen (\textit{supra} n. 279) 94 - 7.

\textsuperscript{281} Andersen (\textit{supra} n. 279) 95 - 7.

\textsuperscript{282} Andersen (\textit{supra} n. 279) 97.
earlier than the Late Mesolithic.\textsuperscript{283} The fact that boats themselves aren't really known from prior to the Ertebølle in southern Scandinavia doesn't mean they weren't used. Although few, finds of paddles from earlier than the Ertebølle obviously implies their existence. Furthermore, in light of the various arguments concerning the ‘inland - coastal duality,’ it should be pointed out that the trees necessary to build the canoes found at Tybrind Vig (one of which was preserved up to a length of 9.5 m) may not have been growing along the coast. If so this may mean that the relationship between inland and coastal occupations may have been more complex than originally thought. Perhaps the need for large trees suitable for boat construction brought about limited forest clearing which in turn facilitated the spread of agriculture by creating plots that were already being ‘harvested’ for trees.

Although the use of technology adapted for aqueous resource exploitation is clearly indicated for the Ertebølle, and is furthermore associated with marine resources, the faunal evidence for the role of marine resources in the subsistence quest, in terms of their importance, is much less clear. A classic example, and one which illustrates the complexities involved in understanding the varied life-ways of prehistoric populations, is that of \textit{køkkenmøddinger}. These shell-middens reach massive proportions during the Ertebølle and mounds that reach 2000 m\textsuperscript{3} are not unknown.\textsuperscript{284}

The formation of such massive mounds obviously requires a massive amount of shellfish. The changes that heralded the beginning of the Atlantic Period provided a climate ideal for shellfish development. Warmer, saltier and more nutrient rich waters along the coast of Jylland and northern Sjælland encouraged the growth of large beds of shellfish.\textsuperscript{285}

\textsuperscript{283} Clark (\textit{supra} n. 129) 108.


\textsuperscript{285} Jensen (\textit{supra} n. 77) 45.
Shell middens are found primarily in the northern parts of Denmark (Fig. 36) and even where clearly visible in the archaeological record are atypical and represent only a small number of the total of ‘coastal’ sites.\textsuperscript{286} From excavations of various shell-middens and the observation of the patterning and composition of their hearth areas, stratigraphic sequencing and the distribution of ‘graves,’ Andersen has been able to demonstrate a pattern of stable, long-term and possibly hierarchical, territorial organization.\textsuperscript{287} Shell middens are observed from the Kongemose although they tend to be much smaller than the ones of the following Ertebølle and fewer in number.\textsuperscript{288}

\textsuperscript{286} Andersen (\textit{supra} n. 168) 48.

\textsuperscript{287} Andersen (\textit{supra} n. 168) 50 - 1; He does point out however that it may be more correct to view the kokkenmøddinger as evidence of intensive utilization as opposed to intensive occupation.

\textsuperscript{288} Andersen (\textit{supra} n. 168) 49.
The high visibility of shell middens has often led to the overestimation of the economic importance of these sites.\textsuperscript{289} The problem stems largely from the caloric value of shellfish. Bailey has calculated that it would take approximately 52,267 oysters or 156,800 cockles to supply the same amount of calories as 1 red deer carcass.\textsuperscript{290} In fact the relative lack of nutritional value in shellfish significantly alters the perception of the role the collection of these resources occupied in prehistoric northern Europe. Taking the coastal site of Meilgaard for example, Bailey has calculated (based on a population size of 40 individuals) that the contribution to the diet made by shellfish is only about 1.8 percent whereas the relative representation of shell-food in the excavated remains indicates a contribution of 26 percent.\textsuperscript{291} Assuming these caloric values have been calculated correctly and our understanding of the ages and stratigraphic sequencing of the middens is accurate then clearly shell-food cannot be considered a primary economic staple for the populations occupying midden sites. As Sørensen discussed however, the stability, relative ease of procurement and dependability of shellfish as a resource encourages settlement location close to this ‘low prestige’ resource.\textsuperscript{292} These middens do exist and therefore were utilized. Whether or not the caloric value derived from shellfish is enough to sustain a group of people is irrelevant. It is possible to eat a bowl of clam chowder, for example, at dinner and be satisfied. Therefore it is possible for people to be incorporating shellfish into their diet without ‘subsisting’ on them. The procurement of this resource obviously had a value even if it was of secondary importance to the value assigned to other resources available from the same area, such as fish or marine mammals.

The representation of fish from Mesolithic sites is problematic as well since issues related to preservation and taphonomic processes have been poorly understood in

\textsuperscript{289} Bailey, (\textit{supra} n. 219) 81 - 2.

\textsuperscript{290} Bailey (\textit{supra} n. 284) 39.

\textsuperscript{291} Bailey (\textit{supra} n. 284) 85.

\textsuperscript{292} Sørensen (\textit{supra} n. 169) 149 - 50.
the past. Recent excavations employing better methodologies and supported by clearer questions have yielded a wealth of information pertaining to fishing in the Late Mesolithic. Enghoff has examined the bones recovered from 14 coastal sites and catalogued 41 different species of marine fishes. Although the sizes of the fish represented were generally on the small side, lending support to the idea of stationary fishing being the most prevalent method employed during the Mesolithic, several sites produced much larger individuals including specimens upwards of 90 cm from Grisby (although on the east coast of Bornholm and slightly out of the study area). Cod of this size (and even slightly smaller such as the specimens above 60 cm from Nederest and Vænget Nord, which incidentally is Kongemose in age) may imply hook and line fishing. In fact, Enghoff discusses hook and line fishing during the Mesolithic and points out that fish hooks are not found in great numbers in the Danish material nor does the great variation in species represented indicate reliance on hook and line fishing. It should be mentioned however that evidence for line fishing is supported by the material from western Sweden in which sites such as Bua Västergård (which is Kongemose in age) contain a high frequency of cod bones (65%) of which over half indicate fish between 55 - 102 cm in length.

In general, for the Ertebølle (as for other periods as well) the majority of fish species represent small species, easily taken from shore with differences in occurrence largely resulting from differences in availability. The most commonly occurring species across this time are cod, plaice, flounder, whitefish and eel. It should be


294 Enghoff (supra n. 293) 73.

295 Enghoff (supra n. 293) 72 - 7.

296 Enghoff (supra n. 293) 84.

297 Enghoff (supra n. 293) 84.

298 Andersen (supra n. 168) 52.

299 Andersen (supra n. 168) 52.
pointed out however that a large number of non-marine fishes are represented in the material record. At Ertebølle (l.c.) for example, only 12% of the fish bones recovered derive from marine fishes.300 Conversely, Norsminde shows high preponderance of flounder (57%) out of a sample of nearly 9000 bones.301

Differences can be demonstrated from this time period among the various species exploited and these seem to correlate to settlement patterns. Since fishing technology is clearly demonstrated from this time and faunal assemblages do exhibit variance, it seems reasonable to conclude that fishing played a role in the subsistence activities of Mesolithic populations whether ‘coastal’ of ‘inland.’

The nutritional significance of fish in the diet of Mesolithic man has been debated. Bailey again challenges the assumption of the key role of marine resources in the subsistence economies of prehistoric people by observing that the caloric values derived from fish still fall far short of those derived from terrestrial ungulates.302 Using Meilgaard again as an example he places the caloric contribution of fish recovered from the site at between 10 and 12.4 percent and remarks that “... fish provide ... a relatively poor return of calories per unit of time and effort expended, when compared to terrestrial mammals.”303 Of course given the predominance of low-maintenance, semi-permanent fishing structures such as weirs and traps found throughout the Mesolithic, it seems debatable how much time and energy needs to be expended. Since fish can be considered ‘low-prestige’ resources, the reliance on them as a subsistence staple more than likely results from their stability and general abundance more so than their caloric pay-off. After all, the understanding of caloric intake and the decisions of prehistoric peoples with regards to such things need not be assumed to operate at all like our modern understanding of nutrient requirements. The assumption that prehistoric peoples sought

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300 Enghoff (supra n. 236) 69.
301 Enghoff (supra n. 236) 71.
302 Bailey (supra n. 284) 86.
303 Bailey (supra n. 284) 86.
out well balanced and nutritiously satisfying diets is a construction based on our understanding of modern population models and their dietary needs. Simply because resources are available doesn’t necessarily mean they will be utilized efficiently. Observation of the eating habits of modern (and historical) student or ‘artist’ populations certainly doesn’t indicate a great concern with ‘eating ones’ vegetables.’ Fishing and shellfish gathering, even if falling short of the mark calculated for ‘appropriate’ caloric intake may have been exploited because they were good and easy. Evidence for marine resources at inland sites seems to support this.

A good example is Ringkloster, an Ertebølle site from Jutland, which shows a faunal assemblage heavily dominated by pig (74 % of the ungulate fauna).\(^{304}\) This site also shows a component of marine fishes, which comprises 3 % of the faunal material.\(^{305}\) Additionally, Ringkloster contains whalebones, oyster shells and amber.\(^{306}\) This clearly indicates contact between the inland and the coast. Although the evidence is too sparse and erratic to definitively determine the patterns of resource utilization between coast and inland during the Mesolithic, what is readily apparent is that utilization of coastal resources is in fact occurring.

One final category of marine resources needs to be mentioned; sea mammals. It has been mentioned earlier that these may in fact represent both high and low prestige resources depending on species and time of year. Grey seal young, since they are presumably abundant and are confined to shore for the first two months of life can be construed as a low prestige resource.\(^{307}\) The historically known practice of clubbing fur seal pups certainly supports this assertion. Mature seals then, being larger, more dispersed and mobile could represent high prestige resources in terms of the risks involved in their exploitation. Seal remains, especially those of Grey Seals are common


\(^{305}\) Enghoff (supra n. 236) 73.

\(^{306}\) Andersen (supra n. 168) 63.

\(^{307}\) Sørensen (supra n. 169) 158.
on virtually all coastal sites.\textsuperscript{308} Although there is little evidence to support methodical, specialized sealing in the Mesolithic, what evidence there is clearly shows a utilization of seals during this time.\textsuperscript{309} Bailey calculated the caloric value derived from seals at Meilgaard to be 31.3 \% of the total subsistence package.\textsuperscript{310} The harpoons known from this time and the general visibility of seal remains strongly argue for the role of sea mammal hunting during the Ertebølle. In addition to the faunal remains and technologies for sea mammal hunting, evidence for blubber lamps, replete with animal fat residue, adds support to the interpretation of sea mammals as important resources.\textsuperscript{311}

In addition to seals, whales, dolphins and porpoises are also known. Killer whale teeth, with evidence of use as flaking instruments have been found at Haldrup Strand and Flynderhage.\textsuperscript{312} Other sites with faunal remains of whales and porpoises include Ølby Lyng, Mollegabet and Ronæs Skov.\textsuperscript{313} Although the evidence doesn’t support extensive, preferential utilization of large marine mammals, the fact that they were utilized at all indicates some value being assigned to them.

Despite the high visibility of marine components and technologies adapted to exploit them, terrestrial ungulates still play a large role in the subsistence economies of Ertebølle populations. Although this visibility often results in the interpretation of a sites economy heavily tipped in favor of marine resources, the observations of Bailey, based on a recalculation of the representation and nutritional value of shellfish, indicates that terrestrial ungulates provided much more ‘value’ than marine resources.\textsuperscript{314} What marine resources lacked in their caloric value (excluding seals whose blubber is assumed

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\begin{itemize}
\item \textsuperscript{308} Andersen (supra n. 168) 52.
\item \textsuperscript{309} Andersen (supra n. 168) 53.
\item \textsuperscript{310} Bailey (supra n. 284) 86.
\item \textsuperscript{311} Andersen (supra n. 168) 53.
\item \textsuperscript{312} Andersen (supra n. 168) 92.
\item \textsuperscript{313} Andersen (supra n. 168) 53.
\item \textsuperscript{314} Bailey (supra n. 284) 85.
\end{itemize}
to yield higher caloric values than any terrestrial animal)\textsuperscript{315} they made up for in stability, abundance and ease of acquisition.

In general it can be concluded from the evidence available that Ertebølle settlements and subsistence strategies involved site location and tool kits designed to afford the greatest exploitation of the widest possible ecological niche. The overall distribution of sites from this time period indicates a preference for liminal zones. The shore areas of lakes and estuaries as well as fjords and coastlines all would have provided access to a plethora of resources. By establishing base camps along shorelines, numerous ecological niches could be exploited with relatively little effort. By means of stationary fish traps, supplemented by line and leister fishing, shellfish collecting, shoreline scavenging, hunting of marine and terrestrial mammals as well as gathering plant materials from both shore and forest, the prehistoric inhabitants of Denmark would have been assured of a seasonally varied, stable and nutritionally balanced diet.

The decision to focus subsistence exploitation on biomes wherein food is most abundant and easiest to procure, although making sense from a purely economic standpoint, doesn’t go far towards illuminating the cognitive and conceptual factors resulting from such decisions. Maritimity is after all a conceptual category and as such cannot be substantiated based solely on subsistence patterns. What can be established however is that populations in the Middle to Late Mesolithic demonstrate an increasingly complex technology designed to exploit aqueous resources. Furthermore, the visibility of marine resources in the archaeological record explodes. Although possibly due to sampling biases, the presence of marine resources on inland sites combined with the large number of sites known to have been coastal clearly argues for something more substantial than errors of interpretation. This pattern of marine resource utilization is taken to be indicative of choices on the part of Mesolithic populations to exploit these resources. The decision to fish or hunt seals or gather mussels is not viewed then solely as one of economics, but rather one in which technologies are adapted and created to take advantage of the eco-systems the resources occur in. In this way, marine

\textsuperscript{315} Bailey (supra n. 284) 84.
resource utilization passes through the filter of cognition and becomes a subject of thought. As such it, is then able to be abstracted, and it is this abstraction that constitutes maritimity.

It is therefore necessary to investigate what is known about ‘abstract’ thought from the Stone Age in order to determine if Mesolithic populations were in fact conceptualizing any ‘abstract’ notions at all, let alone maritimity. The following chapter explores the evidence for ornamentation, burial and symbolism during the Mesolithic. By showing that the tendency for elaboration and symbolic expression existed from at least the Palaeolithic an argument is made for the very real nature of cognitive categories. The evidence of elaboration and symbolic expression during the Mesolithic is then discussed in order to firmly establish that systems of meaning were in fact operant.
CHAPTER VI

ARTISTIC LICENSE

INTRODUCTION

Evidence for elaboration and symbolic behavior is much older than the Mesolithic. Palaeolithic cave sites such as Chauvet, Lascaux and Cosquer, to name but a few, clearly stand as sure markers of abstract processes of symbolic identification associated with the natural world. Even if it can be argued that the naturalistic representations of bison, horses, wooly rhinoceros and what not are simple depictions with a one-to-one correspondence with the natural world, the so-called ‘sorcerer’ from Trois-Frères in France (Fig. 37) most assuredly isn’t.

![Diagram of a deer](image)

Fig. 37. Sorcerer of Trois-Frères. From Mithen 1996.

Furthermore, many examples of mobiliary art from ornamented bones or sculpted tools such as the atlatl from Mas d’ Azil (Fig. 38) to the virtually ubiquitous ‘venus’ figurines, indicate that Palaeolithic people were concerned with more than simply the utilitarian value of their tools.
Burials, such as those from Sungir, north of Moscow and Border Cave in South Africa indicate conceptual processes that transcend the purely functional. Collectively, regardless of the specific form the expressions of these processes take, they all require some form of cognition. These processes can all be viewed as an expression of cognition then and will be hereafter generically grouped as 'elaboration.'

This chapter is concerned with the evidence for abstract thought, primarily as demonstrated through the use of ornamentation and the occurrence of burials. By reviewing evidence for these activities spanning the Palaeolithic through the Mesolithic, it can be demonstrated that prehistoric populations were clearly engaging in conceptual category formation for a very long time. This is important to realize since the idea of maritimity is being developed as a specific cognitive domain for a specific population and relies therefore on the establishment of the existence of these domains per se. Although there are numerous interpretations and theories advanced for the various types of elaboration witnessed in the material record it is generally agreed upon that this elaboration in fact did mean something. By discussing aspects of Palaeolithic elaboration the tendency for human social groups to elaborate is established. This is followed by an
examination of the material from Mesolithic southern Scandinavia, with particular emphasis being placed on recent studies concerned with the motifs occurring and how they relate to the spatial and ‘ethnic’ distribution of past populations in this region. The goal of this chapter is to demonstrate that not only did prehistoric populations elaborate cognitive categories, but also that the evidence available from Mesolithic southern Scandinavia supports the interpretation that, at least for some people, value was being derived from coastal adaptation and this adaptation was therefore meaningful.

PALAEOLITHIC ELABORATION

Although an increasing amount of literature has been devoted to aspects of Palaeolithic symbolic elaboration, very little hard evidence has been forthcoming in support of conceptual systems operating much before the Upper Palaeolithic. Chase and Dibble, in reviewing the evidence for Middle Palaeolithic symbolism conclude that no evidence for clearly ‘modern’ symbolic thought exists for this period.316 It has been argued that Middle Palaeolithic populations (~100,000 - 40,000 years ago) have been claimed to exhibit what has been termed ‘paleoculture’ which does not include regular patterned symbolic behavior.317 Marshalling the evidence from tool morphologies, burials, evidence of ritual behavior (other than that associated with burials) and art they make a case against Middle Palaeolithic populations utilizing symbolic abstractions as part of their adaptive processes.318 The evidence gathered by Chase and Dibble is mainly drawn from Europe with some minor examples from the Near East. Their assessment of the archaeological material has led some scholars to worry that an attribution error is implicit in their argument, one which could lead to an interpretation of the evidence in


317 Chase and Dibble (supra n. 316) 285.

318 Chase and Dibble (supra n. 316) 284 - 5.
support of the idea that the development of ‘modern’ symbolic forms of expression coincide with the evolution of modern human populations.319

In the main, they are arguing against the idea of the replacement scenario wherein particular groups of ‘modern’ *H. sapiens* replaced other groups of Archaic *H. sapiens* since evidence of the kinds of symbolic activities usually assigned to such morphological shifts is inconclusive for the Old World when viewed collectively.320 They make it clear however that they are discounting Europe in their study since no evidence of early morphologically modern humans occurs although they do accept the evidence that something is happening symbolically during the Middle to Upper Palaeolithic transition there.321 In fact, it is possible that activities that partake of higher order cognitive functioning (namely symbolic abstraction or possibly true ‘intellect’) may be present as early as *Homo erectus* populations, in the form of utilized ochre.322 In addition, evidence for increasing cognitive capacity is demonstrated from the Middle Palaeolithic (Mousterian) in the form of ochre, some incised bones and increasing mortuary complexity.323 Whatever the exact beginnings of symbolic or complex cognition were, or where they originated, the fact is that Palaeolithic populations were elaborating activities very early on, albeit sporadically.

One of the examples of such activity is that of the infant burial from Border Cave on the Swaziland / Kwa-Zulu border dated to the Middle Palaeolithic which, found *in situ*, contained a perforated *Conus* shell that could only have come from the Straits of Madagascar, some 80 km away.324 Mithen discusses this site as well and notes that it dates to between 70,000 and 80,000 years ago and that the bones are those of an Early

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320 Lindley and Clark (supra n. 319) 240.

321 Lindley and Clark (supra n. 319) 239.


323 Dickson (supra n. 322) 48 – 9.

324 Lindley and Clark (supra n. 319) 237.
Modern Human (*Homo sapiens sapiens*). Chase and Dibble don’t mention this burial in their review of the material pertaining to burials, as they seem primarily concerned with demonstrating the discrepancies between Middle and Upper Palaeolithic burials. They state, citing the work of Harrold concerning patterning and distribution of goods in the graves, that 33% of Middle Palaeolithic graves contain goods associated with them while 88% of Upper Palaeolithic ones do and that furthermore, the grave goods from the Middle Palaeolithic are comprised only of “...mundane items of everyday use.”

Burials have always been a difficult component of archaeological interpretation due to their fairly specific context and generally rich offerings. Although little evidence exists to conclusively demonstrate complex, conceptual awareness associated with death from the Middle Palaeolithic, by the Upper Palaeolithic evidence exists to support clear, directed, conceptual processes in the minds of these populations. A very good example is the burials from Sungir in Russia in which the single grave of a man and a joint grave of one male and one female adolescent were dated at between 28,000 and 23,000 years ago. These burials contained over 10,000 beads, a large ivory sculpture of a mammoth, mammoth-ivory bracelets (with traces of black paint) and lances, a human femur segment with red ochre packed in the medullary cavity, as well as numerous pendants, pins and ivory discs. This shows unmistakably that the group to which these people belonged (and which presumably buried them) had some sort of cognitive domain in which things such as ornamentation (bracelets, pins, necklaces and beads) as well as ceremony (mammoth-ivory lances, sculpture, femur) obviously existed.

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325 Mithen (*supra* n. 32) 182 - 3.

326 Chase and Dibble (*supra* n. 316) 271 - 77.

327 Chase and Dibble (*supra* n. 316) 273.

328 Mithen (*supra* n. 32) 175; and Renfrew and Bahn (*supra* n. 26 ) 373; Mithen dates the burial at 28,000 years old while Renfrew and Bahn are more conservative giving the age as 23,000. To further complicate the issue, Lindly and Clark (*supra* n. 319) 239; date the Sungir burials at 20,000 - 25,000 years old.

329 Mithen (*supra* n. 32) 175.
Artwork is taken to be a ‘classic’ indicator of symbolic thought. The Upper Palaeolithic is a treasure trove of this material and it is little wonder that the proliferation, generally limited distribution, and technical mastery exhibited by this medium has led to the perception of a cultural explosion. As is the case with evidence for burial, the beginnings of art are a debatable topic. Chase and Dibble don’t find any solid evidence for art or elaboration, which can rightly be spoken of as symbolic in the Middle Palaeolithic, although they do concede that some objects recovered clearly show evidence of human manipulation. Even though this is the case, they point out that it would be incorrect to assume that a sense of esthetic and symbolic behavior existed, in an interconnected manner, as is the case today, among Middle Palaeolithic populations.\textsuperscript{330} It seems reasonable to accept a sense of value deriving from ornamentation or decoration for Middle Palaeolithic people that doesn’t represent an abstract or symbolic process of conceptualization. An object, for example, such as the crude figurine from Berekhat Ram, Golan Heights, which is dated to about 230,000 years ago (Fig. 39) may simply be representational in a strict sense in that it ‘looked like granny’ to some Acheulian individual. This doesn’t mean it stood for her, in an abstract sense, or that it symbolized ‘granny-ness’ or some other conceptual category, such as fertility.

\begin{figure}[h]
\centering
\includegraphics[width=0.3\textwidth]{image.png}
\caption{Fig. 39. Figurine from Berekhat Ram. From Renfrew and Bahn 1996.}
\end{figure}

\textsuperscript{330} Chase and Dibble (\textit{supra} n. 336) 283.
By the Upper Palaeolithic, most especially in Western Europe, artwork had reached a truly magnificent state of development. Much literature has been devoted to the analysis and interpretation of these Palaeolithic "cathedrals," which for the most part are located in southwestern Europe (Fig. 40).

![Map of Palaeolithic cave art in SW Europe](image)

Fig. 40. Distribution of Palaeolithic cave art in SW Europe. From Renfrew and Bahn 1996.

Many theories have proliferated to account for the distribution, content and purpose of this art. Although this is exciting and certainly deserves to be investigated, ".
...analysis at the detailed level should not obscure the enormous cognitive significance of the act of depiction itself.\textsuperscript{331} Whether the artwork functioned as a symbolic ‘shamanistic’ gallery, a hunting record or as part of an initiation ceremony is in some ways secondary to the fact that it existed at all. There is little doubt that the lavish cave art panels from places such as Altamira or Lascaux were meaningful.

One interpretive framework for this particular mode of elaboration recently developed is that of ecological adaptation. This stems from an understanding that art must be viewed as part of the system of thoughts and behaviors undertaken by Palaeolithic populations.\textsuperscript{332} From this stance Mithen argues for an interpretation of these art works consistent with his ‘thoughtful foragers’ model, namely as a means of retrieving information about the herds which were vital to these early peoples.\textsuperscript{333} He uses the basic ‘refugium’ argument advanced by Jochim in which populations living in Europe around 25,000 BP came under increasing ecological strain (in the form of the last glacial maximum) and shifted their populations into the much more hospitable southwest Europe.\textsuperscript{334} Here the rich salmon breeding grounds of the Atlantic and the concentrated populations of large herbivores created an ideal center of occupation which led to population pressures which required more intense interaction, socialization and more importantly, transmission of information.\textsuperscript{335} Therefore the increasing territoriality and need for group identification led to the development of ritual and symbolic forms of expression in which information about group affiliation and resource areas was conveyed.\textsuperscript{336} This seems like a plausible scenario. Mithen mentions two points that bear keeping in mind however concerning the important role of salmon during this time. In

\textsuperscript{331} Renfrew and Bahn (supra n. 26) 375.

\textsuperscript{332} Mithen (supra n. 30) 103.

\textsuperscript{333} Mithen (supra n. 30) 108.

\textsuperscript{334} Mithen (supra n. 30) 106.

\textsuperscript{335} Mithen (supra n. 30) 106.

\textsuperscript{336} Mithen (supra n. 30) 106.
the first place, if salmon was in fact a critical resource and the system of cave art was operating in the manner stated above, there would be far more depictions of fish in the cave art.\textsuperscript{337} Secondly, again dealing with Jochim's emphasis on the role of salmon in the development of sedentism and social complexity during this time, he points out that there simply is not any evidence of the purported critical role of salmon.\textsuperscript{338} For this time period and area no predominance of fish remains, evidence for exploitation technology or isotopic indication of marine resources in the diet exist.\textsuperscript{339} This model and models like it, places emphasis on the environmental constraints limiting Upper Palaeolithic populations and interprets the proliferation of art as a response to increasing population pressures and resource instability. It is interesting to note that remains of 'extended ovals' or elongated spatulas (similar to Clark's nätstickor) have been found with the proximal ends carved in the shape of a salmon.\textsuperscript{340} This is significant in that it lends support to the interpretation advanced earlier that these bone needles were used as spines for fish stringers.

Another advocate of ecological interpretations of Palaeolithic art is Clive Gamble. His starting point in understanding the complexities of Upper Palaeolithic artwork is the idea of style. He adopts this from Wiessner and takes it to be a component part of social communication (under which art falls).\textsuperscript{341} Style, according to Wiessner (filtered through Gamble) is defined primarily as a behavioral aspect rooted in basic human cognition which involves personal and social identification through comparison and which functions as a means of transmitting information about identity and as an

\textsuperscript{337} Mithen (supra n. 30) 107.

\textsuperscript{338} Mithen (supra n. 30) 107.

\textsuperscript{339} Mithen (supra n. 30) 107; Jochim did in fact acknowledge this: M. Jochim, "Late Pleistocene Refugia in Europe," The Pleistocene Old World (New York 1987) 319, although he still maintained a critical role for salmon as a back-up resource; cf. also B. Hayden, et al., (supra n. 224) 289.

\textsuperscript{340} Dickson (supra n. 322) 97.

active tool for the construction of social strategies. Gamble accepts this definition and argues that the context for interpreting the knowledge or information imbedded in aspects of style and identity must be based in ecology. Style, as an active tool of negotiation, responded to both requirements of practical information as well as the elaboration of social knowledge, both of which operate in the context of Palaeolithic ecological chronology characterized by downturn, refuge and upturn (Fig. 41). Therefore for Gamble, it isn’t the meaning, motive or intention of the art that is germane to the argument; it is its variable role in survival and negotiation. Gamble has stated elsewhere that he takes meaning to be comprised of message + context.

Fig. 41. Graph of Palaeolithic upturn. From Gamble 1991.

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342 Gamble (supra n. 341) 3.

343 Gamble (supra n. 341) 7.

344 Gamble (supra n. 341) 12.

345 Gamble (supra n. 341) 12.

In this way the lavish artwork of the Upper Palaeolithic, whether cave or mobiliary, can be seen as the transmission of social knowledge (messages) embedded in a system of ecologically practical information (context). The ecological information may be the result of individual accumulation whereas the social knowledge is most likely the result of group association. This becomes critical for a populations survival since information about survival and adaptation becomes encoded and ritualized and must be transmitted in unambiguous form.\footnote{Gamble (supra n. 341) 13; For an extensive treatment of other views of Palaeolithic art (such as its use as a means of socio-economic or religious response to environmental changes) see Dickson (supra n. 322) 137 – 158.} Although the forms messages can take are virtually infinite in their variety, the systems they operate in are limited by the nature of the material culture they exist in.\footnote{Gamble (supra n. 346) 88.} The images depicted in Palaeolithic art do involve an overwhelming number of game animals and are found in places that are often too inaccessible not to have been ‘ritualized.’ The issue therefore very much becomes one of interpretation. As Gamble perceptively observes, “We need to become interpreters of signs as well as observers of data, appreciative of inner and outer meanings.”\footnote{Gamble (supra n. 346) 88.}

Although Mithen wants very much to interpret the Palaeolithic material in support of explanations that resolve to the level of individual actors subjectively manipulating vital hunting and foraging information, it seems necessary, for now, to agree with G. A. Clark that we simply lack the systematics or theoretical frameworks necessary in order to resolve the level of the individual in the past and therefore must view the material record in terms of ‘groups and generalities.’\footnote{G. A. Clark, “A Comment on Mithen’s Ecological Interpretation of Palaeolithic Art,” Proceedings of the Prehistoric Society 58 (1992) 107 - 109; 108} Of course it should be obvious given the goal and structure of the work at hand that this statement is made begrudgingly and furthermore that this ‘lack of systematics or theoretical frameworks’ is viewed as a deplorable situation and one greatly in need of remedying. Again, in the
words of Gamble; "Restoring history to the Upper Palaeolithic will in the future have to be conducted with similar sensitivity to their negotiations with their past."\textsuperscript{351}

Although the obvious major categories of prehistoric elaboration, such as art or burial, garner the lion's share of the literature, other categories of material culture are available for analysis in order to assess issues of past significance. Lithic industries are one such category in which expression of esthetic or symbolic principles is held to obtain. This makes intuitive sense since prior to making a tool, of any type, the conception of the tool must exist in the mind of the toolmaker. It should be further pointed out that what is more important than the conceptualization of the tool \textit{qua} tool is the conceptualization of the intended function of the tool. In order to make a scraper one must first have the need to scrape something. Therefore it seems reasonable to assume that tools manufactured in a certain manner (by flaking stone) for similar tasks (scraping hides) by human beings would be similar in form. Since flint only breaks a certain way due to its physical properties, a scraper needs a certain type of edge in order to scrape and human beings have the same hand structure and cognitive machine, it is little wonder that stone tools exhibit similarities the world over. Differences in their form or embellishments to their manufacture are therefore assumed to represent higher order choices, those in the realm of the esthetic or symbolic. The evidence available so far doesn't support the existence of specific symbolic or associative traditions among Middle Palaeolithic assemblages. Chase and Dibble do however find evidence for 'isochrestic' variation (the maintenance of particular forms or functions of tools as a product of traditional choices amounting to a sort of 'ethnic' identity) and feel that this generational transmission of manufacturing techniques constitutes a culture of sorts.\textsuperscript{352} This seems reasonable since teaching someone else how to make a certain tool type, in a certain way, certainly allows for continuity of form and allows for a corresponding reproduction of the adaptation, which is founded upon the use of that tool. The interpretation of the material from Palaeolithic tool assemblages, in terms of observed

\textsuperscript{351} Gamble (\textit{supra} n. 341) 13; Emphasis in the original.

\textsuperscript{352} Chase and Dibble (\textit{supra} n. 316) 269 - 70.
differences corresponding to issues of style versus function (the infamous Binford-Bordes debate) is far from over. The evidence does clearly point to differences among Palaeolithic tool kits and assemblages and whether or not these can be explained by recourse to ‘ethnic’ identity or functional necessity remains to be seen. Chase and Dibble feel that the major regional variations observed among stone tool assemblages are indicators of ‘isochrestic’ styles and are not easily explained by recourse to differences in raw material, environment or use. They conclude that there is no evidence clearly in support of symbolic or iconographic usage of tools during the Middle Palaeolithic.

During the Upper Palaeolithic however there is more evidence to support some form of differentiation among tool assemblages along lines other than form / function. Recently, Anthony Sinclair has argued that a difference existed between ‘simpler’ (tools with a working edge) and ‘elaborated’ (tools which require the piece to be worked as a whole) artifacts and that these differences correspond to different aspects of hunting activities. Sinclair makes some interesting points in his investigation of the way in which tool manufacturing relates to tool usage and more importantly the meaning behind it. He argues, correctly, that there is no division, for prehistoric populations, between the act of creation of an artifact and its interpretation through use and that furthermore, it is not possible to simply view the finished, discarded artifact and not consider the process of manufacture. By calling attention to this fact, he seeks to understand Palaeolithic tool manufacture from the stand-point of the users and makers of the tools themselves, very much in line with this work, in an attempt to give them back their past (in Gambles terms). Sinclair states, “It is only by doing this that we can appreciate and understand the degree of individual variation between pieces, the possible reasoning behind the creation of particular forms, and offer an explanation which accounts for individual agency in the

353 Chase and Dibble (supra n. 316) 270 - 1.

354 Chase and Dibble (supra n. 316) 271.


356 Sinclair (supra n. 354) 51.
creation of symbolic meaning through material objects." This clearly makes a lot of sense, as does his assertion that, "... tools must be seen as items of material culture that are both utilitarian in that they are used to do practical things and also symbolic: they . . . communicate meaning about both the nature of the tasks for which they are used and the people who do them." 

Viewed from within this framework, Palaeolithic lithic variation can be seen to exhibit tendencies towards 'stylist', in which groups of individuals shared a common tool tradition, which was construed as meaningful to them, and therefore elaborated through the particularities of their tool manufacturing. In this way evidence such as the curation and economical reduction of flint observed among Magdalenian populations in Portugal by Thacker can be interpreted as evidence of meaning being assigned to manufacture.

The problems associated with the interpretation of meaning for the Palaeolithic are more troublesome than those associated with maritime adaptation. Temporal distance, gross unfamiliarity with prehistoric life-ways and the spottiness of the material record all provide multiple stumbling blocks on the path to understanding. What does emerge however is that, by fairly early, some populations under some circumstances and in some areas clearly had developed a sense of meaning seemingly related to their ecological adaptation. This should not be surprising since the debate concerning Palaeolithic meaning is more concerned with whether or not this is a feature of 'modern' H. sapiens and what, if any, are the reasons for its development than with establishing its existence per se. After all, human populations (at least by the emergence of 'modern' humans) clearly have cognitive abilities suited to abstraction and elaboration and given the nature of their art, tool types and burial offerings it seems highly likely that the environment played a decisive role in shaping and 'contextualizing' these abstractions.

357 Sinclair (supra n. 354) 51.

358 Sinclair (supra n.354) 60.

and elaborations. Although it seems unfortunate to leave this investigation of Palaeolithic elaboration in such a nebulously unresolved state, the nature of this thesis requires a shift to the Mesolithic and a more focused evaluation of the evidence it provides for contextual elaboration.

MESOLITHIC ELABORATION

A good deal of literature has been devoted to aspects of Mesolithic elaboration. The same types of material categories have been explored as were for the Palaeolithic with special emphasis on mobiliary art and burials. The Mesolithic witnesses an increasingly specialized economy with much more emphasis placed on the adaptation to smaller, more varied eco-zones and therefore should exhibit greater variation in stylistic elements and patterns of elaboration. Differences in tool manufacturing techniques and stylistic composition, preferences in burial styles and more regionally bound art motifs can be taken as indicative of not only increased territorial consciousness but of more complex cognitive categories. These categories should be based on the environment (defined in its broad sense) and as such should reflect continuity from previous traditions and modes of expression as well as awareness of the currently relevant ecosystem. In other words, evidence of elaborated bone artifacts in the Palaeolithic, say batons decorated with horses, can plausibly be construed as indicative of the conceptualization of ‘horse’ (horses were known) combined with an application of valuation (time to carve) which yields an interpretation of the artifact as a meaningful transmitter of contextual knowledge. Whether this conveys the hunters’ prowess, records the seasonality of horse migrations or represents the wielders affinity to the horse ‘clan’ remains conjectural at this stage and in fact is secondary (although by no means inconsequential) to the fact that it demonstrates a conceptual process in which an object from the natural world (horse) becomes connected to an object fashioned from the natural world (bone tool) through the agency of an individual, also of the natural world, acting as the manufacturer of the tool, the observer of the horse and cognitive machine which bridges the two. What is important is the fact that this process involves a very
clear relationship between human agency and the set of objects upon which this agency operates. This relationship, its development and expression, collectively, is what is being considered the process of conceptual category formation. In this way, the various cognitive domains, such as Mithen’s ‘natural history intelligence’ have direct inferential correlations to the data set {natural world} that provides the raw material to fill them. Therefore, populations will tend to elaborate what they know in a manner that is meaningful to them. This is not to say that elaboration of systems of meaning cannot contain other abstractions or ‘foreign’ elements, but simply that at the base-line developmental level, these systems will be constructed around known elements. Populations familiar with coastal eco-systems should then have evidence of marine elements in their elaboration both in form of content (depiction) and context (information transmission). In what follows, Mesolithic elaboration will be investigated in order to demonstrate a pattern that is consistent with the cognitive ecology being stressed in this work. This framework allows sense to be made out of the motifs, artifacts and ritual activities engaged in by southern Scandinavian populations as a result of their adaptation to marine resource exploitation.

As has been discussed, tool technologies during the Mesolithic indicate an increasingly specialized subsistence structure. Evidence for fishing technologies, seal-mammal hunting, boats and the utilization of other marine resources is well documented. The simple fact that these artifacts exist is enough to argue for their importance (and hence value) among Mesolithic populations. This in turn allows for the creation of systems of meaning involving these objects, which derives from the need to create them, their fabrication, use and possession as well as the messages socially transmitted through these things. Of course the argument that these things were meaningful simply because they existed, although held to be the case, doesn’t demonstrate any truly symbolic or higher order conceptualizations being assigned to them. After all the evidence for stone tool making is millions of years old and it seems that no clear evidence for elaboration (in the sense employed herein) exists convincingly any time prior to the Upper

360 S. Mithen (supra n. 32) 68 - 9.
Palaeolithic. Therefore it becomes necessary to look for more acceptable markers of meaning such as decoration or contextual occurrence clearly indicating abstract thought.

Fortunately such examples do in fact exist and furthermore are applied to tools relating to marine subsistence. These include decorated harpoon points, ornamented canoe paddles and purposeful marks on objects that are here being interpreted as marine subsistence tools, namely \textit{nätstickor} and lances. Although other artifacts which display ornamentation and are not specifically designed for marine adaptation (such as axe hafts) out number the ones that do, the clear intent to elaborate the marine artifacts argues for the importance of these objects for some individuals and the groups they comprise. The same argument applies to the marine artifacts that do not have elaboration. The fact that some of them do means that somebody was elaborating a system of meaning.

Numerous bone points and axe hafts are known from throughout the Mesolithic and Clark (J. G. D) devotes a good deal of his investigation of the Maglemose to an analysis of these objects and their ornamentation. Towards that end he separates the art into three categories comprised of 'accentuation of cracks,' geometric designs and biomorphs.\textsuperscript{361} The first category, although possibly indicative of some sort of abstract relationship, is not of concern here since it consists primarily of small lines or 'tick-marks' placed across naturally occurring blemishes or cracks in artifacts possibly to 'nullify' them or incorporate them.\textsuperscript{362} The next category is far more germane to the argument at hand and shows some clear indications of fledgling maritimity (Fig. 42). What is important here is the distinction he makes between the motives in general (as a category) and two specific motives, namely the net-pattern (\textit{o}) and the checker-board (\textit{n}).

These two patterns show, according to Clark, a specific distributional pattern (six out of the nine occurrences of these motives come from Sjælland and Skåne; the other three come from Jutland and Holstein) and he feels, at least in the case of (\textit{n}) that

\textsuperscript{361} Clark, J.G.D (\textit{supra} n. 129) 167 - 76.

\textsuperscript{362} Clark (\textit{supra} n. 129) 167; Clark does however state that this interpretation should be adopted with reserve.
the occurrence of this motif corresponds to, "... an aspect of the economic basis of the culture."\textsuperscript{363} The final category is composed of biomorphic figures and includes representations of animals and humans.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{mesolithic_motifs.png}
\caption{Mesolithic motifs. From Clark 1970.}
\end{figure}

He doesn’t go into much detail concerning these objects although he feels that they don’t represent very ‘naturalistic’ representations and cites two examples (the perforated antler from Skalstrup (Fig. 43) and an antler haft from Ystad, in Sweden) both of which he pointedly concludes represent, "... somebody’s idle moments."\textsuperscript{364} Later on issue will be taken with this interpretation but for now let it suffice to say that Clark does

\textsuperscript{363} Clark (\textit{supra} n. 129) 174 - 7.

\textsuperscript{364} Clark (\textit{supra} n. 129) 175 - 6; Clark later rethinks this assertion, Clark (\textit{supra} n. 130) 157.
a good job marshalling the evidence and even attempts to correlate the occurrence, patterning and composition of Mesolithic art motives with Palaeolithic and Arctic art groups. He concludes that connections are tenable between the Maglemose and the Magdalenian art traditions but not between Maglemose and the Arctic art group.\textsuperscript{365}

\textsuperscript{365}Clark (\textit{supra} n. 129) 189; Clark (\textit{supra} n. 130) 148, mentions the definite occurrence of 'Maglemosian' patterns in the Magdalenian and calls particular attention to an engraved Palaeolithic mammoth tusk with a plaited net pattern from Elisavichi in the Desna basin.
Similarities observed between the bone ornaments from Denmark (Fig. 44) and the rock carvings from Skogerveien and Glemmestad (Fig. 45) must simply then represent 'common' ways of depicting human figures just as the Magdalenian bone point illustrated in Kozłowski (Fig. 46) and the rock carvings from Scandinavia, such as that from Bjornholm (Fig. 2) may represent 'common' ways of depicting boats. Obviously such tenuous linkages cannot be asserted as a convincing argument for continuity between an Upper Palaeolithic art form and one as resistant to dating as rock art. It does however point out two comparisons missed by Clark that could be interpreted as showing connections in northern Europe among Magdalenian, Maglemosian and Arctic art groups.

Fig. 44. Mesolithic ornamented objects. After Clark 1970. (5/6, 5/9)

Fig. 45. Rock carved people from Norway. After Mikkelsen 1986.

Fig. 46. Bone point with decoration from the Magdalenian. After Kozłowski 1979.
It is not the goal of this section to establish these continuities, nor to point out errors in previous works. It is however necessary to point out that decorated objects are a vital link between the static material record and the vibrant conceptual past and as such need to be examined from within a framework that pays as much attention to the nature and relationships of social identity construction as it does the typological characteristics of a particular piece.

An investigation like this has recently been conducted by George Nash. In an analysis of decorated objects from Scandinavia he argues for the need to, "...link the ecological to the social" and to create a more humanised discourse.\textsuperscript{366} Pursuant to this he uses ethnographic analogies, a review of the literature dealing with Mesolithic art and essentially a Straussian structural approach to deconstruct the grammar of Mesolithic portable art. His very reasonable argument is that this art acted as means of expression for social and territorial identity and furthermore, "...signifies a symbolic relationship / affinity with the artists surroundings."\textsuperscript{367} Nash further states that the tools on which this art is found should not be interpreted as tools \textit{per se} but rather as symbolic tools, since they are produced in the same manner as their particular tool form dictates but are encoded through a linking of the domestic with the symbolic.\textsuperscript{368}

This is in agreement with the interpretation of Palaeolithic art discussed above in which the rich art of the Upper Palaeolithic is a socio-ecological text manipulated by individual actors and comprised of abstracted, codified social knowledge and practical information. This understanding of art as a symbolic text designed to transmit knowledge and information fits well with the arguments for conceptual category formation being advanced here. In order for a given piece of 'art' to be able to convey any information whatsoever, it must exist as part of a system in which its existence as an artifact is recognized and in which the 'rules of grammar' that govern its message are

\textsuperscript{366} Nash (\textit{supra} n. 192) 23.

\textsuperscript{367} Nash (\textit{supra} n. 192) 70.

\textsuperscript{368} Nash (\textit{supra} n. 192) 52 - 3.
understood. These rules derive from the construction of systems of meaning since the code that a given bāton (for example) uses to convey its message is socially constructed around information and knowledge derived from the environment. Therefore, examples of Mesolithic art can reasonably be assumed to have acted as transmitters of information in the past concerning such things as social identity and perhaps knowledge relating to adaptation. Clearly this understanding of Mesolithic art as social text stands greatly removed from that of Clark’s (J. G. D.) ‘idle moments.’

Even a selective, cursory examination of Mesolithic art demonstrates the existence of differences in motif patterns, composition, type and distribution of artifacts throughout the Mesolithic in Scandinavia. Nash concludes that two distinct patterns of influence appear separated by geography and time. The geographical division is that between Sjælland and Jutland and the chronological one that between the Maglemose and the Ertebølle.369

The patterning and composition of art motives is structured and complex for the Maglemose whereas in the Ertebølle it seems to be comprised of simple designs arranged in a complex manner.370 According to Nash’s revised motif system (Fig. 47) certain compositional patterns are demonstrated to occur. These involve differences in the complexity (number of motifs present) and distribution (geographically) of ornamented tools over time. Particular differences can be sited for specific motifs such as ‘wheat-sheaf’s’ which do not occur on Sjælland and parallelograms which do not occur anywhere but.371

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369 Nash (supra n. 192) 54.

370 Nash (supra n. 192) 54.

371 Nash (supra n. 192) 124 – 6.
Fig. 47. Revised Mesolithic motif system. After Nash 1998.

Furthermore there appears to be a definite pattern concerning the overall complexity of artifact elaboration throughout time over Denmark as a region (Fig. 48). This distribution makes the Kongemose period look like a Mesolithic ‘dead-zone.’ The
Kongemose however contains a high number of artifacts with more than 5 motifs present, which is taken by Nash to indicate that ideas are being shared.\textsuperscript{372}

![Graph showing ornamented artifact complexity over time. From Nash 1998 (scale reflects histogram percentages).](image)

If in fact these artifacts acted as transmitters of identity, social knowledge and adaptive information then the Kongemose, during which marine subsistence activities increasingly came to play a major role should exhibit particular patterns of expression explicitly linked to these changes. This should be displayed by a preponderance of marine related objects bearing decoration as well as clear preferences for marine motifs. Although many of the motifs (for example those of type $i$ or $vii$) would be difficult to assign direct correlations with activities, other motifs (such as type $iii$, $v$ and $viii$) appear more accessible. Accepting the idea that these elaborated tools conveyed information

\textsuperscript{372} Nash (\textit{supra} n. 192) 37.
that was intelligible within a system involving the actor in an environment makes the simple occurrence of different motifs and compositions important in and of itself. It seems that motif v, for example, the zig-zag motif, occurs primarily on Sjælland (68%) and consistently throughout the Mesolithic.\textsuperscript{373}

Motifs such as the mesh motif show specific distributional patterns as well. It seems however that the expected occurrence of these patterns and motifs assumed to correlate to maritimity does not occur at the time when the material evidence indicates increasing reliance on marine resources. In other words, divisions of motif patterns, which should indicate conceptual awareness of the ‘sea’ as an abstract category, should appear most frequently during the Kongemose on Sjælland. This appears not to be the case however.

Nash states that, according to his sample, the mesh motif (Fig. 47, viii: 60 - 62), which comprises 29% of the total sample, contains a majority (19%) that is geographically confined to Sjælland but dates to the Maglemose.\textsuperscript{374} Of course only 11% of the total artifact sample investigated by Nash comes from the Kongemose.\textsuperscript{375} Since Nash is primarily arguing for the expression of social identity through art he is more concerned with establishing a pattern of motif representation and composition than he is with interpreting the particular motifs. He shows therefore that patterning does exist in the distribution of motifs and the tendency for them to be organized in complex or simple patterns. He finds, for instance, that Sjælland yields no simple, complete design variants, which indicates to him a higher percentage of artifacts that express more complex and unique designs.\textsuperscript{376} His attempt to establish the ‘grammar’ of Mesolithic artistic expression yielded some interesting observations. Perhaps one of the most pertinent for this investigation is the fact that animal and human design motifs, when

\begin{itemize}
\item \textsuperscript{373} Nash \textit{(supra n. 192)} 49.
\item \textsuperscript{374} Nash \textit{(supra n. 192)} 44.
\item \textsuperscript{375} Nash \textit{(supra n. 192)} 48.
\item \textsuperscript{376} Nash \textit{(supra n. 192)} 48.
\end{itemize}
incorporated, seem to be organized around a principle which places them in a position of prominence on the artifact and creates a spatial relationship with other motifs present which establishes a 'possible narrative or meaning of occasion' to the artifact.\textsuperscript{377} His ultimate analysis concludes that these ornamented objects represent visible ways whereby one can 'control, communicate and . . . manipulate power.'\textsuperscript{378} These artifacts and their encoded messages acted as transmitters of information about the social alliances and political networks of their owners and helped shape, manipulate and solidify ideologies.\textsuperscript{379}

What can the patterns and motifs present, as well as the types of artifacts they occur on, tell us about the ideologies these people were constructing and manipulating through their 'powerful' art? If a clear-cut chronological and spatial distribution occurred in certain motif patterns then perhaps a case could be made for the importance of fishing on Sjælland during the Kongemose or elk hunting on Jutland during the Maglemose. Unfortunately the case isn't this cut and dried. The fact that many of the artifacts represent the Maglemose and Ertebølle, as opposed to the Kongemose, could be a sampling bias affecting the interpretation of the role of motifs such as fish or mesh during this time. The types of artifacts elaborated could possibly indicate differing conceptual frameworks. Here again however the distribution and chronological arrangement is inconclusive. If it is accepted that Mesolithic mobiliary art functioned as a means of expressing social identity and information about one's self and the group that one belonged to then the fact that artistic representational complexity on artifacts declines drastically during the Kongemose (Fig. 48) doesn't appear to support the idea that maritimity began at this stage. In fact three of the most elaborated and by implication symbolically important 'texts' existing from the Mesolithic, the antler axes

\textsuperscript{377} Nash (\textit{supra} n. 192) 49.

\textsuperscript{378} Nash (\textit{supra} n. 192) 71.

\textsuperscript{379} Nash (\textit{supra} n. 192) 71 - 3.
from Skalstrup, Ryemarksgård and Ølby Lyng, date from the Maglemose and Ertebølle respectively.

The axe from Skalstrup (Fig. 43) depicts what may be a fish and what has been interpreted as an eel as well as numerous mesh patterns. The axe from Ryemarksgård (Fig. 49) contains 5 human figures walking towards a set of zig-zag lines, which are taken to represent water. Nash interprets this scene as magical and feels that it possibly represents a shamanic ceremony in which figures are being escorted through a transition from life to death.380

![Diagram of the axe from Ryemarksgård. From Nash 1998.](image)

Finally the axe from Ølby Lyng (Fig. 50) clearly depicts a fish along with numerous bands, triangles and what appears to be a good ‘net’ representation. These artifacts show that for Maglemose and Ertebølle populations, fish, water and aspects of marine subsistence were meaningful. Even if the exact ‘text’ encoded in these artifacts remains unclear, the fact that marine (or at least aqueous) motifs were being incorporated into these tools is seen as significant. In the final chapter of this thesis, an interpretation of these artifacts will be offered which incorporates the evidence for increasing marine resource utilization, the idea of socio-ecological text construction and the process of valuation discussed earlier into a plausible framework of meaning herein.

380 Nash (supra n. 192) 41.
being called maritimity. For now let it suffice to say that there exists clear evidence of elaboration, involving aqueous subsistence resources and technologies from at least the Maglemose.

![Axe diagram](image)

Fig. 50. Axe from Ølby Lyng. From Nash 1998. (not to scale).

Evidence for the existence of a system of meaning centered on marine adaptation does not only come from the particular motifs employed on tools but from the tools themselves. Examples of artifacts that involve marine resource utilization and which are
elaborated exist as well. This refers primarily to harpoon points and the wonderful paddles from Tybrind Vig. The fact that these particular implements are decorated strongly suggests their value to the decorator.

Decorated harpoons are known from various locations throughout southern Scandinavia. The majority appears to date from the Ertebølle. This is probably due to the fact that most harpoons known from the Mesolithic date to the Ertebølle although a few are known from the Kongemose.\textsuperscript{381} As was discussed earlier, this may be a sampling bias since Clark’s ‘Törning’ type bone point (Fig. 15, no. 9) is convincingly harpoon-like and occurs in Maglemose contexts.\textsuperscript{382} Additionally, given the existence of Azilian harpoons it seems likely that the technology was known. Interestingly, one of the oldest known bone-working traditions, dating to about 90,000 BP, was recently discovered in Zaire and included among the artifacts was a harpoon.\textsuperscript{383}

Obviously, this is a bit far a field for the discussion at hand but it shows the antiquity of the harpoon as a tool type, making it possible for harpoons to have been known and perhaps utilized in southern Scandinavia earlier than currently accepted. In any case, whatever evidence may or may not exist for harpoons during the Late Palaeolithic or Early Mesolithic, no evidence of decoration exists prior to the Middle to Late Mesolithic.

Examples of decorated harpoons include the one found at Tudeå, west Sjælland (Fig. 51); the one from Skateholm II (Fig. 52); a fragment from Skateholm I (Fig. 53); and the bone point from Bloksbjerg (Fig. 30). The Tudeå point was fashioned from a decorated antler axe as was the one from Skateholm I.\textsuperscript{384}

\textsuperscript{381} Andersen (\textit{supra} n. 168) 73.

\textsuperscript{382} Clark (\textit{supra} n. 149) 115.


\textsuperscript{384} Andersen (\textit{supra} n. 168) 58.
Fig. 51. Harpoon from Tudea, made from antler axe. After Andersen 1995 – 1996. (1:2).

Fig. 52. Harpoon from Skateholm II. After Andersen 1995 – 1996. (1:2).

Fig. 53. Harpoon head from Skateholm I. After Andersen 1995 – 1996. (1:2).
This may be significant in terms of continuity between the early Mesolithic (where antler axes occur as common items and may have been ‘badges of office’ of a sort, in terms of Nash’s arguments concerning art as social communication) and the Late Mesolithic wherein perhaps harpoons functioned in the same way. The primary motif on the Tudeâ harpoon, the triangle (motif number 22) frequently occurs on other bone points and antler axes from Sjælland. In fact, in the material examined from Sjælland by Nash, triangles never occur only by themselves and furthermore there appears to be some congruence between the occurrence of triangles, zig-zags and fish motifs on certain types of objects (Fig. 54).

It is interesting to note that the occurrence of triangles, fish and zig-zags show clear peaks on antler axes, bone points and perforated antlers. Perhaps there is a
relationship between the decorations and usage after all. If harpoons, such as that from Tudea and Skateholm I, were being fabricated from axes, which contain similar motifs as the harpoons (zig-zags / triangles) then perhaps this reuse signifies shifts in political or social ideology related to subsistence practices. Of course the evidence is far from conclusive and a larger sample of harpoons, preferably from a longer chronological span, as well as a more in depth analysis of the relationship of particular motifs in regard to particular artifact types is necessary before such assertions can be validated.

As it stands, there is tantalizing evidence that something significant is going on conceptually among these people in terms of their relationship to their environment, especially the marine aspects of it and how they identify themselves with it. What is sure however is that the evidence of elaboration on marine related artifacts is clear. This is indicated in the case of ornamented harpoons, not only by the practice of decoration itself, but also, in some cases by deposition in the context of burial.

The harpoon from Skateholm II comes from grave IV and was placed near the deceased’s left arm.\textsuperscript{385} In addition to the harpoon were two grinding plates, which, as mentioned earlier, seem to correlate to maritime adaptations. Although no clear evidence of direct marine elaboration can be linked to burials for the Mesolithic, evidence is available to lend support to the idea of conceptual awareness of marine adaptation during this time. In addition to the fact that the cemeteries at Skateholm contain evidence of importance being assigned to marine technology (such as the harpoon) they also show clear preferences in the food-material represented. Turbot and mackerel are known from the graves from Skateholm II (Ertebølle in date) and there appears to be an overwhelming preponderance of stickleback, which has led to the conclusion that specialized fishing practices took place at the settlement near by.\textsuperscript{386} Of course the highest percentage of fish bones present come from pike and perch and it has been


deduced that marine fishing played a minor role in the economy of the settlement.\footnote{Jonsson (supra n. 383) 78.} It is clear however that the settlement was placed to take advantage of the maximum number of exploitable biotopes.\footnote{Jonsson (supra n. 383) 77.} In addition, Jonsson mentions that the occurrence of pine marten skeletal remains (especially skulls and mandibles) in the burial material at both Skateholm and Vedbæk indicates the importance of these creatures in personal adornment.\footnote{Jonsson (supra n. 383) 83.} This seems interesting and aside from the martens use as a fur-bearing animal (indicated by special usage sites such as Ringkloster) they may have had some sort of symbolic significance; perhaps because they catch fish?


Cemeteries actually make their first appearance in the Mesolithic and exhibit some interesting similarities. These areas are taken to be the bounded disposal zones of the dead and may act as social markers for the legitimization of resource areas based on ancestral ties to the land. Arthur Saxe hypothesized that such bounded and controlled areas for the dead would correlate to usage rights based on descent from the ancestors.\footnote{D. K. Charles, “Diachronic Regional Social Dynamics: Mortuary Sites in the Illinois Valley / American Bottom Region,” in L. A. Beck, ed., \textit{Regional Approaches to Mortuary Analysis} (New York 1995) 78.} This hypothesis, Saxe’s ‘number eight’ was later modified by Charles who tied settlement patterns into these claims for access and stated that groups which reside in environments where the resource base supports sedentary or restricted mobility will develop such markers whereas those that rely more heavily on mobile subsistence means will not.\footnote{D. K. Charles, “Diachronic Regional Social Dynamics: Mortuary Sites in the Illinois Valley / American Bottom Region,” in L. A. Beck, ed., \textit{Regional Approaches to Mortuary Analysis} (New York 1995) 78.} Given the fact that all cemeteries known from the Mesolithic are coastal (albeit not all marine but in sight of water sources) perhaps there is something to this
after all. 393 In addition to their placement, they exhibit patterning in terms of distinctions along the social dimensions of age, sex and personal achievement. 394 In addition, Clark and Neely conclude that the patterning of regional variability observed is probably linked to adaptation, which in turn is related to the environment and the resources available. 395

The idea of cemeteries originating as areas for the disposal of the dead in order to validate territorial claims, especially among populations which are in the process of establishing sedentary settlement systems due to resource availability accords well with the general pattern of Mesolithic development being investigated here. As the Mesolithic progressed, changes in climate and available resources led to an increasing utilization of marine resources, which in turn led to the need for controlling access to these resources. This in turn would have led to the development of not only cemeteries as territorial markers but also forms of social and ritual identification in order to express relationship with others sharing these resources. In order to develop such things as cemeteries as territorial markers or ornamented art as social badges it is first necessary to have a conceptualization of that which is being expressed. For coastal populations with a marine orientation that conceptualization would be maritimity. Of course the evidence from burials doesn’t clearly support this for the Mesolithic. If maritimity was the operant conceptual category for these populations, one would expect to find more marine related artifacts in burial contexts than is known. The fact that some artifacts with a marine orientation are found in some burials clearly indicates that somebody was aware of the value of these tools but it doesn’t prove the existence of maritimity as operational for the whole population.

The evidence for a maritime component in the burials at Skateholm and Vedbæk-Bøgebakken may be slight but it is there. In comparison, Janzon, in discussing Middle

393 Mithen (supra n. 29) 100 - 1.
395 Clark and Neeley (supra n. 391) 126.
Neolithic cemeteries from Gotland remarks that cemetery formation correlates to subsistence and calls these cemeteries “schools of fish.” These cemeteries, especially the one at Ire exhibit a high percentage of marine indicators, especially fish, in their composition. Janzon’s analysis brings out several interesting points especially concerning the marine elements of the graves. He finds that harpoon heads are generally confined to men’s graves but fishhooks and leister prongs occur in both male and female graves.

In addition to the numerous fishhooks and harpoons present in the graves from Gotland, Dentalium shell ornaments occur as well, and since these shells only occur at depths around 20m, this indicates some method of deep-water exploitation, which in turn argues for the importance of sea-craft. One other aspect of these graves needs mentioned. This concerns the evidence for poplitear pitting observed among the burials from Ire, Visby and Västerbiers. This condition, in which pits form in the hip-bone in order to facilitate the attachment of special muscles has been found to correlate to forward weight shifts (such as archers' position and paddling) and occurs only among the male burials. The ultimate analysis of these graves leads to the conclusion that these peoples not only placed great reliance on marine resources, but also that they were conceptually aware of this importance and furthermore they maintained ties with other ethnic groups, “...by dint of long-range boat journeys.”

Although these graves are Neolithic in date they clearly demonstrate not only marine reliance but elaborated aspects of it. It would perhaps be beneficial to review the skeletal material from the known Mesolithic burials in southern Scandinavia in order to determine if any patterning of poplitear pitting occurs. The point Janzon makes


397 Janzon (supra n. 393) 131.

398 Janzon (supra n. 393) 133.

399 Janzon (supra n. 393) 136.

400 Janzon (supra n. 393) 137.
concerning the boat voyages echoes Nash’s assertion that the group alliance networks of
the Mesolithic functioned similarly to that of the Kula Ring of the Trobriand Islands. 401

This scenario, in which groups of Mesolithic peoples maintained ties through the
ritual exchange of goods and artwork, is an appealing idea. The fact that watercraft exist
from the Mesolithic, the motifs and composition of decorated artifacts show patterning
throughout space and time and it is known that marine resources played a significant role
during the Late Mesolithic certainly allows for this type of practice. In this respect the
ornamented paddles from Tybrind Vig may have indeed functioned as markers of
personal or group identification. 402 These beautifully decorated Ash paddles most
definitely signify valuation. They show very clearly that Mesolithic populations were
aware of such issues as identity and meaning. This in turn argues for the existence of a
conceptual framework in which to place the importance of these particular objects.

In order to be able to accept the use of these paddles as markers of identity for
their users, one must first accept the conceptualization of ‘identity’ on the part of the
user. In light of the above information concerning the creation and utilization of
ornamented objects as tools of social identification and knowledge transmission, it
seems plausible to assume that populations inhabiting southern Scandinavia during the
Middle and Late Mesolithic were aware of their identities (as separate from others) and
furthermore linked it to what they did in terms of their adaptations and technological
developments that enabled that identity. Although the evidence for ‘ethnic’ groups
among Mesolithic populations is not conclusive, recent work has been done in order to
show some general patterns in the composition of populations throughout northern
Europe. Even the work of Newell, et al., failed to come up with any conclusive
resolution to the issue of ‘ethnicity’ in the past and instead concludes that it is up to
regional specialists to resolve the scale in their particular area. 403

401 Nash (supra n. 192) 58 - 9.

402 S. H. Andersen, “Mesolithic Dug-outs and Paddles from Tybrind Vig, Denmark,” Acta Archaeologica
57 (1986) 87 - 106; 104.

403 R.R. Newell, et al., An Inquiry into the Ethnic Resolution of Mesolithic Regional Groups: The Study of
Their Decorative Ornaments in Time and Space (Leiden 1990) 386 - 7; They do however show resolution
If in fact 'ethnic' divisions occur within this area, they will be able to be resolved in the future with recourse to better methodologies, more finds and more analyses of the type exemplified by Nash. Until then, any discussions of particular tribes or bands, such as the 'sea people' or the 'mammoth people' need to stay grounded in the reality of the material record. Even so, it seems clear that for populations inhabiting southern Scandinavia during the Late Mesolithic, the sea was in their conceptual awareness and furthermore, they took time to express that awareness.

SUMMATION

It seems that the tendency to elaborate functional objects or to make ceremonies out of behaviors or activities (such as hunting or death) is as old as humanity, at least the 'modern' version of it. This tendency seems rooted in the need to communicate information and identity. The idea of Stone Age populations manipulating objects of art or symbolic motifs in order to structure, manipulate and create the social world around them makes intuitive sense. After all, these 'modern' humans were no different than us, save in terms of technology and the resultant amount of 'clutter' they had to respond to. In this way Palaeolithic antler batons or Mesolithic ornamented canoe paddles are not fundamentally different from McDonalds billboards or gang colors. This is not to trivialize the behavior of these prehistoric populations but rather to acknowledge that the need for identity and a sense of 'group' is a human universal.

Whatever stance one takes in the interpretation of the meaning of prehistoric art and elaboration the bottom line is that it is held to have been meaningful to the people creating it. As such, it is not only the act of creating the image itself that is meaningful, but the content of the image as well. The fact that an individual in the Stone Age took the time to incise or carve an image onto a bone tool implies its value for that individual. Furthermore, the fact that this sort of elaboration is visual and therefore intended to be seen implies a larger social context in which the image incised operated. In this way it is significant that fish are being depicted and harpoons decorated during the Mesolithic of

on large areas around the preference for certain types of bone or shell in ornament composition although they don't address the ornamented art at all.
southern Scandinavia. In light of the changes taking place geologically and socially during this time it seems clear that the sea was becoming increasingly a factor. The existence of net motifs, zig-zags and fish on antler and bone objects, decorated harpoons and canoe paddles and the inclusion of harpoons in graves all imply some sense of significance being assigned these objects and activities. More importantly, it implies a mind-set in which these things can have meaning in the first place. As Nash points out, in discussing Mesolithic portable art: “Conceptual ideas from the human mind are being expressed as a medium onto a surface.” This conceptualization underlies all aspects of expression since in order to express something it must exist as a concept to be expressed.

For Mesolithic (and even Palaeolithic) populations to express and encode marine related motifs and technologies, strongly implies the existence of a conceptual category in which these things can be held as meaningful. In addition, the possibility of these coded social texts being the vehicles for the transmission of knowledge about the social and natural world cannot be ignored. In this way, Rault’s idea of a ‘ritual seascape’ may in fact not be that far from accurate. Although concerned mostly with Megaliths along the Atlantic coast of Europe his idea that these structures represented claims to fishing rights or ancestral territories may in fact have some basis and more importantly some antecedents in the Mesolithic. In any case the idea of ‘seascape’ or ‘social text’ or any other explanation of the existence of Mesolithic motifs and symbols to express meaning requires some sort of conceptualization on the part of the people themselves. This conceptualization did in fact exist and can be called maritimity since it deals particularly with marine adaptation.

The following chapter provides a synthesis of the evidence gathered so far in support of maritimity. In addition to discussing the formation of this category, it explores

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404 Nash (supra n. 192) 70.


406 Rault (supra n. 402) 15.
the possible origin of the social text this concept was embedded in and the system of meaning it formed. Finally, the idea of maritimity is used as an explanatory framework in an attempt to interpret several Mesolithic ornamented objects and to reconstruct the contextual meaning they held for their users.
CHAPTER VII

THE MEANING OF MARITIMITY

INTRODUCTION

It remains now to synthesize the various strands of argumentation and information presented in the preceding chapters. The purpose of this work is primarily to argue for an understanding of the past (in this case a particular past, that of prehistoric Scandinavian coastal populations) from within a framework of empirically grounded data that are reasonably interpreted. This entails using the material record to interpret, by means of reason, particular systems of past behavior and thought. In other words it is possible to reconstruct past belief systems, within generally defined parameters and to approximate the cognitive domains of prehistoric populations.

Since these cognitive domains are the result of human interaction with the natural world \( \{N\} \), and it is held that reason for all is universal, it should be possible, by means of assessing the evidence for a particular populations adaptation to a specific environment and the material record which results from that adaptation, to reconstruct that domain. Maritimity is just one such domain and can in fact be reconstructed through the application of reason to observable data; in this case, common sense assertions about the role of marine elements in the lives of people living by, from or by means of the sea.

Therefore the evidence for the increasing utilization of marine resources, the creation of technologies related to aqueous resource extraction and the tendency for sites to be coastally located can be combined with the evidence for elaboration of marine related tools and the existence of marine motifs into a coherent ‘text’ of adaptation and the resultant valuation of that adaptation. Furthermore, when this elaboration is viewed from within a framework of eco-psychology and in light of the system discussed earlier whereby meaning becomes assigned, it is possible to offer an interpretation of the past, which is held to be much clearer and more accurate than is traditionally accepted. Since archaeology is concerned with the reconstruction of the past, an act that is essentially the creation of a text, offering an interpretation of the past is the best that can be hoped for.
However, this doesn’t mean that one interpretation is as good as another. It is being argued here that interpretation need not be irresponsible and that to assert an opinion concerning the past and the way in which it was experienced by the actor in that past, is possible with a greater degree of accuracy than previously accepted.

Processual or the ‘new archaeology’ with its emphasis on positivism and ‘hard’ evidence in order to understand past systems of behavior (very much in an operational context) was criticized for ignoring the subjective role of individuals (held to be ‘invisible’ in the past) by the postprocessualists. The Postprocessualists in turn opened the door for a wave of subjective relativism ushered in by Post-Modern literary theory and ideas from Hermeneutics and Critical Theory. Although it was certainly necessary to call attention to the role of the individual and to point out the often inexplicable behavior human beings are prone to, this by no means invalidates the universal nature of the organism *Homo sapiens* nor does it mitigate the structural reality of the physical world that organism lives in. Therefore, any responsible interpretation of the past must take into account not only the individual, subjective actors creating the material record from which the past is reconstructed, but the physical processes that the ‘past’ operated under and by which the material record was formed. In this way the reconciliation of processual and postprocessual archaeologies is found in interpretive archaeology. After all, maritimity is a construction of a particular author at a particular time under the stimulus of particular variables all synthesized from within a certain understanding of the past. Therefore it represents an interpretation of a series of behaviors and inferred actions in the past, reconstructed from the evidence of those behaviors and actions, based on principles held to operate for all people in all circumstances. This refers to the tendency for human beings to assign meaning, through a process of valuation to objects in their environment (in the broad sense). In this way, maritimity presents a unique opportunity to investigate this process since it represents a particular adaptation process that is not ‘natural’ for human beings since it is generally accepted that genus *Homo* has never been considered *aquaticus*. Therefore, through an analysis of the development of marine adaptation and an understanding of the ways in which human beings
meaningfully structure their environment it is possible to reconstruct a prehistoric
cognitive domain and use this reconstruction to illuminate symbolic objects operating
within that domain.

REVIEW

The organization of this work reflects not only the problems inherent with the
reconstruction of systems of meaning in the past but also the limitations of ‘traditional’
archa...
Fig. 55. Relationship of technology to adaptation.

Meaning enters into the equation when value judgments are being made concerning the success of a particular adaptive strategy. This was discussed earlier in the case of the harpoon point. A tool that is created to meet the needs of a particular environmental circumstance is valuable only so far as it succeeds. This is determined by the perceived need to adapt. After all, what good are fishhooks if one doesn’t need to fish? It is being argued here that not only are they not any good, but further they simply won’t exist in the absence of the environmental variables which require them. The more
necessary the perceived adaptation, then the more valuable the tool that enables it. The more valuable the perception of the tools and the success of the adaptation, the more likely it is that systems of meaning will develop centered on that adaptation and the tools (be they material or social) that enabled it. The bottom line is that a system of meaning develops around factors that are intelligible to the participants of that system. In the case of prehistoric populations, these are held to derive from the environment. In this way it makes intuitive sense to expect aspects of prehistoric symbolism and elaboration to reflect the very real environmental needs and desires of the population.

For prehistoric northern European populations, the environment was often unstable if not actually hostile. The changes attested to in the ecological record from the Bølling through the Late Atlantic Period are mirrored in the material record. As the environment changed so too did the resource base available to prehistoric populations. In terms of subsistence this can be seen in an increasing tendency to exploit regionally local niches with a resultant shift in technologies geared for smaller, more varied game species. A noticeable change is the inclusion of fishing practices in the subsistence activities of Mesolithic populations. A clear tendency for aqueous resource exploitation is observable during the Mesolithic as is a settlement system that takes advantage of these resources. This preference can be illustrated by a graph of Settlement Placement over time which shows a drastic increase in the visibility of marine oriented site location around 8,000 BP (Fig. 56).

The values for this chart come from Appendix C, which is concerned with the calculation of a general MRI graph for the area studied spanning the end of the Palaeolithic until the beginning of the Neolithic. All the material and the sources used to determine the values in the graph are discussed in it. In general it reflects the tendency to place sites near marine coastlines, be they estuarine, lagoon or open coast. As can be seen from the following chart, there is agreement between the distribution of sites based on their SP values and the sea level changes affecting Denmark during the Holocene (Fig. 57).
Fig. 56. Settlement preference over time.

Fig. 57. General shore displacement for Denmark.
This chart was compiled from information taken from Christensen.\textsuperscript{404} It should be pointed out that this information is far from complete. Christensen's article does however reflect some of the most recent work undertaken in order to understand transgressions and their role in shaping archaeological factors in this area. It does however, show the same drastic break around 8,000 BP. The settlement patterns and subsistence activities of these populations seem to follow the patterns established by Whitlam for MDE (mobile dispersed extensive) type systems in that small groups of mobile individuals, most likely organized into larger aggregate groups by aspects of technical style and conceptual patterns, were dispersed throughout the landscape with clear preferences for particular site locations. In this case it is for coastlines. Although Whitlam feels that Scandinavia should be characterized by MDI type systems (mobile dispersed intensive) this is based largely on the evidence from middens and specialized marine mammal hunting attested to from higher latitude locations in Norway and Sweden. The environmental conditions and the patterning of the material record concerning tool types and faunal profiles, at least for the Mesolithic, demonstrates a much broader subsistence technology and exploitation strategy than his criteria for MDI systems supports.

This is not surprising given the diversity, richness and sustainable yield these eco-zones provide. As the climate, flora and fauna of the region changed, so too did the patterns of the people with respect to utilizing these new resources. This then, it what is meant by the Marine Resource Index discussed in Chapter III. This index is a tabulated evaluation of this increasing marine utilization over time. This can be clearly seen in the following chart (Fig. 58).

As can be seen, there is a clear chronological progression of marine reliance for northern Europe from settlements of Hamburgian type through those of Ertebølle type. Interestingly the Early Kongemose shows an MRI spike compared to the earlier Maglemose and the Later Kongemose. This could be the reflection of an initial adaptation phase in which large-scale adjustment to an essentially new biotope is taking

\textsuperscript{404} C. Christensen, "The liitorina transgressions in Denmark," \textit{Man and Sea} (Exeter 1995) 15 - 21.
place. This is followed by a general decline in MRI values perhaps indicating a 'complacency' of sorts with regards to marine factors.

Fig. 58. Graph of MRI values over time.

This may represent a pattern of 'commonplace' adaptation during which marine resource utilization was taken for granted. The next large spike corresponds to the Ertebølle Phase and contains some of the clearest indications of maritimity known. By this time period, marine resource utilization was most definitely well developed. The large number of sites with marine implements, coastal locations and decorated marine
items (such as the paddles from Tybrind Vig and the axe from Ølby Lyng) surely indicates a system of value operating in the minds of these prehistoric populations with regards to marine oriented ways of life.

The fact that marine resource utilization does in fact increase over time is not in and of itself a massively significant realization. Establishing a clear pattern of this reliance is however necessary in order to argue for cognitive domains derived from it. Therefore, since this increase in reliance on marine factors has been substantiated, it is now possible to discuss the possible cognitive factors that derive from it.

MARITIMITY IN MIND

Since marine factors are increasingly visible in the material record over the Mesolithic it seems reasonable to conclude that they were thought about. Someone must decide that fishing (the extraction of fish from their habitat) is necessary, or at least desirable, prior to fabricating a technology to do so. Therefore as the need to adapt to a new environment is formulated, the human cognitive engine turns out solutions, which as stated earlier tend to be technological. As this technology is created it becomes valuable in so far as it is successful in allowing adaptation. In this way a fishhook is meaningful to the fisherman and to his family and the group that eats fish. Over time these activities are not simply taken for granted. They become ingrained. The people doing these activities identify with them and assign them meaning. People assign meaning based on the value an object or idea obtains as a result of the feedback generated between the object and the context the object operates in. In other words fishhooks wouldn’t exist outside of their context as tools for catching fish just as the meaning a fishhook has for a fisherman cannot be understood out of the context of fishing.

The understanding of context is of primary importance in reconstructing a system of meaning. In this case the context consists of human populations adapting to a novel environment. This adaptation surely took place and there is no reason not to accept that it had an impact on the cognitive domains of these populations. In fact it is held that this
adaptation occupied a particular domain field of these populations. In this way the
adaptation to marine resource utilization occupies a field in Mithen’s natural history
intelligence. In fact maritimity most correctly results from a synthesis of natural
history, technical and social intelligences. For a population actively adapting to a marine
environment there is very little separation from what one does, how one does it and who
it is that is doing it. In other words, we are what we think we do.

In general successful adaptation requires the perceived need to adapt, the
technical capacity to do so and the ability to transmit the adaptive strategies developed to
others. It is exactly this synthesis that maritimity enables. The need to adapt is not an
individual enterprise since the concept of adaptation itself applies to populations.
Although these populations are comprised of individuals, it is the group that collectively
‘adapts’ to an environment and thereby continues its existence. This existence, for
human populations, requires communication and the transmission of knowledge
concerning the process of adaptation. The information transmitted therefore comes from
the domain field extracted from the adaptation. In this way, the ability to make fishhooks
or harpoons, the uses those tools are put to and the meaning they have for the population
they exist in, are related. For populations adapting to a coastal environment this
relationship is a conceptual category comprised of the sum of knowledge pertaining to
the ecological and environmental parameters involved in the adaptation, the tools
required to facilitate it and the communication of that information.

It should be stressed again here that these conceptual categories are not taken to
be the process of thought itself, but rather the content of particular modules of thought,
derived from specific contextual parameters. These modules are ultimately bound by
‘hard-wired’ parameters in the human mind such as universal patterns in information
processing involving human thresholds in the classification of natural and social
phenomena.406

405 Mithen (supra. n. 32) 123 - 30.

406 K. Kosse, “Group size and Societal Complexity: Thresholds in the Long-Term Memory,” Journal of
These thresholds act to limit the amount of information the brain is able to hold and process and evidence indicates that such things as the classification of natural objects into taxa follow rules of processing concerning the number of items which are general versus specific wherein specific subsistence activities may result in specific knowledge about certain taxa whereas others not involved with those activities will still have knowledge of general taxa.\footnote{Kosse (supra. n. 406) 290.} The understanding of the natural world is a cognitive process of abstracting information and processing it into a system, in the mind of the individual understanding, which enables this information to be manipulated and transmitted, both vital activities which allow for adaptation.

This bundle of information, abstracted from the natural world and processed by a human mind, is what fills a cognitive domain. In the case of prehistoric Scandinavian populations dealing with the natural world in which the sea became increasingly a factor due to geological and environmental factors, it stands to reason that a particular cognitive domain that would be likely to develop would be maritimity. This category was essentially a partition in the human hard drive that stored and processed the knowledge and information necessary to enable adaptation to the resource set and environmental constraints imposed by the sea. This information and knowledge was vital for survival under these constraints and as such was meaningful to those populations. They were aware of that meaning and elaborated it. This elaboration, as mentioned earlier, acted as a means of knowledge transmission about this adaptation and its role for those people. It is in this capacity that maritimity operated, and understood in this way, as a result of that adaptation can be used to interpret the three artifacts discussed in the previous chapter.

**MARITIMITY IN ACTION**

The three artifacts in question, the axe from Skalstrup, Ølby Lyng and the one from Ryemarksgård all can be associated with the conceptual category maritimity. Although separated by geography and chronology, they share two fundamental
similarities. The first is their existence as decorated objects. The tendency to decorate these objects is held to be related to the perceived need to transmit information along the lines of style, identification or knowledge transmission. These axes acted as markers of identity and transmitted information to the beholder about the affiliations or inclinations of the holder. In this the second similarity is revealed. All three of these objects contain evidence of a conceptual awareness of the water. Granted this only means familiarity with aqueous resource utilization or simply awareness of water and not specifically maritimity. The tendency for increasing reliance and utilization of marine resources over time however lends support to the interpretation of these objects as indicative of a conceptual awareness of the role of fishing and aquatic resources and it can be argued based on the interpretation of the motifs present that they represent marine awareness, not simply any aqueous environment.

As has been discussed previously, axes occur very often in the Mesolithic and are frequently ornamented. These axes perhaps functioned along lines similar to Upper Palaeolithic batons or cave art in their role as ecological narratives. The choice of motifs then is neither random nor inconsequential. Rather the medium is the message and the 'text' coded upon these artifacts can be read with recourse to maritimity.

In the case of the axe from Skalstrup, a fairly straightforward interpretation can be advanced. This object represents the transmission of knowledge of a technical sort reflecting the adaptation to aqueous resource exploitation. Although the 'fish' depiction is somewhat unclear, the eel is fairly obvious. It is interesting to note that it has what appears to be a line coming from its mouth perhaps indicating hook and line fishing. Additionally the 'random' chevrons and mesh designs are far from haphazard, unpatterned designs. They fairly accurately represent fishing baskets and weirs. Observe the illustration of the reconstructed fishing trap from Oleslyst (Fig. 59.) as well as the remains of the fish traps from Halsskov (Fig. 24).
The similarities observed are held to be far from coincidental. Considering the understanding of fishing in prehistoric Denmark and its relatively stationary application, it seems totally reasonable to conclude that this artifact represents a ‘hand book’ for fishing practices, coded and transmitted by a member of a population for which such an activity mattered. In this sense it is akin to the Upper Magdalenian ‘skinning handbook’ from Teyjat, Dordogne, Central France (Fig. 60).
The axe from Ølby Lyng then follows the same pattern (Fig. 50). The fish is much clearer although there are less mesh motifs. The motifs present however still contain clear similarities with known fishing implements from the Mesolithic. Observe the fish trap from Lille Knabstrup, Sjælland (Fig. 24) and the one from Bergschenoek, The Netherlands (Fig. 61).

These interpretations stem from the application of maritimity, in a functional sense, to Mesolithic subsistence practices. They illustrate that populations in prehistoric Denmark were conceptualizing their adaptation and transmitting in a socially coded from, by representation, in order to enable others to partake in this adaptation.

Fig. 61. Fishing trap from Bergschenoek. After Verhart 1995.

The axe from Ryemarksgård (Fig. 49) represents a less tangible manifestation of maritimity and as such lies just over the line into speculation. It is held however that this speculation is warranted based on the understanding of adaptation and conceptualization advocated herein. This artifact is taken to represent anthropomorphic fish indicating an association with aquatic life that transcends the functional and partakes of the symbolic.
The figures, although possessing of arms and legs have particular body shapes and designs that lend to their interpretation as fish. The heads for one thing are triangular and if the tableau is turned sideways (an option not traditionally employed due to the presence of legs and arms) the striking resemblance to fish is at once apparent. This impression is strengthened by the presence of the zig-zag lines, which now appear horizontal and can very plausibly be equated to water. Nash points out that very little attention has been paid to these lines and feels that they may represent a crossing of the river of the dead by a procession led by a shaman. In the interpretation being offered here it is likely that the lines represent water in a concrete sense. The figures then represent fish. They all exhibit variations of form and could possibly represent several fish species relied upon for food by the population responsible for creating this artifact. In fact other evidence from prehistoric Europe lends support to the interpretation of these figures as ‘fish-men.’ Take for example ‘the sole of Lespurge’ from the Middle Magdalenian in France (Fig. 62) and the rock carvings, clearly identified as fish, from Skogerveien in Norway (Fig. 63). These depictions exhibit the same form (lanceolate bodies with triangular heads) and the same decoration pattern (‘Y’ stem chevrons) as do the outer figures on the Ryemarksgård axe.

Fig. 62. “Sole of Lespurge.” From Cleyet-Merle and Madelaine 1995.

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408 Nash (supra. n. 192) 41; 49.
Fig. 63. Rock art fish from Norway. After Mikkelsen 1982.

Perhaps this scene represents the tally of several (or perhaps just one) sojourns to the coast in order to fish. Alternately, they could represent, as Rying has pointed out, a family scene, but perhaps one in which the 'sea-folk' are escorting some others back home. In any case, the idea that these figures represent a conceptual identification with an aqueous subsistence system (and more specifically a marine one as the fish figures mentioned represent flat fish which are marine fishes) is no less plausible than that of 'shamanic ceremonies of the dead' or 'wedding rights.'

None of these objects date from the Kongemose however, nor are they able to placed at a coastal location. In fact the axe from Skalstrup and the one from Ryemarksgåard are stray finds from bogs and date to the Maglemose. The axe from Ølby Lyng is Ertebølle in age and comes from the vicinity of a coastal site. The fact that these objects occur earlier than the graph of MRI values indicate they should, and come from non-coastal locations doesn't invalidate the proposed interpretation, rather it supports it.

If it is accepted that ornamented objects functioned as a means of information coding and transmission and further that this was linked to adaptation then the occurrence of fish, nets, traps and anthropomorphic fish very likely represents the early conceptual adaptation to a marine way of life. Objects discovered as stray finds from inland sites do not categorically deny the possibility of their origination at coastal
locations. In fact, if the argument of Nash is accepted about these objects serving as transmitters of personal identity and affiliation circulating around dispersed groups as a means of maintaining ties and distribution networks then their occurrence in non-marine contexts is understandable. After all, there is absolutely no evidence whatsoever indicating exclusivity among ‘coastal’ and ‘inland’ peoples during the Mesolithic. It stands to reason then that these objects represent a means of identification through a particular groups adaptive text and as such clearly imply that maritimity is in operation, at least for that group.
CHAPTER VIII

CONCLUSION

It has been argued in this thesis that maritimity existed as a conceptual category in the minds of prehistoric populations in Scandinavia since at least the Mesolithic. It resulted from adaptation to a particular set of resources under particular ecological constraints. Furthermore it represents the substance of a particular cognitive domain able to be reconstructed from an understanding of the interaction of basic human propensities with a particular domain field; in this case the subset of \{N\} designated ‘marine.’ The evidence reviewed seems to indicate that this process may in fact be older than originally proposed and may not in fact operate for all participants in the same manner. What is the same however is the process whereby these domain fields are created and filled.

Maritimity results from the adaptation to a marine way of life and is necessary for the transmission of any information concerning it. It is a necessary component of any system of meaning or symbolic expression that concerns itself with marine related elaboration. Decorating harpoons, ornamenting canoe paddles or ‘doodling’ fish, all require a particular cognitive framework in order to synthesize the creation of the object, its purpose and most importantly its meaning. In response to the needs of adaptation human cognitive categories develop for the accomplishment of that adaptation and in so doing become templates that absorb the various steps, processes and judgments encountered along the way. These in turn are evaluated to the extent to which they are successful and therefore become meaningful. It is this field of meaning which maritimity represents. It is the result of processes (adaptation), which leave material traces behind and as such can be reconstructed through an analysis of those traces. The present analysis of these traces clearly indicates the existence of such categories operating to enable the transmission of socially ‘coded’ information pertinent to the process of adaptation.
It is in this manner that maritimity can be seen as the underpinning conceptualization which much later allows the symbolization of ships. Ships are technological artifacts that develop as a response to a perceived set of needs among a population inhabiting an area for which they are necessary. In this way they are no different, fundamentally, from fishhooks or harpoons, they only differ in terms of complexity. Therefore it would remain to be seen whether or not a similar argument to that which is being advanced here for Stone Age populations could in fact be carried through to the Bronze and Iron Ages. It is felt that it most likely could. The necessary variables would have to reflect the increasing social complexity but with enough data the pattern would be discernable. After all, the dispositions discussed in this work apply to all people under all circumstances. Therefore the process of becoming a sea-faring people follows the same procedure outlined in this work for people becoming coast-dwellers. A population must have the need to create (or appropriate) a technology and this act starts the process of valuation. This valuation process then develops into a system of meaning, which is what allows symbolic communication in the first place. It is clear that these processes are mental but require physical referents to exist. The relationship between mental abstraction and physical existence is what has been explored in this thesis. It is held that in order to understand the past, it must be comprehended from within the framework of variables and associations that obtained for its inhabitants. These variables, at least their contextual determinates are accessible through material culture. It is not a large step therefore to link the objective ‘reality’ of the past, in terms of its material remains, with the subjective experience of it on the part of the actor in the past, provided the steps taken to do so follow realistic criteria. These criteria are held to be the fundamental similarity of human cognition patterns, the objective nature of the material record (in so far as it results from processes both in terms of initial creation and subsequent deposition) and the reality of the set \( \{N\} \) of which all objects, both as objects and also as abstracted referents, belong. Therefore an understanding of the past, viewed from the vantage point of its inhabitants is neither inaccessible nor a foolish enterprise. It simply requires the application of reason to
observable phenomena. This process is as old as humanity and there is absolutely no reason to assume that prehistoric minds are forever sealed to investigation. After all, their minds aren’t fundamentally different from ours, only the objects represented in them. In so far as that is so, those objects can be quantified and determinations made concerning them. In this way understanding such objects as the axe from Skalstrup or the paddles from Tybrind Vig become possible by evaluating the totality of the contextual variable set confronting those populations through an understanding of the relationship between the mind and its contents.

The exact meaning of the symbolic associations of a ship or an ornamented axe in prehistoric Scandinavia may not be readily ascertainable. An understanding of the process of meaning and analytical frameworks in which large data arrays and complex variable coding can be accomplished however, can certainly help clarify the possible interpretations. It is in an attempt to accomplish just such a clarified interpretation that this work has been written. Obviously more detailed information needs to be evaluated but this seems to be a problem endemic to archaeology in general. The future should hold significant advances in underwater archaeology (perhaps including the excavation of submerged Palaeolithic sites from the North Sea Plain) as well as increasingly advanced technologies to facilitate data analysis. It is therefore necessary to begin creating interpretive frameworks that incorporate increasingly larger bodies of data and allow for ever more complex connections. It is hoped that this thesis at least points in the right direction.
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APPENDIX A.

The following tables are included to provide a general overview of the chronologies for the Upper Palaeolithic and Mesolithic in northern Europe in order to facilitate placing the cultures and events discussed in a chronological context. The lack of consistent chronology as indicated by differing systems of nomenclature (such as BC; B.P.; b.p. etc.) as well as the variation in the dates themselves clearly demonstrates the problem with synthetical works dealing with these periods. This is by no means meant to point out shortcomings or inadequacies in northern European archaeology since these kinds of dating problems are endemic to archaeology as a whole. It is meant rather to provide an overall temporal framework for the purposes of consistency in this work.

Table I A. Geo-chronological divisions of Early Holocene Period after several authors.

<table>
<thead>
<tr>
<th></th>
<th>Bjerck (BP)</th>
<th>Burdukiewicz (BP)</th>
<th>Champion (BP)</th>
<th>Gjerde (BP)</th>
<th>Jensen (cal. BC)</th>
<th>Kurzbabrka (BP)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dryas I</strong></td>
<td>12200</td>
<td>12000</td>
<td>10800</td>
<td>10000 – 8300 (Arctic and Sub-Arctic)</td>
<td>11500 – 10300</td>
<td>12000 – 11300</td>
</tr>
<tr>
<td><strong>Bolling</strong></td>
<td>12000 – 8400</td>
<td>10800 – 10100</td>
<td>10000 – 9800</td>
<td>9800 – 9800</td>
<td>9800 – 9800</td>
<td>9800 – 9800</td>
</tr>
<tr>
<td><strong>Dryas II</strong></td>
<td>~11000</td>
<td>10100 – 9800</td>
<td>10000 – 9800</td>
<td>9800 – 9800</td>
<td>9800/9900</td>
<td>9900</td>
</tr>
<tr>
<td><strong>Allerød</strong></td>
<td>12000 – 11600</td>
<td>9500 – 8900</td>
<td>9000 – 8300</td>
<td>8900 – 8200</td>
<td>9000/8900 to 8300/8000</td>
<td></td>
</tr>
<tr>
<td><strong>Dryas III</strong></td>
<td>11000 – 10000</td>
<td>8900 – 8300</td>
<td>8900 – 8200</td>
<td>8200 – 7400</td>
<td>8300/9000 to 7500/7800</td>
<td></td>
</tr>
<tr>
<td><strong>Frisian</strong></td>
<td>8300 – 7500</td>
<td>8300 – 6800</td>
<td>8200 – 7400</td>
<td>7400 – 6400*</td>
<td>7500/7000 to 6000/5500</td>
<td></td>
</tr>
<tr>
<td><strong>Boreal</strong></td>
<td>8300 – 5700</td>
<td>6800 – 5000</td>
<td>6800 – 5000</td>
<td>7400 – 4400*</td>
<td>6000/5500 to Neolithic</td>
<td></td>
</tr>
<tr>
<td><strong>Atlantic</strong></td>
<td>8300 – 3000</td>
<td>6200 – 3000</td>
<td>6500 – 4400</td>
<td>6000 – 4400*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Jensen has a transitional period for the Boreal from 7400 to 6900.*)
Table I B. Composite Mesolithic chronology, after several authors.

<table>
<thead>
<tr>
<th></th>
<th>MAGLEMOSE</th>
<th>KONGEMOSE</th>
<th>ERTEBOLE</th>
<th>EREMOBOLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andersen</td>
<td>9000 - 8500 (b. p.) uncal.</td>
<td>8000 - 6600 (b. p.)</td>
<td>6600 - 5000 (b. p.)</td>
<td></td>
</tr>
<tr>
<td>Jensen</td>
<td>8000 - 5700 (conv. C14; BC)</td>
<td>5700 - 4500 (conv. C14; BC)</td>
<td>4500 - 3300 (conv. C14; BC)</td>
<td></td>
</tr>
<tr>
<td>Munch</td>
<td>5000 - 3400 (BC)</td>
<td>5000 - 3400 (BC)</td>
<td>5000 - 3400 (BC)</td>
<td></td>
</tr>
<tr>
<td>Sørensen</td>
<td>7100 - ~ 6500 (BC)</td>
<td>Blak: 6500 - 6150 (BC)</td>
<td>Villingebæk: 6150 - 5800 (BC)</td>
<td>Vedbæk: 5800 - 5400 (BC)</td>
</tr>
</tbody>
</table>

* Date sequence completed from A. Fischer and S. A. Sørensen, “Stenalder på den danske havbund,” *Antikvariske studier 6. Fortidsminder og Bygningsbevaring* (København 1983) 107

**SOURCES:**

S. H. Andersen, “Coastal adaptation and marine exploitation in Late Mesolithic Denmark - with special emphasis on the Limfjord region,” in *Man and Sea*

S. Björck, “Late Weichselian to early Holocene development of the Baltic Sea – with implications for coastal settlements in the southern Baltic region,” *Man and Sea*

J.M. Burdukiewicz, “Spatio-temporal zonality of the Palaeolithic settlement of Northern Europe,” *The Earliest Settlement*


J. G. D. Clark, *The Mesolithic Settlement of Northern Europe*

J. Jensen, *The Prehistory of Denmark*


S. A. Sørensen, Kongemosekulturen i Sydskandinavien
## APPENDIX B

**Table II.**
Settlement – Subsistence Variables in the Archaeological Record Compiled from Whitlam:

<table>
<thead>
<tr>
<th>FUNCTIONAL STRUCTURE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Different locales during annual cycle.</td>
<td></td>
</tr>
<tr>
<td>Population size, density and occupation length vary with density and availability of</td>
<td></td>
</tr>
<tr>
<td>exploited resources</td>
<td></td>
</tr>
<tr>
<td>System represented by numerous settlements in a restricted territory</td>
<td></td>
</tr>
<tr>
<td>Annually reused or seasonally occupied settlement locations</td>
<td></td>
</tr>
<tr>
<td>Settlement occupied year round</td>
<td></td>
</tr>
<tr>
<td>Flora and fauna exploited year round</td>
<td></td>
</tr>
<tr>
<td>Entire community resides at one settlement</td>
<td></td>
</tr>
<tr>
<td>Numerous small settlements located in different locales</td>
<td></td>
</tr>
<tr>
<td>Formalized redistribution networks in order to integrate dispersed community</td>
<td></td>
</tr>
<tr>
<td>Variety of different resources exploited</td>
<td></td>
</tr>
<tr>
<td>Different tools and facilities required to acquire and process resources</td>
<td></td>
</tr>
<tr>
<td>Extensive systems diversify resource base through time</td>
<td></td>
</tr>
<tr>
<td>Different resources exploited in different environments</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>A restricted set of resources exploited</td>
<td></td>
</tr>
<tr>
<td>Same subsistence activities carried throughout the year at different sites. Intensive systems specialize through time</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C

The following tables, although brief and composed of basic information, can still be used to compile a table of MRI values spanning the Upper Palaeolithic to the Late Mesolithic / Early Neolithic. This tabulation suffers from problems typical of investigations into this time period; namely the scarcity of secure data and inaccessible or non-existent published information. For example, Eriksen points out that of the 100 or so known northern European Palaeolithic sites only 12 have faunal material preserved. Additionally, the sampling problems associated with the lack of excavated submerged sites have already been discussed. It is clear however that, in general, a trend towards more involved and consistent marine resource exploitation does occur throughout the Mesolithic. The categories in these tables are fairly self-explanatory and represent a synthesis of current understanding of the sites discussed. In a sense the written record of archaeological scholarship is a data set. This data set consists of the distilled information of many excavations and interpretations. These tables represent an integrated synthesis of a spectrum of well-discussed sites in current archaeological literature.

E = Elaboration [present = Y; absent = N; unknown but assumed = ( )]
DK = Denmark
G=Germany
S= Sweden

<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>Source</th>
<th>Subsistence and Tool kit</th>
<th>Site Placement</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poggenwisch (G)</td>
<td>~12,000 BP</td>
<td>Bratlund 1996 a, b; Eriksen 1996 a, b; Clark 1975.</td>
<td>Terrestrial large game animals and no marine evidence; Lithics predominate</td>
<td>Inland</td>
<td>(N)</td>
</tr>
<tr>
<td>Meiendorf (G)</td>
<td>~12,000 BP</td>
<td>Bratlund 1996 a, b; Eriksen 1996 a, b; Clark 1975.</td>
<td>Terrestrial faunal profile; Swan, geese and aquatic birds present; Lithics predominate</td>
<td>Lacustrine</td>
<td>(N)</td>
</tr>
<tr>
<td>Stellmoor [AbH] (G)</td>
<td>~12,000 BP</td>
<td>Bratlund 1996 a, b; Eriksen 1996 a, b; Clark 1975.</td>
<td>Terrestrial faunal profile; Whooper swan; Mostly lithic.</td>
<td>Lacustrine</td>
<td>(N)</td>
</tr>
</tbody>
</table>

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8 B. V. Eriksen, “Resource Exploitation, Subsistence Strategies, and Adaptiveness in Late Pleistocene - Early Holocene Northwest Europe,” in Straus (supra. n. 80) 120.
<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>Sources</th>
<th>Subsistence and Tool kit</th>
<th>Site Placement</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slotseng [e] (DK)</td>
<td>Allerød (~11,000 BP (?))</td>
<td>Holm 1996</td>
<td>Primarily unknown but no marine evidence; Lithics predominate.</td>
<td>Inland; possibly Lacustrine</td>
<td>(N)</td>
</tr>
<tr>
<td>Stoksbjerg Vest (DK)</td>
<td>Allerød / Dryas III ~11,000 BP (?)</td>
<td>Johansson 1996</td>
<td>Camp refuse inline with settlement but no marine evidence; Lithics are predominate</td>
<td>Lacustrine</td>
<td>(N)</td>
</tr>
<tr>
<td>Knudshoved Odde (DK)</td>
<td>Allerød / Dryas III ~11,000 BP (?)</td>
<td>Johansson 1996</td>
<td>Kill site; no faunal evidence; Lithics mostly points</td>
<td>Coastal Spit</td>
<td>(N)</td>
</tr>
<tr>
<td>Nørre Lyngby (DK)</td>
<td>Dryas III ~11,000 BP</td>
<td>Clark 1975</td>
<td>Faunal profile lacking in marine components; Points and antler implements</td>
<td>Coast / Lacustrine</td>
<td>(N)</td>
</tr>
<tr>
<td>Bromme (DK)</td>
<td>Allerød / Dryas III ~11,000 - 10,500 BP</td>
<td>Bratlund 1996 a, b; Eriksen 1996 a, b; Clark 1975</td>
<td>Slim faunal remains; Pike, some swan and beaver</td>
<td>Inland; Lacustrine (?)</td>
<td>(N)</td>
</tr>
<tr>
<td>Stellmoor [AbA]</td>
<td>Dryas III / Preboreal ~10,000 BP</td>
<td>Bratlund 1996 a, b; Clark 1975</td>
<td>No marine evidence; hunting tool assemblage; Whooper swan and beaver present; Harpoons known (4).</td>
<td>Lacustrine</td>
<td>(N)</td>
</tr>
<tr>
<td>Meiendorf (Ahrensburg level)</td>
<td>Dryas III / Preboreal ~10,000 BP</td>
<td>Eriksen 1996 a, b; Clark 1975</td>
<td>No marine subsistence remains; Large terrestrial fauna dominates; One harpoon known</td>
<td>Lacustrine</td>
<td>(N)</td>
</tr>
</tbody>
</table>
### Maglemose:

<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>Source</th>
<th>Subsistence and Tool kit</th>
<th>Site Placement</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mullerup (DK)</td>
<td>Early Boreal</td>
<td>Clark 1936 and 1975</td>
<td>No evidence of marine subsistence; Barbed “Mullerup points” present §; Leister prongs</td>
<td>Inland Bog</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>~ 9,000 BP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Svaerdborg (DK)</td>
<td>Boreal</td>
<td>Clark 1936, 1975; Bay-Petersen 1978; Zaliznyak 1998</td>
<td>96% ungulate fauna; Pike present; slotted points, nätzstickor and fishhooks.</td>
<td>Inland Bog</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>~ 9,000 BP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holmegaard (DK)</td>
<td>Boreal</td>
<td>Clark 1936, 1975; Bay-Petersen 1978; Noe-Nygaard 1983</td>
<td>Mostly ungulate faunal profile; barbed points present (harpoon type); Bow and arrow known; paddles found; $^{13}$C values terrestrial.</td>
<td>Inland Bog</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>~ 9,000 BP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Kongemose:

<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>Source</th>
<th>Subsistence and Tool kit</th>
<th>Site Placement</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kongemosen (l.c.) (DK)</td>
<td>~ 8,000 BP</td>
<td>Sørensen 1996; Clark 1975</td>
<td>No conclusive marine subsistence evidence; $^{13}$C value (dog) indicates marine diet;</td>
<td>Inland Bog</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blak II (DK)</td>
<td>~ 8,000 BP</td>
<td>Sørensen 1996</td>
<td>Evidence of coastal exploitation; Marine fishes; still terrestrial ungulates present; beneprone; ornamented bone knife</td>
<td>Fjord</td>
<td>Y</td>
</tr>
</tbody>
</table>

---

§ Clark (supra n. 151) 130 - 4; This type of point is confined to Sjælland and appears strikingly similar to later Ertebølle harpoons from the same area, (Andersen’s Type B).
**Kongemose (cont.):**

<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>Source</th>
<th>Subsistence and Tool Kit</th>
<th>Site Placement</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Villingebæk Øst A (DK)</td>
<td>~7,000 BP</td>
<td>Sørensen 1996; Clark 1975; Pedersen 1995.</td>
<td>Marine fishes evident; fishing technology present (traps); Elk and Aurochs vanishing; Protein predominantly from terrestrial mammals</td>
<td>Coastal</td>
<td>(N)</td>
</tr>
<tr>
<td>Vedbæk [Boldbaner, Bøggebakken] (DK)§</td>
<td>~7,000 BP</td>
<td>Sørensen 1996; Clark 1975; Nash 1998; Noe-Nygaard 1983; Enghoff 1994.</td>
<td>Stable fishing dominated by <em>Gadids</em> (Cod etc.); Leister prongs; Grey Seal, Porpoise and Shellfish; Terrestrial mammals main protein source; Boats known from later as is cemetery.</td>
<td>Coastal</td>
<td>(Y)</td>
</tr>
</tbody>
</table>

**Ertebølle:**

<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>Sources</th>
<th>Subsistence and Tool Kit</th>
<th>Site Placement</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tybrind Vig (DK)</td>
<td>~6,500 BP</td>
<td>Andersen 1986, 1995a, 1997; Nash 1998.</td>
<td>Much wood preserved; Full suite of fishing technology (hooks, leisters, nets, harpoons, weirs, boats); $^{13}$C values from grave = marine; Marine subsistence remains; Red deer and pig common.</td>
<td>Coastal</td>
<td>Y</td>
</tr>
</tbody>
</table>

§ The Vedbæk region contains numerous sites of which Boldbaner and Bøggebakken are the two most visible in the literature. Vedbæk is often discussed as one site however.
<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>Sources</th>
<th>Subsistence and Tool Kit</th>
<th>Site Placement</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skatoholm II (S)</td>
<td>~ 6,500 BP</td>
<td>Larsson 1985, 1993, 1995, 1997; Jonsson 1988; Rowley-Conwy 1998; Newell and Constandse - Westermann 1988</td>
<td>Cemetery and settlement; Abundant red deer antlers; harpoon in grave; many fish remains (lagoon); Preference for sticklebacks in graves; no fish hooks; Pine marten skulls in graves.</td>
<td>Island in lagoon</td>
<td>Y</td>
</tr>
<tr>
<td>Bjørnsholm (DK)</td>
<td>~ 6,000 BP</td>
<td>Clark 1975; Enghoff 1994, 1995; Andersen 1995a.</td>
<td>Shell-midden; 22% marine fishes (56% eel); Fish hooks; Stickle-back present (7%); Clear indication of marine utilization.</td>
<td>Fjord with Stream inlet</td>
<td>N</td>
</tr>
<tr>
<td>Ertebolle (I.c.) (DK)</td>
<td>~ 6,000 BP</td>
<td>Andersen 1995 a, b; Clark 1936, 1975; Bailey 1982; Bay - Petersen 1978; Enghoff 1994, 1995;</td>
<td>Shell-midden; 71% fish bones freshwater; Still large percentage of terrestrial faunal material; Seals and whale / Porpoise well attested; Evidence of marine technology; Pottery lamps and evidence of cooking fish.</td>
<td>Fjord</td>
<td>N</td>
</tr>
<tr>
<td>Skatoholm I (S)</td>
<td>~ 6,000 BP</td>
<td>Larsson 1993, 1995, 1997; Jonsson 1988; Rowley-Conwy 1998</td>
<td>Cemetery and settlement site; Mostly freshwater and lagoon fishes; no molluscs; possibly occupied year round (or only winter); Seal bones few; no fish hooks</td>
<td>Lagoon</td>
<td>Y</td>
</tr>
<tr>
<td>Meilgård (DK)</td>
<td>~ 5,500 BP</td>
<td>Bailey 1978, 1982; Andersen 1995a; Clark 1936.</td>
<td>Shell-midden; ~50% marine subsistence; Seal remains (35.7%); Whooper swans; fishhooks.</td>
<td>Coast</td>
<td>N</td>
</tr>
</tbody>
</table>
Ertebølle (cont.):

<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>Source</th>
<th>Subsistence and Tool kit</th>
<th>Site Placement</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ølby Lyng (DK)</td>
<td>~5,500 BP</td>
<td>Clark 1975; Bay-Petersen 1978; Bailey 1982; Andersen 1995a; Pedersen 1995; Welinder 1975.</td>
<td>High proportion of seal and fish bones; Fishing structures; ‘blubber lamps;’ Edible ungulates still dominate; Marine motifs; paddles</td>
<td>Coast</td>
<td>Y</td>
</tr>
</tbody>
</table>

Neolithic:

<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>Source</th>
<th>Subsistence and Tool kit</th>
<th>Site Placement</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ire (Gotland)</td>
<td>~4,000 BP</td>
<td>Welinder 1975; Janzon 1974.</td>
<td>Cemetery and settlement; Fish bones 81.9% of faunal material and seals 14.2%; Many fish hooks and harpoons; harpoons and fish hooks in graves.</td>
<td>Coast of island</td>
<td>Y</td>
</tr>
</tbody>
</table>

For the purposes of the following tabulation, given the problems with the current state of knowledge of northern European maritime adaptation, a simplified system of the MRI evaluation is being adopted. Since in many cases the information needed to calculate an accurate MRI value is unavailable, the values used below are simplified based on preference for marine indication of any sort. Obviously the fact that a Hamburgerian site produced an antler harpoon isn’t sufficient to assign points for ‘aqueous tool technology.’ At the same time however, the fact that a site contains 15% seal bones and is coastally located is taken to indicate a fair degree of marine activity. Therefore the purpose of the following table is to show the tendency for marine resource utilization to increase in visibility over the roughly 6,000 years from the end of the Pleistocene until the later Mesolithic.

Table III. Tabulated MRI:

<table>
<thead>
<tr>
<th>Site</th>
<th>Date</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>N</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melendorf</td>
<td>~17,000 BP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Steilmoor [AbH]</td>
<td>~12,000 BP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Poggenswisch</td>
<td>~12,000 BP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Location</td>
<td>Age</td>
<td>M</td>
<td>F</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>-------</td>
<td>---</td>
<td>---</td>
<td>-------</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Slotseng [e]</td>
<td>~11,000 BP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Slagelse/Vester</td>
<td>~11,000 BP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Knudshoved Odde</td>
<td>~11,000 BP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Møn Løkken</td>
<td>~11,000 BP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Bromme</td>
<td>~10,500 BP</td>
<td>(1)</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>(1)</td>
</tr>
<tr>
<td>Skægby [AB]</td>
<td>~10,000 BP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Meiendorf [A]</td>
<td>~10,000 BP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Mølleminde</td>
<td>~9,000 BP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Y</td>
<td>(1)</td>
</tr>
<tr>
<td>Svardborg</td>
<td>~9,000 BP</td>
<td>0</td>
<td>(1)</td>
<td>0</td>
<td>Y</td>
<td>(1)</td>
</tr>
<tr>
<td>Rømøgård [c]</td>
<td>~9,000 BP</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Y</td>
<td>(1)</td>
</tr>
<tr>
<td>Kongemosen (1.c.)</td>
<td>~8,000 BP</td>
<td>(1)</td>
<td>0</td>
<td>0</td>
<td>(Y)</td>
<td>(1)</td>
</tr>
<tr>
<td>Blædder [b]</td>
<td>~8,000 BP</td>
<td>(1)</td>
<td>(1)</td>
<td>(1)</td>
<td>(Y)</td>
<td>(3)</td>
</tr>
<tr>
<td>Villingebak Øst A</td>
<td>~7,000 BP</td>
<td>(1)</td>
<td>(1)</td>
<td>(1)</td>
<td>(Y)</td>
<td>(3)</td>
</tr>
<tr>
<td>Vedbaek Øst [d]</td>
<td>~7,000 BP</td>
<td>(1)</td>
<td>(1)</td>
<td>(2)</td>
<td>(Y)</td>
<td>(4)</td>
</tr>
<tr>
<td>Tybrind Vig</td>
<td>~6,500 BP</td>
<td>(1)</td>
<td>(2)</td>
<td>(2)</td>
<td>Y</td>
<td>(5)</td>
</tr>
<tr>
<td>Skædeholm II</td>
<td>~6,500 BP</td>
<td>(1)</td>
<td>(2)</td>
<td>(2)</td>
<td>Y</td>
<td>(4)</td>
</tr>
<tr>
<td>Grevsle (1.e)</td>
<td>~6,000 BP</td>
<td>(1)</td>
<td>(1)</td>
<td>(1)</td>
<td>(Y)</td>
<td>(3)</td>
</tr>
<tr>
<td>Skædeholm I</td>
<td>~6,000 BP</td>
<td>(1)</td>
<td>(1)</td>
<td>(1)</td>
<td>(Y)</td>
<td>(3)</td>
</tr>
<tr>
<td>Møns Klint</td>
<td>~5,500 BP</td>
<td>(2)</td>
<td>0</td>
<td>0</td>
<td>(N)</td>
<td>(5)</td>
</tr>
<tr>
<td>Ølby Lyng</td>
<td>~5,500 BP</td>
<td>(2)</td>
<td>(2)</td>
<td>(2)</td>
<td>Y</td>
<td>(6)</td>
</tr>
<tr>
<td>Hørup</td>
<td>~4,000 BP</td>
<td>(2)</td>
<td>(2)</td>
<td>(2)</td>
<td>Y</td>
<td>(7)</td>
</tr>
</tbody>
</table>

* This value is ‘inflated’ since the harpoon recovered from grave IV is decorated.
VITA

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EDUCATION

Master of Arts in Anthropology, degree to be conferred May 2001.
Texas A&M University College Station, Texas.
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Double Minor: Philosophy and Sociology
Graduated Magna cum Laude

CAREER HIGHLIGHTS

• Paratrooper (communications specialist), U.S. Army; Discharged honorably.

• Archaeological field work with the Smithsonian Institution.

• Extensive archaeological experience spanning survey through excavation and lab analysis; worker through crew chief.

Christopher J. Cook believes that current advances in digital technology should enable a revolution in the way we think about ourselves. Archaeology is in a position to greatly benefit from these advances through tighter field procedures, more rigorous lab methods and more integrated and expansive databases. Hopefully the future will allow for a deeper understanding of the way in which the past is related to the present, and, in turn, shapes the future. This understanding is of paramount importance as the current world system, with its adherence to the principles of Nation-State ideology is poorly equipped to deal with the emergence of a global community. Anthropology has a duty to bring the family of humanity closer together by exposing our differences for what they are; Aristotelian “accidentals.” It is towards this goal that he plans to strive.