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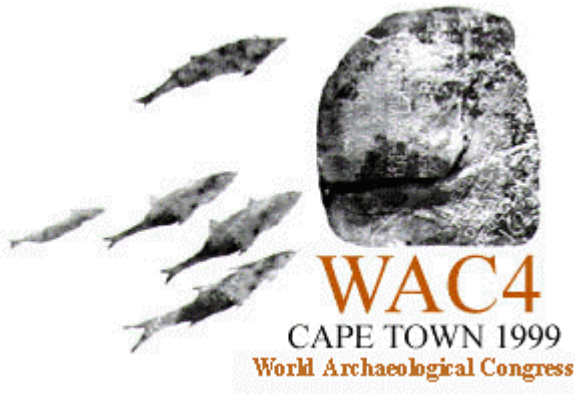

Symposium: Maritime Archaeology: Challenges For The New Millennium

WHICH WAY NOW? Maritime archaeology and underwater heritage into the 21st century.

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ABSTRACT

The evolution of maritime archaeology has differed widely across the globe and the perception of this field of archaeological research also varies extensively at the present time. Specific research topics need to be broached and investigated as this sub-discipline approaches the new millennium. Before this aim can be achieved, the exact nature of maritime archaeology at the end of the 20th century must be explored while its continued growth and progression in the coming century should be conjectured upon.

Several tiers of research problems exist which require consideration at present: What should be the focus for maritime archaeology approaching the 21st century? What type of legislation should be invoked in this domain to facilitate the protection of maritime heritage and what in fact is meant by 'protection? What status does maritime archaeology occupy in modern society and is it, in fact, relevant at all?

A large proportion of underwater heritage appears to be an 'unseen' heritage, being inaccessible to its owners - society as a whole - remaining the preserve of archaeologists. The question of ownership has many other aspects too. For example, how should material located in international waters be dealt with? Who should take responsibility for its protection and how can this coincide with the need for continued research? Does the present ideology of protection preclude future research in this field, prohibiting explorative investigations? The use of 'high-tech' remotely operated equipment in marine research is currently becoming more frequent, subject to the receipt of the necessary financial resources. Could this be the

solution to the apparent paradoxical situation regarding protection vis-a-vis accessibility?

The manner in which maritime archaeology is taught at an academic level should also be examined. What type of educational framework can be established which would respond to the problems outlined above, in order to produce maritime archaeologists capable of directing this sub-discipline in the 21st century while ensuring that society's expectations are maintained.

PREFACE

Maritime archaeology is a relatively young sub-discipline which often appears alien to the rest of the archaeological fraternity, i.e. land-oriented archaeologists. Many established researchers have a rather limited knowledge of the history of maritime archaeology and the directions in which it is developing. This situation is not unnatural, since maritime archaeologists have so far not been particularly adept at informing their colleagues about what is happening in maritime archaeology.

In a lecture held at the Norwegian Archaeological Meeting in 1991 (Jasinski 1994a), I called traditional (i.e. land-based) archaeology the big sister and maritime archaeology the little sister. These two members of the cultural historical research family display little sisterly love. Contact within the family is normally rather limited and extremely cool.

The maritime sphere of cultural history undoubtedly deserves considerably more research effort within archaeology than it has so far achieved. It is equally important to extend and strengthen the role which maritime-related archaeological research can play within the arts. It is not impossible to achieve these aims, but to do so we as professional maritime archaeologists must first and foremost succeed in incorporating our sub-discipline within overall archaeological research at the levels of both research theory and practical research. The aim here is not to erase the boundaries between fields of specialisation, but to make the results of research from the terrestrial and maritime spheres relevant for each other so that both parties can make use of the results and provide mutual impulses for further progress.

Before considering practical opportunities and research fields for interaction between terrestrial and maritime research, I wish to discuss the genesis and definition of maritime archaeology.

GENESIS

Over the ages, very different motives have driven Man to evolve his relation with the sea, and the intensity and results of this effort have varied greatly. The relationship between Man and the sea has therefore become very diverse and complex. The same may be said of modern archaeological research in this field. Various definitions of maritime-related archaeology, its theoretical base and research scope, exist today; indeed, different designations are even used for the sub-discipline in which we are involved.

It is not difficult to understand that the world's oceans have always played a very prominent role in cultural development. Most cultural historical disciplines recognise

this and take the consequences of it in their research. Thus, we have maritime history, maritime ethnology, etc. However, as mentioned earlier, in archaeology a variety of designations exist for research practice centred around maritime problems. Before examining this issue in greater depth, I wish to explain my own understanding of certain terms used in this article.

Underwater archaeology is a term belonging within methodology, i.e. underwater archaeology is an archaeological field method. Underwater methodology is applied in archaeological research when and where it is necessary or desirable, irrespective of whether the problem is maritime-related, or of a terrestrial nature.

Marine archaeology is the part of archaeological research practice that centres around the underwater cultural heritage. Marine archaeology is often looked upon as the research field concerned with Man's use of the sea and its natural resources, using the cultural elements that have come to rest in the sea-floor sediments as evidence. The term is particularly relevant for, and most applied in cultural heritage conservation - the management and investigation of underwater cultural relicts.

Maritime archaeology, understood as an archaeological sub-discipline, studies every sphere of Man's affinity with the sea, both technopractical and symbolic aspects. Maritime archaeological evidence embraces both material, and to some extent, non-material evidence, irrespective of whether it is found under water or on land.

Present-day maritime archaeology has had a relatively complicated genesis. I believe two main impulses led to its creation:

1. The perfectly natural interest for some aspects of maritime cultural history displayed by terrestrial archaeologists.
2. Technological development, which created a necessary tool in the form of satisfactory diving gear. This enabled some archaeologists to study underwater sites.

Regarding the first impulse, the interplay between sea and land in a cultural historical perspective has often been so extensive that it is only natural that numerous remains of Man's maritime activity have been left behind, both on land and in the sea-floor sediments.

In their everyday research, land-based archaeologists often meet data which, even though they have been found on land, have a clear association with maritime activities. Typical examples range from zoological material (e.g. the bones of fish and marine mammals) to artefacts like fishing tackle, fragments of boats, goods imported to sites by sea on board a vessel, etc.

Maritime-related archaeological data acquired through terrestrial archaeology by excavations on land are often studied by land-oriented archaeologists who feel no need to refer to their problems as maritime or their field of research as maritime archaeology. Numerous examples of this can be found, particularly in research fraternities in countries with a long coastline, like Great Britain and Norway. Several compendia on the prehistory and medieval history of Europe, written by terrestrial archaeologists, of course contain long chapters on the past use of the sea (e.g. Clark

1952), shell gathering, fishing, sealing, whaling, maritime trade, transport on water, etc.

With respect to the second impulse, archaeology justifies its independent existence among cultural historical disciplines by basing its studies on past societies, primarily through material remains. Research matter is chiefly acquired through excavations of cultural relicts. This methodological dependency particularly characterised the discipline in its early days, i.e. when research was oriented towards positivism and description.

Excavation on land is a complex process. Corresponding investigations of sea-floor sediments primarily demanded access to technical aids which could facilitate sufficiently lengthy stays under water. Such technological innovation came in 1943 in the shape of SCUBA equipment (Self Contained Underwater Breathing Apparatus). It provided archaeologists with an opportunity for relatively comfortable, if rather limited in depth and time, diving activity (see e.g. Carpenter 1991 for a historical review of archaeological underwater methodology prior to the invention of SCUBA).

SCUBA equipment rapidly became very popular and diving developed into a widespread sport. Archaeologists with a special interest for marine problems (and with good health) began exploiting the equipment and extended the range of archaeological evidence with underwater relicts. Experience was initially gained in the Mediterranean through studies of shipwrecks, but the technique was soon introduced to northern and western Europe and America. In eastern Europe, especially Poland and the former East Germany, SCUBA equipment was used in an archaeological context in lakes and rivers as early as the 1960's.

Over the years, growing numbers of extremely advanced technical aids, originally developed for the offshore industry, have become available. Following modifications, they could be employed for archaeological purposes. Many advanced tools for underwater archaeological fieldwork are now on the market. Apart from SCUBA gear, the most important aids are excavating equipment operated by air or water pressure, and registering and documenting equipment in the shape of side-scan sonar, penetrating echo sounders, remotely operated vehicles, and laser-operated measurement equipment (see e.g. Jasinski et.al. 1995; Søreide et.al. 1996; Søreide & Jasinski 1998; Wickler et.al. 1998).

Work under water can be significantly intensified with these aids. They also help to maintain a high scientific standard in the documentation which marine archaeologists produce under water and allow us to carry on our research in depths which are inaccessible for conventional diving operations. These three aspects are extremely important since two of the principal disadvantages of underwater archaeology have always been that the work is very time consuming and the quality of field documentation is often far from satisfactory.

Underwater survey in unknown waters without the use of side-scan sonar and ROV is a rather hopeless task and is like looking for a needle in a haystack. Archaeologists on underwater excavations have little time and limited physical possibilities for perfecting their drawings and photographs under water. Another major problem is that at most underwater sites it is impossible to study vertical stratigraphies and maintain

profiles in sediments. In addition, the underwater sediments generally have a far more fluid consistency than cultural layers on land, thus resulting in the position of objects in a stratigraphical context generally being more dependent on weight than age.

Marine archaeological investigations with remotely controlled equipment is quite different from conventional diver based operations. Information comes from sonars, cameras and various sensors mounted onto an underwater vehicle etc.. Archaeologist will thus have to deal with a «new» type of information mediated by a monitor, usually in addition to several of the more well known ones. It is therefore likely that the use of remotely controlled equipment necessitates a different kind of information processing system than is necessary with the more conventional operation, although the basis of collecting, storing and processing should be the same (Søreide et.al. 1996:681-687). One must at least make sure that the information that is obtained either by remotely controlled equipment or by diver are useful to the archaeologist. The goal when creating an information processing system must therefore be that information can be collected more efficiently, are more complete, easier to process and that it can help the archaeologist do a better job (Søreide et al 1996; Søreide & Jasinski 1997).

SCHISMS WITHIN THE ARCHAEOLOGICAL FRATERNITY

The above-mentioned impulses have had greatly differing influences on the evolution of maritime archaeology. Maritime material excavated on land has helped to create a broader interest for the sea as a cultural factor. New equipment, enabling investigation of the sea bed, led to the methodology developing in a more technological direction, and brought archaeology new kinds of data.

Up to the 1980's, developmental trends created by these impulses had been steered by two categories of researchers, traditional archaeologists interested in the maritime sphere and a new group, diving archaeologists, i.e. those who began to use the SCUBA equipment. The technical demands and the natural biological barrier between human beings (including archaeologists) and the underwater environment brought about a rapidly increasing gap between the majority of archaeologists and the minority who gave underwater archaeology a go. I will characterise this as the first schism in the archaeological fraternity.

Very soon, only diving researchers with SCUBA on their back were called marine (later also maritime) archaeologists. At the same time, more or less deservedly, they were accused of bearing the so-called Indiana Jones complex, and/or of attempting to make things over-complicated. An ironic description of this opinion was expressed by Paul Bahn (1989: 49) in his small book Bluff your way in Archaeology. Bahn wrote:

> *"Excavating on land is hard enough, but some people like to make things extra tricky for themselves, and working underwater is the archaeological equivalent of standing up in a hammock."*

Specialists clad in diving suits quickly began operating on the fringe of the established archaeological community. They set up their own networks, evolved their own technical terminology, started journals, etc. Soon they split into two main camps, bringing still more confusion. One continued working on maritime-related problems, the other began carrying out archaeological investigations of terrestrial localities

which, for one reason or another, were in fresh water in inland areas; they were specialists in underwater methodology, and, among other things, were called wetland archaeologists (see e.g. Crumlin-Pedersen 1992). Note, not surprisingly, many diving as well as non-diving researchers did not succeed in distinguishing between these two groups and mixed them up when making reference to them; indeed, some still do. Others chose to refer to all diving colleagues as underwater archaeologists (e.g. Dean et al. 1992: 20 ff.).

Ole Crumlin-Pedersen (1992) justifiably pointed out that, with a few exceptions, the so-called wetland archaeologists are involved in underwater investigations that are more relevant for terrestrial than maritime problems, i.e. they carry on traditional archaeology by investigating underwater sites.

In the early phase (1940's-1980's), the marine (diving) archaeologists chose to focus their efforts on nautical aspects, placing boat and ship constructions at the centre of their attention (Jasinski 1993: 131). This led to the emergence of yet another designation, Nautical Archaeology, and meant that marine problems became still less relevant for terrestrial archaeology, and vice versa. For most researchers, marine archaeology has become synonymous with wreck archaeology. The situation can again be illustrated with the help of a quotation from Bahn (1989: 49-50):

> *"Underwater archaeologists get very excited about ship designs and cargoes, topics that leave terrestrial colleagues fairly cold unless they find something particularly old or unusual or well preserved. The landlubbers probably harbour a grudge because they cannot see all these sites for themselves except on film. So occasionally the underwater archaeologists raise an entire ship to the surface and finish the study there."*

This situation resulted in what I will call the second schism in the fraternity, creating a still greater gap between land-based archaeologists and marine/nautical archaeologists.

THEORETICAL PROGRESS

I have just described the chaotic life led by marine archaeology, lacking a clear theoretical concept and definition. This state lasted until the end of the 1970's. That was when the marine research fraternity began displaying the first signs of a growing interest for a debate on the purpose, theoretical delimitation and definition of its own field of research.

It was undoubtedly the theoretical development of the big sister, terrestrial archaeology, that inspired this conceptual movement in the marine field. Researchers who were involved gradually became aware that their professional existence within the archaeological fraternity would, in the long run, become impossible to justify if they failed to maintain contact with the theoretical development.

Steven Carpenter (1991: 33-37) pointed out that it was undoubtedly the arrival on the scene of the so-called New Archaeology (Binford 1962) which sowed the seed for theoretical debate among marine archaeologists. The pioneer here was Keith Muckelroy, with his book Maritime Archaeology (1978), which generated waves of

internal discussion within the fraternity. In his book, Muckelroy gave the first definition of the maritime research field within archaeology.

In my view, Muckelroy's definition unfortunately lacked a humanistic perspective (Jasinski 1994). He defined the topic as:

> *"the scientific study of the material remains of man and his activity on the sea."*

He claimed that the discipline ought to cover all cultural aspects, like technology, economy, social structures and religion. However, he was quick to stress that he was compelled to exclude relevant evidence left on land. Here, Muckelroy applied the principle of underwater context, namely that, with very few exceptions, it is solely the evidence deposited under water that is of interest for maritime archaeology:

> *"…it is only at sea that seafaring disasters can occur, so it is under the surface of the sea that the bulk of evidence must lie…"*
>
> (Muckelroy 1978: 9)

To delimit a range of evidence for cultural historical research on the basis of a depositional environment is, in my view, incomprehensible and unacceptable. The presupposition that human activity attached to the sea can only be traced below the surface of the sea is simply illogical (Jasinski 1993: 132). Even though Muckelroy (1978) used the term Maritime Archaeology he really defined Marine Archaeology.

The sea is without doubt a special case when it comes to preserving physical evidence of anthropomorphic activity. Countless events have taken place on the sea without leaving behind any traces. When a ship or boat passes by and nothing disturbs the voyage, no material evidence is deposited in the sea-floor sediments. Muckelroy (1978) posed the question: what happens if the ship comes undisturbed to a harbour, its cargo is delivered and the vessel sails on? He replied that this means "the end of the story" for maritime archaeologists because no evidence has been left on the sea bed.

In my view, maritime archaeologists must, in such cases, continue their studies and search for data at terrestrial localities - where the cargo ended up. In many instances, such a cargo can be identified. For example, large quantities of imported wares have been found at localities in Norway after being transported by sea. They can cast light upon trading routes, cultural contacts, etc. In fact, maritime archaeologists have the opportunity and duty to search everywhere for maritime evidence. The range of evidence is really unlimited and depends only on the creativity of the researcher.

The next step in developing the theoretical basis was taken in 1981 at a conference at Santa Fe called Shipwreck Anthropology, which attracted representatives of both nautical and terrestrial archaeology as well as cultural anthropology. Its results were published two years later (Gould et al. 1983).

The conclusions arising from the discussions in Santa Fe concerning the research potential of shipwrecks may be summarised as follows:

- studies of shipwrecks are very important for archaeology and should, in principle, continue,

- to enable these studies to bear significant fruit, the theoretical basis must be generally improved. Nautical archaeologists must find problems which will extend beyond the strictly descriptive stage. Ships and boats must be put in context with other aspects of human activity (see particularly Leone 1983).

Even though, at the outset, the theme was confined to nautical aspects, wrecks as a find category and their research potential, the discussion resulted in new guidelines for evolving a more general plan. The need for a better way of studying a ship was pointed out, and for what I would call a transition from the constructional to the contextual, i.e. that a boat or ship be analysed in context with other aspects of culture.

In 1984, Sean McGrail published his article Maritime Archaeology, Present and Future, which built on Muckelroy's (1978) thoughts. McGrail (1984) pointed out that Muckelroy's attitude towards, and demands for, an underwater context are impossible to accept, and put forward his own definition of Maritime Archaeology, maintaining that it:

> *"…is linked to Man's use of all types of waterways (lakes, rivers, seas) with its focus on the vehicles of that use, the rafts, boats and ships, how they were built, from selection of the raw material to launching; and how they were used."*
>
> (McGrail 1984: 12)

He continued:

> *"The evidence for these topics may come from any site, underwater, inter-tidal or on land, and is supplemented by relevant documentary and iconographic evidence. Ethnography, Naval Architecture, Botanical Sciences and Experimental Archaeology may throw further light on some of the questions raised by the excavated material."*
>
> (McGrail 1984: 12-13)

McGrail thus extended the field of operations of maritime archaeology in two directions relative to Muckelroy's definition. He includes additional waterways, like rivers, lakes, etc., and also points out that the evidence may be present in other environments than under water. His pragmatic thinking, nevertheless, stops there, and he wants to focus the actual research effort on the nautical aspect, i.e. the vessel.

I fully agree with McGrail as regards the evidence for the topics, that is to say where an archaeologist should search for elements of maritime culture. We can often find them quite far inland, such as isthmuses over which boats were drawn, but I have to protest about such discriminatory focusing on the vessel, sea voyages and inland waterways which his definition demands (Jasinski 1994). His definition, indeed, restricts the range of evidence again, but this time from another theoretical angle. McGrail really defined Nautical Archaeology when he used the term Maritime Archaeology.

Hence, the main problem with both Muckelroy's (1978) and McGrail's (1984) definitions was the range of evidence for maritime archaeology. Both restrict the range, Muckelroy to what is found beneath the water, and McGrail to the nautical elements. Through these limitations, they also narrowed the perspective and field of operation for maritime archaeology.

It is clear to me that such limitations have a very unfortunate influence on our understanding of the discipline with which we are involved. An important aspect which we must bear in mind is that maritime activities may often be traced in inland districts, at archaeological sites and in archaeological contexts which at first sight have nothing to do with the sea or ocean. We must, moreover, remember that human relationships with the sea embrace many more aspects than boatbuilding and voyages.

SIGNS OF WISE CO-EXISTENCE

In the 1980's, a platform called Waterfront Archaeology was established to discuss terrestrial and marine archaeology (now called maritime archaeology following Muckelroy and McGrail). Here, some traditional and marine archaeologists were able to find common ground for debate. Ole Crumlin-Pedersen (1992) viewed Waterfront Archaeology as:

> *"a side branch of Urban Archaeology developed to cope with the contact zone between land and water within towns."*

I do not agree with this claim. Even though many publications deriving from "Waterfront" conferences deal with urban aspects, a significant number of articles with substantial and valuable content take up other issues than urban ones (see e.g. McGrail 1985, Sognnes 1985). However, I fully agree with Crumlin-Pedersen that the research field for Waterfront Archaeology is "*the contact zone between land and water*".

The next, very important theoretical advance was made by Christer Westerdahl in his book, Norrlandsleden I (1989), which brought whole new dimensions to the problem. He did not define maritime archaeology, but looked at depth into a fundamental concept, maritime cultural landscape, which he believed to be one of the major fields for maritime archaeological research.

This concept proved very important for the development of, at any rate, a significant part of maritime archaeology because it shows how large a range of data archaeologists can exploit in their studies of human relations with the sea. It is not just the material evidence derived from the technopractical aspects linked with sailing and utilisation of marine resources, but also non-material elements like place-names, oral tradition, myths, etc., which, according to Westerdahl (1989), form part of the maritime cultural landscape. Such an opinion widens the scope of maritime archaeology - a sub-discipline which, among other things, studies the landscape.

Right from when I began working on maritime problems in archaeology, I have been eager to find out which elements enter into a relationship between Man and/or society and the sea. We have to admit that, in addition to obvious elements like sailing, fishing, marine hunting, etc., along with all their physical infrastructure, there is a range of more obscure, symbolic and mental elements. That this is so is patently

obvious from research in maritime technology and cultural anthropology. This aspect of Man's interaction with his surroundings (the sea in this case) is still underestimated in maritime archaeological research. It seems as though maritime archaeologists prefer a strictly rational fundament for their problems and choose to relate themselves to the practical and functional aspects. Most researchers smile when they hear talk of symbolism, mythology, religion and mental structures as problems for maritime-oriented research. The same researchers experience daily the very important role played by these aspects in modern society in general and the maritime sphere in particular.

This strictly technopractical attitude which the majority of researchers involved in this field adopt towards past life in the coastal belt means that evidence of human activity on and near the sea is interpreted on the basis of a conviction that implies that practical, and particularly economic, aspects of the utilisation of the sea determine the cultural evolution of the coastal population. That culture is more than an economic basis is forgotten.

Nor does terrestrial archaeology constitute a homogeneous entity as regards the theoretical fundament of the discipline, clarity of definitions and degree of understanding. Here, too, a hectic debate is taking place on future paths and strategies. It is vital that maritime archaeology becomes part of this discussion instead of adopting the stance and function of a passive onlooker, waiting for ready-made directives that can be used (Jasinski 1994).

In general, when it comes to theoretical paradigms, most maritime archaeologists are among the most ultra-conservative researchers in archaeology. They represent what Giddens (1982: 1-3) called orthodox consensus. This consensus has positivistic philosophy as its logical framework and cultural evolution in the form of modernisation as its context (Engelstad 1991: 24, after Giddens 1982).

Fortunately, there are exceptions. A number of publications demonstrate a different attitude (see e.g. McGee 1977, Kobylinski 1988, Carpenter 1991, Westerdahl 1993. A common conclusion that may be drawn from these publications, even though they consider different topics, is that people in the past evolved a large range of symbolism and cognitive systems surrounding the maritime aspects of their existence. Maritime archaeology is obliged to take the consequences of this (Jasinski 1992: 128 ff.; Jasinski 1994b). Ericka Engelstad (1991: 25) pointed out that symbolism is not just an aspect of superstructures like ideology, religion and rituals, but also part of everyday life. All material culture may have function, but it can also have, and actually has, importance for social communication.

A material, anthropomorphic clue from the past (an archaeological site or an individual find) presupposes that an action had taken place. In most cases, thought comes before action. People in the past thought before and during their actions. They thought afterwards, too. Thoughts are often imparted through symbols encapsulated in material culture. Hence, what Engelstad (1991: 25) said about the capacity of clues to provide information on the symbolic aspects of the reality of the past must be correct.

In 1991, I put forward my own definition of maritime archaeology in a lecture at the Norwegian Archaeological Meeting in Oslo:

> *"Maritime archaeology, as a sub-discipline of archaeology, covers the entire research field of marine archaeology, other spheres of past material culture related to the sea and, in addition, the cognitive aspects of human attachment to the sea."*
>
> (Jasinski 1994)

I would like to avail myself of this opportunity to explain this in a little more detail and to elaborate on my intention with this definition.

1. Research in maritime archaeology is concerned with every aspect of human relations and relationships with the sea.

2. These embrace technopractical elements, i.e. utilisation of the sea and its resources, as well as the cognitive and mental systems like ideology, social organisation, language, etc., which are related to the sea.

3. Evidence used for maritime archaeological studies may be both material and non-material in character and may be present on the sea bed, in the shore zone and on land.

An archaeological sub-discipline defined thus has its natural place in archaeology. In my view, the definition also shows the opportunities and needs for closer contact between research carried out by land-oriented archaeologists and the work of their diving, marine colleagues. It transpires that problems may be relevant for both groups and that co-operation leads to more comprehensive results. This contact is now beginning to bring the first concrete results, and it is there maritime archaeology proper begins.

On the personnel level, the appearance of an ever-larger (though still far too small) group of researchers who, in their everyday work, combine the two traditions, the maritime-related part of traditional archaeology (with its theoretical foothold and methodology) and problems, objectives and techniques that are characteristic for marine archaeology.

MARITIME ARCHAEOLOGY - SCOPE AND RESEARCH ENVIRONMENT

I am aware that my definition gives maritime archaeology a very wide scope. Two questions with which I am often confronted are how much of archaeology can be called maritime and who is really a maritime archaeologist.

Let us begin with the scope. According to my definition, maritime archaeology will, roughly speaking, be as much concerned with, for example, patterns of coastal settlement, political structures, manufacture and distribution of wares, ideology and the religious beliefs of the coastal population as with their boat constructions, sailing, fishing and hunting techniques, and harbours, etc. All these elements enter more or less directly into what we may call maritime culture and have to find their place in our analyses if we are to achieve a more all-embracing understanding of the maritime cultural heritage.

In such a situation, we quickly realise that in certain countries or areas a significant part of archaeology may be characterised as maritime. A typical example is Norway. I have several times been asked by Norwegian archaeologists whether I am aware of the scope maritime archaeology must have in this country if we accept my definition. A major part of Norwegian archaeology, especially in central and northern Norway, is of course more or less related to the sea. This is true, and I do not believe this situation should appear frightening. Large parts of Norway can be described as Scandinavia's coast. The sea has always been one of the most important resources and platforms for settlement.

The problem must be viewed in a larger context and with a more wide-reaching perspective. Maritime archaeology and maritime problems acquire different dimensions in countries like Switzerland, a nation lacking a coast, Poland with its moderately long coastline and substantial interior, Great Britain, a relatively large island nation, and Norway with the longest coastline in Europe and limited inland territory. In countries like Switzerland and Poland, the scope of maritime aspects will be of no problem to terrestrial archaeologists. In nations like Great Britain, and particularly Norway, we must learn to accept the great bearing which maritime-related factors have on cultural history.

At the same time, I would like to point out that it is the range of evidence for maritime archaeology that, in Norway's case, will be so extensive, and not necessarily maritime archaeology itself, as regards the number of researchers and the administrative structure. Even though a great deal of Norway's cultural history is maritime-related, a large number of research fields and problems exist for both terrestrial and maritime archaeologists. They must, however, quite often make use of the same sources of data for their research.

What are the qualities of a maritime archaeologist? One thing I am sure of, diving ability does not automatically turn an archaeologist into a maritime archaeologist, even though it is a very useful background. Nor is it always the data we work with that alone can make us deserve such a title. Terrestrial archaeologists indeed quite often, and with good results, work with material that is just as maritime as our own, even though the results they achieve first and foremost have relevance for the terrestrial aspects of cultural development, at any rate initially.

In my opinion, it is primarily maritime expertise, that is to say, knowing about aspects of maritime culture and having extensive knowledge of them, which, combined with the maritime-related problems we place in front of us, constitute a basis for calling ourselves maritime archaeologists. Expertise in the maritime field is essential for marine archaeologists to be able to study the same cultural phenomena as traditional archaeology is concerned with on the coast, but the former view it from a standpoint at sea rather than from the shore or land. Diving ability extends the range of our data with material that has been deposited in the sea-floor sediments. This is why a diving certificate is relevant for practising our vocation.

That terrestrial and maritime archaeologists view, investigate and document cultural heritage objects on the coast from different perspectives is something I sometimes notice when studying photographs and drawings made by archaeologists. The same objects are often photographed or drawn by terrestrial archaeologists while standing

on the shore with their backs to the sea, using the inland as the background for their documentation. Maritime archaeologists generally do the opposite. They take up a position with their backs to the land and use the sea as the background. This almost mechanical and often unconscious action reflects the way of thinking and the attitude of the researchers. Co-operation between these two categories of archaeologists would give the discipline a chance to acquire a more all-embracing understanding of the maritime cultural heritage.

MARITIME ARCHAEOLOGY - NEED FOR KNOWLEDGE AND PRIORITIES

"The reason so few new discoveries are made is not ignorance, but illusion of knowledge."

Daniel J. Boorstin

It goes without saying that we have to widen our knowledge in all aspects of maritime archaeology:

1. The nautical aspects are very important for our understanding of past maritime activities. Changes in boat construction, and data regarding sea journeys, are among the most important aspects of human relations with the sea.

2. Studies of underwater cultural heritage objects make an important contribution to archaeological research. Certain phenomena often prove only to be traceable under water and/or archaeological data are best preserved under water. Such situations undoubtedly partly result from the fact that cultural layers under water, in contrast to those on land, often grow undisturbed by the activities of subsequent generations. Moreover, because certain activities take place from boats and aboard boats little or nothing is deposited on land - the best example here is maritime markets.These aspects show only part of the potential for marine archaeological investigations. Marine archaeology must also be developed as a tool for managing underwater cultural heritage objects.

3. Hi-tech underwater methods must be include in marin archaeological every day practice and new must be developed for to improve our standarts and efficiency as well as make archaeological sites in deep waters accessible for research.

4. Waterfront archaeology has great prospects and needs more effort to support its role as a common platform for maritime and terrestrial archaeologists on which these two categories of researchers can co-operate on an everyday basis and in a natural and unproblematical manner.

*

In present-day practice, all the above-mentioned fields of research chiefly relate to the technopractical spheres of maritime culture and research methodology. In addition, there are important aspects from the cognitive level, i.e. the mental spheres of relations to the sea in the past.

Some of the cognitive structures are essential for purely practical functions to be able to operate in the form of social practice. Utilisation of the natural resources of the sea requires infrastructure in the form of settlement close to resources, technology, transport routes, etc., but also a complex of social norms and directives which, together with ideology (including aspects of symbolism, mythology, religion, and language and other forms of communication), constitute a cognitive system that is essential for a specific population to be able to function as a society in a concrete territorial entity.

In addition, mental elements attached to the world of human experience are found which exist and function independently of the purely practical functions (Jasinski 1992, 1994a, b). They shape a more personal comprehension of the life and surroundings of each individual, although they can form structures common to entire sections of population.

The transition to this level is a very major challenge for archaeological research since it often requires that researchers at least partly shift from a positivistic or vulgar-marxistic attitude to a more advanced standpoint on research theory.

To illustrate what I mean in the case of the maritime-related spheres, I will return to the problem of the maritime cultural landscape. I would like to tell about my most recent fieldwork experience. It concerns the relationship between two important elements of the Norwegian maritime cultural landscape, harbours and so-called coastal burial cairns.

The need for harbours has always been great, at least since the use of the sea attained a role in society. Certain areas along the coastline, characterised by favourable topography and wind conditions, bear evidence of activities in the form of house sites, graves, remains of quays and trading facilities, slipways, boathouses, mooring systems, ship and boat wrecks, etc., concentrated in more or less naturally delimited topographical entities. However, it is not only technopractical elements that define a harbour.

By harbour, I understand all the permanent fixtures where the fairway meets the highway, where the boat meets the settlement, where the seaman or fisherman meets the farmer or hunter, where the boat crew meets a resident community, where the farmer who broadens his means of subsistence by fishing and maritime hunting keeps his boat. Many important aspects of human life on the coast are concentrated in a harbour. The meeting of the land-based and maritime elements of social practice causes a harbour to arise, with its physical infrastructure and ideology.

Apart from investigations concentrated in the medieval towns, European archaeologists have not undertaken any relatively complex studies of harbour phenomena or harbour theory. We really know little about how a harbour originates and which factors control the process and decide why it becomes just as it is. We know little about changes over time, or about internal structures. We know still less about the ideological side of the role of society played by a harbour in cultural development.

Large, monumental burial mounds or cairns are known to have been constructed over the deceased in Norway through large parts of prehistoric time, both in the Bronze Age and in the Early and Late Iron Age. These monuments often have a dominating position on the coast or beside other waterways.

Norwegian archaeological literature refers to these grave monuments as cult sites, allodial mounds, thing sites, meeting sites, defensive posts, navigational beacons and territorial markings, in addition to their original function as graves.

In 1990, Hans Christian Søborg wrote that:

> *"Coastal graves are a category of prehistoric monument that has been little studied. Here, an opportunity probably exists for making new, exciting discoveries. However, perhaps it should wait until archaeologists have evolved important, fundamental theories that require testing in the field. Excavations today with a view to the contents and mode of construction of the graves will probably not carry research significantly further forward."*

Søborg made these remarks in his report on Tjeldbergodden, Central Norway, on the border between Sør-Trøndelag and Møre counties (Søborg 1990). It was precisely these monumental graves that began to interest me.

Tjeldbergodden is undoubtedly an interesting area to study a maritime cultural landscape. Here, we find elements from a variety of categories of prehistoric monuments, in different chronological sequences:

- Stone Age settlements, which once lay on the edge of the shore and depended on good harbour conditions regarding problems surrounding harbours in the Stone Age),
- monumental Bronze Age burial cairns located near the shore,
- traces of Iron Age settlement near the shore,
- Iron Age burial cairns near the shore,
- several groups of pits on the shore which, in my opinion, served as temporary storage places for blubber during whaling and sealing (the closest analogy I know of is from Russian marine mammal hunting in the far North; such use of pits dug into bouldery beaches and covered with planks is confirmed in written records from Russia, in Atlas Arkhangelskoj Guberni (Jasinski & Ovsyannikov 1993: 51),
- harbours in Kjørsvikbugen and on Skipneset, both dating back to at least the Middle Ages and still in use, with material evidence of maritime activities deposited on the sea floor in the form of stray finds (anchor, ballast flint, pottery, glass, clay pipes, timber, etc.), as well as relicts on land - house sites, mooring rocks and bolts).

To return to the burial cairns. Most of those at Tjeldbergodden are on the crest of steep rocky knolls and ridges, or along the edge of steep slopes. They therefore seem still more impressive than their size would suggest (Søborg 1990: 100). As regards their age, they are for the moment dated to the Bronze Age.

> *"Burial cairns on the coast are often looked upon as monuments over the importance of communication along the fairway in prehistoric time. The*

> *Tjeldbergodden cairns are situated at the intersection between the broad, straight waterway separating the mainland and the island of Hitra and the sound separating the mainland and the island of Skarsøya. What is "typical" is generally recognised in theory, but is seldom capable of being demonstrated so clearly as at Tjeldbergodden.*"
>
> Søborg 1990: 100)

When the cairns at Tjeldbergodden are considered, it is not difficult to see that most of them are so situated in the terrain that they address themselves to two specific parts of the maritime space in the area, the fairway and "the land on the opposite side", specifically Hitra and Smøla, the two largest islands in the district. A Polish archaeologist, Przemyslaw Urbanczyk, investigated this in practice with a theodolite. He even found out that it is possible to speak of specifically aligned rows of cairns. These rows point towards two hilltops on the other side of the fairway, one on Hitra and the other on Smøla. On Hitra, the line crosses the top of Elsfjellet, at 319 m one of the highest hills on the island. On Smøla, the line from Tjeldbergodden is directed at the top of Nerdvikberget, the highest point on the island at 63 m a.s.l. (P. Urbanczyk, pers. comm.).

This observation is without doubt very interesting in itself. The link between monumental burial cairns and hilltops is scarcely fortuitous and belongs to the ideological sphere of the culture of the past, i.e. to specific beliefs regarding life and death. It may also have a purely practical significance as a navigational system. Most probably, it combines these two functions.

There is, in fact, another aspect of these two lines or zones. Again, something maritime. When I looked at where they cross the shores of Hitra and Smøla on their way from Tjeldbergodden, I found that on the coast of Hitra the line or zone passes between the islets of Markusøya and Håøya in the approach to Vågen, one of the best natural harbours on this part of Hitra, and it was still better in the Bronze Age when the higher sea level meant that the haven was even larger and better protected.

A brief visit to Markusøya resulted in the registering of stone marker cairns on the two highest points, and a possible burial cairn. Based on the lichen growth on them, the two marker cairns may have an appreciable age. On Håøya, I registered several small stone cairns on most of the heights on the island.

On account of the topography, shape and colour of Markusøya, this entrance to Vågen is easily recognised from the fairway, even from the cemetery at Tjeldbergodden. Navigating from Tjeldbergodden by following the line of burial cairns and, if necessary, correcting the course with the help of Markusøya is problem-free when the weather is good and even when hill fog hangs over Hitra. During inclement weather when the fjord is shrouded in fog, the summit of Elsfjellet provides an excellent beacon, as I have experienced myself.

When the line or zone is followed from Tjeldbergodden to Smøla, landfall is made in Nerdvikvågen, an excellent, natural harbour, particularly if the shore-displacement curve and our knowledge of the types of vessels in the Bronze Age are taken into consideration.

The field investigations of the maritime cultural landscape in the Tjeldbergodden-Hitra-Smøla area presented here are in their introductory phase, and I want to take great care not to draw too far-reaching conclusions. Here, I just want to put forward a way of thinking and a research potential.

In the case of Tjeldbergodden, we may assume that the specific zones or lines have something to do with the way the people of the past looked upon the spaces and landscape surrounding them. Moreover, they belong to the maritime sphere of both practical and symbolic meaning. I can, in fact, envisage as a working hypothesis that the burial cairns, and the zones and lines which they form, had several functions, and depicted several symbols. For instance, they indicated the way to harbours, perhaps also to the settlement to which they themselves belonged. It is possible that we have here an expression of the Bronze Age practice of placing monuments to the dead "on the other side of the sea". They also marked the fairway which went past them. One thing is at least certain, they formed an important element of the cognitive landscape in the area.

Ethnological and anthropological research confirms that meanings which many primitive peoples read into their cultural landscape are much more far-reaching and complex than in our modern, western reality (see e.g. Johansen 1988, based on Malinowski 1961). For these peoples, a physical landscape also functions as their mythical landscape, in the form of a sort of storybook and source of memory which reflect the mythical history of the people and the ideology behind their everyday life. Data collected by Malinowski among the Trobriander show:

> *"the influence the myth exerts over the whole of this landscape, how it colours it, gives it meaning, and transforms it into something living and intimate. What was merely a cliff now becomes a personality; what was a dot on the horizon becomes a beacon surrounded by romantic associations to the heroes; a meaningless landscape formation acquires an obscure, but intensely, emotionally charged meaning… A stone which one of the heroes cast after a fleeing canoe; a passage broken between two islands by a magic canoe, two persons transformed into huge boulders, a petrified canoe over there - all these make the landscape represent a continuous history … Mythically accentuated landscape features are, in the understanding of the native, certificates to the truth of the myths…"*

The use of ethnological analogies as interpretative tools for archaeological data is, from a methodological standpoint, highly problematical. In my opinion, we have no reason to reject the claim that, in prehistoric times too, the landscape was used by people to write their history, materialise their ideology and document their life instead of using paper, photographs or films. It is partly for this reason that a landscape had to be loaded with strong symbols (see e.g. Bradley 1991). I am convinced that this also applied, perhaps to a particularly strong degree, to the maritime sphere, which in itself constitutes something distinct in human mentality (see e.g. Carpenter 1991, Jasinski 1992).

As regards the need for knowledge in maritime archaeology, I believe such studies of relatively complex and hidden phenomena are very important and form a research field which I strongly recommend that effort should be put into. Such studies would also bring us much closer to the people of the past and their notion of the sea and the

maritime landscape. Such research will obviously call for a significant investment of intellect on our part. What is positive is that we can often base our work on these aspects on existing, published material. All we need to do is study the data from a new perspective and pose new questions (Jasinski 1992).

THE UNSEEN HERITAGE

One of the most complicated problems regarding the social perception and protection of the underwater heritage is that it remains unseen for most of society. Sites in shallow water are more accessible for the public simply because SCUBA diving has become a popular sport and given access to this part of our heritage. Shallow-water sites are usually also cheaper to investigate and the results of these investigations can give the general public at least a kind of view of the site in the form of publications, photographs, films, museum collections, etc. Deep-water sites represent a much more complicated case, mainly because they require much greater expertise and are far more costly to investigate.

For the majority of society, including management authorities, something unseen remains something marginal, beyond or on the edge of social practice and not really worth being aware of, and definitely not worth spending funds on. However much the archaeological world strives to focus some public attention on the deep-water heritage, only limited results will ensue as long as society does not have the possibility of actually seeing it, and getting to know it and enjoy it. Existing beyond social practice, this part of the world heritage will always be looked upon by the general public as a curiosity and will remain a preserve of archaeologists and/or adventurers. In this way, treasure hunting and the earning of private profit from the underwater heritage is in fact quite a legitimate activity in the perception of the average man, on the same level as gold or silver mining.

But how can this inaccessible heritage be transformed into something socially respectable and be brought closer to society? In my opinion, the only way is to intensify our research and mediate the results by means which would first awaken the interest of the general public (NB! quite an easy task), and after achieving this aim place the issue of deep-water sites on the local, regional and international agenda.

Yes, but this will cost a hell of a lot of money some people will say. That is true. In my opinion, no state or private university, or even government agency, etc., can carry the cost of long-term underwater archaeological investigations in deep waters on its own. So, what should we do and where should we go to find this kind of money? Is co-operation with mass media and show business á la Titanic our only way? Or can we create large international projects where all participating parties can put a certain amount of money into a kitty and try in this way to raise enough? Or can we try to make our research part of huge international educational programmes which, together with other actors, can bring us enough funds? Or can we try to build exhibitions that are huge and interesting enough to cover our expenses through entrance fees paid by visitors? Or can we use private investors who, for one reason or another, are willing to invest the necessary capital? Or can we be still smarter and use both these and other opportunities at the same time?

All these questions are in a way connected with another problem, the protection of the heritage. This may have many different connotations depending on the aspect from

which we are looking at it. For some of the most radical bureaucrats, protection can even be synonymous with a ban on conducting archaeological excavations, based on an old idea that archaeological investigations are nothing but a controlled catastrophe where particular archaeological and cultural monuments are actually being destroyed by researchers while they are excavating them (e.g. Jasinski 1993).

I think all of us can agree that the underwater heritage must be protected. But protected against what? Treasure hunters, plunderers... and other nasty people, or against forces of nature, micro-organisms and trawlers, which actually can destroy monuments even quicker? Or against both? Or against anything and anybody, including archaeologists, approaching the sites? Another question is who should protect monuments in developing countries where such protection is beyond the means of society. And what about monuments in international waters?

In the last few years, the maritime archaeological community and the salvage industry have used billions of words, megabytes, and tons of paper discussing the proposed UNESCO convention regarding the underwater heritage. In my opinion, the majority of this discussion is unfortunately rather silly. Both sides of the front line hide themselves behind their own barricades and use live ammunition of hard arguments to defend their own rights to something which in fact belongs to all of us as well as to future generations. This time and energy should instead be used to establish clear procedures, work standards, ethical rules, better methods, publishing and mediating channels. Who is paying and who is earning is less important as long as society is receiving its own part and the underwater heritage is taken care of and becomes visible.

TEACHING MARITIME ARCHAEOLOGY

This paper clearly shows that the issue of maritime archaeology is very complex, at least in my opinion. It is only our own creativity which sets limits for what can be studied and what kind of sources we can use while working on maritime culture. This simple fact should be reflected in the way we are teaching maritime archaeology at the academic level. The general perception of the term maritime archaeology is still mostly limited to searching for and excavating shipwrecks. This also goes for the majority of universities and other research institutions. Few of us try to put the results of such research into a cultural/anthropological context. Only a grotesquely small group tries to incorporate studies of maritime cultural landscape and symbolic aspects with the everyday practice of maritime archaeology. Our conference confirms this situation. In fact, the volume of research problems and management goals facing us is enormous. Somebody has to do this job in the future and the proper teaching and training of new generations of maritime archaeologists should be one of our most important tasks.

I am sure that one of the very useful ways of teaching our subject, and also carrying out our research, is to apply the comparative perspective. We have to put the results of our regional studies into a broad coherence. Only in this way can maritime culture be understood by the international community. The best way of doing this is international co-operation. Such co-operation is also required because of the simple fact that most universities have their specialities where they are achieving particularly good results. Nobody can do everything at the same time and the exchange of students and teaching staff, together with the establishment and promotion of international, co-operative

teaching programmes in maritime archaeology should be one of our goals for the 21st century.

REFERENCES

Bahn Paul 1989. Bluff your way in archaeology. Ravette Books Limited. West Sussex.

Binford Lewis R. 1962. Archaeology as anthropology. American Antiquity 28: 217-225.

Bradley Richard. 1991. Monuments and places. In: Sacred and profane. Proceedings of a conference on archaeology, ritual and religion. Oxford, 1989. Oxford University Committee for Archaeology Monograph 32: 135-140.

Carpenter Steven P. 1991. Fra undervannsarkeologi til maritim arkeologi. Hovedfagsavhandling i arkeologi. Universitetet i Tromsø.

Clark J.G.D. 1952. Prehistoric Europe. The economic basis. Methuen & Co. Ltd. London.

Crumlin-Pedersen Ole. 1992. Maritime Studies in Medieval Archaeology. Paper delivered at the Conference on Medieval Archaeology in Europe, 21st-24th September 1992 at the University of York.

Dean Martin, Ferrari Ben, Oxley Ian, Redknap Mark, Watson Kit (eds). 1992. Archaeology under water. The NAS Guide to principles and practice. Dorset.

Engelstad Ericka. 1991. The symbolism of everyday life in prehistory. In: Evert Baudou (ed): Report from the 2nd Nordic TAG conference Umeå 1987: 23-32.

Giddens Anthony. 1982. Profiles and Critiques in Social Theory. McMillan, London.

Gould Richard A. (ed). 1983. Shipwreck anthropology. University of New Mexico Press.

Jasinski Marek E. 1992. European Arctic: Maritime aspects of cultural development. Specimina Sibirica vol. V: 127-136.

Jasinski Marek E. 1993. Archaeology in Svalbard. Theory and practice. In: Marek E. Jasinski, Pomors in Grumant. Archaeological studies of Russian hunting stations in the high-Arctic area of Svalbard, vol I, part 1. University of Tromsø.

Jasinski Marek E. 1994 a. Maritime cultural landscape - archaeological perspective. Archeologia Polski: XXXVIII, 1:7-21.

Jasinski Marek E. 1994 b. Tracing crossroads of shipbuildings traditions in the European Arctic. In: Crossroads in Ancient shipbuilding. Oxbow Monograph 40:195-202.

Jasinski Marek E. & Ovsyannikov Oleg V. 1993. Russian sea hunting in the European Arctic seas. In: Jasinski Marek E. Pomors in Grumant. Archaeological studies of Russian hunting stations in Svalbard. University of Tromsø.

Jasinski Marek E., Sortland Bjørn, Soreide Fredrik 1995. Applications of remotely controlled equipment in Norwegian marine archaeology. Oceans`95 MTS/IEEE, San Diego, California: 566-572.

Johansen Anders. 1988. Mytiske landskap. Profil 2; 1988: 12-27.

Kobylinski Zbigniew. 1988. Things as symbols: the boat in the early-medieval culture of northern Europe. Archaeologia Polona, XXVII: 185-190.

Leone Mark P. 1983. Land and water, Urban life and boats: Underwater Reconnaissance in Chesapeake Bay. In: Gould R.A. (ed.) 1983. Shipwreck Anthropology: 173-188. University of New Mexico Press.

Malinowski Bronislaw. 1961. Argonauts of the western Pacific. New York.

McGee Robert. 1977. Ivory of the sea woman: the symbolic attributes of a prehistoric technology. Canadian journal of Archaeology, no 1, 1977: 141-149.

McGrail Sean. 1984. Maritime archaeology. Present and future. In: McGrail S. (ed.): Aspects of Maritime archaeology and ethnography: 11-40. National Maritime Museum. London.

McGrail Sean. 1985. Early landing places. In: Herteig Asbjørn E. (ed.) Conference on waterfront archaeology in north European towns. No. 2 Bergen 1983: 12-18.

Muckelroy Keith. 1978. Maritime archaeology. Cambridge University Press.

Sognnes Kalle. 1985. King Øysteins harbour at Agdenes, Norway. In: Herteig Asbjørn E. (ed.) Conference on waterfront archaeology in north European towns. No. 2 Bergen 1983: 59-65.

Søreide Fredrik; Høseggen Steinar; Jasinski Marek E.; Svein Kristiansen; Sortland Bjørn 1996. Information Processing in Marine Archaeology. Oceans`96 MTS/IEEE, Fort Lauderdale, Florida:680-687.

Søreide Fredrik & Jasinski Marek E. 1997. VETIS: a survey tool for marine archaeology. The fourth Underwater Science Symposium, Newcastle upon Tyne, Society for Underwater Technology:27-33. 7s.

Søreide Fredrik & Jasinski Marek 1998. The Unicorn wreck, central Norway-underwater archaeological investigations of an 18th century Russian pink, using remotely controlled equipment. IJNA 27. In Press.

Søborg Hans Christian 1990. Arkeologiske undersøkelser 1988 i forbindelse med planlagt ilandføring av gass fra Haltebanken, alternativ Tjeldbergodden. Universitetet i Trondheim, Vitenskapsmuseet, Rapport - Arkeologisk serie 1990: 2.

Westerdahl Christer. 1989. Norlandsleden I. Lansmuseet - Murberget.

Westerdahl Christer. 1993. Links between sea and land. In: Coles John, Fenwick Valerie, Hutchinson Gillian (eds) A spirit of enquiry. Essays for Ted Wright: 91-95. University of Exeter.

Wickler Stephen, Jasinski Marek E., Søreide Fredrik, Grøn Ole. 1998. Remote sensing in archaeology: preliminary results from the Snow White project, Arctic Norway**.** WAC-4, Maritime Archaeology: Challenges for the new millennium. Cape Town, South Africa.