Ship and Society
Maritime Ideology in Late Iron Age Sweden

Gunilla Larsson
Abstract

This thesis analyses the relation between ship and society against a background of ideological and technological changes in Late Iron Age Sweden. It discusses the factors behind the development of ‘a maritime society’, why ships and seafaring came to play an important role that was also reflected in the use of the ship as a symbol and a metaphor in a military context, as well as in religion, administration, jurisdiction and social life. The author argues that this society is disappearing when it is first encountered in the Early Middle Ages, because of a fundamental ideological change.

There is a myth about the appearance of the ‘Viking ship’ and the Iron Age seafarer. The ships are supposed to be big and wide. An analysis of the archaeological material presented here shows that this picture is not correct. Instead the ships of the Svarar were quite small and built in a way that made them very light. This was a result of shipbuilding methods introduced in the Late Iron Age, and it had consequences for the trade communication network as well as for naval operations. Because of the light ships, it was possible to land on any shallow shore and navigate the shallow rivers in the East.

The ship became a key symbol used by the authorities to structure the society for administrative and military purposes, using a terminology based on the Late Iron Age warship.

In the Middle Ages, ideology, shipbuilding and seafaring changed. New key symbols were introduced, and they were used by an increasing royal power to consolidate what would become a united Sweden, inspired by feudal Europe.

Keywords: Ships, Seafaring, Society, Late Iron Age, shipbuilding methods, symbols, sacrifices, boat burials, ideology, leiðangr, long distance journeys, river routes.

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To my sons
Johan, Jonathan and Jim,
to my mother Ulla Norberg,
and to the memory of my father Ivar Norberg
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Preface and acknowledgements

With the completion of my thesis, the first part of a long research into ships and seafaring is concluded. It began in the attic of a local museum in 1985, when I rediscovered the first fragments of the Viks boat, which turned out to be a rather well preserved boat of Valsgärde-type that may date to the 11th century. This was the starting point for a long journey in space and time to learn more about the history and context of the boat, as well as about seafaring. The building of replicas has given previously unknown insight into the qualities obtained by using contemporaneous methods. This has been proven by experimental voyages on rivers and seas, as well as on land transports, which were necessary for the 11th-century journeys along the eastern routes. For me, it has been a great adventure, as well as a way of acquiring knowledge. It has also brought me into contact with many people; in the Baltic Sea region, Russia and Georgia. I am grateful to the boat builder Axel Lindberg, who is no longer with us anymore, but who taught me with his skill and experience how to build and sail boats, while we were reconstructing the Viksboat at the National Maritime Museum in 1993.

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Uppsala den 24 januari 2007
Gunilla Larsson
Introduction

1.1. The maritime aspects of Late Iron Age society
This thesis is about the relationship between ships, seafaring and society, interpreted against the background of a maritime ideology in Late Iron Age Sweden. When investigating the maritime aspects of society, a holistic approach has been used and several different perspectives have been applied to the meaning and use of the ship in the Late Iron Age. A synthesis incorporating these various perspectives is necessary in order to understand why the designation ‘a maritime society’ is applicable to the Late Iron Age society of central Sweden. That this is due to a very specific historical situation, as well as to a special cultural, political and social context, also makes it necessary to provide an answer to the question ‘why then?’ at the end of the dissertation, an answer that also incorporates the aspects of continuity and change. The ship, both as a vehicle and a symbol, is a prerequisite for the emergence of this kind of society. Technological changes in ship construction are an important part of the mechanism that makes this society possible, in combination with social changes. Here it will be argued that, already in the Late Iron Age, the ship is used as a structuring principle in order to organise the society based on a royal administration, and to exercise power locally and regionally. This constitutes the first step in the state-formation process, which is concluded and transformed in the Early Middle Ages.

1.2. Purpose and questions

1.2.1. The ship and the society
The question of the role of ships and seafaring in Late Iron Age society will be discussed in this thesis, based on an interpretation of the ship-archaeological remains, the communication system and the social structure. The ships by themselves are not the main research topic of this dissertation, as it may seem, but instead the society in which they were used. They are analysed as objects by which the social relations as well as religion and ideology are expressed in central Sweden in the Late Iron Age. The remains of boats and ships are treated as entrances to come closer to the people who used them. By means of contextual analysis and a combination of historical, linguistic, archaeological and iconographic sources, these remains can be reinterpreted in order to shed light on social relations and cultural contacts.

In this thesis I will argue that the ship became a key symbol in the Late Iron Age society. This was expressed in a number of ways, of which some will be discussed here: in the iconographic material, in the skaldic poetry, in the use of the ship as a religious symbol, as a symbol of power and possibly also of descent. The ship also was used by the leadership as a metaphor when organising the society for military purposes, and for creating a social and administrative structure on a territorial basis for internal exploitation. This was the leidangr organisation, which I believe belongs ideologically in this period. In my opinion, by means of the leidangr a territorial division into hundare, skeppslag and hamnor was created on the basis of the Late Iron Age warship in a limited area around the Lake Mälaren basin that constituted ‘Svithiod’ in this period. Why, when, and how did the ship become a key symbol? Here it will be questioned whether this is related to changes in shipbuilding methods, ship types, and the introduction of the sail, with subsequent changes in seafaring and trade routes. I will argue that the ships together with the social organisation were the main factors behind the success of the journeys and maritime warfare in the Vendel and Viking periods, and that they were necessary for the creation of the long-distance trade network that is visible in the archaeological material from at least the 8th century AD. The ships and possibilities for seafaring are thus important factors behind the creation of urban centres like Birka and Staraja Ladoga.

1.2.2. Finding the people in the boat
The ships are essential as a source material, but the main interest in this work is the people who used them. The aim is to discover how the ship, and the idea of the ship, was used in social relations between humans, in interaction between different ethnical groups, in pagan and sacral contexts, and by a central, royal power as a means to initiate a state-formation process.

Boat burials in Sweden and Russia, together with depictions and historical sources, will be analysed in order to apply gender aspects of ships and seafaring,
and to question the ordinary view of Viking Age women at home and abroad. The material will also be used to find out if there is a relation between the types of ships used and social stratification.

Ship-archaeological material is the key to the understanding of many aspects of society. The remains of merchant ships provide us with information on trade and the exchange of goods. A detailed analysis can tell us who traded with whom, what goods were transported, where the ships came from, and when such trade connections took place. In a similar way, the finds of warship-remains relate where and when conflicts took place and between which folk groups. Remains of fishing boats inform us about the type of fishing that was done and the methods used. They also answer questions about when and where, and a comparative study of several finds reveals the time and place for changes. Different types of fishing and different methods require different types of boats. The function and use of the boats is visible because the intentions of the boat builders (and those who ordered the boats) are also reflected in the shape of the hull, the dimensions, the building techniques, and the different technical solutions in boat building. At the same time, thus, they reflect the requirements and needs of the society during the time, depending on a specific cultural-historical situation. In this thesis, the marine archaeological evidence for the function of the boats will be analysed and interpreted as a source of information on Late Iron Age society. It will be used to shed light on a scarce, written, source material.

1.2.3. Tracing contacts and cultural connections

Ships as mobile objects are also a form of archaeological remains, which may identify or verify contacts between different countries and peoples. Ethnic groups with specific building traditions may also leave their mark on marine archaeological material. Is it possible that different shipbuilding traditions can be traced in the remains of boats and ships in Northern Europe? Here it will be investigated whether local traditions can be identified and connected to ethno-cultural groups and thus be used as a source of information on the interaction between different peoples, as well as on the material, technological and ideological influences. The remains of Swedish ships from the eastern journeys will be searched for, as well as the traces of foreign visitors by boat to the central Swedish area.

1.2.4. Technology and society

The technological aspects of the ships, which dominated the research within marine archaeology from the 1960s to 1980s, are only of interest when the changes in technique are related to changes in the society, and when the explanation is taken beyond the innovations to answer why these changes occurred at that time, and why at that place. The consequences of the technological changes must not be seen as, and result in, a simple scheme for the development of ship and boat construction, but instead should be viewed in a macro-perspective regarding the changes in seafaring, the effects on communication and cultural contacts, and, not least, the effects on political history.

What can the ship remains tell about Iron Age shipbuilding methods? What can the methods tell about ships and seafaring? How can the more well preserved remains, like the Viks boat, be used to illuminate the construction of the less well preserved boats in the central Swedish boat burials? Is it possible, on the basis of ship-archaeological material, to interpret the function of the boats and ships? If so, what were the ships in the material built and used for, and which needs in society do they reflect? Can ship remains also be used to discuss questions related to the organisation of society in this time period? How can these remains inform about contacts between humans and ethnical groups? What do they tell about seafaring and maritime connections? What is the cultural and historical context of the ship-archaeological finds?

The boat builder’s choice, visible in the construction, is deeply dependent on the demands of the people who ordered the ship. What is most important is that his choice of construction ultimately also reflects the demands in the society as a whole, which always are culturally and historically specific. A society engaged in deep-sea fishing needs boats specially built for this environment, and with space on board for the fishing equipment and the catch. A society engaged in mining will need boats specially built for heavy cargo, which requires a special construction. Use in warfare creates different solutions in the ship’s shape. The use of the ship is thus reflected in construction details. I therefore will examine in what way fragments of a ship can reveal the intended function and use of the vessel; that is, the aims of the boat builder materialised in the ship’s construction details, in which we also can read the needs of those who ordered the boat, and the needs of society.

1.2.5. Ships and seafaring

The communication system and the journeys that were possible to make, are dependent on the ship types that developed in the Iron Age. To understand the role of seafaring, not only the ships but also the communication network is important to trace, as are the conditions for travelling on land compared to water. The boat journeys of the Svear are analysed on the basis of ship finds and historical, ethnographic and iconographic sources. The development and changes in water communication are also discussed against the background of political events in Europe.
and Asia, since to a large degree they affected the possibilities to make these journeys. The role of long-distance eastern journeys for the development within Swedish society will also be touched upon, as they influenced economy, culture and religion in a way that we only recently have begun to realise.

1.3. Material

The remains of boats and ships

The period in focus for this dissertation is the Late Iron Age. In order to trace the fundamental changes in boat-building methods and types which occurred first in the 6th to 7th centuries AD, to a minor extent in the 9th century, and finally to a major extent in the 12th to 13th centuries when the Iron Age boat-types and methods disappeared, an analysis will also be made of what occurred before and after these changes. Using a typological method in a supra-regional analysis of the boat types, it is also possible to trace from where the ideological impulses that caused the changes came.

A ship is the materialised vision of the boat builder. Every detail reveals the intentions of the boat builder, as a response to the demands of the persons who ordered the ship and the requirements of the users. The shape is created in accordance with the kind of water the ship is going to travel, the kind of cargo it will carry, and in accordance with other desired features. Different solutions are chosen if a fast ship is desired more than a ship with great carrying capacity.

On the basis of the reconstruction of boats, it will be asked what the boats were originally intended for, and how it is possible to answer this from the remains. A key to the understanding of this is that the aim of the boat builder is preserved and visible in the ship’s shape and in construction details. Different waters required, and require, different solutions in the building process, which partly are universal. Each form of the hull makes the vessel react in a predetermined way. This creates an inevitable connection between the ship’s shape and its desired performance, which in turn is dependent on the purpose for which the ship was built. Thus, the function of the ship is built into the hull, and visible in the details of construction.

An ethnoarchaeological study will shed light on this question, and illuminate how the boat builder designed ships for different purposes. A comparative study of hull shape and construction will be done to trace the differences between ships built for different purposes. This will form the basis for an interpretation of the Viks boat.

A study of the remains of ships can more than almost any other material provide information about fundamental aspects of society. They are here used to answer questions concerning when, how and where the Svear travelled, and if the journeys were for commercial purposes or for warfare. The cargo tells about goods traded, and the foreign ships found here inform about the nature of the contacts with other peoples.

The ideological context

The context of the ships, especially in the Late Iron Age, tells about religious ideas and provides information for the interpretation of value systems and cosmology.

An aspect of the ship that reinforces its status as a key symbol in the Late Iron Age society is that it also was an important symbol in jurisdiction. It is possible to study this matter by analysing how, why, where and when the ship symbol was used. Some of the best and most informative sources concerning the ship in legislation are, however, the early medieval provincial laws, where rules occur that I believe are rooted in the Late Iron Age ideology and society. They are the last remnants of earlier views, and it is here we find concepts such as frîdr, which is closely related to the ships, and to the ship as an originally divine symbol legitimating a higher value of the space within the ship, and a special legislation within this space.

The traces of Late Iron Age society

An attempt to reconstruct the ‘maritime society’ of Late Iron Age has been made. The framework for the analysis of the settlement structure in different hundare is the division into hundare as it is known from medieval sources. Styffe’s (1911) study of the territorial division in Scandinavia in the Union Period has been used, and I myself have also earlier (1989) studied the records of public finances of the 16th century, where traces of an earlier division into hundare, skeppslag, attunger and hamnas are available for some provinces, which has come to use here. This has been complemented with Birger Lundberg’s results (1972) concerning these records from Uppland. On the basis of these sources, I have tried to reconstruct the territorial division and study the settlement structure of the Late Iron Age within this framework.

The settlement structure is reconstructed on the basis of units identified by Late Iron Age cemeteries with at least five registered burials that are possible to date to this period, in the National Survey for Ancient Monuments. The dating of cemeteries is a source-critical problem, because so few are excavated. My dating of the graves is based on the results from excavations as they were summarised by Hyenstrand (1984). Four groups of cemeteries can be identified if shape, filling, and construction details are considered:

1. Cemeteries with one or more of the following components: triangular stone-settings, standing stones, and stone cairns.
2. Cemeteries with one or more of the following components: at least five burial mounds,
triangular stone-settings with pointed ends, and/or ship-shaped stone-settings.

3. Cemeteries with only round, soil-covered stone-settings and/or 1-4 mounds.

4. Cemeteries with another composition, for example of type 3 with an additional presence of square or rectangular stone-settings.

Category 1 corresponds to the so-called varied cemeteries of the Early Iron Age, which also often include square burials. The majority of the cemeteries in groups 2 to 4 have during excavations been dated to the Late Iron Age.

Single burials are excluded from the analysis. Small groups of 1-4 burials have not been regarded because they are too small to indicate a permanent settlement unit, and like the single burials they often have early dates corresponding to the dates of the burials in group 1.

Because some cemeteries have been destroyed by ploughing or city development, older maps also have been used to some extent. Especially the maps of the older Geological Survey by SGU, made in the late 19th century, have proven to be very valuable for discovering destroyed or vanished cemeteries.

1.4. The theoretical journey from the past to the present and back again

1.4.1. From the soil to the researcher: obstacles and possibilities

The empirical material has a central role in this dissertation. Because of this, the source criticism is of vital importance. A critical standpoint is necessary concerning not only the material and find circumstances, but also the limitations due to biases in the perception of the finder and in myself as a researcher and interpreter. The source material – i.e., the boat finds and burial boats, and the illustrations and historical sources – does not represent a random sample of the past, but instead is the result of an intentional or unintentional selection. The material may not be representative, neither in time nor space. The distribution reflects the activities of the last 200 years, including the areas where people lived in the 19th century and carried out agricultural work and drainage projects that brought boat finds to light.

The large, forested, uninhabited areas of Sweden have not been subject to the degree of exploitation that often leads to finds, and thus may still hide many remains that illuminate the earliest maritime history. In the case of boat remains and the National Survey for Ancient Monuments through time, the Survey has been guided by the rule, ‘You find what you are looking for!’; more precisely, finds are made as a result of expectations of what to find, where to find it, and where to search. With respect to the wrecks of boats, those that are more than one hundred years old have been regarded as ancient monuments and protected by law since 1967 (Norman 1995), although they have not been searched for in a systematic way in the surveyed areas. Only some of the boats are recorded in the Survey’s register, called FMR. Often inland boat finds have fallen ‘between the cracks’, because they have sometimes instead been treated as a case for registration by the National Maritime Museum in SMA, the national analog register for shipwreck- and wreckage-finds. This register is based on coastal finds in water, and the wrecks are recorded on marine charts. Since no such charts exist for the inland wrecks and earth finds, these have not been recorded. Great efforts have been made in the last decade to collect and process information on all kinds of maritime ancient monuments, where both FMR and SMA are included in the new digital registers for handling issues of ancient monuments: the FMIS (RAÄ) and SjöMis (SMM).

The find-spots for boats have occasionally been registered by RAÄ (the National Heritage Board). Earlier a very limited interest was expressed in the logboats, which are sometimes registered as stray finds and other times as wrecks. Throughout the 20th century the areas close to present-day settled places and historical villages were surveyed both once and twice, while a sample of uninhabited, marginal areas were surveyed systematically for the first time in the 1980s and 1990s, and many are still not surveyed at all. The search was based on the economical map 1:10 000, and the maps with south Scandinavian burial mounds were the first to be investigated. This was due to the nationalist view in the 20th century, to the belief in one nation, one culture and one history. That for instance the northern part of Sweden could be inhabited by people with another material culture and burial customs, was not realised until the National Survey office in Luleå began to apply methods that were directed toward finding traces of settlements and not burial mounds of a southern type. In the same way, despite the find in the 1950s of a sewn boat in Tuna in Badelunda, it was not mentioned in discussions and presentations of the Late Iron Age and early medieval shipbuilding until Christer Westerdahl, in a series of articles and a book, turned the attention to the Sámi boat-building tradition with sewn boats, and to other traditions that coexisted with the well-known, south Scandinavian, iron-riveted ship (Westerdahl 1980, 1985, 1987).

The areas surveyed before the 1980s, and the most thoroughly investigated economical maps, thus represent areas settled in the Iron Age and the historical period, and people with burial traditions representative of south and central Sweden. Here, the archaeologists working with the survey sometimes got information on finds of boats in meadows and lakes. The recording of such finds is also related to the interest of the archaeologist involved, to whether he or she has asked for finds of this type. In other areas
such as wetland sites, former lake bottoms and sounds, which due to land upheaval and drainage projects are dry land today, boat finds have been made during construction work. These finds are recorded in the register of the National Survey together with a brief description, and are archived either in ATA or SMA. The finds thus represent areas of agricultural or exploitation work in the 19th and 20th centuries; the other areas are not represented.

Since 1997 a large survey project in a new form has been under way, called ‘Skog och Historia’. The National Heritage Board, the provincial museums, the Forest Agency, the municipalities, and the regional (LAN) and local offices (AF) for labour exchange have all cooperated in this project, where the surveying is done by unemployed persons and the finds are registered by archaeologists. The distribution of finds in this case reflects the interest and knowledge of the person who surveys.

The material that can illuminate the use of ships and seafaring is not limited to the boat finds. Other maritime remains related to communication routes and to ideas about the ships are also of interest, such as beacons, harbours, river blockages, sea routes, boat burials, ship-shaped stone-settings, and sacrificial sites. The same conditions for recovery pertain as for all other kinds of maritime ancient monuments.

To summarise: the maritime remains registered in FMR, SMA and those mentioned/described in the national as well as local archives, lack completely a diverse geographical and historical representativity. Like other ‘stray finds’, the distribution represents activities in the last two centuries that have caused the finds to come to light.

1.4.2. Interpreting the past by analogy

To interpret the past, and to express in words our observations of structures and relations, can be done in several ways. Herein lies the fundamental importance of archaeological theory. As Bo Gräslund has formulated it: ‘The main task of theory is to direct to the principal points of departure for the archaeological analysis and interpretation’ (Gräslund 1989:47 my transl.). For me, to draw analogies with ethnographically and historically known conditions and solutions concerning for instance shipbuilding and portaging, is of basic importance for the understanding and interpretation of conditions in the past. Documented information in the archives that derives from 19th- and early 20th-century traditional boat builders, together with discussions with present-day boat builders of wooden boats, has shed light on the connection between the shape of the ships, the ships’ performance at sea, and the intended function and use of the boats that could be used for analogies in interpreting the ship-archaeological remains from the past. In particular the knowledge and lifelong experience of Axel Lindberg, who now has left us, has helped to increase my understanding of the ‘language’ of the hull shape.

On the basis of analogies with contemporaneous, well-preserved ships of different types, as well as traditional boats of today, it has been possible to interpret more fragmentary finds. Differences in hull shape, proportions, and construction are reflections of functional differences. The intended use of a ship is built into the hull and visible also in the details, so that even fragments of boat parts can provide much information.

Not everything, however, can be understood by analogy alone. The most important differences between boat building in the present and in the past were not discovered by me, but by ‘Acke’, thanks to his boat builder’s eye. His astonishment, reflections, and many questions about how people could build ships the way they did were partly settled in the discussions with wood experts at the Royal Institute of Technology in Stockholm, and partly through experimental archaeology that included both the building and sailing of replicas of known finds by using the same methods, which proved to be of fundamental importance for the capabilities of the ships (see chapters 4 and 6).

1.4.3. A historical ethnoarchaeology

The ethnohistorical analysis is a combination of different methods and source materials used in ethnological, archaeological, anthropological and historical research, and is mainly inspired by what Stig Welinder (1992) calls ‘historical ethnoarchaeology’. Ethnoarchaeology is the study of things and physical environments among living humans, for which oral accounts and participant observation are also used. Historical archaeology is the archaeological study of dead humans, which can also make use of historical documents. Welinder has combined the terms into ‘historical ethnoarchaeology’, which he defines as ‘an ethnoarchaeological study of a historically documented society’ (Welinder 1992:7, my transl.). The historical knowledge of this society has the same role as participant observation in ethnoarchaeological fieldwork, and the archaeological excavation of the remains of ancient monuments of the historical society has the same role as the ethnoarchaeological study of the material culture of a living society, according to Welinder. The ethnohistorical approach is an ethnological study of a historically known society, which can shed light on the relation between man and artefacts, in this case between people and boats.

1.4.4. Reading the material

The archaeological remains form the basis of our knowledge. Although we can use different methods when we study them, and perceive them with a biased
mind whereby the interpretations are shaped and influenced by our modern society, the empirical material is the only way to learn to know human life in a society with few or no historical sources. With a critical view, we can and should be aware of the restrictions, but also of the possibilities that actually exist.

Remains of ships and boats are empirical material that I believe can ‘talk’, if we learn to understand the language and the grammar to interpret them. The remains of cargo ships can tell us about what was traded, with whom we had commercial relations, and the amount of trade and changes in the mercantile relations. The remains of warships inform us not only of maritime warfare but also of when and with whom the relations were hostile and battles occurred, and they can verify or falsify hypotheses on naval organisation. Fishing boats and other types of boat finds inform us about the economy and maritime activities of people in a long-term perspective. Boats in burials and sacrifices give us a glimpse of the religious ideas in ancient times.

When I talk about reading the material it is not in the strict post-processual sense, but rather with a wider perspective where each chapter tells about one aspect of human life, before in the final chapter the different aspects are combined into a hypothesis on the relation between the changes to ships, to seafaring, and to society. I do not limit myself to just one theoretical paradigm for this analysis, but instead use several since most are useful in their own right as well as when combined. They illuminate part of human society in the actual time period – the Late Iron Age and Early Middle Ages. To learn more about the relation between man and the sea by means of the waterborne vehicles, it is necessary to begin with a presentation and interpretation of the ship-archaeological material, using typological, diffusionist, and functionalistic perspectives combined with historical ethnoarchaeology and analogies. This will be done in chapter 2. The technological aspects of shipbuilding are one of the main factors behind the success of the Viking expeditions. They were a necessary precondition for the far-reaching journeys of trade and exploration, as well as for the naval attacks in shallow waters, where warships could not go before the improvements to ships through new boatbuilding methods in Scandinavia. This will be discussed in chapter 3, which also includes the chronological and social aspects of shipbuilding. Shipbuilding is also a tradition-bound craft; chapter 3 represents the shipbuilding of east Sweden. In chapter 4 other traditions in Scandinavia and the countries surrounding the Baltic Sea are analysed, providing the key to information on cultural contacts of different kinds. The purpose is to let the ship-archaeological material found here tell about who had visited Sweden for trade, or from where naval attacks had been launched on the Swedish coasts.

Besides the ships, the other main factor behind the success of Viking expeditions is, I will argue, the territorial organisation made possible by a kingship, which in a state-formation process exercised its power as a leader of the navy. This organisation, known from the skaldic poetry, the sagas, and the medieval provincial laws of central Sweden as leiðanger, made possible the mobilisation of great numbers of people in a short time, which was necessary for the large royal navies that appear in early history. This will be discussed in chapter 7. The contextual analysis is the most important method for learning more about religious ideas, thought and cosmology, especially concerning the sacrifices and burials. The context is also of vital importance for the understanding of whether differences in the archaeological material can be explained by factors such as gender, age, social status or power. This is especially important when examining the boat burials, since, as will be seen, the boat types are related to and are parts of a wider social context. A structural approach is adopted when discussing how the ship as a metaphor was used to organise the society, initially for external exploitation and later for internal use.

1.4.5. Knowledge by experience and practice

Sometimes the analogy is not sufficient and the material language not understood. In those cases the results of experimental archaeology have been of vital importance for answering many of the questions related to shipbuilding, ships and seafaring. Without rebuilding the original boat, I would not have observed some important features in the building methods, which later were explained when replicas were built of this and other boats using the original methods and copies of contemporaneous tools. The relation between the methods used and the resulting properties of the wooden planks, and the performance at sea, is strong and has tremendous importance. This has not been taken into consideration in most of the earlier replica-building projects in Sweden, where the hull-shape has been regarded as most important to reconstruct, but by modern methods. It is mainly in Denmark that experimental ship-archaeology has included the methods of shipbuilding as well.

1.4.6. The archaeologist and the past

In his thesis, Fredrik Andersson is disappointed with the post-processual, archaeological history-writing, and he questions the use of archaeological practice. History in his eyes is only a contemporary simulation, not a representation of the past. The simulation is subordinate to a model and independent of the logic of facts. The facts behind our interpretations are replaceable, and truths are true as long as they derive from the model (Andersson 2005:157). After a dis-
cussion of the archaeological mission and how this is performed, he ends with reflections on his participation in the excavation at Vamblingbo, Gotland, and comes to the conclusion that, ‘despite the facts that we excavate from the house foundation in Vamblingbo, the history is anyway recreated’ (Andersson 2005:156). However, that is exactly what I am not going to do. I am not going to recreate and rewrite a preconceived and conventional history, since it is based on loose premises rooted in our own value systems. There are other options. I am not going to have ‘history at my back’, but rather in front of me, so as to critically re-evaluate the original sources that are behind our present formulation of the prevailing interpretations of the conditions in prehistory, in this case the ships, seafaring, and society of the Late Iron Age.

I am not going to be anti-historic in the manner often seen in the last years, where the theoretically correct scholars today in publications reject previous research older than the 1990s other than to use it as an example of how passé all previous paradigms are for a modern scholar. In fact, much valuable research has been done in the early 20th century by archaeologists looking at the distribution of different traditions visible in the archaeological material, or the functional aspects of the use of material culture. Despite the theoretical biases in only observing some aspects of society in the interpretations, basic results have been achieved in this research as well as important archaeological discoveries, which today are forgotten because of a resistance to use earlier results of investigations. The wheel is invented again and again. In my contextual analysis of the boat finds, I rediscovered sacrificial contexts of fundamental importance in many finds from the early 20th century, but which today are completely unknown because it is not politically correct to use old, ‘dusty’, research results. In central Sweden, the presence of many sites in former bogs and lakes that have man-made constructions around which sacrifices of, for instance, humans, animals and boats had been made, show that there are many parallels to Skedemosse and Käringsjön. Yet the latter two sites are the only ones ‘in stock’ in our present archaeological history-writing. The indications of war-spoil finds in Sweden have long been known, and thus this sacrificial habit and ritual practice is not only a Danish phenomenon, as has often been inferred; it is simply that the early finds have been ‘forgotten’. In these contexts, the boat seems to have played a central role. This important aspect of the idea and use of boats will be further discussed in chapter 8.

In this work, I will focus on the possibilities in the archaeological material to find the traces of social, religious, political and other aspects of a reality in the past, though with a theoretical awareness of possible biases. The past is within reach, even though we have to formulate the patterns and structures we observe with our own language. The symbols and language of the past can be translated and understood. Differences visible in an empirical material can be related to differences based on gender, power, age or cultural identity if a contextual analysis is made.

1.5. Earlier research

Research on ship-archaeological material from the Late Iron Age and Early Middle Ages in Sweden is scarce. Christer Westerdahl (1987a) has made a thorough analysis of the Sámi boat-building traditions, and he also has the northern Swedish ship-archaeological material as the subject of his coming doctoral thesis. Further, in his work Norrlandsleden II (Westerdahl 1989b) there is a discussion about the different boat-building traditions in the Baltic Sea region. In several articles he discusses the distribution of different boat types as a result of different ‘transport zones’.

The logboats are the subject of ongoing research by Maya Wright, Stockholm University. Through comparative studies and analogies with the use of logboats on the Salomon Islands, where she collected material during fieldwork, she has shown that the logboats supplied with outriggers could very well have been used for journeys lasting weeks and months at sea. Earlier the logboats were treated as ‘the guilty conscience of the museum staff’, but in the last decades a few Swedish studies have been made (Westerdahl 1980; K. Andersson 1997, 2001; Ulfheim 2000, 2004; G. Larsson 2004). The logboat finds, as well as other boat finds, have now begun to be properly reported and documented. Bo Ulfheim has made the most recent contributions to the research on logboats. He has studied the preserved finds from Norrland and especially the county of Gävleborg, and related the distribution of finds to the settlements and society. In this regard he has observed interesting differences between the Late Iron Age and the Middle Ages (see chapter 3).

The most informative material concerning central Swedish ships and seafaring – the boats in the burials – has received very limited attention, and a large part of the material is still unpublished. The boats in burials 6, 7 and 8 at Valsgärde have been published by Arwidsson, while the boats 1, 2 and 4 are only discussed in articles. The Vendel boat burials were published by Stolpe, who did not make any deeper analysis of the boats themselves. The boats from Tuna in Badelunda were discussed by Schönblick (1994), who also published the burial boats from Prästgården, Gamla Uppsala Parish (in Nordahl 2001). In 1970, a thorough analysis of the boat-burial custom was made by Michael Müller-Wille in Bestattung im Boot. Studien zu einere nordeuropäischen Grabsitte. It was revised in 1995 in his article ‘Boat-graves, Old and New Views’, with a discussion that included the
more than 30 sites added to the research since his first analysis.

The boats are the parts of the burials that have been least studied in detail, in spite of the fact that the boat-burial custom as such, and the other inventory in the graves, has been in focus for the discussion for decades. In fact, in the last years the boat-burial custom has attracted new interest, as questions about the social aspects and the society behind the burials have come to the fore.

The first in-depth discussion of the boats in the Swedish boat burials was conducted by Jan Bill. In a thesis (1989) he concludes that the boats in the Valsgärde graves were too large to have been used on the small inland rivers like that at Valsgärde, since they easily could have been placed transverse and crossed the whole river. Of the burial boats, Valsgärde 14 was built as a replica three times: ‘Arnljot’ built with contemporary methods in Gällö (Bill 1987); ‘Aifur’ at Vik’s Castle (Edberg 1994); and most recently ‘Stefnir’, built by the association ‘Skiftingarna’ in 2001.

Of the wreck finds, Äskekärr, the only preserved and excavated larger Viking ship in Sweden, was first published by Humbla in 1930, but it became the object of renewed attention in connection with the replica projects and when remains of more ships were found in the vicinity of the first find.

With respect to the early medieval boats, there is a growing empirical material. The Galtabäck boat (Humbla 1937) and the other finds in the vicinity have received renewed attention lately. The Falsterbo boat of the 12th century (Åkerlund 1942, 1948) has been discussed and the earlier reconstruction questioned, since it was based on too little material. The earliest boats from Kalmar Stottsfärd (Åkerlund 1951) date to the Early Middle Ages or before that time; the most famous of them is Kalmar 1 from the 13th century. The Helgeandsholmen boats are slightly older; the most famous of them is Kalmar 1 from the Early Middle Ages or before that time; the most famous of them is Kalmar 1 from the 13th century. The Helgeandsholmen boats are slightly older; the most famous of them is Kalmar 1 from the Early Middle Ages or before that time. The Falsterbo boat of the 12th century (Åkerlund 1942, 1948) has been discussed and the earlier reconstruction questioned, since it was based on too little material.

Before the 1990s, almost all ship finds were discussed mainly from a technological and functionalist point of view. As an exception, Per Nyström (1935) concluded that, ‘The highly developed shipbuilding methods created the technical foundation for this expansive societal system, whose military organisation allowed a systematic collection of taxes among the Slavonic tribes by the Baltic Sea’. The earliest, general effort to discuss ships and seafaring in economical and historical terms was made by Richard W. Unger (1980).

An analogy with ethnographic material is important in this thesis. Here the most thorough work has been done by Albert Eskeröd (1970). The special boats built and used for journeys to church, which are the closest parallels to the Viks boat and other Iron Age warships, have also been studied by Eskeröd (1973).

Most of the earlier research has concentrated on the ships themselves, analysing the remains in order to reveal differences in time and space in the construction; functionalist aspects have also been dealt with. The criticism that has been launched against these studies is that they avoid dealing with other aspects than those that can be measured (Varenius 1992:137). It is true that many other contextual aspects have been given too little attention in most ship-archaeological studies. However, these empirical works have had tremendous importance because they brought order into this previously untouched, large material. The ships themselves are the only material that can inform us about how the ships were used in society, as well as about boat-building traditions. Brøgger & Shetelig’s study on Scandinavian ships was an early attempt to summarise the knowledge (1950). The early studies were, however, based mainly on the burials and sacrifices. The situation changed when marine archaeological, underwater investigations of shipwrecks began to be facilitated by new, light equipment, and a large number of wreck-finds became accessible for gaining more knowledge on ships and seafaring. With the discovery of the five Skuldelev ships in Denmark, methods for ship-archaeological documentation and analysis were developed, and it was here, in Roskilde, that marine archaeological research took shape under the leadership of Olaf Olsen and Ole Crumlin-Pedersen (1967). In Norway an enormous contribution was made to our knowledge by the analyses of ship-archaeological material from Bryggen and other places by Arne Emil Christensen. In the 1970s the first larger, comparative studies of the ship-archaeological material were published, such as Detlev Ellmers’ Frühmittelalterliche Handelsschiffart in Mittel- und Nordeuropa (1972). Several articles from Roskilde summarised the results of the empirical research on ships and seafaring in the Late Iron Age and Early Middle Ages (Crumlin-Pedersen 1981, 1988a, 1988b; Westerdahl 1989, McGrail 1983a, 1987; Christensen 1974; Bill 1996, 1997).

The first study on ships in general in the Viking Age and Early Middle Ages that also took into consideration ideology and society as a context when discussing the ships and shipbuilding, was Björn Varenius’ dissertation, Det Nordiska Skeppet (1992). He brings the ship archaeology of today into a theoretical discussion, which earlier had been absent. The ideological aspects on the use of the ship symbol are here discussed and explained on the basis of a cultural and historical context. In his work, Varenius interprets the ship symbol depicted on Gotlandic picture stones, coins, rune stones, and Hanseatic seals in the historical context visible in inscriptions, poetry and other contemporary material. The aim of his work was partly also to demonstrate the need to interpret technology and technological change in societal terms (Varenius 1992:135), which he also accomplished by explaining the well-known changes in ship-design as
a result of changes in society. However, in order to trace the background of technological changes in shipbuilding it is also necessary to analyse more thoroughly the ship-material in itself, and after that see what ideological changes in society may lie behind the changes in shipbuilding. In my earlier works, I have pointed to some main technological changes that are deeply connected with changes in society, for example the shipbuilding methods.

Depictions in themselves, however, reflect neither the use of ships nor the technology used, in a proper way. They are primarily expressions of the ruling ideology, of the key symbols of society. The ideal of the seafaring warrior in the Late Iron Age is visualised here, in the same way that it is praised in skaldic poetry and underlined as the privilege of the aristocrats in the Edda poem Rígsþula.

Varenius has made a pioneer study in stressing the societal and ideological aspects of the use of the ship symbol. He argues that the ships cannot be understood solely from a functionalistic point of view (Varenius 1992:145). However, the technological changes which he wants to explain by this approach are not thoroughly accounted for because of his limited empirical analysis of the ship-finds. When discussing rigging and sailing, depictions are the only sources, since these parts of the ships are almost never preserved. The changes visible in these are, as Varenius (1992:141) also says, iconographical and not technological. Varenius has especially focused on making a thorough study of various types of ship depictions in order to trace their social importance in the Viking Age society. He has analysed four different categories: picture stones, rune stones, coins, and seals. But concerning the technological and methodological aspects of shipbuilding, especially when discussing the differences between Viking and early medieval ships, the preserved ship-remains such as wrecks, sacrifices and burial boats would have been an excellent and necessary material to take into consideration, yet they are missing in Varenius’ dissertation apart from in the appendix. For a deeper understanding, I argue, it is necessary to analyse the interplay between the ideological, functionalistic, technological and societal aspects of ships and shipbuilding on the basis of an empirical material. To take into account only one aspect, is insufficient for an explanation of the use of ships and ship-symbols. Written and iconographical sources have been studied by, in addition to Varenius (1992, 1995), Ellmers (1995) and Andrén (1993).

Most of the earlier research has suffered in that only one theoretical framework has been used in the models of explanation. This limits the possibilities for interpretations or deeper understanding, because other important factors are not taken into consideration by the prevailing theoretical paradigm.

Interpreting archaeological material on the basis of analogies with ethnologically documented finds was done at an early stage. Philibert Humbla (1945, 1947, 1948) made some studies comparing prehistoric and traditional boat building. Initially, within the evolutionary paradigm that influenced Humbla and others of his time, the remaining old traditions were seen as relics. Later a functionalist view was adopted, where a ship’s shape was seen as related to use. One of the most important contributors here was Olof Hasslöf (1953, 1958). He realised that most of the features of boat types and shipbuilding that were thought to be prehistorical could be found in the traditional boat building until the 19th century. Split logs of twisted trees were used in the 18th century in Västerbotten for making the strakes of fishing boats with pointed ends and in a similar shape as the Viking ships.

Knowledge by experiment is important, and experimental shipbuilding has been carried out in Denmark since the 1960s (Vadstrup 1991), but since the 1980s also within different Swedish projects. Here, within experimental archaeology, the journeys to the East have been the focus of research. With the help of experimental archaeology, Erik Nylén (1983, 1986), a pioneer project investigating the sail types depicted on the picture stones, as well as eastern river routes. With the replicas Aifur (Edberg 1994b, 1999) and Havörn (Altrock 1993) the eastern routes continued to be investigated along waterways through Russia to the Black Sea and Constantinople, a journey that was completed in 2004 with Himinglåva and Expedition Vittfarne to the Caspian Sea (M.G. Larsson forthcoming). Already in the 1980s there was interest in using prehistoric methods as well, such as for Arnjot (Bill & Johansson 1987) when tangentially split logs and replicas of tools were used in the project. The naval engineer Axel Lindberg (1990, 1993) was the first to try the radial splitting method when Blanka (Helgeandsholmen X) was built, a line that I (Larsson 1998, 2006) have followed in for instance the Embla project (Prästgården 3) with surprising results. Without our observations of the quality and performance of boats built in this way, this dissertation would have been completely different since these results have touched upon fundamental aspects of Late Iron Age and early medieval boat-building (see chapters 4 and 7).

Other valuable contributions to our insight into Scandinavian seafaring, though unfortunately not often recognised as such, are the studies of the actual boat remains in NW Russia by Pjotr Sorokin, notably in his dissertation and in several articles (1994; 1997; 2002). Other important studies are the works by Zagosky and Orlov (1954) on the craft remains from Staraja Ladoga, and B.A. Kolchin’s (1959) study of the wooden artefacts from the Nerevsky excavations in Novgorod. The use of Russian waterways was studied already by Hodakovsky in Means of Commu-
1.6. The ships, from a contemporary myth to a past reality

Seldom has anything been surrounded by so much myth and fantasy as the Nordic ship of the Late Iron Age, with regard to both academic and more popular writing. In Sweden a large ship on a warfare expedition, often with an aggressive-looking ‘Viking’ standing armed to the teeth at the prow (fig. 1), illustrates this particular period of time and symbolises the ideas of today in relation to this era, its mentality and ships. The Viking ship is a national symbol, regularly used by the tourist industry as well as in many other connections. To illustrate how Viking ships looked, the burial vessels from Gokstad and Oseberg are those most frequently used.

**Figure 1.** The Viking ship as it is often presented. After Edberg 1999.

But did Viking ships from the middle of Sweden actually look like this? Or were they in reality quite different? In this dissertation an attempt will be made, with the aid of archaeological find material, to describe the types of ships and boats that plied the lakes, waterways and archipelagos of central Sweden during the Late Iron Age. Using Russian find material as my starting point, I shall also try to discuss the extent to which boats from the middle of Sweden travelled the route to the East and which types of boats were involved. My method of working is based on a compilation of material surprisingly unknown in archaeological research such as the central Swedish ship finds that actually exist. Based on an analysis of information from historical sources, from ethnographical and historical analogies, as well as practical experiments, it has been possible to classify and interpret these finds.

1.6.1. The myth of the large ship

Before we come to grips with the archaeological source material, there is reason to look a little closer at the myth of the Nordic Iron Age ship. Generally speaking, ships have had an important role in the writing of national history. This is true of both Viking ships and the large men-of-war such as the Vasa and the Kronan (see, e.g., Cederlund 1998).

It is precisely the myth of the large Viking ship (fig. 1) that turns up again and again in both popular works and academic writing. But the extent to which it is established was revealed, for example, by the exhibition, ‘The Ships of the Vikings’, at the National Maritime Museum in Stockholm, where a model of the Norwegian Gokstad ship was the centerpiece. It was also, tellingly enough, the splendid ship from Oseberg that embellished the exhibition catalogue, even though the little Viks boat (fig. 3) from the province of Uppland would to my mind have been a much better representative, since it is smaller boats like this that have been found in the majority of boat burials and archaeological finds in central Sweden and the Baltic region.
In the new museum in Old Uppsala there are boat-burial boats on display. Their role, however, is to illustrate the myth of the warring Vikings. And it is one of the largest and least representative boats from the middle of Sweden, Valsgärde 14, which is paraded there. The fact is, too, that only the cemeteries of Vendel and Valsgärde are described in any detail. The boat burials of these cemeteries were presumably exclusively those of males with weapons, and they also contained ‘large’ boats that might be classified as warships.

But the Vendel and Valsgärde ships are special and by no means representative, neither in terms of find material as a whole nor even of boat burials. The majority of boat burials including Tuna in Alsike, Tuna in Badelunda, Norsa in Köping, Sagån in Sala, etc., contain small boats and quite a number of them are female graves. Only a minority of boat graves contain fully armed males.

In reference material one encounters, time and again, large ships on their way to the East. One example is Åke Gustavsson’s widely distributed illustration in ‘The Viking’ (Almgren 1967), where a vessel the size of the Gokstad ship is shown being hauled overland (p. 136). Rune Edberg (1999:24, 2002) has critically examined the foremost of the ideas about Viking ships on the eastward routes that have appeared in both academic and popular literature. Well known, of course, is Frans G. Bengtsson’s novel Röde Orm, named after its fictional Viking hero on eastern journeys. In the book it is told how the large ship with 24 pairs of oars is hauled along the portages by the cheerful crew in exchange for swigs of ‘dragging beer’. This was probably a ship about 30 metres long. In comparison the Gokstad ship is 23.2 metres long, and has a hull weight of about 8-9 tons, which means that Orm’s ship may have had a weight of 16-18 tons (Edberg 1999:25). This is, according to the results of experimental archaeology (Edberg 1999; Larsson 2006), not possible. An image of hauling a ship this size has also found its way into the scientific literature, as can be seen in the illustration from the popular-archaeological work on the Viking Age, Vikingen (fig. 2.).

People’s ideas about ships of the Late Iron Age have been based on and generalised from the clinker-built, iron-riveted ships of southern and central Scandinavia. This picture is so well established that the varia-
tions which actually exist in both building techniques and design have been ignored. In the research world this has resulted, amongst other things, in a feeling that a particular number of iron rivets is required in a burial before there can be any discussion whatsoever of a boat having been buried there. What one forgets is that, even in an area as restricted as the middle of Sweden, four different types of fastening techniques occur. Apart from rivets there are also cramps, sewing techniques, and treenails (wooden pegs). These may be the result of local variations, or influence from groups in the Baltic region where people have adhered to another type of shipbuilding tradition.

Only the iron-riveted boats from southern Scandinavia have been touched on in the larger volumes on prehistory such as Stenberger (1963) and Burenhult (2001). Boat types and boat-building traditions which diverge from the general idea of the appearance of Iron Age ships do not seem to be included, as for example the sewn boats of the Sámi, the Wendish treenailed boat finds, and the boats of Dalarna which are fastened with cramps. Logboats (or dugouts) are generally not mentioned at all in the more comprehensive works when writing of the Iron Age or historical times, despite the fact that they form a large element in the material. This is, of course, a great deficiency as far as research is concerned, and gives a distorted picture of the types of boats and ships actually used by the people of the Late Iron Age in central Sweden.

1.6.2. The myth of the seafarers

The ‘Viking’ in the boat, as presented in our contemporary view, is a man (fig. 1). The persons engaged in Late Iron Age seafaring are supposed to be men. Women, if they are dealt with at all, stayed at home and took care of the farm while their husbands were away plundering or conducting trade. The image with which we are introduced to the Scandinavian women of this period is often the woman with her set of keys to the farmhouse, which was her responsibility. In the history-writing rooted in the 19th- and 20th-century ideology, the Iron Age woman stays within the household sphere. She is passive in the events of history; and the artefacts in a woman’s burial are seen more as a reflection of her husband’s wealth and power than of any influence of her own, not even a very small share. Within the same tradition, if a woman does appear abroad in scientific or popular presentations, it is usually the slave-girl sacrificed to her chieftain, in accordance with a selected part of Ibn Fadlan’s account. A few exceptions have broken the pattern in recent years, however. For instance, the fate of Olof Skötkonung’s daughter Ingegärd has been discussed (Edberg 1997).

Here I will not say that women had much power and that the previous view was completely wrong, but on the other hand in my review of the archaeological and written sources associated with ships and seafaring, I will not shut my eyes to the evidence of Scandinavian women engaged in eastern journeys and appearing in other circumstances than we are used to.

The boat burials offer an excellent material for analysing gender relations in the Iron Age, but it is also obvious that much of the earlier research has tended to project contemporary gender structures onto the prehistoric situation.

1.7. From the ships to the society

To understand the role of ships and seafaring, as well as to answer the question why the ships became a key symbol in the society, it is necessary to take a closer look at the ships themselves and what they actually looked like, which is quite different from the popular images of ‘the Viking ships’ reproduced in scientific exhibitions and publications. This will be done in chapter 2. The material consists of remains of boats and ships found in bogs, lakes, rivers, the sea, in meadows and in burials. The large number of burial boats that constitute an excellent material for a study of the boats of the Svear, have in most cases only the iron rivets preserved, which have connected the planking in the hull. Thanks to the well-preserved 11th-century Viks boat from Uppland, it has been possible to reconstruct the original shape, size and construction of the boats in the burials.
The analysis of the boat-building methods used when the Viks boat was built, together with the results of shipbuilding as experimental archaeology and the specialist knowledge of traditional boat builders today, has revealed the main factor behind the special qualities of the Late Iron Age ships: the radial splitting method. The changes in technology and methods are connected to changes in communication systems, in seafaring and society. The improved light ships, together with the introduction of the sail, made it possible to travel new and longer routes, and also to launch unpredictable naval attacks on any shallow shore. The archaeological material used to trace this technological change is not only the ship remains in themselves, but also the tools connected with these new building methods. The remains of tools and implements associated with the radial splitting technology have therefore been analysed, and together with the boat remains the results of the analysis show that the method was introduced in the 6th–7th centuries. A study of the Gotlandic picture stones also indicates that this was the period when the sail was introduced into Scandinavia.

The changes in boat-building methods will be discussed in chapter 4, and their consequences for seafaring, in a contextual light, in chapters 6 and 7. These changes, I will argue, enabled the establishment of the new, expansive, maritime power among the Svear in the early Vendel Period, which is reflected in the boat burials of especially Vendel and Valsgärde in Uppland. The disturbances in the West European trade networks associated with the Arab expansion in the Mediterranean could, thanks to the ships, be used for the creation of new, eastern, trade routes along the rivers, not only to Byzantium but also to the Orient and Asia. Here there were attractive markets where silver, silk, colour pigments and other goods could be acquired in exchange for the easily transported and highly appreciated furs from the North. Already in the 8th century a long-distance trade with the areas east and south of the Baltic Sea was established, and Scandinavia became the host for new marketplaces like Birka, Haithabu, Kaupang and others, centrally placed in this network for the exchange of products between Western Europe and the East. In Russia, the Scandinavian presence is visible already in the earliest settlement layers of the marketplaces.

Where the Svear travelled by boat, and how far, has been the subject of intense discussion. Thanks to the clearly different boat-building traditions in NW Europe, it is possible to distinguish the boats of the Svear from other boats. To some extent the way a boat is built reflects the ethnical identity of the builder and the user. These different traditions are briefly outlined in chapter 5, and serve as a basis for the interpretation of the seafaring of the Svear that is discussed in chapter 7.

The knowledge of the ships, i.e., the kinds of ships used (chapter 3) and how they were built (4), as well as what separated the Swedish boats from the other boats built in the Baltic region (chapter 5), is crucial for the understanding of the development of seafaring in the Late Iron Age. The new possibilities for maritime journeys also had a deep ideological impact, making seafaring and ships part of the cultural identity. It has often been questioned whether the long-distance journeys were made by boat, on ice, or on land. I will argue that the journeys were made by boat, and that this is an important factor that explains why the ship came to be a key symbol in the Late Iron Age society of the Svear. In chapter 6 and 7 the re-
mains of communication systems and seafaring will be analysed. The clearest remains of the eastern journeys – the fragments of Scandinavian ships in the Baltic region, Russia, and farther along the river routes to the Black Sea and the Caspian Sea – are studied against the background of the information in historical sources. The focal point in the ongoing debate about the long-distance journeys by boat, namely the problem of portages, is discussed using the knowledge of boats of this time as well as analogies with North European societies that continued to use portages during the historical period, in a communication system in areas without roads.

Power and religion are intertwined. A symbol is more effective if it is loaded with religious meaning and content. The contextual analysis done for several of the boat finds revealed that many derived from a sacrificial context. Contrary to the Danish situation, the tradition of bog sacrifices in Sweden as well as in Norway continued in the Late Iron Age, and here boats and ships played an important role as symbols connected with fertility deities. This may be explained by the strong position of the fertility cult in the area, which is also reflected in the many place names alluding to deities connected with this cult, such as Njord, Nizerdh, Ull, Frö and Freya. At some sites with place names like these, bog sacrifices with boat parts were found. The occurrence of boats in burials may be interpreted in several ways. They may symbolise that the deceased belonged to the Ynglinga dynasty, deriving from the god Frey, whose symbol was a ship. They could also be a means of transport to the realm of the dead, a container for the deceased, or symbolise the destination to a special death realm for the deceased. An attempt to interpret the use of ships in a religious context will be made in chapter 8.

Despite the chosen interpretation, it is evident that the boat in the burial is connected with wealth and power, another expression of the ship as a key symbol. But does the boat in a female burial represent a woman with power, or merely the power of her husband? Are the boats in the female burials really as simple as has often been claimed? The statements about gender relations in the Late Iron Age have often been repeated, but the boat burials offer an excellent material for the discussion about women and power, and they need to be revisited. Because I am not only a researcher, but also a woman in a male-dominated research field, I do observe aspects in the material that otherwise would have gone unnoticed, since the social order of today is generally projected without question onto past societies. The material must instead be allowed to, as far as possible, speak ‘for itself’. This can be done by, amongst other things, an analysis of the gender aspects of the distribution of artefacts and especially of power symbols in different contexts, combined with a review of the contemporary, primary sources. The latter sources have special value since they are not loaded with our own values, interpretations and assumptions – other than possible influences that occur in the process of translation – and they provide us, therefore, with fewer opportunities to disturb the essence of the texts. With this type of approach, we block the tendencies to rewrite a history based on assumptions, and open up for alternative interpretations based on the material and written remains of a social structure and an ideology that is not our own. The gender aspects of ships and seafaring will be discussed in chapter 11. Was the boat really a male object in prehistory? Is the clinker-built ship, as a symbol of power, only associated with men? When women happen to be buried in a boat, is it only in a simple logboat? Does the boat in a female boat-burial only reflect the power of the woman’s husband? Through a closer analysis of the gender structure as seen in the boat burials, in runic inscriptions, and in accounts from eyewitnesses who met Scandinavians in the last centuries of the Late Iron Age, an answer will be sought to these questions.

Boats were highly valued. They were used as gifts between kings and chieftains, and their glory and beauty were praised in the skaldic poetry. They were loaded with a value that extended far beyond their practical function. Sometimes the ship symbol was used to signal the royal peace, in special areas and at the thing. The social and juridical aspects of the use of the ship symbol will be discussed in chapter 10.

The first step in the state-formation process of the Svear, in my opinion, was a hierarchical division into territorial districts called land, folklund, hundare, skeppslag, har and hamma, partly using a terminology taken from the Iron Age type of warship. This structure was created long before the unification of Sweden, and it is therefore only found in the limited realm of power of the Uppsala kings at the time this organisation was established, namely in the area around Lake Mälaren in central Sweden. The power of the king was more symbolic than real, and it rested on a consensus with the local chieftains and the people, expressed at the things on almost every level in the organisation, from the skeppslag to ‘the thing of all Svear’. The ship was so central in this society that it was used as a symbol of the ruling Ynglinga dynasty, at the same time as it represented the mythological ancestor of this dynasty – the fertility god Frey. In chapters 8 and 10, I will discuss how the use of the ship as a metaphor is related to the role of the ship as a key symbol. I will argue that this ideology belongs in the type of society that we find among the Svear in the Late Iron Age. The ship type used as a symbol and a metaphor is the light, rowed warship of this time period.

In the Middle Ages the ship types and ideology changed, as did the society. The ship lost its role as a key symbol when the power of the Svea kings, along with the old political, military and ideological structure, was finally broken following the Battle of Sparrsättra when ‘the people of the Uppland lost their power’, as the Sigtuna Annals puts it. The Svear were imposed with taxes that were intended to finance the
new, feudal society based on a territorial division into länn. Each länn supplied the military troops for a royal castle that supported, by means of force, the royal power of the new, reunited Sweden. The heavily armed knight on a horse became the new key symbol, deeply associated with the new feudal organisation. When a ship was depicted now it was the cog, used for troop transports, as a warship, and for trade. The small, light and slender Viking type of warship went out of fashion, shrunk, and became the snipa, the boat of the fishing peasants.

In my final model of change I will disregard the conventional mode of explanation, the ‘vulgar social evolutionism’ (an expression by Lars Sundström 2006) which displays a model of social organisation evolving from a simple level to a complex one, or ‘from tribe to state’, even with regard to changes in material culture, in this case boats. Instead I will offer an alternative way of interpreting what I call transformations of society and the degeneration of ship-building methods. Societies fall apart, political constellations disappear, technology moves from complex to simple; and my results of analyses can be interpreted as such that this is what happens in Sweden in the 11th to 13th centuries. This hypothetical interpretation of the interrelated changes will be presented in the final chapter together with my explanation for the political and ideological mechanisms behind the birth and fall of a maritime society.
2. THE SHIP-ARCHAEOLOGICAL MATERIAL OF CENTRAL SWEDEN FROM THE LATE IRON AGE

2.1. Remains of boats and ships in the archaeological material

As was shown in the introductory chapter, there is a general, preconceived notion about the construction and appearance of ships in the Late Iron Age, especially in the Viking Age. Since the question of which ships have been used is central for the evaluation of the possibilities of seafaring and for the creation of the maritime society, the archaeological remains of boats and ships that actually have been used will be analysed in this chapter.

2.1.1. The find-spots

The ship-archaeological material appears in many different environments. There are many wreck sites, if we take into account all kinds of boats and not just those that correspond to the general, preconceived ideas. In central Sweden there are, not least, also the many boat-burial boats, which can be reconstructed on the basis of the position of the rivets and analogies with better-preserved wreck-finds such as the Viks boat (see below). Boat and ship remains have been found in places where we might expect them, in the sea, rivers and lakes; but they also have been recovered from bogs and on land. The shore displacement in central Sweden, with a land upheaval of about 4–6 in the 11th century, has namely turned the former seabed into dry land, and many lakes into meadows, bogs and agricultural fields. The exposed positions have badly damaged the wreck sites in the sea, while the land finds are surprisingly intact and well preserved. Most of the relevant material that I have identified as prehistoric boat remains is from the latter type of find-spot. Some are wrecks that occurred by accident; but as the contextual analysis has shown, there are also finds that were deposited intentionally, where the boats formed part of sacrificial rituals at the sites. These sites will be discussed in chapter 8.

What remains are there of the actual ships that trafficked the domestic waterways of central Sweden and that also carried the inhabitants abroad on journeys for trade, raiding and exploitation? The ship-archaeological material in central Sweden comprises three different categories: wrecks, sacrificial finds, and boats in boat burials. When it comes to the first two categories, a large number of finds have been made in silted-up transport routes and in meadows, which earlier formed part of the seabed. Only a few of these finds have been taken in hand, however, and among them only a small number have been dated and even fewer have been subject to documentation. This material is, nevertheless, an important complement to the partly well documented and published boats of the boat-burial cemeteries. The boat-burial boats have, however, not been discussed or analysed in detail before. Among the latter it is usually only the rivets that are preserved, but it is clear from the careful measurements and recording carried out in connection with investigations that ideas can be formed about the size, construction and hull of these boats. The information about these boats’ construction that is missing due to the poor preservation of the wood, will be complemented and interpreted on the basis of a comparison with the only find of a vessel of this type that has a preserved hull in this context, namely the Viks boat.

Several of the wreck finds have been dated and documented in plans during the work on this dissertation. The boats in the burials have, if possible, been reconstructed on the basis of the knowledge of boat building gained by the study of the better-preserved Viks boat (see 2.2).

2.1.2. The sizes and types of boats

What did the actual ships of the Svear look like? What do we know about their size and construction? To answer this question I will make a comparative analysis of the approximately 75 finds known from the Late Iron Age in central Sweden, which I have recorded so far. The results are shown...
in tables 1 and 2. The material comprises 51 boat graves and 24 wrecks.

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<td>20</td>
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<td>18</td>
<td>17</td>
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</table>

Table 1. Size of ships in central Sweden, dated to the Late Iron Age.

Material used for table: Ribbingebäck, Skogstibble Parish, Uppland (Gezelius UM 107/64), Nyboholm in Sorunda (SHM 12 068, Westerdahl 13), Runsa, Ed Parish, Uppland (SHM 3041/73, Westerdahl 12); Vreta, Värmdö Parish (SHM 192 48), Penningby, Länna Parish; Gavel-Långsjön, Fasterna Parish (Fasterna Hembygdsförening; Fiholm, Rytterne Parish, Västmanland (SHM 4064/4278 Lindquist 1924, Westerdahl 1985:61), Mosjön, Kumla Parish, Närke (SHM 30 713, Westerdahl 13:1985), Skärjsjön 2, Skinnskatteberg, Västmanland, Ämänneringen, Väster Våla Parish, Västmanland; Lertjärn in Säter Parish, Dalarna, (Lundqvist-Hjelmqvist 1941:129; Serning 1966:85); Kvarnsjön, Rikssten, Botkyrka Parish, Södermanland (Andersson 1997) Ribbingebäck (fig. 4), Skogstibble Parish, Uppland (Gezelius UM 107/64), Söderbysjö, Nacka Parish (Bauger 2002), Enköping, Vårfrukyrka Parish (UM 624/60, Norrgården 1961:18), Eskilstuna (Lorin 1999), Vreta, Värmdö Parish, Uppland (Westerdahl 1980), Penningby, Penningby Parish, Uppland (Penningby slott), Örmsossen 1 (Serner 1913), Örmsossen 6, Tensta Parish, Uppland (Tensta Hembygdsförening), Runsa, Uppland (Westerdahl 1980), Vik 1, Söderby-Karls Parish (EM Larsson 1997), Vik 3 (EM 2049), Salsta (UMF); Nyköping (Florin & Olsson 1965), Vika, boat 1, and 2, Söderby-Karls Parish, Uppland (Larsson 1997).

Valsgärde 1 (Fridell 1930); Valsgärde 2 (Dyf verman 1929); Valsgärde 3 (UMF), Valsgärde 4 (Odenkrantz 1933), Valsgärde 5 (UMF); Valsgärde 6 (Arwidsson 1942); Valsgärde 7 (Arwidsson 1977); Valsgärde 8 (Arwidsson 1954); Valsgärde 9, 11, 12, 13 (UMF); Vendel I-IV; Vendel VI-VII, X-XIV (Stolpe 1912). Tuna in Badelunda 23b, 35, 46 b, 48, 75, 76, 79, 84 (Nylén & Schönäck 1994a, b); Tuna in Alasksie nos. I-IV, VII-VIII, X-XIII (Arne 1934); Prästgården, Gamla Uppsala 1, 2, 3, 36 (Nordahl 2001); Årybo (Arbman 1936, 1940), Sagän 1, 2 (Almgren 1907); Birka 879, 1137 (Arbman 1943); Fittja (Weiler 1975); Ultuna (Almgren 1902), Norsa, Köping Parish (UMF).

As can be seen from the table, the smaller boats completely dominate the material. The boats in the boat graves are of many different types; small as well as larger boats and ships occur. They cannot, however, be seen as really representative of the boats and ships used by the average population, since almost all of the finds that can be classified as ships, extending 9 m in length, are found in this group. The rest of the finds, i.e., the wrecks of larger boats, are also found in another, very special context which will be dealt with later (see chapter 3) and which indicates that these did not belong to the holdings of the ordinary Iron Age man.

There are also constructional differences between the boats in the boat graves and other boat finds. The logboat-based boats of different types occur in both groups, even in the boat graves, though they are seldom recognised since they do not fit well with the traditional picture of the Iron Age ship. The boat graves, however, contain boats and ships in which special effort and skill have been invested, namely plank-built boats constructed with methods that surpass even traditional wooden boats built in our own time. These particular boats will be discussed in the next chapter. In the boat graves we thus find most of the boats built on keel.

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logboats and boats with a logboat bottom</td>
<td>32</td>
</tr>
<tr>
<td>Logboats, both 'hard' and 'soft'</td>
<td>20</td>
</tr>
<tr>
<td>Expanded ‘soft’ logboats</td>
<td>12</td>
</tr>
<tr>
<td>Extended logboats</td>
<td>12</td>
</tr>
<tr>
<td>Logboat bottom in boat graves</td>
<td>14</td>
</tr>
<tr>
<td>Logboat bottom in wrecks</td>
<td>18</td>
</tr>
</tbody>
</table>

Table 2. Constructional differences between burial boats and wrecks

The picture given by table 2 should not be taken for granted. The recording of graves as boat graves has been done on the basis of a preconceived opinion of how an Iron Age boat in the Mälaren Basin looked and was constructed. Graves without, or with only a few, iron rivets have not been interpreted as boat graves, since one has not expected that boat graves could also contain logboats, sewn boats, treenailed boats, boats built with cramps, etc. Although preservation conditions seldom permit wood to endure,
a careful recording of dark colourings with a boat shape could in fact reveal a boat grave. A splendid example is the Tuna in Badelunda excavation (Nylén & Schönböck 1994a, b). Without the by chance well-preserved sewn boat in grave no. 75, the graves with mouldered hulls of five other boats built without any rivets, which were visible only as dark shapes against the surroundings, would not have been recognised and documented as boat graves at all. This problem will soon be dealt with more thoroughly.

The burial boat exhibited in the Old Uppsala Museum, Valsgärde 14, is one of the larger boats to be found in a grave in central Sweden, but it clearly fits into the general idea of how the Swedish Viking ship should look. The boats in the Swedish boat graves were significantly smaller than the Norwegian, and built with a few wide strakes attached to the keel (table 3).

<table>
<thead>
<tr>
<th>Number of strakes</th>
<th>Number boat graves</th>
<th>Number dugout bottom</th>
<th>Expanded dugout bottom</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>11</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 3. Boats in boat graves, basic construction.

Sources: Valsgärde 1-9, 11-13; Vendel I-IV, VI-VII, X-XIV. Tuna in Badelunda 23b, 35, 46 b, 48, 75, 76, 79, 84; Tuna in Alskie I-IV, Vlb-VIII, X-XIII; Prästgården, Gamla Uppsala 1, 2, 3, 36; Årby boat, Sågan 1, 2; Birka 1137; Fittja.

The boat finds have here been systematized by means of tables in order to clarify the estimated size and construction as well as the different types of boats in the archaeological material. As is evident from these tables (1, 2, 3), it is the small boats that predominate in the archaeological material from Late Iron Age Sweden.

Logboats as well as boats with logboat bottoms are common, even in boat burials. In central Sweden the elegantly designed logboat with pointed stem and stern comprises a large group. Examples include the beautiful little boat from Ribbingeback (fig. 4) in Skogstibble Parish, Uppland (Gezelius UM 107/64), Nyboholm in Sorunda (SHM 12 068; Westerdahl 13), the fragment from Runsa in Ed Parish, Uppland (SHM 3041/73, Westerdahl 12), and from Vreta in Värmdö Parish (SHM 192 48), Penningby in Länna Parish, and Gavel-Långsjön in Fasterna Parish. In western central Sweden this type has also been found, exemplified by the boat discovered in a bog at Fiholm in Rytterne Parish, Västmanland (SHM 4064/4278 Lindquist 1924; Westerdahl 1985:61), the boat from Mosjön in Kumla Parish, Närke (SHM 30 713; Westerdahl 13), and the two boats found in the Bergslagen district – from Skärsjön 2 in Skinnskatteberg, Västmanland, and Ämännings in Väster Våla Parish, Västmanland. In the two last-named examples the ships’ prows are raised.

The shape of a logboat found in a bog at Lertjärn in Säter and dated by pollen analysis to the Viking period (Lundqvist-Hjelmqvist 1941:129; Serning 1966:85) shows that the tradition from the Mälaren Basin spread to the province of Dalarna and the districts around the river Dalälven. A common feature is their generally rounded sections. The rectangular section and trough form seen in boats from the Bronze Age and earliest Iron Age apparently had ceased long ago. A large number of undated finds of the tapering oval type are also found in the collections of local cultural societies, farms and museums. It should be mentioned that the boats dated to the Middle Ages are much more crudely hewn, and instead of the tapering oval form are once again often trough shaped. These will not be discussed here for lack of space.

A large number of logboats in the Late Iron Age material presented above are remains of expanded, ‘soft’ logboats (see chapter 4), a type that disappeared after the 11th century in central Sweden. In Finland, Estonia and Russia boats of this type were used until the 19th century. In Finland they are known as äsping, from the Swedish word asp ‘aspen’, since they were mostly made of aspen. This type of boat was closely connected with ‘the maritime society’, because it was one of the low-weight boat-types necessary for the communication system in Sweden (see chapter 5) which included an intensive use of river routes with a system of portages where the boats had to be carried. A logboat of this type that was investigated by a Finnish ethnologist in Estonia in the 1920s had a weight of only 67 kg,
and was 6 m long and 0.9 m wide (Brøgger & Shetelig 1950:34).

Generally the Iron Age boats are not very long, usually 3-5 m, but sometimes even longer boats occur, like the 7.2-m-long, expanded boat from Gavel-Långsjön, Fasterna Parish, Uppland (fig. 5). It is radiocarbon dated to 1032 ± 90 (uncal.).

Figure 5. The long expanded logboat from Gavel-Långsjön, Fasterna Parish, Uppland. Drawing by Gunilla Larsson.

One example of the typical Late Iron Age logboat, which is expanded and has the characteristic shape, is the recently discovered and rather well preserved find from Lyttersta (fig. 6). This boat has the typical pointed stems in plan and longitudinal section, as well as the thin, carefully worked sides of the expanded dugout. The boat is 3.46 m long and 0.65 m wide. According to a combination of radiocarbon and dendrochronological analyses (only a few of the outer annual growth rings are missing) the boat can be dated to AD 1073 ± 10 (Larsson & Sundström 2006). The boat was thus built in the last part of the intensive phase when this technology was still in use in central Sweden, before it completely disappeared.

Figure 6. The expanded logboat from Lyttersta. Drawing by Gunilla Larsson.

A special type of logboat is the one with an extending ‘beak’, as seen on the best-preserved Viking Age logboat of the six found in Örsmossen north of Uppsala and now preserved in the UMF collections (fig. 7). Another example is a logboat from Sundby, Sundbyberg Parish, Uppland (fig. 8), from a find-spot with many different parts of boats and ships (Söderberg report, ATA).

Figure 7. The stem of one of the Viking Age logboats from Örsmossen. Photo by Gunilla Larsson.

This type of logboat has, according to my observations, always a Late Iron Age date.

Figure 8. The logboat from Sundby, Sundbyberg Parish. Drawing by Söderberg, ATA.

2.1.3. The social context of the boat finds

The logboats were probably the ‘Viking ships’ of ordinary people, constructed with a shape that reflected the contemporary ideals. There is also a connection between the construction of the logboats and the way of living. A distinctive difference can be seen between the light boats of prehistoric time and the heavy, rough-hewn dugouts of the historical period, and the time of change is the beginning of the Middle Ages.

The light way of building the Late Iron Age boats indicates a mobile way of life, where the boats were built to enable transport between lake systems, as well as on portages in the communication network. When the society and communication system changed, the boat types and the way the boats were built also changed. The heavy boats of the Middle Ages and onwards were kept in the lakes they were built to be used in. This change should also be seen in connection with the restrictions placed on fishing rights in the medieval period. The outlying land and the fishing connected with it came to be seen as royal property, and both the land and the fishing rights were often also granted to the nobility, who in turn could give them
to lease-holding crofters on their property. Fishing became the occupation of the poor and the dependent in society, and it was done in lakes of the inland areas, most of which were in the hands of the aristocracy. The decline in the status of boats and boat-related occupations is clearly reflected in the construction and finish of the boats. The time and labour invested in the construction and appearance were reduced, and the boats degenerated. These primitive, hollowed-out logs used as boats in the historical period are often mistaken for the oldest boats when found by archaeologists. This shows that the prevailing evolutionistic view still affects interpretations.

Ulfhielm (1993, 2004) has related the changes in the distribution and appearance of the logboats to changes in society in the transition period between the Iron Age and the Middle Ages. In his study of the logboats from Norrland (1993) and in a separate study of the finds from the county of Gävleborg (2004), he has found that the logboats that can be dated to the Iron Age are found very close to the contemporaneous settlements as these are known from the distribution of cemeteries. These have often been found in land that is cultivated today, or in bogs that earlier were bays of the sea, or lakes (2004:185). He has also made the observation that these logboats are longer and more beautifully built than the medieval boats. The boats from the medieval period, on the other hand, are found in the outer, marginal areas, at a distance of a few kilometres from the historically known settlements. As I also have observed earlier (2001, 2003, 2004), there is a clear degeneration visible in the boats from the historical period even in the material studied by Ulfhielm. He interprets this as a result of a change from boats that were functional and also used to display the skill and artistic feeling of the owner, to boats that were only a kind of mobile jetty with a specialised function.

2.2. The Viks boat

2.2.1. Find conditions

The Viks boat (‘Viks boat 1’) is a well-preserved vessel approximately 9.6 m long, which was found in 1898 in a meadow belonging to Vik village, Söderby-Karl Parish, Uppland (Larsson 1997, 2000). Most of the hull, which is constructed almost entirely of oak, is preserved: the keel, parts of both stems, most parts of the five strakes up to the gunwale and parts of the äsing (the wooden rail attached to the gunwale), most of the frames, one bite and two knees. About 0.6 metres are missing in the central part, because the boat was cut through during the ditching done when it was found. Thanks to the construction method using radially split material (see chapter 4) the boat has shrunk less than 5 %, and has been possible to reconstruct in a reliable way (fig. 9). This boat was recovered, but in the same meadow at least three other boats were found of which only single parts are preserved (‘Viks boat 2’, ‘Viks boat 3’ and ‘Viks boat 4’).

Figure 9. The Viks boat in exhibition. Photo by Gunilla Larsson.

The Viks boat is built with a hull shape and proportions similar to the boats in the Valsgärde and Vendel burials, which makes it very valuable for the reconstruction of these less well preserved burial boats, and for acquiring information on boat construction and building methods during this period.

2.2.2. Dating

The well-preserved remains of this vessel were not given much attention until a radiocarbon analysis was done in the 1980s, yielding a preliminary date to 1140±70. This was done in connection with registration work at the local museum in whose attic the boat was stored. Three samples for a den-
Dendrochronological analysis were taken in 1986 by Lars Löfstrand. He also collected local reference material from the region, for instance from the roof beams of Söderby-Karl Church, built around the year 1300. Despite the large amount of local reference material extending from the 12th century until the present, no correlation was found. In 2001, eight more samples were taken. They were first examined in Poland, and then were delivered to Alf Braathen for analysis. Earlier, he had received the first samples from Lars Löfstrand and had not been able to find any correlation. Despite the fact that Braathen also has a large Swedish and European reference material and has access to Thomas Bartholin’s material and the Stockholm curve, it was not possible to establish a certain date on the basis of the preliminary dendrochronological analysis of 11 samples, due to the low correlation with reference material. In the first three samples the outermost annual growth ring could have been AD 1033 (sample no. 14) without the outer growth rings, suggesting a date to around the mid-11th century (Braathen 1997). In 2002 Braathen (report 11/1 2002) summarised his results from all the samples by stating, 'No other time positions than those listed above are possible in correlation with Swedish references, valid in for instance Uppland and the Lake Mälaren Basin' (my transl.). The possible dates of the samples he listed cover the period 749–1052, where several strakes come from one and the same large oak with more than 253 annual growth rings. This was the size needed to get the radially split, wide planking for the sheer strake. The average amount of growth rings lost in the sapwood that has been cut away is estimated to be 15-20 rings, which gives a time for the felling of the tree in the 1070s. The Polish analysis of the last samples taken by Marek Krapiek, also claiming to use the Stockholm curve, seems confusing since the given result diverges completely from the one provided by Braathen and Löfstrand, with a possible date for the last ring to AD 1310 (Westerdahl 2004:16; Ossowsk, personal information). This date is not possible in comparison with the other material from Uppland (Löfstrand and Braathen, personal information). Neither is it possible to move the radiocarbon date forward in time, since the addition of linseed oil for conservation has already given a later date than the real date because of the increase in the relative amount of organic material that has not changed from C12 to C14 (Possnert, personal information).

Typologically it belongs to the Late Iron Age. All medieval finds from Helgeandsholmen have a straight stern, while the Viks boat still has the curved stern.

To summarise, the available dates seem to verify a date to the mid-11th century for the building of the Viks boat.

2.2.3. Reconstruction

The Viks boat as reconstructed by the author is today remounted (fig. 9) and exhibited at the local museum of Erikskulle, in Söderby-Karl, close to the place where it was found. The boat, as we can see it, is a hypothetical reconstruction based on a thorough documentation of the parts. Since the parts of the boat were loose and not drawn in situ, the position of each part as well as the shape of the boat had to be reconstructed before the parts were assembled (fig. 10).

Figure 10. The preserved parts of the hull, the position of which could be determined with some certainty. Reconstruction by Gunilla Larsson.

The Viks boat was discovered already in 1898, when a tenant farmer was digging drainage ditches in a meadow. At that time the boat was cut through with an axe, so that the ditch could pass through it. Later when the find came to the knowledge of the landowner Erik Ersson, he decided to rescue the wreck. He did an excavation of his own, and dismantled the parts so that the boat could be taken to his growing collection of antiquities. These collections later became the basis of the local museum, Erikskulle, and the association formed for its care, Söderby-Karls Forminnes- och Hembygdsförening.

Unfortunately the parts were not marked, numbered or documented in situ at the time of excavation. As a result, after a thorough documentation of the parts, the work on the reconstruction at the drawing table turned out to be a giant puzzle. Every part has been drawn by the author on a scale of 1:1, scaled down to 1:10 by Alopaeus and through scanning by Scanmark, Denmark. Every detail has been carefully recorded.
Because the distance between each rivet varied a great deal, usually between 14 and 22 cm, the parts could only fit together in the correct position. This resulted in a hypothetical reconstruction (figs. 10 and 12) made by the author, which served as a basis for the rebuilding of the boat. The parts of the Viks boat were then remounted at the National Maritime Museum in Stockholm in 1993/1994, under the supervision of the author and the boat builders Axel Lindberg and Urban Riismark. The Viks boat was moved to its permanent exhibition in Söderby-Karl during the summer of 1996.

The hull was rebuilt on the basis of the angle of the lands, giving the original shape (figs. 13, 14). The radially split planks had only shrunk less than 5%, and they could be fitted together with new nails in the old rivet holes. The first problem was that the planks had become straight and flat, so that the old wood had to be bent again to fit. We chose the solution of our preceding boat builder: to make the strakes soft by immersing them in water, in our case in a specially built water tank behind the building place in the museum. This turned out to be successful, and as a result we can see the ship remounted today. The first strake was the most critical, since it had to be bent from horizontal to vertical in a very short distance. The wet, softened planks did not break when turned, and they dried in the desired way.
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lines of the ship, which was done by the author together with the experienced shipyard-master Axel Lindberg from the Neglinge wharf outside Stockholm. An expert group was also formed, which included the director of the National Maritime Museum, S. Haasum, the author, Gunnar Nordlinder and Axel Lindberg. The group discussed plausible and reliable solutions to problems that arose during work on the reconstruction.

Research also had to be done on the context of the find and the find-spot. The history of recovery in the late 19th century has come to our knowledge thanks to information from the finder’s granddaughter, Margareta Lindskog in Söderby-Karl.

2.2.4. Ship-technological analysis of the construction

The boat is built with oak planking, which is always split radially with the exception of two cases (see chapter 4). Also the other parts of wood – the keel, stems, frames, beams, knees and laths – are of oak, apart from the wooden dowels that secure the ribs to the hull. Four of them were analysed at the Royal Institute of Technology by Ingmar Johansson, and were found to consist of European silver fir (*Abies alba pectinata*), with closely spaced growth rings. Ocular study has shown a variety of wood species in other dowels; according to the boat builder Axel Lindberg, spruce and beam tree were probably also used. Some dowels have also been analysed by the Viks boat association, and these proved to be of juniper.

The *keel* was made out of a single, solid piece of oak, split into halves, and with a T-section cut so that the medulla was spared at the top of the keel. It is preserved in two pieces, cut for the ditch in the 19th century (fig. 15). Originally it was 6.36 m long, but the ditch cut through about 0.6 m, and the keel is now in two pieces. The keel is 9 cm high amidships, and 9.5-10 cm at the stem and stern. The shape of the section is a ‘T’ with sloping sides, so that the vertical section is not more than 4 cm high. The width amidships is 27 cm, constituted of a middle vertical part only 5 cm wide, with edges 11 cm at each side. The stem and stern are connected to the keel with a horizontal scarf. The stem is fastened with two wooden nails, the stern with one wooden and one iron nail. The first strake is fastened by iron rivets, clenched with square, rectangular and rhombic plates on the inside. There has been no connection between the keel and the frames. The edges of the keel are decorated with three ornamental lines, cut at each side. The keel was protected by a false keel. It was fastened with at least nine wooden nails, 22-25 mm in diameter, at irregular intervals of 9.8-112 cm. A well-preserved, wooden nail that secured the false keel to the true keel (which is 9.5 cm high) measures 17 cm in length, which tells us that the height of the false keel below the true keel was 7.5 cm.

![Figure 15. The preserved parts of the keel. Drawing by Gunilla Larsson.](image)

The stem (fig. 16) is preserved in its main part reaching from the keel lash to strake 4. The top was made of a separate part, which is now lost. The stern was composed of at least two separate pieces lashed together. Both the stem and stern are curved and have steps on the inside. The section is almost triangular, with a rabbet for the hood-ends. On the narrow outside are nail holes, probably for fastening a protective border of wood or iron. Through the stem and stern are transverse holes, three in each and measuring 6.2-18.5 cm.

![Figure 16. The stem (right) and stern (left) of the Viks boat. Drawing by Gunilla Larsson.](image)

The Viks boat 1 has 5 *strakes* at each side, composed of 3-4 strakes lengthwise (fig. 17). The first strake is 22 cm wide amidships, narrowing to 9.5 cm at the stems. The thickness is 18-21 mm amidships, thinning to 11-15 mm at the stems. The second strake is 22.5-23 cm amidships, narrowing to 16.5-17 cm at the stems, with a thickness of 21 mm amidships and 15-18 mm at the stems. The third strake is the least well preserved, with parts missing especially on the starboard side. The width is 29 cm amidships, reduced to 11 cm at the stems. It is 19-21 mm thick along the edges and slightly thicker at the middle, 24 mm amidships, reduced to 10 mm at the stems. The fourth strake is 25.5-26.5 cm broad amidships, reduced to 17 cm or less at the stems. It is 19 mm thick amidships, reduced at the stem to 14

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Figure 15. The preserved parts of the keel. Drawing by Gunilla Larsson.

Figure 16. The stem (right) and stern (left) of the Viks boat. Drawing by Gunilla Larsson.

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mm. The fifth strake is the broadest, 31 cm amidships but only 13-15 mm thick, reduced to 12 mm at the stems.

Figure 17. Wooden rail ‘åsing’ (top), gunwale strake with rail, and some other preserved strakes from the Viks boat. Drawing by Gunilla Larsson.

The strakes are joined by iron rivets with square shafts, 5-6 mm wide, and rounded heads, 15-22 mm in diameter. On the inside the rivets have square, rhombic or rectangular plates, 15-30 mm wide. The rivets are situated at variable intervals of 3.3-26 cm, but usually 17-19 cm. The overlap varies between 20 and 35 mm, usually about 30 mm, but narrower on the outside than on the inside. In the middle of the overlap on the inside of strakes 1-4, there is a rabbet 11-14 mm wide for the luting of cow hair.

The boat originally had nine frames, of which parts of seven are preserved (fig. 18). These were 43-71 mm wide, usually 55-60 mm. The height was 30-170 mm, most commonly 50-60 mm. The frames were fastened to the strakes with wooden nails. The nails were secured with wooden wedges from the inside. Some of them also had been secondarily completed with smaller, square-shaped wedges from the outside, which will be discussed below. The frames were situated at varying intervals, between 73 cm and 100 cm from each other.

Figure 18. Frames preserved from Viks boat. Frame with mast step and locking device (top). Drawing by Gunilla Larsson.

Only one beam is preserved (fig. 19). It is made of oak, in one piece, with the knee on one side. Its overall length is 0.99 m, including the knee. The beam itself is 0.75-0.81 m long, 0.1 m wide in the middle, and 0.05 m thick. It is widest in the middle and narrowed towards the side. The knee is narrower and thinner at the top, and it has a V-shaped, decorative, carved relief where it meets the beam. The beam is held in place by the knees, nailed to the hull. It is placed close to a stem, above a frame, and may have been placed on floor timber 4F.

Figure 19. The preserved beam from the Viks boat. Drawing by Gunilla Larsson.

There are three, preserved, loose knees (fig. 20) and to these we can add the knee in one piece with the beam mentioned above. Two of the knees were fastened to the strakes with wooden nails, the third close to the stems with iron nails. The wooden nails were 17 mm in diameter; the iron nails had square shafts, 5-6 mm wide. The knees were fastened to the beams by rivets with square shafts measuring 5-7 mm wide. The rivets were clenched with square plates, preserved as marks in the wood on the upper side of the beam.

Figure 20. Knees from the Viks boat. Drawing by Gunilla Larsson.

There are several indications of transverse thwart, secured by knees. The boat was reconstructed with beams and knees above each frame. This is the normal solution for the framing system during this
period. On the Viks boat, the beams are indirectly indicated by the holes in the fifth strake for the treenails that fastened the knees. From the preserved knees we know that the wooden nails for these were of smaller dimensions than the ones used to secure the frames to the strakes. The former were only about 17 mm, the latter 19-26 mm. Thus the size of the former corresponds well to the size of the holes in the fifth strake, which vary between 15 and 19 mm.

The Viks boat was propelled by oars, and when the wind was right, by sail. Only a fragment of a possible oarlock is preserved. There are, however, traces that can be interpreted as remains of the fastening of oarlocks, which was probably done by lashing to the top of the sheer strake, where there are several bored holes that may have served this purpose. In the Iron Age material of Scandinavia, oarlocks are either lashed or nailed. What speaks in favour of the first solution is that the extra holes through the gunwale show wear on the upper side, which could have been caused by ropes.

The mast step is constituted of two parts (fig. 21). The mast was stepped with one half in a floor timber, and the other half in a loose wooden block attached by iron nails to the frame. The mast step was 7 x 4.5 cm.

![Figure 21. The mast step construction in the Viks boat. Reconstruction drawing by G. Larsson.](image)

2.2.5. Size and shape

The total measurements of the Viks boat, as reconstructed, are 9.6 m in length, 2.1 m in width, and the height above the keel is 0.54 m (fig. 12). The total length of the ship was initially a problem because of the uncertainty of the width of the ditch that had cut through the ship, but it has been established in several ways. Firstly, it was the only way that the lines of the ship could be fitted together. Secondly, in the beginning of the 1990s some excavations were undertaken at the find-spot where the drainage ditch was found, though it proved to differ in width between 0.4 and 0.6 m. Thirdly, in 1994, when working with the drawings and the parts, two of the fragments from the middle sections were identified.

What is important to note is that the hull is wider and higher towards the bow. This provides protection against the waves when sailing (mainly before the wind) in a boat with a square sail and mast stepped forward, since the waves hit the front of the boat first. The boat narrows towards the stern in order to ‘release the water’ easily, according to the participating boat builder Axel Lindberg during the reconstruction work at the National Maritime Museum.

2.2.6. The Viks boat and the principles for interpreting the shape and size of the burial boats

The shape, size, proportions, L/B ratio, thickness of the hull, framing system and building methods of the Viks boat correspond to the boats of the burials in Valsgärde and to most of the Vendel boats. These same methods and principles of building are also found in several of the burial boats in Tuna in Alsike Parish, as well as in boat no. 84 and no. 76 at the cemetery in Tuna in Badelunda Parish, though all of these vessels are smaller and probably had been used for personal transports and private journeys by the aristocrats buried in them.

The important difference between the Viks boat and the boats in the burials is that in the Viks boat most of the wooden hull is preserved, but very little iron, whereas in the burial boats no wood or only fragments have been preserved, and instead most of the iron rivets remain. Thus the Viks boat and the burials are complementary to each other. The Viks boat has invaluable information concerning the building method and construction of the boats in the burials, and it also has answers to questions concerning peculiarities in the details of boat building – questions that earlier were unanswered or misinterpreted. Some of the conclusions from the reconstruction of the Viks boat will be presented in this chapter, and a few of these will have tremendous effect on the interpretation of the religious and social aspects of the burials as well.

The sheer line is important to take into consideration in the reconstruction of the burial boats. This is the line that the gunwale creates when the boat is seen from the side stem-amidships-stern (fig. 22).
In the Viks boat the sheer line is evenly raised from amidships to the stems, as a result of radially split, straight material which is laid out in the middle and which rises towards the stems. In the burial boats, the parts of the hull that are raised above a certain level, often corresponding to the gunwale height amidships, have generally disappeared. This could be due to several factors, such as erosion, levelling of the ground, later construction work, or houses built on the site. In a longitudinal section of a burial it is clearly visible if such secondary disturbances have taken place, if the recovered artefacts are found up to an even level, such as the rivets of Gamla Uppsala 3. It is important to follow the rows of the rivets and estimate where they should meet the stems, but also to be aware of the ‘sheer-line effect’ which has the result that the rivets seem to disappear when they reach above a certain level, especially in a hull with more highly raised stems. In such cases, the upper (i.e., outermost) row ‘disappears’ first, and is seen as the shortest row on the plan, such as in Valsgärde 7 (see below), followed by longer rows of rivets the lower down in the hull one gets. This gives the plan of the rivets a pointed shape towards the stems, with the longest rows in the middle beside the keel/stems. In order to demonstrate this effect, the Viks boat is here presented in longitudinal section and plan as a typical boat in a burial, with the extending parts that are not visible in the plan shown by dotted lines.

*Figure 22. The sheer line of a boat. After Lindberg 1992*

*Figure 23. Longitudinal section of the Viks boat as a burial boat, with an imagined levelled ground. Drawing by Gunilla Larsson.*
2.2.7. Reinterpretation of the boat in the burial Valsgärde 7, based on an analogy with the Viks boat

The shape and size of the boat in the burial Valsgärde 7 have earlier been interpreted on the basis of the extension of preserved rivets in the burial. Blomberg has estimated the length to approximately 8.5 m and the width to 1.6 m (in Arwidsson 1977:95ff). The height, from the bottom of the keel to the top of the gunwale, was estimated to about 0.8 m, and the stems as reconstructed to about 1.65 m high.

As in the Viks boat and other finds, Valsgärde 7 has had a sheer line that rises evenly from amidships towards the stems, where it rises more markedly. The stems have been highly raised in this boat. This can be seen on the plan where the 'sheerline effect' is visible (see above), implying that the upper, outermost parts are gone. The top strake that rises above the preserved level first, also disappears first, since the stem parts of the hull are raised. The farther down in the hull, the longer the preserved rows of rivets, creating a V-shaped pattern of the rivet lines on the plan, as is typical in a burial with highly raised stem parts. This is visible in Valsgärde 7, especially in the front of the ship, which is rising higher than the stern. Measured between the outermost rivets on the plan, the remains of Valsgärde 7 are 9.25 m long (between nails no. 103 and no. 502), and it has earlier been reconstructed in the same length as the distribution of rivets (fig. 25).

Had it had the same sheer line as the Viks boat, 0.6 m would have to be added to each end. However, a reconstruction drawing based on the rows of rivets reveals that Valsgärde 7 has had a sheer line that is even more raised than the Viks boat. Following the
lines of the land represented by the rivets, at least 0.72-0.73 m should be added, and the correct length then seems to be approximately 10.7 m (fig. 26).

The width between the outermost rivets is 1.7 m amidships, and the greatest width – 0.52 m – is NE of amidships, which is also an indication that, in analogue with the Viks boat, the stem is in NE. In the Viks boat at least 0.3 m should be added to the width outside the outermost rivets. The width would then be 2.0 m and the plan of the boat as in my reconstruction.

Both boats were low and wide amidships, elegantly raised towards the stems. The height from the keel rivets to the uppermost row of rivets is 0.4 m. In the Viks boat the gunwale is situated 0.27 m (?) above the uppermost rivets, and the height above the keel on Valsgärde 7 can thus be estimated to 0.67 m, if this boat in a similar way had a wide gunwale strake. The Valsgärde 7 boat had a narrow keel that measured 0.18 m, stems to which the hood-ends of the planking were nailed, and four strakes on each side. The boat had nine frames as well as a rudder frame and a foremost frame called broken. On seven of the frames the width was great enough for a pair of rowers.

An indication that the stem is found in NE is that the hood-ends of the garboard strakes are secured to the stem by a long rivet passing through strakes and stem (no. 563), a solution often found in the stems, such as in the Lapuri ship find (Alopaeus 1995). This rivet has earlier been interpreted as used for a (vertical) scarf between keel and stem. This type of scarf has been common, but the known finds are only from the Viking Age and onwards, and only from Norway and Denmark (Rieck 1988). In Sweden the horizontal scarf between keel and stems continues throughout the Viking Age, as can be seen in the Viks boat. Secondly, the keel in this burial boat has had a V-shaped top, to which the garboard strake has been fastened with rivets along its entire length, a solution that almost necessitates the horizontal scarf in a technical solution of the type found in, for instance, the Björke boat (Humble 1934).

The ornamentation on this wooden construction found within the Valsgärde 7 boat is highly interesting in relation to the Viks boat. It has the same decoration, with three parallel lines along the sides of the planking. The size and shape of these ornamental lines is almost the same as on the Viks boat, and they were made with the same type of implement: a drawknife of the type found in the Mästermyr tool chest. Another find that has this type of ornamentation is the Årby boat (Arbman 1940:59 abb. 17).

The crew was estimated by Blomberg to consist of only three to four pairs of rowers (Blomberg in Arwidsson 1977:95). The presence of the so-called frame-top rivets in this boat not only shows the places for the frames, but also clearly reveals the positions of the rowers’ thwarts, which were secured to the hull with knees on the top of each
frame. As we shall see, this indicates that the number of rowers in the crew can be raised considerably. If the analogy with the Viks boat is made, the longer rivets found in nine places above the frames are not ‘frame-top rivets’ but knee-rivets, securing the knees to the hull and to the bite that was the rower’s thwart, altogether creating a so-called frame-station (fig. 28). This solution is typical in warships, and the number of rowers’ thwarts can be estimated on the basis of the number of rowers’ thwarts when these are indicated by knee-rivets. Just as in the Viks boat, not all of the knees in Valsgärde 7 have been secured with iron rivets, and only rarely has this been done on both sides, for example nos. 4F, 2F and 4A. Like in the Viks boat, the knees on the opposite sides have instead probably been fastened with wooden nails.

Figure 28. Section of the Viksboat amidships, a ‘frame-station’ of frame, bite and knees.

2.2.8. Reinterpreting the boat in the burial Gamla Uppsala 3 on the basis of an analogy with the Viks boat.

Based on the reconstruction of the Viks boat, it is also possible to make a more accurate reconstruction of the shape and size of the boat in the burial Gamla Uppsala 3 (Nordahl 2001). As we know, the sheer line of the Viks boat is evenly raised from amidships to the stems, as a result of radially split, straight material that is laid out in the middle and that rises towards the stems. The parts of the hull in the burials that are raised above a certain level, often corresponding with the gunwale height amidships, have mostly disappeared. This can be seen, for instance, in the plotting of the rivets in Gamla Uppsala 3, Prästgården, in a Microstation 3D-programme made by Helena Victor. Here the rivets are preserved up to an even level, but beyond that level the extending higher parts have been destroyed, probably on account of ground work in the area (fig. 29).

Figure 29. The position of the rivets in the longitudinal section of the boat. After computer presentation by Helena Victor.

That the prow and stern are missing is even more apparent if the preserved lines of the rows of rivets are seen in perspective (fig. 30).

Figure 30. The lines of the preserved rivet rows in perspective. After computer presentation by Helena Victor.

The boat has earlier been reconstructed on the basis of the position of the 247 rivets and fragments of rivets and nails that were left of the boat; almost no wooden material was preserved, as is often the situation for burial boats. As in most cases, the extension of the rivets has been assumed to represent the boat. When reconstructing this boat the rows of rivets have, on the contrary, been extended in plan and section until they meet the stems, which results in a boat that is longer in reconstruction (fig. 31) than the previous one done by Schönbäck (see Nordahl 2001). The boat reconstructed by him corresponds to the central lower, mainly western, part of the hull, from which the rows of rivets are preserved, that is 5.2 m. A large part of the prow in NE is missing, as is the higher part of the stern section. If the lines of the land in the hull instead are continued, the boat will be 7.2 m. In the SW part of the ship, the south side had fallen out at an early stage and been pressed down into the burial shaft, and the lines of the rivets are therefore preserved here in a longer extension than on the north side, especially the uppermost line which is approximately one metre longer.
The boat is a little shorter than the Viks boat and has had four strakes on each side. Both of these boats were built of radially split oak (Ulf Strucke, oral information on Gamla Uppsala 3). The keel was about 4.9 m long and 0.2 m wide, and approximately 0.06-0.09 m high. Thus it was a low and wide T-keel, and like the Viks boat it also had a false keel. The latter was approximately 0.03-0.06 m high, measured on the basis of preserved nails, which have secured it to the keel. The total height of the keel, including the false keel, was 0.12 m. The garboard strake was riveted to the thin edges of the bottom plank-like keel. Fastened to the keel were stems 1.0-1.1 m long, to which the hood-ends had been nailed, like in the Viks boat. The distance between the rivets in the strakes was on the average 0.2 m, but the strakes were even thinner; the lower were 10-12 mm and the two upper 11-14 mm. The strakes were 0.15-0.22 cm wide; the gunwale strake cannot be measured, but it must have been considerably wider so as to give the boat sufficient width for rowing. There are many nails in relation to the number of rivets, 120 nails in all. The greater proportion of nails to rivets is very unusual and reveals that this has been a narrow boat. Nails were used when the hull was so narrow that there was not enough space to hammer on the clinker plates on the inside. These were, like in the Viks boat, both square and rhombic, which shows that the shape of the plates cannot be used as a chronological indicator, in contrast to what has been suggested earlier (Bill 1994). The shafts are also square in both boats, which disproves earlier notions that such shafts are strictly medieval features. Instead the square shafts, as will be shown (see chapter 7), have a geographical relevance as indicative of a central Swedish origin.

The crew is possible to estimate from the framing system, which was composed of at least three frames and additionally of the rudder frame and the foremost frame called broken. There are also a few longer rivets here, but these are very uncertain. Fortunately they are complemented by long nails, which have been bent over on the inside at intervals (except for amidships) and which served the same purpose. Since this boat was mainly intended for rowing, the frames have had bites (used as thwarts). The boat has probably had knees to secure the bites, just like in the warships, but in small boats it can also happen that the bites were solely placed on the frames. The frames in both boats are unevenly spaced, here between 0.85 and 0.95 m. The boat was propelled by a maximum of three pairs of oars, and could have had one helmsman in the stern, together with a watchman in the stem, which gives a total number of eight in the crew of this boat.

The orientation is possible to establish by analogy with the Viks boat. The wider part of the hull in Gamla Uppsala 3 is found in NE, compared to the markedly narrower hull in SW, indicating that the stem is to be found in NE. In the narrow stern also the largest amount of nails were found, since there wasn’t space enough to hammer on the clinker plates here. Nails are a weaker construction, which explains why the starboard side has come loose in the stern part and fallen out. The rivet rows in the east are also situated higher, showing that this part of the hull was raised higher.

2.3. The boats in the burials of central Sweden in the Late Iron Age

2.3.1. The problem with recognising the boats in burials

The boat burials constitute a splendid material for insight into Iron Age ships and seafaring in central Sweden, but the problem is that only a few of them have been recognised and taken into consideration.
due to several factors. The logboats, for instance, form a complicated and forgotten chapter in the history of central Swedish boat burials, despite the fact that Almgren had already in 1907 published the burials from Sagån in Sala, both of which consisted of single dugout boats. If the well-preserved boat in grave 75 at Tuna in Badelunda Parish, Västmanland (Schönbäck 1994) had not come to light, the remaining five logboat-based burials in this cemetery would certainly not have been noticed or even registered as boat burials. The tapering oval form agrees with the finds made in bogs and lakes. The boat in grave no. 75, like the remaining logboat-based boats at the Tuna in Badelunda site, has been extended with one or more strakes added to the sides, but the strakes are here fastened to the dugout bottom in sewing technique without any rivets, as is also probably the case in graves no. 35, 23 b and 48. In only 50% of the boats at this cemetery have rivets been used to fasten the strakes: nos. 46 b, 79, 84 and 76. The use of the sewing technique for fastening strakes in extended logboats is known already from the Early Iron Age in central Sweden, as illustrated by the Barkarby boat-burial boats (Holmquist 1956). This is also the first and oldest known method of attaching strakes in Scandinavia as well as in NW Europe.

The logboat-based boats from Tuna in Badelunda that have few or no rivets clearly illuminate the problem with the classification of a burial as a boat burial, since up to now rivets have been chosen as the basic criterion. A minimum number has also been set as to what might be regarded as a ‘definite’ boat burial. Gunlög Andersson, like Ella Kivikoski, sets 50 rivets as the limit (Andersson 1963:6 ff; Kivikoski 1963:65 ff.).

Michael Müller-Wille, however, regards 50-100 rivets as being insufficient and argues that at least 100 are needed if one is to be sure that a boat has been buried (Müller-Wille 1970:33 ff). His reason for wishing to set the limit so high is that there are odd cases where more than 50 rivets occur in chests, for example in the Birka grave Bj 1131 where the chest is joined together with 69 rivets. Rivets in boats, however, are easy to distinguish from those used in chests and the bodies of wagons, since they vary in length in connection with the different thickness of the planking in different parts of the ship. The boat planking generally thins out towards the stern and the stern, resulting in shorter rivets towards the ends of the ship. The rivets for the scarves correspond to the thickness of one plank and thereby are among the shortest. There are also shorter rivets in the clinker overlaps where the hull curves, because here much material is removed when the lands are constructed with a plane to get the correct hull shape (fig. 13, 14). In contrast, in the straighter hull side with little or no land the rivets may be twice the length of the thickness of the planking.

Anne-Sofie Gräslund has remarked on the fact that there are smaller boats joined with only a few rivets, and she points to the Björke boat from c. AD 400 which despite its length of 7.2 m has only 45 rivets (Gräslund 1980:54). There are also examples where only parts of boats have been buried, such as the boat components discovered from the cut-off prow or stern-post section in a burial at Fosie in Scania (Burenhult 1971:44 ff).

Compounding the problem of using rivets as a criterion for a boat burial is the fact that in many boats rivets have not been used at all for connecting the components. In the greater part of Sweden, from the province of Västmanland and northwards, for example in the above-mentioned burials in Tuna in Badelunda, clinker nails have not been used to join the strakes; instead, just as in the clinker-built boats based on a keel, the planking has been sewn together in association with what has been interpreted as Sámi boat-building traditions. On the other hand in the western part of central Sweden, in the province of Dalarna and the immediate neighbouring areas, we find that from the Viking period to the twentieth century the strakes in the boats have been joined with iron cramps, for instance in the boats of the cremation burials at Bengtsarvet on the island of Sollerön (Serning 1966). Cramps have also been used for repairs, such as at Tuna in Badelunda 35 (Schönbäck 1994). There is also sporadic evidence in a few wreck finds from central Sweden for the use of treenails to connect the strakes, which is generally associated with west Slavonic boat-building traditions. This is exemplified by the finds from Kjula in Södermanland and Stavsnäs in Värmdö Parish (see chapter 5) and four wrecks found when working on the construction of the Södertälje channel in the 19th century (Westerdahl 1985).

2.3.2. Valsgärde

The burial boats from Valsgärde in Gamla Uppsala Parish, Uppland, come from a completely investigated cemetery containing about 75 burials. Of these, 15 are richly equipped inhumation boat-burials, while the rest are cremation burials and generally of a more modest standard (Lundström 1980:65). The first finds were made in 1926 when parts of a bridle turned up while digging for gravel. These proved to belong to boat burial 1, and in 1928 investigations began that were to continue for several decades. The wood from the boats had almost completely decayed except for a few fragments. In order to determine the correct shape and size of the boats, they have been reconstructed here on the basis of the plans of the rivets, together with the principles given above that are based on an analogy with the Viks boat.
The boats in the burials at Valsgärde as well as the Vendel finds are special in several respects. These burials, together with the Ultuna finds, contain the longest boats in the Swedish boat burials. The length of the boats in Valsgärde is estimated to be between 8.65 m (Valsgärde 4) and 14.1 m (Valsgärde 3), with the exception of no. 9, which is only about 5.45 m long, and no. 11, which is only 6.5-7.1 m long. The context here, as in Vendel, is purely military and of high status. The high L/B ratio, low amidships section, thin dimensions of material and the proportions clearly indicate that the boats were built for personal transports, to be either rowed or sailed, where speed was a more important quality than stability. Altogether these are typical features of a warship, and the vessels correspond to the smallest warships with 6-16 pairs of oars, which in historical sources are called karv and skuta (see chapter 3). The boats are also special in that all of them are clinker built on a T-keel. As will be shown later, this is unusual in society in general.

<table>
<thead>
<tr>
<th>Boat</th>
<th>L m</th>
<th>W m</th>
<th>H m</th>
<th>Keel type</th>
<th>Keel width cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valsgärde 1</td>
<td>9.06</td>
<td>1.72</td>
<td></td>
<td>T</td>
<td>15</td>
</tr>
<tr>
<td>Valsgärde 2</td>
<td>9.84</td>
<td>2.2</td>
<td>0.65</td>
<td>T</td>
<td>15</td>
</tr>
<tr>
<td>Valsgärde 3</td>
<td>14.1</td>
<td>2.25</td>
<td>0.51</td>
<td>T</td>
<td>12.7</td>
</tr>
<tr>
<td>Valsgärde 4</td>
<td>8.65</td>
<td>2.02</td>
<td>0.48</td>
<td>T</td>
<td>32</td>
</tr>
<tr>
<td>Valsgärde 5</td>
<td>13</td>
<td>2.1</td>
<td>0.45</td>
<td>T</td>
<td>22</td>
</tr>
<tr>
<td>Valsgärde 6</td>
<td>12.76</td>
<td>2.01</td>
<td>0.48</td>
<td>T</td>
<td>17</td>
</tr>
<tr>
<td>Valsgärde 7</td>
<td>10.45</td>
<td>1.95</td>
<td></td>
<td>T</td>
<td>18.5</td>
</tr>
<tr>
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<td>1.86</td>
<td>0.54</td>
<td>T</td>
<td>18</td>
</tr>
<tr>
<td>Valsgärde 9</td>
<td>5.45</td>
<td>1.07</td>
<td>0.18</td>
<td>T</td>
<td>17</td>
</tr>
<tr>
<td>Valsgärde 10</td>
<td>9.85</td>
<td>1.44</td>
<td>0.35</td>
<td>T</td>
<td>10</td>
</tr>
<tr>
<td>Valsgärde 11</td>
<td>6.5-7.1</td>
<td>0.9-1.02</td>
<td>(0.14)</td>
<td>?</td>
<td>(49)</td>
</tr>
<tr>
<td>Valsgärde 12</td>
<td>11.45</td>
<td>1.88</td>
<td>0.42</td>
<td>T</td>
<td>(25)</td>
</tr>
<tr>
<td>Valsgärde 13</td>
<td>11.14</td>
<td>2.5</td>
<td></td>
<td>T</td>
<td>18.25</td>
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<tr>
<td>Valsgärde 14</td>
<td>12.14</td>
<td>2.16</td>
<td></td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Valsgärde 15</td>
<td>12.15</td>
<td>1.7</td>
<td>34</td>
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</tbody>
</table>


The Valsgärde boat burials are the best documented of all boat burials in central Sweden. Every rivet is carefully documented in plan and with heights. The boats in the Valsgärde burials are longer than fishing boats, but narrower than transport boats, and earlier I have interpreted them as small warships. This classification is valid for all of the ships except Valsgärde 9 and 11.

The boats of this cemetery are, like in other cemeteries in central Sweden, smaller, lower, and have fewer strakes than the south Scandinavian counterparts.

2.3.3. Vendel, Uppland

The first graves were found beside Vendel Church in 1881, when the churchyard was going to be expanded (Stolpe & Arne 1912). At first several artefacts were thrown away, including a sword that fell to pieces when it was tested, since they were considered useless. Later, however, the finds came to the knowledge of the National Heritage Board, and Professor Hjalmar Stolpe was appointed to conduct an excavation. In the same year and in the next, twelve inhumation boat-burials were excavated, and after new finds came to light an additional three boat burials were documented in 1893. Stolpe published the graves in 1912, together with Ture J. Arne. The finds were so important that the rich burials from the period AD 550–800 at this place came to designate the entire time period – the ‘Vendel Period’ in Sweden, a term first used by Nils Åberg in 1922 (Lundström 1980:11).

As the Vendel graves are situated partly in a churchyard in use, several of the graves had been disturbed by grave digging and other work in the churchyard. Less than half of the boats were preserved in Vendel I and II, and a little more than half in graves III, VI, XII B and XIII. In Vendel III and XIII the remaining rivet rows were also very disturbed. Best preserved were the boats in IV, VII, VIII, IX, X, and XI. To estimate the original length of the boats in the badly preserved graves, the distance from the widest part of the boat to the preserved end of the stem has been doubled. The size of the boats corresponds almost to the Valsgärde boats, but is a little smaller. With the exception of XII A, a small boat of 2.42 m, the average distance between the outermost rivets was probably between
7 and 10.2 m, and the boats were between 7.3 and 10.5 m long. The boats in Vendel I and X had been built on expanded logs, the others on keel. The boats are clinker built with 1-4 strakes on each side.

<table>
<thead>
<tr>
<th>Boat</th>
<th>L m</th>
<th>W m</th>
<th>Keel type</th>
<th>Keel width cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendel I</td>
<td>*c. 8 m</td>
<td>1.31</td>
<td>Log, expanded</td>
<td>131</td>
</tr>
<tr>
<td>Vendel II</td>
<td>*c. 6-7 m</td>
<td>0.7</td>
<td>T</td>
<td>27</td>
</tr>
<tr>
<td>Vendel III</td>
<td>*c. 9-10</td>
<td>1.73</td>
<td>Log, expanded??</td>
<td>37??</td>
</tr>
<tr>
<td>Vendel IV</td>
<td>7.95+</td>
<td>2.02</td>
<td>T</td>
<td>25?</td>
</tr>
<tr>
<td>Vendel VI</td>
<td>*c. 7-8 m</td>
<td>2.07</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vendel VII</td>
<td>*c. 10.2 m</td>
<td>*ca 1.85</td>
<td>T</td>
<td>15</td>
</tr>
<tr>
<td>Vendel IX</td>
<td>*c. 10 m</td>
<td>1.95</td>
<td>T</td>
<td>15?</td>
</tr>
<tr>
<td>Vendel X</td>
<td>*c. 9.6 m</td>
<td>1.7</td>
<td>Log?</td>
<td>0.5?</td>
</tr>
<tr>
<td>Vendel XI</td>
<td>9.35</td>
<td>1.84</td>
<td>T</td>
<td>27</td>
</tr>
<tr>
<td>Vendel XII A</td>
<td>2.42</td>
<td>0.64</td>
<td>T</td>
<td>22</td>
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<td>Vendel XII</td>
<td>(6.05)</td>
<td>1.14</td>
<td>T</td>
<td>22</td>
</tr>
<tr>
<td>Vendel XIV</td>
<td>7.9+0.2</td>
<td>1.12</td>
<td>T</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 5. The size and construction of the Vendel burial boats, * = estimated. Based on Stolpe & Arne 1912.

2.3.4. Tuna in Alskie Parish, Uppland

The boat burials at Tuna in Alskie Parish were found already in 1893 (Arne 1934). These flat, surface graves were discovered while clay was being taken. The site was excavated by Hjalmar Stolpe in 1895–96, and later by Nils Aberg and T. J. Arne in 1928. The latter published the find. Nineteen graves were excavated, of which 10-11 contained inhumation boat-burials. The boat burials differ from Vendel and Valsgärde in several respects. Several of the boats contained preserved skeletons, which were determined to be female. Double burials also occurred. The context of the boats shows grave-goods that are not dominated by military artefacts; other artefact categories occur as well. Finally, the burials contained boats that differ from the boat types of Valsgärde.

The boats in the burials at Tuna in Alskie are generally smaller than in the previous cemeteries. They measure 4.9-8.6 m between the outermost rivets, originally approximately 5.2-8.9. In nos. I/II, 9818, XII and XIII only part of the boats lay in the grave, or else the grave was so disturbed that the length was not possible to establish at all. Most of them, apart from IV and VI b, were narrow and not good for sailing; they were more like canoes in shape. The hull shape indicates they were built for personal transport along the river systems. Nos. I, IV, VIII, VIII and X, which form the majority of boats for which the building technique could be determined, were built on a logboat bottom, extended with additional strakes.

<table>
<thead>
<tr>
<th>Boat</th>
<th>L m</th>
<th>W m</th>
<th>H m</th>
<th>Keel type</th>
<th>Keel cm   width</th>
</tr>
</thead>
<tbody>
<tr>
<td>TuA 9818</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TuA I/II</td>
<td>-</td>
<td>0.9+</td>
<td>-</td>
<td>Logboat, expanded</td>
<td>90-</td>
</tr>
<tr>
<td>TuA III</td>
<td>7.3+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TuA IV</td>
<td>*6.6+</td>
<td>1.5+</td>
<td>-</td>
<td>Logboat hard?</td>
<td>37+</td>
</tr>
<tr>
<td>TuA VI b</td>
<td>8.1</td>
<td>1.8-1.9</td>
<td>0.5-0.55</td>
<td>T</td>
<td>22+</td>
</tr>
<tr>
<td>TuA VII</td>
<td>*6+</td>
<td>0.6+</td>
<td>-</td>
<td>Logboat?</td>
<td>41+</td>
</tr>
<tr>
<td>TuA VIII</td>
<td>*7+</td>
<td>-</td>
<td>-</td>
<td>Logboat, expanded</td>
<td>52+</td>
</tr>
<tr>
<td>TuA X</td>
<td>4.9+</td>
<td>0.8+</td>
<td>-</td>
<td>Logboat, expanded</td>
<td>80+</td>
</tr>
<tr>
<td>TuA XI</td>
<td>*8.6+</td>
<td>1.1+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TuA XII</td>
<td>-</td>
<td>-</td>
<td>0.45</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TuA XIII</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 6. Size and construction of the boats in burials at Tuna in Alskie, * = estimated. Based on Arne 1934.
2.3.5. Ensta, Uppland

The archaeological investigations at Ensta in Gamla Uppsala Parish, Uppland, which I undertook in 1998 (G. Larsson 2003), were done in order to examine information given by Sune Lindqvist (1929) about the presence of depressions, which resembled the ones in Valsgärde that proved to be boat burials. These were visible in photos from 1931 (fig. 32).

The boat-shaped depressions were filled with soil in the 1950s and the former meadow was drained and cultivated. Therefore it was first necessary to localise the burials by means of geophysical methods. GPR, resistivity (fig. 33) and conductivity, as well as cesium magnetometer investigation, all indicated boat-like depressions at the site, situated at right angles to a small stream that flows out into the Fyris River SW of the site (unpublished report Gerhard Schwarts SGU, 1998). Test-pits were opened across four of the anomalies with different appearances. In one of them, within an area 1.5 x 1 m large, there were more than 40 fragments of rivets and nails, heart-shaped belt buckles of iron, and other artefacts from a destroyed boat burial in the upper, ploughed part of the field. The other depressions were from a brick-oven, a clay-taking pit, and a boat-like structure without iron. Based on the resistivity investigation, the probable boat burial could be estimated to contain a smaller boat, 8-14 m long and ca 2 m wide.

2.3.6. Ultuna, Bondkyrka Parish, Uppland

The interest in the large Ultuna cemetery began already in the 17th century. Olof Rudbeck counted ‘more than 700 burial mounds’, and in his excavations of mounds he found over a thousand ship’s rivets ‘in the ceramic vessels of the dead’ (after Holmberg 1969). This was interpreted as that here, beside the harbour, ‘mostly seamen had been burned with their ships’. The interest and investigations continued.

The cemetery has thus probably contained many burials with boats. Between 1854 and 1900 four or five burials were excavated. Ultuna 1, investigated in 1854, is a man’s grave from the Vendel Period, which contained rich weapon equipment as well as...
a ship from which ‘a large number of rivets’ were observed (Holmberg 1969). The grave that I call *Ultuna 2* was situated nearby and investigated in 1855 by C.A. Göbel; it was described as lying under ‘an insignificant mound’ (Hildebrand 1873). This grave also contained a man buried together with weapon equipment. In addition he had been given a game and many animals, and was placed in a ship visible as a dark colouring in the sand. The ship was 16 feet (approx. 6 m) in length, and the remains of it consisted of ‘a large number of rivets’ (Hildebrand, H. & Hildebrand B.E. 1873:2). Like the earlier grave, it was dated to the Vendel Period. *Ultuna 3* is an inhumation burial excavated in 1854–55, which contained two men and two horses, a sword, shields, chess game, and also the remains of a ship from which ‘Nitinaglar till ett drakskepp’ ‘rivets for a dragon-ship’ were preserved. The finds were placed in the UMF collections (no. UMF 1327). *Ultuna 4* is my designation for a boat burial investigated in July 1860, according to written quotations in the book *Teckningar ur Svenska Statens Historiska Museum* (Hildebrand, H. & Hildebrand B.E. 1873:3). Nothing is known about the boat, but of the deceased a skeleton remained and he (?) was buried with a sword, a shield, a game, as well as two horses, a cow and a pig (Hildebrand, H., & Hildebrand B.E. 1873:3). The boat burial that I call *Ultuna 5* was excavated and published by Almgren in 1900. It contained the most well known burial boat from Ultuna, often called ‘the boat from Ultuna’ (Ljungkvist 2006:178). The boat was hewn into pieces; there were no traces of a deceased, but weapon equipment and animals were scattered around in a humus layer dated to the 7th century AD on the basis of the arrowheads (Stolpe & Arne 1912; Nørgård Jørgensen 1999). The peculiar stratigraphy has puzzled the scholars. The humus layer was above a grave from the Migration/early Vendel Period, and had later been covered by two Viking Age stone-settings. It has been questioned whether this really was a burial, as Almgren believed. Lindqvist (1958) had the opinion that the rivets were part of a filling in the mound, but the distribution and proportions of the rivets are clear evidence that they are the remains of one and the same large boat. Ljungkvist (2006:181) suggested that this was a ritual deposition like the Kvalsund boats, but that this particular boat had a symbolic role for the journey to the death realm. Here were the destroyed parts of a large boat connected with more than 1000 rivets. The dimensions of the rivets show that this was a heavily built merchant vessel. Altogether 1124 whole and fragmentary rivets and over 100 nails were recovered, deriving from hewn parts distributed over an area 11 x 7 m large (see also 3.6.3.).

2.3.7. Prästgården, Gamla Uppsala Parish, Uppland

At Prästgården in Gamla Uppsala Parish, Sune Lindqvist had observed boat-grave-like depressions already in 1930. About those he stated: ‘…and we may, when all comes around, have a couple of, or three, boat burials in some minor depressions, less than one hundred meters from the Uppsala mounds, where so many experts have walked, without understanding them, year after year’ (1930). In 1972 when water pipes were going to be placed in the soil, the trench cut through what later would turn out to be boat burial 1 (Nordahl 2001). In 1973 excavations started under the leadership of Sten Tesch, later Else Nordahl, which revealed that among the burials at the site were at least four boat burials. Besides Gamla Uppsala 1, Gamla Uppsala 2, 3 and 36 contained smaller boats: three clinker-built boats on keel and one with a logboat bottom and additional, nailed strakes. This could be an expanded logboat. However, two samples analysed by Ulf Strucke turned out to be spruce, while the wood in the stem was birch (Nordahl 2001:57). Both these wood species are unknown in expanded logboats, but it is very likely that the logboat bottom was made of another material, with additional strakes of spruce. The birch used in boat building was often for protective laths and false keels, and it is not unlikely that this derived from a protective lath on the stem. Here, as in the majority of the central Swedish boat burials, small boats dominate. They were probably aristocratic boats for personal transport, since all were found with traces of rich burials, though especially burial 3 was badly plundered.

<table>
<thead>
<tr>
<th>Boat</th>
<th>Date</th>
<th>L m</th>
<th>W m</th>
<th>H m</th>
<th>Keel type</th>
<th>Strake no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gamla Uppsala 1</td>
<td>AD 875-925</td>
<td>6-7</td>
<td>1.45</td>
<td>0.45</td>
<td>T</td>
<td>4</td>
</tr>
<tr>
<td>Gamla Uppsala 2</td>
<td>Vik</td>
<td>-</td>
<td>-</td>
<td>0.35-0.4</td>
<td>T</td>
<td>2</td>
</tr>
<tr>
<td>Gamla Uppsala 3</td>
<td>Vik*</td>
<td>*7.2</td>
<td>1.15+</td>
<td></td>
<td>T</td>
<td>4</td>
</tr>
<tr>
<td>Gamla Uppsala 36</td>
<td>9th century AD</td>
<td>5.65</td>
<td>0.8+</td>
<td></td>
<td>L</td>
<td>1</td>
</tr>
</tbody>
</table>

2.3.8. Birka, Uppland

In Birka, Adelsö Parish, Uppland, several unburned boats were buried in the Viking Age, and all of them were found in the town rampart. It is not certain whether they represent boat burials, or if they were deposited as symbols (see chapter 8). Two of the burials were excavated by Hjalmar Stolpe in 1879 (Montelius 1881:178), and he mentioned a third burial but it was not investigated until 1932. In the first boat investigated by Stolpe, which I call Birka 1, a woman had been buried. She was wearing oval brooches and had been given a knife, scissors, and ceramics, which date the burial to the 10th century (Selling 1955:108). The size and shape of the boat are not known. The second of the buried boats excavated by Stolpe, here called Birka 2, was ‘larger’ than the female burial (Montelius 1881:178). In 1932, three more buried clinker-built boats were investigated (Arbman 1943). One of them, grave (?) no. 824 B, here called Birka 3, contained a boat without human remains but with finds of pottery, a comb, spindle whorl, whetstone, as well as unburnt bones of animals, birds and fish. In grave (?) no. 879, here called Birka 4, lay a boat that contained only fragments of a soapstone pot. And finally, grave 1137, which I have called Birka 5, also yielded a boat without a deceased, and it contained only two miniature sickles as well as ceramics from the Rhine area that were dated to the 9th century.

2.3.9. Flosta, Altuna Parish, Uppland

The cut-off stem or stern of an unburnt logboat was found together with a cremation burial. The burnt bones lay within a layer of fire-cracked stones that filled the bottom of the boat, which was partly preserved and pressed down into clay. The preserved part of the boat was 0.4 m long (N-S), 1.2 m wide at the gunwale and 1.0 m wide at the bottom, and 0.45 cm high. The sides were completely mouldered away, but still clearly visible as a dark brown layer against the surrounding clay. The bottom was better preserved, but also mouldering.

The boat burial was found during the investigation of a mound in 1916. The burial was observed under a thin layer of brownish soil, which probably formed a covering over the burial. Above this was a brick-coloured layer, which in turn was overlaid by the NE part of a charcoal layer belonging to the burial under the mound itself and containing burnt bones and artefacts, such as rivets and nails, an iron buckle, and a rectangular bronze plate with four bronze rivets (SHM Inv. Nr 15755). The burial was covered with a cairn of stones and then soil (Report ATA Altuna, Flosta; Dnr. 1109/1916).

2.3.10. Smedby, Hammarby Parish, Uppland

Before industrial exploitation of the Njursta Smedby area in Upplands-Väsby County, an excavation was made of the registered ancient monuments Raä 6 and 7 in Hammarby Parish. The monuments had been registered as three stone-settings, but after excavation the site was designated as a small cemetery (Report ATA Dnr 5412/71 Tiuu Andræ).

A boat burial was found on the eastern slope, not high above sea level and visible as a shallow pit before excavation. After soil was removed it could be seen that the pit was under one edge of a three-sided stone-setting, which covered an E-W oriented stone-filled and boat-shaped ditch that was 5.2 m long and 1.9 m wide. Here the remains of about 70 rivets and nails from a small, clinker-built boat were found together with some cramps, a knife and ceramics. The ceramics were stamp decorated, a special Gotlandic feature, and they dated the burial to the early Vendel Period.

The boat or boat remains had been placed in a shallow, bowl-shaped pit, which had been dug only 0.3-0.4 m below the ground surface. If a complete boat had been placed here, the upper parts and stems would have extended above the surface. The burial was later covered with a stone packing. The rivets were found over a 4.8 m long and 1.25 m wide area, but only sporadically in ordered lines. The disorder could be a result of plundering, or it may indicate that only parts of a boat had been buried with the dead, representing or symbolising the whole boat.

Figure 34. Drawing by Tiuu Andrae, ATA.

The cemetery is located on a promontory in the water route running NNE-SSW between Mälaren and Norrviken, and constituting the medieval border between Hammarby and Ed parishes, situated on the shore opposite Eds Church.
2.3.10. Fittja, Botkyrka Parish, Södermanland

The boat burial was the first known from Södermanland, found and excavated in 1970 (Weiler 1975). It included finds of animal teeth, ceramics, a comb and bronze rings. The scarcity of finds indicates a Viking Age date. The boat had been at least 6 m long, 1.25 m wide and 0.4 m high when measured from the depression. It had two strakes, but rivets were used only in the prow and stern, about 80 in number. The central part was either treenailed or sewn together.

2.3.11. Turinge, Södermanland

The boat burial in Årby, Turinge Parish was discovered by chance in 1971, thanks to the observant archaeologist Sten Tesch, when a settlement site and the extension of a suspected cemetery Raä 165 were going to be investigated in connection with a road-building project. Earlier at the site only one uncertain grave was registered. But after excavation 1971–72 by the National Heritage Board and led by Sten Tesch, the cemetery was found to consist of 23 cremation burials, 36 inhumation burials, and 10 burials without finds or skeletal remains. Altogether there were 69 graves of which one, A 57, was a richly equipped, female, boat burial (Tesch 1972, unpublished report, Sigtuna Museum Archive).

The boat was probably an expanded and extended logboat, and measured between the outermost rivets 6.28 m in length and 1 m in width. The original length was probably about 7 m and the width 1.3-1.4 m. According to the rivet plan, the stems had fallen out to the west. The stem in NE had also been marked in the burial by an erected stone. The logboat bottom was 0.6 m wide. The stems had nailed hood-ends for the strakes. The boat had two strakes on each side, connected to each other and to the bottom with iron rivets. Longer rivets and nails had fastened knees to the hull, and they indicated that the boat originally had six or seven frames.

The buried woman was given rich jewellery, comprising oval brooches, 39 gold- and silver-foil glass beads, five circular pendants, a scissors with silver inlays, a knife, and a horse from which the skull was preserved in SW. The grave was covered with birch bark before being completely covered.

2.3.12. Norsa, Västmanland.

Beside the outlet of the Köpingsån River is a cemetery with 60 registered burials, 20 of which are depressions that may be boat burials. The westernmost of these was investigated in the 1960s by Peter Manneke and found to contain a rich, female, boat burial (Lamm 1980:330). The boat had been approximately 7 m long and 0.85 m wide. Traces of wood from the keel were preserved. In the prow and stern, the strakes were connected with iron rivets and cramps, while in the rest of the boat the strakes were connected with other material, similar to the boat in the burial at Fittja, Botkyrka Parish (Weiler 1975) which had rivets missing in the central part, too. It is probable that the Norsa boat was sewn like the boat in Tuna in Badelunda 75 (Nylén & Schönböck 1994a, b). There is a note in the archive (Västmanland County Museum) that 28 iron rivets and nails, together with 16 cramps, were preserved. The many cramps show that the boat was influenced by the same building tradition as was dominant in Dalarna (see chapter 5). Under the boat, logs were placed, either as support for the boat or as rollers like in the Oseberg burial (Shetelig 1919).

Although plundered, several artefacts and jewellery remained, such as a button-on-bow brooch, 45 beads, textiles, a wooden cask, a bed of organic material, and the bones of a dog.

2.3.13. Tuna, Badelunda Parish in Västmanland

A cemetery was found in 1952 at Tuna in Badelunda Parish when a house was going to be built at the site (Nylén & Schönböck 1994a, b). The cemetery had more than 70 burials, which were excavated and found to extend from the Roman Iron Age to the end of the Viking Age. Among the graves were a late Vendel Period inhumation boat-burial and seven Viking Age inhumation boat-burials, all (?) of which were probably female, though some have a fairly weak gender determination based on the artefacts (see chapter 11). Finds of Viking Age arrowheads during a survey for ancient monuments in the 1990s indicate that also male burials might be found at the site.
2.3.14. Sagån, Sala Parish, Västmanland

In Sagån, Sala Parish (Almgren 1907), boats in burials were discovered when the 16th-century dam was broken in the early 20th century and the former water-covered islands were going to be cultivated. On the island in the Sagån River, which was called Brytsholmen (‘the island of the bryte ‘royal bailiff’), four burials were uncovered of which two were in boats.

Sagån 1 consisted of part of a logboat, preserved to a length of 1.3 m. Originally it had been at least 4 m long and 0.65 m wide, which indicates an expanded logboat. This was the grave of a woman and contained jewellery (oval brooches, equal-armed brooch, bronze chain and fifty-seven beads) as well as a dog, sheep and hen.

Sagån 2 was a logboat, better preserved than Sagån 1 but in several pieces. It was determined to have been about 4.5 m long and 0.4 m wide. Also here a woman was buried with jewellery (oval brooches, equal-armed brooch).

Table 8. Size and construction of the boats in the burials at Tuna in Badelunda. Based on Schönback & Nylen 1994a, b.

<table>
<thead>
<tr>
<th>Boat</th>
<th>L m</th>
<th>W m</th>
<th>Keel type</th>
<th>Strake no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TuB 46B</td>
<td>6.25</td>
<td>1</td>
<td>LS</td>
<td>2</td>
</tr>
<tr>
<td>TuB 35</td>
<td>4.8-5.0</td>
<td>1</td>
<td>LE?</td>
<td>1?</td>
</tr>
<tr>
<td>TuB 75</td>
<td>7.0</td>
<td>1.25</td>
<td>LE</td>
<td>1</td>
</tr>
<tr>
<td>TuB23B</td>
<td>4.6-4.8</td>
<td>c. 1</td>
<td>LE</td>
<td>1?</td>
</tr>
<tr>
<td>TuB 79</td>
<td>5.25</td>
<td>-</td>
<td>LS?</td>
<td>2</td>
</tr>
<tr>
<td>TuB 48</td>
<td>4.8</td>
<td>1.0</td>
<td>LE?</td>
<td>1?</td>
</tr>
<tr>
<td>TuB 84</td>
<td>5.2</td>
<td>1.2</td>
<td>T</td>
<td>5</td>
</tr>
<tr>
<td>TuB 76</td>
<td>5.3</td>
<td>1.0</td>
<td>T</td>
<td>3-4</td>
</tr>
</tbody>
</table>

Table 9. The size and construction of the boats in the burials at Sagån, Sala. Based on Almgren 1907.

<table>
<thead>
<tr>
<th>Boat</th>
<th>L m</th>
<th>W m</th>
<th>Keel type</th>
<th>Strake no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sagån 1</td>
<td>4+</td>
<td>0.65</td>
<td>L</td>
<td>0</td>
</tr>
<tr>
<td>Sagån 2</td>
<td>4.5</td>
<td>0.4</td>
<td>L</td>
<td>0</td>
</tr>
</tbody>
</table>

2. 4. Reused boat parts

One of the chamber graves in Birka was built of riveted planks, which are thought to be reused boat parts (Gräslund 1980:34). In 1932 Holger Arbman opened up a trench in the prolongation of the town rampart towards Borg. Here, 225 rivets and about 50 nails were found lying in a five-metre-long row towards the end of the rampart (Arbman 1932:2; Wahlander 1998:7). South of this, another trench was opened. Here were two parallel rows of nails.
(Arbman 1932:3), representing so-called cog nails (see chapter 5). In the rampart of the hillfort the rivets constitute 87 % of the 236 artefacts recovered during the investigations in the 1990s (Sahlstedt 1997:8).

In Sigtuna, in the town block Trädgårds-mästaren as well as Professorn, boat parts had been reused in constructions (Tesch and Wikström, oral information). In the town block Trädgårds-mästaren, treenailed ship finds were made in settlement layers from the earliest 11th century, here reused as building material. In Professorn many rivets and many boat parts were found. Most of them were reused as building material, and they mainly turned up in settlement layers from the late 10th to the 12th century. The rivets may be remains of boat building and repairing at the site (see chapter 4), whereas especially the remains of boat planking probably had been reused in building constructions.

Strakes from a clinker-built boat were recovered in 1935 in connection with excavations on the properties Handelsmännern 8 and 9, between Stora gatan and St Laurentii gränd in Sigtuna (Anderbjörk 1935:301; Ellmers 1972:321). The strakes were connected with rivets and had a rabbet for the luting material. The strakes were found reused in settlement layers dating to the 11th century. The boat planks were found in connection with house 4b, as part of pavement.

Outside the investigation area, reused boat parts are known from many places. Treenailed boat parts of Wendish type were reused in the coffins of a cemetery in 11th-century Lund (Mårtensson 1976:93; Lundström 1976:137) and possibly also in Löddeköpinge (Cinthio 1980:116).

In northwest Russia, several finds of reused boat parts with these characteristics were recovered from town layers in Staraja Ladoga (Ryabinin and Chernyh 1988:93; Sorokin 1994:132), Pskov (Sorokin 1994:133), and Novgorod (Orlov 1958:133). They were found in layers dating from the 9th (Ladoga) to the 15th century.

The special qualities of a radially split plank (see chapter 4) may be a factor behind the frequent reuse of boat parts as building material, in pavements, in fortress walls, and in burials. In Uppsala, reused boat parts were found during the investigations of the town block Kransen in 1978 by the National Heritage Board. Planking from a clinker-built boat was used as a floor in the house A40 from the 14th century (Kransen 1984:30).

2.5. Boat rivets and other rivets

Rivets are usually assumed to derive from boats. This should not be taken for granted, however. As several scholars have pointed out, there are occasions when rivets occur in other contexts (Johansson 2006). In York the interpretation of rivets as boat-rivets are not as given as in Sweden. Here graves from the 10th to the 13th century also include rivets, interpreted as deriving from the construction of chests or coffins (Rogers 1993:1412).

The known coffins are with few exceptions connected with nails when iron connection occurs. In few cases reused boat parts have been used, for example in Lund.

Up to the 19th century, chests were usually composed of planks in a wooden construction. When iron was used, it was nails that came to use because there was no need for rivets. Some exceptions are known, such as a chest (coffin?) from Råga, Härstad that had been constructed with rivets, 45-65 mm long, together with other types of mounts (Strömberg 1968:20). Chests made with rivets are also known from Fyrkat (Roesdahl 1977:111; Strömberg 1968:18).

It has often been suggested that rivets could have been used for sleighs, and in those cases comparisons have also been made with the Sámi akkja, which has the appearance of a half boat (Gräslund 1980:25). That the akkja resembles a boat may be true when seen from a distance. A closer examination, however, reveals that the hull of the akkja is carvel built with no connection between the planks, which are flush-laid edge to edge.

Three planks riveted together in a Viking Age grave at Lovö (A 124), measuring 1 m long and used for the burial of a boy, were interpreted as the remains of a sleigh or a litter (Petré 1984:84). My interpretation is instead that the three planks are from a boat buried with the deceased, where the boat as a liminal agent assures the safe passage to the otherworld (see chapter 8).

Neither sleighs nor carriages are subjected to the same kind of stress as a boat in rough sea. Therefore it would be a waste of iron to make a large amount of rivets for them, instead of nails which require less iron. The wooden construction within Valsgärde 7 was also interpreted as a litter, 2.75 m long and 0.9 m wide (Arwidsson 1977:99ff).

Very few examples of wooden constructions with rivets are known. In Birka grave 1131 (Arbman 1943) there is a wooden, rectangular construction with 70 rivets, which forms a frame that may have been made from boat strakes. From Denmark some finds are known. In the Danish burial Hvilehøj, Randers, dated to the latter half of the 10th century, a richly dressed woman was buried in a wooden construction 2 m long and 1.8 m wide, made of planking 25 cm wide and 13 mm thick, which was riveted together. Worth noting is that the planking was luted with wool, indicating a boat symbolism. Another, similar construction was
found in a burial at Høistrup in Tommerby Parish (Engelhardt 1881:18ff).

In Sweden, rivets for carriages are known only from one Birka burial and from Valsgärde 7. The carriage from Birka was 2 x 1 m, held together with 60 rivets (Gräslund 1980:24). In Denmark, during the excavation of the Fyrkat fortress, two graves were found, nos. 4 and 20, which contained riveted carriages used as coffins (Roesdahl 1977:85, 131). Both were constructed in a similar manner as boats, with a rounded bottom and seven strakes for the sides, and like the Birka ‘carriage’ they were 2 x 1 m large and had straight ends. The carriage in grave no. 20 was, in contrast to a boat, connected with 51 rivets of equal size, measuring about 2.5 cm, which is said to correspond to the thickness of one plank, due to the heavy land. The other carriage, in grave no. 4, was more similar to a boat since it had 62 rivets measuring 3.15-8.9 cm, and in my view it is not impossible that the midsection of a boat had been used for the body of this particular carriage. In grave no. 20 the carriage was complemented with six band-shaped, angled mounts and two iron rings. Similar examples are known from Denmark and Germany, where parallel rows of rivets were found together with angled mounts and iron rings (Roesdahl 1977:131ff).

The occurrence of carriages must be seen in relation to the communication system of Late Iron Age Scandinavia. As many ethnological studies have shown, it was not until the 17th century that the road network was improved in Sweden to such an extent that it was possible to use carriages (Frykman 1973), but this concerned only the main roads and only part of the year (see chapter 6).

Band-shaped mounts found in Garnisonen ‘the Garrison’ in Birka have been interpreted as deriving from a carriage (Johansson 2006:19), but in contrast with mounts on carriages these are not angled. Instead it is possible that they are iron mounts used for protection on the outside of boat stems. Traces of such are known, for instance on the Viks boat.

The rivets from boats show a characteristic pattern of variation in length, as can be seen from Arvidsson’s (1942) analysis of Valsgärde 6 (fig. 37).

Figure 37. The length of rivets from stem to stern in boat burial Valsgärde 6. After Arvidsson 1942.
Figure 38. Length of rivets Valsgärde 6. After Arwidsson 1942.

The varying length of the rivets (fig. 39), as seen above, is the natural result of the construction of a boat. This becomes even more obvious when studying the Viks boat. Here a rivet approximately 10 cm long connects the keel to the stem. On the outside of the stems are traces of short nails that have held a protective border in place. The strakes are connected to the keel and to each other with rivets of very diverging length, which, on the basis of the thickness of the planking, can be estimated to have varied between 15 and 42 mm between the head and plate. The shortest rivet is used in the scarves between the planks, where the length of the rivet corresponds to the thickness of one plank, since both are thinned out towards the edge creating an even surface. In the Viks boat, like in the Valsgärde boats, the strakes are always thinner towards the stems, and therefore we find shorter rivets in those areas than we do amidships. The thickness of the planking amidships also varies considerably, with the gunwale strake as the thinnest strake, only 15 mm thick, while the others are 17-21 mm amidships. This is a factor behind the variation in length. Another is that the land is planed to different degrees, depending on the angle of the hull (figs. 13, 14).

Some of the knees above the frames, which have secured the thwarts to the hull, are fastened with iron rivets to the hull and to the bites/thwarts. These are about 50-700 mm in length, and in a burial they would be placed at the gunwale strake. In many burial boats, ordinary long rivets or the special ‘anchor rivets’ are found, which earlier were always interpreted as ‘frame-top rivets’. Because the knees and the bites/thwarts in rowed ships are always placed above the frames and thereby create an enclosed ‘frame-station’ (fig. 28), the earlier conclusion in literature that they mark the position of the frames is correct. What is important, however, is that in boats of the warship type like Valsgärde (see below) they are knee-rivets, and they mark the position of the thwarts for the rowers and enable us
to draw conclusions about the size of the crew. This will be further discussed in chapter 9.

In sum, it must be emphasised that the main use of rivets was in boats. Rivets gave a stronger construction when the material was subjected to tension and stress, such as when sailing on a rough sea or navigating a river with rapids. Therefore, if possible, nailing to the stems was sometimes avoided in a boat, and the stem was cloven so the hood-ends of the planking could be fastened with rivets instead, like in most of the Vendel burial boats but also in Skuldelev 2. In other constructions not subjected to tension, such as chests, coffins and carriages, there was no need to waste iron on making the plates for rivets since nails could be used with good results. When rivets occur in other contexts than boats, we can suspect that it is the boat symbolism and the special powers attributed to the boat that lie behind the occurrence. This will be discussed further in chapter 8.

Rivets are closely connected with the boat building of the Late Iron Age – Early Middle Ages, and they seem to have been needed as long as the strength in the boat was in the hull. In the Late Middle Ages, when the strength was moved from the shell to the ‘skeleton’ formed by the keel, stems and frames, the rivets were replaced with nails bent into the planks.
3. BOAT TYPES AND FUNCTION

3.1. An interpretation of the function and use of Late Iron Age boats and ships

An important and immediate observation when the ship-archaeological material is studied is that there is not just one but many different boat types. This can be related to social and environmental factors, but the most decisive factor for a ship’s shape and construction was probably the function. The intended use of the ship was built into the hull and visible in many details. When the boat builder built a boat or a ship, he designed it for a special purpose. By drawing analogies with how the boat builder in traditional boat building makes constructional differences on the basis of the intended function and desired properties of the vessel, it is also possible to interpret the function and use of the boats in the archaeological material, since important differentiating details are visible in smaller parts.

By studying better-preserved finds, it is also possible to trace functional differences that can be observed in the less well preserved or fragmentary finds.

To determine the function of the ships, it is very important to establish the role of ships and seafaring in the Late Iron Age society, such as the extension and character of fishing, trade and warfare. By identifying the function of a Swedish ship found abroad, it is possible to draw conclusions about whether, for instance, the ship was part of a naval expedition, or if it was engaged in commercial activities.

3.2. Fishing and fishing boats

3.2.1. Fish species and fishing boats

What were the many small boats in the archaeological material from the Iron Age used for? Clearly they would have been important for fishing, and therefore their shape may well have been related to the fishing methods used and also to the type of fishing location. Fishing for different kinds of fish thus required different, individually adapted methods, equipment and types of boats. Osteological material from central Sweden suggests important differences between the fishing of the Late Iron Age and the fishing that developed in the Middle Ages.

What kinds of boats could have been used for fishing? Have some of these smaller boats been used for this purpose, and in that case could they have been suited and adapted to the kind of fishing done in the Iron Age in central Sweden? The osteological material offers an answer. In particular the ‘Barknåre-project’ in northern Uppland offers a comparative material of preserved fish bones from a Viking Age settlement in Lingnåre and from the medieval settlement in the same area at Barknåre. Maria Vretemark has done an analysis of the osteological material (table 10).

<table>
<thead>
<tr>
<th>Fish species</th>
<th>Lingnåre number</th>
<th>Barknåre number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perch</td>
<td>237</td>
<td>431</td>
</tr>
<tr>
<td>Pike</td>
<td>47</td>
<td>125</td>
</tr>
<tr>
<td>Pike-perch</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Carp fish (ide, roach)</td>
<td>119</td>
<td>186</td>
</tr>
<tr>
<td>Burbot</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Lavaret (white fish)</td>
<td>53</td>
<td>14</td>
</tr>
<tr>
<td>Herring</td>
<td>4</td>
<td>1448</td>
</tr>
<tr>
<td>Cod</td>
<td>11</td>
<td>80</td>
</tr>
<tr>
<td>Eel</td>
<td>11</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 10. A comparison between the fish bones in the osteological material from the Viking Age settlement at Lingnåre and the material from the medieval settlement at Barknåre. Analysis by Maria Vretemark (Broberg 1990).

The analysis provides evidence of clear tendencies. An important change can be observed in the species caught. Fish from lakes and rivers – such as ide, roach, lavaret (whitefish) and perch – predominate in the Viking period settlement, with only a few rather insignificant examples of saltwater fish. In the medieval settlement of Barknåre, on the other hand, it is the saltwater fish that dominate completely. It is mainly strömming (small Baltic her-
ring), but the number of cod bones increases as well, which indicates an establishment and expansion of deep-sea fishing.

In central Sweden during the Iron Age, the fishing for the species found at Lingnärre primarily took place in calm waters, in inland rivers and lakes. These waters have never required particularly complex boats, and it is probable that logboats of the type mentioned above comprised the main ‘fishing boats’ of that period.

The fact that logboats were used for fishing is indicated by a find (fig. 40) from Lake Kvarnsjön in Rikssten, Botkyrka Parish in Södermanland (Andersson 1997). Some 50 small stones found in the boat and measuring 0.03-0.05 m were probably used as sinker weights for a net. The boat was 3.55 m long and 0.53 m wide with a pointed stem finished off with a small knob. The boat has been radiocarbon dated to the tenth century AD.

3.2.2. Fishing as a structuring principle for settlements in society

With regard to the fish species caught and the fishing methods used, the difference between the Iron Age and the Middle Ages is clearly visible also in the settlement pattern. The increased importance of herring fishing in the Middle Ages, as seen in table 10, in my view may be a factor behind the establishment of a large number of permanent settlements in the archipelago, where earlier only seasonal seal-hunters had been seen. Probably this series of events can be connected with the availability of salt which increased at the turn of the first millennium, imported from the area around the mouth of the Oder. Salt made it possible to conserve and store the fish so it could be sold later at a market, rather than having to consume it immediately.

![Figure 40. Logboat from Rikssten found with sinker weights for a net. After Andersson 1997.](image)

![Figure 41. The changed settlement pattern caused by herring fishing in the coastal area of Uppland. Filled circles indicate Iron Age settlements, unfilled circles medieval settlements. Based on map by Björn Ambrosiani (1983).](image)
The settlements on larger islands, the fishing methods, and the combined livelihood of the fishing peasants in the archipelago of eastern Sweden are all factors that also created the need for new boat types. The special boat-types related to herring fishing that were used traditionally in the 19th century, such as the **julle**, **skötbåt**, **mellanöka**, **storöka** and **längbåt** of the Stockholm archipelago (Zacke 1973; Nordlinder 1982), are not found in the Iron Age material. With the introduction of this kind of fishing, boats were needed for transport of people and goods to the islands, for fishing in the different waters around the islands, and to transport cattle to the different islands for pasture. In contrast to the situation on the Swedish west coast, the fishermen of eastern Sweden were also peasants with small fields to cultivate and some livestock whose products were a welcome addition to the livelihood. Also bird hunting to procure valuable feathers and seal hunting for the seal oil were valuable contributions (G. Larsson 2001). The fishing rights were tied to the holding of land (Löfgren 1979). Furthermore, a need for different types of transport boats developed as a result of the establishment of this archipelago society. Tins of salted herring, seal oil, sometimes butter and cheese, hay for the animals in the towns, as well as wood for fuel, had to be transported by the peasants themselves to the markets of the coastal towns. This was done on specially built larger boats (Eklund 1989).

How do we know that these different boat types were not in use in the Iron Age? Is it possible to find these boats among the wrecks or in the burials? How were they built, and how do we recognise these boat types in the archaeological material? The only way to find an answer is to look at the ethno- graphic material, and also to ask the boat builders how these boats were constructed and why they were built in that way. First then can we come closer to a reliable interpretation of the prehistoric finds in this connection.

3.2.3. Boats for fishing from a comparative ethnoarchaeological perspective

In order to judge which boats in the archaeological material could have been used for fishing, it is also necessary to examine the principles used for building fishing boats. This can be done on the basis of ethnological and historical material. Even if there is a risk that this is functionally and environmentally deterministic there ought to be certain similarities over time in the practical methodology used for different types of fishing.

The boats for fishing and transport used by the archipelago communities along the east coast of Sweden are not so very different from each other. Björn Liljeros, who has studied peasant boats in the Stockholm archipelago, states that most of the older archipelago boats have common structural features: they are small in order to be easily manoeuvred, generally 4.8 m long, and with a shallow draught (Liljeros 1998:216). In most cases the household owned two or three different types of boats for different kinds of fishing and maritime environments. The following types of boats were used by the communities of the Stockholm archipelago during the latter half of the nineteenth century: the **mellanöka** (‘medium-sized boat’) of approx. 6 m for fishing in the inner archipelago; and the **storöka** (‘large boat’) of 7-8 m for fishing in the outer archipelago and on the open sea, which also was used for hunting seabirds and seals. Liljeros cites, amongst other things, a **storöka** built by Erik Söderman on Söderöra in 1882 as being 7.5 m long and 2.8 m wide, with an internal depth of some 1.6 m and a displacement of 2.8 tons (Liljeros 1998:217). This was clinker-built with seven planks of pine 3 cm thick, sawn and steam-heated, apart from the so-called **vindor** used in the stem and stern sections, which were hewn out from radially split, twisted tree trunks and which followed the direction of the pith-ray fibres in order to make them stronger and more pliable. Loose deck planking was laid across when cows were to be taken out to the islands. Up to the 19th century the fishing boat was rigged with an asymmetrical square sail.

Gunnar Nordlinder, formerly on the staff of the National Maritime Museum in Stockholm, has made a detailed study of the boats used by the population of Singö in northern Uppland (Nordlinder 1982). All the boats had rounded hulls, and the flat-bottomed boats of the interior were despised. The Singö boats are of the same types and sizes as those found by Liljeros in his research, but here there is also mention of the small **döstock**, some 4.1 m long, used for fishing in home waters, for hunting birds, and for short journeys. The **julle** corresponded to the **mellanöka** and was 5-6 m long, while the **skötbåt**, which was also used in the open water to the east of the island for fishing herring with a **sköt** (drift net) and for local transport of casks with smaller catches, was 6-8 m long and therefore corresponded to the **storöka**. A **skötbåt** built in 1900 by Olof Pettersson on Singö was 6.48 m long, 1.48 m wide, and 0.65 cm high from the upper edge of the keel to the gunwale.

In summary it may be said that peasant boats used for fishing agree in size with the smallest group of boats in the archaeological material. Fishing boats like the **skötbåt** are, however, much broader and more seaworthy than the small, clinker-built, boat-burial boats. The **skötbåt** cited from Söderöra agrees in length with the boat in the
If most of the fishing during the Iron Age took place in calm inland lakes and rivers, fewer demands would have been made on the shape of these boats. Logboats often would have sufficed. The ethnographically recorded types of boats along the coast of Uppland discussed above probably developed during the Middle Ages as a result of the upswing in archipelago fishing for herring.

3.3. Boats for seal hunting

Seal hunting was important in the Late Iron Age, mainly because the seal oil was used for a variety of purposes (Larsson 2001). It was used for light in oil-lamps, for surface protection on the boats instead of tar, for protecting leather and skin, for mixing with colour pigments to make paint, etc (Larsson 2001). The fat that was melted to get the oil was possible to eat, as was the meat. The skin was used for bags, boots and clothes. It probably also used for skin boats, like for instance the *Umiaq* in Greenland, but since these consisted entirely of organic materials they have not been preserved in the archaeological material. The importance of seal hunting has in the last decades been observed in connection with the excavations of so-called *tomtningar* ‘huts’ on small islands and cliffs far out in the archipelago (Broadbent 1987; Larsson 2001; 1988; Rönnby 2003). The oldest *tomtningar* are found at these types of locations; they date to the Late Iron Age and contain seal bones. The medieval *tomtningar*, on the other hand, are in bays on big islands in the inner archipelago and mainly have bones of herring (Norman 1993).

Boats used in the seal hunt have not yet been identified in the archaeological material, but this may be because these types of boats have earlier not been recognised in the discussion of Iron Age boats. The traditional boats have a very special shape, especially adapted for the purpose. The seal hunters’ motto is, ‘Don’t look for the seal, look for the ice!’; because the seal in the transition period between winter and spring used to stay by the ice-shore. The boats were equipped so they could be pulled up onto the ice easily, with the bottom pointing upwards in the stem in a characteristic way, and they also had special runners to protect the keel when pulling them on the ice. Many of the light, expanded dugouts that are so common in the Late Iron Age have a similar stem part pointing upwards and may have been used for this purpose. This may also explain why this type of boat is often found in the outer archipelago, the same area where also the *tomtningar* used as ‘seal-hunt huts’ are located. The boat from Haglø in Blekinge and the Neolithic Helsinki canoe (Raising 1984) are examples of such finds.

3.4. Boats for bird hunting

Bird hunting was important in the historical period, and it probably played a significant role in the Iron Age as well. Feather-down was desirable and a mark of wealth, and it was found in for instance the aristocratic boat burials at Valsgärde (grave 5, 6, and 7) and in 28 of 180 burials at Birka (Hägg 1991:155; Carlestål 2005). The boats for bird hunting are interesting in the discussion of ships and seafaring, since they were used among the reeds in shallow waters by the shore, with similar conditions as in many of the eastern, shallow rivers. Equally interesting is that a punt type of boat with vertical stems was used for this purpose, resembling the hull shape of the boats on the Birka/Hedeby coins (Malmer 1966).

3.5. Aristocratic boats for personal transports

The small boats in the burials often differ from other finds. They are often built of precious materials such as oak, which has always been highly valued for its supreme qualities. The boats are to a great extent clinker built, sometimes with 3-5 strakes, which is not seen among the small boats found as wrecks.

The boats in the burials are also narrower in relation to length as compared with the traditional boats used for fishing. This, together with the hull shape, makes them unstable and not suitable as fishing boats. Experimental rowing with the ‘Smia’, a reconstruction of the sewn boat found in burial 75 at Tuna in Badelunda, was carried out in 2000 at Södertörn University College by Mark Naimark of Moscow. The boat was 7 m long and therefore somewhat shorter than the *storöka* of Söderöra, but only 1.25 m wide. Experience shows that the smaller boats in the boat burials were presumably so light and unsteady that one had to sit in the middle of the boat to prevent it from capsizing. It would, for instance, not have been possible to haul up a net over the gunwale without turning around.

Smia is excellent for shorter voyages since she is so speedy and can also easily be hauled by one person on land on grassy surfaces. Since she is very narrow and thus lacks stability, she is not so well suited for fishing activities. The light and easily manoeuvred boats of the boat burials are instead generally the best adapted for carrying people along
the watercourses of central Sweden and also for being carried or hauled across portages, beside rapids along the river routes and between different lake systems – a practice from which there are also many oral remains in place names in central Sweden such as -ed, -drag, and -bor (Westerdahl 1989:200). The boats in the boat burials can therefore be interpreted as primarily used for personal transports and not for fishing.

Another reconstruction, the ‘Embla’, has also been made of the boat in boat-burial 3 at Prästgården in Old Uppsala, which is 7.2 m long and 1.5 m wide. With its larger beam the Embla is somewhat more seaworthy than the Smia. The planks for the boat in boat burial 3 were radially split and only 10-12 cm thick (pers. comm. from Ulf Strucke at Riksantikvarieämbetet – the National Heritage Board). The technique of radial splitting (see Larson 1995) was also used in the building of the Embla, and this made it possible to achieve much thinner strakes than those used in the traditional boats, but that still give strong and pliable sides. The light construction gives Embla a hull weight of only 250 kg. The boat could have been used for fishing. The boat is, however, built of oak and it is doubtful whether it was available to ordinary people. Similar clinker-built boats in unplundered burials often contain a rich inventory, showing that this type of boat belonged to the highest aristocratic stratum of society. ‘Embla’ is also perfect for longer voyages in the Lake Mälaren area. She is stable enough to bear a sail, and the original boat can thus be interpreted as an aristocratic boat for personal transports.

3.6. Trade and the merchant ships

3.6.1. Trade and trade routes

The foreign goods found in Swedish soil might be an indirect indication of trade, but could just as well be stolen goods or part of a ransom. The preserved artefacts show a vast network of contacts, extending afar. More certain evidence of trade is the ship-archaeological material, namely the remains of Scandinavian merchant-ships found abroad which together with written evidence can illuminate the trade network. In the same way the remains of foreign cargo-ships in Scandinavian waters can shed light on both the cargo traded and the commercial relations that prevailed.

The identification of these commercial activities from the preserved ship-archaeological material is based on a definition of the different shipbuilding traditions (see chapter 5) on the North European scene, together with an analysis of the different names for merchant ships found in the historical records associated with these local ship types.

As a result of Frisian trade, influences are visible also in the ship-archaeological material. The cog is since the 11th century known from written sources as the Frisian cargo ship. With a flat bottom suited to the recurrent tides on the coast, the ships were partly carvel built with special long nails, ‘cog nails’, used in the heavy construction. Examples of such were found in the Skopintull grave on Adelsö Island across from Birka. Also kugghamn ‘cog harbour’, a place name in northern Birka, might be linguistic remains of the Frisian Viking Age trade, though the earliest cog finds date to the 12th century.

However, it is easy to forget that the most important trade routes from central Sweden went eastwards through Russia to Asia and the Near East, as is clear from the large amount of Arabic coins found in Swedish treasures. The role of the river routes for these commercial contacts will be discussed in chapter 5. Hand in hand with the Scandinavian expansion to the East in the 8th and 9th centuries, marketplaces began to appear with a significant Scandinavian influence, which sometimes, as in Staraja Ladoga, can be seen from the earliest settlement layers. The boats were the main factor behind this expansion. The boat types that may have been used for these journeys will be discussed below.

Furs were probably one of the most important trade goods from Scandinavia eastwards. Furs as merchant’s goods are mentioned in the runic inscription G 207, which commemorates a person who sunarla sat mil skínun ‘in the south sat with skins’, i.e., traded furs. In Sigvár’s lausavísa there are feldar ‘sheepskins’ that are trade goods from Iceland to Norway (Sigv XIII 4).

The merchant ships, though slightly higher and wider than the warships, are at the time of their first appearance in the 9th century in Sweden still considerably lighter in construction than those that came in the medieval period and that force harbours and towns to be moved to deeper waters along the coast (Lundström 1981).

3.6.2. How to identify the remains of ships for transports and trading voyages

Which ships possibly used for transport, then, are found in the archaeological material? In order to clarify the design of such vessels we need to take a comparative look at Norway and Denmark where more well preserved finds exist, in order to judge by analogy whether remains of merchant ships...
might also be found in the material from central Sweden. The differences in hull shape stand out clearly in an examination of the finds from Skuldelev (Olsen & Crumlin-Pedersen, 1967) in Roskilde Fjord, where both merchantmen and warships are represented (fig. 56). The merchant ships Skuldelev 1 and Skuldelev 3, which are part of the find material, are characteristically broader in relation to length and have higher sides than the warships. They are also mainly equipped for sailing, with a centrally positioned mast and 2-3 pairs of oars, while the warships have primarily been equipped for rowing, with rows of oars in oar-holes or oarlocks along the sides, complemented by sailing equipment. The fact that the boats have low sides is also reflected in the number of strakes: seven in Skuldelev 5 and eight in the long (30 m) Skuldelev 2/4, and 13 in the much shorter (16.5 m) Skuldelev 1. Obviously this reflects the fact that carrying capacity and seaworthiness were more important than speed and lightness.

Remains of cargo are, however, one of the best and surest indications of a ship intended for trade and the transport of goods. The best example of this is the Norwegian Klåstad ship (Christensen 1976, 1979). This ship was found in 1970 near Tønsberg in the parish of Tjølling, in Vestfold, with a cargo of unused grindstones. It was investigated by Arne Emil Christensen. The wreck comprises the remains of a ship that sank and remained on the seabed near the shore until it became silted up. The find spot is now several hundred metres from the shoreline because of land upheaval (Sjøvold 1985). The ship was 21 m long, 4.8 m wide, and 1.7 m high and is reckoned to have had a capacity of 10 tons. It was built of oak, pine and birch. The keel is just as broad as it is high, measuring 14 cm. An ocular examination on site showed that the planks for the sides vary in thickness between 13 and 46 mm. They are joined with rivets, 7 mm thick, and with large square and rhombic plates measuring approx. 50 x 50 x 60 mm.

The Åskekärr ship (fig. 42) is the only published (Humbla 1934) Swedish cargo ship from the Late Iron Age. It is showing close similarities to the Klåstad ship. Åskekärr is somewhat smaller, only 16.5 m long, but like the Klåstad ship it is 3.5 m broad and has high sides. Both ships have had many more strakes than the warships.

Figure 42. The Åskekärr ship. After Humbla 1934.
Criteria for a cargo vessel:

- Cargo.
- Cargo space.
- Half deck.
- Few or no oar-holes.
- Sail as main propulsion.
- Cargo-carrying capacity.
- Rounded hull.
- Higher sides.
- Low L/B ratio.
- Stability.
- Ballast.
- Proportions.
- More closely spaced ribs.
- More upright stem and stern.
- Thicker hull.
- Heavier frames.

The main characteristic of the merchant ships, both during the Iron Age and Early Middle Ages, is that they are broad in relation to length, with high sides. The keel is narrow and high, its height often surpassing its width, and the planking is generally substantial. The distance between the frames is shorter than in the warships. During the Middle Ages these ships become even more densely ribbed and the frames themselves are also wider and higher. Merchant ships have a centrally positioned mast, revealing that these vessels were mainly for sailing, and then mostly out on the open sea. With this background in mind, three finds above all can be reckoned in this category from among our central Swedish ships (see further below): the burial ship from Ultuna from the seventh century (Almgren 1902), possibly the find from Nyköping from the ninth century, and the Enköping ship from the eleventh century (UM 624/60, Norrgården 1961:18). The ship found under Drottninggatan in Uppsala probably also belongs to this group (Clason 1908:200). Common to all the contexts of these finds is the fact that they have been found near marketplaces which, during the early Middle Ages, developed into towns: places where watercourses important for inland areas flow into larger waters. Here reloading had to take place for the transport of goods upstream, but perhaps even more importantly such a situation provided a natural meeting place for goods from the inland waterborne cargo vessels and the products brought by more distant, interregional transport. Two of the places contain the name component -köping, which we know was already being used in the Viking Age as a term for a trading place. It has also been suggested that Tuna place-names can be seen as being connected with trade, as possibly indicated here by the Ultuna ship and also the Norwegian Klåstad ship.

3.6.3. Finds of cargo ships

The ship in the boat burial at Ultuna excavated by Almgren (1902:147ff) is the only such find that might possibly be classified as a merchant ship. It is also the oldest central Swedish ship of this kind. In 1900 Oscar Almgren investigated a mound in Ultuna with a diameter of 8-10 m, his particular intention being to find more boat burials. Earlier on, for example in 1854, boat-burial finds had been made here, and the ship in the burial now investigated contained an unusually large number of rivets: 925 whole ones, and more than 200 fragments, as well as over 100 nails. These were spread out over an area approx. 11 x 7 m (east-west) and formed a large quantity, atypical compared with the material from the other boat burials of the Mälaren Basin. A ship of the Klåstad type, however, might reasonably produce the quantity of rivets found in this burial. The number of rivets of different lengths can be divided as follows:

- 13.9 cm: 1
- 11.4 cm: 1
- 9 - 7.3 cm: 142
- 7.3 - 6.3 cm: 177
- 6.3 - 5.6 cm: 230
- 5.6 - 4.6 cm: 202
- 4.6 - 3.6 cm: 91
- 3.6 - 2.4 cm: 78
- 1.9 cm: 1 (After Almgren 1902:150 f).

Here, then, the majority of the rivets prove to be longer than 5.6 cm, i.e., a plank thickness that exceeds 2.8 cm. This indicates that it was not a warship but a cargo ship, i.e., a merchant ship. The length of the rivets and their thickness, so very different from the rivets in other central Swedish boat burials, also agree well with the Klåstad ship and speak for the fact that we here have a ‘merchant ship’. The boat appears partly to be hewn to pieces and its original length probably exceeded 15 m.

Fragments of the Nyköping ship (Florin & Olson 1965) were found in 1959 under the cellars of the City Hall while doing work on the foundations. The parts are 14C dated to AD 860–1030 (U-427 1 σ). The find site and the building material suggest that a merchant ship had lain here, though unfortunately the boat fragments, which would have enabled a closer analysis, are no longer extant.

In 1960, while digging drains in Munksundsgatan, Enköping, remains were found of a large ship built entirely of pine (UM 624/60, Norrgården 1961:18), 14C dated to AD 1060 ± 65 (St-916, un-
calibrated, Radiocarbon 5, 1963:212). This find was excavated and recorded by amongst others the county museum directors Nils Sundqvist, Olof Hasslöf and Ola Ehn, together with the engineer Krepp. It was situated 1.65-2.2 m below ground level, and the preservation conditions were good since the find lay in blue clay. It also was covered by an approx. 0.1 m thick layer of clay. It emerged during the investigation that the ship continued in under the edge of the trench and nearby houses, and this was why only fragments could be taken up, mainly in order to carry out tests for dating. The components of the ship found in the trench were part of the keel (?) and part of the starboard side. The prow and the stern, however, were beyond the edge of the trench. The freed parts of the ship filled the whole of the trench (see fig. 43), and were 14.5 m long and 4.5 m wide.

Figure 43. The freed parts of the Enköping ship. After report by Nils Sundqvist, UMA.

From the point of view of shipbuilding technique this find provided much important information on the early merchant ships of central Sweden, but there were also details that are difficult to interpret. One of the problematical components was a 56-cm-broad plank with an arched surface, which with some doubt was interpreted as the remains of a keel (Norrégården 1961:18). If this was the case, however, this plank would have had a vertical piece nailed to it, similar, for example, to the Ärby boat. Whether this was so or not is not clear from the report. The experienced boat ethnologist, Olof Hasslöf, was given the assignment of making a more detailed report of the find (UM 624/60). The planking used in the exposed side of the boat hull consisted, according to his report, of at least 14 strakes, worked with a broad axe, up to 32 cm wide and, according to the information, with a thickness of 1 ¾ – 2 ¼ inches (i.e., 4.5-5.25 cm). These were joined to each other and to the keel in clinker technique with iron rivets, and furnished with square plates on the inside at a distance of approx. 17-21 cm from each other. In the clinker overlap between the planks, in a gouged-out channel, there was insulation material consisting of tarred cow hair. The planks were lengthened where the scarfing, just as today, opened out towards the stern, and this also showed that it was the starboard side that had been taken out of the ground.

Only fragments remained of the ribs, which were of pine and according to the drawing 10-15 cm broad and 9-14 cm high. These had been nailed to the sides with relatively substantial treenails approx. 3 cm broad. The distance between the ribs was only 45 cm.

It is thus possible to work out the original size of the ship. The preserved starboard side was at least 4.0-4.5 m broad, and this provides us with a total breadth of at least 8-9 m (!) for the whole ship. Since the length of a merchant ship was at this time four times its width, the total length would probably have exceeded 32 m. In summary, the research results indicate that this must have been a very large merchant ship by the standards of the time, far larger than any of the previously investigated ships of the 11th to 12th centuries in Scandinavia. The typical medieval merchant ship has substantial (over 4 cm thick) planking and close (under 0.5 m) ribbing, as found in the Falsterbo boat (Åkerlund 1952), Kalmar (Åkerlund 1951) and Helgeandsholmen finds (Varenius 1989). The Enköping find possibly shows that this type of ship may have developed and come into use earlier than was previously thought.

From the point of view of size, the Enköping boat agrees with the ship from Bergen (Herteig 1958:136), which dates from the 13th century and which possibly had a similar appearance. The Bergen ship, however, appears to be more substantially built and closely ribbed, conforming to a pattern which became the norm for large merchantmen of this period. The Enköping boat still retains much of the character of an Iron Age boat.

These wreck finds provide information on a type of ship which, apart from the Ultuna boat, is absent in boat burials and not represented on picture stones either: i.e., the merchant ship. Therefore, the boats in the burials are not those of merchants who have gone to their graves, but lesser warships and status-laden transport boats for people.

Finally, the rib of a large ship, of unknown provenance, may be mentioned (fig. 44). We can call it the Salsta rib, after its ‘find-spot’ in the former UMF collections at Salsta. The ship was of the same size as the Åskepir ship, but the rib has been lashed in place and agrees in form, execution and section almost completely with the ribs of the Norwegian Oseberg ship.
The smallest type of cargo boat used in historical times for local transport along the coast of Uppland was *storbåten* (the large boat), with a length of 10-18 m. It was used for freight, including herring, sand, charcoal and hay. Lightly armed, this boat could also take part in sea battles. According to Hans Eklund, who for many years researched the small cargo boats of the Roslagen district near Stockholm, they were used in the Battle of Svensksund against the Russians in 1790, where they had an important share in the victory. Alternative names for the *storbåt* were *sandkil, pigge, Roslagskuta*, etc. The dimensions of the *storbåt* were decided according to certain overriding principles: the breadth was one third of the length, while the widest part of the beam was one third of the length of the boat measured from the prow, and the height one third of the breadth (Eklund 1998:230).

According to Nordlinder’s research on peasant boats on the island of Singö (Nordlinder 1982, p. 30), there is a dearth of written information on boats built for coastal transport. In 1778–1779, however, 18 *storbåtar* (large boats) were measured, with the following result: length 50-54 feet (approx. 16-18 m), breadth 12-16 feet (approx. 4.5 m.) and depth 2-3 feet (0.75-1.05 m). A vessel of this size, which developed, according to Eklund, in the 18th century as a result of extended use of the products of the archipelago, was the *klyvarskuta*, with a length of 17-18 m (Eklund 1998:228). Like the *storbåt* it is sometimes also called a *Roslag skuta or piggskuta* (Eklund 1998:231). In the 19th century the increased demand for wood fuel led to the enlargement of the *klyvarskuta*. A topsail was added in order to catch the high winds in narrow sounds, and the result was the *vedjakt* (‘wood fuel yacht’) 19-20 m long. Among the largest of all the peasant transport boats was the *sloop* with a length of 20-25 m.

As will be seen from this survey of ethnologically recorded cargo boats, these are significantly broader in relation to length than the boat-burial boats, i.e., usually 1:3 - 1:4 as opposed to the boat-burial boats which have a length and breadth ratio of 1:4.5 - 1:7.5 (Larsson 1993). On the other hand the proportions of the latter agree with the rowing ships in the archaeological material, and also with the smaller warships, which will soon be touched on in more detail.

3.6.5. Transport boats for the eastern journeys?

Small, light, transport boats ought to have been used for the eastern merchant journeys. Only the light Scandinavian boats were able to navigate the shallow rivers with all the occurring portages, and they were the prerequisite for these journeys. The archaeological material from central Sweden shows that extremely light boats were in use. So far mainly warships have been found, because it is these vessels, as well as smaller boats for personal
transports, that are buried in the aristocratic boat graves in this region. It is possible that these may have had a combined function, since the unsafe surroundings in some areas may have necessitated an armed crew. The sails on these journeys must have been quite small, since the hulls were so low and light. As will be discussed in chapter 8, several of the so-called Birka/Heideby coins show ships with sails that were of this smaller type. It is probable that they were used in central and north Sweden, but not in south Scandinavia and Haithabu. From Gotland and southwards, larger ships with bigger sails were used, which makes Birka the most likely location for the minting of the coins that have ships with small sails. This is in line with the earlier interpretations by Lindqvist (1926); but ever since Malmer’s (1966) thorough presentation of the finds and interpretation, the mint place for all of these coins has been regarded as Haithabu, a theory that was earliest presented by Hauberg (1900:39). As will be seen in chapter 8, the symbolic language on the reverse side of the coins may also very well have roots in the eastern areas where central Swedish merchants were active.

When the tribes along the south Dnieper came under control in the 10th century and the regular Byzantine trade began, the local population built logboats for the Rus merchants.

3.6.6. Boat finds related to the transport of ore

A suggestion has sometimes been put forward that boat burials and boat-burial boats were connected with the iron industry of N. Uppland (Ambrosiani). The boats of this industry in historical times, however, were of a completely different appearance: broad and substantially built. In Garpenberg, in the province of Dalarna, when lowering the waters of Lake Gravsjön, a flat-bottomed, barge-like vessel with a cargo of iron ore was found, joined together by three logboats with L-shaped sections in the sides.

Another find, from nearby Åmånningen in the province of Västmanland, showed traces of a cargo of iron when the sand in the boat was analysed. Here it was a question of a simple, fairly flat-bottomed logboat, which has been radiocarbon dated to the 12th century (Ström report 1965, ATA).

3.6.7. The names of cargo ships

Knorr

Knorr is an Old Norse word for ship, often referred to today in the scientific literature as a merchant ship (Falk 1995:126; Duwel 1987:319, Bill 1997:190). It is the only name mentioned in both skaldic poetry and runic inscriptions for a ship that could be used as such. Hjalmar Falk, who also used the sagas as source material, postulates that, ‘With kaupskip was usually understood a knorr, that did not prevent that these, especially in earliest times, were used also for military purposes’ (1995:126). The interpretation of knorr as a merchant vessel is often based on the interpretation of the runic inscription Sö 198, which says that [h][n] uft sikt til simk(a)(l)(a) tu(u)ru[m] knari ‘he often sailed to Semigallia in a splendid knorr’. Another inscription, U 1016, about a person travelling regularly to the harbours of Greece in a knorr, might also be evidence of trade. Judith Jesch, who has studied the occurrence of the word in both skaldic poetry and runic inscriptions, is of the opinion that knorr is another word for a skip, a type of ship ‘that could be used either on a raiding or a trading voyage’ (Jesch 2001:130). She put forward the instances where the ship is used to denote a warship. On U 258 the inscription tells about the fate of the deceased: on trabu nurmir o kniri asiarnaR ‘Norwegians killed him on Asbjorn’s knorr’. U 654 commemorates a person who died in the East with Ingvar, and he kuni ual knari stura ‘he could well steer the knorr’, and here the association with Ingvar probably means that knorr is referring to a warship. One of the few who have earlier argued for that interpretation is Sven B F Jansson (SR VI:328). Jesch (2001:130) means that there is no sure evidence either way. In the skaldic corpus both these meanings occur as well. In Hkv 7 it is obvious they are warships, where Harald Fairhair’s ships are referred to as knerrir in the text. Sigvatr also uses this word in lausavísur (XIII:4, 26) in a context concerning Icelandic trade. Óttarr, when describing the ships Olav Haraldsson uses when returning from raids in England, says that he came back with two knerrir, and here he explicitly equates them with kaupskip ‘merchant ships’ (Ott II:13). At the time of Snorri’s writing this type of ship was used for a different purpose than for a longship, causing him to explain the odd fact in the text — that warriors returned in merchant ships — with, ‘King Olaf left the longships behind there, made ready two knerrir from there’ (Heimskringla). In the fleet of Eiríkr jarl Hákonarson there are three different types: snekkjur, knerrir and skáiðar (ThKolb III:2). It is important to note the will to explicitly separate the different types of ships. In both the skaldic poetry and the sagas, when the knorr is said to be used in a fleet a sharp distinction is made between knorr and langskip, as Falk (1995:126) has noted. There is one very likely and possible explanation for the occurrence of a supposed merchant ship in the context of maritime warfare. This is that the wider and higher merchant ships became necessary and suitable in a fleet when horses began to be
transported. The typical warships, long and narrow in relation to length, and with low sides, were very unstable and sensitive to any movement on board. Horses were more easily transported in a ship of the wider and higher merchant-ship type. This type of ship can be seen in use for transporting the horses on the Bayeux Tapestry for the battle in 1066. In contrast to the ships seen with men onboard, these have no visible holes for oars and also higher sides. In these light ships the crew themselves were ballast and moved according to the needs for sailing capabilities in different wind and weather conditions. In the sagas there is often information about a fleet composed of different types of ships including a few of the type knorr. In the battle with the jomsviking Vagn Ákesson, Hakon jarl had snekkjar ok skeidar sem knorru according to Tord Kolbeinsson’s Eiriksdrápa. Olaf (the saint) had 20 langskip, 2 skeidar as well as 2 knerrir in the battle in Nesjar (AD 1016) (Flat.II:42; Fms. V:169).

An indirect indication of a ship with the typical rounded bow of a merchant vessel, as in Skuldelev 1, is given by the term knarrarbringa when it is used to describe two Icelandic women (Falk 1995:127). The term knarrstemnd means a stem bent backward in Helgeland, northern Norway (Falk 1995:127). These items of information are important because they show that for a very long time the word knorr was used to designate a ship with a rounded bow and special stems rounded and bent backwards.

In lausavísa (Vígf II), in a poem that looks back at the Battle of Hjørungavåg, a knorr also occurs in battle (Jesch 2001:130). A knorr was a status vessel, like skip and karv. It could be used as a precious gift among royals and aristocrats. In a list by Stein Herdisarson (III:14) there is mention of some gifts that King Olaf kyrri gave to his followers, and among them are hábrunþju skip ok steinda knorrur ‘ships armoured at the oarports and painted knerrir’. King Erik gave his followers sverð ok knorrur ‘swords and knerrir’ (Mark I.7).

A related word, knarri (Jesch 2001:131), is used by Arnór in a quarter-stanza about his own journeys. He calls the journey where this ship was used, kaupfor ‘trading voyage’. In his survey, Falk interprets the ship as a large ocean-going transport vessel, as is clear from the information in Fms (IX :167) which refers to oll stórskip, bæði knorrur ok onnrur ‘all big ships, both knorrur and orhers’ (1995:126).

The peaceful transport, travel, and trade journeys are described mainly in the sagas and more seldom in the poetry since the focus there is on the status-giving war expeditions. In the sagas, usually the knorr is mentioned as the ship used. This ship, which often is described as a large vessel and a hafrskip ‘sea ship’, was probably the type best suited to ocean voyages. The trade with Greenland was a royal monopoly and was conducted with a knorr that travelled there once a year. This was a trade of long continuity. In the summer of 1216 there came to Vestmannaeyjar knorr mikil, ok hefði varit Grønlandsfar; af Grønlandi (Sturl.I:236). In 1325 there were þeir kaupmenn af þrondheiði, sem ni kómú i knerrinum af Grønlandi ‘tradesmen from Trondheim that now came in many knorr from Greenland’ (D.N. VII:122). When Kvállulv travelled to Iceland, he made the journey with two knerrir, each containing 30 men as well as women and children. Sigmund Brestison went to the Faeroes with two knerrir with 50 men in each (Fms II:107). For travels to other islands the knorr is said to have been used as well, for instance to the Orkney Islands (Fms I:246) and to Vestmannaeyjar (Fms IX:292). Falk refers to many sources where the knorr is named as the ship used for journeys to England (1995:126).

Jesch also discusses the use of the term knorr as a loanword in other languages. She gives as example the early text The Battle of Brunanburh, written shortly after 937, where both the word cnear (line 35) is used and the compound nægedecnæarr (line 53), designating the ships used to transport the Norse troops to the battle that raged on land (Jesch 2001:131). According to Falk the Anglo-Saxon word ‘cnear’, or ‘cnearr’, refers only to the ships of the Norsemen, and is borrowed from the Nordic language (1995:127). The old French form of the word ‘canar(t)’, or ‘kenar(t)’, means ‘transport ship’. The word is also found in Latin texts, for example in a text from 1095 where it once again signifies a large Scandinavian ship: quatuor naves magnae, quas Canardos vocant, de Northwega in Angliam appulsae sunt ‘four big ships, that are called Canardos (knorr), have arrived from Norway and landed in England’ (Ordericus Vitalis 8, 23).

A knorr used for trading expeditions is mentioned by Sigvatr in a lausavísa which refers to the landing-fee (landaurar) that had to be paid to the Norwegian king by Icelandic traders (Sigv XIII:4). Here Sigvatr asks the generous man (the king) to give (back) halfa landaura af knerrri ‘half the landing-fee from the knorr’, and this request for feldar...
(sheepskins) is contrasted with his previous receipt of gold from the king (Jesch 2001:65).

One of the runic inscriptions mentioning a possible trading journey is Sö 198 where the commemorated person utf sikt til simk(a)(l)(a) t(u)ru[m] knari um tumisnis ‘often sailed in a rich/splendid knarr around Domesnes to the Semi-gallians’. The knorr is seen as indicating a trading journey. The use of the adjective dýrr ‘splendid’ might refer to either the cargo or the ship. That Samland was indeed a goal for traders is verified by the inscription on a copper box found in Sigtuna, which dates to c. AD 1050 and contains a little set of scales for weighing silver and gold:

\[
\text{tiarfr fik af simskum mani scalar}
\]
\[
\text{þisaR i [simkalal]hti. in}
\]
\[
\text{uirmuntr fãti runar þisar}
\]

DjarfR obtained these scales from a man from Samland in Semgalen and Værmundr made these runes.

(R 173, translated by Pritsak 364)

Byrdingr

Byrdingr, in Old Norse byrþinger, was the main cargo carrier in Norway in the Early Middle Ages, when the historical sources begin to shed light on seafaring. It is known to have transported fish along the coast from Lofoten to Bergen from the 12th century onwards. The word is probably related to either bydr ‘cargo’ or bord ‘strake’ (Falk 1995:130). This ship was classified in the sources as kaupskip ‘merchant vessel’ (Fms VII:286; VIII:40, Krók. p. 14). It is also known from the Baltic Sea, where ships with related names continued to be used throughout history. In Poland the Bording is known from the lower Vistula, and is a type of ship said to be flat bottomed with one mast (Falk 1995:130). The medieval Low German words bordinc and bordinge signified a smaller ship, a lighter used in the harbours of the Baltic Sea. In Iceland a ship called byrdingr was used up to the 18th century to transport firewood.

These ships appear to have had a special construction. A special byrdingsegl is mentioned, and the mast was fixed and not possible to fell as in the warships (Falk 1995:130). Like the Danish merchant ships Skudellev 1 and 3, space for cargo was found in the midsection of the ship (fig. 45), and oars were only present in the fore and aft. Sometimes a byrdingr could be transformed into a warship by adding a midsection to lengthen it and by drilling holes in the sides, as was done when the Norwegian king Sverri was in desperate need of more warships (Fms VIII:372). It is probable that, if a knorr referred to a special type of merchant ship with a rounded bow, byrdingr might have referred to the other type of merchant ship which is known from the Viking and Early Middle Ages and which is often depicted on picture stones, coins and seals: namely, the ship with straight stems (fig. 46).

If this ship was flat bottomed like the late Bording of the lower Vistula, it shares many of the main characteristics of the medieval cog, and it might have been a forerunner of that ship type. Many ship finds from the 12th century onwards, such as the Falsterbo barge finds, have these characteristics, but as yet no prehistoric examples have been found. My guess is that the often-occurring word bard (Falk 1995:48) for stem is related to beard and to this special stem-beard. As with other stems, a bard could be protected with a band of iron. The bard might even have been made of iron, as indicated by its use in the name of Eirikr jarl’s ship from AD 1000: Járnbardi ‘Iron bard’ (Fms. X:355). Sometimes bard is used synonymously with skegg or skipskegg, as in Krók (p.35).

Figure 46. Ship with box-shaped hull and straight stems, on picture stone nr 153, Hunninge, Klinite parish. Photo by Gunilla Larsson.

Later in the struggle between Bagler and Birkebeiner, the Bagler were chased away from their ships, which were burnt. They then made a raid on the town of Tunsberg (Tønsberg) and took some merchant ships, rapidly transforming them into warships by making holes for the oars and by putting deck planks above the bites (Brögger & Shetelig 1950).

As transport vessels for the leiðangr fleet these ships were already well suited, and the sources mention a vistabyrdingr, sometimes called vistaskip, which carried the food supplies for the naval fleet (Falk 1995:103). The provincial laws of central Sweden call these food supplies skeppsvist ‘ship’s food’ (see chapter 9). In the same laws, the
special house in which the food provision was stored until the sailing season, and which was located on the royal estate in every province maintained by a royal bailiff, was called *visthus* ‘house of food provision’.

The word *byrdingr* is currently only known from medieval sources, though the sagas often refer to prehistoric conditions. In *Egils saga* a *byrdingr* with 20 men on board is mentioned (ch. 13); Åsbjörn Sálbane is said to have had a large *byrdingr* with 30 men (Fms IV 255). They are said to have sailed mostly along the coast and on the rough North Sea to Iceland (Fms II:90), the Faeroes (Fms IV:307), England (e.g., Fms VI:402; XI:430), the Orkney Islands (Orkney Saga chapter 58) and Denmark (e.g., Fms I:123).

**Búza**

*Búza* (*bussa*) was the ON name for a type of medieval ship used mainly for transports and trade, but sometimes also for military purposes. It first appears in the 11th century and is thought to have been introduced from the Mediterranean by Harald Hardråde. *Thidolf* has described the ship built by the king in 1061–62. According to *Harald Hardråde’s Saga* it was built to look like Olav Tryggvassón’s famous ship ‘Ormen Långe’. Most researchers agree today that the word derives from the (Latin) word *bucia* in the name for the galley-like, combined rowing and sailing ship (Hauge 1980:380; Westerdahl 1989:150). As a merchant ship it is known in sagas, in the Icelandic annals from the 13th century, and in the English toll tariffs from the 14th century; it carried out the trade between Norway and Iceland, as well as between Norway and England (Falk 1995:128 f). Among monasteries of Scandinavia it was used for transports to England. It was a big seagoing trade ship, like the *knorr*. As was the case with the other merchant ships, it sometimes also was used on naval expeditions. There it appears as the largest ship: ‘...er störst varu, konungsskipit ok búzurnar’ that was biggest, the king’s ship and the *búzurnar* (Fms. IX:304).

What did this ship look like? Is the term *buzur* only a poetic variant for ship, or does it designate a special, defined, ship type? What were the characteristics of this ship? According to Erik’s Chronicle, the *buzur* ships were large (Hauge 1980:380). What separates them from *knorr* is not known, but an expression *butzustefnt*, probably a misspelling from *butzustefnt* ‘stem like in a *búza*’, indicates a specially produced stem (Falk 1995:129). The very special kind of stem that we know of from the Late Iron Age is the straight one with a ‘stem-beard’ seen in carvings, picture stones, coins and seals, which has caused much discussion. In a detailed engraving from the Oseberg find (fig. 47), this special type of stem can be seen as an addition accomplished by building out a *skeg* ‘beard’ in the triangle. A kind of beard on the stem is a known feature, mentioned in both poetry and sagas. One word used is *skegg* (Falk 1995:49), mentioned in Krók (p.36) and in Króka-Ref’s rimur, where it is said that *skatnar nefna á skipinur bard, skegg má þetta heita* (Krók p. 104). The word means ‘out-shoot’ according to etymological lexicons. The German word *scheg*, refers to the extended part of the stem that bears up the figurehead. In one case when *skegg* is mentioned, in Krók (p. 36), the word is used synonymously with the word *bard*. We do not know much about the meaning, but can it be related to beard? In the Viking world, naming was inspired by association, and it is close to hand to associate the kind of extension of the stem with a beard (Old Swedish *skegg*?). In Fms. II:310 the ship called Járnbardi ‘the ship with the bard of iron’ is described as follows:

jarlinn átta barda einn geysi mikinn; þar var skegg á ofanverdu bardinu hvátrveggja, enn níðr frá skegginnu jarnspong þykk ok svá breid sem bardit, ok tök allt í sjó ofan; því var þat skip kallat Járnbardinn, var han allra skipa rammgervastr.

The jarl owned a very large barde; on both sides of the stem was a beard that downwards had a thick iron plate, as wide as the stem, which reached down to the water. Because of this the ship was called Járnbardi ‘iron barde’ (my transl. after Heimir Pálsson).

![Figure 47. Engraved ship’s stem from the Oseberg find. After Christiansen 1964.](image)

Depicted ships of this type might be interpreted as merchant ships, since seldom are there (?) oars, shields or crew marked. This type of ship has not yet been found. It is said to have been carvel built (Hauge 1980:380). The earliest carvel-built ship finds, besides the cog, date to the Late Middle Ages. The written sources for this ship type are late. It is often mentioned in the sagas, earliest as a warship, but it was probably sometimes also used in the same way as the *knorr*, i.e., on open sea and for
transport of horses when a more stable and seaworthy ship with high sides was needed. The first time we hear of a búza being used is in the account of Tore Hund’s journey in 1026 on the stormy waters around the northern tip of Norway to Bjarmaland by the White Sea; he equipped his expedition with langskip, búzu mikla ‘longship, a large búza’ and 80 men (Hkr. 380).

A ship with a probable concave stem, like in the Mediterranean from where the búza is thought to have originated, is visible on the picture stone Broa XII, Halla parish (fig. 48). It is not certain if this is really concave though, or if the ship’s shape has been adjusted to the available space on the stone.

![Figure 48. Ship with a concave stem (?) on picture stone Broa XII, Halla parish, Gotland.](image)

Ships with concave stem is however not only found in a Byzantine context. Graffiti on an Arabic dirhem found in Russia (Sorokin 1997:171) also displays this type of stem (fig. 50).

![Figure 50. Ship with concave-like stem as graffiti on an Arabic dirhem AD 913–914 found in Russia. After Sorokin 1997:171, fig. 19.](image)

A búza was exceptional since it probably was one of the largest ship types, and in this category of ship it is also outstanding because it was sometimes given a name. Eindridi ungi had a langskipsbúza mikil ‘large búza as a longship’ that was called Draglaun (Hkr. 784). In Fms. (VIII:204) two búza used as merchant ships are mentioned: islandsfór, ok hét annat Keipá, en annat Vallabúza ‘Island-travellers, one called Keipa and the other Vallabúza’.

The ship name buss- is known as an element in Swedish place names, though sometimes other meanings can occur, such as bus(e) ‘wolf’. Westerdahl, who places this ship among the warships, has listed 35 Swedish cases distributed from southern Norrland along the outer coast southward and on down to the Swedish west coast (1989:155). It occurs in many parts of Scandinavia, in 47 cases, though most of them come from eastern Sweden, 33 in all (see Westerdahl 1989:155 table 8). In Russia we find busa from c. AD 1200, used like sneka to signify a Nordic ship (Falk 1995:129).

In the archaeological material the ship in the Ultuna burial (see above) was constructed as a large merchant vessel, which comes close to the búza as it appears in written sources. Also the large Enköping ship could very well have been a búza, though we will never know for sure.

**Other types of merchant ships**

West European merchant ship types that sometimes navigated also in the Baltic Sea, are the hulc, the cog, and the barge, which will be discussed further in chapter 5.

3.7. Maritime warfare and ships for war

There is, as I mentioned in the introduction, a general, preconceived notion as to the appearance of
ships, in particular warships, during the Viking period. The ideas about them are on the same, vast scale as the ship in Frans G. Bengtsson's novel Röde Orm (in English The Long Ships), or William the Conqueror's ship on the Bayeux Tapestry. In the latter case, however, one easily forgets that this is one of the largest ships to be represented on the tapestry (from c. 1067) in a fleet comprising three different classes of ships, where smaller ships predominate.

3.7.2. The warship in archaeological material

One might ask whether it is possible to trace warships in the archaeological material. According to Shetelig's survey of the Icelandic sagas: ‘Large ships, tyvesessene, and the smaller class’ (Shetelig 1950, p. 193). These three categories were supposed to have been used in Olav Tryggvason's fleet at the Battle of Svolder. It is important to note that, whenever we have either historical or iconographic information about the ships, there is not just a single category, as is often assumed in the models presented for the naval organisation (Hyenstrand 1982; Hafström 1949), but instead several types and sizes. The sagas that Shetelig has studied are late sources and should be treated with caution. The information in the sagas rather reflects the situation during the Middle Ages, and sources from that time period confirm this composition for the fleets. For instance, according to the Gulating Law the 20-sessan (i.e., with bench places for 20 oarsmen) was one of the most common leibangr ships.

The fact that ships existed in several different size classes is confirmed by iconographic source material from the Viking Age to the Early Middle Ages, such as the picture stones from the island of Gotland which, like the Bayeux Tapestry, show the same variations as the archaeological finds presented here.

3.7.2. The warship in archaeological material

In archaeological material this can be seen in the finds, with the warship from Ladby as the most extreme of the narrow, slender Viking ships found in Denmark, 20.6 m long and only 2.9 m broad which gives a L/B ratio of 7:1 (Thorvildsen 1957). These were reckoned as ships. The boat-burial boats which are longer than 9 m have only been found, as mentioned above, in Swedish material in the Vendel and Valsgärde cemeteries. Characteristically, they are longer than the ethnographically recorded fishing boats of central Sweden, but at the same time much narrower than the cargo boats, which, according to the above, were used along the Uppland coasts. The military character of the find contexts of the boats in the burials at Vendel and Valsgärde also suggests a possible naval connection. Of all the boat burials of central Sweden, it is only here in these cemeteries that people were consistently buried with a full array of weapons, cooking equipment and provisions for a long journey.

In seeking Viking warships in the archaeological material, the following criteria ought to be used for a classification as warship:

1. Remains of devices for rowing for propulsion, e.g., oarlocks or oar-holes, since these were rowing ships as opposed to merchant ships which mainly relied on sail. The size of the crew is shown by the number of oarlocks or oar-holes.

2. Length/breadth ratio. Warships were longer and narrower than merchantmen, usually 1:4.5-1:7.5, while merchant ships seldom exceeded 1:3-1:4.

3. Shallow draught. Warships had low sides and a shallow draught that enabled them to travel along shallow rivers and land on long, shallow beaches.

4. Lightness. Thin planking and a small number of sparsely positioned ribs made these ships speedy and easy to manoeuvre.

High L/B-ratio.

The warship is known to have a higher L/B-ratio than the merchant ship. When a merchant vessel was going to be changed to a warship, it was prolonged.

In archaeological material this can be seen in the finds, with the warship from Ladby as the most extreme of the narrow, slender Viking ships found in Denmark, 20.6 m long and only 2.9 m broad which gives a L/B ratio of 7:1 (Thorvildsen 1957).

Installations for rowing

Some sources inform us that the merchant ships did not have as many oar-holes as needed for a warship, so when the Birkebeiner captured some merchant vessels they had to drill oar-holes along the sides to transform them into warships.

In the 12th century the Norwegian king Sverri held a Thing with the peasants in Nidaros and asked them to build ships for him to help him save the
area from his enemies, because, as he said, ‘we cannot rush as fast around the land as they row the ships along the outer route’ (Sverris saga ch. 154, my transl.). The enemy is here assumed to row, not sail. It’s important to note that in the course of the Middle Ages the primarily sailing warship became more important in the navy, and at the end of the period it was the dominating vessel. This development started already in the 13th century, as can be seen in laws, chronicles and sagas. In Erik’s Chronicle there are accounts of Tyrgil Knutsson’s second crusade eastward, when the whole fleet lay still by the mouth of the Neva River, waiting a long time for wind. The Gutasaga, written in the 13th or early 14th century (Gahn 1988:32), assumes that the leiðangr fleet from Gotland would have to wait seven days before the leiðangr meeting council, if necessary, and perhaps also seven days after, but if no wind came the fleet would be allowed to return home (GL Gutasaga 6).

**Low depth**
The Scandinavian ships are known to be so low that they could land on almost any seashore – it was impossible to predict where – and they could also easily escape when followed in shallow water.

The warships were so low that they did not need a harbour or quay. Erik’s Chronicle informs about the naval expedition of Birger Jarl to Finland (mid-13th century), when the ships were launched from the beach.

**Lightly built**
Why was it important to have warships that were lightly built? Light warships were:

- a) swiftly rowed and sailed.
- b) easy to row.
- c) quickly manoeuvred.
- d) easy to carry or haul on land across portages.

Several of the burial boats, as well as the Viks boat 1, fit very well with all of these characteristics. Among the burial boats of central Sweden it is especially the Valsgärde boats that seem to be constructed like small warships. The Valsgärde boats 6 and 8 were previously thought to have only four or five pairs of oars (Arwidsson 1942:100 and Blomberg 1954:112), but the parallels with the Fjörtoft boat in construction and proportions show that this calculation is on the mean side and that boats of this size class may very well have had space for six pairs of rowers.

<table>
<thead>
<tr>
<th>Boat find</th>
<th>6 pairs of oars</th>
<th>8 pairs of oars</th>
<th>9 pairs of oars</th>
<th>10 pairs of oars</th>
<th>12 pairs of oars</th>
<th>15 pairs of oars</th>
<th>16 pairs of oars</th>
<th>20 pairs of oars</th>
<th>Length (m)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vik</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.6</td>
<td></td>
</tr>
<tr>
<td>Fjörtoft 1</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.86</td>
<td></td>
</tr>
<tr>
<td>Foteviken 1</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.3</td>
<td></td>
</tr>
<tr>
<td>Bärset</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>13.</td>
<td>8-10 pairs</td>
</tr>
<tr>
<td>Ralswiek</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>8-10 pairs</td>
<td></td>
</tr>
<tr>
<td>Danzig-Ohra 1</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.76</td>
<td></td>
</tr>
<tr>
<td>Kvalsund 1</td>
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<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Danzig-Ohra 3</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13.3</td>
<td></td>
</tr>
<tr>
<td>Frauenburg</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17.36</td>
<td></td>
</tr>
<tr>
<td>Skuldelev 5</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Oseberg</td>
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<td>X</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23.3</td>
<td></td>
</tr>
<tr>
<td>Ladby</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>21.6</td>
<td></td>
</tr>
<tr>
<td>Sutton Hoo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>27.3</td>
<td></td>
</tr>
<tr>
<td>Skuldelev 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>27-28</td>
<td></td>
</tr>
</tbody>
</table>

Table 11. Finds from the Baltic region and Scandinavia that can be classified as warships by means of the outlined characteristics, during the period 600–1200 (based on G. Larsson 1989).
<table>
<thead>
<tr>
<th>Relation no. of oars/length</th>
<th>Size of boat-types Flateyjarbók</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pairs of oars</td>
<td>Length (m)</td>
</tr>
<tr>
<td>6</td>
<td>9-10</td>
</tr>
<tr>
<td>8-9</td>
<td>12-14</td>
</tr>
<tr>
<td>10</td>
<td>13-18</td>
</tr>
<tr>
<td>12</td>
<td>17-18</td>
</tr>
<tr>
<td>15-16</td>
<td>21-24</td>
</tr>
<tr>
<td>20</td>
<td>27-28</td>
</tr>
</tbody>
</table>

Table 12. The relation between the number of oars and size, based on table 11, and on information given in the Flateyjarbók.

With these given characteristics and given relations between the number of oars and the size of the ships, it is also possible to draw conclusions about the number of oars in less well preserved finds that can be classified as belonging to the warship type:

<table>
<thead>
<tr>
<th>6 pairs of oars</th>
<th>7 pairs of oars</th>
<th>8 pairs of oars</th>
<th>10-15 pairs of oars</th>
<th>Length (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulverket 2</td>
<td>8-10</td>
<td>Vendel VII</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Vendel XI</td>
<td>Valsgärde 2</td>
<td>Vendel X</td>
<td>9.84</td>
<td></td>
</tr>
<tr>
<td>Vendel IX</td>
<td>Valsgärde 3</td>
<td>Vendel X</td>
<td>9.35</td>
<td></td>
</tr>
<tr>
<td>Vik</td>
<td>Vendel III</td>
<td>Vendel IX</td>
<td>9.6</td>
<td></td>
</tr>
<tr>
<td>Valsgärde 8</td>
<td>Vendel I</td>
<td>Vendel IX</td>
<td>9.6</td>
<td></td>
</tr>
<tr>
<td>Vendel III</td>
<td>Valsgärde 7</td>
<td>Vendel I</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td>Foteviken 2</td>
<td>Valsgärde 7</td>
<td>Foteviken 1</td>
<td>10.45</td>
<td></td>
</tr>
<tr>
<td>Valsgärde 13</td>
<td>Valsgärde 15</td>
<td>Valsgärde 8</td>
<td>10.95</td>
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</tr>
<tr>
<td>Valsgärde 6</td>
<td>Valsgärde 6</td>
<td>Foteviken 1</td>
<td>10.3</td>
<td></td>
</tr>
<tr>
<td>Valsgärde 5</td>
<td>Valsgärde 5</td>
<td>Vendel I</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td>Valsgärde 14</td>
<td>Valsgärde 14</td>
<td>Vendel I</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td>Skuldelev 6</td>
<td>Valsgärde 14</td>
<td>Vendel I</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td>Holmedal</td>
<td>Valsgärde 13</td>
<td>Valsgärde 13</td>
<td>11.14</td>
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<td>Valsgärde 15</td>
<td>12.15</td>
<td></td>
</tr>
<tr>
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<td>Valsgärde 6</td>
<td>Valsgärde 6</td>
<td>12.76</td>
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</tr>
<tr>
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<td>Valsgärde 5</td>
<td>Valsgärde 5</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Valsgärde 14</td>
<td>Skuldelev 6</td>
<td>Skuldelev 6</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Holmedal</td>
<td>Valsgärde 3</td>
<td>Holmedal</td>
<td>12-13</td>
<td></td>
</tr>
<tr>
<td>Valsgärde 3</td>
<td>Valsgärde 3</td>
<td>Valsgärde 3</td>
<td>14.1</td>
<td></td>
</tr>
<tr>
<td>Haithabu</td>
<td>Haithabu (burial boat)</td>
<td>Haithabu (burial boat)</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Kvalsund 2</td>
<td>Haithabu (burial boat)</td>
<td>Haithabu (burial boat)</td>
<td>17-20</td>
<td></td>
</tr>
<tr>
<td>Foteviken 2</td>
<td>Haithabu (burial boat)</td>
<td>Haithabu (burial boat)</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Foteviken 3</td>
<td>Haithabu (burial boat)</td>
<td>Haithabu (burial boat)</td>
<td>20</td>
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</tr>
<tr>
<td>Foteviken 5</td>
<td>Haithabu (burial boat)</td>
<td>Haithabu (burial boat)</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

Table 13. The number of oars calculated on some Scandinavian ship finds. Based on Larsson 1989, with complements.
Among the central Swedish burial boats, it is only the boats in the Valsgärde and Vendel graves that are longer than 9 m and that qualify for an interpretation as warships. It is also these burials that, in contrast to other boat burials, show an expressed military association in the artefacts, with weapon equipment as well as food provision and cooking utensils suitable for a long (naval?) journey. In central Sweden, the small boats for personal transports and warfare are the most common in the archaeological material. As Mats G. Larsson (1990)
has suggested, this smaller type of boat was the best suited to the eastern expeditions, like that undertaken by Ínlgvar in 1036–1041. As will be shown in chapter 7, modern-day experimental journeys have proven that the smaller boats were the only types suitable for use both on the shallow river routes in the East and for the attacks on the shallow shores in the West, because of their low weight and shallow draught.

As is shown in table 15 there is also a good distribution of different types and sizes, from the little Fjörtoft boat with only six pairs of oars to Skuldelev 2/4, a longship with 20–25 pairs of oars. The smallest category of ship is completely dominant.

In an examination of the archaeological material, vessels that can be classified as warships prove to be of amazingly variable sizes and are not as uniform in type as research on the leiðangr (see above) suggests. The smaller ships dominate, while the largest ships are to be found in the Norwegian and Danish material. The small warships or transport boats for people were, as we have now seen, the commonest within this category of boat and may therefore have been one of the types of leiðangr ships that the Uppland hundare district equipped. An earlier work has shown that there are also indications of ship’s crews of this size (Larsson 1989).

3.7.4. The names of warships

Warships are also often mentioned in the written source material (poetic lays, Old Norse literature). The snäcka is a type of vessel that was presumably not regularly used as a leiðangr ship until the beginning of the Middle Ages. It is not mentioned in the poetic lays. ‘Sneka’ was, however, from the 12th century onwards the common Russian name for Nordic ships. Crumlin-Pedersen maintains that it was a ship of the size that had 19 to 26 pairs of oars (Crumlin-Pedersen 1986: 21).

In Russia the word schnjaka has survived for a local craft with dimensions that resembles the Scandinavian war-ships, 8.5–18 m in length, 1.8–2 m in width and 1.2–1.4 m in height (Sorokin 1997:86). As can be seen from table 14, this is narrow in relation to length compared with the other traditional boats of this length, a characteristic that it shares with the Iron Age war-ships.

The smallest type of ship is actually the most interesting, since it is mainly this type that has been recovered in the archaeological material. The names we encounter for the smaller classes of warship are karv and skuta, with between 6 and 16 pairs of oars (Shetelig 1950:194 ff.). The word karv is a loan from karabos, the name used by Byzantine writers for the ships of the Russians. The Russian form, korabl, occurs in many narratives about the expeditions of the Varangians from the Dnieper to Constantinople. In the Greek sources we hear the name already from the 9th century onwards. In the early Nordic literature the name first appears in a verse by Egil Skallagrímsson from the year 934. According to the Icelandic sources mentioned above, it denotes one of the smallest of the warships. Its size, however, is not described by the number of oars as with the small boats (a ‘six-oar’, ‘twelve-oar’, etc.), nor by the number of bench spaces (sesser) as on the longships (‘twenty bench spaces’), but instead by the number of men who rowed on each side, ‘12 men or 13 rowed at the side’ (Shetelig 1950:194). Ships of this size are named as warships in England’s Domesday Book from the year 1086. There it is said that the burghears of Dover are to give the king 20 ships every year and that on every ship there should be 21 ‘homines’, i.e., a crew presumably consisting of 20 rowers and a helmsman (Domesday Book folio 1, column 1).

The karv would probably have been a lightly built ship, which could easily be hauled beside rapids and across small portages. It was just such a karv that Ketil of Ringnäs was given as a present by Olav Haraldsson, king of Norway, in the year 1015 and which he himself took along the river Raumelv to Mjøsa 124 m above sea level. But these were not only warships: the Icelandic sagas also tell of karvar used for personal purposes and belonging to well-off large farmers. This explains why we so often encounter this type of ship in both the Norwegian and Swedish boat burials. Karvar are mentioned as leiðangr ships as late as 1315 when the Norwegian king, Haakon Magnusson, told the people of Hålogaland in the far north that, according to ancient custom, they were only required to equip their ‘skip ok karfar’.

It is easy to put a label on preserved finds and assume that we know what type of boat in the written sources they correspond to. However, this may lead into a trap. The karv, so often mentioned in the ON material, has generally been connected with the Scandinavian ship-type with curved stems. We know that it was comparatively small and light, but there our knowledge ends. Looking at the Russian material, which has been presented by Sorokin, there are other types of boats that are interpreted as korabl, the Russian name for the Scandinavian karv. In finds from the Novgorod excavations, dated from the 12th to 13th centuries, this type of boat has a flat bottom, straight stems, and a carvel-built hull with sewn seams or seams connected with cramps of iron (Sorokin 1997). A similar hull shape is found on the karbas used in north Russia. The hull shape thus resembles a type of boat seen on early picture stones, a type that is common in depictions but has never been found archaeologically. A recent find from Riddarfjärden (Jens Lindström SSHM, oral information), recovered during
the underwater investigations by the National Maritime Museum for the railway tunnel project ‘Citybanan’, may be of this type but in a smaller version as a fishing boat. It is 4 m long with a flat, carvel-built bottom and clinker-built sides, and is the oldest Swedish find known so far of this type of boat.

The word *karbas* was still in the 19th century used for a traditional ship in north Russia, usually 6.4-12.2 m in length, 1.6-2.1 m wide and 0.6 – 1.5 m wide, thus with a L/B-ratio and dimensions that is similar to the burial boats. Whether the *karbas* is related to the Byzantine karabos for the ships of Rus is uncertain but possible. Several of the variants of these ships have vertical stems, some have curved stems (Sorokin 1997:85). Like *schnjaka* and known warships, it is narrow in relation to length, and like the *schnjaka* lower than other ships of the same size (see table 14).

![Figure 52. The small warship of type karv from Fjørtoft. After Brøgger & Shetelig 1950.](image)

<table>
<thead>
<tr>
<th>Type of craft</th>
<th>Length m</th>
<th>Width m</th>
<th>Height m</th>
</tr>
</thead>
<tbody>
<tr>
<td>lodja</td>
<td>11-18.3</td>
<td>3.05-5.5</td>
<td>2.1 – 3.3</td>
</tr>
<tr>
<td>kotchmara</td>
<td>9.1-15.2</td>
<td>3.05 – 4.3</td>
<td>2.1-2.4</td>
</tr>
<tr>
<td>schnjaka</td>
<td>8.5-18.3</td>
<td>1.8-2</td>
<td>1.2-1.4</td>
</tr>
<tr>
<td>Pomorski kharbas</td>
<td>12.2</td>
<td>2.1</td>
<td>1.5</td>
</tr>
<tr>
<td>karbas</td>
<td>6.4-8.5</td>
<td>1.6-2.1</td>
<td>0.6-0.76</td>
</tr>
</tbody>
</table>

Table 14. Traditional boats and ships in northwest Russia in the 19th century, of the size 6-18 m in length. After tables in Sorokin 1997:86-87.

What is interesting to note here is that, among the traditional 19th-century boats of Russia, the ones that have dimensions corresponding to the boats in the burials are the *schnjaka* and the *karbas*, which may give a hint as to how the *snäcka* and the *karv* once appeared.

The *skuta* was, like the *karv*, a lightly built rowing ship with mast and sail (Hafström 1949, p. 24). It is often mentioned in connection with the *leiðangr* fleet, as in the Södermanland laws where it is stated that ‘snekkior ok scutor’ are to be made ready at Whitsuntide for voyages (SdmL, Amendment 2). In connection with Birger Jarl's crusade to Finland it is ‘snekkior ok löpande skutor’ (snekkior as well as *skutor*) that are pushed out from the shore at the start of the voyage eastwards, a combined *leiðangr* and crusade. Small ships keep their important position even as late as the 13th century, as shown in an agreement about the fleet from the year 1209 between King Inge of Norway and Phillip on Kvitsöy, where it is decided that none of those involved may use or steer ships larger than 15-sessor (i.e., with bench places for 15 oarsmen).

In the battles between the early medieval Norwegian factions, the Ribbunger and the Birkebeiner, mention is made of the fact that the former had no ships larger than 14-sesser (Brøgger 1950: 210).
3.7.5. The warship from the 13th century

Warships, maritime warfare and military organisation changes dramatically during the 13th century. Though the old warship types are sometimes used and employed when the leiðangr fleet is called out, mainly new, heavy warships used as troop-carriers are taken into use. Mostly it is the cog that from this century also serve as warship, as can be seen in a 13th century manuscript (fig.54).

Jan Bill has shown that the most desired ships for naval service already in the 13th century were the cogs (2002:47). For instance, the Danish king Erik Menved used 45 cogs and many other ships against Stralsund in 1316 (Bill 2002:48). He has also shown that naval warfare changed and that height was sought because of the tactical advantage of a higher position. Castles were built up as fighting platforms on stem and stern (fig.55). The high superstructures necessitated a larger hull. The hull sizes increase dramatically. The first time the ‘big ship’ makes its appearance is probably the Enköping ship, approximately 8 x 32 m large and 4 m high, and the slightly younger Bergen ship 30 x 9-10 x 3.4 m, recently dendrochronologically dated to 1187–88 (Christensen 1985:182; Bartholin & Englert 2000; Englert 2000:41-44).

Figure 53. Ship types and ship sizes. After Crumlin-Pedersen 1978.

Figure 54. Naval warfare in the 13th century, with cogs in fight from an English manuscript. After Crumlin-Pedersen 1972.
Figure 55.

The parallel use of the galley is evidenced by the find of the 14th-century watch ship Helgeandsholmen V, a 22.5-m-long rowing and sailing ship for 8 pairs of oars, dendrochronologically dated to between 1316 and 1350 (Varenius 1987, 1989). Now it appears different from the earlier ships, with straight stems instead of the curved Iron Age stems.

3.8. The main constructional differences between warships and cargo ships ca AD 800-1200.

The combined rowing and sailing warships were slender and narrow. The width of the small- and medium-sized ships in the archaeological material never exceeds 3 m. This can also be seen in the L/B ratio ranging between 4.3:1 and 5.83:1. This can be compared to the primarily sailed cargo ships, which are wide in relation to length in order to be stable in sailing (fig. 57). The width here, besides D-Ohra 2, is instead not below 3 m, but often considerably wider for vessels of similar sizes.

Figure 56. A comparison of hull shape between warships and merchant ships.

<table>
<thead>
<tr>
<th>Shipfind</th>
<th>L m</th>
<th>B m</th>
<th>H m</th>
<th>L/B</th>
<th>False keel</th>
<th>Strakes nr</th>
<th>Strakes Th cm</th>
<th>Frames W cm</th>
<th>Frames H cm</th>
<th>Spacing m</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Warships</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viksboat 1</td>
<td>9.6</td>
<td>2.1</td>
<td>0.54</td>
<td>ö</td>
<td>x</td>
<td>5</td>
<td>1.5-2.1</td>
<td>5.2-7.2</td>
<td>0.77-1.0</td>
<td></td>
</tr>
<tr>
<td>Fjortoft</td>
<td>9.86</td>
<td>2.28</td>
<td>0.68</td>
<td>u</td>
<td>x</td>
<td>6</td>
<td>2.5</td>
<td>9</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>D.-Ohra 1</td>
<td>12.8</td>
<td>2.37</td>
<td>0.7</td>
<td>5.83</td>
<td>-</td>
<td>6</td>
<td>2.2</td>
<td>7.0</td>
<td>9.0</td>
<td>0.88</td>
</tr>
<tr>
<td>D.-Ohra 3</td>
<td>13.3</td>
<td>2.46</td>
<td>0.7</td>
<td>5.4</td>
<td>-</td>
<td>7</td>
<td>2.2</td>
<td>7.0</td>
<td>12.0</td>
<td>0.75-</td>
</tr>
<tr>
<td>Bårdset</td>
<td>13</td>
<td>2.64</td>
<td>0.57</td>
<td>4.9</td>
<td>x</td>
<td>6</td>
<td>2.2</td>
<td>4.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Karmoy</td>
<td>15</td>
<td>2.8</td>
<td>Ca 1</td>
<td>5.3</td>
<td>?</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Skuldelev 5</td>
<td>18</td>
<td>2.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Frombork</td>
<td>17.36</td>
<td>2.78</td>
<td>0.92</td>
<td>6.24</td>
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<tr>
<td><strong>Cargo ships</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechlinken</td>
<td>9.32</td>
<td>3.3</td>
<td>0.8</td>
<td>3.8</td>
<td>-</td>
<td>-</td>
<td>1.5-2.0</td>
<td>10.0</td>
<td>11.0</td>
<td>0.47-0.8</td>
</tr>
<tr>
<td>D.-Ohra 2</td>
<td>11</td>
<td>2.27</td>
<td>-</td>
<td>4.86</td>
<td>-</td>
<td>7</td>
<td>2.2</td>
<td>7.0</td>
<td>13.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Skuldelev 3</td>
<td>13</td>
<td>3.3</td>
<td>1.6</td>
<td>4.2</td>
<td>-</td>
<td>8</td>
<td>2.5-4</td>
<td>4.5-5.5</td>
<td>-</td>
<td>0.89-0.97</td>
</tr>
<tr>
<td>Skuldelev 1</td>
<td>16</td>
<td>4.5</td>
<td>1.9</td>
<td>3.6</td>
<td>-</td>
<td>12</td>
<td>1.8-6.5</td>
<td>11-13</td>
<td>0.92</td>
<td></td>
</tr>
<tr>
<td>Askekärr</td>
<td>16</td>
<td>3.5</td>
<td>-</td>
<td>4.5</td>
<td>-</td>
<td>13</td>
<td>1.5-2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brze zno</td>
<td>17.8</td>
<td>5.0</td>
<td>1.55</td>
<td>3.57</td>
<td></td>
<td>4.0</td>
<td>-</td>
<td>-</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Klåstad</td>
<td>21</td>
<td>4.8</td>
<td>1.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 15. A comparison between the construction of some of the known small- and medium-sized warships and cargo ships in the period AD 800–1200.
The comparison above between warships and cargo ships also shows that the warships are lower amidships, and never exceed 1 m (table 15). This is special for Scandinavian ships, because of the strong intention to get as little draught as possible so that shallow shores and rivers could be entered without problems.
4. SHIPBUILDING IN A LONG-TERM PERSPECTIVE

4.1. The connection between Iron Age shipbuilding technology and the success of Viking expeditions

It has often been argued that boat-building methods and material have little importance for the quality of the ship (Edberg 2005). Opinions differ as to the value of authenticity in experiments. In the evaluation of experiments there has been little discussion about the impact and effect of building methods on the results. Based on my own experiments, the conclusion here is that the building method is of vital importance and is a factor that can determine the outcome of the experiments.

A deeper analysis of the building method used in the Viks boat reveals that it was constructed with a method that made it light, fast, pliable and durable. In this dissertation, a hypothesis will be put forth that behind the success of the Viking expeditions are two major factors, each of which is a necessary prerequisite. The first is that the ships were built with improved methods, which gave them superior qualities for these ventures. The other is an organisation that made it possible to gather a large number of people and to coordinate them to serve as crew on the ships within a short time and in a well-organised manner. In this chapter we will analyse the first factor, the shipbuilding methods, to trace the relation between shipbuilding and the ships’ performance at sea. It is also of importance to determine when this method was introduced, and to see how and why it was abandoned. The technological changes in shipbuilding can be seen as deeply correlated with changes in society at large.

Shipbuilding is also important since it is related to the use of the ships, and the use of the ships in turn is related to the needs in society. Shipbuilding is also influenced by local, regional and interregional contacts. Improvements in technology and methods that give chronological fixed points help to trace changes in seafaring and maritime communication over time. When and how these changes occur is thus related to historical processes in the society that built the ships. The intended use of the ship is built into the shape of the hull.

4.2. The roots of the Scandinavian ship-type

The Scandinavian ship-type, defined as a ship with pointed ends, rounded section, curved stem and stern, and sides with strakes connected with iron rivets in clinker-building technique, began to evolve already in the Early Iron Age.

4.2.1. Clinker-built boats

The clinker-building technique means that the edges of the planks overlap each other (fig.57). This is seen for the first time in the ship in the war-booty sacrifice at Hjortspring (Rosenberg 1937; Rieck 1988), but here the planks are sewn and the term ‘clinker building’ is mostly connected with the use of rivets.

The Hjortspring boat is very similar to some of the boats in the Scandinavian rock carvings. The majority of these seem to be asymmetrical ships, but some, like the Hjortspring boat, are symmetrical, and boats of this type may thus derive from the earliest Iron Age.
The boat from Hjortspring bog (fig. 58) is part of war booty, sacrificed in a bog on the Danish island of Als in gratitude to the deities for success in warfare against an unknown enemy. Where the boat came from is uncertain, but the large lime used for the boat points to south Scandinavia or southwest Europe. Today it is almost impossible in Denmark to find such huge lime trees as the ones used for the Hjortspring boat (Kaul 2002). That the Svear were among the nations famous for their naval skills already by this time, and that they used ships which in those days were symmetrical just as in the rock carvings from this region, is also evidenced by Tacitus:

Chapter 44

Next occur the communities of the Suiones, situated in the ocean itself; and besides their strength in men and arms, very powerful at sea. The form of their vessels varies thus far from ours, that they have prows at each end, so as to be always ready to row to shore without turning nor are they moved by sails, nor on their sides have benches of oars placed, but the rowers ply here and there in all parts of the ship alike, as in some rivers is done, and change their oars from place to place, just as they shift their course hither or thither.

4.2.2. Logboat building technology

The logboats were of importance in Early Iron Age seafaring, in lakes, rivers as well as on the sea. They are principally of two types:

I. Hard dugouts
II. Soft expanded dugouts

These two types have been built since the Neolithic, and were common throughout the prehistoric period. Both were made from hollowed-out tree trunks, but in the case of the soft dugouts a very thin shell of 1-3 cm thickness was carved out and then expanded slowly over a fire by continuously applying hot water; inserted stakes continuously expanded the hull, and finally these were exchanged for ribs nailed or tied to the hull with the primary function of keeping the hull expanded.

The axe available for hollowing out the hull was the celt, which was suitable for the purpose since it could be turned transversely. From the first centuries AD shafthole axes of iron began to appear (Hvarfner 1952:121).

Expanded logboats were also used as bottom in the first clinker-built boats and ships, such as the boat from Hjortspring (Rosenberg 1937; Rieck 1988) and the Björke boat (Humbla 1950) from Gästrikland (fig. 59).

Both hard and soft expanded dugouts, often also extended with additional strakes, are found in the famous Roman Iron Age burials from Slusegård, dated to AD 80/90–250/60 (Crumlin-Pedersen 1991b), and in some cases only the luting of resin is preserved in a boat shape around the body.

Boats with additional strakes that probably were fastened with the sewing technique were in use also in central Sweden, as indicated by the remains of expanded and extended logboats in Roman Iron Age boat burials at the Barkarby cemetery in Uppland, nos. 53, 56 (figs. 60, 61) and 65 (Holmqvist 1956). Two of the graves, nos. 53 and 65, have been dated by the artefacts to the second century AD (Holmquist 1956). No remains of metal fastenings were found, so the strakes must have been sewn to the logboat bottom, as was also the case in Slusegård. The boats were, like the boat burials from Slusegård, visible thanks to the preserved strings of resin that had been used as luting material and that still retained a boat shape. The resin was inserted to make the hull watertight.

The boat in Barkarby grave no. 53 (fig 60) is an extended boat, with luting material inserted only in the stem parts of the boat, which was probably only 2.8 m long.
The boat in Barkarby no. 56 is an extended logboat with two strakes on either side, as can be seen from the two lines of luting strings along each side of the body. The strings show that only part of the boat was buried, maybe half the boat, about 2 m long with the stem section.

The third boat burial in Barkarby, no. 65, contained a 2.8 m long boat. Caulking is preserved along one side of the body, which could be either a sealing of the land between the logboat bottom and one strake, or perhaps a sealing of a crack in the hull of a boat that was not extended.

From the Roman Iron Age we also find similar boat burials in south Sweden, where also boats of a different shape with rounded ends (like Slusegård no. 846) have been excavated: in Valleberga burial no. 24, Valleberga Parish, Scania (Strömberg 1953:177 ff), as well as in Simris 2, Simris Parish, Scania (Stjernquist 1955:26ff). An early excavation of a burial at Alvastra, Östergötland revealed a resin luting at the ends of the grave that probably came from a boat (Almgren 1900:101 f; Crumlin-Pedersen 1991:246). Other Danish boats are also known, such as the Late Iron Age boat burial from Grödbygård, Åker Parish on Bornholm (Watt 1985a:57-59; 1985b:55). Boat burials dating to the Roman Iron Age are also known from Norway. Boats in a Norwegian inhumation grave from Jaerstrand, Hå Parish, Rogaland (Müller-Wille 1970, kat. I:235), and the find from Valderoy, Borgund Parish in Møre og Romsdal (Müller-Wille 1970, kat. I:319; Myhre 1980) show that the clinker-building technique with sewn strakes was also in use in Norway during this period.

4.2.3. Shell building

It is important to note that the clinker-built vessels that begin to appear in Northern Europe at the beginning of the Iron Age, as well as the earlier vessels connected with edge-to-edge joining that also appeared in Southern Europe, were built in shell technique (fig. 63). This meant that ships were built in a sequence with the shell first: the keel was laid,
stem and stern were added, and then the hull was built up strake by strake. As a last step in this sequence, which involved both hard and soft dugouts as well as plank-built boats, the ribs were inserted with a major function to keep the hull outward. The strength was in the hull, not in the internal skeleton of ribs, which never was connected to the keel and in some cases of expanded and extended logboats not even to the hull. This principle for building dominated the practice until the situation was radically altered in the Middle Ages, when skeleton building began to appear. This method had a frame-first sequence and a skeleton that was, in a final step, covered with a ‘skin’ of strakes, which was only a skin that now had lost its original function, the strength of the hull instead being provided by a solid skeleton. In the Middle Ages the frames were connected to the keel, which also became determinant for the hull’s shape.

What was not realised by the early researchers (Shetelig 1950) is that all prehistoric planked ships in Europe were shell built, both the ones in clinker technique and the edge-to-edge joined Mediterranean ships. The ribs were added secondarily. Olof Hasslöf (1958) has observed the connection with how the shape was created. The prehistoric boat builders, as well as the traditional boat builders of Norrbotten and Västerbotten whom he interviewed, all built after eye-measure and skill, whereas the skeleton technique is associated with a pre-planned building with models and often with drawings by mathematically trained engineers.

4.2.4. The first riveted ships
The first ships built in Europe had their strakes sewn together. Connection of the planking with rivets instead – secured by square, rhombic or rectangular plates on the inside of the hull – began to appear in the late Roman Iron Age and became one of the main characteristics of Scandinavian shipbuilding practices in the Late Iron Age, but only in south and central Scandinavia; in the north and east, sewing continued.

In the find from Björke, Hille Parish, Gästrikland (Humbla 1950), 14C dated to calib. AD 340–530 (320±70), we probably have the earliest Swedish example of a boat with the strakes connected with rivets (fig. 64). In the almost contemporaneous remains of all three ships in the war-booty sacrifice in Nydam bog from the 4th century (Engelhardt 1865, 1866), the strakes are also joined with rivets. One of the Nydam ships was an almost complete oak ship (fig. 65), another oak ship had been cut into pieces, while fragments of a third ship was built of pine. The pine ship excavated by Engelhardt in 1859–63 was lost during the Second World War, but systematic investigations 1989–96 in the bog by Fleming Rieck at the Danish National Museum has turned up some additional fragments of this ship, now dendrochronologically dated to c. AD 300, which makes it the earliest riveted shipfind (Rieck 1994, 1995a). The oak boat now on exhibit in Schleswig was according to a dendrochronological date constructed around AD 310 and deposited c. AD 330–340 (Rieck 1994, 1995a).
It is not clearly established from where the defeated enemies of Nydam bog originated. The use of pine in one of the ships might indicate that they came from the north; probably from Sweden or Norway, although in Norway sewing was still used as seen in the Valderøy (Hagen 1977; Bøe 1942; Fett 1950) and Halsnøy finds (Myhre 1980).

The Nydam boats are the earliest examples of the type that much later was to become the model of the leiðangr-organisation described in the provincial laws of Sweden (see chapter 9). Tied to the gunwales of the Nydam ships are rows of oarlocks of the special shape called in OSw har or ar, and there is a rope for the oar, called OSw hamla (Zetterholm 1936). The same terms were later used for the district that supplied an armed rower (see chapter 9).

The pirogue-shaped boat from Björke (Humbla 1950) is, like the much earlier Hjortspring boat (Rosenberg 1937; Rieck 1988), built on an expanded dugout bottom of lime, to which stem- and stern-pieces were added as well as one additional strake on each side. In the Björke boat this is made from pine. It also has thin ribs of spruce tied to cleats saved in the wood.

4.2.5. The emergence of the Scandinavian Iron Age type of logboat

The Scandinavian Iron Age logboat, pointed at both ends and thus shaped after the prestigious clinker-built ships that probably were available to only a few in society, was developed already in the Early Iron Age. Still in the Celtic Iron Age, the heritage from the Bronze Age prevailed, with a completely different type of logboat, rectangular in plan and section, and with an overhang at the stem and stern, which often had a transverse rabbet. In the Roman Iron Age the situation began to change. One find of the type with pointed ends in both plan and longitudinal section, which was to become dominant in the first millennium and in the very beginning of the second, comes from Sjöbo, Sintuna Parish, Uppland and is radiocarbon dated to 5±75 BC (ST 9824). This small logboat measures only 3.15 m in length, 0.5 m in width, and was ‘probably of oak’ (report Gezelius 1977). The section is rounded but the bottom is quite flat.

The plank-built boat, probably clinker built, also emerges in central Swedish material in the early Roman Iron Age, with a logboat bottom of the pointed Sjöbo type and with one additional strake on either side. The boats from boat burials at the Barkarby cemetery, nos. 53, 56 and 65, had been constructed in this way. Here, as in the Danish Slusegård cemetery (Crumlin-Pedersen 1991), only the strings of resin surrounding the skeleton in a ship shape, and the dark colouring of mouldered wood, revealed that these were buried boats. In burial no. 56 the two strings of resin on each side of the skeleton showed that this dugout bottom had been extended with two additional strakes. Two of the graves, nos. 53 and 65, have been dated by the artefacts to the second century AD (Holmquist 1956). The boat burials from Veklice (Okulicz 1992), excavated in the last decades by the shore of an inlet near the mouth of the river Vistula, date to the last half of the second century and beginning of the third, and they indicate both the Scandinavian origin of the idea of the boat burial and also the pointed boat type itself, which differed from local traditions in the area as boats at this time had a
4.2.6. The emergence of rowed ships

The earliest Scandinavian boats were propelled by paddles. In central Sweden paddles have been found from the Neolithic and later. A paddle from Hedemora is dated by pollen analysis to the middle Neolithic (Lundqvist 1929:367 ff). Another very similar paddle was found in Vika Parish (Serning 1966:19), but dated to the 6th century AD.

In the fourth century the propulsion methods begin to change. In the Nydam ships oarlocks (fig. 67) are tied in rows to the gunwales, the first appearance of such in the archaeological material.

4.3. Late Iron Age: The revolution in boat-building technology

The Migration Period and early Vendel Period is a transition time in society when several interrelated changes take place. Boat-building methods show important and radical changes, from the tangential splitting of logs used in Nydam ships to the radial splitting of logs for the planks used in the Late Iron Age ships (fig. 68). The latter method became dominant until the water-powered sawmills made their entry in the Late Middle Ages and sawn planks became easy to manufacture, cheap, and common.

The new methods begin to appear at the same time as the woodworking technology is improved by the introduction of a new tool in the carpenter’s and boat builder’s equipment, namely the broadaxe (Hvarfner: unpublished manuscript at SHM). A differentiation in the types of axes and adzes available also occurs, which fits the separate steps in the boat-building procedure as will be discussed here.

Another fundamental improvement affecting both boat building and the possibilities for seafaring, maritime transport and long-distance contacts is the introduction of the sail, which also occurs parallel to the technological and methodological changes in the beginning of the Late Iron Age.

4.3.1. The introduction of radial splitting technology

In Sweden, probably Valsgärde 7 from the 7th century is the earliest example, as can be seen from the remains of wooden fibres on some rivets. Almost all of the analysed ship remains of the Late Iron Age and Early Middle Ages until the 14th century, where the material has been oak, have planking that is radially split; there are only a few exceptions to this, such as a find from Käringön (Hasslöf 1937) that with some doubt is dated to the 11th century, and the Gedesby ship (Bill 1999) of the 13th century where the stem is sawn. Oak was the most preferred material in shipbuilding, probably because it could be radially cleaved. Among the Skuldelev ships (Olsen & Crumlin-Pedersen 1967), oak dominates. Skuldelev 2 and 3 are completely of oak, Skuldelev 5 is of oak with the uppermost strakes of ash, but Skuldelev 1 and 6 are built with a planking of pine. Of the oak planking, all except the gunwale of Skuldelev 3 is made of radially cloven logs. The pine and ash planks of the Skuldelev ships are tangentially oriented (Olsen & Crumlin-Pedersen 1968:154ff).

The broadaxe that was necessary to hew out thin planking from the material makes its entrance at this time in the carpenter’s and shipbuilder’s set of tools.

The big invention in boat-building technology was the radial splitting of the log into several parts, not straight after a line as earlier, but instead following the direction of the fibres in the wood. A crucial point in this method was not to cut the fibres. In a growing tree, the fibres along the trunk are seen around and between the vessels that conduct sap from the roots to leaves and that also support the tree (fig. 68-70).
An opening was created; wedges were inserted and hammered in along a widening crack until the two halves of the log fell apart. Contrary to earlier practice, the halves were now continuously split into 1/4, and these into 1/8 of the log (fig. 70). A large log can be split into 1/16 or even 1/32 parts in the same way.

Twisted trees
Theory and reality do not always go hand in hand. In practice, the straight-grained tree in the figure above very seldom occurs. The direction of the fibre turns either right or left. In our work with the logs for the replica of Gamla Uppsala 3, Embla, the four minor logs given to the project of trees grown in the same forest at Vittulsberg, Gamla Uppsala Parish, were all right grained. Axel Lindberg (1990) had a different experience while building Blanka, the replica of Helgeandsholmen X, though also here it turned out to be very difficult to find straight-grained trees, as most of the trees instead turned left (fig. 71).

That the fibres of the tree mostly turn either right or left is, however, very good and an advantage in the boat-building procedure since in both the bow and the aft most of the lower planks are twisted. This is especially the case concerning the garboard and second strake, which for a short distance must be twisted from almost horizontal at the amidships section, to vertical at the hood-end where the strake meets the stem and stern. In a plank from a radially split curved log, the shape is naturally given and does not have to be artificially twisted by water or heat. This reduces the tension in the wood, and it also increases the strength in those parts of the ship where the stress on the wood is great. This can explain why in some parts of Sweden, as well as on Åland (Höggnäs 1985), these planks of the ships, which are often called vindor, have continued to be carved out from radially split, curved logs, while the rest of the ship is made from sawn planks. Even in the beginning of the 20th century, the traditional boat builder of Västerbotten would search in the forest for both rättsörnsvinningar ‘left-turned clockwise twisted’ and ansörnsvinningar ‘right-turned trees’ to get equally many vindor on both sides, here called vinningar; this was necessary for the three lowest strakes’ hood-ends, both fore and
aft, altogether six pairs of vinningar (Hasslöf 1953; Ågren 2005). In other parts of Sweden, cloven and cut vindor survived until the 19th century, such as in east Blekinge, Scania and northern Norrland (Det handlar om trä, p. 50). Of the large ships, one of the last ships to be built completely from radially split planks is the Riddarholmen ship that is now on display in the Museum of Medieval Stockholm.

![Figure 72. Radial split (above) and tangential slit log (below). After Crumlin-Pedersen 1968.](image)

4.3.2. From tied to nailed ribs
The change in method is connected with a change from tied to nailed ribs. A large log with not too many branches can with this method produce many planks instead of, as earlier, only two planks, one from each half. The older method was necessary when clamps for the fastening of the frames had to be carved out from the same material, creating significant material loss. In connection with the radial splitting method, in order to get as many planks as possible from the log, cases occur for the first time where the frames are nailed to the hull with wooden dowels, such as in the remains of the ship from Gredstedbro (Crumlin-Pedersen 1968). As a middle phase in the development, clamps are still used but not cut out of the same material as the strake; instead they are fastened to the strakes with nails or rivets. This can be seen in the boat from the burial Valsgärde 8 (Arwidsson 1954). Ribs that are tied to the hull continue to be used parallel to nailed ribs. Especially in Norway late examples are found of tied ribs, for instance in the large ships from Gokstad and Oseberg. This has been explained by the advantages of a softer hull in rough seas, as it doesn’t break as easily and is also faster than a boat with a stiff hull. This knowledge came to use in the last century on competition sailing boats, where the crew purposely broke the ribs of the boat over the keel to make it faster, a procedure later prohibited (Lindberg personal information). In the Viks boat most of the frames are broken. Since it requires considerable effort to break the wood, which is still hard and solid after almost 1000 years, it does not seem probable that it was a result of damage during the recovery in 1900, and instead a possibility is that it was done on purpose when the ship was in use.

4.3.3. Economic boat building
The boat building in the Bronze Age and Early Iron Age was a waste of material (figs. 73, 74), since it was necessary to save material in the wood for the cleats used to tie the frames, like in the Nydam boat (fig. 74).

![Figure 73. The material used for a plank with the tangential splitting method. The Bronze Age Brigg raft. After McGrail & Denson 1982.](image)

![Figure 74. A cleat on a strake in Nydam 2. After Rieck 1988.](image)
The introduction of the radial splitting method resulted in more economic boat building, as this method made it possible to get more planks out of a log. Correspondingly also the use of clamps ceased, and instead wooden dowels were used to fasten the ribs to the hull. A big oak radially split can ideally give sixteen or at the most thirty two parts to be finished as planks, while tangential splitting gives only two planks (fig. 72).

The use of wooden dowels instead of tied ribs is an indication that the radial splitting method may have been used in the manufacture of the planks. Still in the 6th century, vessels like the Holmedal ship in Norway (Shetelig 1939) and Valsgärde 8 in Sweden (Arwidsson 1954) have their ribs tied to clamps. Valsgärde 8 is built of spruce, which indicates that radial splitting was not used, either. Radial splitting demanded logs that were about three times the width of the finished plank, and it is almost only oak-trees that achieve the necessary width for radial splitting. The strake was less than half the diameter of the log. The central part of the log, as well as the sapwood that had a tendency to rot early, was mostly cut away. The boat in Valsgärde no. 6 (Arwidsson 1942) from the 7th century seems to have been built in the same way. The boat in burial no. 7 (Arwidsson 1977), also from the 7th century, is in contrast built of oak, and like the Danish Gredstedbro find (Crumlin-Pedersen 1968) its ribs are fastened with wooden nails to the hull.

![Figure 75. The Nydam and the Gredstedbro find, sections close to stem. After Crumlin-Pedersen 1968.](image)

4.3.4. The results of a boat-building method and relation to societal change

The quality of the wood, which probably is the most important result of the use of the radial splitting method in the building process, has been revealed when practising shipbuilding as experimental archaeology (Lindberg 1990; Larsson 1998). One result is a plank with strength and extremely good resistance to tension. With this method the split follows the natural grain of the tree and the fibre remains intact, which gives a very strong and flexible plank. This made it possible to make the planking very thin and at the same time increase the softness of the hull and flexibility at sea. This in turn resulted in seaworthy, light and fast ships that could endure the bends and movements of a rough sea without breaking. Experiments with radially split planks of the same dimensions as in the Viks boat were made already in the Blanka building project, directed by Axel Lindberg. A 22 mm thick, 2.2 m long plank was placed between two supports, and Axel Lindberg and his fellow boat builder placed themselves on top of the plank, altogether 150 kg. The plank bent 0.45 m without breaking (fig. 77)!

![Figure 76. The Gredstedbro find. After Crumlin-Pedersen 1991.](image)

![Figure 77. The strength of a radial split plank, 22 mm thick. Photo Carl Heideken, SMM. After Lindberg 1993.](image)
In the *Embla* project (G. Larsson 1998) at the Department of Archaeology, Uppsala University, which was the first experimental boat building with original methods to be carried out at an archaeological department in Sweden, the author made a similar test with planking of only 10-12 mm in thickness. This was the thickness of the planking of the original boat, from a grave at Prästgården, Old Uppsala (Nordahl 2001), as determined from the size of the rivets. This was also the thickness known from late Viking Age burials (e.g., Valsgärde 11 and Valsgärde 9). The result was the same, though there was also a knot in this plank, to the great relief of the boat builder who had spent a long time carefully hewing out the thin strake. The plank bent 0.35 m without any breakage (fig.78). The awareness of these qualities made this method the dominating one for a thousand years in Scandinavia from the 6th to the 16th century.

![Figure 78. The pliability of a 10-12 mm thick plank of radially split wood. Photo by Gunilla Larsson.](image)

In the burials at Valsgärde a development is visible with refined methods and towards reduced thickness, from an average thickness amidships of between 16 and 20 mm in the 6th–8th centuries (Valsgärde 8, 7, 5, 6, 13, 14), to only 10-15 mm in the 9th–11th centuries (Valsgärde 2, 4, 12, 9, 11), with the thinnest in the 11th century (see tables 17-18).

<table>
<thead>
<tr>
<th>Boat burial</th>
<th>S K-1 no.</th>
<th>L mm</th>
<th>S 1-2 no.</th>
<th>L mm</th>
<th>S 2-3 no.</th>
<th>L mm</th>
<th>S 3-4 no.</th>
<th>L mm</th>
<th>S 4-5 no.</th>
<th>L mm</th>
<th>S 5-6 no.</th>
<th>L mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valsgärde 2</td>
<td>861</td>
<td>32</td>
<td>871</td>
<td>32</td>
<td>870</td>
<td>30</td>
<td>793</td>
<td>44</td>
<td>795</td>
<td>35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valsgärde 4</td>
<td>691</td>
<td>23</td>
<td>700</td>
<td>24</td>
<td>711</td>
<td>25</td>
<td>698</td>
<td>24</td>
<td>698</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valsgärde 5</td>
<td>1085</td>
<td>40</td>
<td>1065</td>
<td>40</td>
<td>1083</td>
<td>40</td>
<td>1025</td>
<td>33</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Valsgärde 6</td>
<td>398</td>
<td>39</td>
<td>418</td>
<td>40</td>
<td>445</td>
<td>38</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Valsgärde 7</td>
<td>886</td>
<td>34</td>
<td>887</td>
<td>27</td>
<td>871</td>
<td>25</td>
<td>835</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Valsgärde 8</td>
<td>169</td>
<td>33</td>
<td>352</td>
<td>28</td>
<td>371</td>
<td>37</td>
<td>368</td>
<td>28</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Valsgärde 9</td>
<td>76</td>
<td>20</td>
<td>77</td>
<td>21</td>
<td>636</td>
<td>24</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Valsgärde 10</td>
<td>327</td>
<td>25</td>
<td>367</td>
<td>28</td>
<td>366</td>
<td>28</td>
<td>340</td>
<td>28</td>
<td>301</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valsgärde 11</td>
<td>457,456</td>
<td>14, 20</td>
<td>368</td>
<td>16</td>
<td>370</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Valsgärde 12</td>
<td>1149</td>
<td>29</td>
<td>1130</td>
<td>31</td>
<td>1126</td>
<td>27</td>
<td>1106</td>
<td>30</td>
<td>1099</td>
<td>27</td>
<td>1050</td>
<td>30</td>
</tr>
<tr>
<td>Valsgärde 13</td>
<td>449</td>
<td>33</td>
<td>409</td>
<td>40</td>
<td>411</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Valsgärde 14</td>
<td>475</td>
<td>34</td>
<td>472</td>
<td>35</td>
<td>461</td>
<td>36</td>
<td>464</td>
<td>31</td>
<td>463</td>
<td>34</td>
<td>427</td>
<td>32</td>
</tr>
<tr>
<td>Valsgärde 15</td>
<td>1035</td>
<td>25</td>
<td>933</td>
<td>24</td>
<td>1062</td>
<td>32</td>
<td>997</td>
<td>24</td>
<td>876</td>
<td>22</td>
<td>867</td>
<td>26</td>
</tr>
</tbody>
</table>

Table 16. The length of rivets amidships in some of the Valsgärde boats. Rivet nr and length for each strake.
Table 17. Thickness of planking in some of the boats in Valsgärde burials.

<table>
<thead>
<tr>
<th>Boat</th>
<th>No. strakes</th>
<th>Thickness amidships mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Va 2</td>
<td>5</td>
<td>15-22</td>
</tr>
<tr>
<td>Va 4</td>
<td>5</td>
<td>11-14</td>
</tr>
<tr>
<td>Va 5</td>
<td>4</td>
<td>16-20</td>
</tr>
<tr>
<td>Va 6</td>
<td>3</td>
<td>19-20</td>
</tr>
<tr>
<td>Va 7</td>
<td>4</td>
<td>19-20</td>
</tr>
<tr>
<td>Va 8</td>
<td>4</td>
<td>14-19</td>
</tr>
<tr>
<td>Va 9</td>
<td>3</td>
<td>10-12</td>
</tr>
<tr>
<td>Va 10</td>
<td>5</td>
<td>12-16</td>
</tr>
<tr>
<td>Va 11</td>
<td>3</td>
<td>7-10</td>
</tr>
<tr>
<td>Va 12</td>
<td>6</td>
<td>14-16</td>
</tr>
<tr>
<td>Va 13</td>
<td>3</td>
<td>15-20</td>
</tr>
<tr>
<td>Va 14</td>
<td>6</td>
<td>15-17</td>
</tr>
<tr>
<td>Va 15</td>
<td>6</td>
<td>11-13</td>
</tr>
</tbody>
</table>

The decrease in thickness of the strakes as a result of the new technology in turn gave rise to light ships. According to the results of experimental archaeology, there is a considerable reduction in weight. It is clear from the building of replicas that the strakes can be made thinner, and thereby lighter, by the radial splitting method than by the modern method of sawing (table 17, 18).

Table 18. The weight of replicas built with different methods.

<table>
<thead>
<tr>
<th>Replica</th>
<th>Boat-building method</th>
<th>Weight</th>
<th>Original</th>
<th>Length</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embla</td>
<td>Radial split</td>
<td>250 kg (empty)</td>
<td>Prästgården 3, Gamla Uppsala</td>
<td>7.2 m</td>
<td>G. Larsson 1998</td>
</tr>
<tr>
<td>Tälja</td>
<td>Radial split</td>
<td>500 kg (empty)</td>
<td>Viks boat 1</td>
<td>9.6 m</td>
<td>Larsson 1997c</td>
</tr>
<tr>
<td>?</td>
<td>?</td>
<td>108 kg</td>
<td>Gokstad smallest</td>
<td>6.5 m</td>
<td>McGrail &amp; McKee 1974</td>
</tr>
<tr>
<td>Krampmacken</td>
<td>Sawn</td>
<td>c. 800 kg (empty)</td>
<td>'Bulverket boat'</td>
<td>8 m</td>
<td>Nylén 1983, 1986, 1987b</td>
</tr>
<tr>
<td>Aifur</td>
<td>Sawn</td>
<td>600-700 kg (empty)</td>
<td>Valsgärde 7</td>
<td>9 m</td>
<td>Edberg 1995, 1999</td>
</tr>
<tr>
<td>Havørn</td>
<td>Sawn</td>
<td>3500 kg (empty)</td>
<td>2/3 Gokstad ship</td>
<td>16 m</td>
<td>Altrock 1993</td>
</tr>
<tr>
<td>Helge Ask</td>
<td>Sawn</td>
<td>c. 2000 kg (empty)</td>
<td>Skuldelev 5</td>
<td>17.5 m</td>
<td>Hale 1998</td>
</tr>
<tr>
<td>Sigrid Storråda</td>
<td>Sawn</td>
<td>8000-9000 kg</td>
<td>Gokstad ship</td>
<td>23.5 m</td>
<td>Edberg 1996</td>
</tr>
</tbody>
</table>

The original smallest boat in the Gokstad find had very thin strakes radially split, and it weighed only 90 kg (Vadstrup 1993:59). It is professional and difficult work to cut such thin and even strakes, and so far no one in modern time has succeeded. The attempt that came closest was in England, with 108 kg (see table above). The original of the largest of the small boats in the Gokstad find, 9.75 m long, has been estimated to weigh only 375 kg, which is...
confirmed by a replica project at Frydenlund, Norway (Edberg 1996).

The experiences from the comparison between Krampmacken and Aifur show the tremendous importance of the reduction in weight. According to Edberg, the crew felt that the larger, but 200 kg lighter, boat Aifur was much easier to row (1995). Based on this, it is easy to estimate the advantages of a boat which, like the original Gokstad boat of 9.75 m, has only about half the weight of these replicas.

The common result of most experiments, as for instance Aifur (Edberg 1994b, 1999c), Havörn (Altröck 1993), Tälja, and Embla (G. Larsson 1997c, 1998, 2000a, 2000b, 2006), is an agreement on the importance of low weight for the long-distance journeys made in the Late Iron Age. This facilitates rowing, and is a necessary prerequisite for portaging (Edberg 1995, 1996a, 1999a; G. Larsson 2006).

The light ships that were a result of the building methods had very low draught and could sail into shallow waters and land anywhere, including far up along shallow rivers. The technology also meant a decrease in weight, which was of fundamental importance when passing all the portages on the journeys along the trade routes that were opened to the Caspian Sea, Volga and the areas beyond which supplied silk and silver together with other precious artefacts. The pliable hull meant seaworthiness. The lightness resulted in ships that were fast and easy to row. The possibility to make unpredictable attacks anywhere and anytime with ships that could sail anywhere into shallow water was the main factor behind the success of Viking Age seafaring, as has also been underlined by Almgren (1962, 1963). The impact on seafaring and the society of the Late Iron Age will be further discussed in chapter 5.

4.3.5. Shipbuilding methods and the use of naust

That exposure to sun does not imply a great risk for shrinkage means that there was no real need of boathouses, so-called naust. Investigations in Norway show that the main periods of the boathouses are the Roman Iron Age-Migration Period and the Middle Ages (Rolfsen 1974; Myhre 1997; Grimm 2002). The apparent lack in between these periods may be explained in that the new methods of the Vendel Period and Viking Age enabled the boat hulls to endure most kinds of weather, and shelters were thus not needed other than for protection of especially valuable ships, such as the ones that may be expected to have been kept in the Viking Age and medieval boathouses belonging to the royal estate at Adelsö, next to Birka (Brunstedt 1996).

4.3.6. A modern-day boat builder’s reflection on prehistoric and medieval shipbuilding, as it is visible in the Viks boat find

The boat builder Axel Lindberg made sharp-eyed and interesting reflections when he participated in the rebuilding of the Viks boat at the National Maritime Museum in 1993–94. The boat builder and naval engineer Axel Lindberg has devoted his whole life to the building of boats and ships on Neglinge wharf outside Stockholm, where he later became director. In 1985 he was called upon when the Riddarholmen ship was to be moved from the Town Museum of Stockholm to the new Museum of Medieval Stockholm that was scheduled to open in 1986. This ship, which was dendrochronologically analysed and dated to between 1520 and 1527 (Lindberg 1988) is one of the latest big ships (20 m) constructed in the radial splitting technique. Lindberg reconstructed the ship on the basis of original drawings. He was also later employed to reconstruct one of the boat finds from the excavations at Helgeandsholmen in 1979–80 (Varenius 1982, 1990), Helgeandsholmen X, determined by dendrochronological analysis to have been built in the 1320s. This work was finished in 1987. He participated together with the author in the reconstruction of the Viks boat of the mid-11th century at the National Maritime Museum of Stockholm in 1993–94.

Already during work on the Riddarholmen ship, Lindberg (1988) noted some peculiarities in the vessel that were confusing for a boat builder of today and did not make sense, since it is completely impossible to build a ship with this kind of strakes today. In fact it violated many principles that are essential and are taught and performed in traditional and modern shipbuilding. He has summarised his observations of phenomena different from traditional boat building in the following 6 points:

1. The planking had no cracks from drying.
2. The planks were extraordinarily thin.
3. There occurred three scarves above each other.
4. There occurred planks as short as 1.3 m.
5. The strakes were straight.
6. The land differed in width on the same plank. (Lindberg 1990)

The same observations were to be made later when he worked with the Helgeandsholmen boats and the Viks boat, and can also be seen if one studies other finds from the later Iron Age and medieval period. The common method used in these boats that has caused these features is, as Lindberg also has concluded in all his publications, the radial splitting technique.
As Lindberg noted in surprise, there were no cracks from drying in the strakes of the ancient boats he worked with. This was the case even though the Riddarholmen ship had been stored and also partially exhibited in very dry localities since its excavation in 1930 (Lindberg 1988). The same was also true for parts of the Viks boat, which had been exhibited near a window facing south, and especially for the parts that had been stored in the dry attic of a barn since their recovery in the year 1900 (Larsson 1997). As he often said, if a boat built today was left on a shore a whole summer, it could be sold as an object for renovation in autumn. Here were boat finds that had survived 70-100 years without any trace of damage from drying. When measuring the shrinkage from the drilled holes in the gunwale of the Viks boat, it can be concluded that it has shrunk less than 5%. When starting reconstruction of the Viks boat in the National Maritime Museum where the air moisture in the dry localities was only about 35%, only the stem and stern began to twist and crack; these were the only parts that were not split radially, and they had fibres that were cut even though they were carved from a curved piece.

The difference in shrinkage between radially and tangentially split material has been scientifically measured for different species.

According to Ingmar Johansson at the Royal Institute of Technology in Stockholm, the low shrinkage in the sun-exposed planks, as well as the non-existent rot in planks kept under wet conditions, can possibly be explained by the manufacturing technique (Johansson, oral information). It is well known that the shrinkage in a log is lower radially than tangentially.

4.3.7. The introduction of the sail and sailing

The introduction of the sail is the second most important change that affected shipbuilding, seafaring and society in the Late Iron Age. The combination of a soft, pliable and seaworthy hull, and a sail that could reduce the efforts needed to cover great distances by using the wind as power, formed the basis of and opened up possibilities for the far-reaching communication network that was established from the 7th to the 9th century AD.

Iconographic evidence

The introduction of the use of the sail for propulsion is well illustrated on the picture stones from Gotland, which have been thoroughly investigated by Lindqvist (1941a, 1941b). He divides the picture stones into five groups, A–E. The oldest group has been dated by him to the 5th century (group A), the next group to the 6th and 7th centuries (group B), and the others to the 8th century (groups C, D and E).

Figure 79. The types of picture stones, groups A–E. After Nylen 1978.

On the basis of the latest discoveries from Nydam bog (Rieck 2004) of ‘whirl ornaments’, the dating of group A can be pushed back to at least the 4th century, while a comparison with the archaeological material concerning groups C–E rather shows that these reflect ships and mythology of the 8th to 11th centuries.

Figure 80. Rowed ship on the earliest type of picture stones from Gotland. Bro church I. Photo Gunilla Larsson

In the oldest group representing the Late Roman Iron Age, there are only four ship depictions (Bro 1, Stenkyrka, Västkinde, Björkome I) and all of them are rowing ships of the Nydam type.

Figure 81. B-type of stone. Ship with a small sail on the picture stone from Stenstu, Hablingbo parish. Lindqvist 1942 nr 99.
The Vendel Period depictions of group B are the first ships with sails. These are small, rectangular and placed on top of the mast (fig. 81).

Figure 82. CD/type of stone with a big sail and shroud net. Smis 1, Stenkyrka Parish. After Lindqvist 1942, nr 295.

Ships from the late Vendel and the Viking period, on the other hand, have large rectangular sails with a shroud network beneath them (fig. 82).

Archaeological remains of sails in Scandinavia

The finds of woollen sails in Norway in the mid-1980s have quickly become viewed as the norm for a Viking ship sail as well. Textile archaeological evidence of sails was found in Trondenes Church when a study of the roof construction was made; these textiles had been used as roof caulking (Christie 1986; Godal 1994). Later investigations of churches from the 12th century have revealed similar fabrics in seven of the analysed eleven churches. The textiles were identified as sails, since they had the seam on the right side of the cloth in contrast to what is expected in clothing, and one fragment also had a reef-band eyelet. Some horsehair mixed with and spun with hemp was also found, which in the 18th century was used to reinforce the sails. The textile fragment from Trondenes was of wool, woven as a three-shaft twill (Godal 1994). Some of the textiles may also be the remains of cloths. The textiles in Trondenes, Stiklestad and Herøy are dated to 1280–1420 by radiocarbon analysis (Godal 1994). It is known from Norway that the community’s leiðanger sail was stored in church attics, as will be discussed in chapter 9. Sheep breeding has always been an important part of the economy in Norway, and it is not surprising to find a widespread use of wool for sail making.

Earlier and less recognised finds of probable sails have also been made in Norway. These are, like the earliest Swedish sails from Vasa, made of hemp. Thick pieces of hemp fabric with multi-shaft weave were found in a Viking Age burial at Harestad, Randabjerg, Hordaland S. 2193, and interpreted as a sail (Christensen 1982:196). A piece of hemp fabric woven in four-shaft that was ‘probably from a sail’ (Hiorth 1909:11, 18, 20) was recovered in a Viking Age burial at Karmøy; and another hemp piece from a sail, with multi-shaft weave, was found in a Viking Age burial at Jæren (Hiorth 1909).

The use of hemp for sails has not received attention in research, but it is generally accepted that the rig was made of hemp and lime bast as in the Oseberg ship. The earliest known cultivation of hemp in Scandinavia was during the first centuries AD. According to pollen data, the expansion of hemp occurred in the Migration Period, which thus coincides with the oldest use of a sail in Sweden and the first occurrences of a real keel on Scandinavian ships. The intensified use of hemp is probably closely connected with the adaptation to sailing. The culmination of the growth of hemp lasts from this phase until the Early Middle Ages (Eriksson 1996:162).

In drill samples around Old Uppsala, it has been established that hemp began to be grown in central Sweden in the 7th century AD (Königsson, pers. comm.). Like many other features related to seafaring, hemp as a source for textiles seems to have arrived from the Persian/Arabic areas around the Caspian Sea and east of these, for instance Turkestan. Hemp for textile production was also used in Siberia, India and China (Granhall 1981:105). According to written sources the use of hemp for the rig and sail was very important, especially for the needs of the navy in the medieval period and the Vasa time (Granhall 1981:106). The hemp was procured in the same way as flax, and the medieval laws stipulated the same punishment for theft of both these important textile plants when placed in water to soak. The long fibres were used for ropes and running rig, while the shorter fibres were spun into thicker textiles like sacks and sails.

Sails in the Valsgärde burials?

Are there any traces of sails in the Valsgärde boat burials? I argue that there probably are. My interpretation is based on an analogy with the way the sails were used as a tent by the archipelago population along the coast of central Sweden while they were on longer journeys and had to overnight on board. This custom can be traced back to at least the Viking Age, according to information in ON sources. As will be dealt with later in chapter 5, until the 19th century the fishermen of Roslagen who made long journeys to the markets in Stockholm and in Lake Mälaren, overnighted by putting
up a couple of poles in the boat and placing the sail across them like a tent (Liljeros 1997:23). This was called that they tjällade, which is related to the word tjäll 'tent of a sail on board'. The word was used with this meaning about, for instance, the sleeping place on board Harald Hardrade’s ship (Falk 1995:16). Still in the beginning of the 20th century, the sail was used in this way on seal hunts on the Bothnian Sea, which can be seen from one of Gustav Hallström’s photographs from 1926 (fig. 83). My hypothesis is that the deceased chieftains in the Valsgärde burials were put to final rest in the same way as they would have slept while over-nighting on a long journey.

As can be seen in Hallström’s picture, a construction very similar to the ‘tent’ construction in, for instance, the Oseberg ship burial (fig. 84) may have been used. In the Gokstad ship there were also square openings in the gunwale list, which already Nicoalysen (1882:58) identified as holes for a tent’s ropes. This was also supported by Tuxen (1886:85), who had the opinion that the whole middle part of the ship was covered by a tent. The tjald was tied with bands called sviptingar (Falk 1995:18). Nicoalysen (1882:33), Vidalin (1854:534), and Fritzner (1886-96 under the heading klofi) are of the opinion that the tjald was fastened to the hull, but the two latter thought that some kind of cramps were used.

In the Oseberg ship burial there were two tents. The larger tent, 4.8 m wide at the base and 5.7 m long, fits well inside the 5.1 m wide ship, as does the smaller tent which is 4.5 m wide and 5.6 m long. They probably represent the dwellings for the buried queen (?) and her maidservant. It is also possible that, if a tjald was erected on board, it had to be protected with a wooden tent-like chamber, like in the Gokstad burial. This would prevent the tent from capsizing when the burial was covered with soil, which might explain the presence of wooden logs covering the burial.

But are there any textiles that may be remains of sails used in this way in the Valsgärde burials? The answer must be ‘yes’. On top of everything else, and covering the deceased, shields and helmets in several of the burials, there were fabrics that differed from other textiles related to clothing. Thanks to the careful excavation methods, these fragments were observed. The textile fragments in burial no. 5 have been thoroughly analysed by Anita Malmius (1998). Some of these were of a coarse fabric and placed over the central part. Regarding these fragments, Malmius has the following information:

Over the central part of the boat there was a tabby woven fabric ranged over three shields. Fragments existed, apart from on the shield bosses, also on shield mounts from shield I and II and on the rim from shield I. At two of the bosses and some of the mounts there were furthermore pieces of birch-bark. It is therefore quite possible that this tabby represents a lining to a superstructure of birch-bark (Arwidsson 1942:87). Pieces of a relatively coarse fabric, that was found on the shield bosses and on a couple of mounts, might have been a strengthening of a tent. But, because a fabric of a corresponding quality was lying on the helmet, the fragments can also be interpreted as a course “field” cloak/blanket, symbolically placed over the helmet and the shields. (Malmius 1998:70)

The cover uppermost in the boat thus consisted of both a fine tabby and a coarse tabby. In the same
way, together with the birch bark in Valsgärde 6 a similar fabric was identified above the central part of the ship.

Another interesting detail is the occurrence of birch bark in the Valsgärde burials above the central part. In Valsgärde 6 it occurs together with the Sámi sewing technique, which recalls the words of Olaus Magnus concerning the Sámi sails:

...they use for sails woollen textiles or bark from certain trees, this is mostly on calm waters, sometimes, though very seldom, also on the open sea. This kind of vessel is called scutha... (My transl. after Historia 4:10)

The boat type found in the Valsgärde burials is mainly that which is shown in chapter 3, and which in ON material is called skuta or karv. In the next chapter it will be discussed how this sewing technique used by the Sámi and seen on the birch bark fragments from Valsgärde 6, differs from the other sewing techniques in north Scandinavia and north-west Russia.

Historical evidence

In connection with the Danish naval fleet, Saxo mentions linen in sails when describing how the fleets arrive at the scene of the battle in Bråvalla hed. The sentence in his original text is marked with bold below, and it relates how the fleets of Gotlanders and Swedes are approaching the battle:


Note here that the word ‘carbasa’ is used, a word that in the translation has been changed to canvas:

English translation of the selected sentence:

Then was the sea to be seen furrowed up with prows, and the canvas unfurled upon the masts cut off the view over the ocean. (Book 8, part 1)

Here, once again in translation the incorrect word canvas is used; instead the Latin word in the original text is lintea, that is ‘linen textile’, but like carbasa it is also synonymous with ‘sail’ (Ahlberg et al., ‘canvas’).

According to many sources in the historical period, it seems that canvas, a textile that earlier was always made of hemp, was the ordinary material for naval ships. The word ‘canvas’ derives from the Arabic word for cannabis-hemp (Cannabis sativa). Hemp is the strongest natural fibre, three times stronger than cotton. The Vasa ship was no exception with regard to the use of hemp. Christopher Columbus’s ships of 1492, the Nina, Pinta and Santa Maria, each carried 80 tons of hemp for sails and rig. Hemp was seen as superior for the navies in the historical period because of its great strength as a fibre, and not least for its resistance to rotting and decay. It is also rot resistant to salt water. Because of these qualities it was superior to other fibres, such as flax linen, for making canvas sails and ropes, and thus was of vital importance for the navies. However, already in the 18th century it began to be replaced by flax linen. In some places hemp was considered as superior to the cheaper flax linen, and it continued
to be used. As a strategy, therefore, Napoleon tried to cripple the British navy by cutting off their supply of hemp from the Ukraine, where the best hemp was grown. In 1812, then, the British commanded American commercial ships to get the Russian hemp.

That flax linen, on the other hand, came late into use for the navy is shown by a correspondence from 1682 between the Ronneby merchant Jacob Christopher and the admiral Hans Wachtmeister, where the latter in a letter enclosed a sample of unbleached flax linen he had obtained from a colleague in Amsterdam. In the 19th century this was once again an issue. Flax linen and hemp linen were compared for naval purposes, whereby doubts were expressed about the flax fabric since it could crack in severe cold; hemp was viewed as the more durable and superior fabric, and it could also be reused, in contrast to the flax fabric (mail Em. Jacobson 7/1 1839 RA). In a similar comparison in the Diarium from the wharf admiral’s office 31/12 1838 (Tidskrift i Sjöväsendet, Vol. 4 1839), the captain of the frigate Josephine wrote to the director of the wharf that, ‘According to my conviction the hemp fabric has most advantages, because it gets less damaged by the changes of the weather and the climate, though both fabrics could stand the tests and without doubt have the same strength.’

The Primary Chronicle tells that on the expedition from Kiev to Constantinople by Oleg in 906, after the peace treaty and when the parties had sworn oaths, Oleg demanded that sails be made for his fleet: ‘Sew sails of silk for the Rus, but of fine linen for the Slavonic people’ (Chron. Nestoris XXI; my transl. after Hjärne 1979:80). In the Magnussóna saga Snorri Sturluson tells of päll of silk applied to both sides of the sails. When Sigurd Jorsalafar visited Jerusalem and was on his way to Miklagard, this was of importance:

Every day it was good wind for sailing northward across the sea, but he wanted to wait for side wind, so that they could stretch the sails along the ships, because all the sails were covered with päll [a textile covering] on both sides.

When King Sigurd sailed into Miklagård, he sailed close to the shore. Everywhere on land there were cities, castles and country villages, so that there was no end to the settlements. From land in the bays they could see all the sails following close after one another, so that it looked like a fence. All the people were outside, so that they could see King Sigurd sailing... (Chapters 11-12, my transl. and italics)

**Linguistic evidence**

Gösta Bågenholm has thoroughly analysed the terminology associated with ships, based on the Icelandic manuscript *Tíður*. The word for sail is here *segl*, Sw. ‘segel’. This is a Germanic word and he concludes that the odd phenomenon is that the European words for sail in this period fall into three completely different groups. One is the Latin (southwest European) group with the Latin ‘velum’, French ‘voile’, and Italian ‘vela’; the second is the Germanic (northwest European) group with the Swedish ‘segel’, Danish ‘sejl’, English ‘sail’; and the third a Finnish-Sámi group with the North Sámi ‘borjias’, Lulesámi ‘pärjas’, Finnish ‘purje’, Lithuanian ‘bure’, and Latvian ‘buras’. He concludes that, ‘The probable reason for these groups is that the Germanic and Finnish-Sámi sail have been introduced rather independently, and with a minimal contact with the Mediterranean world’ (Bågenholm 2002:104).

He has as a hypothesis that ‘purely hypothetically the earliest Scandinavian sails could be Sámi sails and sewn for mountain lakes and Arctic Sea winds’ (Bågenholm 2002:105). The trade with the hunting and fishing Sámi population of the North has indeed been fundamental for the Scandinavian society and its position in the network of international trade. The Sámi were supplying both furs and products from the Arctic fishing and hunting of sea mammals. In this light it is not surprising to find early depictions of ‘Scandinavian’ ships with sails in the mountains at sacred Sámi sites. The Sámi have always used ‘Scandinavian’ ships, but with the difference that the planking was connected with the sewing technique. Their skill in shipbuilding was praised in the Norse sagas, and it was Sámi ships that the Scandinavians bought when they needed fast and seaworthy ships (see chapter 5). Bågenholm means that the Lithuanian and Latvian words for ‘sail’ could be borrowed from the Finnish word, and the Finnish word borrowed from the Sámi.

The Germanic word ‘segel’ occurs five times in the skaldic corpus (Jesch 2001:162). An interpretation is that the Swedish word ‘segel’ comes from ON *sigla* ‘to travel around on the seas’, and that it has had the basic meaning ‘aid to travel the sea and lakes’ (Bågenholm 2002:106). The word is related to the medieval SW ‘skaera’ and is said to have intended cut pieces of textiles and/or skins. The theory is also that the diamond-patterned sails on the Gotlandic picture stones and the Hedeby coins represent sails made of cut and plaited pieces of textile or leather, something which according to Bågenholm (2002:106) could be questioned. Leather sails are not an improbability. Such sails were used on Gotlandic boats in Burs as late as 1817 according to Zacke and Hägg.
What should not be forgotten is that the earliest square sails in the northwest were used by Celtic tribes and could be seen, for instance, on the Broighter model. Here skin sails are known from the Early Iron Age, in a context closer to Scandinavia.

We have seen that there is no connection between the Scandinavian and Mediterranean words for sail. The small square sails may come from the Sámi. What we know is that both the knowledge of navigation and of how to cultivate the hemp necessary for making ropes and sails came from the Arab people and Persia. What about the sails themselves?

One interesting observation by Judith Jesch is that also the word *skaut* is used for sail (2001:163). Its original meaning is ‘something triangular’, and it was first used for the lower corner of the sail and then the rope connected to this corner. The word occurs twice in Óttar: *skaut þats dróskir spumnu læk við hin* ‘the skaut spun by the women played against the mast-top’ (Óttar II:20). As Jesch also argues, it could hardly be the rope *skaut* from the lower corner of the sail that was intended, since this would scarcely be making noise at the mast-top (Jesch 2001:163). In Óttar III:2 we find the term *skaut* in a ship-kenning *skauthreinn* ‘reindeer of the skaut’, where the sail is most likely to have been in the poet’s mind more prominently than just the corner (Jesch 2001:164). But if we focus on the sail as something triangular, as the etymology of the word implies, is there any evidence, then, of triangular sails in use in Late Iron Age Sweden? There is indeed some, and the origin of it is not without interest. The earliest triangular sails are the ones used by the ‘Northern peoples’ on the ships engaged in battles against Ramses and depicted on Medinet Habu. These came from the northern shores of the Black Sea or beyond in Eastern Europe. Here there seems to have been a possible continuity, because in Russia we find depictions of such ships from the Late Iron Age and Early Medieval Ages, such as the ships used by Rus. But we do not need to go that far afield to find triangular sails. On the other hand, the lower corner could be intended and the word used as *pars pro toto* for sail (Jesch 2001:162). The triangular Latin sail is thought to have come from the Arab seafarers.

The English word ‘linen’ in connection with the fabric is still today separated into flax linen and hemp linen.

From where?

Bågenholm’s hypothesis that Sámi sailing could have developed early and independently seems also to have some support in the iconographical material. The Sámi rock engravings in Padjelanta are among the earliest sailing-ship depictions in Scandinavia (Bailiss-Smith & Mulk 1998). The depictions (fig. 85) may be possible to date on the basis of the ship types. Although there are not many finds, some general characteristics are indicated. The hulls on the Padjelanta boats are of the same type as the 7th-century Kvalsund boat with long and highly raised stems that gave the ship an almost semicircular length section, as can also be seen in the ship engraving on a stone from Häggeby, Uppland (UR 664) from the same time period. The Sámi ship depictions are probably contemporaneous with the earliest ship depictions on the Gotlandic picture stones, where similar, smaller, rectangular sails are one of three types found. It is not possible at this time to solve the question of the direction of technological influences. Bågenholm’s suggestions may be true, but need further support.

![Figure 85. Rock depictions in Padjelanta. After Bailiss-Smith and Mulk 1998.](image)

In the last decades, evidence that there is a circumpolar culture with many similar traits has been generally accepted. The skin boat is spread in Greenland, North America and northern Russia, and was adopted at an early stage by the Celts. In 56 BC Caesar fought a sea battle against a Celtic tribe called Veneti, who had sails of leather. He concluded that these ships were more seaworthy than the Roman galleys. Maybe they were square-rigged ships like the gold model from Broighter from the first century AD. Geographically these ships were closer to Scandinavia than the Roman vessels, and it is notable that also in shape the model is similar to a Scandinavian ship. Here the Old Irish word for sail, ‘seol’, may have influenced (Andersen & Andersen 1989:101).

Mostly the origin is discussed in terms of Roman and Western European influences (Andersen & Andersen 1989). This is the classical model of explanation. Northern or eastern explanations are never discussed.

The hypothesis of an eastern origin for sailing technology

However, in 2000 I presented a hypothesis that the sailing technique was a result of eastern contacts. This was based on the occurrence of the same type of curved yard as seen on the earliest picture stones on Gotland with sailing ships (fig.86) and in depic-
tions from Russia (fig. 87a, 87b) and Byzantium (fig. 87c). On the earliest Swedish depictions of ships, i.e. the Gotlandic picture stones, there are several sail types including a mushroom-shaped sail with curved yard (fig. 86).

Figure 86. Some of the earliest Swedish depictions of sails on type B picture stones on Gotland; a) Ardre, Petsarve, b) Garda, Smiss, c) Gothem, Västerbjes. After Lindqvist 1942.

The same types of triangular and mushroom-shaped sails are also found in Russia, depicted on Scandinavian ships in graffiti dating from the 8th to the 12th century (fig. 87).

Figure 87. Triangular and mushroom-shaped sails in graffiti from Staraja Ladoga, Russia, 8th century (a); from Pskov, 12th century; and on a Byzantine miniature, 10th century. After Sorokin 1997.

The way the sail type reached Scandinavia may have been from the eastern Mediterranean – where at least in the Late Viking Age it occurs on Byzantine ships – and through Russia. But since the earliest depictions seem to be found in Sweden (if we disregard the same sail type used on the ships of the
‘Sea People’), the origin may also have been somewhere else. It is probable, however, that the influence for this sail type comes from the East, since the distribution is significantly eastern.

The ‘eastern hypothesis’ could be further developed, since other types of ships and sails on these stones, which are probably from the Vendel Period, have images of ships of the same types as in the Caucasus.

4.4. Shipbuilding in the Late Iron Age

4.4.1. Material supply
The shift in building method is thereby a shift to a method that requires even larger trees than before, which means trees that have a diameter more than twice the size of the width of the strake and the largest available material. Rarely do any other species than oak reach this dimension. This is reflected in the material used for boat building in analysed graves. While the earliest boats in the graves are sometimes built of spruce, such as the boat in Valsgärde 8 (Arwidsson 1954), the boats from the 8th to the 10th century are mostly built of oak.

In Sweden mostly oak, but also pine and spruce, came to be used in the boat-building process. In Denmark also ash came into use in Skuldelev. The new method of radial split logs with intact fibres was almost always used when oak was turned into planking, which is the material in the majority of the finds, while strakes from ash, pine and spruce had the logs tangentially cut. As mentioned, the radial splitting method requires large logs, larger than previously for the tangential split method. In addition, the Iron Age ships had wider and longer strakes than those used later; the dimensions after this time period were thus gradually reduced.

To find oaks of sufficient width and height today for replicas of Iron Age boats is almost impossible. This has been the main problem within experimental archaeology for many replica-building projects for Iron Age ships. The problem was not as great in the Iron Age because of a better climate, and it is said that in south Poland today there are oaks of the same size and quality as in central Sweden during the Iron Age (Axel Lindberg, oral information).

Despite this, it was a long time-procedure to acquire oaks of the needed dimensions. The Viks boat of the 11th century is also completely built of oak. For the wide planks, especially the gunwale of more than 32 cm width, the oak used for making the strakes was at least 100 cm in diameter, since the medulla and sapwood are cut away. In many of the burial boats the planking is even wider, often 35-40 cm and sometimes up to 55 cm, where the oak must have been up to 1.5 m in diameter. Such an oak is several hundred years old. Oak grows very slowly and its life cycle is said to consist of 300-year phases: it ‘stands still’ for 300 years, and then dies for 300 years. To be suitable for boat building, an oak also requires protection and special care. It needs other trees around so that it does not get many branches that will cause a large amount of waste in the splitting technique, but instead grow straight and tall towards the light. On the other hand, too many bushes and other trees will slowly suffocate the oak. This can be seen today, as the earlier oak meadows and forests once kept open for harvest and pasture are now becoming overgrown (Brusewitz 1996).

<table>
<thead>
<tr>
<th>Boat burial</th>
<th>Number of strakes</th>
<th>Width, estimated, in cm: strake 1/2/3/4/5/6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valsgärde 8</td>
<td>4</td>
<td>22/29/22/x</td>
</tr>
<tr>
<td>Valsgärde 5</td>
<td>4</td>
<td>32/33/29/x</td>
</tr>
<tr>
<td>Valsgärde 6</td>
<td>3</td>
<td>40/42/x</td>
</tr>
<tr>
<td>Valsgärde 13</td>
<td>3</td>
<td>39/55/x</td>
</tr>
<tr>
<td>Valsgärde 2</td>
<td>5</td>
<td>13/27/23/20/x</td>
</tr>
<tr>
<td>Valsgärde 3</td>
<td>6</td>
<td>28/30/25/26/18/x</td>
</tr>
<tr>
<td>Valsgärde 12</td>
<td>6</td>
<td>35/35/42/35/35/x</td>
</tr>
<tr>
<td>Valsgärde 9</td>
<td>3</td>
<td>37/36/x</td>
</tr>
<tr>
<td>Valsgärde 11</td>
<td>3</td>
<td>22/26/x</td>
</tr>
</tbody>
</table>

Table 19. Size of planking in Valsgärde boats.

Central planning as a naval strategy for boat building?
As can be seen from the table above, most of the planking in these boat burials exceeds 0.25 m. This required old and large oaks of good quality, which are not easy to find today and which in the Iron Age must have demanded central planning in order to secure the supply of wood. A hypothesis is that the spatial distribution of the villages with the name Ekeby, ‘the village with the oaks’, reflects such a planning. These villages are found distributed in the settled areas of the Iron Age, one to four in each hundare and sometimes one for each skeppslag (a district supplying one ship for the navy, see chapter 9). Here, a protected oak forest was needed to provide enough material for the building of ships for the navy as stipulated in the medieval provincial laws, though it probably is a reminiscence of a
much earlier practice. The Ekeby-villages almost always have cemeteries possible to date to the Late Iron Age.

Oak became the appreciated material of the aristocrats and is found in the boats of the burials, like Gamla Uppsala 3 (Nordahl 2001). The warships were almost always built of oak, and enormous amounts of wood must have been needed to build the fleets. Therefore it does not seem unlikely that, just as in later history, the oak became ‘royal property’ with a restriction in use and a system of oak-preserves throughout the area that was then Sweden in order to meet the needs of coming generations.

Although there was good material available, it must be kept in mind that there was also a large withdrawal of oaks and other boat-building materials for the large fleets at the end of the Iron Age and in the Early Middle Ages.

4.4.2. The boat-building site

Figure 88. The master shipbuilder inspecting the lines of the ship. From the Bayeux Tapestry.

For William the Conqueror’s fleet, which had to be built in a short time, the number of ships given in different sources varies between 500 and 1500 vessels, and every tree in Normandy was cut down except for the ones growing by the shores (Lindberg 1990:16). Such a large withdrawal of timber for boat-building material is not a new phenomenon and is also known from the classical period in the Mediterranean. In connection with the Punic War the large forests of Sicily were ravaged, and Phoenician boat builders were contracted to build ships for the Romans. In order to build the fleet that participated in the battle at Salamis, the whole area from Venice to the Alps was clearcut. Though the written information for Scandinavia is scarce, the results of similar exploitations are visible in the iconographic material from the medieval period. Here the ships can be seen as a patchwork of wood on seals, coins and in illuminations in books as a consequence, since the only remaining
material for shipbuilding was short trees of modest sizes. One should also remember that the ships depicted are the merchant vessels. There might have been an early royal restriction on oaks, as was known later, in order to secure the supply for the navy.

Open-air sites
The boat-building sites were until the 19th century situated outdoors, in the same way as seen on the Bayeux Tapestry (Fig. 88). This was connected with the partial use of fresh material for boat building, and not dried (Lindberg 1990). It was also because no models were used, and the master boatbuilder thus had to have free visibility of the whole ship and determine the symmetry of the ship by eye, just like the ship master on the Tapestry.

Boat-building sites have been excavated in Denmark, Norway and Sweden. The site most thoroughly investigated is probably the boat-building place at Fribrødre on Falster, Denmark, where Jan Skamby Madsen led excavations between 1982 and 1993 (1984a, b, c, 1987). The site has been dated to the last decades of the 11th century, and has traces of the building, dismantling, and repair of boats. The site appears not to have been a Danish boat-building site, but instead connected to the Wendish activities in the area during this period (see chapter 5). In Norway, a boat-building site is known at Mangersnes on Radøy northwest of Bergen (Ekroll 1988). In Sweden, boat building and repair were carried out at the Viking Age market site of Paviken on Gotland, where tools and waste material were found (Lundström 1981).

Water deposition of the raw material
The boat parts were kept fresh by storing them in water. This prevented drying of the wood, and ensured that it would be soft and easy to cut and hew. Dried wood is hard or impossible to work with an axe, so it was not until the sawing technology was introduced in the Late Middle Ages that the drying of material began. Many of the finds registered by Shetelig (1929) are depositions of boat parts for use in boat building. He also noted that in some parts of Norway, on the west coast, boat builders still stored raw material in lakes to preserve the wood better. Near the boat-building site of Fribrødre on Falster, Denmark, in the one-metre-thick peat layer beside the river, many parts of boats were found (Skamby Madsen 1991). Boat parts were also found in a bog beside the boat-building site at Mangersnes, Norway (Ekroll 1988). In Sweden, during the investigations in Närtuna (chapter 8), I was informed of finds of split oak logs recovered from the fields, which earlier had been lake bottom in Lake Hederviken. Most of the logs had been taken up for use in wooden handicraft, but some were preserved and possible to investigate. They turned out to be material for boat building – oak material split into quarters and deposited in the bog. The material was analysed by Alf Braathen in order to get a dendrochronological date, but it turned out to be too old to get a date. Instead, the chisel marks in the wood showed that it had been deposited in salt water (Braathen oral information). As the find-spot was about 7 m a s l, it was closed off from the Baltic Sea in the beginning of the Late Iron Age, and therefore the material was deposited before that time.

In connection with the building of the replica Embla (Gamla Uppsala 3), the advantages of keeping the semi-manufactured material in water became obvious. If dried, the oak material became hard and the axe ‘bounced’ on the surface of the plank. If fresh, on the other hand, the material could easily be cut and shaped with an axe or a knife. For the purpose, a special water-storage place for the semi-manufactured material was created in the Fyris River, close to the building site (fig. 89). This is an important factor behind the occurrence of semi-manufactured material in bogs and lakes.

Figure 89. The water-storage place in the Fyris River in connection with the building of the replica Embla in fresh oak, with ‘compartments’ for the different sizes of material. Photo by Gunilla Larsson.

4.4.3. Tools and implements connected with shipbuilding

Source material and research
The traces of tools and implements that can be observed in ship remains represent the last stages of the building process. In some cases material and partially worked pieces for boat parts have been found deposited in bogs, which can offer information on the early stages of the building process. By analogies to ethnographically documented tradi-
tional boat building, it is possible to get ideas about the tools used in the initial stages of the building process.

The Swedish Iron Age finds of tools have been thoroughly studied by Serning (1966), except for the axes and adzes. Thålin-Bergman has discussed several of the tools, including axes. The most detailed investigation of both prehistoric and historic axes was done by Harald Hvarfner, but the extensive material was never published and is preserved only as a manuscript at the Museum of National Antiquities. The Norwegian material of different tools has been thoroughly analysed and categorized by Petersen (1919). His categorization of the axes is used in and valid also in Sweden. He has classified different types on the basis of the shape of the axe and on the design of the axe around the shaft hole, resulting in a chronology of axes and conclusions about foreign influences visible in the design (Petersen 1919: 36-47). The ones connected with shipbuilding will be identified and subjected to a closer examination. Woodwork has always demanded different types of axes for different work. The design of the edges is similar in different countries, and the types that came into use in the Late Iron Age have parallels in modern axes. The categorization used here is based on function, and references to Petersen are used with regard to chronological issues and contexts of axes and other tools.

The tools in Serning’s (1966) investigation include both carpenter’s tools and smith’s tools; both groups were also used in the shipbuilding process. She has traced 60 different localities with tool finds from the Iron Age: 7 from the Early Iron Age and Migration Period, 51 from the Late Iron Age, 1 medieval find, and 1 undated. She has specified the different tool finds in the Swedish material, as well as the dating and context. This interesting and thorough investigation shows that tools in grave finds dominate five out of seven in the Early Iron Age, and 38 of 51 Late Iron Age localities.

The context of the tool finds is worth attention. Of the 16 finds from Uppland, 8 come from boat burials. Of these, the tools occur only in boat graves of a special category, namely the aristocratic weapon graves: 4 come from Valsgärde and 4 from Vendel, probably burials for high-ranked military (naval?) leaders. The tools are not found in the male/female boat graves with non-military burial equipment (Serning 1966).

4.4.4. Traces of tools and implements used in the shipbuilding process

Our knowledge of the tools used by boat builders during the actual period – the Late Iron Age and Early Middle Ages – comes from analyses of tool marks in ship remains where the wood is preserved, from finds of tools that correspond to the marks in the wood, and also from depictions of boat building. This can be complemented with experimental archaeology in order to gain knowledge about the use of tools in work stages that have left no preserved marks. A wider knowledge has been acquired about the tools needed to build a boat.

Felling axes

The tool marks that can be observed on the ship remains represent the last stages of the boat-building process. There are no traces from the first steps in this work, but based on the scenes of the Bayeux Tapestry we know that a type of axe was used in the forests for felling trees that was similar to the axe of historical time and up to the 19th century, when it was replaced with the saw. Only the part of the axe around the shaft hole has changed over time.

Figure 90. Cutting down trees with a felling axe with a short edge and a long, straight shaft. Bayeux Tapestry.

The felling axes of the 18th century were heavy, with a short edge and mounted on a long, straight shaft as in the Tapestry. This type is often found in Late Iron Age material. Lena Thålin-Bergman considers that axes that exceed 800 g in weight are hewing axes for felling trees, while modern felling axes weigh about 1200-2000 g (Thålin-Bergman 1982:660).
In the forest, contrary to today, straight trees were chosen for felling, a fact that surprised the contemporary boat builder Axel Lindberg. Today instead the curved line of the hull is created by choosing a curved tree. The 11th-century boat builder of the Viks boat looked instead for straight logs. Curved logs would be impossible to split radially. How was it possible to make a boat with a marked sheer line and highly raised stems with completely straight planks?

**Figure 91** How to make a sheer line a) with sawn plank of a curved log, b) with radial split planks from straight log. After A. Lindberg 1978.

A closer examination of the Norwegian finds from Gokstad and Oseberg, as well as a study of ship graffiti (fig. 92), made him realise that this was done by breaking another almost holy rule in traditional and modern boat-building practice. The early ships with straight planks had to have the scarves between the planks almost above each other in order to raise the stem and stern (fig. 91), something which is almost prohibited today. The angle between the planks in the scarf, in combination with how much the sides were laid out, determined how high the ends of the ship could be.

**Figure 92** The scarves placed above each other because of the radial splitting method. Bergen engraving.

**Wedges and mallets**

The radial splitting method necessitates splitting with some kind of wedge, continuously inserted with clubs or mallets as the crack in the log opens up. This is necessary if the crack shall follow the direction of the fibres in the wood. As can be seen from the section of the planks, the logs have been split without cutting the fibres. The iron implements registered as wedges in the Swedish archaeological material (Serning 1966:33) are too thin to have been used for splitting, such as the one in Birka grave no. 750 (Arbman 1943:272), and instead have probably been used as chisels in woodcarving. Most likely wooden wedges have always been used. In the experimental work it was shown that a good craftsman could finish a wooden wedge to be used in boat building in 5-10 minutes. Though the wedges cracked after having been used on some logs, it was easy to make new ones to replace those destroyed.

**Adzes for hewing out the keel**

The T-shaped keel, as found on the 11th-century Viks boat from Uppland, had to be cut out with an adze, with the blade at a right angle to the shaft. Also for hewing out the log for a logboat or logboat bottom in a plank-built boat this kind of adze was very useful, and it probably replaced the celt of the Early Iron Age for this purpose. Berg also means that the adze with a straight edge could have been used for smoothing planks. This type is, however, uncommon in the archaeological material and goes completely out of use in the Middle Ages, though the one with a curved edge continues (Berg 1983:34). One adze is known in the chest from Mästermyr (Arwidsson 1983). Several are known from Norway, where Petersen has noted 47 adzes dating from the 5th to the 10th century, the majority (40 examples) in male burials.

**Broadaxes for finishing the strakes**

The tool traces on the Viks boat reveal that the radial split pieces had been cut to finished strakes with the aid of a broadaxe. This is the common method in the Late Iron Age, known from, for instance, the analysed traces on the Skuldelev ships (Vadstrup 1993:100). The axe used is called a *skögg-yxa* ‘beard axe’ a type found in Sweden, Norway and Russia (fig. 94). It has an almost straight upper side, while the bottom side bends down to the ‘beard’. From Swedish finds it is known from the 7th century and onwards (Hvarfner manuscript). The oldest find is from a grave in Ultuna (Hvarfner manuscript). The Swedish axes of the 7th-11th centuries AD are also characterised by flaps at the shaft hole, two in the earliest examples.
and later four in the 10th–11th centuries (Thålin-Bergman 1992:663). Broadaxes were used both as a tool and a weapon. The use of the axe was a distinctive trait characterising the Varangians in the Byzantine imperial guard. It is not always easy to distinguish the two types of axes from one another in the archaeological material, but the battle axe is generally lighter. This one occurs in Swedish axe finds from the late Viking Age and early medieval period in an eastern forge tradition with a thin forged, and often ornamented, variant of types domestic in the east Baltic and east Prussia (Thålin-Bergman 1982:664).

Figure 93. Broadaxes of the Late Iron Age. Mästermyr find. After Arwidsson 1983.

The typical central Swedish broadaxe differs from the south Scandinavian type illustrated on the Bayeux Tapestry, which has a very long edge both upward and downward, almost symmetrical. Finds of this later type, such as the one almost identical with the Bayeux type of broadaxe found in Haithabu harbour, in London and York (Brede 1981:67), show that the polish of the edge differs in that it is only polished on one side, in contrast to the Swedish broadaxe which is polished on both sides.

The planking has a very even surface, carefully finished, which must have called for precision when the strake was hewn out. This may be related to a group of axes with a more marked hammer that occurs from the 8th century. How this type of axe was used is illustrated in a medieval illumination. Here a monk is holding the broadaxe to direct the cut more precisely, while another monk is preparing to hit with a wooden club (fig. 94).

Figure 94. Illumination showing a method for precise cutting with a broadaxe. The initial Q in a manuscript of Citeau, completed 1111. After Crumlin-Pedersen 1968.

Precision cutting in the manner seen in the illumination above must have been important for the production of thin planks in the radial split material.

Some heavier broadaxes for woodwork are found in central Sweden, such as two finds from Gamla Uppsala, Gamla Uppsala Parish, Uppland (UMF 1103 and UMF 1104). The former is of Petersen type D from the beginning of the 9th century AD, with a weight of 960 g; the latter is difficult to categorize and date, but is younger, with a weight of 1106 g. An axe from Simtuna Parish (UMF 1005) represents Petersen type C, which according to Petersen is known from ‘a large amount of finds’ from Sweden (Petersen 1919:39), that is, 54 examples known at the time though most of them found on Gotland (36). The type has Roman roots and is known from the Migration Period to early Viking Age. The Simtuna axe weighs 1168 g.

My experience from experimental archaeology is that the choice of axe for finishing the strakes is very individual and personal. Some prefer a heavy axe, others a lighter one (fig. 95).

Figure 95. Shipbuilding as experimental archaeology. Finishing a strake with the broadaxe. Photo Gunilla Larsson.
Hand axe for cutting and carving

A light hand axe (fig.96) seems to have been used for different steps in the building process: for the cutting of strakes, adjustment of the hood-ends, and carving out stems, ribs and oarlocks. In the Late Iron Age and Middle Ages the hand axe was associated with cutting and carving in fresh wood. For carving it was a complement to the knife, and a group of very light hand axes, 150-300 g, might have been used for this purpose. Used with pressure on the neck, it offered the precision needed for the kind of cut in the illustration with the broadaxe above. The most common weight in archaeological finds is 500-800 g, whereas the hand axes that are still sold today weigh 800-1500 g (Thålin-Bergman 1982:660).

Figure 96. Man working with a hand axe. Bayeux Tapest-ry.

Planes

The lands in the overlap between the strakes were smoothed off with a plane, as can be seen on the Viks boat. Here also the long scarves between the planks were made with a plane. Preserved planes are known already from the end of the Roman Iron Age, as in the Vimose find where two intact planes were recovered, one with a hollowed edge perhaps for smoothing the shaft of an arrow (Stigum 1981:308). From Swedish Iron Age material, irons for planes are known from Mora-Kråkberg. In the museum catalogues the iron blades inserted into planes are confused with and called mejsel ‘chisel’. The traces of smoothed-off surfaces on the Viks boat are found in the land and in the scarves where strakes are connected. In the land a plane or a moulding iron was used to make the rabbet in the land, where the caulking material of tarred and twisted cow hair was to be inserted. The lands are 3-4 cm wide and the rabbet in the land only 9-11 mm wide, which means that mostly planes with narrow blades were used, easy to confuse with a chisel when a blade is found out of context in archaeological material. Several or most of the 12 Swedish finds registered as mejsel ‘chisel’ could have been blades for a plane or a moulding iron. In the Norwegian material, planes with an inserted iron similar to contemporary planes are known from the Vendel and Viking periods; six examples, 2.6 – 3.3 cm wide, have been found in male burials (Petersen 1917:221, 1951).

Band iron

The strakes of the Viks boat, as well as several other primarily Late Iron Age finds from Sweden (Årby boat), Denmark (Skuldelev ships) and Norway (Holmedal, Kvalsund, Gokstad) often have a very smooth and even surface, which might be the result of a final treatment with a band iron. Examples of such are known in the archaeological material from the Late Iron Age until present time. In older literature they are often called skavjärn, hövljern or skavkniv (Rygh 1885, figs. 410-411). In Serning’s investigation two finds of skavjärn are mentioned, one from the Mästermyr tool chest and the other from the disturbed Late Iron Age graves at Kråkberg, Mora Parish (Serning 1966). She also mentions tools called skavare from a Late Iron Age grave and a medieval house foundation.

This extra care for the finishing of the strakes is characteristic for the Late Iron Age ships, and reflects the high value given to the ships. This is the period in history when the most effort and work are invested in the appearance of the boats. At no other time are the ships the object of such concern. Already in the Middle Ages the finishing is more rough, and in the 17th century the cuts and tool marks are left very vible, as can be seen on the ship’s boat on Vasa and to some extent also on the hull of Vasa itself, especially on the inside. The glory of the large ships of this time was to be seen at a distance in the colours and golden decorations as well as in the extravagance of ornaments that covered much of the strakes.

The Late Iron Age ships are often so well built, with even thickness and smooth surface, that none of the experienced carpenters involved in the replica Embla building project of 1996 could understand or make anything that comes close to, for instance, the finish of the small Gokstad boats where the thickness is completely even and doesn’t change one millimetre on the strakes amidships.

Profile iron

A profile iron (fig. 97) or moulding iron ‘profiljärn’ was used on the Viks boat to draw the three parallel lines along the visible edges of the strakes, the keel, part of the inside upper surface of the stem and stern, as well as on the top side of the square cut frames. Decorative lines on ships along the edges of the strakes occur in Iron Age and medieval material, such as in one of the few Swedish finds with preserved wood, the Årby boat (Arbman 1940), as well as in several Norwegian finds such as Karmøy, Rogaland.

A profile iron is characterised by the inserted edge at a right angle to the length axis of the mate-
rial. In the Mästermyr chest this kind of moulding iron was found (Berg 1983:35), with a shank on either side to be fitted into a wooden handle, and symmetrical cutting edges on each side so it could be used. It is also called a profilhyvel, and in Sogn, Norway the name båtastrek (‘boatline’) is known (Petersen 1917:226), revealing the use of the tool. The tool is represented in Norway by ten finds from the Vendel and Viking periods, two of which come from boat burials.

The occurrence of this tool represents extra care for the appearance of the ship, where special efforts are put into the decoration of the ship. It reflects the special status of the ship and seafaring in the Late Iron Age.

Figure 97. Profile iron from Mästermyr. After Arwidsson 1983.

‘Holders’

When the holes for the iron rivets are to be drilled through both planks in the clinker overlap, the planks have to be held together in some way, as can be seen on the Bayeux Tapestry, and these holders have been used into contemporary time for this purpose. The earliest holders have a wedge put in between the outer arms to press the ‘mouth’ of the arms together.

Figure 98. ‘Holder’. After Bill 1987.

Forging and forging tools in the shipbuilding process

The blades for the tools used in boat building were the result of a complicated process of welding together iron and steel of the right quality, which demanded the skill of a smith. Working with soft iron, on the other hand, for making nails, rivets and other iron products without sharp steel edges, has been done in connection with shipbuilding. At almost every farmstead in the Swedish agrarian society in the 19th century, there was also a smithy where the peasant could make the most necessary iron products for the household, such as nails, mounts, hooks, iron connections for carts, draught equipment for oxen and horses, etc. The forging of rivets, nails and plates has been done in connection with boat building and repairing. Tools and debris from this kind of work can be seen in the Viking Age boatyard excavated at Paviken: materials, semi-manufactures, slag and wasted material in connection with semi-finished plates and some tools (Lundström 1981:74 ff).

Parts of iron bands and iron bars were also found in the tool chest from Mästermyr (Arwidsson 1983). The tool most necessary for forging rivets is the tongs. In Sweden more than twenty-three tongs have been found in Iron Age material (Serning 1966); five belong to the Early Iron Age, seventeen from the Late Iron Age, one from the Middle Ages, and one undated. They are often grave gifts; eleven of the Late Iron Age finds are from graves. A so-called nageldon was used for making the rivets (fig. 99).

Necessary forging was not only done in the boatbuilding process, but also when needed during the journeys. Material and tools had to be brought along. In light of this we shall view the fact that, of the four finds from Uppland, three come from the boat burials: Valsgärde 6 (Arwidsson 1942), 7 (Arwidsson 1977), and Vendel 1 (Stolpe & Arne 1912). In Valsgärde 6 and Vendel 1 also a hammer, important for both forging and riveting, was found. On longer journeys it was necessary to bring equipment for repairing the ship, for instance if one strake had cracked on a rock. To do this repair work it was necessary to make some new rivets as well, which can explain why a supposed naval leader was buried with smith’s equipment.
Spoon auger

Holes of various sizes for rivets and wooden dowels were drilled into the hull with a breast auger, according to the depictions on the Bayeux Tapestry (fig. 100). In Sweden this implement is traditionally called navare and was widely in use for carpentry and shipbuilding up until the 19th century. Several examples are preserved in local museums as well as in the national collections of Nordiska Museet (fig. 101).

A navare consists of a wooden handle with a spoon auger of iron inserted. The navare has a vertical wooden body with a horizontal handle transversely through it. On top is a rotating round plate that is pressed with one’s chest at the same time as the handle is turned around when drilling. Other types of handles could have been used, too, but no iconographic evidence indicates that this should have been the case. The breast auger is also the type that is seen as a tool associated with boat building (Leppäaho 1951; Berg 1983). Petersen (1917:227) also mentions completely different types of augers in Norway called kjerringrokk or svinghjul med drill; these are almost circular, flat stones with a hole, very similar to but larger than the spindle whorls for distaff, which they are very likely to be confused with in the archaeological collections. In Norway they occur both in male and female burials.

The breast auger, or navare, was fitted with a spoon-shaped, hollowed spoon auger made of iron. This is usually the only thing that remains in the prehistoric finds. Only finds from the Late Iron Age and onwards are known in the Swedish material concerning this type of auger, all in all fourteen examples. Of these, seven come from different graves, six come from the Mästermyr toolbox, and one from a workshop site (Serning 1966).

The holes in the Viks boat have probably been drilled with spoon augers in a set of different dimensions. The drilled hole for the iron nails and rivets is 5-7 mm; holes for treenails securing the gunwale list to the strake 15-17 mm; for treenails in fastenings of knees usually 17-19 mm; for the three dowels connecting keel and stems 17-21 mm; the treenails connecting the frames to the hull 19-26 mm; and for the treenails that secured the false keel to the keel 22-25 mm in diameter.

Based on experience from the Embla building project, it requires a lot of skill to produce the spoon auger with the right charcoal content. The professional smiths involved failed to make a useful auger, since it either was too soft and twisted while drilling, or too hard so that it broke instead. Borrowed, 150-year-old augers were sharpened afterwards and used with a much better result.
Hammer, hacksaw, and other implements for riveting the ship
The rivets were inserted into the hull from the outside, through the holes drilled earlier through both strakes temporarily held in place with strake holders. Then plates were to be put on the inside of the rivet to secure it to the hull. A hole was made in the plate that was to be put on the inside of the rivet with an awl. These implements are known from sixteen finds throughout the Iron Age, though most (fourteen) belong to the Late Iron Age, ten of which come from graves (Serning 1966).

The plate was cut loose from the iron band, either diagonally giving a rhombic plate, or transversely giving a square or rectangular plate. All three types of plates are found in the Viks boat, thus showing that there is no chronological order to the shape of the plate, as has earlier often been assumed (Bill 1994). In many boat burials, a similar variation in the shape of the plates occurs. When the plate shall be threaded onto the rivet on the inside of the ship, the reconstruction work showed that a hollowed implement was needed when the plate was pushed down on the extending shaft with a hammer. This type of implement was found in the destroyed graves at Kråkberg, Mora Parish, Dalarna, and had a length of 2.3 cm and a diameter of 1.1-1.7 cm (Serning 1966:158, pl. 36:14).

The remaining extending part of the rivet had then to be removed. For this purpose probably a hacksaw was used, found together with the other implements needed for riveting in the Late Iron Age Mästermyr find of a carpenter’s (boat builder’s?) chest.

Figure 102. Hacksaw. Mästermyr find. After Arwidsson 1983.

Implements for building a symmetrical ship without models
The shape of the hull was determined by the angle of the lands, not by any drawings or models. This is seen in the boat-building illustration on the Bayeux Tapestry, which shows the master shipbuilder in front of the boat directing the builders how to adjust the planking to achieve symmetry (se fig. 89). This was done by free hand and according to eye measurement. The correct angle of the lands was obtained by using a plane, either in the upper outside part of the plank, giving a convex hull shape, or in the lower inside edge of the plank, resulting in a concave hull shape. If the section of the hull should be flat, as between the first and the second strake in the boat, the land was not cut down at all and the original thickness of the planking was preserved.

The plane used for the lands was of a type that is also found in the Mästermyr chest, as well as in other archaeological material.

The building of boats without drawings or models was dependent on the boat builder’s skill in seeing the symmetry of the hull. To check whether both sides had the correct angle, a lodbräda has been used according to ethnographic accounts, which is also preserved in archaeological finds (see fig. 103).

Figure 103. A pass, also called lodbräda or vater. Drawing by Gustavsson.

Smoothing oars
A curved iron of some kind has probably been used to smooth the surface of the oars, for instance to obtain the kind of surface on the find from Årby. An implement like the curved iron with an edge on the straight side, found in the burial ground at Kråkberg, Mora Parish, could perhaps have been used for this purpose (Serning 1966:158, pl. 30:18).

4.4.5. The Mästermyr find: a boat builder’s complete tool chest?
A closer analysis of the closed find of a tool chest from a bog at Mästermyr (Arwidsson 1983), Gotland, reveals that it contained all the necessary tools for making a boat like the Viks boat (fig. 104). The chest was found when the field Mästermyr – a drained bog – was ploughed in 1936. This had recently begun to be cultivated and the chest was discovered when the plough got stuck on it. The wooden chest contained a rich and varied set of tools for wooden handicraft and for forging. It has earlier been suggested that this was the remains of a carpenter’s chest. The tools indicate specialisation. When studies of the tool marks on the Danish ship finds from Skuldelev were made, the correlation between the marks and the type of tools found in the chest was observed (Vadstrup 1993).
Figure 104. The Mästermyr chest with a complete set of (boat builder’s) tools. After Arwidsson 1983.

When the boat replica *Embla* (Larsson 1998), a reconstruction of the boat in the burial Prästgården 3, Gamla Uppsala Parish in Uppland (Nordahl 2001) was built using original methods and replicas of contemporaneous tools, it was exactly this set of tools that turned out to be needed and came to use in the boat-building process. The boat was built in the same way and with the same methods as I have recorded from the Viks boat. The big chest from Mästermyr includes a *felling axe* with short edge for the felling of trees and splitting of logs. For finishing parts like the keel, an *adze* with a slightly bent edge is included in the chest. For the preparing of the strakes there is a *broadaxxe*, from which tool marks are found in archaeological remains. The surface of the planks of the Viks boat have been smoothed with a *band iron* of a type also found in the chest, and the lands made with a smaller *plane* of the type included in the tool set. The *narrow plane iron* might have been used for making the rabbet in the land of the strakes in the Viks boat. The edges of the strakes, keel, stems and ribs have been decorated with the aid of a *profile iron* resembling the one in the chest. The *chisel* has come to use in the boat for making notches and the *knife* for carving the wooden nails securing the ribs.

The holes for the rivets, for the iron nails, and for the wooden nails in the Viks boat have been drilled. In the Mästermyr chest a *breast auger* was also found together with *spoon augers* of different sizes. The *drill* of 6 mm corresponds to the holes for the rivets in the strakes of the Viks boat, the *drills* of 12.5 mm, 18 mm and 24 mm to the holes in the gunwale list and frames, and the largest *drills* of 28 mm and 34 mm to the holes in the boat that were probably associated with rigging arrangements.

The boat builder from Mästermyr has also had the possibility to forge the rivets and nails needed for the boats and ships. For this purpose the chest includes *hammer*, *tongs* and *nageldon*. For the riveting there is a clinker *hammer*, sharp on one side and rounded on the other side, a *mothål*, as well as a *hacksaw* to cut off the extending part.

The tools that have come to use in the boat building, and that are included in the Mästermyr chest, reveal the method used in the building process. During the Early Iron Age another set of tools was used, which was replaced by the Mästermyr type of tool set when the radial splitting method was introduced in the 6th and 7th centuries. In the shipbuilding of larger ships, this was replaced when the carvel technique made its debut together with mechanised sawing in water-powered sawmills at the end of the Middle Ages. But the tools of the Mästermyr chest to a great extent have remained in use within wooden handicraft and partly within traditional boat building until the 19th century.

The association between the set of tools found in the Mästermyr chest and boat building is seen in some finds from Dalarna that have hitherto not been recognised. In boat grave no. 2, Bengtsarvet in Sollerö Parish (Serning 1965:80), parts of a tool set necessary for boat building are included in the grave: chisels, wedges, files, knives and spoon augers. In a similar boat-burial environment at Kräkberg in Mora Parish, where the site has unfortunately been disturbed and the inventories mixed, there are finds of chisels, wedges, files, awls, knives, spoon augers and plane blades. That the axe is missing in these finds shall be seen in connection.

**Repairing tools**

Many of the tools and much of the debris found in Paviken (fig. 105) derives from repairing activities (Lundström 1981). Here are included tools specially designed for replacing rivets (fig. 106).

Figure 105. Tools and debris from boatbuilding and repairing activities. After Lundström 1981.
4.4.6. Social aspects of boat building and handicrafts in the Late Iron Age

In the Rigsþula in the Poetic Edda the material culture of society’s three classes is described. The divine origin of the social order was established by the god Rig/Heimdal, who made a visit to three farms to give the owners ‘advice’; nine months later a child was born on each farm, and it was from these children, respectively, that the slaves, the farmers and the jarls were said to be descended. It is also clear that labour is divided along social lines and along gender. Carpentry is one of the main occupations of the free middle class of the farmers (Rigsþula 15), and probably also forging, since one of the sons is named Smithy. Specialised woodwork with military association, such as making bows and arrows (Rigsþula 28), is seen as belonging to the occupation of the jarls.

4.4.7. The tools and methods of a maritime society

The tools associated with the radial splitting method that gave the light, fast and pliable ships – a prerequisite for the development of the maritime society – begin to appear in the Migration and early Vendel periods. The earliest beard axe, closely connected with the hewing out of planks from the radial split raw material, is found from the 6th century onwards. The extra care given to smoothing the planks is represented by the band iron, which begins to appear in the Late Iron Age, but which goes out of use in the Late Middle Ages when the ship itself is transformed from a symbol into a work tool. The earlier extra care and status of the ship is also reflected in the appearance of the profile iron in the Late Iron Age for making the decoration lines along the edges of the planking, underlining the slender lines of the ship.

4.5. The medieval changes in technology and society

As a background for the main hypothesis in this work, that ‘the maritime society’ was a phenomenon that belonged to the period from the 7th to the 13th century, it is necessary to outline how the disappearance of this society was reflected in the use of ships, shipbuilding and water-communication. The changes in technology are indicative of and related to these changes in society. During the Middle Ages there was a series of interrelated changes in shipbuilding, the use of ship types, seafaring and society. The causes were largely ideological changes. The seafaring vigher man, last mentioned in the Uppland provincial law of 1296, was replaced as an ideal by a heavily armed, horse-riding warrior – the knight. It was no longer glorious sea-journeys that were praised in the poems, but instead expressions of the chivalrous culture in the castle environment. The maritime ideals of Late Iron Age society disappeared, and the ships and life-style of the medieval, feudal, Western Europe became the source of inspiration.

Together with the disappearance of the light merchant-ships – which were replaced by larger, deep-going and heavy ships like the Bergen ship of the Scandinavian type, but also by Western European ship-types like the hulc, the cog, and others that needed harbour arrangements – the river systems went out of use for other than local communication and the harbours were moved to the coast, where new towns were established. Along with the territorial organisation of a maritime society in hundare and skeppslag (see chapter 9), the very light warship gradually disappeared. It was partly replaced in the 13th century by the heavy cog, in use as a warship for transports of troops stationed at the royal castles from the end of the same century, and which were connected with the new territorial and military feudal-inspired organisation into castle-supplying districts – the län. (Fritz 1983). Still, the light leiðangr ships were sometimes used until the 15th century, but only on those occasions when the help of this peasant fleet was needed in connection with an expedition, such as the Finland expedition led by Birger Jarl (Erik’s Chronicle 2).

What about the shipbuilding methods? Together with the new ship types, the shipbuilding methods were completely transformed in the Late Middle Ages, with regard to larger ships. There was a change from radial splitting of the logs to sawing,
from clinker-building technique to carvel building, from shell-building technique to skeleton building, from the use of one mast to two and three masts with many square sails and a lateen-sail on the mizzen mast. The dimensions of the material, as well as the number of strakes and frames, were dramatically increased, resulting in an important change from light to heavy, deep-going boats. For seafaring, one result was that the shallow rivers at home and abroad could no longer be navigated in the same way, and the cargo had to be reloaded to smaller boats at the coastal port-towns by the river-mouths for further transport upstream to the interior.

4.5.1. From radial splitting to sawing

Granlund (1982) has studied the history of sawing. Although the saw was known already in the Viking Age, it was not used in boat building for producing planks since it reduced the strength and durability of the planks when the fibres were cut, as when sawing instead of splitting the log. The start of the use of sawn planks can be seen in connection with the introduction of the water-powered sawmill, first known in 1447 as recorded in the Vadstena Monastery land register book and soon also in other places such as Forsvik in Västergötland and Görjebro in Västergötland (Granlund 1982:665). It was, however, Gustav Vasa who, a century later, realised the advantages of this method. With the help of the water-powered sawmill it was possible to produce within a short time a large amount of planks for shipbuilding and to a low cost. Gustav Vasa had a great need to build up his own fleet as quickly as possible to secure the borders against the Danes, and as one of his first acts as king he had water-powered sawmills erected by all streams situated in the vicinity of a good shipbuilding place. The first sawmill belonging to the Crown was established on his command at Kalmar in 1525–1527, and this was soon followed in the next decades by Crown-owned water-powered sawmills in Västergötland, Östergötland, Värmland, Uppland, Södermanland and Västmanland. The popularity of the use of sawn planks probably lay behind the introduction of the crane-saw in this period.

The importance of the water-powered saw in Sweden can be compared to what the use of wind-powered sawmills meant to Dutch shipbuilding in the same period. The success of Dutch shipping and shipbuilding is related to the advantages of producing many planks and consequently many ships in a short time to a low cost for the market.

The knowledge of the strength of radially split material also gradually disappeared in connection with the introduction of the water-powered saw in the Late Middle Ages. In traditional boat building, split logs survived longest, until the 19th century in Blekinge (Nilsson 1967:97ff). For the making of vindor, the pieces closest to the stems, cut strakes continued into the 20th century. Here the tension is strongest on the wood, and strength and pliability of the hull is of vital importance. Until the 19th century in, for instance, Hälsingland, the boat builder chose twisted trees where the fibres in the wood naturally had this shape, but in the 20th century the background for making the vindor was forgotten, and instead straight-grown trees were used and drilled to create this shape (Liljeros 1997).

The knowledge of the advantages of intact fibres in the wood has survived longest in handicrafts, such as the making of ladles and barrel staves.

4.5.2. From shell building to skeleton building

Increased speed in shipbuilding meant at the same time a decrease in the quality of planking, and thus also in the strength of the hull. This had to be compensated by an increase in the dimensions of the material and by a change from shell building, where the strength is in the hull and the planking, to skeleton building where instead the strength is in the skeleton. This skeleton was erected first and then covered with a skin of planking. The skeleton building was a fact. The shape of the framework, not the lands, became decisive for the shape of the hull. This change in building method coincided in Europe with the debut of carvel building, which was introduced from the Mediterranean. This method had thick, edge-to-edge planking, and was now combined with skeleton building, where the planks were only connected to the ribs and not to each other. As Olof Hasslöf has pointed out, edge to edge instead of clinker building with overlap was possible and used by ancient boat builders in shell-building technology by joining the hull with mortise and tenons (Hasslöf 1970a:56). It was just a mere coincidence that edge to edge came at the same time as skeleton building to Northern Europe. The changes did not affect the traditional boat building in the same way. Sawn planks were used early on, but shell building continued up until the last century.

4.5.3. From clinker to carvel

The transition in shipbuilding technology from clinker building to carvel building was a slow process for large ships during the 15th and 16th centuries. Several examples are known of clinker-built ships simply covered with an extra layer of flush-laid planking. As Hasslöf has shown, it is also possible to trace this change in the archival records. In Eng-
lish boatyard accounts from 1496, ‘carvell nayles’ are mentioned for the first time in contrast to earlier mentioned ‘clinch-nayl’ (Hasslöv 1970:57). In the 16th century the focus is on the large ships such as the English Great Galley, built in clinker technology, which the shipmaster Brigentine was ordered to cut up and rebuild in carvel technology. In Sweden, ‘Stora Kraveln’, ‘the big carvel built ship’ Elefanten (Rönnby 1996) one of the ships Gustav Vasa had ordered, is one of the earliest examples of a carvel- and skeleton-built ship, of which a part can be seen exhibited in the National Maritime Museum in Stockholm (fig. 107.).

![Image](image_url)

*Figure 107. Part of the carvel-built ship Elefanten, National Maritime Museum. Photo Gunnel Ilonen.*

4.5.4. Reflections of the ideological change in shipbuilding

The symbolic value of the ships also disappears. This is reflected in the fact that the extra finish of the planking with a band iron goes out of use, as does the application of the decorative lines with a moulding iron. The thin strakes of the Late Iron Age, where much effort was invested in creating a flat, even surface, are replaced by thick and heavy planks with the axe-marks often still visible.

The light, expanded dugout modelled after the long and slender, clinker-built aristocratic ships with pointed ends also ceases to be manufactured. In Sweden the knowledge of how to make a soft, expanded dugout also disappears completely. These light and slender boats are replaced by heavy, blunt-ended and less worked dugouts, where not much effort has been put into the production. These are exactly the ones that archaeologists usually think are prehistoric and primitive, but instead these are the most recent and degenerated vessels. This illustrates well how the evolutionary latent view of the archaeologists affects the history writing. From the way in which the ship is built, the wood is elaborated, the surface is treated, and decorations are applied, it is possible to see a change from the ship as the ideological key symbol and status artefact, to the ship as a work tool, with regard to most of the boats of daily life.
5. ETHNICITY AND SHIPS

The seafaring of the Svear was the basis of the maritime society, the main means of external exploitation and, not least, of acquiring a position within the trade network between Europe and Asia. As we have seen in previous chapters, it was the size of the ships and the shipbuilding technology that enabled these long-distance journeys along rivers which otherwise would have been impossible to navigate. But how do we know the extension of the journeys the Svear made by boat? Here, the remains of boats of the Svear found abroad are of crucial importance. The main question, then, is how do we know the remains really come from ships used by the Svear? This question will be dealt with in this chapter. Boat building is very traditional, with regional differences. In small details it also diverges among different boat builders. It is, however, possible to trace the main, regional, boat-building traditions in Northern Europe in the Late Iron Age, and to distinguish them from one another by the combined set of special technical traits and solutions concerning boat building, as well as by the shape of the hull.

Figure 108. Major ship types in Northern Europe. a) Nordic tradition, b) cog tradition, c) hulc tradition, d) pram tradition. After Crumlin-Pedersen 1991.
5.1. The main ship types in NW Europe AD 800–1200

Several archaeologists have made attempts to classify the major ship types, most notably Crumlin-Pedersen (1970, 1991), Ellmers (1979) and McGrail (1981). There is general consensus about the results, with only minor differences. In the following I will summarise these conclusions, and will also add the recently published research from northwest Russia by Pjotr Sorokin (1994:1997), which has given valuable information about the shipbuilding traditions in a region with which we had a lot of contact during the relevant time periods, namely the Late Iron Age and Early Middle Ages.

1. The Nordic tradition.
2. The cog tradition.
3. The hulc tradition.
4. The pram tradition.

(Based on Crumlin-Pederson 1991:198)

In addition to the above-mentioned four, main, lines within Northwest European boat building, there is another tradition that has been identified by Detlev Ellmers (1969), namely the Celtic tradition. Perhaps as a combination of Celtic and Anglo-Saxon traits in boat building, a tradition appears in the Viking Age which Westerdahl (1989b) has classified as the ‘Anglo-Saxon/English tradition’.

5.1.1. The Nordic/Baltic Sea tradition

The Nordic tradition – or as I prefer to call it the Baltic Sea tradition, since it encircles the coasts of the Baltic Sea – is represented by the ship with keel, stems and strakes connected in clinker technique. These ships have curved lines and are built after a symmetrical principle. Ships built in the Nordic tradition are found already in the Roman Iron Age, such as the Nydam (Engelhardt 1865) ships (see chapter 4) and the Björke boat (Humbla 1950). Ships of this type are not only known from Scandinavia but also from both Norman and Anglo-Saxon England as well as among the Baltic and Slavic peoples around the Baltic Sea.

Although built without a keel, also the logboats and the boats with a logboat bottom and additional strakes attached were in the Late Iron Age built after the same symmetrical principle as the ships built on keel in the same area. Like the keel ships, these had pointed ends with nicely curved stems.

5.1.2. The cog tradition

The cog tradition is characterised by a flat bottom with keel plank (or keel-less), straight stem and stern, and a distinctly sharp transition between bottom and stems (see fig.110). The connection between the planks differs from the Nordic tradition, and consists of iron nails that are bent over on the inside. The bottom has the planks connected in carvel technique, side by side, but the sides are clinker built. The ships of this tradition are often caulked with moss in the land, and covered with a lath held with butterfly-shaped iron cramps (Ellmers 1979).

The tradition has its origins half a millennium earlier than the term ‘cog’, represented by early finds such as Mainz (Höckman 1982), Brügge and London (Marsden 1966, 1979). The term was first used in sources from the 9th century in Friesland (Ellmer 1972:70). Typical cogs are most common from medieval time; an early find is probably the wreck from Heide, Zuider zee (Bass 1974:187) from the 12th century, with only the bottom section preserved but with characteristic carvel-built bottom and clinker-built sides. Cogs are found in the Low Countries, the Baltic, and Germany. They are also common in south Scandinavia, as for instance Mollösund (Lisberg/Jensen 1983), Vejby (Crumlin-Pedersen 1979), Kollerup (Jeppesen 1979a; Anderson 1983), Oskarshamn and many others. In central Sweden Helgeandsholmen II is a cog (Varenius 1982), as is a recent find made in the Stockholm archipelago (Rönaby 2001). Similar construction details can also be seen in several finds from northwest Russia, such as in Novgorod (Sorokin .

Figure 109. The Viking Age coins are believed to depict ships of the main traditions. Uppermost row = Dorestad coins with ships of hulc tradition, middle row = ‘Nordic coins’ (Malmer 1966) with ships within cog (?) tradition, lowest row = ‘Nordic’ coins illustrating ships within Nordic tradition. After Ellmers 1972.
The dated cog finds are from the 12th to the 15th century. Indirect evidence of the presence of the cog already in Viking Age Scandinavia is the name kugghamn ‘cog harbour’ in Birka, and more direct evidence is provided by the finds of the specific cog-nails (fig. 111) in the burial Skopintull on Adelsö Island (Rydh 1917) on the shore opposite Birka. The Hedeby/Birka coins are thought to depict cogs with their straight stems, but contrary to all the known Western European cog finds these are vertical (fig. 109, middle row), while the the stems of the real cogs found are sloping (fig. 110).

The Hedeby/Birka coin-ships have small sails indicating a light hull. Could these represent a type of merchant ship that, like the hulc, is not yet part of the Scandinavian archaeological material? The preserved finds in Scandinavia to a large degree represent the warships used, while the coins depict merchant ships representing the trade in the town. The vertical stems may not be related to a cog-type ship at all. They could represent an extra construction added to the stems, i.e. a ‘beard’, to improve sailing capabilities (see chapter 3), like the one attached to the stem carved on the pen-case lid in the Oseberg burial (Shetelig 1917a).

The common view of the cog is that it represents a Western European, Frisian and Lowald boat-building tradition that was later distributed to other areas within the Hansa organisation, of which the cog is said to have been the main vessel. In relation to this discussion, however, it is worth noting that another party active in the early medieval trade, namely Novgorod, also uses ships of this type, even before the establishment of the Hansa. Flat-bottomed ships with flush-planked hulls and seams covered with a lath held in place with iron cramps occur from the 11th century in northwest Russia (see below). Ships called coch are also known here throughout the historical period (Sorokin 1994, 1997).

5.1.3. The hulc tradition

On the Continent there are finds of other types of merchant ships without a keel. In Utrecht in the Netherlands (van der Wijk 1933; Ellmers 1972:292) in 1930 a wreck of a ship with banana-shaped keel-less hull was uncovered, 17 m long and 3.7 m wide. It has been 14C dated to AD 790 ± 85. Instead of a keel there is a rounded bottom plank continuing up to the stems and the planking, instead of reaching the stems, following parallel up to the gunwale (fig. 112). The boat-type is identified as a hulc. The hulc is characterised by its banana shape with the planking running parallel to sheer line and bottom, not ending at the stem but instead at a horizontal line or a transom above the waterline. It has no visible stems or keel, but probably has reversed clinker planking (McGrail 1981:39). This can be seen in the drawing by Basil Greenhill (1976:85). This construction has an almost inevitable consequence for the building technique in larger ships, because during the building process the sides were built up in reversed clinker technique with the next strake overlapping on the inside instead of on the outside.

The hulc is said to have its origin in the Low Countries (McGrail 1981:38), probably with its earliest appearance in a 7th-century engraving on a Merovingian strap-end from northern France (Joffroy 1978). There are not many archaeological finds of this boat type, but one of the few is the Utrecht boat (see above), found in 1930. The mast step is only 5 m from the stem (Philipsen 1965; Bass 1974:186). A similar form and mast stepped far forward can be
seen on two clay models, which were found together with Pingsdorf ceramics from the 10th century when turf was cut by Lake Paterswolde in the Netherlands (Bass 1974:186). Several depictions and seals also show this boat type, ranging in time from the Late Iron Age to the Middle Ages. Other early depictions are those that can be seen on the coins from Dorestad, struck near the mouth of the river Rhine in the eighth century AD.

A *hulc* is probably depicted on the font of Winchester Cathedral. The seal of New Shoreham, Sussex (AD 1295) shows the characteristics of this boat, and according to Crumlin-Pedersen this town was formerly called *Hulkesmouth*. Around the seal is the inscription *Hoc hulci signo vocor o's sic nominis digno*, which he translates as, ‘By this picture of a *hulc*, I am called Mouth, which is a worthy name.’ At this time, the late 14th century, the *hulc* was already beginning to replace the cog, according to Basil Greenhill, because it was more seaworthy and could be developed into larger vessels during a time when trade was expanding (Greenhill 1976:283 ff).

The *hulc* is mentioned already in the 11th century in England in harbour accounts, where it is known as a cargo ship together with a ship called *keel* (Scandinavian cargo ship?). The *hulc* persists in the Late Middle Ages, as can be seen from a stained glass window in Malvern Priory Church, Worcestershire around 1450 (Bass 1974:187) as well as on the gold coin from the time of Edward IV, from 1473–1474, and it continues into the 16th century when it is known from several illustrations in Scandinavia. We don’t know whether it was used in Scandinavia in the Early Middle Ages, but the recovered frame from *Kastrup* (Crumlin-Pedersen 1981) with steps for strakes in reversed clinker technique, suggests this. *Hulces* are said to have been used in the fleet of Gustav I (1523–1560), and can be seen in several copperplate engravings from this time.

5.1.4. The pram tradition

The pram tradition is represented by the punt and the pram, as well as by barges and ferries, with the common characteristics that they have a flat, flush-laid and keel-less bottom with a sharp, L-shaped transition between the bottom and sides (McGrail 1981:40). Like the cog, the punt was influenced by the Rhine barges of the Romano-Celtic tradition (Crumlin-Pedersen 1978) in the Roman Iron Age.

The ferry-boats of this tradition have been found around the Baltic Sea and in northwest Germany. In south Scandinavia they are represented by the Viking Age *Haithabu* (Crumlin-Pedersen 1997) and *Egernsund* finds in Denmark, and the medieval ferries from *Falsterbo*, *Sweden* (Blomqvist 1951); in the Baltic by the *Teiden ferry-boat* from Estonia (Ellmers 1972); and in northwest Russia by several finds of reused parts of boats with these characteristics from the town layers in *Staraja Ladoga* (Ryabinin & Chernykh 1988:93; Sorokin 1994:132), *Pskov* (Sorokin 1994:133), and *Novgorod* (Orlov 1958:133). The tradition is found in layers dating from the 9th (*Staraja Ladoga*) to 15th centuries. In Germany the finds *Antwerpen 1-4*, *Elbing* and *Ellerwald* can be ascribed to this group (Ellmers 1972). The type was also widespread in the Slavonic area (Smolarek 1991:77).

The *barge* with a flat bottom raised towards the ends instead of stems is probably also an early ship type for cargo in Northern Europe. This ship type is known from Russia (Sorokin 1994, 1997) and from the find at *Egernsund, Denmark* (Crumlin-Pedersen 1977). The frames are constructed and look like knees, with the difference that they are generally longer and that there are holes for treenails to attach the frame to the flat bottom. Such a frame was found together with other boat parts in *Bulverket*, *Tingstäde träsk*, *Gotland* (Varenius 1979, see p. 137).

5.1.5. The Celtic tradition

The Gallo-Celtic tradition is rooted already in the Early Iron Age and distinguishes itself in several ways (Ellmers 1969; Westerdahl 1989). The coastal and seagoing ships of about 15-20 m in length have had a flat, keel-less bottom and a sharp transition to high sides. The strakes are caulked with hazel twigs and connected to the ribs with long, inward-turned, iron nails. Often these nails are inserted into wooden dowels. The ribs are heavy. These ships are the earliest in Northwest Europe to bear a sail, as is visible on coins and in descriptions by *Caesar* (De Bello Gallico III:13), and the mast is stepped in a frame forward of amidships, often far forward. Examples are *Blackfriars* in London (Marsden 1966), *Bruges* in Belgium (Marsden 1976), and *St Peter Port* in *Guernsey* (Westerdahl 1989b:47). Also long, flat-bottomed prams were used by the Celtic peoples, as represented by many Early Iron Age finds from, for instance, *Zwammenand 2, 4, 5*
(De Weerd 1976) and Bevaix (Arnold 1974, 1975). From the Late Iron Age there are still no finds recovered, but most scholars today believe it was within this tradition that the prototypes to the cog developed, which in their Frisian form may have appeared during the Migration and Vendel periods in Europe. The medieval cog is in many respects a continuation of this tradition, as evidenced by, for instance, the method of building this vessel, the flat bottom, the position of the mast, and the method of caulking it (Arnold 1977; Crumlin-Pedersen 1983; Westerdahl 1989:48). In the Late Iron Age there also developed a kind of local combination of Celtic and Anglo-Saxon traditions, as will be described below. Besides this wooden boat tradition it should be noted that skin boats were used by the Celts in Europe, documented since the Early Iron Age (Caesar: De Bello Civile I:IV) but still in use in the 20th century in Ireland and Wales, both for inland use, the coracles, and for ocean voyages, the curragh.

5.1.6 English/Anglo-Saxon tradition

The presence of a special English and Anglo-Saxon tradition has been discussed by Christer Westerdahl (1989b). The Sutton Hoo ship (Bruce-Mitford 1975) derives in its construction from the Nydam ships (Engelhardt 1865) and Scandinavian boat building, and is comparable to the Gredstedbro find in Denmark (Crumlin-Pedersen 1967, 1968). Similar finds in England include Ashby Dell (Ellmers 1972:272 f) and Snape (Müller-Wille 1970:181). None of these is well preserved. In Sutton Hoo both the burial practice and the iron rivets are clearly a Scandinavian influence. The rivets have round shafts, like those used on the south Scandinavian ships. That a special English tradition had developed at least in the Viking Age became visible when the first find of a ship with the wooden hull partly preserved was made and excavated in 1970 in Graveney (Fenwick 1978). The ship is dendrochronologically dated to c. AD 950. A reminiscence of the Celtic tradition is the flat bottom-plank instead of a keel, the straight stems and the heavy ribs. As Christer Westerdahl (1989b:43) has observed, iron nails are driven through the wooden nails of the strakes, resembling the practice in Celtic shipbuilding. The heavy construction and larger size of the ship compared with the Scandinavian vessels resembles the description of the ships of Alfred the Great’s fleet (894–901), which did not manage to pursue the light, Scandinavian ships into shallow waters. The construction of the Enköping ship (Norrgården 1961) of the 11th century, with a bottom plank instead of a real keel, may also have been inspired by English boat building. The trade and contacts with Sweden are well documented during this century in both coin finds and runic inscriptions, as well as in the use of English coin masters for the coins minted in Sigtuna (Malmer 1969).

5.2. Shipbuilding traditions in the Baltic Sea region

The different boat-building traditions in the Baltic Sea region are mainly based on the Scandinavian ship type. They are differentiated by the connection of the strakes, the caulking material, the type of keel, the spacing of nails, rivets and seam, and by the shape of the ribs and the hull. Separate traits can cross the borders of the tradition, while the combined sets of traits are specific for certain areas within the region.

5.3. Boats built with rivets and nails

Rivets used for connecting the strakes are found south of the zone with the sewing technique, primarily in central and south Scandinavia. The limited extensions of the technique to Russia and Prussia have often been discussed in terms of Scandinavian influence from the 8th century (see chapter 7).

Jan Bill has made a study of rivets, and observed the differences in the cross-section of the shafts and the shape of the plates (fig. 114). His study is partly well founded, and is based on his own observations (Bill 1994). Concerning Sweden, however, he has based his analysis primarily on the publications Valsgärde 1 (Fridell 1930), Valsgärde 2 (Dyverman 1929), Valsgärde 4 (Odencrants 1933), Valsgärde 6 (Arwidsson 1942), Valsgärde 8 (Arwidsson 1954), Valsgärde 14 (Bill & Johansson 1987), Ultuna (Almgren 1902), and Alsike inv. No. 9404 (Arne 1934), and without a thorough examination he concluded that central Swedish rivets have a round section (Bill 1994:59 f). My own investigations (G. Larsson 2000) have shown that, in cases where the shafts are not so corroded and it is possible to determine the section, the shafts of the rivets in central Sweden’s boat graves have a square section, based on analyses of Valsgärde 8 (Arwidsson 1954) in Gamla Uppsala Parish, the graves Vendel I, III, VII, VIII, XI, and XII in Vendel Parish (Stolpe & Arne 1912), Tuna in Alsike Parish graves IV and VI Arne 1934, Skopintull in Adelsös Parish (Rydh 1917), and Viks boat I in Söderby-Karl Parish, Uppland (G. Larsson 1997c) The corrosion crust on a large proportion of the rivets has made the shafts look round, which might explain the designation of them as round in the publica-
tions, but the least corroded rivets and fragments show the true shape.

Figure 114. Different types of iron rivets, nails and plates, with known variations. After Bill 1994:57.

An result of my analysis (2000, see chapter 7) of rivets is that a picture of two distinctly different areas of boat-building traditions emerges: an eastern area where rivets with square shafts have been used, distributed around the Baltic Sea and along the Russian rivers, including north and east Scandinavia with Sweden, Finland, Russia, Estonia, and a west Scandinavian area where the rivets have round shafts, consisting of Denmark and south Norway. The same results can be observed concerning hull shape, and proportions and sections of the ships, from which it can be seen that the inner and northern part of Norway connects to the first area.

5.3.1. The ‘Baltic Sea boat type’

The boats in burials and finds of central and north Scandinavia, together with Finland, northwest Russia, Poland and the Baltic, have many traits in common regarding boat building which distinguish them from the Danish and southwest Norwegian boats. The shared boat-building tradition concerning hull shape and details in construction makes it useful to designate them as representing an east Scandinavian type, or perhaps rather a ‘Baltic Sea type’. They are in general smaller and lower than their south Scandinavian counterparts. The keel is wide and low, often with a false keel, and has a rounded bottom that is flat amidships. The keel type, as well as the low hull shape, connects the central Swedish ships with, for instance, the west Slavonic finds.

The boats of the Baltic Sea are also in general smaller and lighter than the west and south Scandinavian boats. Apart from Ultuna (Almgren 1902), all of the burials contain boats with 0-6 strakes, where the rowlocks are placed above the gunwale. In east Scandinavia, the intent has been to reduce the size of the ship as much as possible as a means of reducing weight. Another distinctive method to get light boats was to cut extremely thin planking, which especially in the late Viking Age could have been reduced to only 10-12 mm, as is seen in the central Swedish boat graves.

The well-preserved Viks boat is of the Baltic Sea boat-type and reveals a lot about cultural connections across the Baltic Sea in the 11th to the 12th century. The mast step is the same transverse type that we know from the western Slavonic area, which separates it from the south and west Scandinavian boats (fig. 115).

Figure 115. Maststep arrangements; ‘Baltic Sea boat type’ a-e, ‘South Scandinavian boat type’ f-h. A) Viks boat (after Larsson 2001), b) Wolin (after photo in Filipowiax 1955), c) Ralswick (Herfert 1968), d) Czar-Nowsko 1 (Prosnak 1963), e) Bulverket 2 (Varenius 1979), f) Skuldelev 1 (based on Crumlin-Pedersen 1967), g) Skuldelev 3 (based on Crumlin-Pedersen 1967), h) Åskekärr (Humbla 1934).

This specially composed variant, with half the mast step in a loose block and the other half in or against a frame, is known from two other finds: Wolin town layers in west Pomerania (Filipowiax
1955:191; Wojtasik 1963:273, abb. X), and Ralswiek (Herfert 1968; Herrman 1984; Warnke 1981) from the area of the Rani tribe at Rügen. The mast step from Wollin is the older one, dated to the 9th century, and was found during excavations in the town in 1953–1957 (Filipowiak 1985). It is material for a mast step that has never been finished, which can be seen from the long wooden dowels that have not yet been cut, and not split and secured with a wedge. This means that it was under production in the area, which in turn implies that this special type of mast step belongs to a local building tradition of the Wollin area. The Ralswiek boat (Herfert 1968) is slightly younger, from the 10th century, and might very well have been built in the Wollin area.

The low, rounded section, without southwest Scandinavian meginhuvr, is also typical of the western Slavonic boats. In this area we still find the beams used as thwarts up to the 11th century, whereas in southwest Scandinavia the beam usually has sunken down in the vessel to become a support for the deck planks, and an additional set of beams has been put in to secure the need of thwarts, or else loose seats have been used. The Slavonic boats mostly have a low and wide keel like the Viks boat.

The light, Swedish boats have had a small sail. A larger sail would move the centre of gravity too high and cause the boat to capsize. This was observed during experiments with the Swedish replica Embla when a bigger sail of the Nordland type was used, the same type as used on the North Sea in boats with completely different hulls. A hard wind almost made Embla capsize; she took in water and rose again. Sails of the types used in east Scandinavia are depicted on the tapestries from Överhogdal and Kyrkås, as well as on the Birka/Hedeby coins.

5.3.2. The south Scandinavian boat type

The south Scandinavian ships are in general larger and higher than the ships of the ‘Baltic Sea type’. The keel is often higher and narrower than in the Swedish ships, and starting with the Viking Age always has a vertical scarf to the stems and only exceptionally a false keel to support portaging. The bottom is often concave towards the keel in a V-shape to improve sailing capabilities, but is not suitable for the shallow rivers of Russia. In the Danish Skuldelev finds, as well as in the SW Norwegian Oseberg, Gokstad and Tune ships, there are more strakes, and the high sides mean that the oars were instead placed in oar-holes drilled through the sides. The hull has a marked transition, a thicker plank called meginhuvr, between the bottom and the sides. The thwarts for the rowers have sunken down into the hull to become bites, as a support for a deck used in these boats (fig. 116). The mast is stepped in a heavy, longitudinal timber – the keelson – and often an extra ‘mast fish’ is used as support for the heavier mast and rig (fig. 117).
5.4. Boats built with the sewing technique

5.4.1. History.

The sewing technique was the earliest way in the world to connect strakes, as seen already in the boats in the Cheops grave in Egypt (Grenhill 1995), and in the oldest European boats built with strakes. The Danish early Neolithic boats from Åmose (Troels-Smith 1946), Bodal I, and Ögårde III (Philipsen 1983) are extended logboats that have the additional strakes sewn to the dugout bottom. In the Bronze Age the sewing technique is also found on a kind of barge or ferry, represented by the finds from North Ferriby, Yorkshire, England (Wright 1976:35ff), dated to 1700–1600 BC, and Brigg, Lincolnshire, England from c. 750 BC (McGrail 1981b). The spread of the technique is indicated by the presence of an almost identical sewing technique and means of connecting strakes in the Polynesian islands that were colonised during the Bronze Age.

In Scandinavia the first boats built with strakes are sewn. In the beginning of the Early Iron Age they still dominate. The boat from Hjortspring on Als in Denmark from c. 300 BC is sewn with a luting of resin (Rosenberg 1937). Fragments of a clinker-built boat with sewn strakes were recovered in a burial from Valderøy, Sunnmøre, Norway (Myhre 1980). They also occur in the Norwegian find from Halsnøy (Shetelig 1902; Brøgger et al. 1917:359f; Ellmers 1972:332; Myhre 1980). The dugouts from Slusegård on Bornholm were sometimes extended with additional strakes sewn to the hull with a caulking of resin (Crumlin-Pedersen 1991b), which probably also was the case in the central Swedish boats from Barkarby (see chapter 3).

The Late Iron Age

While in central and south Scandinavia sewing was replaced by the use of rivets in the Late Iron Age, sewn boats continued to dominate in the north. Sewn boats have occurred in a large area of north Scandinavia and north Russia (fig. 118). Here, in both the Iron Age and the historical period, the sewing technique was the main method used for connecting the strakes, and it continued until the 19th century.

Figure 118. The distribution of sewn boats. After Westerdahl 1987:15.
Within the distribution area of sewn boats, there are also variations within the technique that often are ethnically significant. Forsell (1983) has divided the different sewing techniques into three groups, here called A-C, to which I will add a fourth and a fifth technique that occur among the finds on single occasions, here called D and E.

A. Running seam that follows along the edges of the planking. The technique is well known from travel accounts from Finnish Laponia, and therefore Forsell has connected it with the sewn boats of the Sámi (Forsell 1983:30). Westerdahl’s thorough documentation shows that it also dominates in north Sweden and north Norway within the Sámi area. Against the background of documented finds, a map can be made that shows a clear distribution in northern Fennoscandia (fig. 119 ‘A’).

B. Seam in groups of 3-5 stitches. The technique appears in the central Finnish area (Forsell 1983), as well as south of the Gulf of Finland (Ränk 1933). Finds with this technique are also known from Spitsbergen (Prins 1975; Cederlund 1978) and from Lake Onega (Forsell 1983). The distribution of these finds (fig. 119 ‘B’) indicates that they can be connected with Finnish and Estonian groups.

C. The strakes tied together with a seam that goes vertically around the edges of the strakes (fig 119 ‘C’). Evenly spaced distances between the seams. Finds with this technique have been made in Karelia, in central Finland, and there are also a couple of finds from Österbotten (Forsell 1983). The technique has also been observed in Russia, where it is represented in finds from the excavations at the Vladimir Tower in Novgorod (Aleschkowskii 1969), as well as being ethnographically documented among the Vogul and Ostjak in Siberia (Levin-Potapov 1961). Westerdahl (1989) has separated these into two traditions: the Karelian-Finnish, and the Russian-Estonian (see below).

In addition to the above-mentioned types that Forsell identified for Finland, I will add two other techniques that also were used in Scandinavia:

D. Seam in a straight line. So far, only one find has been made showing this technique, namely the boat parts from Lake Kiantajärvi in Suomussalmi, NE Finland (Forsell 1983, 1985b).

E. Simple seam locked in a knot. Represented only by the Øksnes boat in north Norway (Gjessing 1941:46).

As can be seen, it is possible to distinguish at least three different groups connected with the first three techniques (Forsell A-C): the Sámi, the central Finnish, and the Russian-Karelian boat-building tradition, with differences in construction and sewing technique. Since the boats were designed for use in the same types of waterways, it is not the so-called transport-zones (Westerdahl 1998) that are behind the variation, but rather a cultural expression and a conscious or unconscious ethnical mark.

Figure 119. The three main types of sewing technique identified by Forsell on the basis of finds in Finland. ‘A’ represents Sámi boat-building traditions, ‘B’ Karelian traditions, and ‘C’ a Finnish näst-technique. After Forsell 1983.

5.4.2. The sewn boats of the Sámi

The sewing technique among the Sámi boats is of Forsell type A with a running seam, a sewing technique earlier documented by Hallström 1909, Manninen 1917, Itkonen 1939 and Westerdahl 1987. Westerdahl has made a thorough analysis of the sewing technique in north Scandinavia, and an interpretation on the basis of the distribution of known finds in the prehistoric and historic periods, in combination with many written sources from different periods. After a survey of documented finds of Swedish finds of sewn boats in archives and museums, he concludes that almost all are situated in north Sweden (fig. 118). Only a few of the 38 finds in Westerdahl’s investigation are preserved in museums. A closer examination I made of the documentation of 10 of these finds – i.e. those finds where details of the technique are known – shows that 7 can be identified as sewn in the technique of Forsell type A, which is related to the Sámi sewing technique (fig. 119 ‘A’). There are also other features that separate these boats from the other North European sewn boats. According to
Manninen, the Sámi boats have the following characteristics:

- Thin seam.
- Thin strakes.
- Small.
- The same length as the Finnish inland boats, but narrower in relation to length.
- Lightly built.

The material used for the sewn boats varies between reindeer sinews, roots and in recent finds hemp rope (Westerdahl 1987a:41). The seam is a running seam (oblique overcast). According to Gustaf Hallström’s (1910) documentation of boat building among the Sámi by Lake Akkjaur, Nuoktjaur (Notozersk) on the Kola Peninsula in 1909, a T-shaped implement was used to pull the seam tight (Westerdahl 1985a, b). This tool resembles T-shaped slate implements in finds of Neolithic date in north Sweden.

The sewn Sámi boats have varied in size and proportions depending on where and for which purpose they were going to be used. They have been of three main types: the small boat for inland lake fishing, 2-3.6 m in length, also used for some personal transports and passages across rivers and lakes; the bigger boat, 7-11 m long, for the longer transport journeys along the rivers, and the sea boat of 10-25 m in length, used at the Atlantic coast (Westerdahl 1987a:78ff). There are also records of bark boats having been used by the Sámi (Bureus 1886:188), of which four finds are known according to ethnographic records, from S Lapland and NW Ångermanland (Westerdahl 1987a). Besides these boats, the Sámi also had a raft, the bårre, which came to use in fishing, for crossing rivers, and for pearl fishing in the interior of north Sweden (Johansson 1989).

In Norway, several of the finds of boats with the Sámi sewing technique have been dated to the Late Iron Age. Among these are also boat burials. One such find is a boat in a burial at Sand on Tjeldøya (Johansen 1976:35), where a man approx. 50 years old (a merchant?) had been placed in a four-metre-long Sámi (?) boat, together with a knife, arrows, fire-steel, and a little payment silver. Tysfjord beside Tjeldsund, close to this find, was a famous centre for boat building during the historical period. It is described by the Sámi-born priest Samuel Rheen in Jockmock in a work from 1671:

...they build Yachts, they sell them to those who live in Norway, who sail with them to other countries. (My transl.)

A fragmentary early boat find, consisting of pieces of sewn strakes, was made during ploughing in Skagen, Álvik. It has been assumed that one of the strakes has had runes of the Older Runic Alphabet of AD 300–800 (Ellmers 1972:339), which has been questioned by Christensen who sees it as damage done by the plough (Westerdahl 1987a:31). This find-spot is situated outside Vefsøen, where a communication route from Swedish Lapland linked up, according to the story of Torulf Kveldulfsson in Egils saga (chapter 14).

In north Norway the meeting between different ethnic groups is mirrored in the boat burials in many ways, which poses many interesting questions. For instance, in a burial from Lekanger, Gildeksål, Salten a man who is said to have had significant Sámi traits was buried in an iron-riveted boat of the ‘normal’ type used in south Scandinavia (Stenvik 1980). This discovery may be interpreted as that Sámi merchants played a more active role in the exchange between the East and the West than has been previously assumed and that is indicated in e.g. the account of Ottar (see Orosius transl. by Foote & Wilson 1980). The distribution of sewn boats in Late Iron Age Norway corresponds to the area that is supposed to have been settled by the Sámi, especially the coastal Sámi but also, until the 19th century, the mountain Sámi of Sweden. Before the border was closed for Swedish reindeer herding in the beginning of the 20th century, this area was a summer pastureland for the Sami reindeer. The southermost finds come from Tröndelag, where sewn planks have been recovered in early medieval settlement layers from the town of Trondheim (Westerdahl 1987:32; 109). Reparations in the sewing technique are known from otherwise riveted boats, like the small boat from Fjortoft (Frooyvik & Fett 1943:22) dated to the 9th century AD.

From Sweden, most of the finds are not dated. A well-preserved find of a Sámi sewn boat comes from Valkijärvi, Jukkasjärvi Parish in Lapland (SHM 21 107). This is a small boat, 4.5 m long and very narrow, only 0.9 m (Arbman 1940:82 ff; Ellmers 1972:322; Korhonen 1982a:75; Westerdahl 1987a:41 ff). The hollowed-out keel is preserved, as is part of a stem. The boat has had two strakes on each side that were sewn together with spruce roots, as well as five, thin ribs attached with wooden nails to the hull (fig. 120).
A similar find has been made on Storholmen in Malå Parish, Lapland (NM inv. No. 83189). This has also been a very small boat, only 3.5 m long, and narrow like the Valkijärvi boat, only 0.95 m. The hollowed-out keel, part of the stem, and part of the two strakes were sewn together with spruce roots, as well as two, bulkhead-like, tied ribs with an even surface on the side towards the hull (Hammarstedt 1909; Hallström 1910:85 ff; Manker 1968:101, 212; Ellmers 1972:319; Prins 1975:20 f; Korhonen 1982a:80; Sirelius 1913:4; Westerdahl 1987:41f). Both these finds are from the forested area of east Lapland.

In the mountainous area, the finds from Stora Sjöfallet in the upper part of the Lule River, further discussed in chapter 8, were made in 1906 and consisted of sacrificed, broken boat parts with a Sámi sewing technique, where plaited sinews of reindeer had been used (Manker 1947:464, 1953:129; Westerdahl 1987a:98).

A find from Soukolojärvi, Övertorneå Parish, Västerbotten in the collections of Norrbotten Museum, which is registered as an ackja (a Sámi sleigh), is probably a sewn, Sámi boat that was cut into two parts and reused as an ackja. In all the historically preserved ackjas, and the ones in the collections of Nordiska Museet, the hull has been carvel built instead, that is, without connection between the stems and instead fastened to the frames. The ackja has been dated to the 13th century (Wahlberg 1956; Westerdahl 1987a:95). The similarities with boats are several. Contrary to documented ackjas, but in line with Sámi boat-building, this find has a hollowed-out keel and two strakes connected in the Sámi sewing technique, as well as the treenailed frames that have been nailed with two nails to each strake, as in the Valkijärvi find. Here the frames have notches at the bottom. From the same lake also another find of a sewn boat has been made (Wahlberg 1956; Westerdahl 1987).

The Sámi sewing technique is in Finland mainly found in the north, in Lapland and the adjacent areas. Forsell (1983:30) has noted six finds of this type. Here the find from Lake Laiivajärvi ‘the boat lake’, situated NE of Torneå town, is of special interest because it has been 14C-dated to AD 910±90 (Hel-1749). It represents the Sámi sewing technique of Forsell type A, with thin, treenailed ribs like in Manninen’s description (1917). It constitutes the earliest clinker-built find in the region of the Gulf of Bothnia.

The Sámi boat-building was very famous already at an early stage, and their boats were admired. This is reflected in the ON sources and early written accounts. Here, only a few informative examples will be given. For a complete account of the historical sources concerning the sewn boats, I will refer to Christer Westerdahl (1987a) who made a thorough survey of both the literary sources and finds concerning sewn boats in north Scandinavia. The sewing of the boats as a Sámi trait is described already by Snorri Sturluson in Heimskringla. The Norwegian king Sigurd Slembidjákn was staying the winter of 1138–39 at Hinnøya, close to Harstad in north Norway, not far from the find-spot at Sand:

> It is told that Sigurd had the Finns make him two skiffs in the fjord. They were held together with sinews, without any nails, and had withies for the knee-timbers. They were rowed by twelve men on each side. Sigurth lived with the Finns while they made the skiffs... (Haraldssona saga ch. 6, transl. by Hollander 1964:742)

At the time the ships were built, he was living with the Sámi in their huts. After they had been completed, the ships were praised and seen as superior to most other ships at sea. These skiffs were so swift that no ship could overtake them in open sea; as this verse has it:

> Few ships fleeter
> Than fast Háleyg boat.
> Swiftly saileth
> Sinew-bound skiff. (Haraldssona saga ch. 6, transl. by Hollander 1964:742)

The special features of the north Scandinavian boats were also observed by Olaus Magnus (fig. 121). In book 2, chapter 9, of his Historia om de nordiska folken ‘History of the Nordic peoples’ he tells us that the Bothnian people and the Russians (Moscovites) use boats connected only with roots and withies, without any iron and then tarred. In book 4, chapter 10, he gives the following information:
They use pine and spruce from their forests for the ships’ planking, cloven to thin planks and (due to the lack of iron nails) connected only by using tiny, fresh, tree roots that serve as hemp rope. Others again tie their boats with twisted withies of aspen or other trees, but not oak, since this tree does not grow closer than 200 Gothic or German miles distance. Others are connected with sinews of animals, especially from the reindeer... (My transl.)

Concerning the boat types among the lightly built, sewn, indigenous boats in the north, Olaus Magnus recognised two different types: håp and scutha. The håp is described in detail:

…and boats of another type, which are of a longish shape and are used on the Bothnian Sea and on freshwater rivers are called hápar and are made by skill without any use of iron. But they have a remarkable length as well, and they are also equipped with a surprising speed, so that they fly forward at the least movement with the oar. They have their primary use on the rapid rivers that rush down from higher positioned places, and also during the fishing in summer. (Historia 4:10, my transl.)

He also describes how, in 1518, he made ‘an adventurous trip’ along the mountain rivers in that kind of boat, ‘putting his life and well-being at stake’ in order to accomplish his official duties (Historia 4:10).

The other type he mentions, the scutha of north Scandinavia, was primarily used on the sea, and was characterised by a shorter and wider shape, at the same time as it was ‘not especially deep’ (my transl.). It was constructed of split pine or spruce logs, with the planking sewn with roots, withies or sinews, and with internal timbers treenailed to the hull. This type was equipped with a sail of wool or bark (Historia 4:10).

That the Sámi were involved in the trading of these famous sewn ships with neighbouring peoples is also known from Olaus Magnus, book 4, where he says about the boats that, ‘they can bring nice sums, when they are sold to foreign merchants’ (Historia 4:10). This is interesting in relation to the sewn boats known in central Sweden, such as Tuna in Badelunda 75 which was found outside the traditional Sámi area, but which was made with the Sámi sewing technique and in the shape and construction of a Sámi boat. This boat burial was one of eight such burials in a cemetery that was revealed during a house-building project in Tuna, and excavated in 1953 by Bengt Schönätz and Erik Nylén (Nylén & Schönätz 1994). The boat in grave 75 was buried in clay, a factor that contributed to the good preservation conditions. Thanks to this, it could be revealed that this was a boat burial and, surprisingly, that it was indeed a sewn boat. In an additional five burials at the cemetery, rivets had not been used, but rather, some kind of organic material of which nothing remained. The find of burial 75 made the excavators observant, so that the boat shape of these dark colourings made it possible to identify them as boat-burials as well. As the excavators concluded, the similarities to burial 75 result in a high probability that also these were sewn boats (Nylén & Schönätz 1994).

In my interpretation, the find of Tuna in Badelunda 75 reveals either the presence of the Sámi in this area, or the trade of boats with neighbouring Sámi. According to Inger Zachrisson’s investigations, the Sámi had hunting-grounds and settlements in the interior of Sweden, both in Värmland towards the Norwegian border and in southernmost Norrland, areas that were adjacent to central Sweden. The occurrence of Sámi DNA in some of the individuals in the Tuna in Alsike boat burials may be an indication of a marital connection between these different ethnic groups as well (Götherström 2001).

The occurrence of the sewn Tuna in Badelunda 75 boat implies that we must also expect that there can be sewn boats bought from the Sámi in other Scandinavian burials. Because of the usually poor preservation conditions, these are in most cases never recognised as boat burials. A repair done with the sewing technique occurs in the otherwise riveted boat from Björke, Hille Parish, Gästrikland, (fig. 122) in southernmost Norrland, dated to c. AD 400 (Humbla 1950:24), as well as in the logboat from Fiholm, Rytterne Parish, Västmanland (Lindqvist 1924), not far from Tuna in Badelunda, which has been dated to the 10th century AD.

The sewing technique has in the Late Iron Age also been used to sew together sheets of birch bark, for example on fragments found in the boat burial Valsgärde 6 (Arwidsson 1942).
5.4.3. The sewn boats of central Finland

With regard to Finland, the sewn boats of different types have been documented by Forsell. One of the techniques identified by Forsell occurs only in Finland – apart from the Novgorod find – and that is type C. These boats are built on a dugout bottom, usually of aspen logs, and sometimes, such as in the finds from Varkaus and Merkijärvi, they are expanded (Forsell 1982b, 1983, 1985b). They have only a few, very wide strakes, and the ribs are sewn to cleats saved out in the hull, even in the historical period. The finds are concentrated to inland water routes and calm waters, as exemplified by the many boats discovered during the excavations by S. Pälsi at Keuru in 1930 (Prins 1975; Hirsjärv 1937; Korhonen 1982; Forsell 1983, 1985b:205), and those found by A. Hirsjärv (Forsell 1983) in 1952, which amounted to 8-10 early medieval boats of this type. Other finds include Savitapale, Siilinjärvi and Virolahti (Forsell 1982b, 1983, 1985b, 1986; Westerdahl 1989). One of three boats found during the excavation in 1960 beside the Vladimir Tower in Novgorod, Russia (Aleschkowski 1969), had this sewing technique and was built on a dugout bottom of aspen. The C-type of sewing dominates among the boats in Forsell’s investigation in Finland. They show a clear concentration to central Finland (Kuopio, St. Michel’s County), with single finds outside this area, like the Merkijärvi boat beside one of the most important water routes that led through Finnish Karelia (Forsell 1982b, 1983, 1985).

The sewing technique is called nästteknik in Swedish, and nide- in Finnish, and has been described by Hirjärv (1937). The seam is a kind of stem-stitch with a locking in a diagonal stitch that also has been used in the manufacture of wooden containers in the wrap-around technique (Forsell 1983; Granlund 1947).

Forsell (1982:2) has connected the boat types in this technique with a special type that Hasslöf (1970:33) calls a ‘five-part boat’, characterised by a hollowed-out keel, hollowed-out stems, and 2-3 strakes. They are direct relics from the Scandinavian Early Iron Age boats like the Hjortspring boat (Rosenberg 1937; Rieck 1988) and the Halsnøy boat, but those boats, on the other hand, have a different sewing technique. The earliest finds of ‘five-part boats’ with the type-C sewing technique include a find from Hartola (Forsell 1995), dated to the 11th century, and the find from Novgorod (Aleschkowski 1969).

Ethnographically, the sewing technique of the C-type has also been documented among the Voguler and Ostjakener in Siberia, northern Russia (Levin-Potapov 1961).

5.4.4. Sewn boats of Karelia

The Karelian boats were documented by Ilo Manninen and published in 1917. In later years they also have been studied by Mischa Naimark, Moscow; he interviewed old boat builders who described how these boats were built. The distribution area for finds of boats with this sewing technique and distinctive characteristics is mainly Finnish and Russian Karelia (Forsell 1985:201).

The boats in Karelia are characterised by Forsell as having the sewing technique called type B, with a running thick seam in short groups (Fig. 120 ‘B’), together with a caulking of moss or birch bark (Westerdahl 1989:34). Manninen made ethnographic studies of sewn boats in Russian Karelia and also observed boat building in action. He recognised several important differences between the Karelian boats and the Sámi boats. These observations can be summarised in the following points concerning the Karelian boats:

- A seam made of withies of juniper, thick as pencils.
- Moss as luting in the land.
- Straight stern and a significantly curved stem.
- The ribs tied to the hull.
• Length as in the Sámi boats, but considerably shorter.
• Roughly built compared to the Sámi boats. (Manninen 1917; Forsell 1983:7).

The Karelian boats connect to both the Russian and the Finnish tradition. One example is the find from Laivajärvi (boat number II) in north Finland (Forsell 1983; Westerdahl 1987), interpreted here as a Karelian boat on the basis of the frame type. Boats with the Karelian sewing technique are known from several places, such as Rääkylä, Koiralampi, Sotkamo, and Kuhmo (Naskali 1980; Forsell 1983, 1985b:205; Westerdahl 1987, 1989). The finds are dated from the 10th to the 20th century.

Finds described as having the thick seam typical of these boats have also been made in northernmost Sweden, namely at Oxträsket, Sorlose Parish, Lapland (Olavi Korhonen, DAUM; Westerdahl 1987:106), and at Hanudamity, Nedertorneå Parish, Västerbotten (Westerdahl 1987:95).

Very significant is that this type is found along the inland water routes of Finland and Karelia, especially the lake- and river-systems connecting Karelia to the northernmost areas of the Gulf of Bothnia. This is important regarding the expansion of Karelian influences in Swedish Västerbotten, Norrbotten, and Finnish Österbotten (see below), probably as a result of the Karelian-Russian use and control of this trade network in the early medieval period.

5.4.5. Russian-Estonian tradition

This boat-building tradition with sewn boats has been identified by Westerdahl (1989). Everything in the boat is sewn or tied, and the ribs are tied directly to the hull without cleats. The seams resemble Forsell type B, with stitches in groups, but here they are secured with small, wooden wedges. According to Mischa Naimark, wedges were also used in the sewn in Russian Karelia in traditional boat building (personal information). Westerdahl (1989:34) has observed that these boats have a caulking of tarred moss and also a use of iron cramps in combination with sewing. According to him the surface of the planking is roughly finished, the parts mostly made of pine, often of large dimensions. The sewn boat finds in Russia have been discussed by Pjotr Sorokin (1994, 1997).

Most of the finds representing this tradition are from the late historical period, such as the remains of coastal ships from the 18th century in the Gulf of Finland, the find from Skeppargatan in Stockholm (Cederlund 1977b, 1978), and the finds from Hara and Narva in Estonia (Ränk 1935). They represent a tradition that in many ways is completely different from the Nordic tradition, but it may be seen as a mixture of the West European boat types, introduced into the Baltic Sea in connection with the Hansa trade-organisation in the Middle Ages, and the local tradition with the sewing technique. The same rough treatment and West European influences are also visible in the contemporaneous Vasa ship of Sweden, built under the influence of Dutch style.

5.5. Boats with treenails

Boats built with treenails instead of rivets for connecting the strakes is one of the structural elements that has been connected with the Slavonic area on the southern shores of the Baltic Sea, and that separates vessels built in this region from the Scandinavian ones (Crumlin-Pedersen 1969; Smolarek 1969; Slaski 1974, 1979; Indruszewski 2000). In 2000 George Indruszewski presented his dissertation with a thorough analysis of the construction and history of ships in this area. Westerdahl (1989b:36) has summarised the main characteristics of the west Slavonic tradition, based on strake fastening, luting, mast-step type, and hull shape. For the west Slavonic shipbuilding tradition, the main criterion is that the following features occur in combination:

1. A keel of T-section, but broader than deep.
2. A mast stepped in transverse floor timber, rather than in a longitudinal keelson.
3. Clinker planking fastened by treenails rather than clenched nails, with moss rather than hair or wool inserted in the overlap.

As Timm Weski (1998a:97) has pointed out, treenails alone cannot be regarded as typical, as has sometimes been done (Westerdahl 1985c:18; Crumlin-Pedersen 1988b:561), since treenails are known in finds from many different places. Besides the west Slavonic area, treenailed strakes are also found in locally built vessels from London, England (Marsden 1994:141, 179), from a river boat in Bremen, Germany that has a dendro-date to AD 808 (Hoffman et. al. 1991:34), and in the 11th century Utrecht boat (Vlek 1987:137). Often repairs or parts of otherwise riveted boats have been attached with wooden pegs, as in the upper strakes of Skuldelev 1 and 6 (Olsen & Crumlin-Pedersen 1967), the Sjovollen boat in Norway (Christensen
1968:140), and in the Lapuri ship from Finland (Alopaeus 1995:129). Also in some Swedish finds that will be discussed below, treenails occur.

The Slavonic origin of treenailed boats has been established in recent years with the shipyards in the west Slavonic boat-building tradition that were found during excavations in Wolin (Filipowiak 1994). A shipyard of similar type has also been found at Fribridrea, Falster (Skamby Madsen 1989:5 ff). At this place boats with strakes connected with wooden nails, though at the stem with iron nails, and caulked with moss and wool, have been repaired and perhaps also built at the end of the 11th century.

As mentioned earlier, another typical trait is the low and wide T-keel, which also shows connections across the Baltic Sea. Occasionally also a log keel has been used, as in Szczecin from the 9th century. A measurement between the rivets in the keel of the Swedish burial boats reveals that the majority have had a low and wide T-keel of the same type as in Poland.

The southern Baltic and the Rhine estuary area are seen as the two main regions where moss was used as caulking in the period AD 800–1600 (McGrail 1987:130). This is seen as one of the traditions that developed locally and coexisted with the development in Scandinavia and Western Europe (Greenhill 1995:189 f.). Slaski has outlined the evolution of the Slavic, early medieval, seagoing ship (1978). On the basis of archaeological material, he made a reconstruction showing how the Slavic, keeled, plank-built boat developed from the logboat, via the extended logboat type (Slaski 1971:12 f; 1979:116 ff). A different opinion was often put forward earlier, namely that the shipbuilding technique for seagoing vessels was given to the Slavs by the Scandinavians.

Smolarek (1994:77 ff) has pointed out that the boats in this region can be separated into four groups. The first is the pram type, with a flat bottom where the strakes are edge to edge, vertical sides sometimes with an L-shaped transition, and either with the bottom rising at the ends or with one pointed stem. This type is exemplified by Elblag (Ehrlich-Steegmann 1923), as well as by the prams from Falsterbo (Blomquist 1953) and Egernsund (Crumlin-Pedersen 1981), and by the Russian finds. The second group is represented by the Prussian boats, found in west Slavonic territory around the Vistula, with the mast step hollowed out of the main floor timber and iron rivets used to fasten the strakes. Smolarek means that Mechkiniki, Frombork (Heydeck 1900), Dziergon (Conwentz 1896, 1924) and the five wrecks from Tolkmicko belong to this group and represent the shipbuilding of the ancient Prussians. This group may, according to my interpretation, either be under the influence of Scandinavian (east Swedish) boat building, or constitute the remains of Scandinavian ships. The third group is found in other parts of the (western) Slavonic territory and consists of treenailed ships with a mast step in a separate block attached to the floor timber. The recently raised Puck III (Stepień 1984; Litwin 1995) belongs, according to Smolarek (1994:77ff), to a fourth type with frames on top of floor timbers fastened with long joints.

In the last part of the Iron Age and the Early Middle Ages, the treenailed boats that also have the special keel, mast-step and moss luting were distributed within a defined area that comprised Slavonic habitation territory during the period. In the region recognised as Saxon habitation territory, i.e. between the Lower Elbe and the Weser River, no ship finds with treenails and moss similar to those in the southern Baltic are known from the period 800–1300, with the exception of an early 9th-century pram from Bremen (Indruszewski 2000:219).

The mast step placed in a frame, or in a special part attached to the frame, instead of in a keelson is a typical trait in the west Slavonic ships (Prosnak 1963:67) and is a feature that also connects them with the ships of the ‘Baltic Sea type’ (see above).

Figure 123. Dispersion of treenailed boat finds. After Westerdahl 1987:13.
A special kind of frame

The western Slavonic ships fastened with treenails and with a luting of moss have also a very significant, special type of high but narrow frame, with a section as a standing rectangle and limber holes that are generally rounded. In Scandinavia the frame with a square or lying rectangular section dominates, with limber holes that are triangular. This feature that must be related entirely to the boat-building tradition. The measurements in the Slavonic finds are based on Indruszewski (2000:45).

The occurrence of treenailed and moss-luted finds in England has caused some discussion. McGrail sees it as a tradition that was not just limited to the Baltic and Rhine area, but was ‘also used in Britain’ (McGrail 1987:130). The occurrence of an eastern Baltic or Slavic variant was recognised in his study of the Dublin material (McGrail 1993:85). The London finds are viewed by Marsden (1994:163) as illustrating the cosmopolitan character of London’s trade. On the basis of dendrochronological analysis he regards them as local, but that they have a strong relationship with Slavonic shipbuilding (Marsden 1994:171). Goodburn also sees the use of treenails and moss as parallel to the use of iron rivets, and that it is not evidence to support the idea of moss and treenails as a ‘purely south-eastern Baltic feature’ (Goodburn 1987:213). Indruszewski, however, is skeptical to the dendro-analyses referred to by Marsden on account of the lack of comparison material from Northern Europe, as well as to the issue of how the provenience then was determined (Indruszewski 2000:221 note 768).

Scandinavian influence on boat building and society in Prussia, Pomerania and Rügen?

The first finds and the introduction of the research into shipbuilding and seafaring in the southern Baltic began with the excavation of Bagart (Conwentz 1896, Reitan 1927) and Frombork (Heydeek 1900), initially regarded as Scandinavian Viking Age vessels. Smolarek (1969:12 ff) later altered this view and stated that they were inland craft and should be regarded as products of local shipbuilding. The earlier attribution of ship finds and the origin of the shipbuilding technology in this area to the Scandinavians was inspired by the late 19th-century popularity of the Vikings (understood as Scandinavian ethnics) in both historical (saga literature) and archaeological material (excavations at Nydam 1859–63, and Gokstad, Oseberg and Tune 1880–1904) (Indruszewski 2000, 196). A similar view can still be seen in some works (Leciejewicz 1999:74).

It has often been assumed that the emergence of the clinker-built sailing vessel in the western Slavonic and Prussian area is the result of the cultural and economic connections with east Scandinavia. It is evident, however, that the mutual influences in boat building, when they did occur, were between east Scandinavia (especially east Sweden) and Poland. There are as many similarities between east Swedish and west Slavonic boat building as there are differences between east Swedish/west Slavonic and southwest Scandinavian boat-building traditions. The treenails for connections between the strakes, as well as the moss caulking, may be a local development, but the boat-building tradition with the rounded section and the transverse mast step appears first in central Sweden, where we find the earliest traces in burial boats of the Vendel Period. It is possible that this tradition has evolved in east Sweden and spread as a result of the cultural and economic ties with Prussia and Pomerania especially in the 10th to 11th centuries. It should be noted that P-2 (Smolarek 1995:142 f) from the 9th century, i.e. the time before the major eastern Scandinavian impact, has the mast step in a longitudinal keelson, while all ship finds in east Sweden up to the 12th century have the mast stepped in a transverse timber. Although the longitudinal keelson also reaches central Sweden in the 13th century as part of a massive continental influence in both boat building and society, the transverse mast step continues to be used, as can be seen in the boat Helgeandsholmen X (Lindberg 1989), as well as in local boat building up to this century in this area. The same variant of transverse mast step as the Viks boat, composed of two parts, has, as earlier discussed, been found on Ralswiek II from the area of the Slavonic Rani tribe on Rügen, and on a find in west Pomerania in the town layers of Wollin.

The iron-rivetted Prussian boats may, as discussed earlier, have been the result of Scandinavian contacts. Especially the finds with both iron rivets and caulking with animal hair might have been built in Scandinavia. The transverse mast step is viewed as a Slavonic indication, but as we have seen this does not necessarily mean that the ship was built in this area; instead it can be a result of cultural connections. As has been shown, there are both finds and a prevailing tradition for building ships with a transverse mast step in eastern Sweden, perhaps as a result of political, cultural and economic ties with the west Slavonic area.

There are, however, finds in the Slavonic area, i.e. the ancient Prussian domain, which also can support Smolarek’s interpretation of the finds as representing a Prussian boat-building tradition: namely, the finds from the recent excavations in...
Janow Pomorski (=Truso?) at Elblag (Jagodziński1988:7; Filipowiak 1994 p. 93). Here, at this famous marketplace in the early Viking Age, there are traces from the building of boats with strakes connected by iron rivets. The material, which is similar to the Paviken material from Gotland (Lundström 1981), is constituted of semi-fabricates of iron for rivets, nails and the square plates used inside clinker-built, riveted vessels. There were also found rivets that had been cut off in order to repair a ship. Does this show that the Prussians actually did build ships with iron rivets? Or is it another expression of the Scandinavian presence in the area, clearly visible in other finds and in the boat burials (?). Is the refuse perhaps analogous to the situation in Wollin, where both wooden and iron nails were found, and where iron rivets had been used for connecting the strakes at the stem and stern? Or were the recovered ships that were built with iron rivets – such as the Frauenburg and Baumgart – Scandinavian vessels? Future excavations may provide an answer. The five wrecks (burials?) close to Truso, recognised during excavation, were built at least partly with iron rivets (Jagodziński1988:7; Filipowiak 1994 p. 93). Unfortunately these remains were found in sand layers where preservation conditions were bad and did not allow organic material to last. So if there was a use of wooden nails in these ships as well, we will never know. It may be possible, however, to determine whether iron rivets had been used in the entirety of the ships when the test-pits are widened. Still, the consequences for the interpretation are almost the same: that there has been an intense give and take in culture and its material manifestations, with influences flowing in both directions between east Sweden and the west Slavonic area, especially between AD 800 and 1200.

Smolarek (1991:78) means that the finds of iron-nailed ships with flat bottom and mast step in the main floor timber, ‘represent the boat building of the Balts, or rather the ancient Prussians’. He men-
tions from the shores of Gdansk Bay and the Vis-
tula lagoons the finds from Mechlini, Frauenburg
(Heydeck 1900), Baumgarth (Conwentz 1896,
1924; Reitan 1927) and the five wrecks from Tolkmicko
(Smolarek 1983, 1988) as representative of
this type. Among the recently found Puck bay
wrecks there are also mixed finds, such as Puck 2
which is treenailed but with a longitudinal keelson
and caulked with animal hair (Litwin 1995:142 ff).

Filipowiak suggests that in the area around the
mouth of the Odra River, in Rügen and Pomerania,
the partial use of iron nails and rivets for
connecting the keel, plank hood-ends, scarves and
also knees to thwarts in otherwise treenailed boats
from the 9th to 12th centuries (Szczecin, Wolin,
Ralswiek 1, 2, 4 and the Kamien Odra area?)
indicates a problem of interpretation and does not
necessarily say anything about the origin of the
vessel, but rather, can ‘give an idea of cultural
contacts’ (Filipowiak 1991:92).

A special indication of the resulting (?) cultural
connections between Sweden and the Slavonic area
is Adam of Bremen’s account of the distribution of
the cult of St. Olof. He writes that his day of death
was held in memory by ‘populi Nortmannum,
Sueonum, Gothorum, Semborum atque Sclavorum’
(2:61).

Influences from Slavonic ship-building in
Sweden
Ideological and technical influences have gone in
both directions. In Sweden the construction of the
well-preserved Viks boat and other finds has, as
discussed above, shown solutions typical for the
west Slavonic area.

In the same meadow where the Viks boat was
found, a find was made of a probable winch. It was
the same type of winch as recovered in Wollin for
hauling boats ashore, a type that has been used up
to the present century in western Pomerania. The
interpretation of the find-spot as an area for
repairing boats, like the one in Wollin, may be
supported by at least three other finds of boat parts
from the same meadow as the winch and the Viks
boat. In the same parish, a block was also found
that is very similar to mast steps found in the
western Slavonic area. The local word for frame,
used by people when first cataloguing the
collections, is ‘wrang’, similar to the Slavonic
word.

The find-spot is situated only 20 kilometres from
the shore, where it is possible to see across to the
island of Åland. As has been recognised by
Westerdahl (1985c), there was a change in boat-
building technique during the earliest Middle Ages
– from iron rivets like those found in Late Iron Age
boat graves, to wooden nails of Slavonic type. This
could be a consequence of the reversed raids in
early medieval time, when Vikings from the south-
east Baltic became a harassment for the people
along the Swedish and Danish coasts, and occa-
sionally whole islands were abandoned by people
taking refuge elsewhere to avoid becoming pris-
ioners of the slave market.

5.6. Iron cramps in the east and west
The boat-building tradition with the most peculiar
distribution area is the one that has the strakes
connected with iron cramps. This type of boat is
found dispersed in Sweden, where it is especially
common in Dalarna. Elsewhere, it appears in NW
Russia, Estonia, and in the Netherlands, where it is
usually interpreted as connected with Frisian boat
building. To understand why this type is dispersed
in this way it is necessary to apply a historical and
chronological perspective to this tradition, which in
reality consists of two different traditions with
nothing more in common than the cramps.

One of the traditions is represented by the
cramps used within the Scandinavian shipbuilding
tradition, where the ships of the usual types have
curved stems and rounded hulls. The Scandinavian
ships with cramps have had the surface of their
clinker-built strakes smoothed. The cramps are here
always straight. Boats of this type have primarily
been used in Dalarna, and single cramps of this
type are also found in other parts of central
Sweden. Cramps of this type are also the earliest
recovered in Russia and probably come from boats
of the same type as in Sweden.

The other tradition with cramps is seen on the
ferry-boat types with edge-to-edge joined strakes
that show a relation to Frisian boat building, but
that are also found in Estonia and Russia. Two
types are used from the High Middle Ages: the
older straight type, and a later butterfly-shaped
type. The plank seams here have a caulking of
moss, covered with wooden laths held in place by
the cramps. In contrast to these cramps, the
Swedish ones have not been found in the type of
craft with edge-to-edge joining in combination with
a wooden lath. In the medieval cog with edge-to-
edge joined bottom and clinker-built sides, so-
called cog-nails connect the planks while the seams
are covered with a lath held in place by cramps (see
fig. 125).

Among the earliest known use of cramps in con-
nection with boat building is the evidence from
central Sweden. Here, single cramps are found
already in the Vendel Period boat burials, though
they become more common starting in the late
The strong impact of tradition within boat building is especially apparent in Dalarna, where cramps are recorded not only in boat burials from prehistoric time but also continually until the present century, as has been well documented by ethnologists visiting the area (Zetterholm 1938; Eskeröd 1970). Nails have in this century slowly begun to replace the use of cramps in traditional boat building, but it is still possible to see boats in use that have strakes connected with cramps. The technique as it is used in ethnographically documented boats shows a smooth outer surface with apparent edge-to-edge joining, but on the inside the true clinker-building technique can be seen. Thus it seems to be a local mixture of both techniques.

The boat burials constitute an excellent material for the study of geographical differences, of changes and of prevailing cultural influences in boat and ship construction from the 6th to the 11th century. In the boat graves in Uppland and Södermanland, the use of rivets is dominant for connecting the strakes in boats and ships. Here occasionally also single or a few cramps occur in connection with repairs.

In contrast, in Västmanland in the burial-ground at Tuna, Badelunda Parish other techniques occur as well, such as sewing which was discussed earlier, and in three of the boat burials there is a limited use of cramps. The boats in graves no. 35 (Nylén & Schönback 1994a:42 f), 48 and 23 B (?) had repairs with iron cramps.

Further to the west, in Dalarna, the cramps have, as mentioned, dominated, and have done so until today. The first occurrences here, according to a study of Serning’s results of the study of archaeological material from Dalarna (1966), is that in Vendel Period burials, generally consist of only a few cramps, usually 1-4, which possibly had been used for repairs. It is first during the Viking period that the cramps become so numerous that we can speak with certainty of boat burials. These latter finds come from Sollero Parish on Sollerön Island, the only large island in the entire Lake Siljan. Here, for instance, are the Bengtsarvet graves, no. 1 with 45 cramps and no. 2 with 25 cramps, and the grave Utanmyra 1 with 10 cramps. In the neighbouring parish of Mora at Kräkkberget 45 cramps were found, and in 11 more graves, mostly by the shores of Lake Siljan, a few finds with 1-4 cramps have been made (Serning 1966). That the cramps in the rich cremation burials in Dalarna were remains of boat burials was noted already by Trotzig (1936:118) and further by Inga Serning (1966). The frequent use of cramps in boat building seems to have started in the 10th to 11th centuries. That these late Viking Age graves reveal eastern contacts is interesting in a period when eastern and Oriental influences in other parts of central and south Scandinavia were beginning to be replaced by influences from the southwest and south. In boat building, southern tendencies are for instance visible in Tuna in Badelunda, Västmanland, where sewing and cramps have been abandoned and rivets instead are used in the two youngest graves from the 11th century. One interpretation is that Dalarna might be included in the north Scandinavian cultural sphere during this time period. To judge by the sacrificial deposits from early medieval time, this area had continuous trading relations with Novgorod and the east Baltic (see below).
soils. This led the inhabitants of Dalarna to specialise in several handicrafts and other work, and in historical time it is well documented in ethnographic sources that each parish had its own specialisation. The products were brought to markets along the coast and in foreign countries. From a few parishes in Dalarna these seasonal journeys are known from the Middle Ages. Only in this province are they so early; in the rest of the country they start in the 18th century (Rosander 1979:4). Dalarna also has the most widespread network of journeys. From the 18th and 19th centuries there is good source-material, since journals began to be kept and records made by the church (Rosander 1979:6), and we know that in this period many manufacturing sites and parishes were involved. For instance it is documented that in Bonäs the women with hair products and the men with wooden handicraft made journeys to a wide area between Glasgow and Moscow (Rosander 1979:4). The people have, at least since the time of the earliest historical sources, been involved in itinerant work. Each spring, people went to the neighbouring areas and towns to supply agricultural and other kinds of labour, such as the ‘rowing madams’ who supplied boat transportation in Stockholm, and the skilled carpenters and painters (Rosander 1979). In connection with the boat graves, it is particularly interesting to examine more closely the manufacture of hair products. This production was concentrated to Mora and Våmhus parishes (Rosander 1964-65, 1979). In the Middle Ages Mora also included Sollerön, the same area as where we find the earliest boats with cramps. Each year these manufacturers went to the coastal cities to sell their products, but also abroad to NW Russian towns, i.e., the area that yielded the earliest finds of cramps in Russia, from the 11th century (Dubrovnin 2000; Sorokin 1994, 1997).

Iron cramps are mostly connected with Frisian shipbuilding, since it was widely used in the Netherlands in the Late Middle Ages (Reinders 1985; Vlierman 1996). This ship type had a flat-bottomed hull without a keel, but with plank seams with a caulking of moss, covered by wooden laths held in place by the cramps.

Iron cramps, of both the narrow and the butterfly-shaped type, have also been found in the inland waters of Estonia, for instance at the bottom of the river Emajogi (Mäss 2000:56). These have also been interpreted by Mäss as an early influence of Frisian boat building, which is thought to have survived in the Estonian boat-building tradition up to the present day, as similar boats are still in use. The movements of the Swedes in the East are seen in the remains of the boats of the Svear. In the same way, foreign visits to Sweden, both military and commercial, can be determined on the basis of the finds. This material can be complemented by, but more importantly also complement, the written sources on political history. Cultural influences, trade connections as well as foreign aggression are visible in finds of different types of ships, e.g. merchant ships and warships in Sweden. These contacts and influences have shaped the society of Late Iron Age and early medieval Sweden.

5.7. Political history and boat-building traditions

Many of the boat remains in Sweden do not reflect Swedish maritime activities, but instead contacts with other people in Northern Europe with whom the Swedes had different kinds of relations. The possibility to trace contacts between different ethnic groups through the strongly traditional boat-building methods seen in the preserved archaeological material, also makes it possible to trace when, how and why these meetings occurred. The movements of the Swedes in the East are seen in the remains of the boats of the Svear. In the same way, foreign visits to Sweden, both military and commercial, can be determined on the basis of the finds. This material can be complemented by, but more importantly also complement, the written sources on political history. Cultural influences, trade connections as well as foreign aggression are visible in finds of different types of ships, e.g. merchant ships and warships in Sweden. These contacts and influences have shaped the society of Late Iron Age and early medieval Sweden.
5.7.1. Eastern influences in the north

An eastern influence is clearly visible in the archaeological and maritime material in the northern part of Norrland, primarily in Västerbotten, Norrbotten and Lapland. This influence comes first from central Finland in the Viking Age, and from the 11th to the 13th century also from Karelia/Russia. Are there other traces of Finnish-Karelian/Russian influence in archaeological, historical and linguistic material that can shed light on the origin of the use of Finnish boat types and boat terms in the area? In Lappviken, upstream the Byske River, Karelian knives have been found as well as a Russian type of oven (Sundqvist, unpublished report, Västerbottens Museum). The Sámi votive deposits reveal the changes in cultural influences, contacts and connections in this area (Zachrisson 1984). Some historians have shown that, until the beginning of the 14th century, the Sámi area was the interest area of the Karelians and the republic of Novgorod. The border of Sweden/Finland was thought to end at Bygdde/Bjuröklubb in Västerbotten and Pyhäjoki in Österbotten (Ahnlund 1924; Gallén 1968; Julku 1986). The first treaty indicating this is the peace treaty from Nöteborg in 1323, for which the Finnish scholar Jaakola has suggested that the border on the Finnish side followed the ancient boundary between the Tavastians and the Karelians from Varkaus to the Pattijoki River and the Gulf of Bothnia (Helsingh haff/Kajano more). Kuusta Vilkuna had a similar opinion, but placed the border at the ancient water route of the Karelians to the Pyhäjoki River and the Bothnian Sea. Both scholars believed the area north belonged to Novgorod. This was criticised by Jarl Gallén in 1968, who suggested a twin course of the border, established by the results of investigations at, for instance, Kyrkudden. This place was a medieval marketplace, situated in the valley with the Torne River on the opposite side of Kainuunkylä, and here burials from the 11th and 12th centuries have been excavated (Wallerström 1987:148). These burials differ from both the Swedish and the Sámi burial practices. Three of the graves have an earth-covered mound of stones covering an inhumation where the deceased had been placed on the surface of the ground, in general a practice that is well known from Tavastland and along the Kumo River in Finland. In two burials an oval pit had been dug for the deceased, and they were covered by a stone packing of man’s length, a feature that also occurs in Tavastland, by the Kumo River, in upper Satakunta, and in Finland Proper. Not far from Kyrkudden on the Finnish side of the border in Lake Laivajärvi, a find of a tied rib (Alatorneå II) also has associations to central Finland. This was ornate, with a crossed knot of a type that belongs to the 10th century according to Wladyslav Duczko (oral information).

The finds in this area from the Viking Age and until the 11th century show close cultural contacts with Finland (Wallerström 1987:142). The same conclusion has been drawn by Vahtola, who sees a Viking Age and early medieval influence here that is traceable to Tavastland in the place-name material (Wallerström 1987:162). Since central Finland is the main distribution area for the lighter boat type with tied ribs, it seems probable that the tied ribs in boats of north Sweden are related to this Finnish-speaking, agricultural population group of north Sweden, which in ON sources is sometimes called Kvåner during the period in question. The influences from central Finland are even more obvious in the terminology of the boats. An eastern influence in the north is clearly visible,
especially in the linguistic material concerning håpar. This has been discussed by Olavi Korhonen in his dissertation of 1982 (Korhonen 1982a), as well as in articles (Korhonen 1982b). The term håp, from the Finnish word haapio (of haapa, asp) was originally the name for the Finnish, light, expanded logboat of aspen. This, according to him, reveals an obvious western Finnish influence in upper Norrland.

The term håp and the boat type with this name were in common use in the 16th century, as we can see in Olaus Magnus’ description (Historia 4:10). As he also mentions, this could be a long-stretched boat, probably of the type we know was used in the early 20th century on the Kalix and Torne rivers. On the Torne River the long-stretched riverboats were in 1695 still called håpar (Rudbeck d y, after Fjellström 1980:90), but now they were built with strakes connected with nails and only sewn to the stems. In later descriptions, the term håp mostly applies to the small, light, sewn boats used on the inland waterways, with thin planking and so light that they could be carried by one person, as in the descriptions by Linné on his journey to Lapland.

One of the earliest references to boats and waterborne communication in the north is by Ottar, who gives a contemporaneous account of the situation in the 9th century:


Sometimes the Qvens make raids on the Norwegians across the mountains, and sometimes the Norwegians on them. There are many freshwater lakes everywhere in these mountains and the Qvens carry their boats over land to the lakes and make raids on the Norwegians. They are very small and light boats. (My transl. after Westerdahl 1987:76)

The arrival of Karelians and Novgorodians by boat in the north

Boat finds with the thick seam typical of the Karelian boats have, as earlier mentioned, also been made in northernmost Sweden, at Oxsträsket, Sorrele Parish in Lapland (Olavi Korhonen, DAUM; Westerdahl 1987a:106) and at Haudanity, Nedertorneå Parish in Västerbotten (Westerdahl 1987:95). According to other archaeological materials, a significant presence of influences from Karelia is visible especially from the 11th century AD. At the above-mentioned cemetery of Kyrkudden, 3-5 graves lay under cairn-like stone packings and frame-like wooden constructions, which constituted the remains of small timber houses in which the dead had been placed. This is, according to Wallerström (1987:42), typical of a people that have been in contact with the Karelian culture. This burial construction has its main distribution and origin in the Finnish and Russian Karelia.

The arrival of Karelians to north Sweden is mentioned in Egils saga. In chapter 14 it is told that Harald Fairhair’s tax collector among the Laps, Torolf Kveldulfsson, in Finnmark met a messenger from the ruler of the Kvåner, King Faravid. The messenger encouraged Torolf to make a military expedition against the Karelians, who were raiding in his country. Torolf agreed and went with his people to the Kvåner’s country, and together with King Faravid they then went to Karelia and returned with rich war booty.

Many stray finds of Karelian origin figure in the archaeological material of north Sweden from the early medieval period. In the sacrificial deposits a rich material reveals that the oldest finds have a clear Finnish and Karelian origin, while the southern influence comes first during the High Middle Ages (Zachrisson 1984). Parts of an eastern type of sewn boat may have been recovered in the river, and a settlement of Karelian/Russian type has been excavated along the shore by Lennart Sundqvist of Västerbotten’s Museum. Here, for instance, a baking oven of a type used in the Eastern Orthodox areas for making unleavened bread was found, and earlier two Karelian knives were recovered (Serning 1960).
Although few in number, the boat remains can perhaps support the knowledge we have gained from the archaeological material with regard to a period not mirrored in historical sources. Instead this area comes into the historical light first when the Swedish interests increase in the area. To give historical legitimacy to the request for sovereignty over this area, traditional history-writing usually describes the area as virgin land colonised by the Swedes in the 14th century and onwards. In reality, both the archaeological material and pollen analyses show that several ethnical groups had long since been active in the area. This is also visible in the claims by Novgorod in the 14th and 15th centuries that this area had earlier been under their sovereignty, with a border that in some sources continued right across the Gulf of Bothnia to Bygde Sten in Bygde Parish, Västerbotten, and in other sources to Björköklubb and further west.

As a hypothesis, the water-communication trade network based on light and portable boats that was in the hands of Rus, continued to be in Russian hands even after the contacts with south Scandinavia had come to an end in the Middle Ages. The well-established trade routes as described by Constantine Porphyrogenitus (AD 905–959), where merchants from Novgorod dominated the fur trade from the northern areas, were in the early medieval period controlled by Novgorod and the Karelians. And as described in chapter 5, the portages were renewed during these centuries along the eastern route through Karelia via Lake Onega to the Volga River and the southern markets, at the same time as the Karelians made their entrance into the area in the vicinity of the Torneå Market. Still in the 16th century, the Russians played an important role in the fur trade at the Torneå Market, according to Olaus Magnus (Historia 20:2).

### 5.7.2. Boats and Baltic contacts

Christer Westerdahl (1985c) has observed that treenailed boats found in Sweden are one of several maritime remains that reflect Wendish aggression in the 11th to 13th centuries.

The maritime contacts across the Baltic Sea are to a large degree reflected in the boat finds in Sweden. An intensification of the contacts with the west Slavonic area is visible beginning in the 9th century. Both the ship finds and the archaeological material in general reflect an increase in the contacts, especially with Prussia and Pomerania but also with Rügen. While other contacts cease, it is possible to trace ongoing, peaceful, mercantile relations that are mirrored in both ship finds and other archaeological material from the first part of the late 11th century. After that the character of the contacts changes, and the boats that are found later are of warship type deriving from the Wendish raids.

Treenailed ship finds from the earlier phase of peaceful contacts are found in settlement layers from the earliest 11th century in the town block of Trädgårdsmästaren in Sigtuna (Tesch, oral information). Characteristic west Slavonic boat parts, treenailed together and with caulking of moss, were reused here as building material. In the same block other artefacts from the same geographical area were also identified, such as temple rings, a kind of jewellery typical of women in the west Slavonic area (Tesch, personal information). The town block is situated closely beside the royal estate, where it is possible that King Erik Eriksson occasionally stayed together with his Polish wife. Probably a personal retinue of hers came to Sigtuna in connection with her wedding, and it is tempting to see the finds in relation to this. The continuation of peaceful contacts was marked politically by the marriage between Erik’s son King Olof (995–1020/1022) and Astrid, a daughter of the Obotrite king. The Obotrites were a west Slavonic tribe situated in the Mecklenburg area. Astrid became the mother of Anund Jakob (1020/22–1047-50) and Ingegärd, who later entered into a political marriage with King Jaroslav of Russia (1014–1054).

In Lund, treenailed boat parts were reused in the construction of coffins (Lundström 1976), and treenailed boat parts were also found in Löddeköpinge (Cinthio 1980:116).

### The Bulverket boats

Well-preserved boat parts of special interest were recovered during investigations of the wooden construction ‘Bulverket’ in Lake Tingstäde träsk, Tingstäde Parish on northern Gotland (Varenius 1979; Rönnby 1996; Bendegard 1992). In connection with investigations of the construction in the lake, the remains of several boats were found by Major Zetterling in the 1920s and 1930s, and by Johan Rönnby in 1989–1992 (Rönnby 1995). Only a limited share of the finds is published, but a complete picture of the situation is obtained if the notes, plans and analyses by Zetterling are studied, an extensive material that is preserved at ATA (the National Antiquarian Archive). The boat remains belong to the collections of the Museum of National Antiquities, but some of the missing boat parts were later found at the conservation department. My investigations of the documentation and boat remains from Bulverket revealed that there were several boat finds from the site, at least two of which had been treenailed and were possibly of west Slavonic origin, while at least two other finds were iron nailed or riveted. The complicated situa-
tion demanded a thorough investigation of the material recovered by Zetterling, as well as the material found by Johan Rönnby in his underwater excavation in 1989.

Zetterling’s catalogue of finds from Bulverket has been surveyed for boat parts (ATA). It consists of a description with a detailed drawing of each find. There is also a note telling in which square of Zetterling’s grid the finds were made. Zetterling has also identified most of them as boat parts, in a special register of the finds. For some reason Zetterling has interpreted treenailed finds as gunwale strakes, without any indication that this was the case. As the excavation was done in the 1920s and 1930s, no diving occurred, but instead special tongs and other tools were used to survey and bring up the find. Regarding the boats, probably mainly the upper parts of the bottom mud were reached by these tools, such as the gunwale planks along the outer limits of the vessels. This was probably not a very careful way to recover boat parts, and it may explain the fragmented state of several parts. This was a kind of organised but random collecting of the remains on the bottom. The finds in Zetterling’s catalogue are scattered over a larger area in the northern and western lines, with several concentrations that probably indicate separate boats. This is also apparent from an analysis of the boat parts in SHM’s collections, where different boat-building methods are visible (radial splitting, tangential splitting, and sawing), different materials (pine, oak, alder), different fastening methods for the strakes (nails, rivets, treenails), as well as different shapes of the frames (square with round, rectangular with ordinary steps, frames with even outside, frames from expanded logboat). In 1989 new investigations were made in the same area, as the remains of two different types of boats had been found in the 1930s. In these new underwater excavations led by Johan Rönnby, also frames of two different kinds were found (find no. 21/1989).

The first finds recognised as boat parts were encountered in the western line of the Bulverket construction. In the grids IC-E:13-15, a flat frame probably for an expanded and extended logboat was found (no. 183/34), as well as two treenailed strakes that were still fitted together (no. 186/34), one of oak and one of pine. Zetterling thought that the dugout bottom had been sewn (no. 183/34), but the other remains indicate treenails. Zetterling called these finds Båtfynd Nr 1 'boat find No. 1' (ATA catalogue), which in the following will be called Bulverket 1. In the same area were also strakes (no. 58/31, no. 80/31) and a presumed bulkhead (no. 189/34). Bulkheads are unusual in Swedish boats, but have been documented archaeologically and ethnographically in Sámi boats in upper Norrland (Westerdahl 1987a:22ff). South of the Baltic Sea, on the other hand, this is a feature that becomes common in the Late Iron Age – Early Middle Ages, and according to Waldemar Ossowski’s investigations it begins to appear in the logboat material of Poland in connection with the arrival of the Slavonic peoples (1999:216).

The second and third boats were found during the investigations of the northern section. In the grids IaB-D, 9-10, three treenailed strakes were recovered (no 460, 457, 458). These had closely spaced (8-12 cm) and thin (12 mm) treenails, similar to and typical of west Slavonic finds (Indruszeski 2000). Several other treenailed parts were also identified (ns 391-397, 433, 492, 485, 459). All of these are probably related to the frames of west Slavonic type (see above) in this area (Zetterling no. 184 a-i), with the characteristic rounded limber holes that I observed during my studies of boat remains in Poland. Typical for especially the west Slavonic boats, but also for other vessels of ‘the Baltic Sea boat type’ (see above), are the mast bite (no. 535/36) and the way of placing the mast step (fig. 127) in a floor timber (no. 184). Two frames of this type were recovered in 1989 (nos. 1565 and 1566). A thwart (no. 184) was also found here, as well as several remains of strakes with the edges missing, which have not been found in the collections and analysed (nos. 391-396, 433,296, 288, 289-290, 463). One preserved strake (no. 397) was of an unknown material of a reddish colour and in bad condition, crumbling into fragments. These boat remains are known as Zetterling’s find ‘N:o 2’, and will be referred to here as Bulverket 2. In connection with the new investigations of Bulverket led by Johan Rönnby in 1989–1992, a sample for dendrochronological dating was taken from a rib of ‘the Bulverket boat’, which, according to a description of the position of this rib, ought to have been from Bulverket 2. The sample can with a high degree of probability be dated to the 1120s, according to Alf Brathen (Rönnby 1995:81). This boat find has become the most well known from Bulverket, since half a century later it was published by Varenius (1979) as ‘the Bulverket boat’. It is discussed as one treenailed boat-find, but as observed already by
Rönnby (1995:46), Zetterling also mentions fragments of strakes with rivets in this area (Rönnby 1995:46; ATA dnr 529/36). The boat could have had a combination of rivets or treenails, but the other finds from the area indicate that here were also the remains of a completely different boat. Rönnby (1995:46) writes that in 1990 boat parts that were intentionally cut to pieces were found in the area. In my view, this may indicate ritual activities at the site. One floor timber of Bulverket 2 was earlier dated to 1180 ± 80 and AD 1215 ± 100 (Varenius 1979:11), and a dendro-date also supports that the boat is contemporaneous with the Bulverket construction (Rönnby 1995:48).

The remains of boat/boats with iron-riveted and nailed strakes were found in the northeast part of the same area as where the treenailed boat parts were recovered, in the squares II B 9-10 (nos. 185, 254, 255) and the squares IIB 12-14 (nos. 529, 543, 524, 530), and here they can be given the name Bulverket 3. Some of these could be identified as tangentially split, or sawn, pine strakes (nos. 543, 524, 530, 529, 536, 528, 532); two others were of oak. The plates of the rivets were either rhombic (no. 185/34) or round (no. 254/35, 522, 255) in section. According to my investigation of the frames recovered in 1989 during Rönnby’s excavation (ATA Dnr no. 21/1989), the frames were of two different types: an older type that was cut, and a later, modern type that was sawn. This means that here are the remains of two different boats: a Late Iron Age type with riveted strakes of oak and cut ribs, and a modern type with tangentially split, pine strakes and sawn frames. The latter will be referred to here as Bulverket 4. The main distribution area for these boats was about 6 m north of the former two boats.

A short distance away from these, the remains of an iron-riveted strake (no. 590/36) were found in the squares II D 11, as well as radially split planks of oak, nos. 503 and 506, which were not registered in the catalogue at ATA. These probably belong to Bulverket 3.

One of the boat parts recovered from the area where Bulverket 3 and Bulverket 4 were found was identified by Varenius (1979) as a thwart (no. 537/36), but it is more likely that this is the floor timber of a flat-bottomed boat like a pram. It has, like prams, holes for the wooden dowels connecting the floor timber to the bottom of the boat (fig. 128). This must be separated from the others and will here be called Bulverket 5.

During the investigations in the western line of the Bulverket construction, a trough-like object (no. 345/35) was found, 0.8 m wide, which may be the remains of a logboat. A few metres from this were also fragments of strakes (nos. 276/35, 297/35). One of them had a gunwale list; and the other, which also probably was a gunwale plank, had remains of treenailing. These remains from an extended dugout, which here will be distinguished as Bulverket 6, were found in the squares 1 E-F:5-6. Finally, there were two other areas with planks of uncertain origin. One is called ‘Find-spot 32’ in Zetterling’s notes and has thick planks that may come from a pram, with sparsely spaced treenails along the edges. The other area is in isolated squares in the western line and has treenailed planks.

Altogether, thus, there are the remains of at least six different boats in connection with the Bulverket construction, of many different types and ages. The earliest is represented by boat fragments of the Scandinavian, iron-riveted type with radially split planks of oak (Bulverket 3). Then there are at least two extended logboats and one clinker-built boat built with tree-nailed strakes and other construction details that point towards the west Slavonic area (Bulverket 1, 2 and 6). To this shall be added fragments of what may have been a pram (Bulverket 5), and a probable ‘modern’ boat (Bulverket 4). To speak of ‘the Bulverket boat’ (Varenius 1979) is, against this background, misleading.

The Bulverket construction (fig. 129) is the contemporaneous context for Bulverket 2, according to the dates (Varenius 1979:11; Rönnby 1995:48). The west Slavonic influences visible in the construction of this boat must be taken into consideration when
the lake construction is interpreted. The calibrated 
$^{14}$C dates indicate that the Bulverket construction was built in the period AD 1000–1200 (Rönnby 1995:80). It appears as a ‘floating town’ surrounded by a palisade (Rönnby 1995:49). Rönnby (1995:125) has interpreted it as ‘an expression for the resistance against claims of the king and the bishop’, since it was built in a time period when the king of the Svear and the Church were trying to incorporate Gotland into their dominion. Bulverket should thus be seen as a stronghold for the local resistance and a reaction against these efforts of the Swedish king. The researchers agree that Tingstäde is an old place for assemblies, which in the Early Middle Ages acquired a new, but temporary, special function (Steffen 1943:11; Kylberg 1991:63; Rönnby 1995:103). Bendegard has discussed the interesting place name waelde that occurs in Tingstäde as the residence of a judge who signed a treaty with Erik of Pomerania in 1412 (Bendegard 1992:32; 1993:307). The term may be related to water that väler från ‘flows forth’ (Olsson 1976) or perhaps instead it has to do with power and herrvälde ‘domination’ (Bendegard 1992:32; Rönnby 1995:101). But was it a local chieftain or a foreign power that had herrvälde in the area? One interpretation is that Tingstäde was a Slavonic stronghold in the southern part of the Baltic Sea. The special construction with yoke-like caissons has been documented from only a few other places.

During the Viking Age the known examples are from jetties in Birka (Ingelman-Sundberg & Rönnby 1989) and in harbour constructions from Gdańsk and Wollin (Filipowiak 1986:12; Bendegard 1992). Also the foundation for the Late Iron Age lake construction in Lake Valgjärve, Estonia (Bendegard 1983; Kenas & Rönnby 1988) seems to have been built in a similar way. In the Early Middle Ages the technique continued to be used in Poland and in Sweden. In Poland it continued to be used in the harbour arrangements in Gdansk and Wollin; and in Sweden apart from Bulverket it is also found in harbour constructions in Stockholm and Kalmar (Åkerlund 1953).

Nevertheless it is obvious that in the 1120s there was an acute need for a sheltered place on northern Gotland, since 25,000 trees and 38,000 work-days were used to create this enormous arrangement in the lake, and clearly someone had the power to command people to do it (Rönnby 1995:121). Rönnby (1995:125) is of the opinion that the builder was inspired by similar constructions in the south and east, but I mean that it is not impossible that the builder himself came from this area. It seems unlikely that Gotland would have escaped the raids that occurred in the Baltic Sea region in the Early Middle Ages. The kingship was weakened by internal struggles. The same may have been the case on Gotland, where Tingstäde träsk was well suited to a west Slavonic military stronghold centrally positioned in their area of interest in the Baltic Sea.

The Bulverket construction seems to be contemporaneous with the events described by, for instance, Saxo, and it may very well be connected with the Wendish activities in this period (see below).

Some Swedish finds are clearly remains of warships, such as the treenailed boats recorded in 1806–19 during the initial work on the Södertälje channel (Nordewall 1832), one of the most important routes to Lake Mälaren. Three of four boats recovered here were treenailed, and in one also iron nails were used. The boats were equipped with decorations in the form of human heads on the stem and stern, a feature that is related to the religious expressions among the Slavonic cultures and that also is visible on the bronze door of the Cathedral in Gniezno, the foremost area for this type of decoration (Westerdahl 1985:411). Stem decorations were also used on warships.

Other finds, as well, might have a connection with the Wendish aggression in the earliest medieval period. The remains of a treenailed ship were found in 1925 close to Stavsäns in Djurö Parish, Uppland, during peat cutting in a bog close to Östersjöviken Bay, but by a small ridge separated from the Baltic Sea (report Ivar Schnell ATA Djurö Parish, Dnr 2882/25). This was a bigger boat with heavier frames and relatively thick strakes, 30 mm, according to Schnell. The boat parts themselves are at the time of writing missing in SHM’s collection, but several unmarked frames resembling the ones in the pictures are housed in the Tumba storage facilities.

From the area around Lake Mälaren several finds are known. By the shores of Vaxångsfjärden Bay, Toresunds Parish in Södermanland, the remains of a ship were found that was interpreted as a snipa or Målarjakt (A. Ellsén report 1933 ATA). It was examined by Commander Captain A. Elsén in 1933.
during the opening of some test-pits at the site. The documentation is not very detailed, but judging by the photos the boat has had stems with rabbet and steps, like several west Slavonic finds. The pine strakes were also connected with treenails, according to information in newspaper articles (DN 5/7 1933). A clinker-built, treenailed boat was found in 1937 during ditching on the west side of Lake Nasen, Kyjula Parish in Södermanland (Schnell report 1937, ATA). The strakes, which in this boat were of oak, were badly damaged just like in the Bulverket boat. Schnell believed this occurred when the boat crashed against a cliff at the site, but it could just as well be the result of sacrificial treatment. A pollen analysis by Carl Larsson gave a possible date to the first millennium AD, but the date is very uncertain (report 1937 ATA).

**Wendish raids**

The heyday of piracy began in the late 11th century when west Slavonic princes and local chieftains, together with Baltic groups, began to steer their fleets to most of the shores of the Baltic Sea and also through Öresund and up along the Swedish west coast. The events are best mirrored in the descriptions by Saxo Grammaticus concerning AD 1133:

In those days piracy was so unchecked that all the villages along the eastern coast, from Vendsyssel to Eider, were empty of inhabitants, and the countryside lay untillied. Zealand was barren from the east to south, and languished in desolation. The dearth of the peasantry made it home of robbers. Pirate raids have left nothing of Funen, except a few inhabitants. Falster was smaller in size than in courage, and compensated for the disadvantage by the bravery of its natives. For it was untouched by the yoke of tribute, and kept the enemy away either by treaty or by force. But Lolland, although bigger than Falster, nevertheless sued for peace and paid tribute. Other places were desolated. Thus there was no confidence in arms or in forts; and the inlets of the sea were obstructed with long pales and stakes, so as to not let the pirates in. (Saxo: Christensen 1980-81:392).

Place names of Slavonic origin appear on the Danish islands of Falster and Lolland. This has led Skamby Madsen (1984a:8) to draw the conclusion that, ‘It is probable, that Lolland and Falster at a point up to AD 1100 have been entirely or partly under Wendish occupation’. Besides the Wendish colony (?) on Falster with the west Slavonic boat-building site at Fribrödrå à, there are also influ- ences from Slavonic boat building in the Gisslinge boat. This has, like the Viks boat, a hull shape and a mast-step of the west Slavonic type (Gothece 1995).

South Norway was not spared, even though quite distant, when the biggest and richest towns were attacked, conquered and burned to the ground in 1135 by forces led by Prince Rathibor of Pomerania, aided by a fleet of 650 ships with horses on board. On their way they passed the Swedish west coast, where the west Slavonic boat-building tradition is apparent in the ship Galtabäck 2 in the hull shape, the wide keel, and the mast-step construction with the mast stepped in a floor-timber and supported by a mast bite. This ship find was partly excavated in 1997 by Carl Olof Cederlund together with Niklas Björk of Södertörn University College (Cederlund report 2006). Here on the Swedish west coast, suddenly treenails begin to appear as part of traditional boat-building after the Middle Ages. In Galtabäck 1 (Åkerlund 1943, 1948) the frames, as I have observed, are of the high, narrow type found in the Wendish area.

The sources are silent concerning attacks on Sweden. Yet a deep impact seems to have been made here, namely in the former Swedish province of Åland, which today is part of Finland. In Åland, just as on the Swedish west coast, after a period of changes in the Early Middle Ages that are visible in the archaeological material, shipbuilding with the use of treenails becomes established as the local boat-building tradition, replacing the use of iron rivets that is known in the Late Iron Age. It is tempting to relate the changes in boat-building practice to similar circumstances that are historically documented on the Danish islands, that is, to interpret them as a result of Wendish activities here in the Early Middle Ages. The absence of both historical and archaeological sources means that we still lack the possibility to explain these changes, and they remain a subject for further research.

As will be dealt with in chapter 5, foreign raids have left many traces in Sweden in the maritime and archaeological remains during this period, such as river blockages and fortifications by the rivers, stone towers, reused hillforts, buried treasures, and churches built for religious as well as fortification purposes. The west Slavonic ship-finds are perhaps the most informative sources that tell us from where this aggression originated, and against whom the protection efforts were directed.
6. THE SIGNIFICANCE OF WATER COMMUNICATION IN THE LATE IRON AGE

6.1. Journeys on land and water

The conditions for travelling on land and water in Late Iron Age Sweden are essential for the understanding of why and how ‘a maritime society’ developed here. In this chapter, historical and archaeological sources will be used to investigate how the communication system was organised, and how this was related to the structure of society. The aspects of time and distance, as well as other factors that influenced the choice of means of communication according to ON sources, will be taken into consideration. The conditions for journeys on land and water will also be illuminated by ethnographical accounts from areas with a similar situation as in central Sweden in the Late Iron Age.

Here it will be argued that the developments in shipbuilding and ship types made possible the use of a widespread water-communication network, from which traces remain in both the ship-archaeological material and the place names relating to a system of water routes and portages. The river routes also partly shaped the settlement structure of the Late Iron Age society. In the 6th to 10th centuries a large number of settlement units, which we call villages today, were founded along the water routes that were navigable only by the small and light ships. Often these settlements were given names that reflected their location in relation to the river routes. They became the main veins in the social, administrative and military organisation, and thus the ships and internal seafaring became the basis of ‘the maritime society’. These statements will be supported by an analysis of some important river systems, the adjacent settlement structure, how the ‘central places’ relate to the water routes, and information given in the earliest historical sources.

As will be seen, when the ship types change in the Middle Ages the communication network also changes, as does the society. The importance of land journeys increases at the same time as the ship symbol and the seafarer as an ideal are replaced by the mounted knight on a horse as an ideal, which clearly underlines the deep impact of this transition.

Before more closely analysing the development and impact of the water communication network in Late Iron Age Sweden, a comparison will be made between the conditions for journeys on sea and on land. In this thesis the land journeys will not be discussed in detail but only as a background for the interpretation of the role of water communication among the Svear in the Late Iron Age. Concerning further information about journeys on land, I will refer to research that has been done on the land communication network (Gustafsson & Lidén 1980; Jonsson 1986; Vinberg 1983; Eriksson 1982; Lindqvist 1933; Lundberg, O., 1937, etc.).

6.1.1. The choice of means of communication

A comparison between land transports and sea transports in the 11th century by Adam of Bremen reveals the advantages of waterborne transport. As he writes:

But the journey itself is like that, if you sail from Scania of the Danes, You will reach Birka or Sigtuna first on the fifth day – they are not situated far from another. But if you make this journey on land from Scania through the land of the Goths and via Skara, Telge and Birka, the journey to Sigtuna will take a whole month. (Gesta book 4, ch. 29. my transl.)

Based on these conditions, it is not hard to guess the means of communication chosen by those who were able to make a choice. Nevertheless, journeys on both land and water have occurred. Especially the winter transports with sleighs have been underestimated, which often went along the frozen river-routes.

The journey on land implied several obstacles that made travellers reluctant to take the land route. Adam of Bremen also speaks of ‘deep forests and hardly passable mountainous areas through which one was forced to pass’ if one took the land route from Scania (Gesta book 4, ch. 7, my transl.). The journey on sea in the Late Iron Age was faster than on land, but here pirate attacks were a real threat. Adam characterises the sea as ‘wild, fearsome and dangerous’ (book 4, ch. 10, my transl.), and concerning Harald Hardråde’s journeys on the Baltic
Sea he says that they ‘investigated the extensions of this sea despite the great hardships and dangers, and did not turn around until they were conquered by the combined forces of the storms and the pirates’ (Gesta, book 4, ch. 11 my transl.).

In Sverris saga there is a passage with a comparison between land and sea journeys. King Sverri held counsel with the peasants at the thing. He lacked ships and asked them to build ships for him, to help save the coastal settlements by the bay from the enemy raids:

We cannot run as fast around the country the upper road as fast as they row along the outer route. (Ch. 154, my transl.)

The land journey is here considered to take much longer time, running along the ‘upper road’, and ships are needed to catch up with the enemies. Since it is hard to get wind in a fjord, they are expected to be rowing.

The choice of the means of communication shaped Late Iron Age Sweden. The settled areas were located around the lower, navigable water routes in connection to the sea. The higher lands that lacked external, water communication possibilities were uninhabited and covered with deep forests, which constituted border zones between provinces and regions.

It has been calculated that a riding retinue rode 40-45 km a day (Gahrn 1989:12). In Iceland it generally has been assumed that 37 km was a day’s ride (Steen 1929:629). In Adam’s account a journey was 45-65 km per day in Denmark. Ottar says, in the 9th century, that Norway measured 600 km in its widest place and that it took two weeks to travel across it, which gives an average of 50 km per day (Orosius 19).

It is, however, important to note that not all journeys were fast, not even those by sea. There was a big difference between, on the one hand, journeys straight across the open sea where the navigational methods enabled sailing day and night (see chapter 7), and, on the other hand, coastal journeys where obstacles had to be watched for and the journeys thus made in daylight when visibility was good. As can be seen from the table 25, when sailing across the Baltic Sea, the North Sea, or on the Atlantic Ocean, the distance per day according to Adam of Bremen could be between 140 km (in the Baltic Sea) and 417 km on the fastest and also longest route that stretched between Norway and Greenland, a journey of about 2,500 km. This should be compared to the information given by Ottar (Orosius 19).

In order to understand the importance of ships and seafaring in the Late Iron Age society of central Sweden, it is necessary to know about the conditions for travelling on land. This will be dealt with in the following. The water communication system will then be analysed to illuminate how the light ship-types that had developed in the early Vendel Period also permitted far-reaching water communication networks, including rivers, lakes, and portages between river systems where the boats were brought on land and water. Since the question of portaging is of central importance with regard to both the internal communication network and the far-reaching trade routes to the East, the problem of portaging will be discussed in detail at the end of chapter 7.

6.1.2. The conditions for travelling on land

Ethnographical and historical sources inform us that most of the transportation in prehistory and in the Middle Ages was done on horseback, and most roads were riding trails (Frykman 1973:355). It was first in the 17th century that, due to the needs of the army, the foundries, factories and mines as well as the postal service (established in 1636), the Crown decided to reinforce and expand the network of roads to a standard permitting the use of two-axle wagons to some extent. However, this was in the first hand done on the most important roads, i.e., on the landsvägar ‘interregional roads’ connecting regions, parishes and provinces. Stones, roots, clay and mud earlier made a journey with wheeled vehicles slow, hazardous or impossible.

The conditions for travelling on land in the Iron Age can be illuminated by analogies with ethnographic material. The culture and life of the agrarian population were documented in the 19th and 20th centuries. According to this, for local transports, trails that had the character of hollowed-out roads came to use, which had survived from the period before the roads were improved. These lasted until the 19th century and were called klövjestigar ‘trails for pack-animals’. To klövja an animal was to pack an animal and add carrying equipment called klövjeton ‘packsaddles’ on its back and bring the cargo on it. Along these klövjestigar the products were transported on klövjeton placed on the backs of horses and oxen. From such journeys, remains of packsaddles that date from the Migration Period and onwards have been found (Gahrn 1989:12). Logs were drawn on these forest trails by oxen; a single-axle cart could be used but was not very effective. This kind of local communication on trails through the forests has continued in many parts of the world, such as in the mountains of Georgia. The erosion and wear turn them into shallow ditches are recorded from Iron Age Scandina-
via, which in the terminology of the Survey of Ancient Monuments are called hålvägar ‘hollowed-out roads’. These hålvägar can still be seen in many places in the landscape, and often where they converge at river crossings. One of the deepest can be seen at the old crossing of Säva River, identified by Annika Larsson (oral information) as situated on the old border between Tiundaland and Fjädrundaland, as mentioned in the original text of the Uppland law (fig. 130).

Figure 130. The hollowed-out main road crossing Säva River. Photo Gunilla Larsson.

Although the larger roads were cleared of obstacles starting in the 17th century, it was still impossible to use them during large parts of the year; in ethnographic documentation these periods are called menföresperioder, ‘periods with bad transport conditions’, when clay and mud sucked the wheels of any wagon (Frykman 1973:354). These periods were in the autumn and early spring, when the ‘roads’ were too unstable and muddy.

Older inhabitants from Edsbro Parish, in the countryside of Uppland, inform us that also important roads such as the landsväg ‘regional road’ between Närthinghundra and Sjühundra, extending between Rimbo and Edsbro parishes, were still in the 19th century impossible to use during these periods because the wagons would get trapped in the clay and mud along parts of the road (Sigvard Larsson, personal information).

It was inevitable that one had to pass bogs and marches. At these places a kavelbro ‘log-bridge’ was laid out, but in some cases also stone paving was laid. In Scandinavia this is known from prehistoric time. In Sweden in the medieval period, when land journeys on horseback became more important and seafaring lost its symbolic value, there is evidence that efforts were made to improve the land-road net. New kavelbroar were built, and taverns were established along the roads with food and lodging for the travellers (Friberg 1963, 1969).

According to skaldic poetry, ON sources, and the provincial laws, land journeys were made on horseback in summer and on horseback or sleighs in winter. Wagons existed, but were probably not used other than ceremonially because of the poor state of the roads. Although depictions of wagons exist, there are only a few archaeological finds of wagons and wheels in special contexts, as was earlier discussed in chapter 2 concerning the interpretation of rivets. This fact, together with our knowledge of road conditions and other information in historical sources, leads us to conclude that people did not travel on land in wagons in the Late Iron Age, but on horseback and sleighs. It could be expected that at least the king travelled in a wagon, but the information given in the sources shows that riding was the normal mode of travelling on land for the aristocracy and also for the king, at least according to the provincial law of Östergötland.

All major assemblies in the Middle Ages seem to have been held when journeys with sleigh were possible. The disting, disting market and disa sacrifices were held earliest at the vernal equinox, but in Christian time in connection with Candlemas in the beginning of February. In 1594 the funeral of Johan III and the crowning of King Sigismund were postponed because transport by sleigh was delayed that year (Staf 1935:251).

In the early social organisation of the Sámi, before the 17th century, all important markets where the southern traders came to purchase furs in exchange for commodities like salt, were held in the winter when the Sámi were gathered in their ‘winter villages’ and not dispersed on hunting and fishing grounds as during the rest of the year. Probably the main reason was that this was the time of year when land journeys were easiest to make, i.e., on the winter routes.

A journey on horseback was a time-consuming venture. The horse needed water and rest, and sometimes a horse had to be exchanged for another one. The rider had to be careful so that the horse did not slip or sidestep due to the frequent stones, pits and other obstacles. How was the journey on horseback? Sigvat skald provides us with vivid information on what this was like:

The horse runs hungry in the dusk on the endless roads; the hoof makes grooves in the ground on the way to the hall; now not much is left of the day. The horse carries me over the streams far from the land of the Danes. My horse stumbled in the stream. Day and night now meet. (Hakonarsaga)

Stones, roots, low-hanging branches from trees, as well as slopes and streams, were all factors that prevented a swift ride. The same horse was often
used on the whole route. The horse had to be saved from exhaustion, however, so sometimes a couple of extra horses were used in exchange.

6.1.3. Winter roads

The most important routes for transporting goods to markets and foundries were, in addition to the water routes, the winter roads. These usually followed the river systems and lakes, and the land passages between them. In northern Sweden, where the road net was completed very late, the major transports of ore to the blast furnaces and foundries were made in wintertime with the ore packed in the Sámi sledges known as akkjor, drawn by reindeer. In a similar way, due to difficulties in transport in other seasons, the markets were mostly held in wintertime. This kind of seasonally variable communication system in roadless land was probably also typical of prehistoric and medieval times in south and central Sweden.

In recent years the importance of the water routes for the eastern journeys has also been discussed (Edberg 1997, 1998, 1999, Sindbæk 2003). The suggestion is, for instance, that 'the route from the Varangians to the Greeks' was not travelled by boat at all, but on the ice and snow in winter. It is well known from the Byzantine emperor Constantine Porphyrogenitus that by the late 10th century a trade network to the Byzantine Empire had been organised. The Rus merchants from Novgorod and Kiev travelled north on the snow in winter to purchase furs, and returned in spring and bought local boats on which they travelled down the Dnieper to sell their merchandise. The description resembles the medieval trade journeys from the Novgorod state to the northern Sámi markets, also described by Olaus Magnus (Historia 20:2), and they probably represent a partial continuity in the trade network, despite the Mongolian conquest of power in the 13th century.

The importance of the water routes for winter communication cannot be underestimated and has been stressed by several scholars (Ernvik 1955, 1974; Hyenstrand 1974). There are many archaeological remains from journeys on winter roads. They consist of skates of bone, sleighs, rivets from sleighs in burials, frost-nails for horses in the burials, and other indications.

6.2. Travelling on water

6.2.1. Ships and possibilities for river communication

The light ships that were the main result of the shipbuilding method, together with the fact that weight was also kept low by reducing the size of ships (see chapters 2, 3 and 4), resulted in the opening up of river communication routes, which would have been impossible to navigate with the big and heavy ships of the Nydam type. Both before and after the ‘period of the light ships’, mainly the 6th to 13th centuries, rivers were used and navigated mainly by smaller boats like fishing boats, dugouts and rafts. When shipbuilding was at its peak, the river communication network could be extended so that every small river could be used and the different river systems could be connected by portages. Evidence of this is that clinker-built boats have been found in all possible small streams. One such stream is Svarthäcken in Uppsala, which during the Middle Ages constituted the border between the town and the countryside to the north, and where in conjunction with E4 motorway construction through Uppsala a small clinker-built boat was found (K. Andersson, oral information).

The rivers could be used for internal and external exploitation. In 2000 an experimental journey was made to find out whether it had been possible for boats of this type to go from Lake Mälaren to Lake Vänern via the rivers. The route chosen was Eskilstuna River – Hjälmaren – Svartån – Letälven. Despite the very shallow streams, the boat was able to glide smoothly. Where rapids had earlier created obstacles, where the boats had to be hauled on land beside the river, there are power stations today that largely create similar circumstances. With the crew as labour force, with or without wheels, not even the 5 km portage to Letälven constituted any problems. Some small rapids with shallow water and many rocks also occurred along the way. The boat struck several rocks, but the pliable, radially split planks did not crack and instead bent and slid over. The keel was well protected by a false keel. Mats G. Larsson (2002) is of the opinion that the Svear approached the Götar and Lake Vänern via inland water routes in the Late Iron Age. He has observed that both the types of ancient monuments and place names along the river routes reveal that the Svear approached along the river routes.

6.2.2. Ships and harbours

The position of the Gotlanders within trade would have been impossible without the use of light ships.
This was first discovered when the Viking Age harbour of Paviken in Västergarn Parish was investigated (Lundström 1981). The shallow harbour was only possible to reach by the light ships built in this period. When bigger and heavier ship-types replaced them, the harbour had to be moved to the site by the sea, within an enclosed rampart near Västergarn Church. Similar harbours, now situated on land, have been found all around the island after a systematic survey (Carlsson 1998, 1999, 2004).

With the help of the ships with shallow draught, the Gotlanders came to dominate the trade in Grobin and Elbing, which were situated by rivers 10 km inland (Nerman 1933:77; Almgren 1962:197).

We find harbours in locations that are only possible to approach with light ships. In Scandinavia these are mostly situated in shallow bays, with narrow inlets that were often fortified by piles in the 11th to 13th centuries. The entrance to the shallow bay Foteviken in Scania was blocked with sunken ships, poles and stones (Crumlin-Pedersen 1984). Many of the harbours discovered in recent years on Gotland (Carlsson 1991, 1998, 1999) are situated in protected bays with very shallow waters. The harbours here often had stone towers, so-called kastaler, that earlier were interpreted as storage houses for merchandise (Lundström 1981). According to my interpretation (Larsson 1997), they could instead have been the storage places for the skeppsvis, the food supply for the crews in the naval organisation (see chapter 9), where they could be protected from both thieves and rats.

Nautical harbours were accessible only by the light Scandinavian ships. As Almgren has drawn attention to (1962), the Danish military centres of Aggersborg and Trelleborg are situated at such locations. Aggersborg is situated where Limfjorden is only 1 m deep, and Trelleborg where two small rivers about the size of Fyris River meet. Both places were abandoned when the light warships went out of fashion in the 12th century.

6.2.3. The inland water-communication systems: ranking the rivers

The rivers were the main entranceways for the inhabitants of the Mälaren Basin, as well as for enemies. Thus Erik Segersäll is said to have blocked the river to prevent his nephew Styrbjörn from entering the central parts of Uppland around Uppsala. This information is found in the Flateyjarbók (1944:148):

Hann skyldi ok láta stíka, þjóðleifð þá er til Uppsal lás, svá at eigi væri þar skipum fært.

He should also have blocked the þjóðleifð (‘people’s route’) that leads to Uppsala, so that it could not be used as a ship route. (My transl.)

The importance of the river routes for communication is attested by the use of the word þjóðleifð ‘people’s route’, probably synonymous with aldæ manna leif ‘all men’s route’, a term that is explained in the provincial laws of central Sweden. These river routes were communication routes that had fixed sizes. In the provincial law of Uppland, it is established that aldæ manna leif should be 10 alnar wide (UL BB 22:3). In the provinces of Västmanland and Södermanland there were also fixed sizes for the aldæ manna leif, but here instead the width should be 12 alnar (VM L BB 22:3; SDML 20:5). The law of Södermanland also uses the expression roja rum firi væggarsandum mannum (SDML 20:5). These water routes can be compared to the more important regional and interregional roads used today. In the laws the main river routes are contrasted with the local routes that called bate leif ‘route for boats’ (probably in opposition to aldæ manna leif, which more appropriately would be thought of as ‘route for ships’) and that only needed to be five alnar. The institutionalised system of river routes is known only from central Sweden and from the province of Hälsingland where the main rivers are known as almanna leep ‘all people’s route’ (HL BB 14:1). In the lines dealing with these, we come closer to another important principle used for the most important river routes:

Lays the almanna leep to and from the sea, lay one third of it unbuilt in the deep. (My transl.)

In several medieval literary sources there are traces of a system where 1/3 of the width of these major rivers should be free of any built obstacles, such as fishing traps. They were sometimes called Sw Kungsådra, ON konungsadhr ‘king’s vein’ (see Westman 1920), which gives a hint of the status and importance of these waterways. The name konungsadhr appears for the first time in a letter of 1442 (Hellquist 1980:497) in a case between the bishops at Linköping and the royal bailiff, and it is used for the central 1/3 of the river that, at least in the provincial laws, was deemed necessary to keep open for boat traffic. The terms used in the letter for the central part of the stream were, according to the prosecutor and witnesses, konungsadhr, kungsådra, Konungsledet or Konungsstream (Westman 1927:59). According to Hellquist (1980), the word occurs only in Old Swedish and has no counterpart in other old languages.

The sources also mention the terms oos and vaginald, which may have been seen as almost syn-
The word *os* in place names has often been interpreted as ‘sand’. As pointed out by K. G. Westman in his work on the *konungsadhra*, a court attest of 10 June 1407 mentions *lagas os* ‘*os* according to the law’. Here, and even more clearly in connection with juridical disputes in 1443 and 1490 over a stream for a mill belonging to St Klara Monastery and flowing to the Baltic Sea, it seems that the words *os* and *vågled* designated the part of the water route that had to be kept open (Westman, 1920:27). The landholders beside the river said that the mill was an obstacle to them, since there were no *os* or *vaglid* through it. The man representing the monastery denied that there had ever been such at the mill, and the court confirmed that they did not know whether *os* or *vaglid* ever had been open through that place. The lawman Bengt Laurensson settled the case with a verdict 1443 that in the stream a 6 *alnar* wide *vågled* should be held open from this mill to the Baltic Sea. This verdict was once more confirmed in a new verdict 22 January 1490. If this interpretation of *os* is applied, the names of the towns *Västerås* and *Östra Åros* come into a new light. *Västerås*, which comes from Västra Åros where ‘*ar*’ means river, would be ‘the western river with *os*’, and correspondingly *Östra Åros* ‘the eastern river with *os*’. According to one hypothesis, the first site, *Västra Åros*, was situated at the mouth of the western main river of what was probably the earliest core of *Svitihod*, a river that periodically may have formed a border between Västmanland and Fjädrundaland. The second site was situated where the Fyris River, the main river system of Tiun-daland, flowed out to the sea in the 11th century.

The system with an obligation to keep 1/3 of the water route was earliest known from historical sources in central Sweden. the land of river routes, together with the above-mentioned quotation from the provincial law of Hälsgland. In a passage added to the regulations in the Västmanland law concerning the building and maintaining of bridges, we also find:

Four are the rivers in our land (Västmanland), of which each and every one is valid for 40 mark. One is oppbåga bridge, the second Herrevads bridge, the third the bridge at Västerås, the fourth the bridge over Sagån...In these rivers one third of it will run free in the water. (Vml BB 23:3 my transl.)

The rivers mentioned are rivers that we know of as borders between *land* ‘regional provinces’, and *hundare* ‘local provinces in the *leikongr* organisation’. Sagån is on the border between the *land* Fjädrundaland and Västmanland; Oppbåga Bridge was above Arbogåin, which was a border between the *land* Västmanland and Närke; Herrevads bridge was above Kolhäckssån, the border between Snävringe and Tuhundra *hundare*; and the Västerås bridge was erected over Svartnån that separated the *hundare* Tuhundra from Seunda and Gorunda.

In Kristoffer’s national law of the 15th century the organisation of water communication is still of fundamental importance, and the rivers are valued and divided into two groups according to the status of the river: ‘For sounds between villages, regions or provinces, communication sounds should be 12 *alnar* wide as a common water route; a boat route 6 *alnar* wide that is not a common water route, and always where the greatest depth is’ (Kr. landslag Bb 34:3, my transl.).

The free passage that should exist in a water route could also be called *vågledh*. The reluctance to create an open waterway beside the mills was often a cause for dispute. In 1638, during a trial, there is mention of the obligation to make a *vågledh* of free water passing the mills in Karlös and Järso, Söderby-Karl Parish, Uppland. In this case the purpose was to have enough water for the mills downstream to keep them in operation (Unestam 1954:498).

Water communication was still important in the 17th century in central Sweden, but in many places land upheaval and growth made the rivers silt up, which was a major problem. Among those who thought about solutions to this was Olof Rudbeck, who in a letter to the magistrate in Uppsala suggested that Stockholm’s sluice as well as Norrström could be dammed up to improve the water communication of river systems in the Mälaren region (Lundberg 1937:11). Even in Rudbeck’s time the aristocrats and nobility made their journeys to their castles by boat. The castles themselves were situated so as to be easily accessible by boat, with a large concentration in central Sweden along the shores of Lake Mälaren.

The water routes were kept open until the 19th century. The Långshundra River route was the object of attention in 1838 when the owner of Mälsta complained that the river had not been cleaned in the last year, although as a Crown water route it was supposed to be kept open (Sundqvist 1986:24). This shows that the river still had some importance as a communication route also in the days of relatively good land roads, and that the meaning of the word *konungsadhra* was very much alive among the population. On this occasion the Crown bailiff inspected the river, and concluded that the inhabitants of Husby Parish should finance this work. In the parish court they agreed about the necessity to do the work, and to take the matter to the regional court since the work would benefit the whole area. The different parishes of the regional court came to an agreement in 1839, and the cleaning was later fulfilled. Here it was the parts from Storån in
Husby westward to Danmark Parish, from Sigridsholmsjön in Lunda Parish (the site of the medieval Folklandstingstad) to Storån in Husby-Långhundra, and from the Gottörö River in Gottörö in the east across the watershed to Storån that were discussed as routes important to keep open (Sundqvist 1986:24).

When the term konungs adhro ‘king’s vein’ is used for the first time in a royal verdict of 1442, it concerns the south stream at Fotviks mill that was konungs adhro and should be kept open. In several other documents similar terms are used for the free common waterway, such as konungsvatten ‘king’s water’, kunungsled ‘king’s route’ and konungsström ‘king’s stream’ (Hafström 1981:519). Because the distribution of this phenomenon occurs in the areas where the leiðangr organisation was most developed, several authors have interpreted it as intended primarily for the free passage of naval ships from each naval district, to the meeting places along the coast (Hafström 1981). This may be a point, but it must surely have been of tremendous importance for the transport of merchant goods from the interior of the Mälaren Basin to the coast, sea and foreign markets. The distribution of Arabic coins (?) in the middle of Sweden should not only be seen as a result of plundering and warfare, but also to a great extent a result of involvement in long-distance trade. In the province of Dalarna around Siljan in the western part of central Sweden, the result of the connections along Öster- and Västerdalälven can be seen in the distribution of different foreign artefacts. The temple ring, a typical female ornament in the western Slavonic region, is found in several graves in Leksand, probably a local marketplace in the south part of Siljan at the mouth of the Dalälven River (Serning 1966; Nordin 1995). On the largest island in Siljan, Sollerön in Mora Parish, several boat cremations came to light in excavations (Serning 1966). The connection of the planking in the boats by iron cramps is typical of early medieval boat finds in NW Russia (Sorokin 1994, 1997). Maybe this indication of long-distance maritime connections should be seen in light of the emerging iron-ore production in Dalarna, which in some places can be determined to have started already in the Late Iron Age (Eriksson & Quarfort 1996). The mountain ore probably required more investments in the reduction process, and was probably associated with a small market production that exceeded local needs. The orientation of the market is here indicated by the finds. In the Early Middle Ages we find, between Siljan and Lake Mälaren, one of the most advanced furnaces in the world for the early iron production. Similar furnaces from this time are known only from Germany and China (Magnusson 2001).

The term konungs adhro was reinterpreted by King Gustav I in the 16th century to signify not only the part of the river that should not be closed, but also the part of the river that actually belonged to the king.

In Finland, which was a Swedish province in the Middle Ages, frien stromen och skipledin are similar expressions (Niitemaa 1981:520). The legal status is here documented from the coastal route that passed south Finland to Neva. The royal protection was discussed in terms of koninges wather ‘king’s water’ (FMU II 1800), koninges strome ‘king’s stream’ (FMU II:433 note x) and de Swedeschen krone watere ‘Swedish Crown’s water’ between Viborg and Åbo (FMU V 3881, cit. 3884).

6.2.4. Remains of a communication system in place names

The water-communication system in many places included portages. These places largely reduced the distance of the journey and created shortcuts to other river systems. They were also found where rapids were too severe to navigate and boats had to be hauled on land beside the river. These places are often called ed and drag (Friberg 1969). Portages were also often found at places called nor, and in my opinion they were mostly named after the conditions of the site in a maritime perspective and in relation to water communication. In this respect, most of these common names in central Sweden are linguistic remains of an Iron Age water-communication system. The sites bearing these names were in most cases established during the Late Iron Age, in connection with the creation of the extensive water-communication system that was based on the now-appearing light boats of the type found in burials.

The role of portages will be discussed further at the end of chapter 7, since they are of central importance in the ongoing debate about the Scandinavians’ eastern journeys.

6.3. Water communication and the location of some important central places

The location of the central places of Late Iron Age society reveals the fundamental importance of the inland water routes, probably both for boat traffic and communication in wintertime on the ice.
6.3.1. Helgö

The earliest known marketplace so far, often regarded as preceding Birka, is Helgö, which was strategically placed on an island in Lake Mälaren and accessible from all places in the region along the water routes, by boat or on the ice. This very special island that bears the name ‘the holy island’ has archaeological indications of being a place with central functions with regard to both handicraft production and trade but probably also religion. The early harbour at this place was mainly for the regional Scandinavian ship-types. The shallow harbour is now completely drained and on land.

The harbour was mainly in use in the centuries before the trade network between Eastern and Western Europe through Scandinavia was opened up in the 8th century. As Almgren (1962:195) has observed, there is possibly a connection between the arrival of the West European trade ship, the cog, which required deep harbours, and the moving of the import harbour from Helgö to Birka, where the site Kugghamn in the north is a linguistic remains of the visits of this type of ship. At Kugghamn it was possible to leave with the aid of the often-occurring SW wind, necessary for the sail-dependent cog. From the establishment of Birka c. AD 750, until c. AD 850, the trade between Western Europe and Eastern Europe, the Caliphate and the steppe region, passed through Scandinavia. Birka has many imports from Frisian and other areas on the Continent, where ships of cog type were the main means of transport. It was probably also cogs that brought the products to Scandinavia, where they could be exchanged for eastern goods such as silk (Larsson 2004), colour pigments (Sandelin, oral information) and other products transported by the light, central Swedish ships from Russia and the areas beyond the Caspian Sea. Almgren also discusses the possibility that the cogs had to reload to light ships of Valsgärde type within the protected harbour below the ‘black earth’, and that the town wall (and the pole blockage around the harbour) could have had the purpose of charging tolls. In the same way as Helgö might have been replaced by Birka, with a harbour for deeper ships, the shallow harbour at Haithabu was replaced by Schleswig with its deeper harbour.

6.3.2. Birka

A map of the water routes in the vicinity of Birka shows even more clearly than Helgö the importance of the routes for the location of the earliest town in Sweden. Birka was established on an island in Lake Mälaren at the very ‘crossroads’ of river routes. To the north lay the Fyris River system with converging river routes. To the south was the route passing Tälje and constituting a shortcut to the southern shores of the Baltic Sea. To the east was the outlet of Lake Mälaren in the Baltic, which connected to the eastern route and northwards to the supply-area of the much appreciated furs of black fox and other animals that, at least in Norway, are known to have constituted a kind of tax from the Sámi already in the 9th century. And finally, to the west lay the river routes from Bergslagen, known for its early iron production.

6.3.3. Old Uppsala and Samnan

According to the traditional view, Old Uppsala was the core of the royal holdings, Uppsala öd. It was the royal seat and the most important place among the Svear. This was where the whole population assembled, originally at vernal equinox every ninth year, for alla svears ting ‘the court of all Svear’, religious rituals, and a big market. A graphic presentation of the area reveals that the location for the king’s hall, in the northernmost part of the area, may be explained in relation to water communication. If the water routes are taken into consideration as they were before land elevation, drainage work and other projects to lower the water level and gain more arable land in the 18th and 19th centuries, the location of the royal seat in the area becomes understandable. The site where the big hall-buildings were excavated (Nordahl 1993; Duczko 1996) is orientated towards the place where the river Samnan reaches the Fyris River. The Samnan, which today has almost vanished, was once an important water route, creating a shortcut from the rivers connecting Old Uppsala with the entire region of eastern and northeastern Uppland and especially with the river we call ‘Långhundraleden’ which came from the Baltic Sea.

Several old maps from the 17th and 18th centuries show the Samnan River as a big route, almost comparable to the Fyris River, but after that the Samnan seems to disappear. Like in most other areas, drainage projects have probably affected this river since today it is surrounded by large, arable fields.

The old maps also show the central ridge of Old Uppsala with the royal hall, the church, the burial mounds and the thing mound, almost surrounded by water (fig 131).
In the late 17th- and 18th-century maps, the lake north of the ridge, Myrby träsk, still exists, as does a small stream coming from the east towards the Fyris River. This was identified during excavations of the ‘North field’ (Ljungkvist 2006). Today all these streams and lakes have vanished through drainage and been turned into agricultural fields. The water has played a significant role in the cult here, just as it did in the Iron Age religion of central Sweden in general. In addition to all the streams and lakes surrounding Old Uppsala, at least four wells/springs are known from earlier times (Atlantica). Workers at the site informed that human remains were found in a former well when a trench was dug for a water pipe in the 1970s (oral information).

6.3.4. Mora sten

The site called Mora sten, ‘Mora stone’, was one of the most important places with great symbolic value in the Middle Ages, since the king was elected by the population at a þing ‘thing’ at this site. He received the people’s ovations at a large stone, which had disappeared by the time Gustav Vasa came to power (see chapter 9). The legitimacy of the elected king was symbolically manifested by stones inscribed with the king’s name; these were placed on Mora sten, and then ritually destroyed if the king was deposed.

Mora sten is situated at the crossroads of four important water routes. From the east and the sea comes Storån, a part of the so-called Långvandra River route leading from the Baltic Sea to Uppland and possibly also connected to ‘Sjuhundra River route’, by a portage. This water communication system passed through most of the important rundare districts in Attundaland. Here at Mora sten was also Funboån, which reached the northeast part of Tiundaland; and shortly to the west Storån was joined by the Fyris River, connecting the districts of Fjädrundaland and other provinces around Lake Mälaren. Finally, there was also Samnan, which as earlier mentioned once provided a shortcut to Old Uppsala where it met up with the Fyris River and with possible travellers from the north and west parts of Tiundaland. In the valley below Mora it connected to Storån.

The prehistory of Mora sten is hidden in shadow, but a Late Iron Age cemetery with at least 74 mapped graves, together with the large, nearly dried-up well, indicates that the place could have been used a longer time. Excavations in the 1930s revealed that some graves in the cemetery derive from the 11th century (Lönnerholm 1993). In six of the seven investigated graves skeleton remains were found. The deceased had been placed in E-W, with their heads usually in the west, in the Christian mode. Snorri Sturluson gives us a hint in Óláfs saga hins Helga. According to him, when the conflict between Olof Skötkonung and the peasants at the Uppsala assembly – the ‘thing of all Svear’ – was to be settled, Torgny the lawman, who was the spokesman for the peasants, told the king:

...But if you will not do as we say, we shall set upon you and kill you, and not tolerate from you lawlessness and hostility. That is what our forebears did: at the Múlaþing they plunged five kings into a well because they were swelled up with the same arrogance as you show against us. Say now right quickly what you decide to do. (Chapter 80 after Hollander 1964:321)

Múlaþing is according to my interpretation a misspelling of Mora thing, because Mora sten is related to the elections (and rejections?) of kings in the Middle Ages. In the middle of the cemetery at Mora is one of the largest springs in this part of Uppland (fig. 132), though it dries up during summer. A small stream flows to the north of it, which according to old tradition is necessary for a sacred well with healing water (Tillhagen 1997).

The procedure at Mora reveals important aspects of the society of the Svear. It shows a weak kingship
dependent on the approval of a strong peasantry (or at least their representatives?). If the king was accepted by the people, a stone with a runic inscription designating him as the ruler lay atop the larger stone, but if he was removed ‘from duty’ the stone with the inscription was symbolically smashed to pieces as he lost his right to rule (Holmgren 1937, 1954; Mora sten). In the exhibition house that was built at the site in the 18th century, pieces of nine stones remain, of which three have been identified. One is the stone cut for Erik of Pomerania in 1397, while another is from the election of Karl Knutsson in 1448. One stone, which has three crowns, is undated.

The fact that this important site is situated at the cross-point of the water routes, making it accessible by boat from all corners of Uppland, means that the site may have been chosen because of this, and that the site was established in the ‘period of the light ships’.

6.3.5. Folklandstingstad

Folklandstingstad, ‘the town of the Folklords thing’, which was situated on the eastern shore of Sigtuna, was another early central place situated at the crossroads of water routes and linking together the provinces that formed Attundaland (Gustavsson 1944). The area around Sigtuna has, at least since the Bronze Age and up to the end of the Viking Age, been a central cultic site of high rank, probably of regional importance. In the northern part of Sigtuna, in an area approx. 200 x 200 m, several sacrificial deposits had been made. Here bones of horse, swine and sheep were found (report Claes Varenius, ATA, Lunda Parish), as well as two boats (ATA Dnr 3508/63, 5047/63, and oral information from present landowner). Furthermore jewellery from the Bronze Age and earliest Iron Age was found either while ploughing or during a small investigation at the find site (Report RAÄ UV Birgitta Sander 3915/86, RAÄ Lunda Parish, no. 232). In this deposit were artefacts such as a so-called wendel ring with traces of gold cover, arm-rings, foot-ring, and needles, but also tools such as bronze celts (1 of ordinary size and 2 miniatures). In the same area, in the 19th century, remains of weapons were found, including a well-preserved Late Iron Age sword of unusual type with inlays of copper and silver on the hilt (SHM 6742). The parish name Lunda, ‘(sacred) grove’, reveals that a sacred grove had once existed here.

As with many other central cultic sites, the gatherings for religious rituals were performed in combination with the summoning of a regional court, in this case Folklandsting, the court for Attundaland. At an early date this gave rise to a marketplace or town, Folklandstingsstad, which was forbidden by the king in the 14th century in favour of the nearby town of Sigtuna. The exact location has not been established, but in several places by the eastern side of the lake and in the vicinity of Lunda Church the remains of houses have been found as well as early medieval artefacts of an urban character (report Kerstin Östmark, ATA).

It is hardly surprising that there has been a need for facilities to ease the communications to this central place for regional religious, juridical and commercial activities. The portage ditches at the ridge by Sjöås between the lakes Halmsjön in the west and Sigtuna, in the east, enabled the people from the western part of the folkland Attundaland with the province Ärlinghundra to arrive by boat from Lake Mälaren along the western water routes. The 14C dates of the construction found by David Damell in a 1986 excavation revealed that it was made in the earliest Iron Age (see further below about the construction). A ditch was needed when deeper-reaching boats were to be hauled over, since people had to take a firm grip of the gunwale during the procedure. In the Early Iron Age, ships of Nydam type would have necessitated a shallow ditch like this, while in the Late Iron Age and earliest Middle Ages it was mainly the merchant vessels that were so high. In combination with a marketplace, the construction had a function also in the Late Iron Age, but we do not know when this market was established.

In the 16th century, according to Gustav Vasa, the seasonal market was moved to the island which today is landlocked and called Öbacken, in Närta Parish. (Gustavsson 1944).

6.3.6. Other central places on islands and by water routes

Many other central places are located on islands, such as Sollerö in Dalarna, Visingsö in Västergötland, and later Stockholm on the island where Lake Mälaren met the Baltic Sea, a place that seems to have been important also in the Viking Age to judge from the fortifications built at the end of the period. Probably also sacred places were situated on islands. An indication of this is the many islands bearing the name Helgö, ‘holy island’ (Calissen-dorff 1991). Also marketplaces were preferably located on islands, accessible only by boat or via the ice. Not only Birka on Björkö was a marketplace situated on an island and bearing the name Björkó. Also the most important medieval marketplace in the north at Torneå was situated on an island and had the name Björkó. Even at such a distant place as where the Dnieper flows into the
Black Sea, there is an island with a Scandinavian marketplace with the Russian name Berezanj, i.e., in Swedish ‘Björkö’.

6.4. The social and political system as shaped by the river routes

The water routes had a crucial role in the communication system, because of the condition of the land transport system. The rivers were the veins of society, and the well-adapted boat types that developed during the Late Iron Age were like the oxygen needed to vitalise the country that emerged in the Mälaren Basin. Both for the creation of the country and the provinces, i.e. the hundare, the river routes were the structuring principle around which the political and administrative territories were shaped.

The folkland Tiundaland is located around the shores of the Fyris River (earlier ‘Sala River’), with tributaries. With short portages also the Närdeningen River system to the Baltic Sea as well as the Oland River could be reached. Snorri considered Tiundaland the primary and most important land of Sweden (OHS 77). It houses the royal seat. Here the royal hall, together with the ‘thing mound’ for the assembly of the Svear, is situated in the part of the area orientated towards the place where the river routes from Attundaland met Fyris River. The earliest aristocratic boat burials are distributed along the river, perhaps symbolically manifesting the area of influence of the Ynglinga dynasty at the time (Ynglingsaga).

The folkland Attundaland is located around the shores of three main river systems – the ‘Långhundra River route’, the ‘Lyhundra River route’ and the ‘Sjuhundra River route’ – as well as the shores of Lake Mälaren to the west. The thing has been placed here centrally, near the cultic site at Sigridsholms Lake in Lunda Parish. It was possible to arrive here by boat from all the river routes, and from the provinces in the west by Lake Mälaren across a portage construction built from Lake Halsmön to Lake Sigridsholmsjön (see below).

In the western part of present-day Uppland and bordering to Västmanland is Fjädrundaland, situated around the Örsunda River, with only one of the hundare on the ridge south towards Enköping by Lake Mälaren, which was the connection to Västmanland and to which it was joined from time to time. Here the most important royal seat has never received the name Husby; instead it was called Landsberga, Laghundsberga. It was situated on a hill, which appeared at a distance in the landscape when approaching by boat, and which was positioned strategically by the 11th-century seashore outside the outlet of the Örsunda River flowing through the land. As several scholars have observed (Larsson, A., oral information), the name of the place may have been related to the parish name Kulla (later Biskopskulla, Latin Collum) deriving from the marked hill, Sw kulle, where the royal estate was located. On the earliest coins Olof tiles himself ‘Rex an Col’, which according to Annika Larsson should mean that he resided here and perhaps only had influence over Fjädrundaland (oral information). Beside the river are the remains of a fortress on a low hill called Garns fästning, guarding the river route and the entrance to Fjädrundaland. The early medieval church has close to this place had a predecessor, situated in the fields between Garns fästning and the present church at Biskopskulla (Anders Hollmer, oral information).

Roden, the area by the sea, and probably also Åland, was named for the maritime context of the people who lived there and their relation to seafaring. The name Roden (see further chapter 9) derives thus from people’s relation to naval seafaring and is associated with the word ON rodr ‘rowing’. The provinces of this land are as districts called skeppslag ‘ship supplying districts’ on the basis of their function within the naval organisation.

This area is probably also the same as the part of Svithjod referred to by Snorri Sturluson in Heimskringla (OHS 77) as Sialand. This name could be translated as ‘the land of the sea and the island’, and thus is named after the sea. The name has never been fully interpreted, but together with Attundaland, Tiundaland, Färhdhundraland/Västmanland and Södermanland it was considered as Svithjod själf ‘real Svithiod’. The first three of these together with Roden became ‘Uppland’ in 1296 when the common law of Uppland was introduced. Åland has since the 19th century belonged first to Russia and then to Finland, and culturally and politically it has been connected with the coastal areas of Uppland. Linguists have observed that many traits in language connect Åland with Roslagen, such as the disappearance or the addition of h at the beginning of words.

Seafaring was the main reason the settlements, at least since the Iron Age, were concentrated to the main inland river systems that were connected to the sea. When the society was organised, these natural neighbourhoods were turned into the provinces called hundare, later called härad, each shaped around a central waterway. The connection might have been coincidental, but we can also see that, as the core of the provinces, these rivers also sometimes gave name to the provinces, which indicates their crucial importance for the organisation and for the society. Here only a few examples will
properties, and in the 13th and 14th centuries it was giving name to the outside. The bay was probably called ON Lagen, around the mouth of the Örsunda River and the bay medieval texts as OSw name *Lagen, preserved in Icelandic the entire Lake Mälaren which is said to have had estate was strategically situated by the 11th-century Landsberga of Laghundsberga. Here also the royal never had the name Husby and instead was called Herrevads bro in 1251.

Lyhundra, the neighbouring hundare in Attundaland, earlier (?) probably named ‘Lo hundare’, but the earliest form is Lyundereth (DS 699 in 1280) was a province situated around the lake Lommaren, probably originally Lo maren (?), with a tributary from Malsta-Estuna. In the north it surrounded the important river route that I will hereon call ‘the Lyundra River route’, which in the south constituted the border between Attundaland and Roden. The central Tuna-site, Östuna, is situated at a protected tributary to this river route, where also the Estuna weapon deposit may indicate the presence of a leiðangr harbour strategically placed by a nor, i.e., a short portage, and where the harbour site of Nora Lake by the church was easily accessible from Lake Erken with its surrounding shores. In the Late Middle Ages the Husby was shared with Sjuhundra and Lyundra provinces, but according to local tradition the old border ran about 2 km to the east where the remains of a stone fence, with no obvious function, still runs N-S through the forest. The whole of Husby in that case belonged to Sjuhundra, and the original Husby of Lyundra was located somewhere else.

Lyhundra, the neighbouring hundare in Attundaland, earlier (?) probably named ‘Lo hundare’, but the earliest form is Lyundereth (DS 699 in 1280) was a province situated around the lake Lommaren, probably originally Lo maren (?), with a tributary from Malsta-Estuna. In the north it surrounded the important river route that I will hereon call ‘the Lyundra River route’, which in the south constituted the border between Attundaland and Roden. The central Tuna-site, Östuna, is situated at a protected tributary to this river route, where also the Estuna weapon deposit may indicate the presence of a leiðangr harbour strategically placed by a nor, i.e., a short portage, and where the harbour site of Nora Lake by the church was easily accessible from Lake Erken with its surrounding shores. In the Late Middle Ages the Husby was shared with Sjuhundra and Lyundra in the south, probably replacing an earlier royal site at Stensta in Karls Parish. The latter was an enfeoffed village of 4 markland, like the Husby-villages that were royal properties, and in the 13th and 14th centuries it was partly owned by members of the Folkunga dynasty, the Ulf family (Westins samlingar 1115) – the dynasty of the Svear – who opposed the centralised power that finally succeeded after the battle at Herrevads bro in 1251.

Lagunda hundare of Fjädrundaland is situated around the mouth of the Örsunda River and the bay outside. The bay was probably called ON Lagen, giving name to the hundare and later probably to the entire Lake Mälaren which is said to have had an OSw name *Lagen, preserved in Icelandic medieval texts as Lögrinn. Here the royal seat has never had the name Husby and instead was called Landsberga of Laghundsberga. Here also the royal estate was strategically situated by the 11th-century seashore.

6.5. The threat of enemies arriving by boat

The rivers were the main entranceways, not only for the inhabitants of the Mälaren Basin but also for potential and real enemies. The awareness of this forced the rulers to take preventative actions; they blocked the rivers and built hillforts and systems of watch fires to guard the river routes. As a complement, a system of watch fires along the river system was also created. There is clear archaeologica oral evidence that in prehistoric and medieval times the potential enemy was considered to arrive by boat. All of this is part of the maritime cultural landscape, which above all in the last decade has begun to receive scientific attention.

The interpretation of poles in the rivers might in some cases be ambiguous. Certainly many poles found in the rivers are the remains of fishing traps, shore supports and bridges, but we also have remains that can be interpreted as real blockages. The interpretation is also supported by the information in early historical sources that, in periods of unrest, important river routes were blocked with poles (Haralds saga Hárfagra 16).

6.5.1. The first piling of the rivers

When were rivers first blocked? Poles in the rivers have given a wide range of dates, varying between the 3rd century BC and the 18th century AD. The earliest piling of the rivers was not necessarily connected with maritime defence. Some pole arrangements of the Early Iron Age might instead have been bridges or cultic causeways to sacrificial sites. Examples of early constructions with poles in rivers are Gullbron ‘golden bridge’ in Vallentuna Parish and Rickey in Gotttöra Parish. The pole arrangement Gullbron is dated to the 3rd century BC, and is situated by the Harg mill in a small stream. It was found c. 1907 and excavated in 1979 by Fil. Dr. Lars Löfstrand together with the ‘work group Långhundaleden’, a group of amateur archaeologists researching the history of the area surrounding the river route today called Långhundaleden. A number of poles and wooden material of oak, but also pine and birch, were recovered and interpreted as the remains of a 125 m long and 4 m wide bridge, largely because of a later bridge from the Viking Age used nearby (Löfstrand 1993:113). The name Harg, in combination with the fact that many pieces of wood were heavily burned and that there were also many remains of branches, raft, stones and charcoal – just like at several contemporaneous sacrificial sites (see chapter 8) – might suggest a cult site rather than a blockade. The poles were, according to the drawings, put down without
any apparent order, making an interpretation of the site as the remains of a bridge less probable.

The Rickeby pole construction is located in the Långhundra River route where it passes Västra Rickeby village in Gottröra Parish. It was found by the farmer Kjell Rickegård when his plough got stuck on a pole in 1986 (Rickegård 1993:123, Skoglöf 2000). During several years this site was the focus of excavations, led by Helena Knutsson, Kaisu Antila, Bo Gräslund and Kjell Knutsson from the Department of Archaeology at Uppsala University. The excavations began already in 1988 and continued until 1991 (Helena Knutsson, unpublished report, Knutsson & Olsson 1993). The construction consisted of poles oriented N-S, thicker in the middle, as well as cloven and non-cloven material, pieces of construction details with holes, and many branches just as in Gullbron. Paving material was also found; adjacent, to the north, was a stone road. Some of the poles had been connected as bollards and were made from young trees of spruce and alder. Between them the wooden material seemed to have been floating, a kind of floating bridge. Bo Gräslund instead was of the opinion that this was the remains of a blockage. In 2000 the author in cooperation with Gerhard Schwarts, SGU, did measurements with cesium magnetometer and found the continuation at the other side of the river, leading right towards a cliff at a steep part of the slope, not suitable for a road. Instead the blockage theory seems likely, if it was not leading towards a cultic site on the isolated cliff in the valley. The interpretation of the construction as a sacrificial site may be supported by finds in 1823 of three gold neck-rings, of which one (with snake-head terminals) was traded in to the Historical Museum and found to date to the Roman Iron Age (SHM 443). The closer circumstances of the finds are not known, but they were made in fields belonging to Västra Rickeby so they were from the vicinity.

An early piling arrangement was also found below the Skjulsta hillfort where the Eskilstuna River bends. The area between the villages of Skjulsta and Vilsta alongside this river has three hillforts within a very short distance of each other. This is why the amateur divers Kjell Ove Mattson and Göran Wilkingsson were engaged in a search for underwater arrangements in the area (Lorin 1999:105). A large number of poles were found. One pole and one construction element was taken in for dating. The pole gave the date 2060±70 BP (ST 13088) and the oak branch with holes at either end from a kind of ‘yoke’ construction was dated to 1360±70 BP (ST 13089). The poles often appeared in groups of two or more poles, which may suggest some kind of bridge or harbour construction. Also horizontal planks were observed, some with construction holes. A logboat bottom for a boat with pegged planking was dated to 1070±60 BP (ST 14 629) and may be the remains of a foreign visit to the area. It does not seem to be connected with the pole construction.

6.5.2. Organised maritime defence

In the Late Iron Age organised maritime defence was the focus of interest for the political power. Poles put down for the obvious purpose of creating an underwater blockage are first known from the 9th century, namely in the river surrounding the island where the medieval fortress of Stegeborg was later situated. Whether it was the river or a fortification, marketplace or other arrangement that needed to be defended on the island that inspired the blockage, is not known. At the same time we know that there exists a pole blockage around Birka in Lake Mälaren as well.

Snorri Sturluson mentions in his Haralds saga Hárfagra (chapter 16) that, already in the time of Harald (Fairhair), there was a tradition of blocking the river Götaälv to stop enemy ships:

Um várit, er ísa leysti, stikuð u Gautar Gautefi, at Haraldr konungr skyldi eigi mega leggja skipum sinum upp í landit. Haraldr konungr helm skipum sinum up í elfina ok lagðisk við stikin, herjaði þá á bædi lón ok brendi byggöina.

In the spring, when the ice broke, the Gauts stuck poles into Göta River so that King Harald and his ships would not be able to enter the country. King Harald held his ships in the river, positioned them by the stikin (‘pole blockage’), then raided along both shores and burned the area. (Haralds saga Hárfagra 16, my transl.)

More frequent and perhaps systematic (?) blocking of the rivers seems to have been done at the end of the 10th and beginning of the 11th century, which must be seen in connection with other events at this time. When Birka was abandoned and Sigtuna established in the 970s, a fortified town was replaced by a town without any visible fortification. The need for defensive arrangements cannot have ceased to exist, but what had happened? How had the defensive organisation been changed? It is possible that, at the same time as Erik Segersäll established Sigtuna, he moved the defensive line outwards. The enemies threatening the realm were still considered to be waterborne; and according to historical sources, instead of a town wall that allowed the foreigners to come close to the target of their attacks deep in the inhabited areas of central Sweden, Erik Segersäll blocked their passage at every entrance to river routes from the sea to central
In prehistoric time one of the main river routes leading to Uppsala was that which in the 1960s was named ‘Långhundraleden’ by scholars, since the route runs mainly through Långhundra province on its way from the sea to Uppsala (Ambrosiani 1961a, b). Where the route meets the sea it diverges into a northern and a southern arm, of which the southern arm is now silted up. At the entrance to the southern arm, local people have long since complained that poles in the water disturb the boat traffic to the local harbour situated just outside the river outlet in the bay. Another pole blockage is known in the inner, completely silted-up part of the river, extending up to the road beside the river, and in the past year it has pierced the asphalt and become an obstacle for traffic. In spring 2005 a smaller investigation was made by Jens Lindström, Lotta Mejsholm and the author in order to find out whether the poles were the remains of fishing traps, or perhaps a pole blockage (Larsson, unpublished report). At least 20 poles could be seen without any organised order, crossing the river outlet over a 15-20 m wide area. The poles were of different sizes, from 0.07 to 0.16 m. Many were so eroded that they could only be felt in the mud at the bottom. The fact that they were not driven down in a line, but more randomly covered a larger area across the river outlet, indicates that this was not a fishing trap but rather the remains of a river blockage. Two samples of the poles were taken for dating, but these turned out to be from recent reinforcement of the sides. New samples will be taken from the strongly eroded poles in the middle of the river route, as well as from the inner pole blockage.

The southern river leading to Uppsala, the Fyris River, comes from Lake Mälaren, which is connected with the sea in the east through the narrow sounds around the Old Town island in Stockholm and in prehistoric time also by a (now dammed up) sound at Södertälje from the south. There are some indications that also the Fyris River has been blocked by poles. The amateur archaeologist Gunnar Skoglöv has called attention to a letter of 1586 from Johan III to the people in the area surrounding this river. In the letter the king is not pleased with the fact that the river has become too shallow for other than small boats, and every year uppgrender, icke alleneest innan wnder staden, wthan och hela inlöpett emillan pålarne och Flöthesund...‘damming up occurs, not only in the town but also outside and the whole entrance between the poles and Flöthesund’ (my transl. after Kjellberg 1907:50; Skoglöv 2000:25). The inhabitants were ordered to clean the river route and to stick poles along the sides to prevent erosion. Skoglöv means that it is possible that the name Polacksbacken for an old exercise area south of the castle by the river derives from Pålåbacken, which in turn derives
from a name for the part of the river downstream Islandsfallet in Uppsala (Nelson 1930:82, Skoglöv 2000:27). Another suggestion made by Sahlström (1940, 1965:42) is that Polacksbacken comes from Pålthagsbacken.

South of Uppsala and the mouth of Fyris River connecting to Lake Mälaren is a series of lakes between which narrow sounds have to be passed. At Almarestäket the diver Lennart Karlsson has observed some poles (oral information). Between the uppermost lakes Skarven and Görveln, present-day Ryssgraven (?), is a place which Skoglöv (2000:102) has found on old maps and which has the names Lilla Stäket, Hindersstäket (1634), Bak-Stäket and Ryssestäket (1750). The names are to be seen in relation to the ‘big’ stäk Almare-Stäket, situated only 2 km SE of the smaller one beside the fortress belonging to the archbishop in early medieval time. Skoglöv also draws attention to an investigation of both sites by O. Modig in 1839. Modig did not find any water to show an outlet at Lilla Stäket, but the remains of that (Skoglöv 2000:103). The ancient water route was artificially made; it had been dug, and measured 3 m wide and 1.8 m deep with the side protected by stone walls. Modig suggested that this connection was made by Russian war prisoners during the reign of Karl XII, thus giving the place the name Ryssgraven. The passage is, however, already visible on a map from 1690 (Skoglöv 2000:103).

The important entrance to the Mälaren Basin at Stockholm was fortified at an early stage. Here many investigations have been made, especially in the 1970s and 1980s, and dendrochronological dates were published in 1987. According to the analysis in Norrström, the oldest material, poles and material for stone caisson was collected from the 970s to the 1010s AD (Bartolin & Ödman 1987:4). Probably Erik Segersäll began fortifying and blocking the sounds around the town island in Stockholm. This work was continued by Olof Skötkonung, during whose reign large work projects were undertaken. These included the filling out and extending of the town island with stones and material from the ridge and by digging a moat across the isthmus, which created an extra defence line for the eastern island where a fortress was being built. Geological survey shows that large-scale felling of oaks was done during this period, and the stock never returned to the same level (Bartolin & Ödman 1987:4). Many poles were used for an underwater construction built AD 1008–1014 (Bartolin & Ödman 1987:28), a pile blockage where the poles may also have been connected with chains.

It was also possible to arrive at ‘Långhundra River route’ via a smaller river route running west from the Norrtälje bay in east Uppland, which we can call the Sjuhundra River route since it is the central lake- and river-system through this province. Via a shorter land passage from Lake Mets-jön, it was possible to reach the ‘Långhundra River route’ in Gottröra about half the distance to Uppsala (Sahlgren 1945). Whether there was a portage here is not known. This communication route also seems to have been well protected. Many of the poles driven down in the river outlet into Kundbyjön (oral information local inhabitants), together with a (purposely?) sunken boat in the same area (Sigvard Larsson, Rimbo, oral information) can be the remains of a river blockage, which is situated below an Iron Age hillfort in Finnby, Rimbo Parish (Raä 35).

The meadow opposite to Brönlunda in Söderby-Karl is called Pålhagen in sources from 1775 and onwards (Unestam 1954:391). Here it is still possible to see poles sticking up from the ground. Sometimes in spring they also come through the asphalt of the road crossing the valley here.

Some of the best-investigated pole blockages are from the archipelago in Blekinge, a region in what today comprises SE Sweden. In particular the pole blockage between Helgeö and Kvalmsö can be linked to this phase by means of $^{14}$C. A pole blockage at Bussevik has by means of four samples been determined to 1000–1180, a blockage at Skällö to 1000–1180, and one at Östanö-Stutafjärden to 1000–1150. Five blockages gave $^{14}$C dates, especially to the period 1020–1180: between Almö and Kvalmsö 1020–1180, between Almö and Tromto 1020–1180, between Almö and Östanö 1020–1180, between Helgeö and Östanö, between Östanö and Kvalmsö and at Tomtö (Svanberg 1995:85).

Who made them? Was this also a part of Olof’s defensive arrangements? Or was Blekinge subordinated to the Danish king? According to the traveller Wulfstan, in the 9th century Blekinge belonged to the realm of the Svear (Orosius 20). The artefacts
from the Viking Age graves show contacts with central Sweden. According to Adam of Bremen, c. 1070, the ‘wild tribe called Blekingar’ was baptised by Bishop Egino from Lund (1984:208). The account of estates belonging to the Danish king Valdemar in the 1230s shows that he had large holdings in Blekinge at the time. A hypothesis put forward by Sven Tunberg (1935:268) is that the Danish king Canute conquered Blekinge after the battle at Helgeå. Canute called himself ‘king over some of the Svear’ and for some years he continued the coinage at Sigtuna, which makes the hypothesis reasonable though still unproven. The political situation in Blekinge seems to have changed too much during these centuries to know for sure who was in power when these underwater constructions were made.

6.5.4. Background for pole blockages

The pole blockages are a reminiscence of a society where the rivers were the main communication routes, for inhabitants as well as for enemies. They were needed as long as the ship types and the character of seafaring were such that it was possible to navigate along these shallow river systems, and also to pull the boats on land between the river systems and beside existing rapids. When the society changed, also the ship types and seafaring were completely transformed according to new ideals. For the aristocrats, journeys on horseback became a fashionable, alternative mode of travel – an ideological change that began already in the 11th century but which probably came to have its deepest impact from the 12th or 13th century. Still in the 11th century the skalds praise the maritime journeys, but the riding trails are restored and marked by stones with inscriptions at the places where they pass over rivers. In many places the inscriptions also mention the building of bridges, which in many cases means at these river crossings. When the warships in the 13th century (see chapter 3) became deep and heavy, there was no longer a need for these blockages, since from this time on the enemies would not be expected to enter the shallow river routes.

The changes in the archaeological material must also be connected with events in the Baltic Sea region. (German troops took control over several of the countries whose fleets of Viking-like ships had harassed the Scandinavian coasts from the 11th to the mid-13th century.)

<table>
<thead>
<tr>
<th>River blockage</th>
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<th>Type</th>
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<tbody>
<tr>
<td><strong>Uppland</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>E, Åkers Parish</td>
<td></td>
<td>Poles</td>
<td>Larsson, unpublished report</td>
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<tr>
<td>W, Åkers Parish</td>
<td>-</td>
<td>Poles</td>
<td>Oral information</td>
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<tr>
<td>Tusköströmmen, Hargs Parish</td>
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<td>Poles, wreck</td>
<td>Gustavsson 1934; 1937:19; Westerdahl 1989b:129; RAÄ</td>
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<tr>
<td>Tuppagren, Långalmaviken</td>
<td>-</td>
<td>‘Barrier of stones’ in two places</td>
<td>OAU Norman 1936; Schram 1949:28; Westerdahl 1987b:218</td>
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<tr>
<td>Innersundet, Långalmaviken</td>
<td>-</td>
<td>Boats, stones</td>
<td>Westerdahl 1989b:130</td>
</tr>
<tr>
<td>Snuggsund, Östhammar</td>
<td>-</td>
<td>Stone barrier</td>
<td>Westerdahl 1989b:130</td>
</tr>
<tr>
<td>Trångsundet, Östhammar</td>
<td>-</td>
<td>Stone barrier</td>
<td>Westerdahl 1989b:130</td>
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<tr>
<td>Loo/Stäket, Hallbodaviken, Norsviken</td>
<td>-</td>
<td>Poles</td>
<td>Westerdahl 1989b:130</td>
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<tr>
<td>Helgeandsholmen</td>
<td>c. 1020 (dendro)</td>
<td>Poles</td>
<td>Ödman 1987, Westerdahl 1989b:129</td>
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<td>Poles</td>
<td>Lennart Karlsson, oral in-</td>
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<td>G. Larsson 1997</td>
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<td>Raä, Westerdahl 1987:223</td>
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<tr>
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<td>-</td>
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<td>ATA report Larsson</td>
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<td>-</td>
<td>Poles</td>
<td>N. Pihl, Gullunge, oral information</td>
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<tr>
<td>Snäcksjön, Snesslinge Parish (Börstil)</td>
<td>-</td>
<td>Wooden construction</td>
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**Södermanland**

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<tr>
<td>Stäket, Fällnäsviken</td>
<td>AD 780 ± 30; AD 1140 ± 75 (ST 10674) cal. c. AD 1225; AD 1275 ± 25</td>
<td>Poles, riders</td>
<td>Lindström 2000:37; Westerdahl 1989:127, Rönnby 2001:42, Deckel 2002</td>
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<td>Linasundet, Täljehus, Västertälje Parish</td>
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<td>Lindström 2000:35</td>
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<tr>
<td>Pålsundet</td>
<td>9th to 10th centuries</td>
<td>Poles</td>
<td>Edberg 2001, 2002; Rönnby 2001</td>
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**Västerbotten**

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<td>Avafjärden, Lövånger Parish</td>
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**Hälsingland**

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<td>Poles (?)</td>
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</tr>
<tr>
<td>Stegsundet, Rogsta Parish</td>
<td>-</td>
<td>‘blockhouse’ (?)</td>
<td>Westerdahl 1989b:129</td>
</tr>
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</table>

**Gästrikland**

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<tbody>
<tr>
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<td>-</td>
<td>Stones (?)</td>
<td>Westerdahl 1989b:129</td>
</tr>
<tr>
<td>Gavléan</td>
<td>-</td>
<td>-</td>
<td>Westerdahl 1989b:130</td>
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**Östergötland**

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<td>Stegeborg, south sound</td>
<td>AD 1510 ± 950</td>
<td></td>
<td>Beijer 1990:12, 51</td>
</tr>
<tr>
<td>Stegeborg, north sound</td>
<td>AD 850 ± 75l; AD 805 ± 75; AD 860 ± 75; AD 840 ± 75</td>
<td></td>
<td>Beijer 1990:13, 51</td>
</tr>
<tr>
<td>Pålsundet Eknön-Notudden</td>
<td>-</td>
<td></td>
<td>Beijer 1990:16</td>
</tr>
<tr>
<td>Ettersundet, Eknön-</td>
<td>-</td>
<td></td>
<td>Beijer 1990:16</td>
</tr>
</tbody>
</table>
Table 20. River blockages

Suggestions have also been made that the pole blockages not only were obstacles to prevent enemies, but also territorial and symbolic markers for a border of the rule of a small king or chieftain (Edberg 1994:18-19).

6.5.5. Place names as remains of pole blockages

The ON words related to the making of pole blockages and to these kinds of blockages themselves can be found in Old Icelandic texts, such as Snorri Sturluson’s *Haralds saga Hárfagra* (16).
In *Haralds saga Hárfagra* (see above p. 152) it is interesting to note the words used for putting down poles to block the river. One example is the Gauts' *stikud*, which is similar to the verb used in *Flateyjarbók* where the king *láta stika*. The noun is, as can be seen, *stikin*, as when King Harald Fairhair had to stop with his ships (*Haralds saga Hárfagra* 16). This word is related to ‘stek’ and ‘stäk’, and probably also to ‘steg’ and ‘stig’ (Bolin 1933:64). These words are found in at least nine of the cases with documented pole blockages. That these names are associated with river blockages is supported by Bolin (1933:61) and Franzén (1978, 1982, 1984), while in contrast Modéer (1937:176) argues that the names are associated with fishing equipment and fishing poles. A map combining these types of names with the known blockages shows that most of the main river entrances to the Swedish mainland can have been blocked.

6.5.6. The organised maritime defence

**Vårdkasar, the watch fires by the water routes**

To know when an enemy was arriving, watch guards were positioned at strategic places along the water routes, within visible range of one another. So-called *vårdkasar* ‘watch fires’ were erected at these places. If an enemy fleet was sighted, the fires were quickly lit one by one to notify people and to mobilise the defence before the enemy ships arrived. When this system was first introduced in Sweden is not known. In Norway, according to *Heimskringla*, it was during the reign of Hakon the Good (king AD 934–961) that this system was introduced together with a *leiðangr*-type of naval organisation, with the main purpose to guard the water routes, warn if an enemy was arriving, and quickly summon a fleet for the defence:

After this battle King Hákon incorporated into the laws for all the land along the seas, and as far inland as the salmon goes upstream, that all districts were divided into “ship-levies”; and these parcelled out among the districts. It was stated in the laws how many ships there were in every district, and how many large ones were to be furnished when a general levy was called; and a general levy was enjoined whenever a foreign army was in the land. Along with this it was ordered that whenever there was a general levy, beacons were to be lit on high mountains, so that one could be seen from the other. It is said that news of the levy travelled from the southernmost beacon to the northernmost borough in seven nights. (*Hákonar saga Gísla* 20, transl. by Hollander 1994) In this text by Snorri Sturluson we are informed that it took seven nights for the watch fires (*vitavørðr*) to deliver the call for defence along the 1500-km-long coast of Norway. The average speed then was 200 km/night. This means that from the watch-fire places on Kökar hills of Karlin, which for a long time was the easternmost place in Sweden, it would be possible to alert Uppland and the Mälaren Basin in one night.

The preserved medieval Norwegian laws also give detailed information about the duty to keep guards by the watch fires, and when to light them. A fire should be lit as soon as an enemy fleet of at least five ships was sighted. Here also a connection with the territorial ship-supply district can be seen (Landslagen III:4). In Sweden, the administrator of the fourth part (*Fjærfunger*) of the hundare district that lay closest had the responsibility to maintain a guard by the watch fire, according to the national law introduced by Magnus Eriksson.

In Sweden a defence system based on watch fires is known from the earliest provincial laws. There were three different levels, or lines of defence, in this system of guard and watch fires according to the Swedish provincial laws: *byvakt* ‘village guard’, *strandvakt* or *invakt* ‘shore guard’ or ‘inner guard’, and *bötesvakt* or *bergvakt* ‘watch fire guard’ or ‘mountain guard’ (UL KgB 12; HL KgB 9; SdmL KgB 12).

The *bötesvakt* was the outer national line of watch fires. A reminiscence of this is the many place names on hills and mountains along the coastal areas that still have the element –*böte* in their name (map). The guard of the *böte* was responsible to the king. If the guard failed or did not show up, the fine was 6 mark to the king.

The *strandvakt* was the guard on the inner line of defence along the water routes to the main settled areas of central Sweden. Possibly this was a guard on hills along the water routes, or maybe by the harbour of the naval district. The *strandvakt* guard was the responsibility of the naval district, the *skeppslag*. The naval organisation was used also for the organisation of defence. This is also clear from the way the changing of guard at the watch was organised. This was done at sunrise, and guard duty would in a fixed order follow the same routine as the so-called *buþkafli* that was delivered among the villages and farms in times when the navy was called out. A reminiscence of this could be seen in Dalarna, where the duty to keep watch by the fire – in the local (dialect) called *kall* – was shared between the villages in a certain, fixed order.

The fine, if the *strandvakt* failed in his duty, was 3 mark, to be divided into equal shares among the king, the *skeppslag* (see chapter 9) and the person who caught the guard shirking his duty.
One well-known inner line of watch fires from Stockholm to Birka comprised the following watch-fire places: Brunkeberg, Kungshatt, Wärbyberg and Blockhusund.

Along these inner lines of watch fires, many different names are known for the places of ‘guardian’ fires: Vard-, Val-, Vål-, Vår(d)-, Vite-, Vet-, Vette-, Ved(d)-, Vitul-, Kas-, Båk-, Bål-, Kall-, Bränd-, Eld and Jäll-, just to mention a few of the names used (summary of research concerning names of watch fires, see Westerdahl 1989b:172).

The byvakt was the responsibility of the inhabitants of the local village. The fine here for the irresponsible guard was 3 öre, which was given to the village people.

If an enemy succeeded in passing through the watch lines, the fine was much heavier: 40 mark for raiding and fires. The guard could, however, be free of this if two witnesses could swear on his behalf that he had shouted three härrop ‘alarm calls’. Places for these calls have sometimes been identified in place names with the element rop- ‘call’. According to the Guta law (chapter 54), guard duty warþi was the responsibility of all persons who had reached the age of 20. A guard also had to bring his own weapons.

6.5.7. The background: periods of unrest and naval attacks

The main reason for the precautions was that the enemies were presumed to be waterborne. The countries around the Baltic Sea that were behind the attacks all had developed small and light ships by the time the pole blockages and beacons were made.

The precautions traced archaeologically are thus different from earlier periods. In the period of unrest in the Migration Period, treasures were hidden in the ground and fortresses were built or reinforced for defence. The next period when the same precautions were taken against threatening enemies was the Viking Age, but especially severe conditions were present in the 11th to 13th centuries. The main difference between these periods seems to be that the threat of waterborne enemies reaching far up along the rivers was greater starting with the Viking Age. This is because many of the attacks were made from neighbouring Scandinavian peoples that also had developed the technology for radial splitting and could build small and light boats suitable for navigating the central Swedish rivers. By the end of the Viking Age, we know that also the west Slavonic ‘Wendish’ peoples had learnt to build
similar ships, such as the ones found in Gdansk-Orunia (see chapter 5). This was probably the main factor behind the ‘heyday of piracy’ caused by Wendish raids during almost 200 years to come. Behind the raids was also a kind of organised society; for instance a kingdom had developed in Poland, a factor that probably also was a prerequisite for the mobilisation of large fleets.

In the 9th century we are told in Vita Anskarii that the king Onund, who had been driven away by the Swedes, came back and attacked Birka, demanding levy contributions (Vita Anskarii 19). There were also other threats to the inhabitants according to Adam of Bremen:

The inhabitants of Birka have again and again been attacked by pirates, that are there in large numbers. (Gesta 1:60)

It is in this connection that the pole blockages in the Södertälje route, the entrance to Lake Mälaren basin, shall be seen (fig. 137). Here during Viking Age and the early Middle Ages blockages are made at Fållnäs, Pålsundet and Ragnhildsborg (Lindström 2000; Edberg 2001, 2002, Deckel 2002).

In the beginning of the 11th century, problems occurred in the contact between Sweden and Norway. The Norwegian Olav, who later became king, was harassing Sweden according to the court poet Otta Svarte:

People were frightened by your raiding expedition, warrior. You ravaged the isthmuses of Svithiod. (My transl.) (DNIS 269)

Two hundred years later Snorri Sturluson provides us with a more detailed, but perhaps less correct, account of this event:

King Óláf sailed then east along Sweden, thereupon steered into Lake Mälaren, harrying on both shores. He rowed all the way up to Sigtúnir and made fast his ships close to Old Sigtúnir. The Swedes say one can still see the stone wall Óláf made for the head of his piers. (Óláfs saga Helga 7 transl. by Hollander)

The Danish (?) duke Knut is also said to have plundered the countries eastwards and taken booty in Svithiod. So, too, did Magnus Nilsson, who also took heavy ‘Jupiter hammers’ (probably Thor’s hammers) from one of the islands and ‘still the Svear see him as a sacrilege’ (Saxo H 421). In Sverris saga Erik is said to have ravaged Estonia, Denmark and Sweden (Sverris saga 113).

At the end of the Viking Age, the 11th and 12th centuries were periods when the directions of maritime raids changed. In these centuries we find several peoples from the opposite side of the Baltic harassing the coastal areas of Sweden and Denmark with sword and fire. This less well known and less glorious time of Swedish history has, as we have seen, left many maritime archaeological remains.

‘Erik’s Chronicle’ tells of a duke named Jon, who had fought against the people of Russia and Ingermanland for nine years, but after returning home to Svithiod he was attacked and killed by them at Askans. His wife escaped to Hundhammar, gathered people, and had the enemy killed at the mountain Estaskär and their ships burned (Ek 490-509). In one of the manuscripts this event is dated to 1209, a date that is supported by Nils Ahnlund (1928: 149 ff).

Figure 137. The blocked entrances to the Mälaren basin from the south, with Viking Age and pole barriers at Fållnäs, Ragnhildsborg and Pålsundet. After Deckel 2002.

6.7.8. The interrelated changes in ship types, seafaring and maritime defence

The way the naval attacks were prevented changed in time and space, but in the 13th to 14th centuries also the military organisation was altered and adapted to a warfare based on heavily armed elite troops that waged battles on land as much as on water. The warship types also changed all over Europe, and heavy ships like the cog were taken into use as warships. This, together with the land elevation, transformed the rivers in the cognitive landscape into peaceful communication routes for the inhabitants and for commercial activities, since the warships that had come into use were unable to travel upstream the shallow rivers of central Sweden. At this time the construction of blockages in rivers almost came to an end, continuing mainly around castles. Svanberg has noted from Blekinge that several blockages, such as Tomtö, Bussevik
and Skällö, also have dates to c. 1200, but after this time the defence system seems to have changed and no more pole blockages were made in this area (Svanberg 1995:68). It was not until the light Russian galleys made their entrance in the beginning of the 18th century that the rivers had to be blocked once again.

6.6. Travelling in a roadless land

Parallels can be drawn with those parts of Scandinavia where travelling conditions even in the 19th century were similar to those in central Sweden in the Late Iron Age. This is important to be aware of in a discussion of communication. As was shown in chapter 5, there are several references in the historical sources that inform that travelling in the north of Scandinavia, an area without roads except for the coastal road, was mainly done on the water communication network. Already Ottar told that ‘the kväner carry their boats over land to the lakes and raid the Norwegians’ (Ottar after Lund 1983:23 my transl.). Olaus Magnus reported that the Russians on their way to the Torneå market ‘sometimes carry their boats on their shoulders over the strips of land that separate the water routes’ (Historia 20:2 my transl.). Both among the Sámi and the local peasant population of north Sweden, there is much evidence that travelling in areas without roads meant journeys with light boats in communication networks that included combined water and land transports. The analogies with ethnographically and historically known ways of travelling in this area will shed light on the probable solutions in prehistoric and medieval times in central Sweden.

6.6.1. Sámi water-communication system

It is important to note that it is typical for the Sámi communication system that they didn’t have a boat in each lake or river, but instead brought their boats with them. This was also the case in connection with fishing. Carl Johansson (1989), Sámi and teacher of the nomadic Sámi children, remembers:

In the spring, after the lakes around Varfoluokta had opened, the fishing took place. Common for all these lakes is that a person had one fishing boat that was taken across muorke, the land ridge between the lakes, depending on in which lake one was fishing. (Johansson 1989-90, my transl.)

Some of the land passages have been preserved to the 20th century thanks to the fact that they became useful to the forest industry in the 19th century and onwards for the floating boats. They were constantly reinforced. Several of these have not yet deteriorated and can still be studied. They are continually registered and recorded by the National Survey for Ancient Monuments.

With boats on land and water

In old travel accounts from northern Sweden portages were an ordinary part of the communication by boat, such as in the earlier-mentioned description by Rheen of the communication route for people and transports between the coastal port at Luleå and the inland mine in the mountain W of Kvikkjock in Lapland.

An interesting aspect is which words are used to designate a portage along a communication route, as well as how and where the different words are used. Notable is that, among the eight portages, two of the three outside Lapland are called Eed, while in Lapland where Sámi people still completely dominate the population the last four portages to Lake Saggat by Kvikkjock are called Måtken, i.e., the word mårkan, which is the corresponding Sámi name for the place where boats were carried and drawn between lakes and rivers.

It has been discussed (Friberg 1969; Widmark 1958; Westerdahl 1984) whether the term ed solely means a natural feature as ‘a piece of land between two waters’, or if it should be interpreted as ‘a piece of land along a water communication route where boats are hauled on land’. Based on the use of the word, my opinion is that the word should be interpreted from a communications point of view. Although few investigations have been made, archaeological remains have been found in places named Ed for facilitating the land transport of boats and ships, which supports this interpretation. Of course, these might be suitable places used secondarily as portages, but they only seem to occur along ancient communication routes. Nor occurs when land is situated between lakes in the forests.

Linné’s experiences

In the early 18th century, the famous botanist Carl von Linné made a journey to Lapland to collect material. The description of how the communication was organised between the coastal and inland towns and settlements had not changed considerably since Rheen’s days. Most of north Sweden was still roadless land, and the river systems constituted the main communication routes. When Linné travelled from Umeå to Lycksele and to Sorsele, mainly boat transport along the Ume River was chosen.

The journey started with a shorter distance on horseback from Umeå to Åbacken on 27 May. From there he continued in a small Lapish boat to
Teknäs, 28 May to Granön, and 29 May in a håp manned by a farmer who had both nets and hunting-ground in the area. The first 30 km were navigable, and then came three rapids, of which Tukenforsen was one, which could only be passed by carrying the boat as well as the luggage (fig. 138):

...we came to three rapids, some distance apart, that were impossible to sail upstream. The peasant leaves to me his things, puts his bag with food provision on the back and turns around the håp, putting the oars transverse, so that each is on each arm, and runs like that across hills and valleys so that not even the wolf almost could manage to follow. One of these rapids is called Tukenforsen' (Linné 1969:41).

On 30 May he arrived at the home of Vicar Ola Gran in Lycksele, and then continued upstream 31 May and the following night before resting; thereafter he travelled upstream to Jukta River until he landed on the wrong side of this river on 2 June, since the guide appointed was sick. He did not find the intended trail to Sorsele, but instead got lost in a large wetland area called Lycksamyren with deep and dangerous rivers crossing it. Linné was so tired that he decided to turn around, a decision that is of interest since he explained it like this:

I, who already felt sick of so big hardships, over mårkor that were many and that were long, by the carrying of my own things, because the Lapp carried the boat....

As an itinerary he summarises the route to Lapland from a clearly waterborne point of view, with the navigable parts as well as portages noted (see G. Larsson 2006).

6.6.2. Travelling to church among the inhabitants of Enviken, Dalarna

Albert Eskeröd (1973) has done research on the use of church-boats, based on ethnographic questionnaires to local informants in the beginning of the 20th century. In the inner parts of the north of Sweden where the road net was not developed until the last century, the route to church was along the waterways, both on land and in water. This was also the case in east Dalarna. Albert Eskeröd writes about the people in the village of Enviken, Svärdsjö Parish, in Dalarna:

It has been told that most of the Enviken people, at least during the later part of these journeys, used the same boat all the way down to Svärdsjö Church. But since there was not an open water route all the way, they had to pull the boat from one lake to the other, beside the rapids and streams. Between N and S Lingan they hauled the boat across the lowest passage of the ridge between the lakes that was called Hedhuven. The same procedure was applied between S Lingan and Iskan by the Lingheds stream. Then it was possible to row down Hökviksän and Svärdsjö and land by the Prostparken.

The neighbouring Tänger village inhabitants in Svärdsjö Parish instead had a boat in each lake and exchanged boats. They rowed across Vägen and left the boats by N. Lingan at a landing place called ‘Tänger lännstan’ (cf. länn- used in place names for old landing sites for boats, such as in the Länna parish- and village-name, Roslagen, Uppland). They brought food for dinner that they left in one of the farms they passed and ate on their way home in the evening when the housewife at the farm offered small beer (an old Swedish beer type).

6.6.4. On land and water to Arjeplog’s church

In northernmost Sweden, in Lapland, the inhabitants of the villages around the shores of Naustajaure had a 50 km route to Arjeplog’s church involving both land and water transport of the boats by the lakes Storavan and Uddjaure to Hornavan where the church was situated (see map). It was especially the rapids beside Naustajaure and Storavan that were so forceful that they had to pull up the boats on land beside them. The currents at Kasker between Storavan and Uddjaure were also strong, but here it was possible to pole small boats upstream. This was half the distance to the church, and it was the place where people from Naustajaure used to spend the night on their long journeys to the church and back.
6.6.5. The main communication route in the 17th century from the port at Luleå to the silver mines above Kvikkjokk

Samuel Rheen (1897:50 XVII.I) wrote a description of how to make the journey from Luleå to the silver mines in the mountain. He gives a description of the communication route for people and transports between the coastal port at Luleå and the inland mine in the mountain W of Kvikkjokk. Distances are given on water and where the portages are situated (see G. Larsson 2006). That this is a waterborne communication as in most of roadless Europe is something contemporaneous readers are expected to know. Important information in this itinerary for the traveller is the distances where it is possible to sail and row, and the length of the portages between them.

6.7. With ships over land and water in ON material

What was the situation in south Scandinavia? Although the topic here is the Swedish material, the meagre historical sources might be illuminated by the neighbouring country of Norway and foremost by the sagas where land transports are mentioned several times. Sverris saga tells us that, as late as in the 1170s, the Norwegian king Sverri took several ships in Randsfjord. He then moved them to Mjøsa. This journey meant that the ships were moved along a route from Randsfjord 124 m above sea level, then past Høykorset – a mountain passage 676 m above sea level – to Einavann 399 m above sea level, and then by the river Hunnselven with many rapids 20 km down to Mjøsa 124 m above sea level. Here he then took control over the local boats. King Sverri made other, similar journeys, as when he pulled ships past the river Sarpsfossen to get to the village of Glomma.

Snorri tells us in Óláfs saga Helga (ch. 52), that Ketil from Ringanäs was given a karv with 15 rooms by King Olav in gratitude for his help at the Battle of Nesjar. He took the boat up the river Glomma, past the rapids at Sarpsborg, to the lake of Mjøsa where he kept his estate at Ottestad in Hedmark. The karv was a name for one of the light ship types used on portages with 5-15 pairs of oars (Larsson 2004). Falk, who has studied most of the ancient Norse material, the sagas and the skaldic corpus, makes the following reflection about the karv and ship haulings: ‘Though the number of oars was like that of the smaller longships, the karv ought to have been of lower draught and lighter built. Their crew was a lot smaller and did not exceed what was necessary. Several times it is men-
tioned that these ships were hauled over land from one lake to the other’ (Falk 1995:94 my transl.).

In the beginning of the 13th century we have many accounts of how kings and aristocrats bring their ships when they travel to the interior, despite the many and long land transports. In 1218 the king Hakon Hakonsson pulled 14 ships to Øyeren, according to Hakon Hakonssons saga. In the same saga there are other examples: in 1222 ribbungene moved several ships from Drammensfjorden to Tyrifjorden, then up to Randsfjord. In 1226 Hakon, like his father Sverri, moved ships also up to Mjøsa, but this time a total of 34 ships were taken from Oslo instead. In the same year, 1226, his men moved 13 ships from Sarpsborg by Glomma to Øyeren. In 1227 King Hakon carried 35 ships from Oslo to Glomma (Brögger & Shetelig 1950).

6.8. The maritime landscape and how it disappeared

Today it is hard to imagine the way the landscape of central Sweden looked in the Late Iron Age. It may be difficult to understand how the small ditches in the countryside once were important river routes. It is therefore important to reconstruct the prehistoric setting and to illuminate the fundamental changes that transformed the landscape completely in the last centuries and eroded most of the lake and river systems that were characteristic of this area earlier. The maritime landscape was a necessary part of the maritime society.

In the following, one of the most important central Swedish river routes of the Late Iron Age will be discussed, the so-called Långundra River route. This will provide an example of the process all over Sweden during the last 200 years, which completely transformed the landscape. In order to understand how a maritime society could develop in central Sweden, it is necessary to know what the landscape looked like before the changes.

6.8.1. The Långundra River: the life and death of a water route

The Långundra River route has had thresholds holding the water behind at a level that permitted sailing and rowing. Halfway to Uppsala, in Gottröra and Husbys-Långundra parishes, is the highest point and the watershed between the east and west parts of the river route today. At least in the west part until the 19th century the bottom of the valley here was covered by a lake called Malsta Lake, which has since vanished after several drainage projects. A spearhead was found here, recorded in
the notes as found in ‘Mälsta Lake’. Today in spring the flooding period recreates part of the lake, when meltwater covers the valley (fig. 140). In the Iron Age this lake was even bigger and deeper. It reached a level of about 15 m. According to Gunnar Skoglöv’s observations of sections uncovered in 1985 when digging ditches in the ridge at the western end of this lake, it was blocked by the Stockholm ridge to the west at Vallby in Husby-Långhundra Parish. In the section that was visible it could be seen that the water from the dammed-up lake had burst forth in enormous quantities and with great strength. Both at this ridge and in the east in Frösunda Parish, the natural blockage seems also to have been improved by man-made constructions. At Vallby the ridge was improved by timber, which was swept away when this blockage capsized naturally or deliberately. The worked timber found in the layers after this catastrophe was 14C dated to 1030 ± 35 BP (St 10104), thus between AD 785 and 1055 (Skoglöv 2000:15, 283).

The observations made by Skoglöv and supported by SGU show the river route in a new light. The water level had permitted much river traffic from the Baltic Sea towards Uppsala up to the Viking Age, and with smaller vessels into the historical period. The strategic point at the western end of the lake at Vallby, where boats had to pass the ridge on land towards Uppsala, was well protected and guarded by the hillfort Broborg above the site.

At the southern end of the former lake, Gunnar Skoglöv made other observations in 1985. These included a large amount of stones, in an otherwise stone-free field at the bottom of the valley, lying in a band and crossing the river route between Fågelsunda and Skarpsundsby in Frösunda Parish. In 1988 professor Bo Gräslund from Uppsala University, together with Skoglöf, dug a test pit in which it became clear that this was a constructed rampart of earth, stones and timber, visible as dark colouring in the soil (Gräslund, unpublished report UM archive; Skoglöv 1993:181). A researcher of diatoms took a sample and at 12 cm depth found species that live in dry air. Below the construction to the southeast much wooden material could be observed when a ditch was dug. The wooden material was lying without any order, and included many thin laths, but also boat parts such as a rudder block and a mast bite. In the forest beside this construction also a large number of pits are visible where the material for the construction has been taken. Cut poles were observed by a farmer at Berg village when digging in Helgö Lake.

Gräslund and Skoglöv interpret this construction as a temporary construction probably made in connection with the attack by Canute on the Svear in 1026, when several battles took place (Gräslund, B. 1986). Anund together with the rebellious Olav Haraldsson, who had seized the crown in Norway in opposition to the earl appointed by Canute, waited for Canute’s fleet ‘in the mouth of the Holy River’ (ON a in Helga) and a big battle took place in which Canute seems to have been victorious. The way the battle took place was described by Snorri Sturluson, but has not been believed since it fitted so badly with the topography and conditions prevailing at Helgeå in Scania, the place that earlier has been identified for the battle. Anyway, he describes how Anund remains with his fleet by the river mouth and Olav runs up along the river to the place where the river flows out into a lake. In Scania he would have had to run to the border between Scania and Småland to find such a place, but with the 11th-century shore level such a place is found at Fågelsunda. Snorri continues by telling how Anund had a river blockage made. In Scania this is almost impossible. Snorri describes how Olav worked for many days building a dam wall of timber, turf and earth at the southern end of Hellvi-jken (?), and he also dug ditches to adjacent lakes to acquire enough water. When he received the message from Anund that Canute’s fleet had arrived, he broke the dam. A wave rushed towards Canute’s fleet and washed over many ships and caused a lot of disorder; many ships broke into pieces and many Danes and Englishmen drowned.

Without further penetrating Gräslund’s evidence that it was here, in Helge River in Uppland, these events took place, it can be concluded that the blockage at Fågelsunda when broken could cause a wave large enough for the purpose. The rampart as reconstructed by Skoglöv (1993:181) could have been 4-5 m high, and when broken it could have caused a wave that, according to calculations made by Vattenfall and which Skoglöv refers to, included 500-1000 m/s, giving the wave a speed of 40 km/sec and a height of 3-4 m. Within four minutes the wave would have reached Canute’s fleet at the mouth of the river.

The river route seems to have been the object of interest for the authorities by the end of the Late Iron Age. In the east part of the river, where it widens to a narrow lake, an island now called Toftesta holme, in Össeby-Garn Parish, is strategically situated. On this island constructions dated to AD 970 ± 100 have been found. A constructed plateau with steep sides and a possible moat is visible, as well as house foundations and an elevation 6 x 6 m that may be the remains of a wooden tower. The island could have been established and used as a control point for the river traffic (Skoglöv 2000:284), but it could also have been a marketplace.
The beginning of an end

The big changes made by humans on the river route have been analysed in detail by Yngve Gustafsson, agronomy PhD at Ultuna, a specialist in water and plant cultivation, and since 1956 professor at KTH in Stockholm (Gustafsson 1993:23ff). He describes how earlier thresholds held lakes along the river in place, such as the now completely drained lakes of Vadasjön, Helgösjön, Hederviken, Östuna, and Mälsta. By removing the thresholds with machines or dynamite, the lakes were quickly transformed into meadows, and by complementing with ditches they soon became arable land.

The eastern part of the river system from Närtuna and Hederviken to the river outlet in Äkersberga was lowered several times. Still in the 11th century the river was used for transport. The county governor Lars Bentzelstierna went from Åker to Helgö to get a herring boat (Sundqvist 1986:19), and in 1705 the district judge Anders Ersson travelled here with a herring boat (Sundqvist 1986:19). Until the 18th century, the lowering was seen as vital for the local transports. In the 19th century, however, the agricultural interests came to dominate, and it was first in 1873–74 that the Helgö and Vada lakes were lowered, followed by another attempt in 1892–93 to transform the remains of the lakes into more arable land. In some cases the levels were recorded, such as 1935 when the largest drainage project in Sweden was undertaken by ‘Garnsviken-Vadasjön-Helgösjön-Hedervikens torrläggningsföretag’; it involved 1300 ha land, from Äkersberga to Skepptuna Church. Much ditching and digging was done. The lake Vadasjön, which earlier covered the whole valley between Vada Church and Benhamra estate, disappeared completely and the lake bottom was transformed into meadows, as was most of Helgösjön. We know that the lake Hederviken was lowered 0.9 m, and almost disappeared as well. In 1869–70 the Viggeby and Stolp-Ekeby lakes were lowered 1.2 m when a waterfall was removed near Frösunda Church; and the adjacent lakes Stor- and Lillsjön near Orkesta, where the Lindholmen estate is situated, were lowered 1 m.

Situated in the central part of the river route, in Gottröra and Husby-Långhundra parishes, is the watershed. Today it has a water level of 13.1 m above sea level; the bottom of the ditch is 11.6 m above sea level at the highest point. Large ditching projects have affected the area on both sides several times, namely at the watershed and eastwards through Lindbergaån in Gottröra in 1895–96, and from Gottröra at the ‘Gottröra ditch’ to the Husby River westwards in 1925 (37). Until the 19th century in Husby-Långhundra, Mälsta Lake covered the bottom of the valley, held by a lake threshold at Lilla Vallby where the ridge crossed the river. In the 1880s voices were raised for a complete draining of this lake, and some years later this was done (Sundqvist 1986:25). Before all these projects took place, the level of this lake was at least 9.4 m above sea level, lowered at least 2.6 m by ditching and digging away the threshold. At this lake, situated in the Late Iron Age central settlement area with the royal estate Husby-Långahundra (earlier Husby Ærmavi) and with Tuna and other important places of administrative and religious significance, another important river route joined Långahundraseden. This was the river from Folklandstingsstad – the early medieval town and place for the thing of Attundaland – and it connected from the south here, from Sigridsholmssjön in Lunda by Nederångssjön to Mälsta Lake. Nederång Lake was lowered at least 2.5 m from an earlier level of 12.6 m above sea level, which it had before 1850. On a map from 1782 we learn of ‘Big Sigridsholm Lake’. The name was very apt, since the level of the lake at the time as reconstructed by Gustafsson (1993) was about 15.3 m, compared to the present 13.8 m which gives a significantly different landscape (map below).

As can be seen from the map, the former larger lake passes the medieval estate of the Vasa dynasty and it also had an outlet eastwards at Skepptuna. In the lake there was a sacrificial site from the Bronze and Iron Ages (this will be dealt with later), and the religious context is also underlined by the parish name Lunda. Near the church in the southeast and on a hill called Ekhagen, building remains have been observed. Excavations in several places southeast and northeast of the church have yielded medieval material. Here ceramics were found, as is often found in the cultural layers of towns, and they indicate that this was the place for the town of
The lake was connected with the lake system from Mälaren by a portage from Lake Halsmjönn (Raä 233), facilitating the water transports.

The western part of the Långhundra River route was also characterised by the now-vanished lakes and navigable rivers. In an investigation by Iggberg in 1843, he writes that on Östunaby’s low and wet meadows there ‘was earlier a lake, called Östuna Lake’ (after Gustavsson 1993:34 my transl.). During some years, even today, the lakes reappear in the spring floods (fig. 140).

A distance to the west, Storån River meets Sävjaån; at the bridge the level was 5 m above sea level, but today it is 3.6 m above sea level after a documented lowering of the levels by 1.4 m (1993:36). In this flat landscape, the results are considerable.

The ‘Långhundra River route’ has, due to a combination of human efforts and natural causes, changed from a river- and lake system to a silted-up ditch. Many scientists and others are not aware of this. Usually ‘shoreline’ is discussed in terms of sea level during different periods. Thus, a prehistoric settlement situated at 10 metres above sea level is regarded as being located by the water only in the Early Iron Age when the sea level reached this height in central Sweden. In a similar way, water communication is regarded as having been possible on a larger scale only when the shoreline of the sea covered the area. My analysis here has shown that not only small streams for the smallest boats covered the landscape, but also bigger, navigable water routes in the landscape that partly shaped the society of Late Iron Age Sweden.

6.9. To summarise: why a journey on a water route?

The water routes, as we have seen, were of primary importance. This is evidenced by the location of settlements, central places and harbours. It is also evidenced by the amount of legislation and rules concerning the maintenance and proportions of different kinds of waterways, as well as the juridical treatment if obstacles were affecting common communication. That the water routes also were used by potential enemies is shown by the archaeological remains of blockages in the rivers and the organised defence using watch fires along the water routes.

Why, then, were they so important? Why wasn’t the extensive network of riding trails used instead as the primary basis for travel? The answers are:

1. The reduction of time for journeys by boat.
2. The poor quality of the riding trails.
3. The extensive network of rivers and lakes.
4. The possibilities for portaging.
5. The high quality and lightness of the boats.
6. The reduction of effort for transporting cargo.
7. THE JOURNEYS ABROAD

7.1. Seafaring, ships and society

Why is it important to have a discussion about seafaring in a work about ships and the maritime society? The answer is that seafaring laid the ground for a maritime society, and the development in shipbuilding created unique ships that made this seafaring possible. Here I will argue that the ships were the necessary factor for both long-distance trade and the external exploitation by organised, naval raids. The light ships that were the result of the changed building methods could easily navigate the shallow rivers to markets abroad, and they could be hauled across portages as well as beside obstacles in the rivers, such as rapids. In the first part of this chapter, I will focus on the connection between the improved shipbuilding, as discussed in chapter 4, and the possibilities for seafaring. The light ships could also land anywhere on shallow beaches during the raids, making organised defence impossible. It was thus the seafaring that caused the economic growth at home. The awareness of this, together with an emphasised pride in the ships, made them the key symbol of the maritime society.

The ships not only played a significant role in the European political history of the Viking Age. The long-distance journeys that became possible thanks to the central Swedish small and light ships, also were important factors behind the development and expansion of the trade network, as well as the development within warfare methods. As a result, the first urban centres were established in Sweden, and the Scandinavians also played an active part in the earliest phases of several early towns along the water routes in the East.

The role of water communication has, however, not been undisputed and has sometimes been questioned, especially concerning the eastern journeys. The results of some of the experimental journeys with replicas of Viking ships have, for instance, cast doubt on the possibilities to bring ships all the way to the Black Sea. In the last part of this chapter I will discuss how the results of these modern experiments are extremely dependent on the methods and ships used, and that when these factors are changed the results are completely different. In the ongoing debate, land communication and winter routes have been presented as an alternative. Because of this it is important to analyse the communication system in the Late Iron Age to determine the role that water communication played.

The seafaring of the Svear was mainly directed eastwards. Also here the ships were the main factor, as I will try to show, not only for the external exploitation from central Sweden, but also for the development of the trade routes that became the prerequisite for trading centres such as Birka and Sigtuna. Here I will not use the traditional archaeological material for the question of the role of Scandinavians in Rus and further east. Instead, the most important archaeological material for determining the role of ships and waterborne communication with distant areas, such as the Black Sea and the Caspian Sea, is the remains of Scandinavian boats and ships along the eastern routes. These will be discussed against the historical background outlined in written sources. In the previous chapter we saw that, despite similarities in the shape of the ships, Scandinavian vessels differ from the ships built in other parts of both Eastern and Western Europe. There are also differences within the Baltic Sea area, and accordingly it is important to note that the rivets and shape of ships within central Sweden differ from those in southern and western Scandinavia. In Eastern Europe the Scandinavian ships thus differ from the local ones, and it is therefore possible to trace the remains of Scandinavian ships and seafaring, but also to decide from which part of Scandinavia the foreign ships came. The archaeological nautical material has seldom been used in the debate to illuminate the actual seafaring of the Svear.

The importance of seafaring is a fundamental part of my designation of Late Iron Age society as ‘a maritime society’ and will thus be discussed here. Due to lack of time and space, only the eastern journeys will be considered, but these are the ones that are of primary interest for Swedish seafaring and also the most controversial.
7.2. SHIPBUILDING AND SEAFARING POSSIBILITIES

7.2.1. Experience and history
The shipbuilding methods that resulted in reduced dimensions compared to contemporary ships have, as we have seen, given rise to light ships as well as to shallow draught. The importance of these conditions has been discussed by Almgren (1962, 1963). During the experiments with Embla it became clear that she could navigate in the shallowest waters. One occasion that demonstrates well the difference between these smaller, light boats built with radially split planks and the so-called Viking ship replicas built with modern methods was the recording of ‘The Viking Saga’ in Foteviken 1997. Most of the existing replicas in Sweden at the time had been called upon for the shooting of the film sequences illustrating the beginning of the Viking Age with the attack on Lindisfarne in AD 797 and ensuing attacks on England’s shores. The fleet approaching by sea was not a problem. But when the landing of the ships by the shore of Lindisfarne was simulated and filmed in similar, shallow waters of Öresund, it was only the two ships built with radially split planks, Embla and Erik Emune (based on Foteviken 1), that were able to sail all the way into the shallow shore for landing. The other ships did not even come close to the shore on account of their weight, their deep draught, and the shallow waters off the beach of Foteviken. The conditions were the same in Lindisfarne, as can be seen on the marine chart. On the outside there are cliffs while on the other sides of the island are sandy shores with shallow waters that drain at low tide. That these waters could be navigated was what astounded the monks of Lindisfarne the most:

No one could believe that such seafaring was possible. (Mon. Germ. Hist. IV:42)

The advantages of the light ships were the main reason behind the success of the Scandinavian Viking Age raids in the East and West. The possibility to land anywhere made it impossible to predict where the attacks could be expected, so defence could not be prepared. The ships were completely independent of the harbours that long since had been fortified (Lewis 1958:395; Almgren 1962:191). Ships landing in a similar way as Embla, i.e., by sailing all the way into the shore where the crew could then jump off the ships and wade to land in the shallow water, are perfectly illustrated on the Bayeux Tapestry (fig. 141).

The advantages of the light ships were not realised when King Alfred, at the end of the 9th century, built a fleet to deal with the Scandinavian navies harassing the coast. According to the Chronicle:

Then King Alfred had ‘long ships’ built to oppose the Danish warships. They were almost twice as long as the others. Some had 60 oars, some more. They were both swifter and steadier and also higher than the others. They were built neither in the Frisian nor the Danish pattern, but as it seemed to himself that they could be most useful… (‘The Anglo-Saxon Chronicle’ for 892, transl. Whitelock 1955:189)

The same summer, when the Danes attacked the Isle of Wight, Devon, and, to quote the Chronicle, ‘everywhere along the coast’, King Alfred ordered nine of his new ships to go there. Three of the six Danish ships went out against the English and two of them were captured and the men killed:

…and the one ship escaped. On it also the men were killed except five. Those got away because the ships of their opponents ran aground…
The ships of the English were too big, too deep and too heavy. The Scandinavian ships could easily escape into shallow waters.

7.2.2. Scandinavian strongholds: naval bases for light-built ships
Soon after the first phase of naval attacks a network of military bases was created for the naval fleets, based on a water system navigable only by the light Scandinavian ships in order to ensure the continuation of this external exploitation. Strongholds were established, often on islands surrounded by shallow waters that were impossible to reach by the local military forces with their heavier, deeper ships. On the shallow islets in the river estuaries, only the light Scandinavian ships could be used for landing. Here the naval crews created strongholds to stay over winter, as had been created in the Seine, the Loire, the Rhone, and on the Isle of Thanet and Sheppey. The Orkneys, which lacked good natural harbours that could be used by the West European ships, had sandy bays that instead offered excellent possibilities for landing. The Orkneys, which lacked good natural harbours that could be used by the West European ships, had sandy bays that instead offered excellent possibilities for landing with Scandinavian ships. In the Seine the well-known island of Oiselle was used for a Viking camp, surrounded by shoals of sand in shallow waters, probably situated by Jeufosse close to Paris. The bigger island in France with the shallowest shores along the Atlantic coast, Noirmontier at the mouth of the Loire, was occupied by the Vikings, as was also another island with a similar environment, namely the island of Camargue situated between the two arms of the river Rhone (Askeberg 1944:167 ff; Almgren 1963:216).

7.2.3. Ships and river journeys
On the journeys to Western Europe, the Scandinavian ships could reach much farther up the rivers than the local ships without reloading. They could be rowed, whereas the local ships had to be towed (Oxenstierna 1959:21; Almgren 1962:192).

The eastern journeys were made possible with the type of ships used by the Svear. That the use of smaller boats, such as the ones found in the central Swedish burials, was a necessary condition for these journeys has been proved by the experimental journeys made. The 2/3 replica of the Gokstad ship, Havörn, was too deep and too heavy to even lift it out of the water without the help of a crane. The replica Krampmacken, inspired by the ‘Bulverket boat’ and built by modern-day boat builders with conventional ‘modern’ methods and dimensions of the wood, also was too heavy. Men and muscles were needed for the rowing, but not even that was enough when the necessary portages came.

7.3. Problems and possibilities related to the journeys across the Baltic Sea
A basic question concerning the seafaring of the Svear is whether small ships of the size of the burial boats could be used, and had been used, on the journeys abroad. As we have concluded, these small and light ships were superb for river communication in both Sweden and Russia, but could they be used on the open sea? Have we actually found the boats used on the profitable eastern journeys, or were the burial boats too small for such journeys? Since a cornerstone in my argumentation is that the small and light ships enabled the far-reaching trade network and were the necessary prerequisites for the development of a maritime society, it is also important to find out whether these vessels really could manage the voyage across the Baltic Sea, which had to be passed on the way to the Volga and the Caliphate. One of the main ways to answer this question is to make experimental journeys with replicas of boats found from this period and to use the same methods as in the original building process. Another fruitful solution may be to draw support from ethnographic documentation that shows how similar boats were used to cross the sea.

7.3.1. Small boats on a big sea? The boats used to cross the Baltic Sea
In the planning of the experimental journey across the Baltic Sea with Tälja, the replica of the Viks boat which in shape and size corresponds to the boats from Valsgärde, scholars expressed doubt that it was possible to sail on the open sea with such a ‘small’ and open boat. The journey, which will be referred to below, proved beyond a doubt that not only was it possible but also better and safer to travel with such a boat built with the same methods as the original, rather than one built with modern methods.

That small boats were not an exception on such journeys but instead were used on a regular basis is confirmed by an ethnographical analysis of the types of boats actually used by the population. The same result is obtained if one takes a closer look at the existing remains of boats from the Baltic Sea.
The same route as was probably used for the earliest eastern journeys is documented in the itinerary of the 13th century. This itinerary was a guide for small and light warships on their way from Denmark to Estonia. The shallow and now completely drained routes mentioned in this document prove that small and light warships were used for this journey, the same ships that were later used to cross the open sea on the stretch between Arholma and Eckerö, Hangö and Estonia. This route was partly also used for the transport of travellers already in the Middle Ages, especially for officials and military persons. Here usually the smaller boats of the peasants came to be used. The postal deliveries organised in the 17th century are another source of information on the boats used.

These deliveries were, like the earlier personal transports, maintained by the local population at Väddö, who in return got some tax relief (Gustavsson 1971). For these journeys the small and open fishing boats called skötbåt (see chapter 3) were commonly used. As we have seen, these boats were even smaller than the Viks boat and measured 7-8 m in length. Sometimes also the storbåt was used (fembordsbåtar, sexbordsbåtar), 9-12 m long. The internal organisation of the transports resembles the early medieval hamna-organisation for naval purposes (see chapter 9). The peasants of Väddö Parish were divided into territories called rota that were responsible for the boat transports and the supplying of a crew, altogether 21 in the parish (Boije & Prenzlau-Enander 2003). Like the hamna, each rote consisted of eight peasants and each peasant represented one farm.

The ethnographic documentation also shows that ordinary fishing boats were often taken to fishing grounds far out at sea. On Gotland the tremmäning, of the same size and comparable to the skötbåt, was used for these journeys (see Larsson 1993). As can be noted, these are the traditional boats in Sweden that are most similar in shape, though smaller in size, to the Viks boat and the boats in the Valsgärde burials, since they are narrower in relation to length and also have more out-falling stems than other fishing boats. Boat builders explain that they are built like this to be faster than other boats – though it also renders them less stable – since the fishermen had a long journey out to the fishing grounds and had to be able to return home the same day. Outside Gotland there are no smaller islands where seasonal fishing camps could be erected close to the fishing grounds, like the camps in the outer archipelago for the fishing villages in Roslagen; with these camps it was possible to overnight and stay out for longer periods fishing.

There are some finds of prehistoric boats from the Baltic Sea. Two Iron Age boats have on different occasions fastened in trawler’s nets in the sea outside Gotland and Öland. These were not big Viking ships, as some might have expected, but expanded logboats. One of these was caught by Polish fishermen in the 1950s. It was made from an expanded oak trunk, 4.4 m wide, with very thin sides and a semicircular section with an edge pointing like a beard under the stem. Two ribs were nailed with treenails to the hull at a distance of 1.27 m (Crumlin-Pedersen 1970:232-233; 1991:224ff, 242). This boat can now be seen at Muzeum Moraskie in Gdansk, Poland. In 2002, Swedish fishermen outside Öland also got a logboat in their net, which now has been radiocarbon dated to AD 1000–1250 (Lars Einarsson, Kalmar Museum, personal information).

From the outer archipelago of the Swedish east coast, two early finds of smaller boats are known: one Neolithic expanded logboat from Helsinki (Rausing 1984), the find-spot originally at the outermost skerries; and another Viking Age expanded logboat from outside Haglò Island in the archipelago of Blekinge (Persson 1992; Blekinge County Museum Archive). Not even in the inner archipelago have we found a ‘Viking ship’, if we define it as a ship of the Gokstad or Oseberg type. Instead one boat of the Viking Age Svear that looks somewhat different from this type and falls outside the definition was found outside Loudden in the Värtan harbour (ATA Dnr 2892/40; Stockholm City Museum). Like the earlier mentioned, this is also an expanded dugout. As described in chapter 4, the expansion gives a thin, soft and pliable hull that can endure the bends at sea without breaking, like a radial split hull. The width also increases through the expansion process. This, in turn, increases the stability of the otherwise very narrow and unsteady logboat and results in a boat with the shape of a canoe, to judge by my own experiences from the building of Smia, a replica of the expanded and extended logboat in the burial Tuna in Badelunda 75 (Nylén & Schönbucks 1994). From a hollowed-out log that measured 0.45 m in diameter before expansion, a hull 0.9 m wide was obtained after the treatment with fire and water.

Figure 142. The Viking Age boat from Haglò found in the outer archipelago of Blekinge. Blekinge Läns Museum.
An expanded and extended logboat of aspen, locally called äsping, was still used in the 19th century for postal deliveries in the Åboland archipelago in SW Finland. One such postal boat is preserved in the collections of the Historical Museum of Åbo (fig. 143). It was probably built in the coastal areas of Satakunda (Koivusalo 2002:61). The boat, about 4 m long, is equipped with two false keels to protect the bottom when hauling across the ice. There are also transverse iron bars in the stems for lifting and pulling the boat.

The boats from Valsgärde, as well as the Viks boat, are larger, wider and more stable than the skötbåt used for the postal delivery between Sweden and Åland, and also the recovered prehistoric logboats. As with the prehistoric, expanded dugout finds, the radially split planking has enabled the Viks boat and the burial boats to have a soft and pliable hull, which at least in the Viking Age was made extremely thin and light as well. The resulting properties for sailing will be discussed below when evaluating the experimental journeys made with the replicas Tälja and Embla.

The sailing capabilities of the boats and ships used

Sibylla Haasum (1974) has in her dissertation studied sailing, and concluded that, ‘the square sail was not suitable for sailing close-hauled. It is a romantic misconception that square-sail-rigged boats were good sailors. Aerodynamically the sail is bad’ (1974:86, my transl). Her statement is very bold, since at the time it was written we did not have any remains of a Viking Age sail, and neither did we have remains of a square sail for a smaller boat of Viking type until the one recently recovered in 1997 on an island (Hemmarö) in the Stockholm archipelago (Liljeros 1997). In 1974 not many experiments had been made with different types of sails, different ship types, or ships built with different methods; neither were there experiments with the special sailing methods as depicted on the Gotlandic picture stones, nor with experimenting with ballast, and the crew used as ballast, in the ship during different winds. In the 1980s and 1990s the Ship Archaeological Centre built replicas with original methods at a speed and has made many trial expeditions. The sails used, however, have been of late Norwegian type. With Krampmacken, Erik Nylén tried sail types that resembled those on the Gotlandic picture stones and that had a similar rig (Nylén 1983, 1987a).

However, Haasum’s main goal in her dissertation (1974) was to study the sailing capabilities of the Viking ships, the sailing itself and the navigation. Her material consists of the Gokstad, Oseberg and Tune ships from Norway, the Ladby ship from Denmark, and the Åskekärr ship from Sweden. The material and text almost only take west Scandinavian ships and seafaring into consideration, while the east Swedish material, such as the boats in the boat burials, is completely lacking. The differences between the sailing capabilities of boats with radially split planks, as in the Viking Age, and sawn planks, as in the boats used by Haasum in the experiments, are not discussed either. However, the impact of these differences for rowing and sailing was not observed until the boat builder Axel Lindberg carried out pioneer work in the 1980s. Based on his lifelong experience of not only boat building but also sailing, Lindberg (1990, 1993) compared the results of ships built with Iron Age/medieval methods, like Blanka which he built as the first Swedish replica with radially split planks, to the square-rigged ships with sawn planks that he had sailed earlier, like Viking Plym which was one of the first replicas in Sweden.

The Danish replica built with the radial splitting method, Roar Ege – which is based on Skuldelev 3, the smaller merchant vessel found at the inlet to Roskilde – has turned out to be a good sailor with excellent capacity for cruising, in contrast to Haasum’s experiences (Winner 1984; Vadstrup 1986; Andersson 1986). The merchant ships were built for sailing and had a more centrally placed mast, to improve the sailing capabilities. The warships, like the Viks boat, were built to be fast and easily manoeuvred. They had a longer and narrower shape, and in order to sail better on rivers the mast was stepped forward, as is ethnographically documented (Rausing 1984). Also the Viks boat can cruise without problems. The replica of it, Tälja, built with radially split planks and a soft, pliable hull, was used in 2001 for trials and the experiments could confirm this (report Båttekniska grup-
pen, Viksbåten association 2001). The results showed that in rougher sea she was slower against the wind, 74°, whereas in less rough sea 65°. She could also cruise with very little wind, and during trials in 2001, with only 2 m/s, she sailed 61° towards the wind.

This is, however, not the only benefit of a soft, pliable hull. In 2000, an experimental journey was made with Tälja across the Baltic Sea – from Simpnäs on Arholma along the old coastal sailing route, across the Åland Sea to Eckerö, by way of the archipelago of Åland over to the southwest archipelago of the Finnish mainland, and then south right across the Gulf of Finland to Estonia. The purpose was to test the possibilities for a voyage across the Baltic Sea in a smaller boat like the Late Iron Age vessels found in Swedish soil and the Viks boat, since several scholars had cast doubt on this (Edberg 2001). The result was that this boat proved excellent for the purpose. On the stretch of the voyage between Simpnäs and Eckerö there also was an opportunity to study the capacity to deal with a very high sea. In the middle of the Åland Sea, the wind accelerated suddenly and the waves swelled to a height of two to three metres. This was not a problem for the boat, however; she was so light that she was floating like a cork on, not in, the waves. Though heavily loaded with a crew of ten persons and a freeboard of only 0.25 m, she never took in water other than twice on the whole journey, and even then it was only spray. The higher front of the boat was very protective; it was here that the waves were taken. The only minor problem was caused by a change in wind direction, which meant the boat had to sail more and more against the wind in order to try to reach the desired destination of Mariehamn. Sailing against the wind implied a considerable loss of speed, and as a result it became too slow for the steering oar to work. The boat then lay parallel to the waves, something that is considered to be dangerous for modern boats. This was never a problem for this light boat, though. The only resulting difficulty was in using the oars to row, and to get wind into the sail again. The oars were either completely in the air, or completely in the water. To be able to continue sailing instead of rowing, the destination was changed from Mariehamn to Eckerö, which gave a wind possible to use for sailing the remaining distance, though slow. Nine hours after having left Arholma, the boat entered the shallow, sandy harbour north of the ferry route, which was well suited to this boat.

That the smaller merchant ship Skuldelev 3 could cruise well, but not at a high speed, has become evident in the trials made with the replica ‘Roar Ege’. The best achievements were 8.6 knots in a true wind of 32 knots (16 m per sec). Here the best angle to the true wind was around 60° (Vinner 1984:224). The speed for different boats can be seen in table 20. The boats were in most respects good sailors. The safety level was higher in these small boats built with soft, pliable and light planks, than in modern boats. This became evident on the journey with Tälja in 2000, when she had no problems, whereas two modern fishing boats got into an emergency situation on the rough sea. A modern, stiff hull behaves completely differently at sea and can easily break and capsize.

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<tr>
<td>Valsgärde 7</td>
<td>Aifur, sawn</td>
<td>7-8 knots sailing</td>
<td>Edberg 1995</td>
</tr>
<tr>
<td>Skuldelev 5</td>
<td>Sebbe Als, cloven</td>
<td>5 knots rowed</td>
<td>Vadstrup 1986:86</td>
</tr>
<tr>
<td>Ellingå</td>
<td>Imme Aros</td>
<td>8-9 knots, sailed</td>
<td></td>
</tr>
<tr>
<td>Hjortspring</td>
<td>Roar Linde</td>
<td></td>
<td>Kaul 2002</td>
</tr>
<tr>
<td>Skuldelev 5</td>
<td>Lindheim Sunds, cloven</td>
<td>8-9 knots sailing, 3 knots rowing</td>
<td>Vadstrup 1986:90</td>
</tr>
<tr>
<td>Skuldelev 3</td>
<td>Imme Skinfaxe</td>
<td></td>
<td>Andersson &amp; Andersson 1989</td>
</tr>
<tr>
<td>Skuldelev 3</td>
<td>Roar Ege, cloven</td>
<td>8.6 knots, 16m/hr</td>
<td></td>
</tr>
<tr>
<td>Viks boat 1</td>
<td>Tälja, cloven</td>
<td>6 knots</td>
<td>Report Bättekn. gruppen 2001:9</td>
</tr>
</tbody>
</table>

Table 21. Summary of results from different experiments.

The sails used were important for the capabilities of sailing. Ethnographically documented sails of the high and narrow type used on the Nordland boats have also often been used on the Viking ship replicas. Such sails were probably not in use in the Viking Age, since all depictions instead show a wide, square sail. The cruising capabilities are not as good with these, as has been noted during the experimental journeys by Erik Nylén with Krampmacken. But Nylén concluded this was not so important, since he sees the ships from this period as rowing boats with a sail as assistance in favourable winds (Nylén 1987b:79). That square-sail boats were intended mainly for sailing before the wind is clear from the remains of fishing boats built for a square sail. These latter boats were used until the
19th century, as exemplified by a *skötbåt* (see chapter 2) in the collections of Singö Hembygdsförening. This boat is highly raised in the front, with a marked sheer line and low sides, features that we also find on the Viks boat.

The qualities of the square sail is proven in ethnographical material as well as in experiment (fig. 144). It almost lifts the boat, and thus reduces the water resistance and increases speed, almost flying above the water.

Figure 144. Åfjorsfemböring in trial experiments. After Andersson & Andersson 1989.

Another very important factor is the position of the mast. As Rausing (1984) has noted, the ships with a centrally placed mast are better cruisers than the boats with the mast placed forward in the boat. In almost all preserved merchant-ships from AD 800–1200, the mast is placed close to amidships, only slightly forward, while on the other hand war-ships and boats for personal transports, like the Viks boat, have the mast stepped farther forward in the ships. The former are built to sail and to use a wider range of available winds, being built with only 1-3 pairs of oars. The latter, on the other hand, were built as rowing ships that had to be able to function independently of the wind. They were propelled with oars along the sides, and, as Nylén concluded, they had to be able to use a sail when cruising before the wind.

The soft hull promoted speed as well as safety at sea. It is well known among mariners that smugglers, pirates and blockade runners used to cut some frames and deck-beams to increase the flexibility of the hull and thereby gain speed when being chased by a warship (Vinner 1984:222).

7.3.3. Environmental conditions

**Climate**

In the 5th century AD a warmer period began in Scandinavia, reaching its optimum AD 800–1000 and lasting until 1200 (Lamb 1966:7 f). In the Viking Age the climate was 2-4° warmer in mean value per year than today (Lamb 1966:64). According to Wallén a more humid climate in AD 900–1050 was exchanged for a drier and warmer period AD 1050–1130 (Wallén 1970:225 f). Based on isotopic studies of the ice in Greenland and in the Arctic, Wilson (1971:345) has reached the same results. This means that the conditions for seafaring were favourable in that the season for sailing was longer and the ice-covering period shorter. In connection with the western voyages most often discussed, the permanent ice did not reach S of 80° N, and the drift ice not S of 70° N. Today we find them at 60° N. The east and west coasts of Greenland were free of ice as were the coasts of Iceland.

**Winds**

Today W and WSW dominate up to Trondheim 70-75° N where NE occurs. Taylor means that NE-E winds blow on the Norwegian Sea, but SW-W over the British Isles (Taylor 1956:75). Based on times for sailing mentioned in the sagas, Larsen considers that an even wind from NE prevailed AD 500–1050. He adds the fact that in the Viking town of Lindholm Høje in Denmark sand displacement has deposited a 4-metre-thick layer on the west side and only a few decimetres on the east side of the hill (Larsen 1973:152 f). Lee is sought for NE wind according to his studies. Wallén (1970:225) means that south of an axis from the Faeroes across south Norway to central Finland the western winds dominated, and north of this line the eastern winds.

The right wind and the possibility to take the aid of a sail was what in the Late Iron Age facilitated and increased the possibility for long-distance journeys. Together with the advantages of the small and light boats, sails and advanced navigational methods brought the distant markets within reach.

Sailing reduced the time spent on the voyage, if one had the right winds. Therefore we often find information in the sources about ships waiting for the right wind. It was good to have the possibility to row as well, but people did not want to invest more energy than needed in rowing.

**Water level**

Central Sweden was a land of water routes in the Late Iron Age. The sea had a shoreline 8-4 m above present sea level, which means that in many places in the flat landscape where meadows and fields are found today, there were rivers, sounds and bays during the Iron Age. The eustatic movements have created an uneven curve for the shore displacement since the Ice Age, and the fastest land upheaval is found in NW where the ice occurred most recently. This means that the slope of the river routes that
mostly run NW-SE increases, and the SE end of lakes is ‘sinking’ instead when the water masses are tipped over.

Another factor that has influenced the water level in the river routes is the human impact. In the 18th and 19th centuries there was an increased need for arable land as the population grew rapidly, and the government recommended that the level of the lakes and rivers should be lowered to obtain more arable land. In some cases whole lakes disappeared. The river system running north from Norrtälje bay, which earlier was the vein in Lyhundrahärad, was lowered at least twice.

7.3.4. Sailing or rowing?
The choice between sailing and rowing depended on the purpose of the journey, the route, the distance, and the type of ship one had. Warships were built primarily for rowing, but merchant ships primarily for sailing. The warships had to be independent of wind if necessary and were therefore equipped with rows of oarlocks or holes for oars along the side, with mast and sail as complement when running before the wind. These ships were built as light as possible, with a narrow slender shape in order to be as easy and fast to row and manoeuvre as possible. For the sailing ships, cargo, capacity and safety were more important than speed. The more rounded shape of these ships, and the higher and heavier hull, made them heavier to row, and they had a centrally positioned mast and only 2-3 pairs of oars as complement to facilitate the manoeuvring in harbours. When open sea should be crossed, most ships preferred to wait for wind. The leiðangr fleet gathered at certain points and then waited for wind before they crossed the Baltic Sea. The early medieval legislation tells of how long they had to wait. By the time the legislation was written, however, the ships had become larger and heavier to row than in the Viking Age, so the need for sailing wind must have increased considerably since the Viking Age. On the western journeys the right wind was necessary, and the distances that are given in the sagas as the time needed are based on running before the wind. Many references about waiting for wind are found in the sagas.

In Floamannasaga, ‘Froke stayed by the ship until everything was ready and as soon as they had wind from behind they set out to sea’ (my transl. after Ohlmarks 1964 bind V:443).

The story about Floki tells that he ‘was lying and waiting for wind’ (my transl. after Mörcken 1969:11). Grønlandinga saga describes Torfinn Karlsfni’s departure for Iceland: ‘When he was ready for sailing and his ships were lying by the bridges waiting for wind’ (my transl. after Ohlmarks 1962 bind I:227).

The story of Egil Skallagrimsson has this description: ‘…they pulled the boats to Digranäset, where they lay in wait for sailing wind’ (my transl. after Ohlmarks 1962 bind I:387).

7.4. Relation between navigational methods and seafaring
People around the world have at least since the end of the Mesolithic known methods for navigation on the open sea based on knowledge of streams, winds, fish species, and other things observable. This knowledge is still used today, and it is a specialty among the highly valued navigators on, for instance, the Solomon Islands, as noted by Maya Wright in her participant observation of boats, boat building and seafaring in the South Pacific (Wright oral information).

However, the Scandinavians seem not to have had any tradition of long-distance voyages on the open sea before the end of the 8th century. But then, all of a sudden, people began to feel safe travelling right out into the Atlantic Ocean to the west, leaving the shores and their landmarks that were followed earlier when sailing on the sea. Almost simultaneously, around AD 860 according to ON sources, the Swede Gardar and the Norwegians Naddod and Floki set out to find new land and discover Iceland (Stenberger 1979:678). There is no need to try to discover a new island to settle on in the middle of the ocean, if you don’t have the possibility to sail exactly the same way again the next time you come with your family, household, animals and furniture. A few degrees wrong, and with these distances, and you will miss the nice island that you found. After the discovery, a large number of interested settlers managed to find their way to Iceland, and an era of landnám began. This was probably made possible by the introduction of the Arabic latitude navigation, which we know was well established by the time the historical sources first described the methods for navigation in the 12th century.

Even in the 9th century, some navigators were better and some were worse: Haddod and Gunbjörn, 40 years later, belonged to the latter and discovered the new places by accident after having missed their primary targets. What is most interesting, however, is that hundreds of sailors were such good navigators that they could find exactly the right course to reach Iceland and Gunbjörnsskár, later Greenland. The true nature of the latter, an island almost completely covered with ice, was probably known to the people of Iceland and what initially discouraged people from settling there. It
was not until the Icelander Erik the Red, who after several killings was sentenced to exile from Iceland by the Allting, chose to explore the land discovered by Gunbjörn that a new journey to Gunbjörnskär took place. Erik sailed into, investigated systematically, and named fjord after fjord. The total distance investigated along the eastern, southern and western shores was approx. 1000 km, not counting the journeys into the fjords – a large-scale investigation during three years. He also found in some places valleys covered with green grass usable as pasture, and small rivers with fresh water and plenty of fish. He returned to Iceland after this 4,400 km long trip, and changed the name from Gunbjörnskär to Greenland, because ‘people would like to go there, if the country had a good name’. Many people were convinced, and an emigrant fleet of 25 ships sailed away. Problems on the long journey resulted in that only 14 ships reached their destination this time. Many who travelled there later succeeded better at navigation, and in the richest colony Österbygden there were at least 190 farms.

The time for the beginning of these long-distance sailing routes on the open sea coincided with the end of century-long intense contacts between Scandinavia and the Caliphate. It is almost inevitable that there was some exchange of ideas about seafaring and navigation during this long period. It is not probable that these ideas came later, in the period AD 950–1100, since by then the Arab contacts had ceased. So when Rimbegla (see below) gave information about Arabic navigational instruments in the 12th century, it was probably not a new adoption in the north, but instead an aid for navigation which had been known for a long time and one which made the discoveries in the 9th century possible.

7.4.1. Navigation on the Baltic Sea in the Late Iron Age

Navigation on the Baltic Sea was hardly a problem, since most of the main sailing routes followed land (fig. 145). The oldest known sailing route is the one documented in an appendix to the Danish king Valdemar’s land possession book called ‘Navigatio’, which is a list of a number of places from Utšëng in Blekinge to the Danish-conquered Estonia. This itinerary is most often dated to the 13th century. The sailing route for the warships followed the coastline to Arholma in the Stockholm archipelago, then crossed the Åland Sea to the archipelago of Åland, through it to the islands of southwest Finland, and then south across the Gulf of Finland to Estonia. In several places the route divides into several alternative routes: inner routes mainly possible to navigate with oars, and an outer route that allowed the use of a sail. Many suggestions have been made as to what the places in the list represented, such as sheltered harbours, pilot stations, etc. My own opinion is that it is a list of landmarks to follow before the use of maps. The compass is first mentioned in the 13th century, and when it became common the route across the Baltic changed to a crossing straight over the sea (fig. 145).
However, the short times given by Adam (table 25) for the long voyages across the sea between Sweden, Denmark and Russia indicate that already in the 11th century, navigational methods were known that enabled sailing day and night, and thus also directly across the sea. This may be a result of knowledge of Arabic navigational methods, which will be discussed below. Before this, we shall look at some artefacts that are associated with navigation and some information found in the written sources.

![Figure 146. The medieval bearing plate from the Uunartoq bay on Greenland. National Museum, Copenhagen.](image)

In her dissertation, Haasum (1974) makes a thorough summary of theories about methods for navigation in the Viking Age. Most of them relate to sailing on an open sea, and include the hypothetical aids such as the bearing plate and sólarstein ‘sun stone’ to determine the height of the sun at midday for latitude sailing, but also observation of the stars, the wind, streams, birds, the colour of the sea, temperature of the sea, smells, reflections of ice on clouds, and many other methods (1974:103ff). When travelling on the Baltic Sea, both natural and constructed landmarks have been of importance (Haasum 1974:103ff). According to Morcken (1970:11), Floki from Rogaland in AD 870 built a varde ‘stone mark’ when he was waiting for wind to sail west, which was later called Flókavardi. At this place there is still a varde that has been used as a watch fire. Two Norwegian watch fires had been built by Olav Haraldsson 1015–1030, and Morcken (1970:13) also means that the stone cross in Korsund and the cross at Kvisøy are from the Viking Age. In Sweden the places along the coastline with watch fires were called bóte, and they follow the documented sailing route of the 13th century.

7.4.1. The problem of the sólarstein ‘sun stone’

Of the artefacts linked to navigation, the above-mentioned sólarstein ‘sun stone’ deserves closer attention (Haasum 1974:101). The most informative account of the sun stone is found in the story about Rödulf:

![Figure 145. Medieval sailing routes in the Baltic Sea: the route in the 13th-century Itinerary of King Valdemar (dots); and Seebuch from Lübeck, 15th century (line). After Crumlin-Pedersen 1983a.](image)

...The weather was cloudy and there was heavy snowfall. The king had observers watching, but nowhere was the sky without clouds. Then he asked Sigurd to tell how far the sun could have come, and Sigurd did that, and then the king had the sun stone taken up, and he saw how it shone from the stone, and he concluded then that it was as Sigurd had said. (My transl. after Ramskou 1966:29)

Ramskou has interpreted the sun stone as a kind of bearing plate to determine the position of the sun, like a polarization filter when it was cloudy (1969:28). He suggests that Iceland spar, which is found on Iceland, diorite or andalucite, which is found in Norway, came into use. The principle is the same as in the present-day navigation system for aeroplanes, i.e., Kollman’s Sky Compass (Ramskou 1966, 1967, 1969). Haasum means that a patch of blue sky is needed above the boat for the method to be useful in boat navigation, and therefore she considers its use very limited (1974:101). Almgren is of the opinion that the solar stone could have been some kind of primitive compass (1967:14). Bågenholm argues that usually when the sólarstein is mentioned – in Flateyjarbók, Farmanna sögur, Gudmundar Biskups saga and Olafs saga Helga – it is not mainly navigation, but rather time measuring that is intended. Today, some scholars are sceptical to the occurrence of the ‘sun stone’ (Schnall 1975, Norr 1987, 1991). Uwe Schnall means that the occurrence in for instance Olafs saga Helga is rather reflecting a sun symbolism under the influence of Christianity, that prevails when the text was written.
In the story of Floki it is said, ‘...because the sea people by that time had no sailing stone in the northern countries’ (my transl. after Ohlmarks 1962 bind I:38), which suggests that it came into use by the Vikings some time after the period (the 9th century) to which the story refers (Haasum 1974:101).

The sólarstein ‘sun stone’ may have been an aid to navigation in cloudy weather, as mentioned in early sources. When holding it up to the sky vertically, it will catch the polarized light, with the result that it is possible to establish the location and height of the sun, which was necessary to determine the position of the ship (Barfod 1981:261). Written records of the sun’s azimuth and the meridian heights are known already from the 12th century in lists made by Oddi Helgason, but the method was probably known much earlier among sailors.

Another mineral used early in navigation is cordierite, a rather common, transparent to semi-transparant, hard mineral. The famous mineralogist Per H. Lundegårdh (1998) writes: ‘Long ago the seafarers used cordierite as a compass due to the ability of crystals to change colours in different directions’. The crystalized mineral is blue to bluish violet in one direction and yellow to yellow-brown in another.

A stone used as a compass, leðarstein, is mentioned in early medieval sources, earliest in Hauksbók in which the Landnámabók contains information by Haukr that long ago ravens were used to show the way ‘because then the men, that sailed on the sea, had no leðarstein in those ages in the North...’ According to Barfod (1981:261), the stone used was magnetite (?) and like the earliest compass mentioned in Europe in the 13th century it was a kind of floating compass.

7.4.2. Influences from Arabic astronomical navigation

Three theories have prevailed concerning the navigation in the Viking Age, when the Scandinavians journeyed extensively across the seas. One theory is that people in ships and on rafts were more or less passively following the streams and winds. The other two dominate the present debate, both agreeing that the sailors were capable of latitude sailing. However, one group of scholars believes they used navigational equipment such as the bearing plate (Ramskou 1966, 1967, 1969; Almgren 1967), and the other group is sceptical to this and argues that they could manage without these aids whose existence is not verified reliably in the archaeological material (Schnall 1977; Norr 1991). The position of ‘south’ was measured from the sun and the position of ‘north’ from the North Star. All prevailing evidence now points to the latter theories, and in accordance with the research of Gösta Bågenholm (2002:14ff) it can also be concluded that this knowledge must have been transmitted from the Arabs to the Scandinavians through their early encounters. As we have seen, ships, sails and sailing techniques were improved in the late 8th century, at the same time as contacts with the Caliphate were starting to make a deep impact in the archaeological material through the establishment of the eastern route and marketplaces on the way such as Staraja Ladoga and Birka.

The focus of the discussion is whether these early Scandinavian seafarers knew about calculation of latitude. This could be done by measuring the angle between the North Star and the horizon. The North Star is in zenith (approx. 90°) at the North Pole, and 0° at the equator line. In Reykjavik on Iceland the North Star is 64° north, which also is the latitude of Reykjavik. The North Star is called leðarstjarna ‘the star leading the way’ in the medieval Icelandic language.

The height of the sun at midday could also be used to calculate the latitude. Here the find from the Unartoq bay on Greenland is of interest (fig. 146). This semicircular object with marks along the edge could have been an aid for this. If the sun points out south at midday, it could be possible to calculate the latitude from the length of the shadow of a stick placed in the centre of this implement, though such has not been found. This theory was first proposed by Carl V. Sølver in the Journal of The Institute of Navigation (1953), but has later been questioned due to the difficulties when sailing in other directions than straight east or west (Thirslund 1999). Bågenholm means that this could have been used as an astronomical angle-measuring device, held vertically and with a movable arm.

Measuring latitude by observing the angle between the horizon and the North Star at night is commonly accepted as a safe and reliable method. But were the Late Iron Age seafarers aware of this method? Apart from Ptolemy AD 83–161, whose texts seem to have been forgotten by the western civilisation before the Renaissance, only the Arabs knew the concept of latitude and used it for navigating, for instance on the Indian Ocean in the 9th and 10th centuries AD (Bågenholm 2002:16). The Vikings seem to have been the first to use astronomical navigation in Western Europe, which derived from Arabic navigation. The important words for navigation in seafarers’ vocabulary derive from Arabic loans, as do the names of many stars. The words zenith, nadir, asimut, haveri ‘wreckage’ and amiral ‘admiral’ derive from the Arabic language (Bågenholm 2002:16). The most important word that remains for this discussion is Sw zenith. This is the point in the celestial sky that an observer has right above, an important concept in the calculation of
latitude. In Icelandic the word is cenit, which derives from Ar samt (pronounced semt), i.e., an abbreviation for Ar samt-ar-ru us ‘the road above the head’ (Hellquist 1957:1413).

Bågenholm has also paid attention to evidence of the early contacts between Scandinavians and the Arabic astronomy, as well as the necessary knowledge for Arabic astronomical navigation. This is the little Icelandic text Rìmtol I-III (Beckman & Kålund 1914-16:72), from the 12th century. In Rìmtol I there is a small astronomical vocabulary with Arabic and Greek names, showing that these names were used by the Icelandic population and seafarers, while they were still uncommon in contemporaneous continental Europe (Bågenholm 2002:17). Here we find the star Alakol, from Ar. Algòl is in Sw Algòl; the star Wega from the Arabic Al-waki, in Sw Vega; and Al…ph, possibly the star name Al(c)aiph, from the Arabic Al-khaf, in Sw Kassiopeia. In this text it is possible to read about the height of the sun at midday, and about stars and planets. The text is not in itself nautical tables, as has often been suggested (Barfod 1967:260; Haasum 1989:98), but rather the main purpose was to be able to establish the time for vernal equinox, summer solstice, autumnal equinox and winter solstice, Easter and Ascension Day.

In Rìmtol II the midday height of the sun on north Iceland is given for the whole year. This means, according to Bågenholm, that in 12th-century Iceland there existed an instrument for measuring angles, of the type astrolabium. This was used on land and on sea to measure the height of the sun, the North Star, and other stars and the planets, by measuring the angle between a celestial body and the horizon. In Rìmtol II, two illustrations of an instrument of astrolabium type are seen (fig. 147) which also has an alidad ‘movable arm’ as on the astrolabium for use at sea. It was interpreted by the publishers as an instrument for establishing connection between lunar and solar eclipses and high and low tides at the equator (Beckman & Kålund 1914-16:89, 118).

Bågenholm’s research on the connection between Arabic and Scandinavian navigation, and on older navigational equipment in Turkey, has shown that these illustrations are of an instrument resembling astrolabium (fig. 148), the navigational aid used by the Arabs to cross the Indian Ocean in the 9th century, and which was based on astronomical angle measuring. It was an easy and reliable instrument, and it would also make it possible to sail across the Atlantic, which we know the Scandinavians did in the 10th century (Bågenholm 2002:18). Rìmtol II shows that the Scandinavians at least in the 12th century had the knowledge of how to measure latitude, and how to use the astrolabium or instruments with the same use, such as the equatorium, quadrant or similar. The tables and figures in Rìmtol are evidence of the existence of astronomical angle-measuring instruments. Also the bearing plate from the Uunartoq bay on Greenland could have been used for this purpose (Bågenholm 2002:20).

Figure 147. Icelandic instruments for measuring angles, illustrated in Rìmtol II; a) after Beckman & Kålund 1914-16:118, b) after Beckman & Kålund 1914-16:118.

The astronomical navigation was introduced in Europe in the Viking Age, and sun navigation was developed as a less reliable complement to night navigation according to Bågenholm. This must be a correct observation, since the only way to travel the distances given in 11th-century sources in the short time given in the same sources, must have been by sailing day and night by the most favourable wind directions (see above).

Other nautical words, such as mesan ‘mizzen’ mast, also come from the Arabic: Miizaaam.
7.5. Life on board on the journeys

7.5.1. Food

Cooking could either be done on board or on land. In the boats of the Valsgärde and Vendel boat-burials, large cooking cauldrons are included. Once again we have to ask our seafarers in the 18th and 19th centuries, via the ethnographic documentation, how they solved this problem. Sometimes they docked at small islands for the cooking, but more often they cooked on board by using a similar type of cauldron as in the boat burials. The cauldron, with three legs, was used as a kind of hearth with a smaller cooking vessel inside (Liljeros 1997:24). The firewood and fire were thus inside the cauldron. Whether this was also the case with the Valsgärde cauldrons, has never been analysed. On the replica sailing journeys with Aifur this method was tested with good results (Edberg 1994).

Åke Sandström (2001:84ff) has analysed the cooking on board on the seal-hunt expeditions, which lasted many weeks in the early spring along the border of the ice where the seals could be found. For this purpose, in the Bothnian region, a special cauldron called kabbgryta was used (fig. 149-151).

Figure 149. Kabbgryta. Österbottens museum. Photo Gunilla Larsson.

Figure 150. Fire cauldron in an Icelandic boat. After Kristjánsson 1985.

The cauldron was placed on a birch piece on the ice or in the boat, and inside it were put six-inch-long pieces of birch as firewood. Sometimes holes had been made to get air for the fire in the cauldron. Over this cauldron ‘is hung on iron supports a smaller cauldron, in which the food twice a day is cooked’ according to a description from a seal-hunter from Bergö in Österbotten (after Sandström 2001:85 my transl.). The similarities between the kabbgryta, with its supporting construction, and the cauldrons with iron support in the central Swedish boat burials are obvious.

In a book about the seal-hunting expeditions by Birger Masalin in 1933, the importance of this special type of fire cauldron as a cooking place on board the seal hunting boats is evident. A depiction of such a construction with a wooden support, used by seal hunters, was made by Schvindt (fig. 150). He adds the description: ‘in the bigger cauldron the fire is kept, in the smaller the food is cooked’ (Schvindt 1905, my transl.).

Figure 151. The sealhunters’ cooking equipment. After Schvindt 1905.

Åke Sandström (2001) has discussed the etymology of the word kabbgryta for this fire cauldron used around the Bothnian Sea, and concludes that the kabbe originally intended a piece of a log, that sometimes also was used to keep the fire (fig. 151.).

Figure 152. A kabbgryta ‘fire cauldron’ made of a kabbe, a piece of a hollowed-out birch log, in a seal-hunt boat, Holmöns boat museum. Detail of photo by Johan Svensson, after Sandström 2001.
7.5.2. Overnight on journeys

To overnight on the journeys may seem a problem, but the easiest way was probably to do as the fishermen did in the historical period, namely to sleep in the boat transversely between the bites and use the sail as a tent. In Roslagen, to prepare the tent for overnighting on board was called to *tjälla* (Eriksson 1951:35). On longer journeys with the *storöka* or *storbåt*, for example to transport goods from the archipelago to Stockholm and Lake Mälaren, this was necessary. A fisherman named Oskar Löfgren, born in 1864 on Tallholmen Ornö, has told how on the journeys with the *storöka* to Stockholm the boat and crew rested for the night below the inn at Fjäderholmarna. They slept in the boat and *tjällade* by putting up a couple of poles and placing the sail across it like a tent (Liljeros 1997:23). The yard was used as a ridge pole. This procedure was in OSw called to *tiælda* (Falk 1995:18), and is often mentioned. The tent created by the sail across the yard was called *tjald*, plur. *tjold*. This was usually placed amidships, but also a *stafntjald* ‘stem-tent’ could be used, as well as a *lyptingartjald* ‘stern-tent’. A special *tjall* for the king on the *lypting* is mentioned in the account of Harald Hardrade, who had a bed in *lypting under lyptingar tjall* (Falk 1995:16).

In *Flateyjarbók*, *tjald* is mentioned in the following context: *lét sveipa skip allt fyrr ofan sjó med grám tjoldum* (chapter II). The expression *tfjælda* was still used in the 19th century in Österbotten for putting up a tent on board (Pensar 2003). In Vallgrund, Finland, the tent cover is called *tjald*, the poles *tjaldnicko*, the tentyard *tjialdus*, and the cover of the boat *tjialdak* (Pensar 2003). *Tjáll* was synonymous with tent in the language until the 18th century, as can be seen from a travel account by Anders Tidsström in 1756, where market visitors were said to have put up their *tjáll eller tält* ‘tjáll or tent’. On the boat, to *tjálla* is connected with the square-rigged boats, since the square sail was well suited for the purpose and the yard for the sail of the right length. When other sail types came in the 19th century, the *tjall* was soon replaced by a cabin built to sleep in on the journeys.

Leaving the most valuable ships at night was out of the question, according to information in the ON sagas. For the travellers the ships were the means of survival, a safe journey and a safe return back. Sometimes the safest thing was to rest at sea at night, like the Rus did in the Caspian Sea, or to have a guard stationed at the shore all night. This is mentioned in both the provincial laws and in the Ingvar saga. This was also necessary when the experimental journeys were made through Russia in the 1990s with the replica Aifur (Altrock, oral information), and with Himinglæva on the journey in 2004 from Ukraine, through the Black Sea past Russia, to the Caucasus and the Caspian Sea (Altrock 2006).

Besides this place, the term *klofum* only occurs in the nautical dictionary to Snorri’s *Edda*. The term may designate gable boards of the same type as found on the Gokstad ship (see chapter 4). Here a complete construction like on the Oseberg ship was missing. Instead we may assume that the yard was to be used as a ridge pole between the gable boards. *Klofi* has the original meaning of ‘tong’ (Falk 1995:18).

As mentioned in chapter 3, the boats in the burials were equipped as if the deceased had been put to rest on a journey, as if they *tjällade* with the sail as a tent amidships. This can be seen in the Valsgärde burials, where it probably were the textiles from sails (according to my interpretation) that were used.
in this way, and found covering the deceased and their equipment.

7.6. The destinations of the journeys of the Svear according to runic inscriptions

Runic inscriptions are contemporaneous sources and thus have a high value as historical sources. However, the information is brief and we usually don’t know the circumstances of these travels, their purposes, their mode of organisation, who took the initiative or why. A complementary study of other historical sources, such as possible annals and letters from the countries mentioned as destinations, may give insight into the inscriptions. Archaeological remains from both warfare and commercial activities are a reliable source that can fill out the large gaps in the historical material. It is even more difficult when we are told only that the person for whom the rune stone was erected has died in the East. Sometimes there are also interpretative disputes concerning place names mentioned in the inscriptions.

<table>
<thead>
<tr>
<th>Region</th>
<th>Abroad stones</th>
<th>East</th>
<th>West</th>
<th>Others</th>
<th>Total number inscriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attundaland</td>
<td>44</td>
<td>29.5</td>
<td>5.5</td>
<td>9</td>
<td>481</td>
</tr>
<tr>
<td>Tiundaland</td>
<td>20</td>
<td>11</td>
<td>4</td>
<td>5</td>
<td>422</td>
</tr>
<tr>
<td>Fjädrundaland</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>167</td>
</tr>
<tr>
<td>Roden</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>99</td>
</tr>
<tr>
<td>Västmanland</td>
<td>8</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>Södermanland</td>
<td>68</td>
<td>37.5</td>
<td>18.5</td>
<td>12</td>
<td>389</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>152</strong></td>
<td><strong>88</strong></td>
<td><strong>34</strong></td>
<td><strong>30</strong></td>
<td><strong>1584</strong></td>
</tr>
</tbody>
</table>


<table>
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<tr>
<th>Region</th>
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<th>East</th>
<th>West</th>
<th>Others</th>
<th>Total number inscriptions</th>
</tr>
</thead>
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<tr>
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<td>9.1</td>
<td>6.1</td>
<td>1.1</td>
<td>1.9</td>
<td></td>
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<tr>
<td>AR</td>
<td>4.6</td>
<td>2.3</td>
<td>0</td>
<td>2.3</td>
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<tr>
<td>T</td>
<td>4.7</td>
<td>2.6</td>
<td>0.9</td>
<td>1.2</td>
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<tr>
<td>F</td>
<td>4.8</td>
<td>3</td>
<td>1.8</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>30.8</td>
<td>11.5</td>
<td>11.5</td>
<td>7.8</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>17,</td>
<td>9.6</td>
<td>4.8</td>
<td>3.1</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9.5</strong></td>
<td><strong>5.5</strong></td>
<td><strong>2.1</strong></td>
<td><strong>1.8</strong></td>
<td>**                          **</td>
</tr>
</tbody>
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<td>Roden</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>99</td>
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<tr>
<td>Västmanland</td>
<td>8</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>26</td>
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<tr>
<td>Södermanland</td>
<td>68</td>
<td>37.5</td>
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<td><strong>88</strong></td>
<td><strong>34</strong></td>
<td><strong>30</strong></td>
<td><strong>1584</strong></td>
</tr>
</tbody>
</table>


In the runic inscriptions, indications of naval activities are limited but important. According to Mats G. Larsson’s thorough investigation (1990) there are 152 of 1584 inscriptions mentioning jour-
neys abroad on rune stones in the Mälaren counties, my main investigation area concerning questions about the leidangr organisation. Of these, the largest proportion concerns journeys to the East, namely 58%, while those to the West comprise 22% and other destinations 20%.

7.6.1 The maritime context of an ‘abroad stone’
Many of the inscriptions mentioning foreign journeys are made on stones erected in central places in the parishes, often close to important water routes. An example of this is U 504 at Ubby, Närtna Parish, close to a bay of the lake Hellviken, earlier Helig viken ‘the holy bay’, in the lake system along the river route today called ‘the Långhundra River route’, which extended from the Baltic Sea to Old Uppsala and the mainland of Uppland:

\[+ kitil\times fastr \times risti \times sin + \pi ana \times ifriR \times askut \times fa\bar{u}r + \sin \times saR \times uas \times uistr \times uk \times ustr + k\bar{u}p iailbi \times as \times salu\]

\[Kætilfastr ræisti stein þenna æftiR Asgaut, faður sinn. SaR vas vestr ok austr. Guð hialpi hans salu.\]

‘Ketilfastr raised this stone in memory of Ásgautr, his father. He was in the west and in the east. May God help his soul.’

This stone is erected in memory of a person who together with his retinue might have followed or personally joined a naval expedition. Here are also Raä 27, with 22 graves including a ship-setting. It was erected close to the village of Malmb, where another stone was erected for Kætilfast himself (U 503). Malmb has almost the largest number of graves in this region of Uppland. The cemeteries Raä nos. 89, 118, and 92 at this village have a total of 793 graves, with at least 400 of them dating to the Late Iron Age and including a ship-setting of standing stones, 18 m in length and resembling the snäcka used as a warship in the leidangr organisation. The cemetery is one of the largest in the whole Lake Mälaren region, and next to Birka the second largest in Uppland. Rich graves found during excavations have yielded artefacts from the Late Iron Age, such as bronze buckles, silver coins, glass beads, Thor hammers, a key, etc. (SHM 18268, 18682, 19000 and 22610).

The village Malmb is situated in the inner part of a bay extending eastward from the lake Hellviken in the Långhundra River system, which constituted one of the main river routes to Uppsala and the central parts of Uppland. The place is also very strategically chosen, because via a short portage it was possible to reach the lake Sparren with adjoining river systems. Mats G. Larsson (1998:31) has observed the remains of a portage ditch along the old shoreline of the lake, visible as a shallow depression. As often with important maritime sites, a hillfort is situated at Uttran close to Malmb. The lake that extended to Malmb, Hellviken, has a name deriving from Helgiviken ‘the holy bay’, and close to the parish church of Närtna a sacrificial site was found (see chapter 9). The river upstream from the lake is called Helgeå ‘the holy river’, and a village beside it is called Helgåby ‘the village beside the holy river’.

7.6.2. ...han austarla arþi barþi…: the social aspects of a journey abroad
Mats G. Larsson has analysed the runic inscriptions mentioning journeys abroad in central and eastern Sweden. According to his results, 96 inscriptions mention journeys eastwards (106). More than half of these are inscriptions related to Ingvar the Fartraveller’s journey and in memory of Greece-travellers, of which Larsson has noted 25 in each group. Of the others, the Baltic Sea region is the destination in 17 inscriptions and ‘Gårddarike’ (Russia) in 7 inscriptions, while only ‘eastward’ is the destination in 14 inscriptions. Two inscriptions mention ‘Särkland’ and ‘Chorezm’, and one ‘Jeru- salem’.

It is worth noting, as Larsson has done (1990:106), that the majority of these inscriptions relate to long-distance journeys and not travels to neighbouring countries. It seems thus that it was these journeys, to countries several thousand kilometres away, which gave status and were worth mentioning in the memorial inscription of a deceased. That these were maritime journeys by boat has sometimes been underlined.

The runic inscriptions reveal pride in seafaring and the social status related to steering a ship and being an East traveller. This is seen in the inscription on the stone Sö 65:


\[Inga raisti stein þannis at Oeifei sim ... Hann aus- tarla arði barði ok a Langbarðalandi andaðis.\]

‘Inga raised this stone in memory of Óleifr, her ... He ploughed his stem [barði] to the east, and met his end in the land of the Lombards’.
Barði is the dative of barð ‘stem’. The same expression is found in the strophe by the Orkney jarl Ragnvald, ‘erjum úrgu barði út at Miklagarði’ (Orkn.sag 82, Flat. II:488), as well as in the Edda, ‘sá er af Islandi arði barði’ (Snorris Edda ed. A.M. II:413).

Sometimes a person has not died but instead is commemorated for having acquired riches in the East, as is mentioned in the Gripsholmen inscription (U 209), where the deceased *fóru drengila fjarrri at gulli* ‘travelled valiantly far for gold’. This shows that part of the motivation for maritime expeditions was temporary external exploitation. Clearly, what were considered important in life and worthy of mention in runic inscriptions, besides the memory of the dead, were the journeys the person made. These were mostly maritime journeys; they were frequently made in a military context, and often the person had died in a battle. He was *drengi*, ‘helmsman’ on the ship, or *lids forungi*. In the inscription Sö 164:

*Guðbjôrn [and] Oddi, they raised this stone in memory of Guðmarr, their father. He who died stood valiantly in the staff of the ship; [now] lies inhumed in the west.*

The only possession worthy of mention in the inscriptions besides land holdings is the ship (and not, for instance, a horse or a dog), which makes it the most status-giving object, an attribute of an aristocrat, and as important and symbolically informative as clothing. It also underlines the maritime ideal. One of the few endeavours worth commemorating was a maritime journey, which showed that the deceased belonged to the social stratum of society that was permitted and expected to make this kind of journey.

### 7.7. Times and distances

#### 7.7.1. Historical sources

According to *Vita Anskarii*, the second journey of Anskar took 20 days. In the 11th century, according to Adam of Bremen, the journey from Scania to Birka took only 5 days. Ships, shipbuilding, sailing and sails had probably improved. As shown in chapter 4, the ships were then built thinner and lighter than ever before.

<table>
<thead>
<tr>
<th>Journey no.</th>
<th>Journey</th>
<th>Days no.</th>
<th>Distance km</th>
<th>Distance km/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Zealand – Fyn (Korsør – Nyborg)</td>
<td>1/2</td>
<td>26</td>
<td>52</td>
</tr>
<tr>
<td>2.</td>
<td>Ålborg – Iceland (Krossanes)</td>
<td>30</td>
<td>c. 1700</td>
<td>57</td>
</tr>
<tr>
<td>3.</td>
<td>Denmark – Ostrogard (Schleswig – Novgorod)</td>
<td>30</td>
<td>c. 1800</td>
<td>60</td>
</tr>
<tr>
<td>4.</td>
<td>Zealand – Scania (Copenhagen – Malmö)</td>
<td>1/2</td>
<td>32</td>
<td>64</td>
</tr>
<tr>
<td>5.</td>
<td>England – Iceland (C. Wrath – Krossanes)</td>
<td>9</td>
<td>c. 800</td>
<td>89</td>
</tr>
<tr>
<td>6.</td>
<td>Jomsborg – Ostrogard (Schwinemunde – Novgorod)</td>
<td>14</td>
<td>c. 1560</td>
<td>111</td>
</tr>
<tr>
<td>7.</td>
<td>Scania (Ystad) – Birka and Sigtuna</td>
<td>5</td>
<td>c. 700</td>
<td>140</td>
</tr>
<tr>
<td>8.</td>
<td>Birka – Russia (St. Petersburg)</td>
<td>5</td>
<td>c. 700</td>
<td>140</td>
</tr>
<tr>
<td>9.</td>
<td>Ålborg, Vendsyssel – Viken (Göteborg)</td>
<td>1</td>
<td>75 å 150</td>
<td>75 å 150</td>
</tr>
<tr>
<td>10.</td>
<td>Norway – Iceland (Stat-Horn)</td>
<td>6 (5-7)</td>
<td>c. 1000</td>
<td>167</td>
</tr>
<tr>
<td>11.</td>
<td>Denmark – England (Ribe – Hull)</td>
<td>3</td>
<td>c. 600</td>
<td>200</td>
</tr>
<tr>
<td>12.</td>
<td>Viken (Göteborg) – Trondheim</td>
<td>5</td>
<td>c. 1000</td>
<td>200</td>
</tr>
<tr>
<td>13.</td>
<td>Ålborg – Norway</td>
<td>1/2</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>14.</td>
<td>Norway – Greenland (Bergen – Kap Farvel)</td>
<td>6 (5-7)</td>
<td>c. 2500</td>
<td>417</td>
</tr>
</tbody>
</table>

The journey undertaken reflect the cultural interaction of the society. To interpret the character of this and the pattern of communication, the remains of Scandinavian ships shall also be analysed. The intended journeys determined how the boats were to be constructed, and the details of construction in the ship remains also reveal the intended use of the ship and thereby the character of the journey and the interaction. Different waters create different demands on the vessel. To this shall be added the purpose of the journey, which influenced the boat builder to choose between creating a hull shape that gave a fast and easily manoeuvred vessel, or a slow but seaworthy vessel.

7.8. Sailing routes across the Baltic Sea

7.8.1. The coastal sailing route to the east

In the Baltic Sea the earliest documented route is a coastal route. The boats used were considerably smaller and had less freeboard than the boats used in the North Sea. The compass was not known until the 13th century, and the primary aids in navigation here were the known landmarks along these coastal routes, and perhaps also the availability of pilot stations. In the High Middle Ages, the appearance of new boat types that were higher, bigger and deeper, together with an increase in the number of sails and in their dimensions as well as new navigational aids, also had an influence on the routes used, which were radically altered in favour of sailing across the sea. This can be seen in a comparison between the earliest known sailing route from ‘Navigatio’ in the mid-13th century, which probably reflects the route in use since the Viking Age, and the route presented in ‘Seebuch’ from the 15th century (fig. 145).

The ‘Itinerariet’ or ‘Navigatio’ is of great interest. It was found as an appendix to Valdemar II Sejr’s cadastre, and it lists a number of places along the sailing route from Denmark to Estonia. It served as a guide for the navigators on the warships used to conquer and maintain Estonia within the Danish realm from AD 1219. Starting with Utlängan in the Swedish region of Blekinge, the route follows the coast to Arholma, then turns eastwards through the Åland archipelago and to the SW Finnish archipelago where it turns south to Estonia from Hangö. This description has received much attention during the last two decades (Breide 1995, 2006; Westerdahl 1995, Gallén 1993, Cederlund 1989) and it would be a long list if all who dealt with this subject were mentioned. It has been discussed in detail by Henrik Breide (2006). A summary of the discussion is given in an anthology published by the National Heritage Board, Kung Valdemars Segeled (1995), where also different types of ancient monuments found along the route are described. The main issue at hand for the scholarly debate has been what all the places named along the route stand for. It has been suggested that the places are sites for sheltered harbours, places with pilot stations, or places of interest in the missionary work of Franciscan monks (Gallén 1993). Against this can be noted that the places are not always sheltered harbours, Vinterklasen. Some are places with pilot-guides, but by no means all. Some do have remains of Franciscan activity, but only a few, such as Kõkar.

A very plausible interpretation, in my opinion, is that the names indicate places for man-made and natural seamarks. Experimental journeys clearly show that without maps coastal navigation is in need of knowledge of such places. Man-made seamarks are, as earlier mentioned, known from both historical and archaeological sources. Probably as an influence of Christianization, crosses were raised in some places as seamarks, and in Norway the crosses at Korsund and Kvitsöy are believed to be Viking Age seamarks (Morcken 1970:24). In Sweden the only memory of similar places are maritime place names including the element kors- (cross-), often situated at strategic places along river and archipelago sailing routes. Beacons were used as watch fires, and at least one such place is mentioned in the Itinerary, namely Lynaeboe, probably also seen as a special formation against the sky. Buildings, especially the towers of churches, were also used as seamarks. In addition, natural formations were widely used as seamarks.

7.8.2. Ships and sailing routes

The ships for the inner sailing route of the Itinerary

The Itinerary was probably written as a guide for the naval ships of King Valdemar’s expedition to Estonia (Breide 2006), during a time when many warships, like in the Late Iron Age, were still light, low, narrow and open small boats, and the change to heavy warships like the cog had just started.

The outer sailing route of the Itinerary

The outer sailing route of the Itinerary in many places corresponds to the trade route used by coastal carriers in the later historical period. These ships were too deep to use the inner route. The
same type of smaller cargo ships are found in the archaeological material since the Viking Age, of which the best preserved is Skuldelev 3 (see chapter 3). These were mainly propelled by sails, and the sharp turns and often high sides of the inner route necessitated, as mentioned, rowed ships. For these, the outer sailing route was perfectly suited.

A route across the open sea?
The times and distances given by Adam of Bremen require ships that sailed before the wind day and night. They also imply that other methods for navigation existed besides mere landmarks. This type of sailing was impossible to do within the archipelago, where people had to stop each night. Navigational methods that enabled this kind of seafaring offshore across the Baltic Sea may, as said earlier, have existed already in the Viking Age. If so, this means that a sailing route across the Baltic Sea may have existed parallel to the coastal route, to be used for sailing ships when needed. The route directly across the sea has been assumed to come in use together with the introduction of the compass in the High Middle Ages, since no route straight across the sea is known in ‘Seebuch’ from the 15th century (fig. 145). This is because the only earlier source known is the above-described Itinerary from the early 13th century, which gives the impression that a development has taken place. This may be an illusion.

Already in the 11th century a special merchant ship had developed that was half-decked, higher, wider, and a better sailor than the warships. This type is represented in the archaeological material by ship finds like Skuldelev 1, Ellingå, Galtabäck, Enköping etc. (see chapter 3). These ships were adapted to being out at sea longer periods. ‘Seebuch’ was written for all kinds of ships, but in the 15th century the big sailing ships dominated the sea voyages both in connection with warfare and trade. The ships had become even more adapted to sailing thanks to the addition of two more masts, with a square sail on the first mast and a lateen sail on the mizzen mast. Despite the late evidence of this route, it is possible that it could have been used in the Viking Age or earlier.

7.9. MARITIME TRACES OF THE SVEAR ALONG THE EASTERN ROUTES

7.9.1. Poland and the west Slavonic area

Early maritime contacts
Eastern Poland by the mouth of the Vistula in Old Prussia is the area that first shows contacts with Scandinavia with regard to both boat building and, ideologically, the use of boats. This is especially visible at the burial site of Veclice, where Roman Iron Age graves with boat burials have been found (Okulicz 1992). The boats are of the same type as the ones dating from this time at the Barkarby cemetery (see chapter 4) and also on Bornholm (Crumlin-Pedersen 1991b). After having personally been allowed by Professor Okulicz to study the plans of the boat burials from Veclice, I can conclude that the ideology behind the boat burial seems to be the same as behind the Swedish and Danish burials. According to my analysis of these plans, this is evident from the position of the dead in the boat, and symbols like the spiral in the inventory of grave-goods are all Scandinavian features that I have observed in the central Swedish burials, which indicate intense contacts. From other fields within archaeology, the similarity in the outer grave construction has been pointed out as well. The Scandinavian contacts have been discussed in relation to the movements of the Goths. I will not enter into this discussion, but will briefly touch on the issue from a maritime perspective. In south Scandinavia the period is characterised by the presence of Roman imports, gold coins, and other artefacts. On the other hand, the Roman authors describe their admiration for the furs they receive from the northern areas, as well as the appreciated amber from the south Baltic. Today there is marine archaeological evidence that the Vistula constituted one of the main water routes to the Roman Empire, navigated by expanded and extended logboats of the kind found, for instance, in Veclice, Bornholm and Barkarby. One such boat was found as a wreck, with Roman solidi and amber as the valuable and informative cargo (Duczko, oral information). The route followed Vistula to the Morava River, and through the Moravian Gate – an opening in the mountains – to the Danube. This was the same route as the one later used by the Rus (Duczko 2004:77, see below).
Contacts between Scandinavia and west Slavonic areas in the light of ship-archaeological finds

The turbulence of the Migration Period reduces the contacts, but in the early Viking period, especially in the lower Vistula region and also in the areas around the mouth of the Oder, there are close cultural contacts that are visible in influences in the boat construction. As Władysław Filipowiak has pointed out in ISBSA 1991, 'in this field a reciprocal exchange of experience and influences has taken place in the area' (Filipowiak 1994:91). He offers examples of finds around the mouth of the river Odra that show a limited use of iron for nails. In Prussia whole ships built with iron rivets are found: Frauenburg/Frombork (Heydeck 1896-1900: 67), Baumgart/Dzierzgon (Conwentz 1924), the Tokmicko wrecks (Smolarek 1986, 1994), Puck (Stepien 1984, 1987; Litwin 1995) and the remains of five ships from Truso/Elblag (Jagodzinski 1988:7). Iron rivets in combination with a mast step hollowed out from the main timber floor separate these ships from the other treenailed ships in western Slavonic areas that have the mast stepped in a separate block. Smolarek interprets these as representing the boat building of the ancient Prussians. The implication of the interpretation is that there was an intense give and take of culture and its material remains, and influences flowed in both directions between east Sweden and the west Slavonic area especially between AD 800 and 1200. Another possibility is that these boats, particularly the earlier, are really Scandinavian boats that made both military and commercial visits to the area. Traces of boat-building activities in the area around Truso reveal that some Scandinavians even settled here, as is also evidenced by other archaeological material from excavations in the last decades. This is also visible in ideological influences. The five boats from Truso may be remains of burials. The presence of Scandinavians within the population has left traces in boat-building traditions that endured in this area.

In Wollin, refuse of both wooden and iron nails has been found. The latter were used for connecting the strakes at the stem, but only where the edge bevels made the use of treenails too difficult (Filipowiak 1994 p. 91).

A forgotten trade route from the Vistula to Great Moravia and the middle Danube

Władysław Duczko has observed that the Vistula had great importance in the Late Iron Age trade network between the Baltic Sea and Central Europe (Duczko 2004:74ff). He has observed that the so-called ornaments of Pelta type were produced in the area that, between the early ninth century and the beginning of the tenth, comprised the powerful Slavic state called Great Moravia. These ornaments were cast in Birka and Haithabu, but the type belongs to the dress ornaments used by women of Moravia, Slovakia and Bulgaria. The aristocratic culture of Moravia has given jewellery art to Rus, such as the lunula pendants decorated with granulation which were the most characteristic ornament of tenth-century Rus culture (Duczko 2004:76). The motivation for Rus to travel all the way with wax and slaves was probably to obtain salt, a mineral that was as valuable as gold and silver. It was mined south of Moravia in Bulgaria, but was a well-documented commodity traded on the middle Danube (Lewicki 1967:20f). The connection between Rus and Moravia is especially visible in Ruzaramarcha, between Vienna and Linz in present-day Austria, and the nearby trading station of Raffelstetten. For the later place there exists also a unique document issued by Louis the Child AD 904–906, the so-called Raffelstatt statutes ('Inquisitione de teloneis Raffelstettensis'). As Duczko points out in chapter 6 with regard to custom dues, there is mention of goods delivered by Rugis, who probably can be identified as Rus traders (Duczko 2004:77; Franklin & Shepard 1996:89; Nazarenko 1999:296).

The route taken by the Rus traders was the same as had been used for hundreds of years, and where in Roman times the famous Amber Route went. The journey followed the Vistula to the Morava River, and through the Moravian Gate – an opening in the mountains – to the Danube. This trade route is the least investigated of all routes in the Late Iron Age, but it has probably had greater importance than has previously been observed, not least thanks to the access to the important commodity salt.

Gross Strömkindorf

At Gross Strömkindorf, a seaside site close to Wismar, Germany, a large cemetery with boat burials was found in connection with excavations of a marketplace, led by Hauke Jöns in 1995–1999. The burials can be interpreted in the light of Scandinavian influence in the area. The marketplace was used during the 8th and early 9th centuries (Jöns 1997:204) and was identified as the town Reric mentioned in French annals from the year 808 (Herrmann 1980, 1984; Jöns 1997:205; Luth 1997:200). The cemetery was situated 250 m NE of the marketplace. It comprised an area 1.7 km² and contained 150 graves, including 6 boat burials (Holzer 1999):
7.9.2. Scandinavian boat remains in the southeast Baltic

Estonia

The traces of Swedish seafaring in Estonia consist of rivets in settlement layers and burials with rivets that may come from Scandinavian boats or local boats built within a Scandinavian tradition. One such site is Viltina. The first finds in the area were made by a local farmer who in the beginning of the 20th century found a whole complex of horse gear and weapons in the remains of a grave (SMM 1924:105, Vassar 1940:1, Mägi 2002:60).

In 1940 the Viltina cemetery was excavated as a rescue excavation in connection with the annexation of the area by the Soviet army bases. Many boat rivets were found, probably the largest amount of such rivets found at a cemetery (Vassar 1940). The boat rivets were spread in ovals at the edge of the cemetery, and no real burials were found in connection with them. They were interpreted by Vassar (1940:7-8) as representing cenotaphs, or that the bones had completely disappeared, while Mägi (2001:61) believes that boats may have been left to decay at the site centuries later, as it is situated close to the shoreline. She also refers to the custom known from Karelia of letting boats decay in pagan-period stone cemeteries (Cleve 1978:86ff). The cemetery was situated at the seashore during its time of use, and at a distance of about 100 m was a site probably used as a marked harbour/landing place/cult place (Mägi, mail 2006-02-09).

According to my own observations of the Viltina rivets, out of 118 analysed, 78 could be determined to have shafts with a square section, and only 3 had round shafts; the others could not be determined. They thus belong to ships of the Svear according to my analysis.

Actual boat burials have been found in Proosa near Tallinn (Deemant 1975, 1976, 1977) and in Rebala (Bill 1994:60). At both sites the boats have had rivets of the type used among the Svear, with square shafts. At Proosa, which has also revealed other rich Scandinavian burials from the 5th and 6th centuries AD, the rivets found are either in an undated context, or in a context from the 11th or 12th century. The boat burials are evidence that the visits by Scandinavians were not just for raids or for conducting trade. Instead some Scandinavians settled here and buried their dead according to the tradition and customs from home, in boat burials. The earlier Scandinavian graves, without rivets, show that these contacts across the sea were established early on. Rivets like those at Viltina are not with certainty connected with burials, and instead may represent influences on the boat building and customs of the local population as a result of contacts with the Svear. Maybe these types of finds in Viltina and several other places on Saaremaa (Mägi 2002) are more related to the Finno-Ugrian tradition from Karelia, mentioned above (Cleve 1978).

Proosa cemetery with boat burials is located close to Tallinn, close to present-day Nehatu. What is even more important is that it is situated only 200 m from the Pirita River, which was a navigable river. At this place there had been an important settlement since the Bronze Age, protected by the Iru hillfort downstream, 2 km to the west. At Iru there was also a marketplace and a harbour. The water route as an important communication route attracted habitation, and around its shores many prehistoric settlements were established. The Proosa cemetery was excavated between 1970 and 1984. The find material is exceptional because of the large amount of early Scandinavian artefacts (Markus 2004:119). Among the 1,600 artefacts recovered in the 1970–1977 excavations, which are mainly of local character, there are 23 luxury objects of Scandinavian origin: mounts, a sword pommel, a buckle, clasp buttons and belt ornaments, decorated in Salin’s style and dated to the second half of the fifth and early sixth centuries. The site was a typical Estonian cemetery, and the finds were recovered between the stones. Markus (2004:120) means that, although Scandinavian artefacts from this period have been found at several places, none can compare to Proosa. She points out that links to other peoples around the Baltic Sea could also be seen in the material, and that the material from the northern part of the Estonian mainland shows close connection with Finland. Valter Lang (1991) has written his thesis about the river and suggests that here were earlier so-called hillfort districts. Marika Mägi is, however, skeptical to this (personal information).

The latest research concerning the cultural history of coastal areas indicates continuity in settlement from the Late Iron Age into the historical period (Markus 2004). By studying Enby on the Nuckö peninsula, Felicia Markus has observed that the settlement was probably established already in the Early Iron Age, and that in the Late Iron Age, especially in the tenth to thirteenth centuries, expansion and changes took place in the foundation of the cultural landscape that were to last until present time (Markus 2004:194). Markus’s important study indicates settlement continuity, population continuity, and probably also linguistic continuity in this area. The archaeological investigations and 14C dates have filled a gap in the written sources and shown both settlement and agrarian activities on Nuckö long before the fourteenth century, when the first written documents indicate a population on the
island, and before the Christian conquest which was nearly completed in 1226.

South of the Peipus Lake in southeast Estonia, is Pskov. Here the traces of Scandinavian maritime journeys recovered so far consist of 34 rivets, dated between the tenth and the fifteenth century, i.e., including the period after Scandinavian influence (Sorokin 1994, 1997). The traces are found in the town levels. Here, however, it should be added that it was probably a question of re-used parts of planks, since ten of these were found in the Kremlin at Pskov. Here also a depiction of a Scandinavian ship-type has been found on a comb (fig. 145) of Finnish type, dated to the 9th–11th centuries (Kondrateva 1981:107 fig. 2:6). The ship appears together with an image of a tree, and it has a small square sail that resembles the Vendel period depictions on Gotlandic picture stones (Nylén 1987a).

Figure 155. A comb with picture of a ship from Pskov. After Labutina et al. 1981.

The journeys of the Svear to different parts of Estonia are, as we will see, also evidenced by the runic inscriptions: Virland on U 346, U 356 and U 533; and Livonia on U 698 in connection with the naval expedition led by Fröger, and on Sõ 39.

To summarise: Estonia has been a multi-ethnical scene, with regional differences that are visible in the material. In the Late Iron Age two local ship-building traditions develop. The earliest rivets from the Migration Period burials may represent Scandinavian journeys, mainly from central Sweden. In later periods this has probably developed into a local Estonian tradition with iron-riveted boats. The rivets occur so frequently in the coastal region and on the islands that they cannot be the remains of temporary foreign visits to the area. As Marika Mägi has shown in her investigation of the Saarema burials, iron nails and rivets occur in 54 % of the men’s graves and 62 % of the women’s graves on this island, in the cremation burials (Mägi 2002:114). According to my observations, they have fastened wood of varying thickness, 20-35 mm. Rivets of this kind are of the same type as found in burials from the Late Iron Age and in settlement layers up to the 13th century, after which time they are replaced by iron nails.

The other boat-building tradition is represented by inland finds of ‘soft’ logboats of the type called haabias in the historical period and related to the Finno-Ugrian boat-building traditions. This type of boat is dominated by the light, expanded and sometimes extended logboat, manufactured with an extremely thin hull that demanded great skill. The thin strakes that were sometimes added were sewn together with the stems and the bottom, like in the other Finno-Ugrian areas around the Baltic Sea (see chapter 5). One such find from Lake Koorkula-Valgjärv has thicker ends but thinner hull in between, and is dated to c. AD 1600 (National Maritime Museum, Tallinn).

Latvia

In Latvia the capital town of Riga was established by the large river which in the Lettish language is called Daugava, in the Russian the western Dvina, in the Belarusian Dzvina, and in ON Dúna (Edberg 2001:41). The river constituted an early shortcut to the Dnieper. This river route has its sources at 220 meter above sea level among the Valdaj hills in northwest Russia, where also the sources of the Volga and Dnieper are found. It runs through Russia, Belarus and Latvia. The navigable conditions have differed significantly during a year, since the highest level in the spring flood at the beginning of April is 6-8 m higher than the water level in summer. Problems for the navigators on the river have been the sections with underwater cliffs and rapids, altogether over a hundred. Despite this, it constituted a main transportation route until the Soviet Union blocked the river by building a power plant without sluices in 1965. The goods that were earlier transported on the river consisted in the historical period of e.g. timber, grain, tar, building material, and hemp (Edberg 2001:43). Through the centuries it constituted an important route for the trade between Eastern Europe and the Baltic Sea. Wax and furs came from Russia towards the sea, and on the return route salt was an important commodity.

Along the Daugava, so-called Boris stones were erected in the 1120s, a kind of stone with inscriptions resembling the rune stones and interpreted as reflecting the ambition of the principality in Polotsk to expand downstream from the river. Many of these stones were destroyed in the dynamiting of cliffs in the river that were obstacles in the 19th and 20th centuries. One of the stones is preserved and exhibited in the Sofia Cathedral in Polotsk (Urtans 1993b). Here in Polotsk, a stronghold was created during Rurik’s reign (M.G. Larsson 1997:13).

The boats used locally were rafts, strussar and ‘smaller ships’ (Bielenstein 1918:602). Strussar
were flat-bottomed barges with 3-inch-thick planks held together by dowels or nails, with a lath covering the seam and with luting on the bottom. The *strussar* could be up to 175 feet long and 56 feet wide. For local transports and fishing, rowboats or expanded logboats were used. The latter could be up to 28 feet and hold up to 30 persons.

Where the river begins at the Baltic Sea, the realms at the end of the prehistoric period and start of the medieval period included Curonia along the western coast, Livonia along the coast north of Riga, Sengallen southwest of Riga, and Letgallen in the eastern part of Latvia. The people of Livonia had, like the people north of Vironia and Estonia, a Finno-Ugrian language and material culture. Upstream the Daugava, a Slavonic people called 'Krivichs' had settled.

Concerning the Scandinavian journeys along this river, the lack of archaeological material can only be filled by some scarce information in historical sources and by runic inscriptions. **S39** is erected for Bergvid 'who drowned in Livonia, and U 698 after Åsger 'who fell out in Livland'. Domesnäs, the outermost promontory of Livonia, is mentioned on **S 198** where a journey is said to have been made in expensive knar around Domesnäs'. On a lost stone, **S 121**, Bugge thought that Daugava was mentioned *I Dynaosi* 'in the mouth of Daugava', but this interpretation has been rejected by Wessén (see Ohlmarks 1981:149). Also in Daugmale, 30 km from the mouth of Daugava, a stone with runes has been found (Edberg 2001).

At Daugmale is one of the larger hillforts along the Daugava. It is a 25 m high hill where an area of 3,800 square meters is encircled by a wall up to 7 m high. The find-material includes a large number of coins, an Islamic type of balance weight, spindle whorls, pendants with *rurikid* symbols, crucifixes of orthodox type, and resurrection eggs. Altogether the archaeological material suggests that here was once a combined fortress, settlement and harbour, but also a control point where the apparent regular trade from the Baltic Sea along the Daugava valley to the Dnieper valley and Kiev area and back could be controlled and regulated (Edberg 2001:48).

The different, more or less adventurous, experimental journeys – such as Havorn in 1992 (Engøy 1992; Altrock 1993), a 2/3 replica of the Gokstad ship that weighed four tons and needed crane and tractor, an early journey by Russian cadets in a sloop in 1901, or a rubberboat expedition by Germans in 1994 (Müller 1995) – the most realistic journey with a boat resembling Scandinavian vessels used on rivers was made by the French explorer Michel Peissel in the 1980s (see Edberg 2001). The boat was a 7.5 m long *snipa* (a traditional central Swedish fishing-boat type) with six oars and a square sail. In 20 days Peissel and crew travelled to Besjenkovitji in Belarus, 550 km from Riga, a journey averaging 27 km per day. The well-trained crew spent 10 hours a day at the oars. The boat was then carried 90 km to the Dnieper. The delta of Dnieper was reached after a total journey time of 52 days (including 7 days of rest). According to calculations by Pleissel, the distance of this journey was 2008 km (Peissel 1990). This gives an average distance of 38 km per day (Edberg 2001:50).

Archaeological evidence indicates the presence of people from central Sweden and Gotland in the vicinity of Grobin in Latvia. In the 1920s and 1930s archaeological excavations were done of several cemeteries in the coastal areas surrounding Grobin, led by Birger Nerman (1958), who interpreted the site as a Swedish/Gotlandic settlement or trading station. Later research cannot support any permanent habitation or colonisation in the area. The strong Scandinavian presence in the material can instead be interpreted in terms of cultural contacts and ideological influences (Petrenko & Urtans 1995; Jansson 1992; 2000). Here was situated an important trading place of Curonia, corresponding to the western part of present-day Latvia. The marketplace was probably the same as Seeburg, which is mentioned in *Vita Anskarii*.

**Lithuania**

At Palanga, a marketplace from the 11th century on the coast of present-day Lithuania, with a fortress and a cultic site at the trading place, boat rivets and nails reveal the Scandinavian presence in the area (Zulkus 2001:96). It is situated along the shore of what in the Viking Age was called Curonia, mentioned several times in written sources as a country that partly had been attacked and forced to pay taxes to the Svear from time to time. At this place is also the mouth of the river Rouzes, a local communication route beside which in the 1930s were found the remains of what was said to be a 'Viking ship' (Zulkus 1997: 292-301; 2001:97).

According to Anskar's *Vita Anskarii*, one of the earliest contemporaneous sources about Scandinavian naval journeys to the East, the large fleet was steered by King Olof in the early 850s towards the Curonians, and after Seeburg it continued to Apulia, probably present-day Apuole in Lithuania (chapter 30).

**Finland**

Along the old eastern sailing route, a wreck was found in 1976 near Lapuri Island by a skin-diver named Manu Törönen. This has been further documented by Alopaeus (1995:127ff). It is dated to 980 ± 90 BP, and 570 ± 100 BP. The reason for the discrepancy in the dates is not known, though it is
generally assumed to be the first known Viking ship in Finland. Constructed as a clinker-built Scandinavian ship, the use of both iron rivets and treenails displays west Slavonic contacts as well. Another interesting feature concerning communication and cultural contacts is that it seems that the last time luting material was inserted was in Russia, since the wool derives from an eastern race of sheep (Alpaeus 1995:130). The dimensions of the remains, about 9.8 m long and 3.3 m wide, indicate that this is a merchant vessel. A closer dating will be interesting, since the boat remains reveal commercial contacts between Scandinavia, the south shore of the Baltic Sea and Russia.

Finland also has many burials with rivets dating from the Late Iron Age, dispersed along the whole shore of Finland as well as on the Åland Islands (Müller-Wille 1970). Both linguistically and archaeologically, the same area also displays close contacts with central Sweden during this period. After an early medieval break (?) in the contacts, almost all local boats were changed in construction and have their strakes connected in the west Slavonic way with treenails. Is this an indication that the early medieval Wendish raids also affected Åland? We do not know the answer since written sources are lacking, but the ship-archaeological remains may be a clear indication. A similar change occurred in shipbuilding on the Swedish west coast following the better-documented raids in this area, when for instance Kungshälla was burned down in 1135 during an attack led by Prince Rathibor of Pomerania who had 650 ships and horses on board, as evidenced by Saxo. After this treenails began to occur in boat building. We also know that the boats and boat building were crucial for the Wendish naval warfare. When some Danish islands were partly colonised during this ‘heyday of piracy’, also boatyards were established, such as the one documented at Fribrodrea (Skamby-Madsen 1984a, b). A similar development may also have occurred on Åland. As was described in chapter 5, the ship-archaeological remains from this period reveal the presence of west Slavonic naval ships in central Sweden as well, and maybe also on Gotland.

7.9.3. Journeys to the south and east Baltic in ON sources, inscriptions and chronicles

The early sources that illuminate these early maritime expeditions across the Baltic Sea in the Vendel period are scarce. In Ynglingatal, some information is given that can be related to the events that left archaeological traces.

The common feature in Ynglingatal as well as Ynglingasaga is that the maritime expeditions are under the leadership of a king and are not random raids by chieftains. Concerning Ynglingatal the topic is the kings, but in Ynglingasaga even the chieftains are mentioned. The main leaders of military expeditions are kings, though they are often assisted by high-ranked aristocrats, the jarls (see chapter 9). This implies that some sort of organisation was needed to raise enough crew, ships and food for naval voyages that would have taken at least a month. The country of the Swear that was called Svitjod was, however, probably not larger than the central parts of Uppland at the time of the first mentioned expeditions. The first time a geographical term is related to an expedition eastwards in Ynglingatal is in connection with the king Dagr, who led a campaign in the East:

Ok þat orð á Austrvega visa férð frá vigi bar at þann gram of geta skyldi slonguðref Sleipnis verðar And eke that in East (Baltic) lands, the king’s host of combat told that this thane by thrown hay-fork from hind’s hands to Hel should fare (Ynglingatal 9 after Pritsak 1981:258)

Pritsak has here interpreted austrveg as the Baltic countries and that it later came to denote Rus (1981:258, 15). This is in line with the archaeological discoveries (see 7.9.2.).

Ynglingasaga also tells of another king, Yngvar. He led many naval expeditions in retaliation for incursions against Swedes by both Danes and men from Austrvegr ‘the Eastern Way’. Later he was killed in an attack on Estonia, and is said to be buried under a mound in the Aðalsýsla district. This event is described already by Þjoðólfr:

Þat stokk upp at Yngvari SÝsu kind of sóat haföi ok ljóþhomum við lagar hjarta herr eistneskr at hilmi vá Ok austmarr jofri sænskum Gymis ljóð at gamni kveðr. Said it was that slaughtered had Estnic (SÝsla) folk
Yngvar the fair,
and (at Steini)
had struck with force.
gallant leader
a song doth sing
in the east
To atheling slain.
(Ynglingatal 18, after Pritsak 1981:258)

The son of Yngvar was the legendary king called
Braut Onundr. Besides his journeys to the East to
avenge his father, when he 'harried far and wide
and made great booty', he is also a familiar name in
the scientific discussions because he "established
estates for himself in every large district in Sweden
and made his royal progress through the land." (Ynglingasaga chapter 33, transl. by Hollander).

Some scholars see this as the background for Uppsalaód, and the creation of a territorial organisation
based on hundare-districts with a royal estate in
each, later often called Husaby (Stenberger 1979,
Larsson 1989). King Anund is called eistra dóllgr
‘the Estonians’ enemy’ in renewed naval expedi-
tions. The preserved strophes in Bjoðólfr’s account
about these are:

Varð Onundr
jónakrs bura
harmi heptr
und Himinfjollum.
Ok ofvæg
Eistra dólg
Heipt hrisungs
At hendi kom,
Ok sá fromuðr
Foldar beinum
Hogna hrors
o’erborne was

Onund was
‘neath open sky
with Jónakr’s-
sons’-evil (=stones) slain.
And the Est’s
enemy strong
by bastard
base was murdered;
and he who
Hogni’s blood shed
Of horfinn vas
by bones-of earth (=stones).
(Ynglingatal 19 after Pritsak 1981:259)

Since the dating is not fully established for Ynglingatal (Norr 1968), the source value may be low if it
turns out to be late. One of the most reliable and
earliest contemporaneous sources for Scandinavian
naval voyages to the East is Vita Anskarii, which
tells how the Swedes had gone to the Curonians and
made them pay taxes. Since the Curonians had
stopped doing this, it was time again in the 850s to
raise a fleet and make them pay again. It was King
Olof who led this expedition and forced Seeburg to
subordinate.

The Chud were a people south of the Gulf of
Finland in present-day Estonia. According to the
Primary Chronicle they lived ‘by the Varjagian
Sea’, and ‘by the same sea Varjags live all the way
to Shem’s share’ (Primary Chronicle II, my transl.).
The first expedition to be mentioned in the Primary
Chronicle, and maybe the most extensive naval
expedition, began in 859 eastward towards the
Chud. As the Chronicle says for this year, ‘The Varjags came from the other side of the sea and
demanded tribute from the Chud, the Slavs, the
Merians, and from the Ves and the Krivichs’ (Pri-
mary Chronicle XIV, my transl.). Three years later
the Rus were driven out, back across the sea ac-
cording to the Chronicle, but then internal war
between these different tribes broke out. They then
decided: ‘Let us seek a chieftain, who rules over us
and makes law and order among us’ (chapter XV),
and then they ‘went across the sea to the Varjags, to
Rus, because these Varjags are called Rus, just like
others are called Svear. Others are called Normans,
Anglians, others Goths. In this way they have their
name. The Chud, the Slavs, the Krivichs, and the
Ves said to the Rus: Come and rule over us, our
land is big and fertile, but we have no order. Come
and rule and govern over us!’ (Primary Chronicle
XV, my transl.). Here follows the story about the
three brothers chosen to lead their country, Rurik,
Sineus and Truvor. One of the brothers, Truvor
settled in Izborsk south of Peipus Lake on the bor-
der to present-day Estonia. Later, after his death,
his domain was taken over by Rurik.

The Battle of Svold in the year 1000 was a battle
between the kings. The contemporaneous sources
also mention this sea battle. One was Halfreðr
Óttarsson vandrædaskáld (976–1007), Óláf
Tryggvason’s favourite skald, who in AD 1001
wrote ‘Óláfstr efridráp’ where he also mentions the
Swedish king Erik’s participation:

Harðgorvan lét hjorvi
Holms verða Týr sverða
vind á víðu sundi,
vigbey. Heðins meyjar,
áðr an Órmi naði
Eirekr eða hlut meira
-morg ðð bitr í blóbí
benkneif – fyr Aleifí.

The lord of brands
On the wide sound of the (wendish) isle
raised up a storm
off Hedins maid, fierce fought with swords.
Many wounding blades
were steeped in blood round Oláf
e’er Eiríkr won the ‘Serpent’
And gained the victory.
(Óláfs saga Tryggvasonar 17 after Pritsak 1981:273)

Runic inscriptions
Of the runic inscriptions in the Mälaren area including Gästrikland, 17 mention journeys in the Baltic Sea region, and according to M.G. Larsson (1990:125) they constitute 10% of the ‘abroad stones’. Two thirds of these belong to the first half of the 11th century. Larsson has noted a significant concentration to the area around Lake Mälaren in central Sweden: 13 in Uppland, 3 in Södermanland, and one in Gästrikland. Of the ones from Uppland, 12 come from Attundaland and one from Fjädrundaland.

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<td>‘silu’</td>
<td>U 518</td>
<td>erected after Fröger who fell at ‘Salu’ in north Finland or Ösel</td>
</tr>
<tr>
<td>Virland</td>
<td>U 346</td>
<td>erected after Björn, cut by Asmund</td>
</tr>
<tr>
<td></td>
<td>U 356</td>
<td>“</td>
</tr>
<tr>
<td></td>
<td>U 533</td>
<td>“</td>
</tr>
<tr>
<td>Livonia</td>
<td>U 698, Sö 39</td>
<td>naval expedition led by Fröger.</td>
</tr>
<tr>
<td>Semgallen (Latvia)</td>
<td>Sö 198</td>
<td>often sailed there with precious knar</td>
</tr>
<tr>
<td>Finnish bay area</td>
<td>U 180</td>
<td>uncertain inscription (Larsson 1990:120).</td>
</tr>
<tr>
<td>Finnish bay area</td>
<td>U 214</td>
<td>“</td>
</tr>
<tr>
<td>Gotland</td>
<td>U 614</td>
<td></td>
</tr>
</tbody>
</table>

Table 26. Runic inscriptions with destinations in the Baltic Sea region.

One of the well-known maritime expeditions to the Baltic Sea region was Fröger’s in the 1040s, for which Larsson (1990:120) has three inscriptions where Fröger is named as a leader. In Gs 13, Tavastland is mentioned as a destination, situated in central Finland. In U 698 Livonia is named as destination, but on U 611 it is only said that the commemorated died in Fröger’s lid abroad. The place of death for Fröger himself may have been in Finland. This event, which could have occurred on this or another expedition to the area, is mentioned in the inscription U 518; it speaks of a Fröger who died in silu, which could be either Sala in Finland or in Ösel.

Several expeditions have headed eastward to the area of present-day Finland. The first time the name Finland is used in the runic inscriptions is in the early 11th-century inscription on the now lost stone from Söderby-Karl in eastern Uppland (U 582). It was erected in memory of Otrygg, killed a Finnlandi ‘in Finland’.

Finland in the runic inscriptions refers to the southwest part of the country, Egentliga Finland. The central part, Tavastland, is mentioned separately in Gs 13. Another memorial inscription mentions Viborg (U 180), earlier a Finnish town but now situated in Russia. The Danish Viborg could have been intended, however:

Sigvat and Torbjörn and Torgrim and Ärenmund had the stone erected for their brother Sigsten. He died in Viborg. (U 180)

The rune stone was earlier erected at Söböringe, Össeyby-Garn Parish, situated by the main river route from the Baltic Sea to Uppsala, which today is called the ‘Långhundra River route’. This stone has been moved to Össeyby-Garn’s church, but it is related to a stone in Söböringe, U 192, the only inscription besides this one to mention a man named Torgrim. At Söböringe there is a cemetery that includes two monumental mounds, 14 and 15 m in diameter, and also a ship-setting. This place may have had a function in the naval organisation, and was thus a suitable place for an inscription commemorating a warrior (?) who probably had died on an expedition. The inscription is from the early 11th century, the same period as the Söderby-Karl inscription.

The runic inscription indicates both trade (Sö 198) and naval activities (U 698, Sö 39) in the Baltic Sea area in the 11th century.
7.10. THE WATER ROUTES TO ASIA, THE CALIPHATE AND THE ORIENT

In the following chapter the investigation will be restricted to the Ladoga-Beloozero-Volga route, because of the attested Scandinavian presence at for instance Beloozero. However, many other routes have also been used (Kerner 1946), and will be the subject for more investigations in the future.

7.10.1. The history of journeys to the East

The journeys to the East have a long tradition, and they did not begin with the so-called Vikings. Already in the Neolithic, journeys were made to Ural to obtain precious minerals, such as flint of different colours. Sleighs of pine from this area found in Finland are evidence of early, long-distance connections (Edgren 1992). The Ural has long been the source of valuable semi-precious stones. Not only were the richest gold and platinum mines on earth here, but also the green malachite, the red jasper, and the multicoloured agates, which have all been included in decorations in the palaces of Moscow and St. Petersburg. Precious stones such as large corundums, emeralds, topazes, aquamarines, garnets, zircons, amethysts, sapphires and diamonds have been found here (de Lanoye 1865:1ff) and probably at an early date they attracted foreign traders.

The journeys to the East have been discussed on the basis of both archaeological and historical sources. In the last decade the growing marine-archaeological discipline has also put the maritime aspects into focus. The questions of how these journeys were made have been the topic of an intense debate among Swedish scholars, and especially whether they were made by boat as often has been suggested, on land, or on the ice in winter-time. One of the more central questions in the debate has been whether the boats were brought the entire way to the Black Sea, and thus were hauled on land between the rivers, or if instead new boats were acquired along the way. This important question, which also relates to communication within Scandinavia in the Late Iron Age and Early Middle Ages, will be discussed thoroughly in chapter 7. Here the archaeological and historical materials concerning journeys abroad will first be revisited from a maritime perspective; that is, the ship-archaeological remains will be focused on, as well as historical sources that illuminate this issue. Other archaeological materials have been dealt with in detail in several works, such as the thorough examinations of the artefact finds related to the Scandinavians in Russia by Ingmar Jansson (1985) in his thesis about the oval brooches, and recently by Władysław Duczko (2004) in his study of the presence of Scandinavians in Eastern Europe; Duczko also has presented a history of the research on the subject. In addition, it is important to make a review of the written sources containing information that has not been given sufficient attention in the debate.

The renewed investigations at Birka in the last decade have turned the attention to the connections with eastern material culture. In her thesis, ‘The Birka Warrior’, Charlotte Hedenstierna-Jonson (2006) has made a thorough investigation of artefacts associated with the warriors that are assumed to have been stationed in the Garrison at Birka. She includes a special analysis of the origin of sword chapes and belt mounts, which she interprets as clearly influenced by the eastern contacts with, for instance, the nomadic peoples and the Orient.

In general archaeology, the importance of the eastern journeys for the development within Scandinavia has often not received enough attention, and instead the contacts with Western Europe have been investigated thoroughly (Ljungkvist 2006). This may be due to the fact that the availability of the eastern material has been limited during a large part of the 20th century, and additionally the linguistic problems may have constituted an obstacle. Since the 1990s, however, the situation has changed, and studies have begun to appear which also discuss the eastern journeys. The archaeological material indicates that, during some periods, the majority of the contacts in fact went eastwards (Jansson 1985, 2002; Duczko 2004; M.G. Larsson 1990; G. Larsson 2000a. Stalsberg 1988, 1998; A. Larsson 2004). Still, when eastern voyages are discussed, much focus is put on the Roman-Byzantine influences (Fischer 2006; Herschend; Hägg 1974). Only very recently have scholars observed that, with regard to the central Swedish society of the late Vendel and early Viking periods, it was the journeys to the eastern parts of the Caliphate, the steppe region, and the middle Volga region that formed the basis of the developing trade, the earliest towns, and the growing wealth of the central Swedish elite.

Ingmar Jansson has made the important observation that the material culture related to these journeys can be divided into an ‘older phase’ beginning in the 8th century and enduring until the late 10th century, and a ‘younger phase’ that started in the late 10th century and lasted to the mid-12th century (2005:39). The transition in the late 10th century is associated with political and religious changes, as well as with changes in trade and towns. In Scandinavia, in the ‘older phase’, the Islamic silver coins dominate as payment in both Scandinavia and Eastern Europe, and one of the most obvious expres-
sions of the changes is their disappearance and replacement by German and English silver coins in the late 10th century. At the same time, Birka is replaced by Sigtuna; and in Russia the oldest Novgorod, Rjurikovo Gorodisce, disappears and the present Novgorod is established about 2 km away. Most of the Scandinavian finds in the East belong, according to Jansson, to the ‘older phase’. That they are few in the ‘younger phase’ may be explained by a change in dress, where the typical Scandinavian style is no longer as obvious. However, another explanation may be that the burial practice changed as a result of Christian influences (Jansson 2005:44). True Scandinavian finds from the younger phase are detectable along the Dnieper route all the way down to the Black Sea, such as the runic grave-stone from the island Berezan outside the mouth of the Dnieper.

The eastern artefacts in Scandinavia in the ‘older phase’ are, as Jansson has observed, from the eastern Caliphate (Iran-Iraq-Afghanistan-Uzbekistan), from the Khazarian Empire between the lower Dnieper and lower Volga, and the Volga-Bulgarian area by the middle Volga. Comparatively few finds are of Byzantine origin, approximately 600 coins, (pendant-crosses och encplings) and a few others, and the majority of them are from the ‘younger phase’ (Jansson 2005:44). This is in line with the recent results by Annika Larsson (2004), who has shown that the ‘Oriental style’ of dress with the kaftans, the silk types, and the use of applications that we find in Birka – i.e., in the ‘older phase’ which is contemporaneous with the existence of Birka – is completely different from the Byzantine style in that period. The kaftan that we associate with Constantinople came in use there first after the invasion of nomadic riding tribes from the east, when the Christian Constantinople was transformed into the Islamic Istanbul in the 13th century (Larsson A., 2004:51). In the Birka period no applications were used on the dress in Constantinople; instead, patterns of gold were woven into the textiles (Larsson 2004:51).

The written sources, such as the Primary Chronicle, tell of predominately hostile relations with Byzantium, including repeated attacks from Rus until the 10th century when the first peace treaties and trade agreements are made. Later, in the ‘younger phase’, the Rus also take service in the Byzantine army, and the Rus emperor converts to Christianity in order to marry a Byzantine princess. The Islamic sources in the ‘older phase’ talk about ‘Rus’ and the journeys to the areas around the Caspian Sea, whereas they talk about Warank in the ‘younger phase’. And finally, in the Old Russian and Old West Norse early medieval literature the contacts with the steppe and the Caliphate seem forgotten, and the Byzantine connection stands out as the most important (Jansson 2005:44). The later term Warank is associated with the Scandinavians in Byzantine military service, which in Russia are called varjag, in Greece varangos, and in Scandinavia våring. The first time (?) these Scandinavian warriors are mentioned as being employed in Byzantium is in the second peace treaty between Rus and Byzantium in 944. The reference is found in the Primary Chronicle, where it is also stated that, besides a trade agreement, the Rus emperor should send warriors to the Byzantine emperor to fight against his enemies in the number that he requested. Further evidence, observed by Mats G. Larsson, is the work De ceremonies aulæ byzantinae by the Byzantine emperor Constantin Porphyrogenitus (?), where, in connection with the Rus empress Olga’s visit in 857, the emperor complains that Rus has not sent people to him to the extent they had agreed to (Larsson, M.G., 2003:26).

Peter Lindbom has traced the origin of the ideal of archers on horseback, as well as arrow types, in late Iron Age Sweden to the nomadic peoples of the east (personal information, 2006). He has found many similarities with Norway, but both the ideals and the material culture differ from, for instance, Denmark (personal information). Sylvia Sandelin has noted in her discussion of the colour pigments found in Scandinavia in the Birka period that they originate from as far off as India and Afghanistan (personal information).

Ljungkvist discusses military journeys to the East as a means for the Swedish elite to obtain resources, by external exploitation and plundering, and states that ‘…a reasonable conclusion is therefore that possible Scandinavian military conflicts took place within Scandinavia and maybe were directed eastward, or southward, to areas where annals and chronicles were not produced’ (2006:116, my transl.). Is this really the situation? After having discussed the ship-archaeological remains deriving from these journeys, I will also shed light on historical material that contains information on the eastward journeys of the Swear.

7.10.2. Trade routes and political history

The development of the international trade is dependent on the political history. The changes within Swedish commercial relations in the Late Iron Age should be seen against the background of the dramatic changes in Southern Europe. Trade as a force behind the Viking expeditions has to a large degree been underestimated. When Muhammed died in 632, it marked the beginning of an Arab expansion, with swift attacks on and conquests of the countries surrounding the Mediterranean. Within a century all countries except for the former Eastern Roman
Empire, Byzantium, were taken. The Byzantine fleet was saved by an unusual invention in naval warfare – the Greek fire. It served as a rescue line for them for a long time to come, even against raids from the Rus in the north.

To the north the Arabs were stopped by the Carolingian Charles Martel. In the absence of trade to the south, the trade with the North Sea began to flourish, especially from the Frisian areas. The building of Danevirke should be seen in connection with the maritime trade routes. West European artefacts begin to appear in the Swedish marketplaces. This applies especially to the 9th century, following improvements to trade routes; the commercial remains in the recently established Birka, for example, show a golden era for the Frisian-Scandinavian trade.

In the Vendel period the cargo ships had to pass through the dangerous water around the northern tip of Jutland to enter the Baltic Sea, but in c. AD 800 King Godfred created a well-protected shortcut for the transports across the base of the peninsula, from the Eider River to Slien Bay. The Franks launched an aggressive campaign towards the north, conquered the Old Saxons and pushed their frontier to Elbe. They clearly constituted a military threat to Denmark, but through the creation of the defence wall Danevirke, Godfred gained both military and commercial advantages since it at least temporarily protected not only Jutland but also the important trade route.

7.10.3. Seafaring and the development of trade

Seafaring and the conditions for seafaring made possible by the ships are of crucial importance for the understanding of the development of trade. It is a striking coincidence that at the same time as the seafaring was extended to Russia in the mid-8th century, several important marketplaces were established. Recent dendro-dates from a log in a building construction attest to the establishment of Staraja Ladoga at its present place in AD 753 (Kirpitjnikov oral information 2006-02-16). As Wladyslaw Duczko has shown, there is a Scandinavian presence from the very beginning, in E3 (c. AD 750–760); the remains include large dwelling houses of Scandinavian type, as well as timber houses of the local Finns, 4 x 4 m large (Duczko 2004:67). At almost the same time, the marketplace of Birka was established. Shoreline displacement dates the oldest jetty there to c. AD 750. The material from the earliest phase has a lot of furs and paws from foxes, martens and squirrels (Ambrosiani 1991). Furs were merchandise. Ibn Khordadbeh (see below) wrote, probably in the 840s that the ar-Rus brought furs to the Greek Sea, the Caspian Sea, and sometimes beyond the Caspian Sea on camels from Gurjan to Baghdad (Lewicki 1956:43 ff; Duczko 2004:22). The impression given is that of an already established trade route.

Because of the seafaring possibilities of Birka, the eastern connections were probably of major importance for the establishment of the marketplace there. This has perhaps been somewhat neglected in discussions because of the large amount of objects showing an intense commercial contact with Western Europe and the Frisian area in the period c. AD 750–850. The reorientation of Frisian trade in the 8th century from the south to the Scandinavian markets must be seen in connection with the events in the Mediterranean. The ship types used in the North made it possible to open up new trade routes through Russia to Byzantium, to the Black Sea and the areas surrounding the Caspian Sea. The Scandinavians seized an opportunity to take control of the prosperous trade between Eastern and Western Europe.

The Arabic authors talks about Rus as ‘merchants’:

The Rus are a great nation; they do not submit to any king or any law. Among them are merchants who constantly journey to the king of Burghar. The Rus have in their land a silver mine similar to that of ‘Panjhir in Khorasan… (Hudud § 6).

Today most scholars agree that a long-distance trade route to these areas was established already in the mid-8th century (Jansson 2002; Duczko 2004). In the archaeological material we can see that, simultaneously with the inflow of Arabic silver to Sweden and the establishment of the trading centre Birka in Lake Mälaren, another stronghold for the trade between Scandinavia and the Caliphate is created through the establishment of Staraja Ladoga. But how do we know that the Svear actually went by boat on their eastern journeys? In the following both ship-archaeological material and historical sources will be analysed and evaluated in relation to this question. But in order to establish which remains of boats and ships really are Scandinavian, it is necessary to first investigate how the Scandinavian ships differed from the local boats.

7.10.4. How to trace the remains of Swedish seafaring in the East

The most important remains of the Scandinavian seafaring in the East are the boats and fragments of boats that can be identified in local finds. The main characteristics of the boats used by the Svear were outlined in chapter 5. In order to decide to what extent the ship remains found are Scandinavian or
domestic craftwork, a careful analysis must also be made of the types of vessels which occurred in the final phase of the Iron Age and beginning of the Middle Ages in Russia and the Ukraine. In St. Petersburg, Peter Sorokin has studied the ship-archaeological material from NW Russia (1994:129 ff). He divides it into the following groups:

1. Clinker-built ships built on keels, from which iron rivets and fragments of planking have been found.
2. Flat-bottomed barges with planks held together by iron cramps or seams.
3. Logboats, hard or soft, sometimes extended.

The first group was found only in connection with artefacts and occupation layers showing Scandinavian influence from the eighth to eleventh centuries. Such boat-building techniques lived on during the Middle Ages and up to the fifteenth century, even when the Scandinavian influence had vanished (Sorokin 1994:130). As was shown in chapter 5, the majority of the rivets are of the type used by the Svear. It is clearly distinguished from the local traditions, represented by the second and third groups.

The local sewn boats are held together partly by a sewing technique similar to the stitch technique (Forsell type C), representative of Finno-Ugrian elements in the area, and partly in a coarse running stitch, or groups of oblique stitches, using strong withies (Forsell type B) similar to those found in Karelian boats and later Russian finds (see chapter 5). Early on, during the 11th or 12th centuries, iron cramps also begin to occur in the material over the beading covering the seams, often on barges (Sorokin 1994, Dubrovnin).

Soft or hard dugouts, sometimes extended, and of the same types as those recovered in Russian archaeological occupation layers from the Viking period and early Middle Ages, have continued in use in northwest Russia right into modern time, for instance among a number of Siberian and Finno-Ugrian peoples such as the Voguls and Ostyaks (Sorokin 1994, 1997; Forsell 1983).

Thus it can be concluded that the rivets represent foreign, Scandinavian influence in this area. These rivets, together with remains of Scandinavian boats as well as boat burials, will be analysed in the following to trace the journeys of the Svear.

Is it possible to trace more specifically the origin of the Scandinavian travellers in the East? The answer is ‘yes’, by a close examination of the rivets, important differences can be traced. This will also be discussed below concerning the remains of Scandinavian rivets in Russia.

Traces of the Svear in the boat terminology
Sorokin (1997) has discussed thoroughly and critically the terminology used in Russia for the boats and ships, and on the basis of the latest results he also reconstructs some of the actual craft types that were used according to the written sources. What is of interest here is to trace any cultural exchange between Scandinavia and Russia, as it is revealed in the names in the documents. The names that were identified by Zagoskin and Mavrodin (Sorokin 1997) are primarily a group of general terms that denoted any vessel, more specifically the names lodya, corabl, shneka, and busa. Among these, it is already clear that the last three are related to Scandinavian ship-types (see chapter 3). Corabl is the Scandinavian karv, known as an aristocratic ship and a warship already in the Viking Age and in use until at least the 13th century. Shneka is a term related to the snäcka, known as an early medieval rowed Swedish warship in the leidang organisation mentioned in the central Swedish provincial laws, and sometimes also in Norway and Denmark in this period. Busa occurs in different contexts in the Middle Ages in Sweden as the busse. The Russian researchers of the ship terminology then divide the concrete types of vessels into two groups: the Russian crafts cheln, strug, nasad, uchan, ushkuj, marine and naboinaya lodya; and the foreign types, loiva, galea and skedia. Here it can be observed that the last type of foreign craft, the skedia, is clearly related to the Scandinavian skeid, a larger Viking and early medieval warship.

Here it can be concluded that, both in the terminology and in the boat building, there has been a mutual exchange. This has made such a deep impact in Russia that the majority of the general terms for boats and ships in the early written sources are of probable Scandinavian origin. As will be seen below, Rus who travelled are in the earliest sources mainly associated with journeys by boat along the rivers, which is in contrast to the habits of the local inhabitants and which was seen as so special that it was worth noting by the authors observing these habits (see page).

Traces of Scandinavians on Arabic coins
There is direct evidence of the Scandinavian involvement in the trade through Russia with the Caliphate in the find of Arabic coins with graffiti of Scandinavian ships. The Russian finds have been observed by Sorokin (1997). They are mainly from the 9th and early 10th centuries (figs. 156).
7.10.5. The Neva River, Lake Ladoga, and the Volkhov River to Staraja Ladoga

The traces of ships and seafaring of the svar from the first part of the journey through Russia, from the Baltic Sea to Staraja Ladoga, consist of fragments of ships, boat rivets and depictions.

**Rivets from the journeys of the Svear**

The rivets are, as has been touched upon, a good indication of Scandinavian ships and seafaring, and it is also possible to distinguish the rivets from the ships of the Svear.

The rivets in the Russian finds are sometimes thought to have been of another type than the finds from central Sweden. According to my own examinations, the Russian finds from the Staraja Ladoga town layers (Kirpichnikov 1985), the mounds at Plakun cemetery (Nazarenko 1985), the Gnezdovo settlement layers, and the Gnezdovo cemetery mounds (Mühle 1988) in northwest Russia, all have square shafts. Jan Bill (1994) has made a comparative study of rivets that is partly well founded and based on his own observations. Concerning Sweden, however, he has based his analysis primarily on the publications (see chapter 5) and without a thorough examination he has concluded that central Swedish rivets have a round section (Bill 1994:59f). His results have been widely used and referred to in the intense Swedish debate about whether or not the Scandinavians brought their own vessels to Russia and further down to Miklagard/Constantinople (Westerdahl 1996a; Edberg 1996). His results have namely been taken as support for the opinion that Scandinavians did not bring their own boats, but instead purchased locally built vessels. My own investigations have shown that, in cases where the shafts are not so corroded and it is possible to determine the section, the shafts of the rivets in central Sweden’s boat graves have a square section (see chapter 5). This results in a completely different picture of the distribution of rivet types (fig. 156); it clearly indicates the origin of the clinker-built vessels with rivets found in NW Russia, and also shows that the vessels might have been used without exchange of boats between, for instance, eastern Sweden and Gnezdovo in Russia. The Scandinavian ships also could have been built locally by ship carpenters who accompanied the fleet from Scandinavia and who were taught in this tradition, but so far no traces of shipyards have been found in Russia with debris from the manufacture of rivets, as is known from the excavated shipyard at Paviken, Gotland (Lundström 1981).
Staraja Ladoga

The start of the eastern journeys and the earliest traces of Svear in Late Iron Age Russia are found at Staraja Ladoga. Archaeological investigations in later years have revealed that the marketplace at Staraja Ladoga was established at its present location in AD 753; dates are based on a log in a building construction (Kirpitjnikov oral information 2006-02-16). As Wladyslaw Duczko has shown, there is a Scandinavian presence here from the very beginning, in phase E3 (c. AD 750–760); the remains include large dwelling houses of Scandinavian type, as well as timber houses of the local Finns, 4 x 4 m large (Duczko 2004:67). The area was at this time occupied by a Finno-Ugrian people, and not by the Slavs who had not yet started their expansion northward from the steppe-forest zone (Duczko 2004:64). The Finns buried their dead in sopkas, i.e., high barrows, which are also common around Staraja Ladoga on both sides of the river. The presence of the Svear can also be seen in the burials at Plakun, a cemetery on the shore of the river opposite the ancient town, where the deceased are buried in boat graves.

The archaeological material indicates that this was a town where Svear, Finns, Frisians, Slovenians and other people in the countries around the Baltic Sea met for trade. The trading expeditions to Miklagard and to Baghdad in the 840s might have passed through here.

Boat rivets occur in town occupatiolevels from Staraja Ladoga from the eighth century up to the ninth century. Twenty-seven rivets were found during E. A. Ryabinin’s investigations (Kirpichnikov 1985). Rivets from Scandinavian ships occur also in the boat burials at the Plakun cemetery. There are boat burials under the mounds 1, 3, 5, 6, 7, 11, 13 (Nazarenko 1985:156-169), and the boat burials themselves may be seen as exemplifying the way both ideological and religious ideas as well as customs and artefacts followed the Scandinavian travellers eastwards. The boats in the burials were clinker-built vessels joined with rivets of the same type as those found in central Swedish boat burials.
The Primary Chronicle tells of a large expedition launched in 859: After having travelled upstream the Neva River, the ships reached Lake Ladoga where the Slavs lived by the southern shore, as well as southwards along the Volkhov River towards Lake Ilmen. According to the Chronicle, these people were subordinated like many other tribes and forced to pay taxes (Primary Chronicle). Like the other tribes they also managed to throw out the Varjags, but later asked them to come back.

On the opposite side of the river, E.A. Rjabinin’s excavations in 2001 uncovered a fortified settlement that had existed before Staraja Ladoga, with no traces of Scandinavians (Lebedev & Sebykh 1985:23). At this place, situated at Maloe Chernavino, there were remains of ramparts more than 2 m high, consisting of a wooden construction covered with earth and with a stone facing on one side.

The deep and wide Volkhov River was possible to navigate with bigger boats, such as the Scandinavian merchant vessels. Thus, Staraja Ladoga and Novgorod were accessible with trade ships.

Lake Ladoga area

East of Lake Ladoga by the river Pasa, an unburned boat was found under a mound, grave no. 19 in the cemetery at Ust Rybizno (Arbman 1955:56). The rivets were distributed over an area 10 m long and 4 m wide, and to a depth of 1.5 m. This boat is thus very similar to the boats in the central Swedish burials at Valsgärde and Vendel. In the grave were also other artefacts typical of a Scandinavian boat-burial: sword, spear, axe, knives, pail, locks, weights, cauldron, silver brooch, frying pan, etc.

An important observation by Raudonikas is that in the area of Lake Ladoga the wealthiest graves are those that contain the most Scandinavian objects. He interprets these graves as being those of Finnish magnates’ families, who bought Scandinavian objects for themselves (Raudonikas 1930:11). An alternative interpretation, however, is that it was the well-to-do Scandinavian merchants who were buried in these graves. According to Arabic sources, the ‘Rus’ mainly made a living from trading; and this is an important factor in the interpretation of boat journeys from Scandinavia to the area. It was probably as merchants that many Scandinavians came in contact with the kingdom of Russia.
7.10.6. The water route from Lake Ladoga to the lakes Onega and Beloozero

The eastern water route that probably played the most important role in the communication of the Sverar in the ‘older phase’ from the 8th to the 10th century (Jansson 2005) was probably the Volga route that reached directly to the Caspian Sea and the Caliphate. This could be reached either from the Don, or eastward from Lake Ladoga via different rivers and the lakes Onega and Beloozero. From the eastern shore of Lake Ladoga the river route went upstream Svir to Lake Onega. The area that the travellers had to pass here was inhabited by the Finnish tribe *Vepsians* (Ves), who in the medieval period resided in the triangle Ladoga - White Sea – Onega. This area was inhabited by the Finnish tribe *Vepsians* (Ves). According to the Primary Chronicle, in 6367 (AD 859) they were also subordinated and forced to pay tribute to the Sverar. The Chronicle tells that Sineus, a brother of Rurik, settled here (Primary Chronicle for the years 6368-6370, AD 860-862).

The western shore of Lake Onega belongs to Karelia, and today the capital Petrozavodsk (Onegaborg) of the Karelian republic within the Russian Federation is situated here.

From the southern part of Lake Onega this route continued on the river Vytegra until the river turned east. Here the travellers had to pull their boats (see discussion at the end of this chapter) to reach the river Kovzha and to Beloozero Lake and the town with the same name. This was called the *Badozhsky portage* (no. 3 on the map, fig. 163). The continuous importance of this water route is partly mirrored by the construction here of the Mariinsky water system in the beginning of the 19th century, as well as the establishment of the ‘Volga-Baltic’ water route in the 1960s (Makarov 1994:15).

7.10.7. From the lakes Onega and Beloozero to the Northern Dvina, Onega River and the fur-supplying areas of the north

From the area around Lake Onega it was possible to reach the fur-supplying areas and the Arctic Sea via the river systems and several important portages that connect to the rivers Northern Dvina and Onega. These have been studied by Makarov (1994).
Via the main river from the eastern shore of Lake Onega, the Onega River could be reached by the Kensky portage (no. 1 on the map). In some places the hauling of ships and goods was so frequent that this became a source of income for the people living beside the portages, and this was the case concerning the Kensky portage. This portage is mentioned in the Land Cadastre Book of 1563:

...it is via this portage that merchants from the Novgorod Land travel to the Zavolotskaya Land, from the Zavolotskaya Land to the Novgorod Land in boats along the water route. And peasants of the Great Prince from the Nastasia volost’ on the Myshe Chereva carry goods through this portage, charging a denka for each load...And now this portage is abandoned and merchants do not use this way, they travel by a new way. (Makarov 1994:22)

The conditions for preservation at the Kensky portage are better than at Slavensky volok (see below), and here Makarov mentions a ditch at the side of the road, which he interprets as having been intended for drainage. In the boggier sections of the portage, planks are also placed.

From the Onega River, the Northern Dvina was accessible via a tributary and the Emetsky portage and Emitsa River (the left tributary of Northern Dvina) in the north, as well as across the Moshinsky portage in the southern part of the river via the tributaries Pya River and Vaga River.
East of Lake Beloozero, it was also possible to reach the Onega river system by passing the Uchтомsky portage (no. 2 on the map, fig. 163) situated between the lake Volotskoe and the lake Dolgoye. In the Beloozero Land Cadastre Book from 1585 it is described how the villagers at Beloozero are transporting their cargo by the portage at Uchtomsky, also called the ‘Red portage’, and how they are ordered to use the old portage and not the new one. During excavations it was shown that the five dwelling sites around the river could be dated from the 10th to 13th centuries. It seems probable that also here the inhabitants could gain from assisting at portages, like Kensky, and that this was the main basis for the settlements here. The period coincides with the time when light ships were still used in central Scandinavia, and the later part with the time when Rus merchants were controlling the fur trade between the hunting grounds in the north and the Caliphate and Byzantium in the south, as described in several sources.

Figure 164. Archaeological sites at the Uchtomsky portage. a – 10th century dwelling site; b – 11th century dwelling site; c – portage road; d – medieval cemetery. After Makarov 1994:16, fig. 2.

<table>
<thead>
<tr>
<th>Place</th>
<th>Length</th>
<th>Remains</th>
<th>Scandinavian artefacts</th>
<th>Village time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kensky</td>
<td>6 km</td>
<td>Planks, road, ditch</td>
<td></td>
<td>13th to 17th centuries</td>
</tr>
<tr>
<td>Uchtomsky</td>
<td>1.8 km</td>
<td>Road + wooden construction</td>
<td></td>
<td>10th to 13th centuries</td>
</tr>
<tr>
<td>Badozhsky</td>
<td>-</td>
<td>- under Mariinsky’s water system-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slavensky</td>
<td>4 km</td>
<td>Under new road</td>
<td>x</td>
<td>10th to 13th centuries</td>
</tr>
<tr>
<td>Moshinsky</td>
<td>6-10 km</td>
<td>Under new road</td>
<td>?</td>
<td>11th to 14th centuries</td>
</tr>
<tr>
<td>Emetsky</td>
<td>12 km</td>
<td>Road</td>
<td></td>
<td>11th to 13th centuries</td>
</tr>
</tbody>
</table>

Table 27. The portages investigated by Makarov (1994).
The Northern Dvina runs north and continues all the way to the White Sea. It was thus an important route; it served as a link to the fur-providing areas of the north as well as to the rich hunting areas in the Arctic. As far as I know, no Scandinavian boat remains have been found along this route.

7.10.8. From Beloozero south to the Volga and to the Northern Dvina

The river route from Scandinavia to the big trading centres like Bulghar continued south from Beloozero along the Sheksna River to the Volga. The area around the Sheksna River and the upper Volga was inhabited by a Finnish tribe called Merians at the time of arrival of Rus.

The area around the Sheksna River is still very similar to Sweden, with mixed forests that still have plenty of game like bear, bison, wild boar, ermine, marten and lynx. When the inhabitants according to the Primary Chronicle were forced to make payments to the Rus in AD 859, furs may have constituted a tax in kind.

From the Sheksna River it was also possible to reach the Northern Dvina, via a portage called Slavensky volok. This has been studied by Makarov (1990, 1994). In the sources which Makarov quotes, it is suggested that ships were also hauled across this land passage. In the case of the Slavensky volok, he quotes the Land Cadastre Books of 1585 that state, 'boats and goods were transported by horses across the portage along a dry road' (1994:18). Nearby settlements existed between the 10th and 13th centuries. A cemetery in the vicinity at Nefedievo can boast of Scandinavian objects such as an animal-head brooch, a round pendant in Borre style, and part of an oval brooch, but the Baltic, Finno-Ugrian, and Slavic artefact types dominate in the earliest phase here in the 11th century. Makarov has, quite rightly, interpreted the objects as showing that the Slavensky volok formed an important meeting point for trade routes between the Baltic Sea, old Russia, and the area round the Northern Dvina (1994:20). Unfortunately all remains along the route, including any possible structures built to facilitate the land transport of ships, have probably disappeared under a new road found in this area today.

The Nefedievo cemetery is of interest because it is related to the portage. It reveals objects of long-distance trade, and not least it shows the important changes that occurred in the 11th and 12th centuries. In the 11th-century graves, the large number of objects brought from distant lands, according to Makarov, exceeds the average (1990:168) and includes dirhems, cornelian and glass beads, enamelled silver ornaments, cowrie shells and slate spindle whorls. It is the 'north-eastermost Russian settlement where dirhems have been found' (Makarov 1990:168). The great number of imported objects testifies, according to Makarov, that '...the people from Volok Slavensky were engaged in active trade and had stable connections with the towns' (1990:168). However, it is no longer Scandinavians that dominate the trade, since their presence is very limited in the material. Instead the artefacts of Slavic and West Finno-Ugrian origin dominate. By the 12th century the Scandinavian influence has disappeared, and instead Old Russian and Finno-Ugrian ornaments are found in the east-oriented inhumation burials at this important portage along the trade route. This route, which connected to the fur-producing areas of the north and was fundamental in the fur trade, had come into the hands of Novgorod and probably also Karelian populations. This lasted for several centuries. As we have seen earlier, Olaus Magnus in the 16th century describes how, for instance, Russian and Karelian merchants come to Torneå market with furs, and like the Swedes in the Iron Age they use light, portable boats as the necessary prerequisite for this widespread trade along the northern river systems. The influences from these areas in north Scandinavia are reflected in the finds throughout the Middle Ages, not least in the Sámi sacrificial deposits.

In the year 859, when the Rus of the Chronicle arrived here, journeys along this route had probably been well established for at least a century. The travellers continued on the Kovsa and Sheksna rivers and in the East reached the Volga River.

7.10.9. Maritime traces of journeys by Svear along the Volga River and tributaries

The area from the upper Volga to the river Kljazma, a tributary to the river Oka, has according to Duczek 'one of the largest concentrations of sites that has yielded remains of Viking-age Norse culture indicating the existence of several communities of Scandinavian origin...' (2004:189). Norse colonisation can be traced in the vicinity of not only Rostov, but also Jaroslavl, Pereslav, Jurev, Suzdal and Vladimir (fig. 165).

Here maritime remains exist from the Scandinavian journeys. At Rostov, the small town lying by a tributary to the Volga, which runs southward from Jaroslavl, the remains of probable Scandinavian ships have been found. During the excavation of occupation layers in 1999 both rivets and treenails were recovered (Leontyev 1999:162 ff). In these investigations a find also came to light reminiscent of the 'Utrecht boat', with ribs indicating reversed clinker. Boat parts, earlocks, and rigging details of the same sort as those used in Scandinavian ships
were found in levels dating back to the ninth and tenth centuries (Leontyev 1999:159 ff). The Merians are said to be the original inhabitants of the town Rostov, according to the Primary Chronicle (chapter XV). Like other tribes in the Chronicle, the Merians first threw out the Varjags, but later asked them to return.

At Sarskoe Gorodishche by Lake Nero, close to Rostov, are the earliest traces of Norse presence in the upper Volga region. Here there is a Merian settlement from the eighth century, with a significant amount of Norse artefacts including weapons, chapes with falcon, and female ornaments (Duczko 2004:190). Important is also that, in the late 9th century, the number of Norsemen frequenting this route increases and new places become settled in the area. This coincides in time with the diminishing trade between Birka and Western Europe, which seems to be replaced by an intensified trade with the Volga Bulghars, the Khazars and the Caliphate, which were reached by this route.

**Figure 165.** The Upper Volga region. After Jansson 1997.

Eastwards along the Volga route, burials with boat rivets have also been found at Timmerevo, which is situated by the same tributary as Rostov (Stalsberg 1998:281; Duczko 2004). Here only a few rivets were found in the burials, probably symbolising the boats by themselves and constituting the remains of boat parts laid in the grave, or of repairs done with rivets in otherwise sewn boats or expanded log-boats. The latter were common both among the Scandinavian and the Finno-Ugric people during this period. In grave no. 100 at Timmerevo, under a mound of 13-15 m, seven rivets were recovered in a burial with both a male and a female, just as in the description by Ibn Fadlan. Fragments of rivets were also found in grave no. 383, a mound that also contained a male and a female burial. It was along the Volga route that Ibn Fadlan in AD 921–922 met the Rus merchants and recorded one of the few valuable eyewitness accounts we have of a Swedish boat-burial ritual of a chieftain. What is important to note is that he also tells that poorer people were buried in boats, though in simpler ones, while chieftains were buried in ships. Regarding what we know from chapter 2 and 3 about the actual boats and ships used by the Svear, the boats of the poor that Ibn Fadlan refers to were expanded dugouts. It is not probable that other than chieftains owned clinker-built ships. The occurrence of only one or a few rivets, such as in Timmernovo, may reflect a belief that a fragment of a boat, *pars pro toto*, represents the whole boat and brings the associated powers connected with the ship symbol to the benefit of the deceased on the journey to, and in, the afterlife.

At the middle Volga lies the big merchant town of Bulghar. This town is located at the crossroads of water-communication routes with the river Kama, which for many centuries had been central in the world trade, connecting both these rivers with the fur-supplying areas in the forests of Permia beside Kama and also serving as one of the main routes to the Orient (Arbman 1955:45).

This is the least investigated route concerning Scandinavian traces. Here the Rus were one of many peoples travelling this well-established route, and the traces are probably mixed with many other cultures.

7.10.10. With ships to the Caspian Sea

So far, there is only indirect evidence of maritime journeys to the Caspian Sea. No remains of ships have been found, but on the other hand none have been searched for. The lack of ship-archaeological material is, however, in this case compensated by several historical sources that inform us about the maritime aspects of the visits by Rus – how these people travelled to the area, and the purpose of their journey. The main route used by Rus to Baghdad and the Caliphate seems to have been the route by the Caspian Sea, according to contemporaneous sources from the mid-9th century. And all the sources are in agreement about the use of boats – that the arriving Rus came by boat, and that this aspect separates the Rus from the other peoples in the area. The earliest source is the earlier mentioned Arab writer Ibn Khordadbeh, who was a director of Posts and Intelligence in the Baghdad Caliphate. In the book *Kitab al Masalik Wa ‘L-Mamalik* (The Book of Roads and Kingdoms), which probably was written in the 840s, he gives information on Rus:
...a tribe from among the as-Saqaliba. They bring furs of beavers and of black foxes and swords from the most distant parts of the Saqaliba [land] to the sea of Rum, [where] the ruler of ar-Rum levies tithes on them. If they want, they travel on the Itil, the river of the as-Saqaliba and pass through Khamlij, town of the Khazars, [where] the ruler of it levies tithes on them. Then they arrive to the Sea of Gurjan and they land on the shore of it which they choose. On occasion they bring merchandise on camels from Gurjan to Baghdad [where] as-Saqaliba eunuchs serve them as interpreters. They claim to be Christians and pay [only] head tax. (transl. by Boba 1967:27)

What is important to note here is that he also says they do not travel on land on their way to the Caspian Sea, but instead ‘they travel on the Itil, the river of the as-Saqaliba’. Furs and swords were light wares that were possible to transport on the small and light boats that were necessary for these journeys. The squirrels are of major importance; they were used as money of a fixed value. Furs were attractive to the Caliphate and were a much appreciated and highly valued contribution from the North already in the Early Iron Age in the Mediterranean, where (Tacitus?) also speaks of the black foxes.

As is also clear from this quotation, the first known journeys by Scandinavians to the Muslim states surrounding the Caspian Sea were peaceful trading expeditions. Ibn Khordadhbeh says that these journeys were waterborne, that Scandinavians were arriving to the Black Sea from the distant parts of the Saqaliba, and then travelling on the Don and through the Khazar Empire further to the Caspian Sea. Here they landed on any shore, and sometimes they also left their ships and travelled on camels to Baghdad to sell swords as well as furs from beaver and black fox.

Much indicates that these peaceful traders returned with silk and expensive clothing from the Persian market and from the nomadic peoples. Annika Larsson (2005) has recently shown that the areas of origin for the silk found in Birka must be around the Black Sea and the Caspian Sea. Earlier the kaftan of Byzantium was seen as the source of influence for the kaftan finds in Birka (Hågg 1974). But as Larsson has shown, the use of the kaftan in Constantinople instead was introduced in connection with the medieval cultural and religious changes caused by the conquest of the Osmans; the change in dress namely marked the religious change from Christianity to Islam and the demand that the arms should be covered. Instead of being typical of Byzantium, the kaftan in the Late Iron Age is, according to Larsson, characteristic of nomadic riding peoples as well as of the Persian clothing in the Islamic Caliphate. Another important observation by Larsson is that the trade agreement with Constantinople, which included a limited amount of silk, dates to the late 10th century when Birka ceased to exist. Larsson argues that the silk earlier arrived by the northern silk-route and not from Byzantium. The precious silk was easily transported on the light vessels of the type we find in the boat burials and did not need to be transported in heavier cargo-ships.

**Rus arriving in ships**

Several contemporaneous Arabic authors emphasise that the Rus, who are separated from the Slavs ethnically, also differ from them in that they come by ships, and that the ships are central in warfare, raids as well as trade. One of these authors is the Arab writer Ibn Rosteh, active AD 903–913:

...They have a king who is called khaqan Rus...they make raids against Saqalaba, sailing in ships in order to go out to them, and they take them prisoner and carry them off to Khazar and Bulgar and trade with them there...They have no cultivated lands; they eat only what they can carry off from the land of Saqalaba...their only occupation is trading with sables and grey squirrel and other furs, and in these they trade and they take as price gold and silver and secure it in their belts (or saddle-bags). (transl. by Macartney 1930)

Later in the text the central role of the ships and seafaring is emphasised even more:

The Rus are strong and observant. And their raids are not made riding, but their raids and fights are only in ships. (transl. by. Macartney 1930)

**The Khazars by the mouth of the Volga**

By the mouth of Volga into the Caspian Sea, the Rus seafarers had to encounter the Khazars, who since the 7th century had a flourishing multi-ethnic and multi-religious empire reaching from the Don in the west, to the lower Volga, and to the steppes in the east. The Rus came on ships along the Don and through the Khazar Empire (channel or portage) to the Volga, or from the north on the Volga to the Caspian Sea, and they needed good relations with the Khazars. The Arab geographer Ibn Khordadhbeh tells that Scandinavian merchants already in the 840s were travelling from the Don to the Caspian Sea, and thus through the Khazar realm on their way to Baghdad for trade. The Russian merchants are described by Ibn Khurdadhbih as ‘a kind of Slavs’. He calls the Don ‘the Slav River’. Later, Idrisi calls the Don nahr al-Rusiya.

The relations with the Khazars were peaceful at first, and the Rus were present in their country as traders. Al-Masudi knows them as a numerous nation with many subdivisions, who ‘for trading purposes constantly visit the countries of Andalus,
Informative about the Rus burial customs in the
route Don-Volga, since the Khazar still ruled there (Larsson 1993b). They probably arrived by the Caspian Sea toward Azerbaijan (Ibn Miskawayh, troops from the people called Rus arrived from the Black Sea to the lower Don with the plan to use the channel to reach the Volga through the Khazar Empire, and then to reach the Caspian Sea. Al-Masudi described how Rus entered this area but were stopped, probably at the fortress Sarkel by the Don. Negotiations began with the emperor with whom they made an agreement to share all booty and in return get free passage through Khazar country. They continued upstream the Don and then along a channel (?) to the Volga where they passed the Khazar town of Itil before reaching the Caspian Sea to start the plundering and raids.

Rurik’s son Igor might have taken his fleet eastward after the peace treaty with Byzantium in 943. In 943 or 944, according to the Arab philosopher Ibn Miskawayh, troops from the people called Rus came sailing on the Caspian Sea toward Azerbaijan (Larsson 1993b). They probably arrived by the route Don-Volga, since the Khazar still ruled there after another agreement with their emperor.

The intentions of the Rus were more and more seen as a cause for worry. In 960, the Khazar king Josef expressed his concern in a letter to Hasday Ibn Shaprut, an eminent official of the caliph of Cordoba:

Know and understand that I live by the mouth of the river. By the help of the Almighty I guard the mouth of the river and do not prevent the Rus, who come in their ships, to come out on the Caspian Sea to go against the Arabs, and not either any enemy on land towards Bab al-Abwab. I fight them. If I would let them for an hour (to sail down to the Caspian Sea), they should raid the whole Arab country all the way down to Baghdad… (After Arbman 1955:61 my transl.)

The concern of the Khazar king was justified. Within a few years the devastating attack he feared came, not only to the shores of the Caspian Sea but also to the Khazar realm itself. It was Svjatoslav, Igor’s son, who at the end of the 960s in his big expedition to northern Caucasus and further to the Caspian Sea first struck against the Khazars and defeated them. In 965, according to the Russian Chronicle, he launched his devastating expedition. According to Hypatios Codex (see Minorsky 1958:113 note 3) he took both the Khazar town and the fortress Bela Vezha ‘white city’. The fortress is probably Sarkel, which according to the investigations at Tsmlyanskaia Stanitsa was abandoned by this time and transformed into a small agricultural village (Minorsky 1958:115). The route to the Khazar realm and the Caspian Sea was opened.

Ibn Haqual tells how the Rus thoroughly destroyed the Khazar towns of Atil, Samandar and Khazaran. In Samandar there had been 40,000 vineyards. When speaking with a man in Djordan who had recently returned from there, the man said that, ‘there was nothing left even for charity to the poor in any vinyard or garden, if it even is a leaf left on a branch. Because the Rus’ came, and not one cluster, not a single grape remained…’ (my transl. after Arbman 1955:62). The people who lived there – who were Muslims, of other faiths, or heathens – all emigrated. This event marked the beginning of the fall of the Khazar Empire.

Khazar boats are mentioned by al-Masudi; the so-called zeunrac sailed upstream the river Volga (§ 4 transl. after Minorsky 1958:148 annex III). However, the Khazars had neither boats nor crews capable of navigating on the Caspian Sea, according to al-Masudi (§ 8 transl. by minorsky 1958, annex 3): In the Azov Lake we are informed that only Rus navigate:

…In the upper part of the Khazar River there is an estuary (masabb, a canal?) disemboving into a gulf of the Nitas (Pontus) sea-which is the sea of Rus and is navigated only by them, and they are es-

Another important piece of information given by al-Masudi is that here, like in Byzantium:

The Rus and Saqaliba, who as we have said, are pagans, (also) serve in the king’s army and are his servants…’ (Al Masudi § 4, transl. by Minorsky 1958:147)

...burn their dead together with their animals, their implements and ornaments. When a man dies, his wife is burnt alive with him, but if the women die, the husband is not burnt. If someone dies unmarried, he is married posthumously and women ardently wish to be burnt (thinking) that their souls will enter paradise jointly with the souls of the (deceased) men’. (Al Masudi § 4, after translation in Minorsky 1958:146)

The first naval expeditions were not directed towards the Khazar Empire, but only used the water route through this country to reach the shores of the Caspian Sea. In 912 an expedition with warships arrived from the Black Sea to the lower Don with the plan to use the channel to reach the Volga through the Khazar Empire, and then to reach the Caspian Sea. Al-Masudi described how Rus entered this area but were stopped, probably at the fortress Sarkel by the Don. Negotiations began with the emperor with whom they made an agreement to share all booty and in return get free passage through Khazar country. They continued upstream the Don and then along a channel (?) to the Volga where they passed the Khazar town of Itil before reaching the Caspian Sea to start the plundering and raids.
Minorsky means that Maytas, the Azov Sea, is intended (1958:149).

Where the passage between the Don and Volga is shortest, it is only 30 km. Today there is a modern channel here. In the sources there are several references that could be connected with the presence of an ancient channel here. 

Al-Masudi informs us of how the Rus passed through the Khazar realm on their journey to the Caspian Sea. Here he speaks of, ‘the branch which joins the Khazar river to the gulf of Pontus’. When the Rus entered the Don after getting permission to pass, ‘they began to ascend that branch until they came to the Khazar River by which they descended to the town of Attil’ (§ 8, after transl. by Minorsky 1958, annex III). Minorsky himself thinks this is a misunderstanding for a portage.

Al-Masudi also tells that at the start of the water route through the Khazar Empire the Khazar king had positioned well-equipped men, at the place where ‘the straits of Nitas join with the Khazar Sea’. The task of these men was to ‘oppose anyone coming from this sea, or from that side of the land, the parts which stretch from the Khazar Sea down to the Nitas’ (§ 6, transl by Minorsky 1958 annex 3). The stronghold mentioned by al-Masudi may correspond to the remains of a fortification found and excavated by Russian archaeologists at Tsymljanska Schanitsa, by the Don and close to the present-day channel between the Dona and Volga. At this place a strong brick wall has surrounded an area of 18 hectares, built with massive towers at the corners (Arbman 1955:60). The artefacts show that the fortress was losing its importance sometime during the 10th century, and the brick walls were deteriorating. This is probably the remains of the fortress called Sarkel, built by the Khazars to guard the border between 834 and 837. Constantine Porphyrogenitus describes how this fortress was built with the help of the Greek emperor, who sent officers with naval ships to the area. Since the royal Greek warships were much deeper than the Scandinavian they had to be left already at Kersonesos, where the crew transferred to smaller cargo boats in which they continued up the Don. When finished the stronghold was manned by 300 warriors, and it served as a blockage for the water routes.

Whether the ‘branch of the river’ mentioned by al-Masudi is a forerunner to the present channel, can be discussed. Mats G. Larsson (1993) doubts this, and thinks that the short distance between the Don and Volga here was a short portage. However, it seems that the intention may have been to use water as an additional obstacle for most intruders, which except for the Rus normally came by land.

This is seen in the description where al-Masudi relates the problem when the water route was frozen:

...in view of the fact that the nomad Ghuz Turks come in winter to this tract of the land. Sometimes the branch which joins the Khazar river to the gulf of the Pontus becomes frozen and the Ghuz with their horses cross it. This is a large stream but the ice does not collapse under them because it is as hard as stone. Consequently the Ghuz pass over to the Khazar country and on several occasions, when the men posted here to repel the Ghuz were unable to hold them at this place, the Khazar king had to sally forth to prevent them from passing over the ice and to repel them from his territory. (al-Masudi § 8, transl. after Minorsky 1958:151, annex III)

Channel construction was known early in the area of Asia Minor and the Mediterranean. For instance Persians, Sumerians and Egyptians dug irrigation channels already 3000 BC. Considering the advantages of a channel at this place, it is not unlikely that a channel really had been built by the Khazar empire by the time of Rus visits.

From trade to raids

In the late 9th century the character of the voyages to the Caspian Sea and surrounding areas seems to change dramatically. Like the situation in the Byzantine Empire, the Rus’ raids spread over the area, and they came in ships. The earliest Muslim report on the devastation by Rus on the Caspian coast is recorded during the reign of ‘Alid Hasan b. Zayd (864–884). According to Ibn Isfandiyar, the Rus on this occasion went to attack Abaskun in Tabaristan by the southeast shore of the Caspian Sea, a Muslim area. This time the emperor stopped them, and his troops killed all of them (Minorsky 1958:111).

In 909, says Ibn Isfandiyar, the Rus arrived by sea with 16 ships, raided the same coast and launched another attack on Abaskun, with plundering and murder. The commander of the area was, as earlier, quick to launch a counterattack on the Rus one night. The Rus were taken by surprise, many were killed, and several were taken away to a life as slaves (Larsson 1997:25).

In c. 910 the Sari and Gilancoust in the SW Caspian Sea became the target of Rus maritime expeditions (Larsson 1997:26). They were said to have come ‘in great numbers’ and raided the Sari, but in Gilan the emperor attacked them at night when they had pulled their boats ashore. He had all the Rus ships set on fire, and killed everyone that was on the shore. Only the more cautious participants who had spent the night at sea survived. This may or may not be the same expedition that al-Masudi has described in great detail and of which he has forgotten the date, though he says it was ‘after 300’, i.e., after AD 912.
The largest attack on the shores of the Caspian Sea was in 300/AD 912. Here al-Masudi has a detailed description of both the route and the events. The Rus came with a large fleet of 500 ships from the Black Sea and entered the Azov Lake, where they were stopped by the Khazars, probably at the fortified town of Sarkel by the Don. After making a deal with the Khazar emperor they got free passage through his country to the Volga and the Caspian Sea; in return the Rus had to share the booty from the raids with the emperor. Al-Masudi writes:

The ships of the Rus scattered over the sea and carried out raids in Gilan, Tabaristan, Abaskun (which stand on the coast of Jurjan), the oil-bearing areas and (the lands lying) in the direction of Azarbaijan, for from this territory of Ardbabil in Azerbaijan to this sea there is a three days’ distance. The Rus shed blood, captured women and children and seized the property (of the people). They sent out raiding parties and burnt (villages). The nations around the sea were in an uproar, because in olden times they had not witnessed any enemy marching on them from the sea, as only boats of merchants and fishermen had been plying on it. The Rus fought with the Gil and Daylam and with one of the generals of Ibn al-Saj. Then they came to the oil-bearing coast of the kingdom of Sharvan known as Bakuh (Baku)... (Al-Masudi § 8 transl. by Minorsky 1958 annex III)

The inhabitants around the Caspian Sea were taken by surprise by this sea-borne enemy. Despite this, when they got the opportunity they made a less successful attempt to reach the Rus by boat:

On their return (from the coast) the Rus sought shelter on the islands which are only a few miles distant from the oil-bearing area. The king of Sharvan in those days was ‘Ali b. Haytham. Having made their preparations, the inhabitants took their boats (qavarib) and trading-ships sailed towards these islands. The Rus turned upon them and thousands of the Muslims were killed and drowned. The Rus remained many months at sea, as we have said, and none of the nations adjacent to that sea could find a way to reach them. (al-Masudi § 8 transl. by Minorsky 1958 annex III)

Not even the Khazar king had seagoing ships that could meet the returning Rus ships, according to al-Masudi:

When the Rus were laden with booty and had enough of their adventure, they sailed to the estuary of the Khazar river and sent messengers to the Khazar king carrying to him money and booty, as had been stipulated between them. The Khazar king has no (seagoing) ship (marqab) and his men have no habit of using them... (al-Masudi § 8 transl. by Minorsky 1958 annex III)

However, the Muslims of his country had heard about the plundering and demanded revenge for what had happened to their brothers. The Khazar emperor couldn’t stop them, but had a warning sent to the Rus (the emperor himself was a Jew). The Muslims gathered 15,000 people, among which were also many Christians. They also had horses, and probably because of this they easily defeated the Rus. Five thousand managed to escape from the slaughter, but they were later killed by the Burtas, a tribe living in the forests by the Volga, and by the Muslim tribe Volga Bulghars further upstream. According to al-Masudi, all in all 30,000 Rus were killed by Volga. This coincides with the death of Oleg in c. AD 912, who according to Khazar sources was killed in the emperor’s service in battle with the Persians, though this information is not completely certain (Larsson 1997:27). Oleg could have been the leader of the expedition, though the Primary Chronicle refuses to tell about this unsuccessful journey. Oleg was, according to the Chronicle, later buried under a mound near Kiev. A mound at the shore of the Volkho at Staraja Ladoga is called Oleg’s mound, and by tradition it is said to be Oleg’s grave.

Al-Masudi, writing his account in AD 943, says that after the defeat in 912 ‘from that time the Rus have not reverted to what we have described’ (al-Masudi § 8, transl. by Minorsky 1958, annex III). However, the same year another naval expedition from Rus entered the Caspian Sea.

The Arab philosopher Ibn Miskawayh tells that, in 943 or 944, a fleet from the people called Rus came sailing on the Caspian Sea toward Azerbaijan (Eclipse ed. II 62-67). Ibn Miskawayh has presented a report of the events by an eyewitness. From the Caspian Sea the Rus sailed up Kura to the province of Arran and then continued up the side river Terter to the town of Berda, where the town’s governor and an army of more than 5,000 men met them. They made the mistake of thinking that the Rus were like Byzantine people or Armenians. Many volunteers had joined to fight the holy war against the intruders, but the Rus made a sudden attack and killed or drove away all but 300; these were killed except for those mounted on horses. The Rus seized the town. In the beginning the inhabitants were treated well. When the Muslims attacked and threw stones at the backs of Rus, the latter lost patience and gave them three days to leave town. When many refused to go, the Rus used their swords on them and took many as prisoners. Men were gathered in a mosque, women and children in the fortress, and everyone was offered to buy themselves free. Those men who didn’t were killed, and women and youngsters were turned into sex slaves. The emperor in Azerbaijan, al-Marzuban Ibn Muhammed, tried to attack them with 30,000 men, but he and his troops were continually defeated. Then Allah heard his prayers. The
Scandinavians were struck by a disease. When they were decimated, they were ambushed, and more than 700 were killed. In the city the disease hit them hard, and finally one night they gave up, fled to their ships with women and jewellery, and sailed away. Who was leading this expedition? Rurik’s son Igor might have taken his fleet eastward after the peace treaty with Byzantium in 943 (see above), but the sources are silent about the leader.

Minorsky, who has made thorough studies of Caucasian history (1953, 1958), bases his work on the translation of history from ancient Arab writers, especially the ancient Ta’rikh al-bab (fourth/eleventh century). In his history there are several examples of historical information concerning Rus actions in the area. In the area around al-Bab (Derbend) there were internal struggles in the late 10th century, and the ruling amir Maymun sought help from Rus against the chiefs and opposing groups in the area. The Rus arrived in 987 in 18 ships, but when the crew of one ship went to town they were attacked by inhabitants and all were killed. The other ships then proceeded to Sharvan and Mukan and killed. The other ships then proceeded to Sharvan they were attacked by inhabitants and all were killed. Naturally, this may have been Russian ghulams so that they could be either converted or killed. The roads and defiles were guarded, and when the Rus returned with their hands full of booty and captives, most of them were put to the sword and killed (Ta’rikh al-bab §15, after Minorsky 1958:31).

Thus, in 432/1032 Ta’rikh al-bab tells that the Rus returned for more raids, encouraged by the earlier victories. After more raids by Rus in the territories of Sharvan (Ta’rikh al-bab § 35 after Minorsky 1958:45), where they ravaged and plundered the area and made captives of many inhabitants that were not murdered, the amir Mansur of al-Bab (Derbend), together with the leaders of the Islamic ‘Centres’, led a great expedition on the Rus. The roads and defiles were guarded, and when the Rus returned with their hands full of booty and captives, most of them were put to the sword and killed (Ta’rikh al-bab §38, after Minorsky 1958:47).

The Rus, however, together with Alans, returned to the area for revenge. They arrived in 1033, but were beaten again due to a joint military effort of the different local groups (Ta’rikh al-bab §38, after Minorsky 1958:47).

The Ta’rikh al-bab, which is usually informative about important foreign visits, gives no information on Rus having entered during Ingvar’s expedition in 1040–41, however, and this has led to scepticism on whether they really came down to the Caspian Sea. Less than ten years after the last severe raids, the inhabitants would have been on their guard and reluctant to let the expedition pass through these areas.

The continuation of the journeys from the shores of the Caspian Sea

From the south shore, the journey went on camelback to Baghdad. The east Swedish merchants continued their journeys east of the Caspian Sea as well, to the areas rich in silver, valuable pigments and spices. Whether they used boats part of the distance or changed to camels, is not known.

7.10.11. The problem of the maritime journeys to Särkland

The destination called Serkland is an area that in the runic inscriptions is closely related to Ingvar the Far-traveller’s expedition in 1036–1041. The name occurs five times (Jesch 2001:104). In the Gripsholm (Sö 179) inscription the death place of Ingvar himself is indicated:

‘Þeir fóru drengila
Through the Caucasus

In 943 Ibn Miskawaih tells that Rus came across the sea that forms a border to their country, and continued until they came to the big river known under the name Kura, which gets its water from the mountains of Armenia and Azarbaijan and flows out into the sea.

The sea that borders the Rus country must be the Black Sea, and the big river Rioni. From this river, the ancient communication route follows the river Kvirla and crosses the low Likhtin mountain ridge, after which the other big river, Kura, is reached, which flows out into the Caspian Sea.

Ibn Miskawaih continues by describing how the Rus head toward the towns in Armenia and Azerbaijan, conquer Berda and take Meraga (the capital of Azerbaijan at the time). Here they were struck by a disease and decimated:

When the number of Rus was reduced, they left the fortress during the night, where they had stayed, and put on their backs as much as they could carry of property, valuables and precious clothing; the other things were burned. They brought with them as many women, youngsters and girls that they wanted, and left for Kura. There their ships were ready, on which they had come from their country; on the ships were sailors and 300 men of Rus, with whom they shared their booty and sailed away. Allah saved the Muslims from the Rus’ misdeeds. (Arbman 1955:57, my transl.)

We can expect that they returned the same way as they came, through Georgia.

After the raids in 1030 along the Kura and the lower Araxes, and with the ruler of Arran towards Baylaqan, the richly rewarded are said to have continued westward to Rum, i.e., the west parts of Caucasus controlled by the Byzantines, and then to the Black Sea and back to their own country (Minorsky 1958:115). Minorsky argues that the journey back possibly should be viewed in connection with the founding of Tmutorokan, a short-lived Russian principality at the entrance to the Azov Sea, which really brought the Russians to the very gate of the Caucasus (1958:115).

7.10.12. The journey of Ingvar the Far-traveller

The most famous expedition of the Svear was the journey of Ingvar the Far-traveller, whose destination was probably the Caucasus region between the Black Sea and the Caspian Sea (see below). The Icelandic saga (Brocman 1762; Olsson 1912) has sometimes been questioned as a historical source, but most scholars agree that it has a core of truth since so many runic inscriptions in Sweden mention Ingvar’s journey to Särkland (Olsson 1912:12;
His journey was commemorated by his contemporary society in inscriptions mainly in central Sweden, where 23 of the 26 known ‘Ingvar stones’ are found; there are also two in Östergötland and one in Norrland (Larsson 1986, 1990). As Mats G. Larsson has shown in his investigation, of the 97 inscriptions mentioning eastward journeys more than a quarter, i.e. 26, are related to Ingvar the Far-traveller’s journey (1990a). According to the inscriptions the destination was ‘eastward’ and ‘Särkland’, with no further information as to where these areas were located. The medieval Icelandic saga about this journey gives some clues, but even these can be interpreted in several ways.

The later medieval oral tradition was written down in Iceland in the late 13th or early 14th century. Since Ingvar was an important historical person, the year of his death, 1041, has been recorded in several Icelandic annals: in Annales regii, the Law man annals, and the Flateyjarbók.

Mats G. Larsson has reconstructed Ingvar’s expedition with the help of runic inscriptions, the saga of Ingvar the Far-traveller, and Georgian chronicles, together with an investigation of several water routes in the East that could have been used. He comes to the conclusion that the expedition reached the Black Sea via the Russian rivers, and then travelled through the Caucasus via the rivers to reach the Caspian Sea (M.G. Larsson 1983, 1986, 1990b, 1996). Here they would have met Muslims in the eastern part of present-day Georgia and in Azerbaijan. In 2004 an experimental voyage along this route was completed, which verified that this route was both likely and possible to use with small and light boats (see below). Another possibility is that Ingvar’s expedition reached the sources of the Euphrates and came to the Muslim countries south of the Caucasus. It is evident from the large amount of Arabic silver coins found in Sweden that there was a lot of contact with these areas in the 9th to 11th centuries. The water routes here have never been investigated and compared with the written sources.

Who was Ingvar the Far-traveller?
The identity of Ingvar has been discussed (Braun 1910; v. Friesen 1910:199; Olsson 1912:XCIVf; Pritsak 1981:423ff; M.G. Larsson 1987, 1990). Some historians have claimed that Ingvar of the saga must be the Russian Igor who launched an unsuccessful attack on Constantinople in 941, where his fleet was destroyed by Greek fire. An attack by Greek fire is also described in the saga, and the name Igor corresponds to the Nordic name Ingvar. The dominating interpretation that corresponds to the information in the saga is that Ingvar belonged to a sideline of the royal family and died in 1041. The date is confirmed in Icelandic annals, i.e. in Annales regii, the Law man annals and the Flateyjarbók, and not least by the many runic inscriptions related to this journey. The inscriptions can be dated to this period stylistically, by using Anne-Sofie Gräslund’s (2002) method.

The most important sources for establishing the identity of Ingvar are the runic inscriptions referring to Ingvar’s family. In the saga, Ingvar is descended from a daughter of King Erik Segerståll (ruled c. AD 970–995) who married a local chief-tain Åke and had a son, Emund, who was Ingvar’s father. At the minster in Strängnäs there is a fragmentary inscription commemorating a person who died on the expedition to Särkland, and it also mentions Emund as the father of a person who died at this destination, just like Ingvar:

Ső 279

ai... ...(u)a : --(a)- ...uni ÷ aimunt... ...sunarla : a : se(r)kl...

Engl. transl.
Ei... ...[hógg]va [st]e[in] ...[s]onu Eimund[ar] ...sunarla a Serk[land].

Another possibility is that Ingvar’s journey because of the occurrence of the name of Ingvar’s father and of the place of death as Särkland. Not far from this site is another stone, Ső 179. This stone had been used as a threshold stone at Gripsholm Castle, Södermanland, but originally had been erected for Ingvar and a brother named Harald. The inscription also mentions participation in battle in the East, as well as the death-place Särkland. Therefore it can be interpreted as a stone related to Ingvar the Far-traveller and his journey:

Ső 179


Tóla lét reisa þenna at son sinn Harald, þróður Ingvars. Þeir fóru drengila fjari at gulli ok austarla erin gáfu, döu sunnarla á Serklandi.
Tóla let ræisa stein þennsa at sun sinn Harald, broður Ingvars. Þær foru draengila fiarri at gulli ok austarla ærni gafu, dou sunnarla a Særklandi.

Ensl. transl.

Tóla had this stone raised in memory of her son Haraldr, Ingvarr's brother. They travelled valiantly far for gold, and in the east gave (food) to the eagle. (They) died in the south in Serkland.

The most informative stones related to Ingvar's family are, however, two inscriptions close to the 'Sjuhundra River route' in east Uppland. The first stone mentions not only Ingvar but also four brothers, and was found walled into Rimbo Church. It had been erected for a deceased brother Ragnar by the other brothers:

U 513

* anuntr * auk * airikr * auk * hakun * auk * inkuar * rais-- ... (p)(i)(n)-(a) * (i)(f)(i)ir * ragnar * bruþur sin * kuþ * hialbi ant * hans


Engl. transl.

Önundr and Eiríkr and Hákon and Ingvarr raised this stone in memory of Ragnar, their brother. May God help his spirit.

According to local traditions, mentioned both in the 17th-century 'Hornska boken' in Rimbo and the 17th-century investigation of ancient monuments 'Ransakningar', Ragnar is said to have been a king. Further, it is said that he lived in the village Kunby in Rimbo, which earlier was called Kunungaby 'king’s village' after him, and that he supposedly was buried in a grove of aspens at 'two musket shots distance from the church' (Norberg 1986). According to DMS, Kunby was really called Kunungaby in the earliest sources (Skoglund 1986, DMS 1:5). Beside Vallby, close to the church, where the road passes across the Vallby River, there are remains of a royal mound, with a hole at the top after an erected stone and with large boulders surrounding the edge of the mound (Rimbo Raä 206). This was already in the 19th century about to be taken away when the antiquarian Dybeck passed and stopped the work. The ground around this mound was cultivated field when the survey for ancient monuments was done here, and mound-like raised parts of the field may be the remains of over-ploughed similar mounds, according to Kjell Silver who is a specialist on large and royal mounds (oral information during field visit at the site). All other elevations in the field were unfortunately removed some years ago when the area was exploited and blocks of flats were built. Fifty metres NW of the remaining and registered mound is a grove of aspens. According to the local population, earlier there were several similar mounds in the vicinity, but they were taken away when the present road was built (Axel Rimsén, oral information).

On the other stone mentioning the same brothers, Raä 540 at Husby-Sjuhundra Church, also Anund is missing:

U 540

airikr * auk hokun * auk inkuar aukk rah[n]il[r] 'þou h--... ... R' -na hon uarþ [tauþ(r)] [a] kriklati ' kuþ hialbi hans| |salu| |uk| |kuþs muþi(R)

Eiríkr ok Hákon ok Ingvarr ok Ragnhildr þau ... ... ... Hann varð dauðr á Griklandi. Guð hjalpi hans salu ok Guðs móðir.

Æiríkr ok Hákon ok Ingvarr ok Ragnhildr þau ... ... ... Hann varð dauðr a Griklandi. Guð hjalpi hans salu ok Guðs móðiR.

Engl. transl.

Eiríkr and Hákon and Ingvarr and Ragnhildr, they ... ... ... He died in Greece. May God and God's mother help his soul.

The inscription may be connected with the big mound called Anunds hög, situated in Skederids Parish 2 km to the west of Husby-Sjuhundra Church. Skederid is by Gustav Vasa called Husby Skederid. Here, beside the river, is a spring called 'Birgitta's spring', which may recall the words in the Older Västgöta Law that King Olof Skötkonung was baptised 'in a well called Birgitta's situated beside Husby'. Olof Skötkonung was a Christian long before he moved to Västergötland and Husaby, where it is now stated that he was baptised, and in the vicinity of this spring we have two of the four runic inscriptions that mention members of the royal family during the first half of the 11th century. Husby-Sjuhundra Church had a gallery for the king in the earlier, now pulled down, tower.
Why did he leave for this journey?

According to the saga, Ingvar was disappointed that he could not get a king’s title, although he was entitled to it since he belonged to the royal family of Erik Segersäll. There were, however, probably more important reasons for the journey, rooted in the historical and political situation and closely connected with the water communication network. The main water-route to Constantinople was threatened by a nomadic tribe, the Pechenegs, who when Jaroslav was in Novgorod even took the opportunity to occupy Kiev. According to the Primary Chronicle, in the year 1036 Jaroslav assembled a military force to confront them, a force in which also Varjags participated. According to Larsson, this may have been done with the help of Jaroslav’s brother-in-law Anund Jakob, by using the military levy system to assemble this force (see chapter 9).

The continuation to Särkland after three years may not have been planned from the start, but there was a serious reason to investigate new routes to Särkland from the Swedish as well as the Russian side, since the trade route to the areas around the Caspian Sea had been blocked after the fall of the Khazar Empire by hostile tribes around the lower Volga. A century earlier, the journeys along this route to the Caliphate had, as discussed above, been the main source of the inflow of Arabic silver, and an economic base for trading centres such as Birka. Alternative routes now had to be sought, as well as new ways of getting silver. For a short period during Olof Skötkonung’s rule, Swedes participated in the Danish attacks on England and got a significant share of the danagäld, the tribute taken in silver (as discussed by Edberg 2006). After him, however, Sweden once again turned its loyalties eastward both politically and religiously. The trade was mainly with Byzantium, where the Scandinavians also took an active part in the emperor’s service. The memory must still have been alive regarding the many journeys further east to the Caspian Sea, from which Baghdad could be reached on camelback. Ingvar’s mission may have been to find a new, or to reuse an earlier, trade route through the Caucasus to the Caspian Sea.

The route

The route of the journey has also been discussed. Thulin (1975:19) means that it should be seen in connection with an Arabic source mentioning ships from Rus on the Caspian Sea in 1035, and that it could have been an assisting expedition from Jaroslav in Russia to a Turkish chieftain aiming to conquer Chorazm south of the Aral Sea. Ingvar and his men could have died in the battle there in 1041 (Pritsak 1981:443). Larsson (1983) takes his point of departure in a close examination of the information given in the Icelandic saga. According to this, they followed a river that came from the east. This does not fit with the Volga, which goes to the east. Instead, as Larsson has noted, it fits perfectly with the Rioni in present-day Georgia in the Caucasus. Citopoli, mentioned in the saga, was identified by Larsson as Kutaisi by the northwest shore of the river Rioni. According to the history scholars at Kutaisi University, Citopoli is the ancient name for Kutaisi (Historical Department, Kutaisi University). The port of Kutaisi by the river is Bashi. As Larsson has observed, it is mentioned in the Georgian Chronicle that 3,000 Varjags were placed at Bashi, probably by the king Bagrat who resided in Kutaisi and from whose reign the ruins of the palace and the cathedral still exist. Bagrat was out in warfare in the east, and according to the saga it was at this place that Ingvar’s expedition met Queen Silkesiv, who had their boats carried up to the town and which impressed the Varjags greatly because of all the shining white marble. Today, air pollution has damaged the 11th-century marble buildings, but in reconstructed parts one can get an impression of how it once looked.

The Georgian Chronicle tells that Ingvar continued with 700 men across the mountains. The Lichten mountains have to be passed here by pulling the boats on land to get to the next river, Kura. One of the descriptions mentioning the use of this route is by Marco Polo in the 13th century, who also tells that the people of Genoa pulled their boats on land on their way to the Caspian Sea.

Several routes across the mountain were shown to Mats G. Larsson and Håkan Altrock in the planning of the Expedition Vittfarne. The route chosen, with a low passage, was in earlier times used for pulling boats across the mountain to Mtkvari (Kura), according to information I received in 2004 from the history teacher at the local school in Zuare.

According to Mats G. Larsson, the expedition then continued downstream the Mtkvari. In the town of Heliopolis they met a king named Julf; Larsson identifies this king as Bagrat, and the town of Heliopolis as Tbilisi. The expedition then continued to find the sources of the river, and came to a place where the river falls out of a cliff into a chasm close to an isthmus called Sigeum. The chasm is in Larsson’s interpretation Kara Bugaz, and the isthmus the neck of land between the bay Kara Bugaz and the Caspian Sea. The saga also tells about the Red Sea, where the high salinity of 15-30 % often makes the sea look reddish.

On the return voyage the expedition was engaged in a battle to help Julf. Larsson has found information in the Georgian Chronicle that the Varjags helped the Georgian king Bagrat against his enemy Liparit, before they returned across the
mountain. On the way back, the saga says, the expedition was struck by disease and most of the participants including Ingvar died. The Varjags were buried along the rivers, while Ingvar’s burial is said to have taken place later in a church in Citopolis (Kutaisi) at the insistence of Queen Silkesiv.

Of the 30 ships, only 12 remained. The saga tells that on the return voyage most of these navigated wrong or capsized. Valdemar, who may be Jaroslav’s son Vladimir, came to Constantinople, which as Larsson also has concluded is among the best evidence that the Scandinavians travelled the reconstructed way and not on the Volga. Only the helmsman Ketil is said to have chosen the right route and come to Gårdar, and in the following summer to Sthiod to tell about the journey. After the return to Sweden, as we know, 27 stones were erected in memory of the participants who fell in the expedition.

As we shall see, it is not only literary sources and historical chronicles that support the reconstruction made by Larsson (1983) of the route taken by Ingvar’s expedition. There is also archaeological evidence to support it. After a closer look at the other evidence, an alternative possibility for the last part of the journey from Mktvari will be discussed.

**From history to archaeology**

The first attempts to scientifically verify the reconstructed route of Ingvar the Far-traveller were done by Larsson as experimental archaeology, using replicas of Viking ships along this route. In 1994 and 1996, the boat Aifur was used first to Novgorod in Russia, and then to Cherson in Ukraine (Edberg 1994, 1998). During the Expedition Vittfarne in 2004, the replica Himinglåva was used from Cherson on the Dnieper to the Black Sea and then through the Caucasus to the Caspian Sea (Altrock 2006).

Himinglåva was built as a replica of the largest of the small boats in the Gokstad find by Håkan Altrock, who also was the captain on the boat all the way from Sigtuna in Sweden to Baku in the Caspian Sea. With some effort (fig. 166), the rivers could be used both upstream and downstream. The bottom is, however, more V-shaped than the Viks boat, which is very flat in the bottom amidships and does not penetrate deep into the water, thus making it possible to row in shallow rivers whereas Himinglåva had to be pulled.

The land passage between the Tscheremila (a tributary to Kvirila, which is a tributary to Rioni), to Mktvari, between the villages of Zuare and Kvishketi, was easily done with the help of four rented oxen as pulling force and a runner under the keel (fig. 168). The passage point was 1152 m a s l. The land part of the journey took four days, which shows a striking correlation with information by classical geographers like the Roman Plinius and the Greek Strabo, where it is said that across the mountains a driving route was used for 4-5 days. This route was by that time one of the routes used by Roman merchants, and also one of the routes used for the so-called Silk Route, especially when the routes north and south of the Caucasus were blocked for different reasons.

**Figure 166.** Himinglåva is pulled upstreams Rioni in shallow water.

**Figure 167.** Down a hollowed-out road. Photo G. Larsson.
In connection with the expedition in 2004, I visited museums to look for Scandinavian finds. I also looked along the rivers for remains of burials of central Swedish type, and of course also for boat parts of Swedish type.

Close to Bashi, where according to the Georgian Chronicle the Varjags had a camp, several boat parts of oak were observed. Among them was a small piece of a strake made from radially split oak with traces of rivets or nails of iron, and a rabbet for luting material, like in Scandinavian ships. Because of the lack of knowledge of local shipbuilding traditions in the Late Iron Age, it is impossible to know whether the fragment actually originates from a Swedish ship.

Figure 168. Pulling help by oxen on Likhti mountain passage.

In many places along the rivers, small mounds and earth-covered stone-settings were observed (fig. 170) which looked very much like the ones registered beside every Iron Age village in Sweden. These were so different from any prehistoric burial practice in the area that they had never been looked upon as ancient monuments. The local mounds were huge and contained rich chamber burials from the Kolchis era in the centuries before Christ.

In 2005, I returned to perform the first joint Swedish-Georgian excavation at one of the sites with probable burial mounds, on the shore of the river Kvirila, where a small stream runs into the river. Of six excavated mounds, two contained a stone packing covering a layer of soot and bone meal, and in one of them were 4-cm-long iron oxide colourings in the clay – the remains of corroded rivets or nails.

Figure 169. Radially split oak strake with rivet hole and rabbet for luting material found near Bashi.

Figure 170. Site with grave-mound like structures.

Mats G. Larsson has earlier found a penannular brooch in the collections. During my visit to the Museum of Kutaisi, the staff said that in the archaeological collections they had seen battleaxes of the special type called ‘beard axe’ used by the Scandinavians, and one of these was also exhibited. Language problems resulted and therefore much material in the collections still remains to be further investigated.

There ought to be a lot of archaeological evidence of both Ingvar’s expedition and other visits to the area. In an earlier source, ca 980, the Arabic writer Ibn Miskawaih tells of the weapons and other equipment of the Rus: swords, daggers, battleaxes, spears and shields, as well as tools such as axes, saws and hammers. What is also important is his knowledge of burials. When a Rus died, Ibn Miskawaih says, he was buried with his clothes, weapons and tools, as well as with his wife, another woman or servant. This custom is well known from both homeland Scandinavia and from finds along the Russian rivers.

However, concerning Ingvar’s time, the participants in the expedition may all or to a large extent have been baptised. The above-mentioned inscriptions where Ingvar is erecting the stone are both Christian; on the Rimbo stone there is both a cross and a prayer, and Husby-Sjuhundra has a prayer. Jaroslav’s son Vladimir, who probably participated, was also a Christian. This means that there may be few or no finds in the burials of the deceased on Ingvar’s journey. However, the investigation of the mounds along the presumed river route used must continue. They may reveal preserved belt- or dress-ornaments and possibly also bone material that can shed more light on, as well as verify, Larsson’s reconstruction of this route.
An alternative interpretation of the route through the Caucasus

Some peculiarities in the saga may open the way for an alternative interpretation of the last part of the route taken by Ingvar the Far-traveller and part of his expedition in AD 1040–1041.

After the visit at Silkesiv in Kutaisi, Ingvar is said to want to investigate the length of the river, and he makes the difficult journey along mountain rivers. He came to a rapid with narrow cliffs, pulled the boats up and later down into (another) river. After a long journey later in the summer, the expedition encountered a lot of boats that ‘were all round with oars around...’ and went as fast ‘as the bird flies’ (my transl.). The description very much resembles the modern quffa (cognate with Akkadian quppa), which is a circular and very light boat (fig.171), the boat that through millennia has been the typical vessel of the Euphrates. It is made of reed bundles covered with bitumen (McGrail 1981:45). The first time it was noted was on the river Euphrates in the late 17th century (Hornell 1970:104), but the boat type has a much longer tradition in the area. The earliest reference is an inscription from 2300 BC in which Sargon of Akkad says that he, as a baby, was placed in the river in a basket of rushes sealed with bitumen (Andersson 1978:49). The story is familiar from the bible where Moses was treated in a similar way (Exodus 2.3), but is also described by Strabo concerning the boats in Babylonia in the 1st century AD. Whether these boats were round or elongated is not known; both types of boats are documented in ethnographic descriptions. Boat-shaped boats made in a similar way with rushes covered with bitumen in the marshes of southern Iraq were taradas (Layard 1853:552), but also the zaima (Thesiger 1978:128) and the jillabie were fashioned in this way (Heyerdahl 1978:35).

Other round boats may also have been in use on the Euphrates. Round skin-boats are depicted in Assyrian reliefs from the 7th century BC (fig. and described by Herodotus from his visit to Babylon in the 5th century BC. Hornell described ‘circular boats of basketwork covered with skins’ in use near Baghdad in the early 19th century (Hornell 1970:104). We don’t know whether the skin-boats mentioned by Strabo for crossing the Red Sea were round as well, but otherwise the boat type seems closely connected with the Euphrates-Tigris area.

This is the first indication that the expedition either followed Mktvari upstream to the sources in Armenia and pulled the boats over to the nearby sources of the Euphrates in Armenia, or that via the tributary of Mktvari called Araxes they reached the sources of the Euphrates in the same area. The Euphrates then runs a long way from Armenia, first to present-day Turkey westwards, then south to Syria, and thereafter eastwards through Iraq, where it finally arrived at the lowland where the quffa is mainly used.

Another indication that the expedition may have reached the Euphrates is the mention of the town Heliope, in some variants Hieriope. This can hardly be identified as Tbilisi. The expedition has, as Larsson has concluded in line with the historical sources, travelled on the Mktvari; and when they did so I agree that they naturally must have made a visit to this important town as well, and participated in the battle at Sasireti not far west of the town. Heliope is, however, probably one of the known towns with this name. Heliope is known from, for instance, Greece and Palestine, and Hierapolis from Asia Minor and Syria. The last town is of great interest, since this town (also known as Bambyke) is only 20 km west of the Euphrates via a tributary.

The third indication that the Euphrates is intended in the saga is that Ingvar comes to the sources of the river, and that it is mentioned that in this area also another river has its sources, running in to ‘the Red Sea’. In the mountain plateau of Armenia, the rivers Mktvari, Araxes and Euphrates all have their sources, close to each other and possible to change between with only short land passages, which Ingvar’s expedition may have done. From these mountains other rivers run into the Mediterranean, called Reid havet in the runic inscription in Rök, Östergötland.

A fourth indication is that, on the river passing Heliopolis, the saga says that bandits are travelling on vessels covered by reeds and looking like islands. Inhabited reed islands are well known into the 20th century among the marsh Arabs on the lower Euphrates.

Other strong evidence is the name Śarkland. It is still used for Kurdistan, to denote an area consisting...
of parts of Iran, Iraq, Turkey, Armenia and Syria, of which the river Euphrates passes through the last four countries.

7.11. THE ESTABLISHMENT OF THE ROUTE FROM THE VARANGIANS TO THE GREEKS

The route often called ‘the route from the Varangians to the Greeks’ after a famous text with the classic description of an important travel route (though it does not mention the means of transport) in the Russian Primary Chronicle, refers to the communication route between the Baltic Sea called ‘the Varangian Sea, Russia and the Byzantine empire’. This much debated text reads:

When the Polyanians lived isolated in the mountain districts there was a way from the Varangians to the Greeks, and from the Greeks back along the Dnieper, and in the upper reaches of the Dnieper there was a portage to Lovot (the River Lovat) and if one follows the Lovo one comes to Ilmen, a large lake, and from this lake flows the Volchov, which flows out into the great lake Nevo while the mouth of this lake goes out into the Varangian Sea [the Baltic]. (Primary Chronicle 19 f.)

The text may well refer to winter journeys on the ice, which formed easily accessible winter routes, and to journeys in boats after the melting of the ice. Here will be argued that both methods of travelling have been used, but that due to the special construction of the boats, waterborne travels were not only possible but also played a dominant role in the communication along this route. The travel route described in the Chronicle is lined with both settlements and graves. Distant cultural and commercial connections are reflected in the Greek, Arabic, Oriental, Scandinavian and Slavic find-materials.

The same tradition about the eastern route is preserved in the Gutasaga, joined together with the Gutha law and written down in the beginning of the 13th century, thus only a century after the Primary Chronicle (Gannholm 1994). The route is mentioned in connection with the information about early visits of bishops to the island:

Before Gotland had a proper bishop of its own, bishops came to Gotland on their way to the Holy land, as pilgrims to Jerusalem, or on their way home. At that time there was a route to Jerusalem through Russian and Greece. At first, it was they who consecrated the churches and churchyards and on whose insistence churches were built. (Gutasaga, transl by Tunstall 2004)

The 13th century, when the Gutasaga was written down, was a period of big political changes and altered communication patterns. It was the time when the Mongolian invasion into Russia permanently blocked the eastern route. Since the beginning of the Middle Ages both the merchant vessels and warships had become larger, so large that they were impossible to transport all the way to Greece. The Hansa established itself as far as Novgorod, and this was also as far as the new, deeper, merchant vessels could reach. So the words ... for the long journey to Jerusalem, or more generally ‘Eastward’ are some of the destinations named (M.G. Larsson 1990).

The source material which can shed light on the communication routes and journeys of Scandinavians as well as on their influence on the way to the East consists of archaeological, iconographical and historical materials and to a certain extent also language-historical material in the form of place names. The archaeological remains have been examined by means of material-culture studies and settlement analyses, but the remains of possible Scandinavian ships in Russia have not been studied in any detail.

During more than 400 years of large-scale Scandinavian involvement in travels along the rivers on the way to the East, the character of their connections changed significantly. Historical information, and to a certain extent the archaeological material, shows how Scandinavian influence changed over time. It is quite clear, however, that the water routes used, whether those travelled in summer or winter, played a decisive part in forging links and distributing objects and ideas in both directions.

7.11.1. The beginning: Novgorod/Gorodische by Lake Ilmen.

If one continues in a southerly direction from Staraja Ladoga along the Volkhow River, just before reaching the outflow to Lake Ilmen one will come to Novgorod, Holmgardr of the runic inscriptions. A hundred years after the establishment of Staraja Ladoga, the events took place that were later described in the Primary Chronicle – members of the Varangian Rus settled in Novgorod. Whether the brothers in the Chronicle – Rurik, Sineus and Truvor – were real or fictional can be discussed, but that the Varangians really appeared here is undisputed. Rurik was the brother who is said to have
settled in Novgorod. The site was not at present-day Novgorod, but a couple kilometres away (?) on an island in the delta on the eastern side of the Volkhov River, and according to archaeological investigations of recent years the Scandinavians founded their main settlement point in the mid-9th century. It was known as Rurikovo Gorodische, but in the beginning it may have been named Holm (Duczko 2004:100). The name Holmgarðr could have been used for the entire area of Ilmen (Melnikova 1986:47). The Swedish rune stone U214 mentions a man that drowned in Holms hav ‘the sea of Holm’, a singular name that according to Duczko could be a transfer from a place of special importance, such as Rurikovo Gorodische where the river Volchov runs into Lake Ilmen (2004:100).

The founding of Rurikovo Gorodische can be seen in relation to the start of the route to the Byzantines, which at this early stage was not used as a trade network but instead mainly for military purposes. In the last half of the 9th century, Rus began raiding the shores of the Caspian Sea (see above), and those of the Black Sea. In 860 the Rus extended their raids on neighbouring peoples to attacks on Constantinople, mentioned in both the Chronicle and Byzantine sources. Despite the accounts from Ingelheim a few decades earlier, Rus are described as an unknown nation from the farthest north; Photios, the patriarch of Constantinople, has described the encounter:

these people, surpassing all others with cruelty and bloodthirst – I am talking about Rhos – conquered neighbouring people….raised their weapons against the Roman state… (Vasilijev 1946:232; Boba 1967:31)

The hostile contacts continued for almost a century, and ‘it became almost a ritual to attack the Byzantine capital by each new generation of Rus princes’ (Duczko 2004:82). The Scandinavian trade with Western Europe had been interrupted by the frequent raids in the west, and this had to be replaced by new methods of external acquisition. Still, for more than a century after the foundation of Rurikovo Gorodische, the main trade routes were dominated by the same routes to the Volga region, the Caliphate and the steppe area as previously.

The boat rivets found here reveal that the area could be reached from Scandinavia by boat. At Rurikovo Gorodische some 50 rivets have come to light in levels from the ninth and tenth centuries (Dubrovnin oral information 2000). Additional rivets have turned up in investigations during the last years (Nosov, oral information 2003).

The importance of the ships and seafaring among the Rus in the period when the Rus ‘empire’ was centred at this place is clear from the account of Ibn Rustah in the beginning of the 10th century AD. He informs us that, ‘they make all their attacks and journeys by ships…’ (Brøndsted 1960:249).

From Gorodische there is also a unique find of a silver pendant showing a walking woman in a long dress (Nosov 1992:48). This is the only find of its kind in Russia, but in Sweden it occurs in wealthy women’s graves (Nordahl 2001:52ff). This lady may be of interest in connection with the boat as a symbol. It namely is possible that she represents the goddess Freya, the Scandinavian fertility goddess, and she is depicted with the boat as a symbol of the recreation of life, death and rebirth (cf chapter 8).

In connection with Nerevsky’s investigations in Novgorod, 35 rivets were found in the levels of the tenth to twelfth centuries (Kolchin 1959:113).
The Primary Chronicle tells that the first inhabitants here were the Slavs, but that ‘after these Varjags the land of the Novgorodians has become the land of the Rus. The Novgorodians are now of Varjag tribe, but were earlier Slavs’ (chapter XV, my transl.).

7.11.2. Remains of Scandinavian ships and seafaring from the journey to the Black Sea and Constantinople

**Travelling from Novgorod over Ilmen Lake and upstream the Lovat**

The Scandinavian presence along this route in the tenth century is well documented. On the upper Lovat, close to Velikie Luki, is a settlement site called Gorodok (Gorjunova 1978, Duczko 2004:156). Here were metalworkers producing equal-armed brooches and circular pendants that were typical Norse, and also other silver and bronze ornaments. Here were also probably facilities for taking care of the boats after the longest portage on the way to Byzantium and the East, between the Lovat and the Dnieper. Traces of this consist of remains of production of rivets and nails for boats, in connection with other Norse finds (Gorjunova 1978; Duczko 2004:156).

The large expedition of 859 mentioned in the Primary Chronicle also continued south from Ladoga via the Volkhov, across Ilmen and upstream the Lovat.

**From the Lovat across the portage to the land of the Krivichs**

There are several possible routes that have been used by travellers from the Lovat to the Dnieper. It was necessary to use some of these to get to Gnezdovo and Kiev, sites that in the 10th century became very important for the Scandinavians and the emerging Rus Khaganate. All of these routes included land passages across portages. The historically documented portages in the area have been discussed by Kerner (fig.).

Gnezdovo by Smolensk has long been recognised as a place with a significant Scandinavian influence. What has been discussed is how the Scandinavians arrived, whether they brought their own boats the whole way – which mostly has been doubted – or left their boats at the upper end of the portage, and used local boats when reaching the Dnieper after the long portage was completed. The remains of Scandinavian ships have not been used to answer these questions. Research done on the settlement layers in Gnezdovo has also resulted in finds of many rivets (Puschkina, oral information). These were studied on a visit to Moscow in 2000, and proved to have mainly square shafts. The town layers date from the 9th to 11th centuries and have for many years been the object of archaeological excavations, headed by Tamara Puschkina from Moscow University. It is worth noting that no scrap material from boat building has been found, which indicates that the boats were brought here from Scandinavia and not built locally.

![Figure 173](image1.png) Figure 173. Part of map showing portages between the Lovat, Dvina and Dnieper. = portage. After Kerner 1946.

![Figure 174](image2.png) Figure 174. Rivets from Gnezdovo. Photo G. Larsson.
The rivets also occur in graves, i.e., in probable Scandinavian boat burials under mounds at the great Gnezdovo cemetery (Mühle 1988). One portion of the older material examined by Bulkin comprises nos. 7, 16, 18, 20, 23 and 24, which are situated under higher and larger mounds than the rest, and which often contain pairs of graves and a rich array of weapons, belt ornaments, sets of women's ornaments, etc., as well as rivets (1975, p. 134 ff). In the burials rivets with both round and square shafts were found, though the square shafts dominated, indicating the presence of both Svear and south Scandinavians.

**Figure 175.** Rivet of Swedish boat with square shank found in Gnezdovo in burial mound. Photo Gunilla Larrson.

In contemporaneous sources the Rus are presented as waterborne, travelling in boats and ships. Constantine Porphyrogenitus speaks of the problems associated with this kind of communication, since especially at the portages they were very vulnerable to attacks:

> ...Nor can the Russians come at this imperial city of the Romans, either for war or for trade, unless they are at peace with the Petchenegs, because when the Russians come with their ships to the barrages of the river, and cannot pass through unless they lift their ships off the river and carry them past by porting them on their shoulders, then the men of this nation of the Pechenegs set upon them, and, as they cannot do two things at once, they are easily routed and cut to pieces.  

*(De Administrando* Chapter 2 Moravcsik 1949:51)
The information available for the author of Primary Chronicle has the year 852 as the first date when the Rus are said to have come to Constantinople (ch. XIII). It is possible they used the Dnieper route, but if so this most likely would have been remembered in the Russian annals. The prevailing tradition about the expansion of the area under control of Rus southward to the areas surrounding the Dnieper, is described in detail in the Chronicle.

The journeys downstream the Dnieper for attacks on Constantinople began in the second half of the 9th century and continued to the late 10th century with several expeditions. According to the Chronicle, two of Rurik’s men, Askold (Slavonic form of Nordic Höskuld) and Dir (from Nordic Dyr), got permission from their leader to launch an expedition to Constantinople. On their way they arrived at a city called Kiev where the inhabitants complained that they had to pay taxes to the Khazars’ realm; stretching to the Caspian Sea. The Rus stayed and ruled the city with the Varangians that joined them. After some years they continued to Constantinople with 200 ships and attacked the city. This was the first naval expedition downstream the Dnieper, and according to the Primary Chronicle it occurred in AD 866, in Byzantine sources in AD 860. The attack was fearsome; neither humans nor animals were spared, but the city was not taken. The Byzantine patriarch Photios was leading the defence in the absence of the emperor. In his own account of the events, he describes how the countless numbers of small ships filled the Bosporen. He also says that the Barbarians were separated from them by the amount of countries, navigable rivers and harbour-less seas.

The encounter with the Scandinavians in 860 also resulted in the beginning of influences from Byzantium, but it would take almost a century before a regular trade route was established. Probably it also resulted in one of the first attempts from the East to Christianize the wild peoples of the North. Photios’ trainee was one of the preachers trying to baptise the barbarian peoples. In 867 Photios says he has succeeded in converting Rhos.

The Chronicle (the years 6388–6390, AD 880–882) tells us that Oleg continued and also took another town downstream: Ljubeck. The chronicle continues:

He then came to the hills of Kyiv, and saw how Askold and Dir reigned there. He hid his warriors in the boats, left some others behind, and went forward himself bearing the child Igor. He thus came to the foot of the Hungarian hill, and after concealing his troops, he sent messengers to Askold and Dir, representing himself as a stranger on his way to Greece on an errand for Oleg and for Igor, the prince’s son, and requesting that they should come forth to greet them as members of their race. Askold and Dir straightway came forth.

Then all the soldiery jumped out of the boats, and Oleg said to Askold and Dir, “You are not princes nor even of princely stock, but I am of princely birth.” Igor was then brought forward, and Oleg announced that he was the son of Rurik. They killed Askold and Dir, and after carrying them to the hill, they buried them there; on the hill now known as Hungarian, where the castle of Of/n/a now stands. (Primary Chronicle transl by Cross and Sherbowitz-Wetzor 1953)

The author of the Chronicle describes the Varangians as waterborne, making this raid and the other conquering expeditions by boat. After this event, Oleg is said to have set himself up as a prince in Kiev. Even though scholars today (see Duczko 2004:206) mean that the deeds of Oleg may be an artificial narrative made up by the compiler to create a picture of the beginning of the dynasty in Kiev, there is no doubt that the connection between the Varangians and boats was taken for granted in the 12th century, as well as earlier by the Arabic writers. In the Chronicle the Rus are related to a tribe called Poliane. But this name is not known in the contemporary sources such as Constantine (De Administrando), who only knew Rhosia as a name for the Rus in the Kiev area.

The Chronicle tells that in 882 Oleg imposed tribute on the Slavs, the Krivichs and the Merians, and in 883–885 on the peoples situated between Kiev and Smolensk – the Derevlians, Severians and Radimichians – to be paid annually to the Varangians. The latter two had earlier paid tax to the Khazars. According to Duczko, this may be behind the halting stream of Islamic silver to the West at the end of the 9th century, and when the stream of dirhams began again in the early 10th century it is from the Samanid territories and not through Khazaria; instead it is by 'the intermediary of the Volga Bulgars’ (2004:209). The Khazars continued to have an influence in Kiev by a Jewish community there, and some scholars mean that they maintained control there until the 930s, which would contradict the information given in the Chronicle (Golb & Pritsak 1982:60ff).

During the 9th century there was a problematic situation around the lower Dnieper. Due to a civil war in Khazaria in the 830s, the Magyars (Hungarians) moved westwards to the Dnieper, and in this area they came into conflict with the Pechenegs. Still in the early 10th century, the Pechenegs also posed a serious threat to the Rus travellers along the river (De Administrando chapter 2, see above, page).

There is no firm archaeological evidence of an early presence of Scandinavians in the area around Kiev and the Middle Dnieper, at last not as early as the Chronicle states. The Norse items in the burials belong to the short period between c. 950 and c. 990 (Duczko 2004:220). This is a clear indication
that the expansion southwards along the Dnieper was late and coincided with the establishment of the more regular journeys to Byzantium in the last part of the 10th century, which is the same period when the regular trade journeys to the Caliphate cease.

In 907 Oleg led an attack with 2000 ships on Constantinople. The sound north of the town, the Golden Horn, was blocked with chains, but Oleg put wheels under the ships and ‘sailed’ on the road into town. The environments were raided as harshly as earlier, but with regard to the town Oleg was satisfied with demanding a fee for every rower in the ships. He left with sails of silk and nettle cloth, and a cargo of gold, silk, fruits and wine.

In 911 a first treaty with Constantinople was made, listing fourteen envoys, all with Scandinavian names (excerpts in the Primary Chronicle). Rurik’s son Igor married Olga from Pskov; Olga is a Slavonic version of the Nordic name Helga. She is later also known from Byzantine sources, where in the second work of Constantine Porphyrogenitus, called De ceremonies aulae Byzantin, the emperor recorded the people who followed Olga to Constantinople in 957 (Platonova 1999:166).

The Chronicle says that, though Igor had grown up, Oleg didn’t want to hand over the power to him. When Oleg died in 912, Rurik’s son Igor could finally take the throne. The Derevlians tried to revolt, but were subjugated and given even heavier taxes to pay. In 915, the Turkish nomads called Pechenegs arrived from the steppe north of the Black Sea and attacked the Rus. Igor stopped them and made peace. In 920 they returned, and they continued to be a threat to the Rus for more than a hundred years. The information on the Slavonic tribes in the area that were forced to pay tribute to Rus, as described in the Chronicle, is also verified by Constantine, who refers to a situation before 944 (De Administrando chapters 9-10, see below).

The second treaty with Byzantium, in 944, includes 22 representatives of the princely family, and each of them had also sent one merchant.

The boats and ships used to Byzantium

The Russians are, as we have seen, presented in contemporaneous sources as waterborne, travelling in boats and ships. Constantine Porphyrogenitus also speaks of the problems associated with this kind of communication, since especially at the portages they were vulnerable to attacks (De Administrando, chapter 2).

As with the Caspian Sea, there are not many remains of Scandinavian boats recorded archaeologically from this area. However, there is information on, for instance, a boat burial with a logboat found in Ukraine. The appearance of the logboat on this route fits very well with the development in the use of ships as described in the written sources. For example, Constantine Porphyrogenitus has given a very informative account of the ships, seafaring and organisation of the Rus’ merchant journeys to Byzantium:

9. Of the comings of the Russians in single-straked ships from Russia to Constantinople

The single-straked ships which come down from outer Russia to Constantinople are from Novgorod, where Sviatoslav, son of Igor, prince of Russia, had his seat, and others from the city of Smolensk and from telitza and Chernigov and from Busegrad. All these come down the river Dnieper and are collected together at the city of Kiev, also called Sambatas. Their Slav tributaries, the so-called Krivichans and the Lenzanines and the rest of the Slavonic regions, cut the single-strakers on their mountains in time of winter, and when they have fastened them together, as spring approaches, and the ice melts, they bring them on the neighbouring lakes. And since these lakes debouch into the river Dnieper, they enter thence on this same river, and come down to Kiev, and draw the ships along to be fitted out, and sell them to Russians. The Russians buy these bottoms only, furnishing them with oars and rowlocks and other tackle from their old single-strakers, which they dismantle; and so they fit them out. And in the month of June they move off from the river Dnieper and come to Vitchiev, which is a tributary city of the Russians, and thence they gather together two or three days; and when all the single-strakers are collected together, then they set out, and come down the said Dnieper river. (De Administrando, chapter 9, transl. by Moravcsik)

The small merchant boats were brought not only from the tributaries of the Dnieper but also across the portage, probably from the Lovat, on the journey from Novgorod. During wintertime the Rus themselves collected the merchandise, i.e., the furs that were going to be sold in the south:

The severe manner of these same Russians in winter-time is as follows. When the month of November begins, their chiefs together with all the Russians at once leave Kiev and go off on the polluilde, which means ‘rounds’, that is, to the Slavonic regions of the Vervians and the Drogovichians and Krivichians and Severians and the rest of the Slavs who are tributaries of the Russians. There they are maintained throughout the winter, but then once more, starting from the month of April, when the ice of the Dnieper river melts, they come back to Kiev. (De Administrando, chapter 10, transl. by Moravcsik)

The regular trade between Rus and Constantinople began in the 10th century, according to the peace treaties. This seems to have been organised and set out from Kiev. In winter the Rus journeyed North
on the ice and snow to purchase valuable furs for trade, and to sell precious goods from the south. Many of the main markets were held in the winter, such as the Disting Market at Old Uppsala. In north Scandinavia, before the 16th century, the Sámi hunting population of the dispersed sita-villages were gathered in winter camps in the wintertime, and in connection with these the markets were held; they were visited by merchants who in the Middle Ages were known as birkarlar. Probably it was a long, profitable trading tradition that lay behind the claims on north Scandinavia from Novgorod in the 14th century.

7.13. THE PROBLEM OF PORTAGES

7.13.1. An introduction to the problem
The problem of portages is central when discussing the eastern journeys of the Svear.

In the following, an attempt will be made to shed light on the problem of portages by using a combination of ethnohistorical analysis and experimental archaeology. Ethnologically documented ways of passing rapids and portaging on land between river systems are presented together with historical information such as skaldic poetry and travel accounts. Further, archaeological remains as well as information on different solutions to the problems of land passages are used as a basis for archaeological experiments with replicas of Late Iron Age ships. The premises for using these experiments as analogies are carefully studied, in particular the influence of ship-building technology on the results of the experiments.

The results indicate that more than one solution was sought for the land transports of ships. Not all types of ships were hauled over land, and among those that were, this could be performed in several ways: on rollers, in the grass, in specially made ditches, or on sleighs. On some occasions even wheels were used. An alternative to hauling was carrying.

The aim of the experiments was to test arrangements at portages that are documented from Sweden ethnographically, archaeologically, or in historical sources. This section therefore begins with a study of the different types of source materials that concern portages and that are used as a basis and background for the experiments. The documentation of these has served as a guideline for constructing the portage in the experiments. The premises for using experimental archaeology in this case are discussed, especially with regard to the boats and the boat-building methods. Lastly, the results of the experiments are presented and interpreted.

7.13.2. The discussion
In Sweden the discussion about portages has been intense the last decade. The debate has mainly concerned whether or not ships and boats in the Late Iron Age, and especially the Viking Age, were drawn along portages between river systems or beside rapids in rivers (Edberg 1994, 1995a, 1995b; Westerdahl 1994a, 1994b, 1996). The issue became actualised when trial journeys with Viking ship replicas began in the 1980s on the waterways that were used by the Vikings in Poland, the Baltic countries, and Russia on their way to the Mediterranean (Nylén 1983, 1987; Edberg 1998, 1999).

Did they leave the boats at the portage and take another boat at the next river? Or did they bring their boats across the portage, pulling or carrying them, and launch them when they reached water again? Was this possible at all? The debate has focused on the experiments and a few early written sources, and has never touched on other available material such as what the solution was in historical time in the parts of Scandinavia where roadless land dominated until the 19th century. Based on his experiences with hauling the Viking ship reconstructions Krampmacken and Aslifur land beside rivers and in special experiments, Edberg concludes:

As I have shown, the ideas about the Viking Age ship-haulings between the rivers in Russia are not only unproven but also rather improbable. (Edberg 2002:85 my transl.)

Edberg then reduces this phenomenon to an idea that flourishes in our society, and he concentrates on how an idea like this could have originated. His conclusion is that the idea comes from ‘legends, sagas, myths and shippers’ stories, some with roots in antiquity’ (Edberg 2002:85 my transl.).

But is the hauling of ships between the rivers really unproven? And is it really improbable? Edberg has based his conclusions on experiments using either boats built with modern methods (Krampmacken, Aslifur, Havörn) or ships that were considerably larger than those used in eastern Sweden and Russia (Havörn, Helge Ask) (Edberg 1999). This affects the weight of the ships and consequently also the results, as will be shown. The way in which the hauling was carried out, by moving the logs used as rollers, is not documented anywhere, neither archaeologically nor ethnographically. The written sources that once dominated the discussion comprise the accounts by Constantine Porphyrogenetus about the Scandinavian journeys, as well as the Primary Chronicle, both of
which can be seen as ambiguous regarding whether ships were hauled, so they will not be used here. The question is, are there any other sources or analyses that indicate that the hauling of ships was an appropriate solution in some circumstances and therefore occurred?

The earlier results are based on very little material, and the experiments are not based on available knowledge of the ships’ construction, on adaptions of the ships for portages as seen in ethnographic and archaeological material, on knowledge of how portages were constructed, or on how ships were transported along portages in historically documented cases. In this article I will first shed light on this neglected documentation, and then show that, by using this knowledge as a basis for the experiments, other results can be obtained.

7.13.3. The premises for the experiments

Here I will begin with an ethnohistorical and archaeological analysis that serves as a background for the experiments with replicas of Iron Age ships presented here. My opinion is that the results of earlier experiments are largely due to the fact that they were not performed on the basis of available information on ships, hauling and portages. In contrast the knowledge and the premises that have served as a basis for my own experiments with the hauling of boats include:

*Archaeologically investigated and documented portages.
*Historical sources.
*Analogies with the construction of ethnographically documented portages.
*Analogies with ethnographically documented methods for hauling of ships on land.
*Analysis of adaptations for hauling in preserved boat finds.
*The same types of boats that were used in the Iron Age.
*Boats that were built with the same methods as in the Iron Age.

The source material and studies chosen here are only examples, and are used because they have not figured in the discussion earlier. The archaeological material does not reflect the real distribution of preserved portages, but instead shows where archaeologists interested in these issues have been working.

7.13.4. An ethnographic approach to the problem of portages

The ethnographical material constitutes an excellent source for information about communication in a roadless land, especially in north Sweden, where, as we have seen above, the road network was very limited until the 20th century. Here information is given about when, where and how portages were used and not least how they were constructed. This source material has not been recognised earlier as a basis for experiments, affecting the results.

**Boats and methods of portaging among the Sámi**

Many accounts continue to mention the carrying of boats. On Linnén’s journey upstream the Umeå River in 1732, both the peasant and the Sámi carried the boats on the portages (see chapter 6). The same procedure was used for Sámi boat transports during Ehrenmalm’s journey to Åsele lappmark in 1743 (1743:96). In Högström’s description of 1745, the boats of the fishing Sámi are ‘of such shape and construction that he takes them with oars, bulk-heads and scoop, and also takes his food provisions on his head and back and carries his boat wherever he wants to’ (1746:111-114 my transl.). Besides these small boats he mentions that also longer boats, 7-11 m, were used along the rivers in northern Lapland. That these boats were also brought up on land beside the rapids is evident from the travel account from the Muonio River in 1909, where the same type of long and narrow boat was still in use (see below).

Daniel Tila wrote a diary from the Swedish-Norwegian border commission in the 18th century, which was published in 1966. On the way from Umeå to Lycksele lappmark he wrote: ‘We now had to use small miserable boats, which were not bigger than that an 18-year-old stableman could carry it upside down on his head together with the oars and an axe. The planks were not more than 2 decimallineers thickness [0.4 cm]’ (1966:181 my transl.).

The Sámi boats were built to be very light. The hull was very thin, just like in the Iron Age boats of central Sweden. To make them as light as possible, spruce was used as material; it was also found in the 6th-century burial from Valsgärde 8 (Arwidsson 1954). In earlier times the seam between the strakes was sewn with for instance roots, instead of using iron nails that further reduced the weight.

**The construction of the Sámi portages**

The Sámi of northern Scandinavia have drawn and carried their extremely light boats along and between river systems and lakes, as well as beside rapids. Ethnographic accounts and travel journeys illuminate this. There were fixed water communica-
tion systems for the journeys from the sea to the mountainous areas, used by the Sámi themselves as well as by visiting officials, explorers and scientists. The land transport parts were called mårkor. They have not been registered systematically in the National Survey for Ancient Monuments and occur only occasionally. No such place has been thoroughly investigated and documented. There exist, however, occasional early photographs that show how they looked. As can be seen from the photo, wooden logs were positioned at the portage as rollers to facilitate the passage (fig. 177). A good picture of the communication system is also, as mentioned, acquired from the early travel accounts, which will be discussed.

Figure 177. The Sámi Sjulsson and his wife Anna Sara pull the boat over an old hauling place with logs placed as rollers in south Lapland. Photo Ernst Manker.

Portaging the boats between rivers and lakes as well as beside rapids was seen as natural in earlier times in north Sweden, before roads and new boat types entered. In remote areas this could still be done in the 20th century. The ethnographer Ernst Manker informs us about his journeys among the Sámi of southern Lapland, and at the same time gives us information on the construction of the portage:

Once I had company with both Sjulsson and his wife Anna Sara, mother of eight grown-up children and still like in her best years. This time we steered from Setsele to the old mother camp by Koppsele. And on the way up we took the opportunity to try an old hauling-place over a tongue of land between the lake and Malá River. Earlier it was usual – and sometimes still is – to haul the boat over here in order to avoid rowing around the long isthmus. In a worn groove through the bushes a number of logs were placed transverse. Father and mother took hold of the oarlocks on each side and pulled the boat up into the groove, then father took the stem and mother the stern and the boat got speed over the rollers so it whistled through the bushes. Easy and handy was also the little boat'. (1939:124 my transl.)

River journeys and portaging in the early 20th century

In the early 20th century large areas of north and inland Sweden were still without good roads, and to a great extent boat journeys along the rivers were still the main form of transportation.

In 1909 the treasurer of STF (Swedish Tourist Association), together with three doctors, boarded a boat for a trip from Lyngen to Skibotten across the mountains to Kilpisjärvi, the source of the Kóngámá and Muonio Rivers which they were going to follow. The boat journey was described by one of the doctors, Thorbjörn Hwass (1910:346 pp). The boats for the passengers were 9 m long and only 1.25 m wide, with the gunwale empty only 0.2 m above the waterline. An additional strake was inserted between the oarlocks to protect against the rapid's waves. The passengers were sitting in pairs in the boat. Each boat had two rowers, one close to the stem and one close to the stern. One man was also the helmsman; he had a short oar with a long and wide blade, held in place with a withie of birch at starboard side. At the first rapid by Kilpisluspa, the boats had to be taken up and pulled on land beside the rapid. First went the travellers, after them the luggage was carried, and last came the boat on wooden rollers. After the rapids came the northernmost Swedish settler farmstead of Kummuvoipio. Along the rivers as here, there were settler farmsteads where the state provided the house if settlers in turn provided help and lodging for the travellers. Along several rapids, 28 on the way to Karesuando, the boat was punted downstream with great skill by the Finnish crew on board, though there were plenty of rocks of different sizes all around. In some rapids such as Peräkoski and the wildest rapid of them all, Lammakoski, the boats were emptied of luggage and passengers, and then poled by two men on board. A third man took the boat by a rope securely tied to the stern, and with great effort tried to slow it and keep it from being taken by the river. The same procedure has been documented by Gustav Hallström at a rapid by the river at Umba Russia.
On the STF expedition of 1909, when arriving at the rapid of Pättikökuorkio both passengers and boat had to be taken up on land beside it, and this was done in a quite unusual way. The boats were put into carriages, specially built for the purpose, with boat-shaped bottoms of ribs for the boats. On the larger lake Kellotijärvi it was possible to sail the whole way. All in all the rivers amounted to 81, of which 78 had been navigated by the boats and three passed on land (Hvass 1910:346-406).

In the beginning of the 20th century also many ethnographic accounts from the north shows that both carrying (fig. 178) and pulling of boats was still carried out along portages in remote areas with no or few roads.

Figure 178. The Sámi Jonas Israëlsson carrying a boat beside Atjiken, Lapland. Photo taken by Gustav Hallström in 1909. Umeå University Library Archive. Gustav Hallström’s photo collection no. c699.

7.13.5. Some information about the construction of portages from the historical material

The construction of the portages: hlunnr

In the skaldic poetry and the sagas, when the hauling of boats is mentioned and information is also sometimes given about the constructions, logs as rollers occur. The special logs for facilitating the pulling of boats on land are well known in the Old Norse material as lunr and collectively as hlunnr, also used in for instance Ir. lorn and Gael. lorn (Falk 1995:37). This word is still applied to the long logs used in the launching of boats: No. lunn, Swe. luna. In the boat they could be put as support while rowing fotalunnar. In Iceland also bones of whales were used, as is also mentioned in Havard Isfjarnings saga (ch. 10). In order to secure them firmly in place, a shallow groove was made: ‘þær eigu þeir at grafa fyrr hlunnu’ (Jónsbók fóm. 5).

The related word lunnr is sometimes used even today for logs as rollers.

Lunnr were also used when ships were launched and landed, and in both the skaldic corpus and the sagas these occasions are described in connection with the launching of the royal fleet for an expedition, as expressed by Magnús in the 11th century: vannt geyst herskip af harða stimnum hlunni, ‘you caused the warship(s) to move swiftly down the very stiff slipway’ (Arn II, 4).

Arnorr reminds Magnús that when he started his Wendish campaign drótt hélug borð af slettu hlunni ‘you dragged icy hulls from the smooth slipway’ (Arn II, 1 1, after Jesch 2001:173). Here land passages probably also were involved. Arnorr tells first that Magnús ytti flota milum surd med ladi ‘showed a great fleet southward along the coast’.

Journeys on lunnr may lie behind the following expression as a kenning for a leader: hleypimeðr hlunnviggja ‘tree [man] that causes roller-horses [ships] to run’ in Hfr II,5 (Jesch 2001:173).

On land and in water in the East

Neither in Scandinavia nor in early Russia is there a lack of information on the hauling or carrying of ships across portages. Several surveys have been made, and the discussion has focused on a few sparsely worded written sources that describe the travels of the Svear to Byzantium. Analyses of these have been compared to the results of archaeological experiments, and it was subsequently concluded that it is not possible to find definite evidence for people having hauled their own ships over the long portages known as volocher, which are common in Russia (Edberg 1996; Westerdahl 1996). Edberg himself has shown by archaeological experiments that such hauls are possible with small ships and short stretches (Edberg 2002). Studies have not yet been made, on the other hand, of the remains of boats and ships found adjacent to the waterways leading to the Black Sea. There are, however, interesting Russian studies that penetrate the historical sources for some Russian portages.

Beginning with the Russian case, when the historical sources first shed light on the portages, the hauling of both ships and goods occurs in many places. They are known in Russia by the name voloch. Makarov has studied six portages in northern Russia (see above) and concludes that: ‘There is no doubt that all six portages were ‘dry’ sites where cargo was transported along roads by horses’ (1994, p. 15). This, however, does not mean that ships could not also be hauled over them. In certain sources which Makarov quotes, there is direct evidence that ships were also hauled across these land passages. For instance in the case of the Slavensky
volok (see above), he quotes from the Land Cadastre Books of 1585 which inform us that, ‘boats and goods were transported by horses across the portage along a dry road’ (1994, p. 18).

After his analysis of some of the portages in northern Russia, Makarov writes that, ‘In all probability, the role of the local residents was to construct a road across the portage, to maintain it, and to keep horses for the moving of boats and cargo. These innovations completely changed the conditions of portage transport, and saved the travelers’ time, prevented risks and reduced the need for physical labour’ (Makarov 1994:26).

The solutions to portaging by Ingvar the Far-traveller according to the saga

The journey recreated by Expedition Vittfarne in 2004 was based on a reconstruction by Mats G. Larsson (1997) of the route travelled by Ingvar the Far-traveller. In the saga there is also information about places and situations where the ships were hauled on land, and where other solutions are mentioned:

…He then continued until he came to a big rapid and a narrow mountain gorge. At that place there were high rocks, so they pulled up their ships in ropes, and after that they pulled them down to the river again. (The Saga of Yngvar the Traveller’ after Larsson 1997:110 my transl.)

On one occasion when coming to a rapid, the rocks by the side were too high even for this solution:

At that place there were such high rocks that they could not pull the ships ashore with ropes. (The Saga of Yngvar the Traveller’ after Larsson 1997:112 my transl.)

In an opening between the cliffs there was softer ground. They went ashore there. Ingvar ordered trees to be felled and spades to be made. The crews then dug a channel for the ships, a project that, according to the saga, took several months to complete before the ships could pass.

It seems that the author of the saga expects the expedition to bring their ships all the way, and to pull the ships on land where there are obstacles and rapids, and not exchange boats along the journey. This was an exploration journey, but where regular commercial and other journeys were made by boat, probably prepared facilities were at hand. How these could be constructed will here be interpreted on the basis of an analysis of preserved portages in the archaeological material.

The construction of some preserved portages in the archaeological material of Sweden

The Survey for Ancient Monuments in Sweden by the National Heritage Board (RAÄ), as well as the authorities of provincial museums in the ongoing project Skog och Historia – a survey began in 1997 by Skogsvårdsstyrelsen in cooperation with the National Heritage Board – has resulted in several registered portages. One district in particular should be specially thanked for being observant of this type of cultural remains, namely Malå in Lapland; the representative of the authorities Rickard Vesterlund and the local worker in the field Inga-Britt Hultman found most of the sites mentioned here from SVS in Lapland. Most of the better-preserved arrangements have been subject to restoration since coming into use for floating boat journeys after the period when the old waterborne communication routes were replaced by roads. It is therefore only the youngest portage arrangements with logs that are visible today and possible to find during the survey. Ditches are more easy to detect and can be found also in areas where portages have not been in use for several hundred years, such as in central Sweden. No attention has been given to this type of remains. When they have been registered, it has been by coincidence often thanks to the interest of those conducting the survey.

Here I will present only a random selection of portages registered as ancient monuments in Sweden. It is neither a complete nor a statistically chosen sample, but it is presented to give examples of the different types of arrangements made on portages in Sweden.

1. Skidberget1, by Skellefte River, Malå Parish, Lapland

1) 100 m long portage beside rapids in the old river route (fig. 179). Built with logs as rollers 0.2-0.3 m thick, spaced at approx. 1 m distance. The site was found and registered by Skog och Historia 1998, ste no. SVS 919:3

Parallel to no. 1

2) 60 m long portage with logs as rollers 0.2-0.3 m thick. This site was also found and registered by Skog och Historia 2002. Site no. SVS 919:4.

Figure 179. Portage by Skidberget. Photo by Inga-Britt Hultmar, Malå.
2. Västra Lainejaur, Malå Parish, Lapland

Portage in plain ground between lakes, 120 m long consisting of logs as rollers 1.5-2.0 m long and 0.05-0.1 m thick, placed with an internal distance of 0.45-1.0 m. The site was found and registered by Skog och Historia 2002. Site no. SVS 1974.

3. Skidberget 2, Malå Parish, Lapland

Portage road beside Skellefte River, with remains of specially built carriages (fig. 180) and with log-built portages on both sides. The road is 300 m long and 2 m wide. The log portage in NW is 35 m long and 4 m wide. The log portage in SE is 20 m long and 2.5 m wide, situated on a cliff. The site was found and registered by Skog och Historia 1998. Site no. SVS 920.

4. Sandfors, Malå Parish, Lapland

Remains of a portage that was once about 200 m long of which 18 m in SE are largely intact (fig. 181). The site was found and registered by Skog och Historia 1998. Site no. SVS 921.

5. Skäppträskåheden, Malå Parish, Lapland

Portage on a flat rock, 28 m long and 2 m wide. The site was found and registered by Skog och Historia 1998. Site no. SVS 860.

6. Gargån, Sorsele Parish, Lapland

A portage beside the rapids of Trollforsen in Gargån. Logs as runners built up on a wooden construction among the stones (fig. 182). The portage was used until the 20th century for the floating boats. Registered by Skog och Historia 2002.


The most well known but least investigated site, often occurring in the discussions of Swedish portages, is the construction found and drawn by road builders for E18 by Draget in Kalmar Parish. Visible in the drawing (183.9) is a deep ditch with the sides covered by closely spaced logs transverse to the ditch.
8. Fållnäs, Södermanland

The ditch by Draget in Kalmar Parish is well known. A similar, deep, strategically positioned ditch at Fållnäs, Södermanland (fig. 184) opens a route to the interior of the peninsula Lisö beside the Södertälje river-route connecting Fållnäs Bay with Grimsta Bay (Deckel 2002). The ends open at 5 and 10 metres above sea level respectively. The ditch was investigated in 2000 by Michael Olausson (Deckel 2002), and revealed closely spaced logs positioned in a similar way along the sides transverse to the bottom of the ditch, as is illustrated in the drawing from Draget in Kalmar Parish (oral information). A 14C date from charcoal below the walls of the ditch on the original ground level gave a date to the 6th century (Deckel 2002), while wooden material from the trench in the bottom of the ditch is preliminarily dated to the 16th century.

A smaller investigation and the context of the ditches at Sjöås, Halmsjön

The ditches found in the survey were inspected by David Damell of the National Heritage Board. He also did a small trial excavation in the N ditch, which showed that the width was 3 m and the original depth 0.5 m (report by David Damell, ATA Dnr 4063/86). Lengthwise in the ditch, situated in the deepest part, was a charcoaled plank, 0.3-0.4 m wide (fig. 185). Here and there were also visible charcoaled traces of transverse timbers. An investigation close to the lower end of the ditch showed that also here the width was 3 m; charcoaled wood lay in the bottom as well as transverse wood in a fishbone pattern. The ditch continued a few metres into the bog east of the ridge, which at least in the beginning of the Iron Age was part of Sigridsholmssjön. The ditch was covered by 0.7-0.8 m mud and peat and in the bottom was a great deal of wooden material, some of which had cut-marks.

The strategic position between two important river systems makes Damell’s interpretation of the ditches as portage arrangements very likely. Of the 14C datings that were made, one was recent (St 11140), while the other gave 65 ± 90 BC (St 11139).

9. The ditches from Halmsjön to Sigridsholmssjön, Lunda Parish, Uppland

Two ditches have been registered by the Survey for Ancient Monuments at Sjöås between Halmsjön, which is linked to the Lake Mälaren water system, and Sigridsholmssjön, which is linked to the so-called Långhundra River route that ran between Uppsala and the Baltic Sea in the Iron Age.

The ditches were found in 1996 and recorded in the register of the National Survey for Ancient Monuments as no. 233 in Lunda Parish, Uppland. Both ditches run transverse across the ridge from the lake Halmsjön in the west to the bog with a small water flow in the east. Both ditches had been cut by the road that runs along the ridge, which shows that they are older than the road. The south ditch measures 50-60 m in length, 3 m in width and approx. 0.5 m in depth. The north ditch is longer, approx. 90-100 m long, and is 3 m wide and 0.5 m deep.
Observations on the constructions of preserved portages

Contrary to most of the earlier experiments performed with hauling ships, the preserved portages that have logs as runners have permanently placed logs, partly sunken in to the ground, or where there are many stones and rocks, on a built-up trail. The logs had not been brought in by the ships and moved. The logs are between 0.05 and 0.3 m thick and most of the logs seem to be 0.1-0.2 m in size (Skidberget, Lainejaur, Skäpptraskaheden, Malån, Gargnäs, Sandtråsk).

Roads occur in some places, and at one location (Skidberget 1) also a special carriage had been constructed.

In south Sweden the communication system with portages had been abandoned so early that logs as runners are not preserved or visible. Instead during the survey of some places special ditches were observed (Sjöås, Draget, Fällnäs), which in one case has the name Draget ‘the pulling’, revealing a possible portage function. Remains of wooden constructions have been found (Sjöås, Fällnäs) or noted (Draget) that might have facilitated the boat transport. Ditches might have been suitable when the gunwale was higher and it was possible to grip at a comfortable level. This was the case for larger ships, especially the merchant vessels. This interpretation fits well with the occurrence of the ditches by Sjöås leading to Sigridsholmsjön with the regional marketplace, thing and town of Folklandstingsstad.

7.13.7. The ships used for portaging

The significance of the boat-building methods

The importance of the boat-building methods (see chapter 4) for the function of the replicas and the results of experiments, has been observed earlier by some scholars (Westerdahl 1994a, Crumlin-Pedersen), but not taken into consideration during the earlier hauling experiments in Sweden. The methods used resulted in light boats with shallow draught well suited to river traffic and hauling.

Light ships

The weight of the boats is crucial for the results of the experiments with hauling. Radial splitting as a building method has almost never been used when building the Swedish replicas in the earlier experiments, and the thickness of the sawn planking has had to be increased to compensate, resulting in heavier boats. The use of the building method has clearly influenced the results, since boats built with modern methods have often turned out to be so heavy that a wagon or other aids have been needed. This was the case with Krampmacken, which was supposed to be a reconstruction of the ‘Bulverket boat’ and which in 1985 made a journey from Gotland through Eastern Europe to the Black Sea (Nylén 1987; Edberg 1999). This boat, built in a modern way, was only 8 m long but had a total weight of almost 1000 kg. For the heavy land transports a cart was brought. As a comparison, Tälja, which is 9.6 m long and built with the radial splitting method as a reconstruction of the 11th-century Viks boat, weighs only approx. 500 kg. In 1996 the present author had a replica, Embla, built of the boat in grave 3, Prästgården, Old Uppsala Parish. Embla is a 7.2 m long reconstruction built with original methods and the same thickness of the planking as the original, that is, only 10-12 mm. This boat weighs only 250 kg. Both Tälja and Embla were used in the experiments that will be presented in this thesis.

The thin planking used in the boats can be illustrated by the rune stone from Altuna Church. It depicts a mythological scene, described in the Edda poem Hymiskvida, in which the thunder god Thor is fishing and gets Midgård’s snake on the hook. In the struggle to get the snake, Thor happens to tramp one foot through the hull of the boat. This is a good illustration of how thin the hull of a fishing boat could be, just like the light Sámi boats in historical time (see Westerdahl 1987).

Embla and Tälja, used in my experiments, are good examples of the most common category of boats (see chapter 2), as is my smallest boat, Smia, which is a reconstruction of the expanded and extended logboat in the burial no. 75 at Tuna cemetery in Badelunda Parish (Schönböck 1994 a, b). Smia has not been weighed, but is possible to pull easily by one person even without any special arrangements on the trail.

The initiators of the earlier experiments had often not studied and applied the knowledge about the ships used by ordinary people in the Iron Age. Often some of the largest ships found have been reconstructed and used in experiments, such as the Norwegian burial ships from Oseberg and Gokstad. The latter were aristocratic prestige boats built to represent the power and glory of chieftains; they were constructed as floating symbols, to be used primarily on open sea. Havorn, a 2/3 version of the Gokstad ship, was used in a Norwegian expedition from Riga by the Baltic Sea upstream Dyna heading for the Black Sea. The big ship, 16 m long and with a hull weight of 3 ½ tons (Edberg 1999), was almost impossible even to bring up from the water (fig. 186). It took a whole day with the use of tackles to get her on land, and then a tractor and truck with crane was the only way to transport the ship the 500 km to the Dnieper (Edberg 1999).
A heavy ship is also very heavy to row. It cuts deep into the water, which increases the resistance and thus reduces the distance that is possible to row upstream the shallow rivers. The Havörn expedition had to stop already before the Russian border where the river was too shallow. The Gokstad ship has also a V-shaped bottom, in contrast to the boats of the Swedish burial finds at Valsgärde, Tuna in Alsike and others, which like the Viks boat are flat-bottomed with shallow draught.

7.13.8. Special technological adaptions to the boats for portages

The false keel

The ships had to be prepared in several ways for the repeatedly occurring land passages beside rapids and portages between river systems. Ethnographic documentation from north Scandinavia where portages were still in use for ship transports on land until the 20th century, shows that the ships were equipped with an additional false keel of birch, treenailed in place to protect the original keel from wear; the false keel could then be easily replaced when it was worn. The archaeological ship remains tell us that the ships, especially in the Late Iron Age, were often equipped with a false keel, as evidenced by the Bärset boat (Gjessing 1941), the Ärby boat and the Viks boat (Larsson 1997, 2000). These ships often have holes made in the stems for ropes in connection with different types of transports, such as pulling from land or hauling on portages. Thus, the ships were constructed specially for the purpose of tackling the portages.

The Old Norse word for the false keel added as a protection under the original keel is drag ‘pull’, revealing the purpose of this extra keel (Falk 1995:45). In the old literature drag as a name for the false keel is preserved in the expression leggja drag undir (einhlvers) ofmetnad, to ‘add fuel to someone’s arrogance’. Both the false keel and the word drag for it are still used in Norway and in Iceland, but nowadays mostly iron is used to protect the original keel. The word drag is also used for the portage itself. The Swedish name for this construction detail today is still slitköl, or dragköl.

Stems with holes for pulling ropes

The Viks boat 1 has three multifunctional holes made in the stem and two in the preserved part of the stern. These could have been used for ropes as an aid when hauling boats on land, or perhaps for attaching to some kind of runner, but also for pulling the boat upstream from the shore in shallow waters. Similar holes are not found in younger boats or contemporaneous heavy merchant vessels.

7.13.9. Results of portaging as experimental archaeology: ship replicas on a reconstructed portage of the type with lunar

Place of trials and participants

In 2001 the present author organised an experiment in Roslagen together with Lennart Widerberg of the Viksbåten association. On the 19th of September all who were interested gathered in the beautiful surroundings of the reconstructed Viking settlement of Storholmen, by Svanberga in Uppland, situated on the eastern shore of Lake Erken. For the experiments we used two replicas of boats used in central Sweden in the Late Iron Age, and a reconstruction of the type of portage documented ethnologically and archaeologically where logs, so-called lunar, were positioned. The boats, unlike those in earlier experiments, were built with the same methods as the original boats. This means that the same dimensions of the material could be used, and no extra reinforcements adding weight were needed. Participants also included Rune Edberg, a researcher of Marine Archaeology at Södertörn University College; Mirja Arnshav, Niklas Ericsson and Nicklas Sundervall, students in Maritime Archaeology; a class of students from the primary school Svanbergaskolan; a class from the Media program at the secondary school Rodengymnasiet; as well as the local enthusiasts Peter Geschwind, Bertil Otterman, Petter Hallegren, Ingela Jansson, Vanja Schubert, Per Erici, Krister Pettersson and Carina Andersson.

The reconstructed boats

The reconstructed Late Iron Age boats used for the experiments were Tölja and Embla, which like the

Figure 186. Havörn in need of help to escape from the water. Photo Håkan Altrock.
originals were built with the radial splitting method, resulting in light and pliable boats.

*Tälja* is a replica of the *Viks boat 1*, Söderby-Karl Parish, Uppland. *Tälja* was built in Norrtälje, Uppland, and is 9.5 m in length, 2.2 m wide and 0.54 m high. *Viks boat 1* has been equipped for portages: it has a false keel, 7 cm high, secured with treenails to the original keel, and three drilled holes in the stems for ropes. Without equipment inside, the weight is approx. 500 kg.

*Embla* was built as a replica of a boat in a burial beside Prästgården 3, Old Uppsala Parish, Uppland. The dimensions of the rivets revealed that the strakes were only 10-12 mm. The building method used permitted this thickness for the strakes of the replica as well, resulting in a boat with a weight of only 250 kg. In analogue with the Viks boat, since no wood was preserved, *Embla* was also equipped with a false keel, here approx. 4 cm.

### The reconstructed portage

The trail prepared with *lunnar* logs inspired by the portages of Lapland was 900 m long, with curves and a height difference of approx. 10 m. The ground consisted both of even grass and uneven meadow ground with tussocks, as well as a bog and a riding trail. The prepared portage began and ended by the shore of Lake Erken.

The logs, mostly of aspen and maple, varied between 3 and 15 cm in diameter, and between 0.6 and 1.2 m in length. They were placed at an internal distance of 0.5-1.5 m. In the wet, boggy part the ground was partway covered with thin branches.

### Results of the experiments

*Tälja* was the first boat to be used, and the first participants at the experiments were 16 school kids, 15-year-olds from the class at the last year of primary school in Svanberga. Under the direction of Lennart Widerberg, they took on the task of bringing *Tälja* up and along the portage after a short trip on the lake. The taking up of the boats involved a 90 degree turn that caused some problems before the boats were safely on the prepared track, and took up to 5 minutes. A straight trail with similar size of logs as on the Sámi portages, approx. 10 cm, commenced thereafter for 100 m, and with the maximum speed of the trial it was passed smoothly in only 2 minutes. The trail continued with the bog, which for 40 m was covered with branches instead of logs, a part of the trail that caused an immediate stop, and several problems suddenly arose. Some thinner logs of 3-4 cm were broken. Here the shoes of the team got stuck in the mud, as did the boat. After short moves of 1 m at a time in more than 10 minutes, thicker logs and not so muddy ground were reached and the trial could accelerate again.

The first part of the following 100 m was uneven, and here the boat ran easiest when the logs were thickest, up to 15 cm, since it touched the tussocks otherwise. Here the track turned a bit, and the boat steered off the track of logs and stopped again briefly. This part continued with more even ground, mostly covered with meadow grass that had been grazed. The distance was passed in approx. 5 minutes. The young team from Svanberga School had pulled the boat over various conditions for about 250 m and now had to continue with their next lesson in school and therefore left the scene. They were followed by seven 17-year-old boys from Rodengymnasiet senior school, the Media program, who together with two teachers took *Tälja* along the whole trail in approx. 1 hour (fig. 188). During this time there were several stops caused by someone who stumbled into dog roses, stinging nettles or just by lactic acid, as when the slope to the upper part of the track was passed. The final downward slope was not covered with logs the whole way, but with green fresh grass. The boat was moved with quite good speed, but almost too fast against the stones at the lower end where the riverbank was reached. At this point it was good to have the keel protected by a false keel, which got most of the wear at this place. The reward for the teenagers was not beer, but a 4 km long trip on the lake.

Figure 187. *Tälja* on the rollers. Photo by Mediagymnasiet, Norrtälje.
The turn had now come to Embla. Only five of the senior school students took Embla around the same track (fig. 188), at such speed that their classmates who were trying to do photographic documentation had a difficult time following. In 15 minutes they had made the round of 900 m, sometimes aided by their teacher. They launched the boat and disappeared on the lake for a long time.

Fig. 188. Embla pulled at speed along the prepared trail. Photo by Mediagymnasiet, Norrtälje.

Later in the day it was time for a second round for Tälja, and for the adult team with teachers and students of Marine Archaeology at Södertörn University College to perform the experiment. On this occasion seven adults took Tälja around the whole trail in approx. 1 hour and 15 minutes (fig. 189). The stops were quite often caused by either lactic acid or because the boat had slipped off the rollers in the curves. As with the first team, the highest speed was achieved when the boat was going straight on logs approx. 10 cm. At these places, 100 m were covered in 2 minutes. It was also an advantage if the logs were sunken into the ground so that they were not so easily moved to the sides. The exhausted pulling team ended the trials of the day with a journey of 3 NM on Lake Erken with both rowing and sailing in the late summer evening.

Figure 189. The team pulling Tälja along the trail of rollers through the Iron Age cemetery beside Svanberga.

Conclusions and comparison with earlier experiments

A prepared trail on a portage with the logs secured partly by sinking them into the ground or in a shallow depression with no sharp turns, will easily be passed 100 m in a maximum of 3 minutes, and 1 km in 30 minutes, using half of the possible crew for the Viks boat and exchanging them regularly for the other half of the crew to permit rest. This is possible if a similar size of logs and similar construction of the portage as in the archaeological documented cases are used. The logs should be approx. 10 cm thick. On a correctly prepared trail, the boats run smoothly without any greater effort. It is also necessary, as in documented portages, to have a portage with logs prepared in advance.

Earlier experiments with the replica Aifur, a boat built with consideration for the type and size of boats used, but not with the construction of portage that is documented from several places, has shown that bringing and moving logs on a trail that has not been prepared, constituted a great part of the effort in the experiment (Edberg 1995, 1999). There are other experiments, as when a block from Stonehenge was transported on a sleigh on rollers, and in a similar way the moving of the rollers occupied 12 of the 24 persons in the labour force; the other 12 persons managed the rollers (Coles 1973:87). That much effort was put into moving rollers on frequented portages does not seem likely to me, and we know also from the ethnographic parallels that permanent logs were positioned at such sites. On this occasion it was also an object of unlikely weight that was moved, approximately 2,000 kg, which almost broke the logs, and therefore Coles concluded that, ‘…experiments have shown that rollers are not very successful unless the ground is quite even and firm. Extremely heavy weight will crush the rollers.’ Also, in an experiment in 1996 when Helge Ask, the reconstruction of Skuldelev 5, was moved 300 m over an isthmus, 30-33 men were engaged but 6-8 men were needed to move the logs (Hale 1998). It is not probable aside from on exploration journeys that other than prepared tracks were used on the well-travelled communication routes, such as those in the parts of Scandinavia where this communication system has survived. In one of the experiments with Helge Ask, four horses were used as a pulling force, stumbling on the rollers. It seems probable that when horses or oxen were needed and used as a pulling force, they were used on a dry road as in the Russian examples shown by Makarov. In those cases a runner probably has been used, as is known from Listeid, and which has also been tried with positive results with Himingløva in 2003 and 2004.

The false keel is needed to protect the keel. The wear on the false keel was approx. 1 cm, mostly
caused when stones were passed over at the end of the trail before the boats were launched again. The false keel was easily replaced with another one after the experiments.

It must also be stressed that it was especially the boats for personal transport and the warships that were constructed to be as light as possible and that were equipped for portages by the use of drag and holes for ropes. Merchant vessels are usually more heavily built, and reaching a port meant changing to smaller boats or other means of transport. This does not, however, apply to the Russian merchants of the north, who with their light cargo of furs preferred light, easily transported boats that could be used in the river systems to reach the markets of north Scandinavia.

On logs and grass
In May 2003 some experiments were also done with the replica Embla on and beside the trail at Storholmen, in connection with a visit by Håkan Altrock, Mats G. Larsson, Holger Eliasson, and Rune Edberg, together with the present author. The logs, of about 8-12 cm in thickness, were lying on the ground, not in a shallow depression. A hundred metres took 5 minutes; but of these, in the part where the logs did not move too much, 30 m were passed in 1 minute! At the suggestion of Mats G. Larsson, the same distance was tried directly on the grass and flowers on fairly even ground, and it resulted in the same speed 30 m beside the prepared trail covered in 1 minute.

7.13.10. A solution to the problem of portages?
As can be seen from the historical and ethnographical material, the main way of travelling in a roadless land was by boat, and not least, the boats were mostly brought all the way on land and on water. Many solutions could be chosen for the arrangement of the portages. Where **lunnar** were used, permanent logs were placed on the portage at such localities where land transports were frequent and facilitated communication. This had not been observed when the earlier experiments were made. Instead much energy and effort were put into moving the logs that were brought with the replicas, further reinforcing the impression of the heavy and difficult hauling given by the use of stiff and heavy boats, and contradicting the experiences shared by Manker from hauling boats in the ‘real’ world.

Not surprisingly, the solutions chosen when arriving at a portage seem to have varied both in time and space. They have also been dependent on the type of vessel used, the type of cargo and the purpose of the journey. The larger merchant vessel has probably never, with few exceptions, been drawn on land. The main exception might be at the portage by Halmön. Here in the Middle Ages, a special construction to haul the ship along the ditch across the ridge has probably existed for ships on their way from Lake Mälaren to the marketplace of Folklandstingsstad in Lunda Parish by the shore of Sigridsholms Lake. The construction was probably also used in earlier times, to enable access to this special lake that was used as a central sacrificial site since the Bronze Age.

Pulling ships along portages has occurred in many places as is evident from the archaeological, historical and ethnographical material, but it has only continued as long as the light ships were built and used. It was part of a communication system belonging to the time before a road network was established that permitted carriages with two axles to be used. In south Sweden the main roads were improved by Queen Kristina (1632–1654), while in north Sweden in many places roads did not exist at all until the 19th century. The river systems were used as the main communication routes both in summer and winter. The towns were established where the rivers met the Bothnian Sea along the coast, and here the coastal road was built early.

Experiments have shown that when the same kinds of constructions and boats known from the archaeological material are also used in the experiments, this facilitates the hauling considerably. It is also evident that the boat-building technology of the Late Iron Age and Early Middle Ages has been a significant factor for the possibility to reduce the weight of the ships, without losing strength and elasticity of the hull. The thin hulls that we find in boat-graves with only 10-15 mm thick strakes, can only be obtained by the radial splitting method that leaves the fibre intact. The sawing of planking, introduced in the Late Middle Ages, necessitates double dimensions for the smaller vessels and even more for large ships like the Riddarholmsholm ship, according to naval engineers. The transition from a soft to a stiff hull also created a need for a solid internal structure of ribs and for the skeleton technique to replace the shell technique. The portages in the south of Sweden then lost their importance, and are now only preserved as memories in place names such as –ed and –bor. In the north, the lack of roads made the rivers central to communication and necessitated a continuous use of both light boats and portages until the last century.

The main results of the ethnohistorical analysis and the experiments can be summarised as follows:

As I have shown, the Viking Age ship hauling between rivers and lake systems is not only probable, but also possible to prove.

As has for a long time been noticed, the archaeological material in Sweden indicates widespread contacts of the Svear. Already in the 8th century these are intensified and seems on the basis of cins and other artefacts mainly directed towards the Orient, by which I here mean the Eastern part of the Caliphate, the Caucasus area and Eastwards to Asia during the 8th to 10th centuries (Jansson 2005). These are replaced by intense contacts with the Byzantine empire, in central Sweden visible in the material from the 10th to the 13th centuries (Jansson 2005; Henricson 2006). Earlier scholars have had an intense debate whether these contacts were direct or indirect, if they were results of waterborne journeys or other means of communications, and especially if ships were and could be used all the way. In this chapter I have tried to answer some of these questions by studying the remains of Scandinavian ships from the journeys across the Baltic Sea, to Poland, the Baltic Countries, Russia and the area around the water-routes to the Black and Caspian Seas. This has been complemented with experimental archaeology, both concerning portaging and travelling along the water-routes. Where the archaeological material is limited, historical sources about ships and seafaring of Rus has been considered.

In both Poland, Estonia and Finland, shipbuilding is influenced by Scandinavian shipbuilding tradition and may indicate the presence of Scandinavians.

Concerning the journeys through Russia, I have studied the preserved rivets from Scandinavian ships in detail and can conclude that they belong to ships built in Central Sweden, which differs from south Scandinavia. Rivets of this type are also found south of the long portage between the Lovat and Dnieper, showing that the Swedish ships were brought across this portage.

In Caucasus and the areas surrounding the Caspian Sea, there is very little archaeological material available for a study, but on the other hand there are plenty of contemporary, Arabic sources illuminating when, how and why Scandinavians came to the area. These are uniform: the significant of Rus was that they came in ships. At first on peaceful trading voyages bringing furs to the Bagdad market, but from the 10th century onwards also to attack the coasts of the Caspian Sea and take booty. The fall of the Khazar empire as a consequence of this, seems to have blocked their old trade route. In the late 1030’s the Swede Ingvar the Fartraveller makes a journey to the Caucasus area to investigate new water-routes. After a period of attacks in the 10th century towards Byzantium, trade agreements are established and regular journeys begins also to this area. The conquered Slavonic tribes are used to build boats for the Scandinavian merchants, traditional, expanded logboats.

With their own ships?

There are two important facts which reoccur in the historical sources concerning the Rus attacks, and which are described as special features of Rus that separate them from other known enemies. Firstly they are said to have come in ships, something that is very unusual and for which there was earlier no organised protection. Secondly, the Rus arrive in their own, light ships, which are independent of the deep harbours, can be brought anywhere along small rivers, even beside rapids, and can also attack on any shore without needing a harbour. Al-Masudi, as discussed above, mentioned how the Rus came to the Caspian Sea in their ships in 912 (al-Masudi § 8).

In the letter from the Khazar king Josef in 960 to Hasday Ibn Shaprut, an eminent official of the caliph of Cordoba, it is also evident that the Rus are a waterborne enemy, and are expected to arrive on their ships, while other enemies come from land:

...Know and understand that I live by the mouth of the river. By the help of the Almighty I guard the mouth of the river and do not permit the Rus, who come in their ships, to come out on the Caspian Sea to go against the Arabs, and not either any enemy on land towards Bab al-Abwab…

Warships were not used by other than the Rus on the Caspian Sea. In the Black Sea and in the Mediterranean, the Byzantine warships were mainly built for naval battles at sea and on the lower part of big rivers. As we have seen earlier, the Greek naval expedition that was sent to assist the Khazar king in fortification works, had to leave their deep-going warships at Cherson and transfer to smaller vessels.

7.14.2. Ships all the way?

The sources clearly inform that Rus arrived by boat to the Khazar realm and asked for permission to pass through on their way to the Caspian Sea. They were granted this if they shared their booty on the way back. They passed through between the Don and Volga, either by a canal or portage. Here, they did not recruit local boats.
7.14.3. Several answers to one question
The above-described situation refers to the light warships, boats for personal transports and small merchant vessels that probably were, like the warships, adapted in several ways for travelling the shallow rivers and portages of the east. The latter were replaced by the indigenous light logboats in the 10th century. The big merchant ships for heavy cargo were taken to Staraja Ladoga, but not further. Most of the cargo from the far-reaching eastern journeys was, however, light cargo – furs on the way south, and silk, silver, beads and colour pigments on the way back, all of which was possible to bring on light boats. By the time regular journeys to the Byzantine Empire were established in the mid-10th century, the Rus had gained sovereignty over the surrounding tribes, both several Finnish-Ugrian and Slavonic tribes, which were employed for building the light, expanded boats that were so well adapted to the Russian river systems and portaging. These are probably the monoxyla mentioned by Constantine Porphyrogenitus. As we have seen, on naval expeditions the light, small warships of the Valsgärde type, built of either radially split planks or light spruce, could be brought all the way, and the rivets of Gnezdovo are also indications of this (see above). The experimental journeys have shown without a doubt that this was not possible with the big, west Scandinavian ships such as Gokstad, even if they were scaled down like Havörn. Also heavy boats built with modern methods, dimensions and sawn planks, like Krampmacken, are completely useless for any transports that include portaging. Instead it was the small, light ships of the type found in the central Swedish boat burials that were used, boats like the Viks boat.

Figure 190. Waterroutes in the East.
8. THE SHIP AS A SYMBOL

The ideological value of the ship in the Late Iron Age society made it a key symbol. It represented not only water communication, but also status, power, and communication between humans and deities, as well as contact between this world and the next. In the archaeological material, the use of the ship symbol appears in the following categories:

1) Finds of boats/boat parts in bogs
2) Finds of boats and boat parts in water
3) Ship-shaped houses
4) Ships depicted on stones and rocks
5) Ships depicted on textiles
6) Ship graffiti
7) Ship-shaped artefacts (bowls, mounts and others)
8) Toys
9) Votive ships
10) Ship-shaped stone-settings
11) Ship-shaped pole-settings
12) Ships in burials

These categories are not fixed, and can be found intertwined and mixed as well. Boat burials can, for instance, be found in bogs (Müller-Wille 1970:114; Ingstad 1992:226, 255). Ships on textiles may be found in boat burials, such as the Oseberg ship. Ships depicted on stones may also be related to burials, such as the picture stones from the Migration and Vendel periods on Gotland. In addition, boat burials may be found in ship-shaped stone-settings.

When the ship was a key symbol it was actively used as a metaphor by a leadership, even politically. It was used to create the society that I call a maritime society, with its special social and administrative structure that will be discussed in the following chapters. Therefore, it is important to pinpoint the specific cultural and historical situation in which the ship symbol was used. Since the ideological value of the ship is mirrored in so many ways in the archaeological material, it is possible to trace the time when the ship symbol became central as well as when it was replaced.

There are many explanations for the use of the ship symbol. They do not exclude each other but instead are related to each other, and each is important for the understanding of the meaning and language that was associated with this symbol. In this chapter, the religious aspects will be analysed.

Mythology and religion are expressed in rituals. In many cases boats occur as remains of such rituals. By means of a contextual analysis of some boat finds, the ideological background will be sought. In the Late Iron Age, boats that can be interpreted as religious symbols have been used in the following ritual contexts:

- Boats in processions
- Boats as sacrificial gifts
- Rituals in the boat
- Transport to sacrificial sites
- Votive gifts
- Divine guardian of ‘peace’ at the thing assembly (see chapter 10)
- To communicate with the deities
- Burials; communication with the after-world

The boats and their element, water, were conceived of as having special powers, activating sacredness. In this chapter some of the religious aspects of the use of ships in ‘the maritime society’ will be discussed. The ship symbol within social communication will be described in chapters 10 and 11. Because the religious sphere was not separated from ordinary life but intertwined with other activities, beliefs related to the ship symbol may explain the use of it in other contexts as well, a question to which we will return later.

The ship as a religious symbol was not created in the Late Iron Age, and instead has a long tradition that may be traced back to the Mesolithic period. However, what is important here is that many rituals and beliefs connected with the ship as a symbol seem to have continued into the Late Iron Age, according to a contextual analysis of several ship finds. This applies mainly to central Sweden but also to Norway. In contrast, in south Scandinavia the bog sacrifices of ships were not continued into this period, and boat burials were not carried out except in a few cases. In the area studied in this work, east Sweden, there was an intensified use of boats in both sacrificial and burial rituals, unlike the situation in Denmark.
In this chapter, also the knowledge gained from the study of the Viks boat will be used in the analysis of the religious aspects of the boat burials. For instance, the orientations of the boats in the burials can in many cases be established by a comparison with the better-preserved Viks boat. The orientations are important for the interpretation of the burials, and in many cases the burials have to be reinterpreted with regard to orientation and to the religious aspects related to this. The value system visible in the use of space within the boats in the burials is closely connected with the orientation of the boats in the graves and partly related to the body metaphors used in ship terminology.

The sacred power of the ship symbol also is behind the fact that the ship’s shape and other features of ship symbolism are built into houses, including special houses like hall-buildings, military camps and the earliest churches. This custom, I will argue, is related in time and space to many aspects of what I call the maritime society.

8.1. Boats and ships found in bogs and lakes

In Scandinavia, models of boats are known from bog deposits since the Bronze Age. The earliest finds of real boats sacrificed in bogs and lakes come from Denmark. In Hjortspring, a ship was part of a war-spoil find dated to c. 300 BC (Rosenberg 1937; Rieck 1988). In the Nydam bog the remains of four ships were found, deposited as part of war booty in the Late Roman Iron Age (Engelhardt 1865).

In Norway there are many, though less known, finds from bogs that have a sacrificial context. The known Norwegian finds date from the Late Roman Iron Age to the Viking Age; Müller-Wille has listed 53 of these (1970). At least four of the moor finds consist of material for boat building, but the majority of finds are bog offerings of whole ships, some of them intentionally destroyed, as well as parts of ships. Unlike in Denmark, the majority of the finds derive from the Late Iron Age. Among the early finds are the well-known boat fragments found in a bog at Halsnøy, Norway and dated to around AD 400 (Brøgger & Shetelig 1950), and a find from Siljan, Telemark from the same time period (Røstad 2003:33). Of importance is the Migration Period find from Ullernmyren, Løten Parish in Hedmark, where axes were found together with a logboat. What makes this place especially interesting is the theophoric place-name Ullernmyren, which derives from the god Ull who is thought to have preceded the fertility god Frey, also associated with boats and ships (Müller-Wille 10 p. 189). Sacrifices of whole or larger parts of ships from the 7th century include Kvalsund, Herøy Parish, Møre og Romsdal (Hjortspring 1938); from the 8th century (?) the Bårdsset boat (Gjessing 1938); from the 9th century Fjørtoft, Haram Parish, Møre og Romsdal (Færoyvik & Fett 1943); and from the 10th century Rong, Herdla Parish, Hordaland. Also boat equipment, such as oars, could be sacrificed. One example is an oar from Sande by Jæren, which had been intentionally broken (Shetelig 1929:41).

Although all bog finds of boat parts are not sacrifices, it is generally assumed that most of them are. As Røstad writes: ‘When it comes to the interpretation of bog finds, there is a general agreement that the overwhelming part is sacrificial finds’ (2003:33). There are indeed many reasons for the occurrence of boats and boat parts in bogs. As we have seen, the deposition of semi-manufactured material in water was part of the building process in the prehistoric period. During this time fresh wood was used, and storing it in water kept it fresh so that it could be prepared later with axe and adze (see chapter 4). According to my analysis of the finds registered by Shetelig (1929), there are also many depositions of boat parts for use in boat building. Some finds also comprise the remains of boats from harbour sites, which through land upheaval and overgrowth have turned into bogs. This is probably the case concerning the many boat parts said to be from a bog at Vinnes, Strandviks Parish in Hordaland (Shetelig 1929:43 no. 12).

In Sweden the Örsmossen find (14C dated to c. AD 800) consisting of four more or less destroyed canoes, together with an anchor of Viking Age type from Åkersjö, Trollhättan Parish, Västergötland (Müller-Wille 1970:189), earlier comprised the only known sacrifices of boats or boat parts in bogs. Many boats had been found earlier, but forgotten. A contextual analysis of several of the boat finds from central Sweden indicates that the sacrificial deposits constitute a significant part of the ship-archaeological material. Some of the sites from central Sweden will be discussed below.

Figure 191. The distribution of sacrifices of ships and parts of ships. After Müller-Wille 1970.
What is important to observe in Müller-Wille’s analyse is that in Late Iron Age the sacrifices of ships and parts of ships almost only occur in central and north Scandinavia. Sweden seems to have had much in common with Norway in this aspect, and may also have shared religious beliefs behind these habits of bog offerings.

8.1.1. Traces of ship parts in early sacrificial sites in the Lake Mälaren Basin

My investigation of the finds of boat remains in central Sweden also included a contextual analysis in order to interpret the finds. It turned out that in many cases the boats were parts of sacrifices where the remains had been deposited either hewn to pieces or intact, and sometimes also had been burned after being hewn. They were occasionally found in connection with wooden constructions, built close to areas with open water in the bogs. Other parts of the sacrifices included bones of animals and humans, brushwood, branches, poles and wooden fragments that often had traces of fire. Weapons and jewellery could also form part of these sacrifices. In order to interpret the use of the ship symbol in a sacrificial context, and to see the distribution in space and time as well as to distinguish chronological and geographical differences, it is necessary to make a closer examination of these finds. My hypothesis is that the development of the use of the ship symbol in central Sweden is different from in south Scandinavia, and that the maritime aspects have been so deeply rooted in the ideology of this area that there is a continued and intensified use of the ship as a symbol even in a religious context. In the following, some of the sites that can shed light on this question will be presented.

Only a limited share of the finds has been analysed. Many of the other logboats recovered, which are not presented here, seem to have been intentionally destroyed, but since most of the finds were made in the 19th century not much is known about the find circumstances and it is not possible to exclude that the logboats were damaged during recovery. An investigation at the find-spots would be one way to determine whether this was the case, or if other artefacts indicate a sacrifice. This was done concerning the site for the many recovered, but not preserved, logboats in Nårtuna. This site was deliberately chosen because of the place name that included the name of the goddess Niœrdh (for a thorough discussion see Vikstrand 2001:94ff) written nierdhatunum in 1298 (5/6 Tuna Rap or.), which according to my hypothesis (see below) may be one of the deities that have a connection with the ship used as a symbol. In 2000 a geophysical investigation was made here, followed by a trial excavation in 2003. The results of the investigation of this site will be accounted for and compared with finds from other sites in this area.

Örsmossen, Tensta Parish, Uppland

The Örsmossen bog is situated on the border between the parishes of Tensta and Viksta, just 2 km E of the village Husby by the Vendel River in Tensta Parish. In 1912 the first find was made during a geological survey, and soon started an investigation of the bog (Sernander 1913). Soon the remains of an additional three logboats were found. Two of the logboats had been destroyed on purpose, smashed to pieces with the blow of an axe. The boats were found together with brushwood, branches and twigs. Furthermore, poles and wooden material were found in connection to a mound of stones with a wooden construction. This was a kind of platform built beside a small patch of open water in the bog, and to which a wooden trackway led, linking it to ‘dry land’. Around the platform were also seven white blocks of rock-flint, each of which was quite heavy, and also a thin layer of charcoal.

Figure 192. Destroyed boat cut to pieces from Örsmossen. UMF collections Photo Gunilla Larsson.

Lake Söderbysjön, Nacka Parish

A partly destroyed logboat (fig. 194) of pine was found in the southern end of Lake Söderbysjön in the dry summer of 1960 when the water level was low (Baugus 2001:63ff). Later, Stockholm’s City Museum took care of the find. The boat was radiocarbon dated to AD 980 ± 80 (St 784). It had been subjected to rough treatment during the rituals connected with the sacrifice. The boat had first been chopped to pieces with an axe, the sides hewn
away, and then burned in a fire that partly charred the traces of the cuts. Finally, it was thrown off a steep cliff, and it landed in the southern end of Söderby Lake below, at a depth of 2 m and standing vertically in the muddy lake bottom.

The site was probably a local sacrificial site. During the Viking Age the village of Söderby lay beside the eastern bay of the lake, with a small cemetery dating to the same time period and consisting of four mounds and six round soil-covered stone-settings.

Rickebasta, Alsike Parish, Uppland

In 1961, boat parts (fig. 195) were found together with a sacrificial deposit of animal bones in a bog south of Rickebasta (UMA; Hagberg 1967:77; Lundholm 1947:24; Mörk report AL archive) situated only 1 km east of the famous boat burials at Tuna in Alsike Parish.

The boat parts consisted of a bulkhead and a rudder-like item. The bulkhead resembled similar ones used in historical Sámi boats. It had limber-holes and seems to be of Late Iron Age type. According to Lundholm’s analysis (1947:24) the bones derived from three horses, cows and pigs, and were 14C dated to between 720 and 620 BC (St 3250). The remains were found while digging drainage ditches in the wetland east of the old main road to Uppsala. They were lying in detritus clay and thus had been deposited in open water. Beside the find-spot is a so-called *trefaldighetskälla* ‘Trinity well’, at which there had been annual gatherings, water drinking, and sacrifices in the historical period. The well is called Alkällan, and according to Pellijeff the element *al-* is related to the Gothic *alhs* ‘temple’ and the Lithuanian word *alkas* ‘sacred grove, sanctity’ (Pellijeff 1967:132). Stefan Brink (1992:116), who has discussed this word, has offered some criticism and is of the opinion that this meaning, ‘temple’, is extracted from words in old religious literature. He sees, however, as a possible interpretation of *alh* in names like Albjerg and Alboge the adjective ‘protected’ and perhaps also ‘holy’ (sacred). The religious component in place names with *al*, he stresses, must be confirmed by the qualifying element and not by *al* in the main element, as exemplified by Fröjel in the parish name on Gotland. The etymology and occurrence of the word has been thoroughly discussed by Per Vikstrand (2001:191ff). The same interpretation as for Alkällan can probably also be given to *al-* in the parish name Alsike. Here were also remains of structures. South of the find-spot, on a terrace, Hagberg has observed a monumental, stone structure of unknown age (1967:77).

Earlier, before 1907, a spearhead had been recovered in the same field (UMF 5572). In the general vicinity, a Roman handle for a vessel shaped like a lady (UMF 3902) was also found, in a clay pit west of the main road. A similar handle is known from Källa, Öland (letter J.P. Lamm UMA). Closer to Tuna, in a potato field belonging to Storgården, Tuna village, a bronze arm-ring was found (UMF 1709).

A probably contemporary find with the same species of animals and also the remains of dog and humans came to light in 1934 in Björklinge River, Lövsta, Bälinge Parish, Uppland (Lundholm 1947:24 f). No boat parts are mentioned in the find record. The site is dated by means of pollen analysis to the Bronze Age, a date that is uncertain due to the impact of the stream (Hagberg 1977:78).

Bokarn, Stavby Parish, Uppland

The remains of a sacrificial site, including a find of a boat’s rib, were investigated by Rutger Sernander and Nils Sundquist in 1939 and by Bengt Lundholm in 1941 (Lundholm 1947:21 ff). A platform was found here, built of poles, branches and stones. On the platform bones of humans, cattle and pig were recovered, as well as flax. Bones were also found outside the platform, and here bones of horse dominated. Especially notable were the skull and the legs from one horse, cut below the knees. The site has been pollen-analytically dated to the Bronze Age (Hagberg 1967:77). The same combination of skulls, extremities and tail vertebrae was also observed at the sacrificial site at Skedemosse,
Öland (Hagberg 1967;59) as well as at Sallmuns, Hamra Parish on Gotland (Lundholm 1947:21 f). An investigation of the archival material yielded no written information about the boat remains, but the photographic material (Uppland Museum archive) shows several boat parts. The rib is probably from the Late Iron Age since it is fastened with wooden dowels.

**Lundby, Husby-Långhundra Parish, Uppland**
The logboat of spruce (!) that had been intentionally destroyed (?) was found in two parts in 1858 in the fields of Lundby village, Husby-Långhundra Parish, Uppland. The boat had originally measured more than 6 m in length (SHM 2805). Under the boat lay a spearhead with a square, bayonet-shaped blade (SHM 3222) of the same type found in about ten examples in Skedemosse, Öland (Hagberg 1967;70) as well as in the famous Danish war-spoil finds from Nydam (Engelhardt 1865:28, pl. XI fig.43), Vimose (Engelhardt 1869:21, fig. 23) and Kragehul (Engelhardt 1867:5 Pl II fig 7, 8; pl. III fig. 14). The fields of Lundby village all lie in the same area, on the gentle slope towards Østuna River. A twisted finger-ring of gold (SHM 8546) from the 11th century was found in the same fields at Lundby in 1889 during agricultural work, which suggests that we might be dealing with a site of continuity. The connection between the finds might be coincidental, but in favour of the interpretation as a sacrificial site is also the name of the village: Lundby. Undoubtedly the name refers to a lund, a ‘(sacred) grove’, and here again we are dealing with a possible link to a prehistoric sacred grove in a wetland area where sacrificial finds have been made. On the opposite side of the valley is Höns-gärde, Husby-Långhundra Parish, where in a wet part of a field a prehistoric, expanded logboat was found (privately owned) during agricultural work, and somewhere in the vicinity also a Roman gold coin – an aureus for Emperor Nero (AD 54–68) (SHM 8240).

**Flyan, Östuna Parish**
Flyan in Östuna Parish is one of the interesting wetland sites discovered by the observant machinist Gunnar Skoglöv during drainage work. At this place he saw longitudinal and transverse timbers that were more or less prepared (Hedlund K., UNT 19/7 2001). The logs were placed side by side with remaining branches, at an angle 90° to the ditch, constituting an obstacle for agricultural work. One of the farmers who had cultivated the land, Åke Johansson, informed that there were other obstacles of wooden objects of the size and shape of a sunken charcoal barge, which might be the remains of such a vessel, although Skoglöv is sceptical of this (oral information August 2006). He had earlier worked in Stockholm harbour, and that was the reason for his association. One of the prepared logs has been 14C dated to c. 1675 BC. Bronze Age sites with wooden constructions in former lakes are known from Scotland, usually called ‘crannogs’ and functioning as dwellings on constructed islands or platforms in the lakes. Similar constructions with widely dispersed dates and functions are also known from lakes in other parts of Europe.

**Vreta, Värmdö Parish, Uppland**
In a bog close to Vreta Farm on Värmdö, two boats, a raft, a paddle, prepared logs and planks have been found. The former lake was isolated from the sea already in the pre-Roman Iron Age. One logboat of a single log (SHM 19248) has a date to AD 940 ± 70 (ST 5918, uncal.?). The other dugout (SHM 21 232) was pollen-analytically dated to the Migration Period (Granlund E. 1933, ATA), but has received a 14C date to the later half of the 17th century AD: BP 285 ± 100 (Westerdahl 1980:12 St 5919). The boats have been in the care of the Museum of National Antiquities for a long time, and the 14C values may have been deeply affected by some treatment with conservation chemicals that was commonly given to boats in museum collections. In the early 19th century, for instance, creosote together with linseed oil was often used, and this was also recommended for boats in the collections of local museums (Birgitta Håfors, personal information). What indicates a sacrifice here is that the remains were found in a small area and in connection with a trackway or pier constructed of a log and a couple of planks, leading towards the place at a right angle to firm ground. The find circumstances are uncertain, but worth a closer examination.

**River Altunaån, Eneby, Altuna Parish, Simtuna province**
In connection with river dredging in 1929, planks that could derive from boats were recovered together with human and animal bones, remains of a wooden construction, polished sandstone, burned clay, horizontal logs and pointed poles, brushwood and branches, as well as burned pieces of wooden artefacts (letter to G.Hallström from K.A. Karlinder 1929 ATA Dnr 2212/1929). In addition, the place-name element al- indicates a religious context (see above).

**Sigridsholms Lake, Lunda Parish, Uppland**
In Sigridsholms Lake at least two boats have been found in the same area as several sacrificial deposits. From at least the Bronze Age and up to the end
of the Viking Age, the area around this lake was a central cultic site of high rank, probably of regional importance. In the northern part of Sigtuna's Lake, in an area approx. 200 x 200 m, several sacrificial deposits had been made. Here bones of horse, swine and sheep were found (report Claes Varenius, ATA, Lunda Parish), as well as two boats (ATA Dnr 3508/63, 5047/63 and oral information from present landowner); jewellery from the Bronze Age and earliest Iron Age was found either by ploughing or during a small investigation at the find-spot (Sander 1986, unpublished report). In this deposit were artefacts such as a so-called wendel ring with traces of gold cover, arm-rings, foot-ring and needles, but also tools such as bronze celts (one of ordinary size and two miniatures). In the same area remains of weapons were found in the 19th century, including a well-preserved, Late Iron Age sword of unusual type with inlays of copper and silver on the hilt (SHM 6742). The parish name Lunda, ‘(sacred) grove’, indicates that there may have been a holy grove here.

As with many other central cultic sites, the gatherings for religious rituals were held in conjunction with the summoning of a regional court, in this case the thing of the folkland, the court for Attundaland. At an early date this gave rise to a marketplace or town, Folklandstingsstad, where the market activities were forbidden by the king in the 14th century in favour of the nearby town of Sigtuna. The exact location has not been established, but in several places by the eastern side of the lake and in the vicinity of Lunda Church there were finds of house remains and early medieval artefacts of an urban character.

It is hardly surprising that there has been a need for facilities to ease the communications to this place of regional religious, juridical and commercial activities. The portage ditches at Sjöås enabled the people from the western part of Attundaland and Seminghundra hárad to arrive by boat from Lake Mälaren and the western water routes.

**Islandsfallet, Fyris River, Island*, Uppsala**

In its lower parts the Fyris River through Uppsala has been a sacrificial site, and boat parts together with a concentration of finds were recovered from the eastern riverbank below Islandsfallet in the vicinity of the present harbour. The remains of a larger ship were lodged in the shore, and from time to time parts of these remains surfaced during the work at the site. Together with the boat, at the same place and depth, a human skull and a spearhead were found, and in the vicinity lay an iron cauldron that was later sold by the worker (UMF Inventarjet 10 May 1884). The recovered boat parts by Islandsfallet consisted of two pieces of strakes with preserved rivets (UMF 2094-95), though no traces of these remain today. The human skull was given to the anatomical collections. Preserved from this site in the UMF collection is the spearhead of Petersen type E from the 9th century (UMF 121). The other finds from the same area were also possible to date to the early Viking Age (Ljungkvist 2006:173ff); these consisted of another spearhead (UMF 121) and a complete sword (UMF 119). Given the 5-metre sea level of the Viking Age, the finds here had been deposited at least 100 m from the shore in what was then part of the open water area called Föret. The estate known as Island by the east shore was a royal estate during the Middle Ages (Sundqvist 1953:122). It was during this time that the Distings Market was moved to the ice on the Fyris River, somewhere in the vicinity of this place.

A large number of weapons have been found in the Fyris River, almost all of them during the dredging of the river in the 19th century. The finds are both from the Iron Age and the historical period. These have been analysed by Ljungkvist, who has concluded that 21 weapons and weapon details were possible to date to the Viking Age (2006:173ff). Among them were miniature axes found at Nybron (Ljungkvist 2006:176), but almost all of the other finds were made during dredging of the harbour (below Islandsfallet) and when the sides of the river below Kvarnfallet were reinforced with a stone wall. Under Drottninggatan and the house in the northern corner towards Östra Ågatan, a ship was found in the mid-19th century (see chapter 3), sunken in what was then the inlet of the Viking Age harbour. The ship may have been left at the place, but it could also have been deposited since so many weapons were found in the river nearby. The harbour bay reached into and around Stora Torget, where many boat parts have been recovered, such as a steering oar (under Åhlens department store) and rigging details (UM collections). A peculiar find from the same site is a baptismal font of wood, whose presence is difficult to explain at a harbour location. Many boat parts were found in the 1960s and 1970s during the excavations at Rådhusstorget beside Kvarnfallet and the river crossing, but the parts were not kept and preserved. From the city block called Rådhuset, immediately east of the area of weapon finds, boat parts were recovered and saved during excavations in 1972 and 1976 (Sundqvist 1948; Anund 2000).

Some of the weapon finds from Föret and the river might be connected with the battle ‘on the ramparts beside Föret’ known from ON sources and runic inscriptions (Dr 279 and Dr 295-297). However, this does not explain the dispersed dates or the fire treatment on some of the weapons, which shows that some finds are part of a ritual deposition. At the river crossing, probably by Kvarnfallet,
in 1221 (KÅ 1914:469ff), but the earliest dean at this Vårfru/St. Mary church is known already in a document of 1164–67, which indicates that a church institution existed at this time (Ljung 222, 398). Around the year 1300 it was replaced by a church with brick walls (Rahmqvist 256). As mentioned, a royal estate was situated in the southernmost part of the town, called Island (1338) or Konungsgårdenom (1424), beside Foresæng where King Erik Eriksxon and Queen Katarina celebrated their wedding in 1243 (Rahmqvist 1984:255). A king’s mound also was situated on this side of the river close to the Franciscan monastery, giving the block its name: Kumungshogh in 1407 (SD 891) and Konungshoghen in 1410 (SD 1340) according to Rahmqvist 1984:277).

The development of Uppsala has come in focus in the latest years, after several investigations (Anund et al. 2000; Ljungkvist 2006). As mentioned, several villages existed in the area where the town later was established, such as Ovanberga, Rickomberga and Billinge (DMS 1:2). The finds indicate that these villages, which at an early stage were incorporated with Östra Aros, were established in the Late Iron Age (Anund 2000:15).

**The site at Helgö, Frösunda Parish, Uppland**

In the Helgö Lake at Helgö, ‘the holy island’, a trackway of logs led to a place around which were found boat parts such as floor timbers with remaining wooden dowels, a curved item that probably was a stem or frame, and part of a large, stave pail (Schnell 1989, ATA; Skoglöf, personal information). The investigation was conducted in 1989 by Johan Hegardt and has not yet been published. In the permit granted by the regional antiquarian Schnell, it is written: ‘During earlier digging in the former Helgö Lake wooden details, of which some derive from boats, have been recovered’, and, ‘The piece of land that you plan to investigate contains on the whole a large amount of wooden material, of which a large part has turned out to be constructed’ (Schnell 1989, ATA Dnr 0430/89). The arrangement, the artefacts, and all the more or less prepared wooden material resemble the situation at Örmsösen and Käringsjön. As at these sites, the find material at Helgö points to a holy sacrificial site, and this is strengthened by the place name. Karin Calissendorff (1991) has discussed the place name Helgö and interprets this Helgö as an important place with proclaimed peace for some reason, not necessarily for cultic activities, but also for trade, leidanger, or other activities.

In connection with the interpretation of this site, it should also be kept in mind that it is situated only a few kilometres below the remains of a presumed dam construction, which is interpreted by Bo Gräsland (1986) as created in connection with the ‘batt-
tle at Á in Helga River’ in 1026. As described in Óláfs saga Helga (chapter 150), when King Canute entered the mouth of the river his opponents, King Olav of Norway and King Onund of Sweden, had the earlier built-up dam breached so that the river flowed along its bed and caused great damage to Canute’s ships. As can be seen on the map, Helgö is situated close to the innermost part of the bay of the sea when the Viking Age water level is taken into consideration. The fragmentary and broken boat-parts recovered here and in the vicinity, may also be from destroyed ships during this occasion, if the hypothesis by Gräslund is correct.

Lake Nasen, Kjula Parish, Södermanland

At the western and southern shores of Lake Nasen, boats were recovered after drainage projects in 1936–1937. The boat in the bog by the western shore of the lake is a treenailed, clinker-built vessel that had been smashed to pieces with great force. Treenailed boats are mainly known from the west Slavonic boat-building tradition of the Viking Age and Early Middle Ages. It was from this area that the Wendish pirate raids on the shores of Scandinavia in the 11th to the 13th centuries originated. One interpretation is that the ship of an attacking, conquered enemy had been destroyed and sacrificed in a local, holy lake. The boat remains are still in the bog and have unfortunately not been recovered. The exact find-spot is not known today, but thorough antiquarian documentation with photos and drawings was done by J. Schnell after the discovery (Schnell report ATA, Dnr 2709/37). The boat from the southern shore is less well documented, but it is known to be a logboat. No other information exists about the find circumstances (ATA 2795/36). The boat remains were pollen-analytically dated to the 1st millennium AD by C. Larsson (report ATA, Dnr 4755/37).

Lake Igeltjärn, Torsåkers Parish, Gästrikland

A lake with an agglomeration of sunken boats is Igeltjärn in Torsåker Parish, Gästrikland. In the NE part of the lake were found more than 20 boats during lake lowering in 1882 and 1897 when the level of the lake was lowered a total of 3 m to prevent water from pouring into the limestone quarry nearby. The boats are said to have been about 5 m long and made of single hollowed-out logs with a curved stem and stern and a sheer line rising towards the stem (Eriksson report Torsåkers Hembygdsförening). The description of the boat type, i.e. the curved raised stems, indicates an Iron Age date for the find. While digging ditches by the shore of the small lake, on land belonging to Wall village, another boat was found that was similar to the others. This boat was documented by an expedition from Nordiska Museet in 1920 (fig. 196). For a long time it was missing, but in 2001 it turned up again at the local museum in Torsåker, and was C14 dated to between AD 890 and 1030 (1 σ, Ua-18692).

Figure 196. Drawing of one of the boats found in Lake Igeltjärn. NMA.

Lake Goxen, Torsåkers Parish, Gästrikland

During peat digging in a bog beside the drained lake Goxen three more boats were found in 1936 (report Carl Larsson SGU, ATA Dnr 2000/37, Leander report ATA 2536/37). Like the boats from Igeltjärn in the same parish, the find was a logboat hollowed out from a pine trunk. Although there were only one or two boats here, the context of this find is reminiscent of more well-known bog sacrifices in that the same layer yielded broken pieces of wood or planks cut into pieces, twigs, prepared wooden material, as well as several large stones (Leander report ATA Dnr 2900/37). The boat itself was broken, the sides and the stern part completely missing, and it had been placed upside down on a birch log. A geologist who visited the site interpreted the find as a parallel to Örsmossen. Samples were taken for a pollen-analytical dating, and it resulted in a probable date to ‘the centuries just before the birth of Christ’ (ATA Dnr 2305/41). This boat is in the collections of the local museum at Torsåker, and the find-spot is registered in the National Survey for Ancient Monuments (RAÄ 116).
It has been dated by C\textsuperscript{14} to AD 1040-1240 (1 \sigma, Ua-
18693).

\textbf{Bolsrudssjön, Ekeby, Söderby-Karls Parish}

A logboat was found already in 1891 in the now completely drained lake Bolsrudssjön, when the drainage work was done (EM). Another logboat, almost complete, was found in 1919. Whether or not these finds had a connection with the find of a bronze celt (EM 261) is not known. The lake was very small, and it could have been used as a sacrificial lake like, for instance, Sigridsholms Lake in Lunda Parish. The bronze axe was found already in 1914 ‘in boggy soil in old lake bottom’ (Unestam 1954:369).

\textbf{Munksundsgatan, Enköping}

The ship find from Munksundsgatan would have been interpreted as left on the shore if not for the sacrificial deposit at the place. It cannot be seen as a closed find, but the context makes an interpretation as a sacrificial find possible. Under Munksundsgatan, in 1903, about 20 coins from the 11th century were found, as well as a stone seal and a chain and a dagger (Wisehn 1989; ATA, KMK top. Ark.; Nerikes Allehanda 27 August 1903; Strengnäs Tidning 28 August 1903.).

8.1.2. The investigation of the sacrificial site at Lake Hederviken, Närtunaby, Närtuna Parish, Uppland

The name Närtuna, the tuna (‘enclosed space’) of the goddess Niærdh, may be related to the fertility goddesses, which often are assumed to have had the boat as a symbol. Niærdh is only known as (genitive) OSw Niærdhar, which according to Vikstrand (2001:94) corresponds to OWN Njørdr. It is etymologically identical with an (Proto-Germanic) *Nerþuz and ought to correspond to the goddess Nerthus in Tacitus’ text (chapter 40). A variant of her cult may be the worship of Nehalemmia. She is often speculated to be the Isis described by Tacitus. On a Roman votive stone from Walcheren, Holland she is depicted standing with one foot in a ship (Helm 1913:383). At an early stage my attention was drawn to this site, and I wondered whether this could be a place for a deposit of boats in a religious context. My research was well rewarded. In the wet fields drained from the former lake Hederviken below Närtuna Church in the areas belonging to Prästgården, Närtuna Parish, Uppland, the remains of at least seven boats were recovered. At least one of them was found at the same spot as finds of human skulls, wooden pieces, some partly burned carved fragments, poles, brushwood, branches, twigs, a slate whetstone, and other artefacts belonging to a sacrifice that had been investigated already in 1924 (Niklasson 1924:224). The site was well suited for further investigations, since the exact spot for the older finds was known by local inhabitants and could be pointed out.

The site was until the 19th century a lake bottom of the shallow Hederviken, which on older maps is called Hellviken. The name derives from Heligviken ‘the holy bay’ and is related to the name Helgá ‘the holy river’ which from the north runs into it, and which also gave name to the Iron Age village situated beside it: Helgaby.

Hederviken was part of the ‘Långundra River route’ and easily accessible by boat from all parts of Attundaland. In an angry letter to the inhabitants of Långhundretz häredt, Seminghundretz häredt and Åkers skepslagh in 1531, the king complains about the buildings in the river route that are obstacles for traffic in the river, and states that the inhabitants of the archipelago need to be able to come to ‘the place in Närtuna long ago called Foleke-
landstingh with salt fish and get grain in return’ (20 April 1551, copy in ATA Närtuna). The location of this earlier marketplace can be established by means of an old map, private-owned; the map has a sign with the words ‘former marketplace’ on the island of Öbacken, located right beside the sacrificial site.

\textbf{History of recovery at the find-spot}

The largest finds came to light in 1924 in the same place as one of the boat finds. They were made in connection with drainage work, i.e., ditch-digging in the meadow (SHM 17559). They consisted of carved, wooden fragments, some pointed wooden pieces (some partly burned), brushwood, branches, a bark float, a sinker weight of stone wrapped in birch bark, a slate whetstone, and skulls (fig. 198) and bones from at least five humans (Niklasson 1924:224, ATA Dnr 1884/24). The human bones were dominated by skulls, but a collarbone was also found. A similar combination of human skulls and only larger extremity bones is known from a sacrificial deposit in Venmerlöv, Scania (Studier tilläg-
nade Oscar Almgren 1919: 160).
A log boat in a ‘wet meadow by the lake Hederviken’ was found ‘not far from the church’ in 1931 (Oldeberg 1932, unpublished report), about 500 m SW of the 1924 find. The boat was investigated by the museum lector E. Klein and the geologist E. Granlund. The boat had an extended ‘pointed’ stem that may indicate a Late Iron Age date, like the similarly equipped boats from Sundby, Spånga Parish and Rikssten (see chapter 3). This should correspond well with the pollen-analytical date suggested in the report, namely AD 700–1050 (Granlund 1932, unpublished report).

It was not long before more boats were found in the same area as the find of 1924. In 1952 three logboats were unearthed by Hederviken in the ‘clay of a field belonging to Närtuna Prästgård’. The local archaeologist G. Karlsson documented several of the finds at Hederviken with drawings and descriptions. One of the logboats was donated to Maritime Museum Åland in 1961 (appendix to protokoll Arbetsgruppen Långhundraleden 29/2 1980).

Soon afterwards, in 1962, the former tenant of Prästgården field, E. Andersson, reported to the authorities that in the 1940s a find had been made 50 m SW of Öholmen and 800 m S of the church. This was a piece of a four-metre-long logboat made of oak, which Andersson showed to the antiquarian Alf Nordström. He also pointed out a similar find made at Hederviken 200 m W of Öholmen (ATA Dnr 3508/62), which was 5.45 m long, 0.7 m wide, preserved to a height of 0.15 m, and made of oak. In the aft it had a bevelled place for sitting, and amidships the bottom was slightly raised. The first of these two finds is from the part of the field where the finds from 1924 turned up. During the following decades at least two more skulls were recovered here during agricultural activities and burials in the churchyard.

In the 1960s another boat was found (Raä 291), situated approx. 650 m NW of the find from 1924. This log boat was documented by Lars Löstrand in 1969 and then covered again. It measured 6 x 0.9 m (Lövstrand, unpublished report 1971).

The valley and the former lake Hederviken form the border between Närtuna Parish in Långhundra härad and Frösunda Parish in Seminghundra härad. In the same lake, but at Löstra village on the side of the lake that belonged to Frösunda, more boats have been recovered. The site is only some hundred metres west of the investigated area. Here a logboat of oak (Hallström 1943, unpublished report), partly broken and sunken with stones, was found in 1943 together with broken branches, brushwood and some prepared wooden fragments, which give this find the same ritual context as the Närtuna site. In the same area, by the west shore of Hederviken, the remains of ribs from a clinker-built ship were visible in the 1980s, according to the landowner I. Jansson.

The geophysical investigation in 2000
The find-spot for one of the logboats and the 1924 find was pointed out by the tenant of Prästgården Farm in Närtuna, to which the area belonged. The investigations began with geophysical measuring to see if any traces of constructions and more remains could be identified in the area. This was done by Gerhard Schwarz from the Geophysical Department at the Swedish Geographical Survey (SGU) in June 2000. A very sensitive cesium magnetometer was used. It could react to magnetism deriving from a magnetic bacteria living in old wood, and thus indicate possible boats and constructions in the field. The measurements were taken in rows at 0.5-1.0 m intervals within a coordinate system.

When the measurements were processed by computer, they showed a square-shaped anomaly in the northern part of the area, and another anomaly that looked like part of a bigger boat with the southern end outside the measurement area (fig. 198). The signal was reduced towards the central part of this anomaly, which could correspond well to the presence of a boat that is deeper in the centre and thus further away from the instrument, giving a weaker signal.

As can be seen, also diagonal anomalies run across the measured area. Already at the start these were interpreted as the ditches made in connection with drainage in the field in the early 20th century.

The archaeological excavation 2003
The site for a trial excavation was chosen on the basis of the geophysical measurements. In 2003 a test-pit was opened in each of the two most signifi-
cant anomalies: one at the edge of the square-shaped anomaly, and one transversely across the boat-shaped anomaly. Both test-pits touched upon a diagonal anomaly running across the measured area.

The results of the test-pit at the square-shaped anomaly showed that here had been a wooden construction, now completely mouldered and visible only as a brown-coloured layer against the lighter, dry clay. Also traces of poles outside this structure were visible in the same way. The strong signal running transversely across this part of the field derived from a concrete pipe placed in one of the ditches during the drainage work, which later had been covered and which extended towards the main ditch.

The test-pit across the boat-shaped structure had just as little success regarding the preservation of wood. In the bottom of the ploughed layer was a dark brown layer deriving from mouldered wood. In the section it could be seen that this had been a clinker-built vessel with a keel. In the lowest part of the fallen-out hull, the dark-coloured layer was thickened and possibly derived from a low, T-shaped keel. In the overlap of the strakes, the contour of the brown soil was thickened. Deeper down in the bottom of this test-pit, which in the west end was taken down to 1 m depth, lay preserved wood from branches and poles. These remains were at the edge of another ditch running through the area and visible in the measurements. To find out whether these belonged to the time of the ditch-digging, or to the archaeological finds made on this occasion, a 14C analysis was undertaken. However, it turned out that the dated material was contemporary. It belonged to the filled-in material, i.e., branches placed here to make the water stream downwards towards the main ditch in this covered drainage ditch.

What was of interest here, however, was the completely decayed bone material at the west end of the test-pit. The material could not be recovered since it was now only bone-coloured images against the darker cultural layer, but thanks to the presence of a former medical doctor among the assisting amateur archaeologists from the association Långhundralden, these bone remains could be identified as to species. Bone meal from two pairs of bones, tibia and fibula, standing vertically in the soil derived from a man placed almost ‘standing’ in the clay. Other bone-colourings could be identified as from horse.

**Interpretation of the results**

The square-shaped anomaly clearly derived from some kind of platform built in the ‘holy lake’ and probably surrounded by poles. Beside this construction, boats and artefacts, humans and horses, branches, brushwood and more or less prepared wooden pieces had been deposited. A 14C date from one of the skulls (SHM 17 559) indicated the Viking Age (1075 ± 40 BP uncal. UA-23076). It cannot be excluded that the place has had very long continuity as a sacrificial site, as can be seen from other places (see below), but the 14C date and the construction of the boats show that this sacrificial site was in any case used in the Late Iron Age. The find of human remains also show that this place was highly ranked in the hierarchy of sacrificial places, and like Skedemosse on Öland (Hagberg 1967) it may have been the collective place for sacrificial rituals for the inhabitants of a whole land. Concerning Skedemosse, it was probably intended for the population of Öland, and in Närntuna it could have been the place for religious assembly of the population in Attundaland. In Gamla Uppsala the Disathing (UL) was, according to Snorri, earlier accompanied by religious activities at the disablót, and also a market was held on this occasion (Ólaf’s Saga Helga ch. 77). There is an indication in a letter written by King Gustav Vasa himself, as we have seen above, that the thing of Attundaland, _folklandsdathing_, took place here on some occasion, and old maps also inform us that the marketplace was at Öbacken beside the present-day excavation site.

Skedemosse, a site discovered in 1959, is the most well-documented, sacrificial site in Sweden and may be comparable to Närntuna in many ways (Hagberg 1967). The artefacts recovered showed that sacrifices had been recurring events during a longer period, from at least the 3rd to the 5th century AD. Human bones from men, women and children were found, as well as animal bones that mostly derived from horse but also pig and other species (1967:428). In addition, weapons and jewellery were recovered.

The island of Öbacken as well as the platform, like a ‘constructed island’, brings to mind Tacitus’ description of the wagon of Nerthus kept on a holy island in a lake, and how the slaves who washed the image were sacrificed in the same lake:

In an island of the ocean there is a sacred grove, and within it a consecrated chariot, covered over with a garment. Only one priest is permitted to touch it. He can perceive the presence of the goddess in this sacred recess, and walks by her side with the utmost reverence as she is drawn along by heifers. It is a season of rejoicing, and festivity reigns wherever she deigns to go and be received. They do not go to battle or wear arms; every weapon is under lock; peace and quiet are known and welcomed only at these times, till the goddess, weary of human intercourse, is at length restored by the same priest to her temple. Afterwards the car, the vestments, and, if you like to believe it, the divinity herself, are purified in a secret lake. Slaves perform the rite, who are instantly swallowed up.
by its waters. Hence arises a mysterious terror and a pious ignorance concerning the nature of that which is seen only by men doomed to die. (Germania ch. XL, transl. by Church & Brodribb 1876)

Though Tacitus must be regarded with scepticism, because of the distance in time and space from the events and peoples he describes, this site may provide some support for a cult of a goddess, whose name may have derived from Nerthus (see Vikstrands discussion above page). Närtuna means the enclosed place by a fence of/dedicated to the goddess Niærdh. This could well be the platform construction surrounded by poles. The connection between Niærdh and the ship-symbol has by this investigation received support. Neither the big ship nor the dugouts could have been used for transports to the site since they had been left there and not carried their passengers back to shore. Instead they were part of the sacrificial deposits at the site.

8.1.3. The context of the ship sacrifices: an interpretation

The different ship-sacrificial sites recorded from central Sweden have many features in common, as is clear when examining the context of the finds. In many places there are built constructions, both platforms and pavements, and very often branches and brushwood are found, occasionally even complete logs. In some cases the objects have traces of fire. A common feature is also the deposition of animals, and sometimes also humans, especially skulls. More seldom, weapons and jewellery have been deposited together with the ship remains. What is interesting is the long continuity, with dates from the Late Bronze Age to the Late Iron Age. The main features of the finds are listed below, and they will be discussed here and interpreted in order to understand the function of the finds, their position within society, and the ideas behind them.

<table>
<thead>
<tr>
<th>Location</th>
<th>Boats</th>
<th>Humans</th>
<th>Animals</th>
<th>Platform</th>
<th>Stones</th>
<th>Branches</th>
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Table 28. Sacrificial sites of central Sweden, based on information in ATA and UM archive.

Abbreviations:

Animals
a Horse (r rindern)
b Cow
b Dog
b Sheep
c Hen
f Bird
b Pig

Stones
w White stones

W Weapons
H Household items
By fire and water to eternity

The smith Peter Johansson, who has analysed swords, and Eva Hjärthner-Holdar have noted that sacrificed iron objects, such as weapons, have been treated with fire prior to deposition in wetlands, lakes and rivers. The most obvious case is the bent objects, such as swords, that had to be heated 500-600 °C in order to be soft and bendable. A thorough microscopic analysis often reveals a fire crust as well, a result of the fire treatment (Hjärthner-Holdar oral information). Previously it was thought that the Celtic sword had not been hardened. But as Peter Johansson has observed, most of the remaining swords are found in water, often in a sacrificial context. Because of the fire treatment with temperatures around 500-600 °C, all traces of hardening of the steel have been lost.

Boats and ‘offerkast’ ‘sacrificial throwing’

A feature often seen together with boats in the sacrificial sites of Örsmossen, Närtuna, Lövsta in Frösunda and many other places is the presence of large amounts of wooden pieces, branches, brushwood, logs and other things related to trees. So-called offerkast ‘sacrificial throwing’ is known from ethnological documentation and has earlier been discussed in relation to archaeological sites such as Kärringsjön (Arbman 1945:104; Erixon 1917:3ff; 1929:117).

Brushwood

Large amounts of brushwood mainly occur at the ship-sacrificial sites that have been subject to a more thorough investigation. In ON sources I have not found many references that can illuminate the ideas behind this habit, but in contemporaneous sources from the Mediterranean there are descriptions of important religious rituals involving both trees and brushwood. In the Philocalus calendar from AD 354 we learn of the big, spring festivities in Rome during the vernal equinox, which began 15 March with canna intrat, that is, with ‘the arrival of the brushwood’. In an inscription from Ostia a funeral association was called Cannaphori ‘brushwood carriers’ (Näsström 1986:75), showing that there was a connection between brushwood and the rituals connected with the rebirth of nature in the spring festival, as well as with the death rituals that probably in turn were connected with the rebirth of human life itself.

Trees

Whole trees, too, are often found in connection with boat finds in bogs and lakes. I have been hesitant to include this in the account of sacrificial sites, but there might be a religious context here as well. In central Sweden one such site is Salsjön in Edsbro Parish, where two logboats were found along with many peculiar finds of complete logs from trees, as well as big branches that have not been possible to explain with natural causes (Wiséhn 1984, unpublished report). Another place is Yxjärn, Dalarna, where many trees, branches and logboats were found but not removed from the site. At many of the sites above, logs and branches were also recovered, such as Bokarn (Karlsson 1941, report UMA), Närtuna, Lövsta in Frösunda, Ullentuna, Altuna, Rickeby (Knutsson report UMF archive), Tadem and Örsmossen.

Concerning the religious ideas and cultic activities related to trees, we are well informed from the Germanic area, and the widespread idea of ‘the world tree’ in both Europe and Asia has been much discussed (Bugge 1881; Palm 1948; Ström 1961; Hultcrantz 1996; Andrén 2004). As with the brushwood, parallels are found in the Mediterranean, which may be of interest, since they refer to a period when the contacts with the Roman Empire was intensified, as evidenced by the archaeological material (Stenberger 1979; K. Andersson 1997; Roman reflections in Scandinavia 1996). Here it was in connection with rituals associated with death and rebirth at the vernal equinox. During these spring festivities in Rome, which lasted several days, we also find that 22 March is called ‘Arbor intrat’ ‘the arrival of the tree’. This is the day of the vernal equinox itself, when according to Julianus the holy tree was felled. This was then carried in a procession by ‘dendrophori’ ‘tree carriers’. The tree was here a symbol of Attis, who represented death and rebirth.

Also other aspects of the spring festivities may have influenced the rituals in the North. The day after Arbor Intrat was dedicated to Mars, a day ‘when the trumpet sounds’ (cf. rituals in rock art!). 24 March was Sanquem, when the priests in analogue with Attis performed self-castration rituals. The succeeding day is of great interest for parallels with Scandinavia, namely 25 March, which was called Hilaria and devoted to Cybele. According to Julianus, Cybele was ‘the mother of all gods and humans’, and on the day honoring her there were joyful festivities as well as a procession. Cybele is the goddess in Rome who probably comes closest to the North European mother goddess; she is known by different names and there are similarities with the cult of Nerthus as described by Tacitus (Germania, chapter 40). After the procession during vernal equinox the image of Cybele was washed, just as was the case with the image of Nerthus according to Tacitus (Germania, chapter 40). Though there is a big distance in both time and
space, and it is very speculative, it is also interesting to consider that the day dedicated to Cybele may well be the same day as when the disablót took place, i.e., the biggest sacrificial rituals interpreted as originally devoted to 'the big dis' i.e., Freya (Näsström 1995).

Twigs

The smaller twigs that occur at many of the ship-sacrificial sites are known from Scandavia in another important ritual context – the divination ritual (Noreen 1925:224; Sundqvist 2000:199, 2002). The existence of hlauttein ‘lot-twig’ is attested from lausavísa (c. AD 980) by Thorvald Kodransson (Skj.Bi, p.105). Here it is said that the Christian skald was mocked by ‘the one who threw lot-twig(s)/bough(s), the servant (?) of the gods (at hreyti hlautteins göda sveini)’. Sundqvist has thoroughly studied the divination rituals in the Iron Age, and he refers also to other words associated with this lot-twig used in divination rituals. Such words include blótspáinn and hlautvör (2000:199). He has also found it used in a kenning in Vellekla (st. 30 in Skj.B1. p.122), where there is mention of teinlautar þyr ‘the god of the lot-twig’, referring to a ‘diviner’ (Earl Hakon) (200:199). Divination rituals, without mention of the methods used, are described in many places in early sources, such as in Vita Anskarii where in chapters 19, 26 and 30 lot casting is used as a method to find out the wishes of the gods among the Swedes. The first mention is in connection with the description of the naval attack on Birka led by King Anund. He had been driven from his kingdom and was in exile in Denmark, but returned with a fleet of 11 of his own ships and 21 ships of the Danes. After having reached Birka, he and the troops had to make decisions about continued operations with the help of lot casting:

Meanwhile the king proposed to the Danes that they should enquire by casting lots whether it was the will of the gods that this place should be ravaged by them. “There are there,” he said, “many great and powerful gods, and in former time a church was built there, and there are many Christians there who worship Christ, who is the strongest of the gods and can aid those who hope in Him, in any way that He chooses. We must seek to ascertain therefore whether it is by the will of the gods that we are urged to make this attempt.” As his words were in accord with their custom they could not refuse to adopt the suggestion. Accordingly they sought to discover the will of the gods by casting lots and they ascertained that it would be impossible to accomplish their purpose without endangering their own welfare and that God would not permit this place to be ravaged by them. They asked further where they should go in order to obtain money for themselves so that they might not have to return home without having gained that for which they had hoped. They ascertained by the casting of the lot that they ought to go to a certain town, which was situated at a distance on the borders of the lands belonging to the Slavonians. The Danes then, believing that this order had come to them from heaven, retired from this place and hastened to go by a direct route to that town. Having made a sudden attack upon its people, who were living in quiet and peace, they seized it by force of arms and, having captured much spoil and treasure, they returned home. Moreover the king who had come with the object of plundering the Swedes, made peace with them and restored the money he had recently received from them (chapter 19, transl. by Robinson 1921).

An even more important reference to lot casting is in chapter 26, where the king speaks to Anskar on his second journey in AD 852. He tells Anskar that the question of which god to choose and the will of the gods is decided in this case by lot casting at an assembly (probably a thing), and that it is the people, not the king, who together with the lot have the real power of this decision:

On this account I have not the power, nor do I dare, to approve the objects of your mission until I can consult our gods by the casting of lots and until I can enquire the will of the people in regard to this matter. Let your messenger attend with me the next assembly and I will speak to the people on your behalf. And if they approve your desire and the gods consent, that which you have asked shall be successfully carried out, but if it should turn out otherwise, I will let you know. It is our custom that the control of public business of every kind should rest with the whole people and not with the king. (Chapter 26, transl. by Robinson 1921)

These statements indicate that the sacrificial sites with twigs may have been places for general assembly, i.e. a thing, where most important matters were settled.

Councils, called ‘things’, were summoned for the purpose of deciding on public policy or to settle private disputes. They were held in the open air or in a large tent constructed of the branches and foliage of trees. In the middle of the site was placed the ‘thing stone’ on which the king or leader sat (cf. Drevés 1864:63).

Lot casting was also practised for important decisions on naval expeditions. Rimbert refers to the Swedish king Olof’s expedition to the Curonians after they had ceased paying taxes. The Swedes became engaged in several days of battle, and were in need of divine advice:

On the ninth day the Swedes, being exhausted by the daily slaughter, began to be distressed, and in their terror considered only how they might get away. "Here," they said, we effect nothing and we are far from our ships." For, as we have said, it was five days' journey to the port which contained their ships. As they were greatly disturbed and knew not what they should do, they resolved to enquire by
casting lots whether their gods were willing to aid them either to obtain a victory or to get away from the place where they were. Having cast lots they failed to discover any god who was willing to aid them. And when this was announced to the people there arose much outcry and lamentation in their camp, and all their courage left them. "What," said they, "shall we, unhappy people, do? The gods have departed from us and none of them will aid us. Whither shall we flee? Our ships are far away, and if we flee (those in the city) will follow after us and will utterly destroy us. What hope have we? " When they were in this great difficulty some merchants, who remembered the teaching and instruction given by the bishop, offered them advice. "The God of the Christians," they said, "frequently helps those who cry to Him and His help is all powerful. Let us enquire whether He will be on our side, and let us with a willing mind promise offerings that will be agreeable to Him. Accordingly, at their unanimous request, lots were cast and it was found that Christ was willing to help them. (Chap- ter 30, transl. by Robinson 1921)

To summarise: according to these sources, the casting of lots, probably twigs, seems to have been done in preparation for important decisions during public assemblies in the presence of the king, and it probably also occurred at the ship sacrifices and the boat burials (see below).

Humans
At some of the sites the sacrifices have included humans. The similarities with Örsmossen are many. As at Örsmossen, these places have yielded branches, poles, logboats and sometimes also burned wooden material, and they have dates to the Viking Age.

The sacrifices in water at some of the sites with boats – Närtuna, Bokarn, Altuna and others – have included humans, and these sites probably were central places in the cult. The dates for these sites are dispersed, from the Early to the Late Iron Age, indicating continuity. The depositions of human skulls at Närtuna are, as far is known, later than in Bokarn, although only the animal bones have been dated there. The date from Närtuna is, however, from only one skull, and human sacrifice could have had a long tradition at this site. Skulls have also been found at the central sacrificial site of Skedemosse on Öland (H) as well as at Vemmenlöv, Scania (von Post 1919). The site from Vemmenlöv was pollen analytically dated to the Bronze Age (von Post 1919:168). The deposition of sacred heads and boats in water has its closest parallel outside Scandinavia among the Celtic tribes in the pre-Roman Iron Age. The Celtic cult and adoration of heads is well known, as are the sacrifices of boat models and skulls in water. Ross means that the head as a symbol is the real core of Celtic religiousness (Ross 1967:61). The site at Bokarn (Karlsson 1941, report UMA) is contemporaneous with the presence of the Celtic tribes in Western Europe, according to the date of the bone material (Lundholm 1947). However, the boat rib (bulkhead) found here is of Late Iron Age type, and it indicates continuity in addition to a place for sacrifices. Parallel to this Celtic custom in the Late Iron Age are harder to find.

White stones
Like many other features in the ritual context of the finds, the occurrence of white stones in the rituals connects Sweden to Norway. There are several similarities between the Bársset find in northern Norway (Gjessing 1941) and, for instance, the Örsmossen find. In both places white stones had been deposited together with the ship, and boats had been purposely destroyed. Concerning the Bársset boat, the sacred white stones were found inside the ship and were of white quartz (Westerdahl 1987:29), while the Örsmossen boulders were of white rock-flint. Christensen has underlined the Scandinavian tradition visible in this northern find, such as the occurrence of riveted strakes (1975), though fragmentary sewing may also reveal some local influence. In Käringsjön ‘were found almost everywhere small stones, 3-8 cm in length, often of white or light quartz and quartzite’ (Arbman 1945:103 my transl.). In both Halland and Östergötland white stones occur in graves as well. In Halland white quartz was found in a dolmen in Fröböke, Breared Parish, dated to the Early Iron Age (Arne 1919:130), and in an undated burial mound at Esphahögen, Laholm Parish, stones of white quartz formed a small pile above the bones (Evald 1929:262). A similar heap of white stones in an undated burial mound was documented in Lundtorp, Väversunda Parish, Östergötland (Nordén 1928:346). Quartz was also found in chamber-graves at Lilla Sylta, Fresta Parish, Uppland (Andersson, M., et.al. 2005).

War-spoil finds
Several of the Danish finds of ships in a religious context had been deposited as war booty, such as Hjortspring (Rosenberg 1937; Rieck 1988), the four ships from Nydam (Engelhardt 1865), and perhaps also a logboat at Illerup. Here boats were found together with a great amount of weapons, horse equipment and horses. There might also be similar places in Sweden. None of the known sites has been subject to any larger investigation, but in the last years, with the increasing interest in wetland archaeology in Sweden as well, a couple of these places have been the object of small-scale investigations.

The war-spoil finds of central Sweden consist of some evenly distributed sites. In Södermanland, in Gäsinge Parish, when digging a new house founda-
tion in 1886, 30 spearheads from the Roman Iron Age or Migration Period were found (Hagberg 1977:76). In Närke, by the Åversta River, the first finds appeared already in 1860, and again in 1885 when the river was going to be expanded. At a depth of 1 m, bones of humans and horses were found together with destroyed swords, an arrowhead (SHM 12973), as well as large parts of an iron cauldron (Lindquist 1963:192; Hagberg 1967:74). Only 1.5 kilometres away the famous Hassel find was made, consisting of a large bronze cauldron with two smaller cauldrons inside, but also two Hallstatt swords (Stjernquist 1962, 1967; Annuswer 2003); the find is dated to c. 600 BC (Annuswer 2003). New investigations in 2001 and 2002 resulted in the uncovering of some type of platform, dated to the Vendel Period (Annuswer 2003:58). Västmanland has a war-booty find from a bog at Grimsöbodarna, Ramsberg Parish, where gold objects (in private ownership), swords and spearheads have been recovered (SHM 12973, Hagberg 1967:74). As yet, none of these places has yielded ship remains.

Single weapons have been found in the immediate vicinity of boats. Sometimes several weapons have been deposited at the same place, such as the Uppsala find by the Fyris River, which includes boat parts and many weapons of Viking Age types (Ljungkvist 2006), both swords and spearheads, some treated with fire before the deposition (UMF). Another interesting find is the destroyed (?) logboat of spruce (!) in two parts, found in 1858 in the fields of Lundby village, Husby-Långhundra Parish, Uppland. The boat had originally been more than 6 m long (SHM 2805). Under the boat lay a spearhead with a square, bayonet-shaped blade (SHM 3222) of the same type as found in about ten examples in Skedemosse, Öland (Hagberg 1967:70) as well as in the famous Danish war-spoil finds from Nydam (Engelhardt 1865:28, pl. XI fig.43), Vimose (Engelhardt 1869:21, fig. 23) and Krogehusl (Engelhardt 1867:5 PI II fig 7, 8; pl. III fig. 14).

The Viking Age sewn, expanded logboat from Fiholm in Västmanland (Lindquist 1924:224) was found together with an axe. At the sacrificial site of Sigridsholms Lake in Lunda Parish, two boats and jewellery were found in the same area as a sword (SHM 14.471).

In southern Sweden attention has been drawn to the wet part of a bog at Finnestorp in Västergötland, which more and more begins to resemble the Danish war-spoil finds. Here, on and around a platform of logs covered with brushes, there is warrior equipment all dedicated to the deities: horses, horse equipment, swords, spearheads and belt mounts. Everything resembles the equipment of the chief-tain buried in Högom outside Sundsvall, to such a degree that the leader of the attack in Västergötland has been interpreted as a possible relative, and the defeated warriors as at least belonging to the Svear who made an unsuccessful assault on their southern neighbours (Nordquist 2001:12).

8.1.4. Ship sacrifices in other areas of Sweden

Sámi sacrifices

Sacrifices with boats were also practised among the Sámi population. An undated find was made in 1910 at Offerholmen Island by the former big waterfall Stora Sjöfallet, Gällivare Parish, Lapland (Manker 1947:464; Manker 1953:129; Westerdahl 1987:98). Here sewn boat fragments in the typical Sámi sewing technique (see chapter 5) were recovered together with bones and charcoal (inv. nos. 03.12.2; 03.12.3). The famous sacrificial deposit from Graträsk (Oldberg 1956:239; Senning 1970; Zachrisson 1984), earlier called Tjautjersjön, beside the village Graträsk in Pitca country parish, Västerbotten, also included a bulkhead like rib (SHM 18022) from a boat with decoration of 10th-century type (Duczko, personal information) The frame was found close to a built construction in the lake, with remains of poles, timber and prepared wooden pieces (Buch 1898, unpublished report; Marklund 1908, unpublished report ATA). According to Senning (1970:70) the items were deposited in a timbered construction by the edge of the small lake. The lake was earlier called saivo, a Sámi name for a holy lake, and according to Tornaeus a so-called storjunkare had earlier been present here. In some places several finds of boats and other things have been made in the same bog. In Soukolojvärri, Övertorneå Parish, both a sewn boat and a Sámi sledge (?) have been found. On the Finnish side of the border in this area, in a lake called Laivajärvi ‘boat lake’, two boats were found (Forsell 1983:19 ff) of which one is dated to 910 ± 90 (Hel-1749). In Skatamark, Övertorneå Parish, no less than seven boats were found together in a bog, but obviously several of them had been joined together.

Southern Sweden

Most of the finds in southern Sweden date to the Early Iron Age and Migration Period. The famous site of Skedemosse, a central sacrificial site for Öland used from at least the 2nd to the 5th century AD, has both human and animal bones, jewellery, coins and weapons, but still no boats (Hagberg 1967).

The local sacrificial site at Käringsjön, Halland has no identified boat parts either (Arbman 1945), but among the wooden artefacts found was a
Cederlund gives some interesting information in the report (1944:88). A similar object was, however, also found in both the Gokstad ship burial (Nicolaysen 1882, taf. VI:7) and the Årby boat (Arbman 1940:72) and it was identified as cordage for the boat. Another wooden artefact of interest was an object interpreted as a digging stick, but much resembling an oar, preserved to a length of 73.5 cm, with a 32 cm long, 6 cm wide and 2.8 cm thick blade that had one rounded and one flat side (Arbman 1944:135).

While most of the sites mentioned here were in use only in the Early Iron Age, there might be a sacrificial site that was used in the Late Iron Age at Enerum, northern Öland (report 22/1 1974 K-H Arnell, ATA; Cederlund report 8/101976, ATA; Arne Sjögren oral information). In at least three different places in the bog, boat remains have been found here on different occasions (1923, 1934, 1960s, 1974, 1992). Among them is a piece with a sculptured animal head for a stem. One piece of a strake has been 14C analysed and assigned a preliminary date to the 11th century. A geophysical investigation in 2000 also shows boat remains still in the bog (G. Larsson, report ATA). The land upheaval in the area is not completely clear. The bog could have been a harbour basin at the time, but on the land separating the bog from the sea there is also an Iron Age burial, which speaks against this theory. Other observations from the site make it clear that this is a site of the same character as Närtauna, Bokarn, Rickebasta, Orsmossen, Altuna and others. This conclusion can be drawn after a study of the report written after a visit to the site by Carl Olof Cederlund and Per Lundström of the National Maritime Museum in autumn 1975 (Cederlund report 8/101976 ATA) – according to Cederlund today it was after a parrel had been found. Cederlund gives some interesting information in the report:

At approx. 0.5 m depth under the surface was a bed or packing consisting of cut branches, brushwood and similar. This packing seems to be concentrated to a waterhole for the creatures in the middle of the bog. In this packing also objects of wood were visible, for example pieces of planking, and tools. Possibly the packing is a filling around a marshy waterhole, and that people in connection with this filling have used remains of discarded boats lying on the shore east of the bog. (Cederlund 1976, unpublished report, my translation)

Once again, the combination of boat remains, branches, brushwood, and prepared wood occurs together at a site, just as we have encountered earlier in the central Swedish area.

8.1.5. Sacrifices on the sea journeys

As noted earlier, the difficult rivers of the East, like the Dnieper, were navigated by the Swedes. At several places along the rivers sacrifices were found as well, made during the journeys perhaps for protection. By the rapids near the island of Khortitsa in the Dnieper, beside a river crossing at Kitches, five swords, coins of gold and bronze, and vessels were retrieved (Raudonikas 1933:611, 616; Androshchuk 2002:9). Two of the swords were of Petersen type S, two others of type T (Petersen 1916), three had the inscription ULFBERTH on the blade, and two others were marked with crosses. Earlier interpretations were that they could have been remains of Svatjoslav’s warriors who died here in 972 according to the Primary Chronicle, or a cache of trade-goods that had been dropped in the river (Raudonikas 1933). Androshchuk, however, has pointed out that Constantine Porphyrogenitus writes of sacrifices on the nearby island of Khoritsa carried out by the Russians to an oak tree, and that cocks and arrows were sacrificed (1967:61). Androshchuk also mentions other finds in the river, including a bronze vessel with Byzantine coins for Nicephorus II Phocas and John I (AD 969–976) as well as ringmail. Furthermore, he names other places along the river where swords have been found in water, for instance a find-spot close to Cherson that yielded a sword of type T-2 (2002:11). Also bog finds have been made, namely a sword of Petersen type H at Kraznyj Rog in the Kiev government (Kirpichnikov 1966:76-78). So far, the above-mentioned find-spots lack boat remains. Elsewhere such finds have been made, but with undocumented and unclear find circumstances. For example, the remains of a clinker-built boat and a wooden construction were found together in a river and sold as material for wooden handicraft (e-mail Mischa Naimark, Moscow, 2001).

8.1.6. Regional differences in Scandinavia?

There are important regional and chronological differences within Scandinavia. In Sweden and Norway, as can be seen above, the custom of depositing ships in bogs and lakes as sacrifices continues and becomes more dispersed in the Late Iron Age, unlike in Denmark, which contradicts some of the experiences from south Scandinavia. One hypothesis by Fabech is that, during the Migration Period, the religious manifestations changed in south Scandinavia and, among other things, the depositions moved from wetland areas to dry land (1991, fig. 3). This has, however, later been criticised by Lotte Hedeager who has observed that a large amount of objects of precious metals have
been found in Viking Age deposits in bogs and lakes (1999:237ff). What mainly distinguishes the practice in Sweden and Norway from Denmark are the sacrifices associated with the fertility cult and especially the use of the ship symbol in the sacrificial context. That central Sweden also had ritual deposits in water throughout the Iron Age was observed already by Zachrisson (1998:118). The contextual analysis of the boat finds, partly presented here, has further supported the occurrence of this phenomenon.

In central and north Scandinavia, among Scandina-vians as well as the Sámi people, these habits become most widespread in the Late Iron Age, probably as a result of a shared ideology in the area. The exchange of religious ideas may be an outcome of commercial contacts, since the furs provided by the hunting Sámi populations were an important part of the merchandise in the eastern trade network maintained by the Rus and the Swear. From this region, we know of the find of the destroyed 4th-century Halsnøy boat (Myhre 1980) as well as the 7th-century Kvalsund boats that were destroyed and put in a waterhole in a bog (Shetelig & Johannesen 1929). Many of the finds of boats from central Sweden have, as I have shown, been deposited as part of sacrifices that occurred in numerous places. A large number of these have been dated to the Viking Age. From the 9th to the 11th century there are finds of boats, both whole and broken, at Örsmossen, Uppland, that had been put into a bog, as well as at Närtna, Söderbysjön, Fasterna and other sites. This is a consequence of the fact that the ship had developed into a key symbol in central Sweden. The ideological and cultural connections with Norway are also obvious. In the 9th century two boats were sacrificed without prior destruction in Fjortoft, Norway (Færoyvik & Fett 1943). A century later the Rong ship was destroyed and sacrificed in a bog (Færoyvik 1947:14). Boat sacrifices probably took place in southern Sweden as well, at least on Öland, since the ship remains found in the bog at Enerum from the 11th century may be interpreted in this way.

As for other cultural traits of the Swedish Viking Age, among the Sámi there was continuity of boat sacrifices into the Middle Ages, as can be seen from the Gratræsk and Stora Sjöfallet finds.

8.1.7. A hierarchical ranking of ritual sites

The ‘History of the Gotlanders’ (Gutasaga) describes a hierarchy in the sacrificial custom. According to most scholars (Skov 1946; Holmbäck & Wessén 1979:296f; Hagberg 1967; Yrwing; Löffler 1908–09; Kylberg 1991; Skovgaard-Petersen 1985:64 ff) Gutasaga was probably written down in the beginning of the 13th century AD, although some scholars like Sjöholm date it to the 14th century (1976:110):

In those days, and for long afterwards, men believed in holt and howe (grove and gravemound), sanctuaries and sacred enclosures, and in heathen gods. They made offerings of their sons and daughters and cattle, with feasting and drinking. They did that in their error. The chief sacrifice among the people was one for the whole land, but each Thjóð had its own sacrifice, and the smaller assemblies had lesser sacrifices with cattle, food and ale. They were so called suth-nautar, that is ‘Brethren of the Boiling’, because they cooked [the sacrificial feast] together. (Gutasaga, translated by Tunstall 2004)

What is obvious from the quotation from the Gutasaga is also that the blót followed the hierarchy of districts in the territorial organisation related to the naval organisation, the leiðangr (see chapter 9), and formed a part of a society that in almost every aspect was organised according to a maritime principle.

As Hagberg has noted earlier, the Skedemosse find on Öland with humans, animals, jewellery and weapons probably constitutes a sacrificial site of the highest rank, for the whole land. In central Sweden, throughout the Iron Age, one can distinguish sacrifices in bogs and lakes at both a local level, perhaps the hundkar or attunger (Örsmossen, Tensta Parish; Lundby, Hussy-Långhundra; Söderbysjö, Nacka Parish), and a regional level for a whole land (Hederviken, Närtna Parish; Altuna River, Altuna Parish; Bokarn, Stavby Parish). The latter is of special interest, as we see that the central wetland sacrifices – the ones that probably were officially sanctioned – were practised as late as the 11th century and were not moved to dry land as in Denmark.

What can be observed so far, however, is that the presence of ships in the deposits belongs to central and north Scandinavia in the Late Iron Age, and that every kind of water ritual deposit of humans, animals, branches, twigs, weapons and jewellery is widespread during this period as well, especially in central Sweden. This phenomenon may be related to a religious symbolism associated with water, of which the ships form a part. These questions will be discussed below (see chapter 8.4).

8.1.8. The relation between ships and sacred water

There is a natural connection between ships and water. Therefore, at an early stage there developed an association between the ships and the deities of water; in Scandinavian prehistory the deities were associated with the fertility of the soil, with the birth and rebirth of nature and the living, including humans. As we have seen in the analysis above, ships have on several occasions been deposited in
water as sacrifices to these deities. There is also a connection between sacrificial places and sacral place-names. In several cases the finds are related to place names that can be interpreted in a religious context, for instance names that have deities as an element, such as probably Niærdh by Närtuna, and Frey in Frösunda. In the vicinity of the Lundby find we find Husby-Långhundra village, which earlier was called Husaby-Ærnavi, a place name related to the goddess Härn (Freya). An uninvestigated sacrificial site that has horses, including one with a sharp stone still in the skull, as well as a construction leading to the water in the bog, is situated by Ullentuna ‘the enclosed space of the god Ull. It is possible that investigations here can reveal boat remains in analogy with the Norwegian Migration Period find from Ullermyren, Löten Parish in Hedmark where a logboat was discovered together with axes. The god Ull is thought to have preceded Frey (Müller-Wille 189). Another site is in Altuna ‘in a fence-enclosed space with a temple/sanctity’ (see above). The name element Al- is also found in connection with the sacrificial site at Rickebasta, which like the boat burials is situated in Alsike Parish.

8.2. The ship symbol in depictions
The use of the ship symbol in depictions is a well-known phenomenon in prehistoric times. What is of particular interest here is when changes occur in the use of the ship symbol in the Iron Age and Middle Ages, because the use of the symbol in different contexts reflects the ideological value of the ship. Here it is also important to trace when the ship as symbol is replaced by other symbols, since this reflects fundamental changes in society.

Ships in depictions occur in a number of contexts: on picture stones, stones with runic inscriptions, graffiti on different materials, coins, rock carvings, textiles and other places.

8.2.1. Ships on picture stones
The picture stones, which are found above all on Gotland, offer an excellent opportunity for studying the use of the ship symbol in a long-term perspective since the custom of erecting stones with depictions lasts from the 4th to the 12th century AD. Lindqvist (1941–42) has divided the stones into four groups based on shape, which also are separated from each other by the motifs and dates. Type A is dated to the 5th century, type B from the 6th to the 7th century, type C/D to the 8th century, and type E to the 11th century. The last group represents rune stones as picture stones. The groups identified by Lindqvist correspond, as Erik Nylén and Björn Varenius have noted, to different types of ships with different rigging (Nylén 1983, 1986, 1987 a, b, c; Varenius 1992). Varenius (1992:56) has made an additional division of the stones based on the rigging:

<table>
<thead>
<tr>
<th>Category (Varenius 1992)</th>
<th>Ship’s rig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I</td>
<td>Ships without rig propelled by oars and corresponding to Lindqvist group A.</td>
</tr>
<tr>
<td>Category II</td>
<td>Ships with a single rig without sheets or sheets in corners. These correspond to Lindqvist period B.</td>
</tr>
<tr>
<td>Category III</td>
<td>Ship motifs with sheets creating a Y-shape. According to Varenius, these ships belong to the main part of Lindqvist period CD, 9th to 10th centuries, slightly earlier than category IV.</td>
</tr>
<tr>
<td>Category IV</td>
<td>Ship motives with sheet net. The group corresponds to the later part of Lindqvist group CD, mainly the 10th century.</td>
</tr>
</tbody>
</table>

Table 29. The categories of ship’s rigs identified by Varenius (1992:56).

In the following, my main interest is not to study the information on technical details on the depicted ships, but instead to define which types of ships are depicted and to try to pinpoint when and in which context the ship symbol occurs. The purpose is to identify which ship type had the greatest symbolic value and to define the time period when the ship had the most importance as a symbol, and, not least of interest, to find out when it loses this position.

Type A
Of the picture stones, type A sometimes has a ship as one of the symbols used. There are four stones that represent this type: Bro I; Austers I in Hangvar Parish; Björkome, Västkinde Parish; and a fragment from Ire, where only the baldachin of the ship is
visible (Lindqvist 1941, I:29, 69, 142, figs. 207, 319, 403, 562). On the stones within this group, the presentation is dominated by sun symbols (whirls, spirals) combined with pairs of circles, pairs of horses, pairs of men, pairs of snakes and single ships.

When the ship symbol occurs, it is in a composition that is crowned either by a whirling ornament above a pair of circles with spirals (Västkinde and Bro I), or by an animal and a big circle with spirals (Hangvar, Austers), with the ship image filling up the lower part as an important share. All the ships illustrated are rowed longships, i.e. warships of what Lindqvist calls the ‘Bro-type’ (1941, I:62), more commonly known today as ships of ‘the Scandinavian type’ with high, curved stems. A baldachin construction and ornaments carved in wood have recently been found in the Nydam bog during excavations in connection with the ship finds of the 4th to 5th centuries AD (Rieck, personal information).

Figure 199. Ship on the picture stone Bro I, Bro Parish, Gotland. Lindqvist’s group A, Varenius rig category I. After Lindqvist 1942.

Type B.
The ship symbol appears on a large amount of stones within this group. Of the preserved stones published by Lindqvist (1941), ships occur on 31 picture stones. Now the ship is often seen crowning the composition, with birds, pairs of birds, animals, or a geometrical pattern below, and in those cases the framework is almost always a very special pattern (see fig. 200). When the ship is seen at the bottom of the small picture stones it often appears together with another ornament in the framework, namely with a plaited decoration which is also used on the type-C/D stones, and here the ships also resemble those in the latter groups. The ships of type B are for the first time equipped with sails (see chapter 4), but it is impossible to determine whether they are warships or merchant ships. The sails are small and can be of the eastern, mushroom-shaped, almost triangular type with a curved yard (see chapter 4); of a square type; or of rectangular pieces of cloth on top of the mast. The hulls mostly have straight stems at an angle towards a curved keel-line, either standing vertically or leaning inwards (20 ships), and occasionally curved hulls occur as well.

Figure 200. B-type of stones. After Lindqvist 1942.

Type C/D.
Here the ship is similar to the one on the type-B stones. It is a very important part of the depicted scenes, which are crowded with illustrations of the mythology that we find, for instance, in the Eddas. Ships appear on 30 of the picture stones that represent this group and that are published by Lindqvist (1941). The ships are now developed sailing ships with large sails, often marked as warships with either the crew depicted, or rows of shields along the gunwale. Smaller fishing boats also occur, as well as boats for personal transports. The warships with marked crew or shields have at the most 14 pairs of rowers (Smiss I, Stenkyrka Parish), thus representing the karv and skuta (see chapter 3), i.e., a ship of exactly the same type found in the Valsgärde burials. Smaller boats for personal transports, like the boat depicted with two women on the picture stone from Lillbjärs III in Stenkyrka Parish, also occur in the boat burials, such as Tuna in Alsike X. The hulls are either of the curved ‘Scandinavian’ type, or of a box-shape that Lindqvist calls the ‘Hunminge-type’ (1941:1, p. 68).
Type E

Type E has the central part filled with ornamentation. There are scenes with humans (Ardre II), horses (Ardre VI), riding humans (Ardre I; När, Bosarve), mythological motifs (Sanda I; Hemse Annexhemman I), horses with chariots (Levide Church), but almost never a boat. Here it is obvious that the ship has begun to lose its symbolic value and is replaced by land-related scenes, especially by the horse and rider as a symbol of emerging importance – the forerunner of the medieval knight.

At Hablingbo Church on Gotland there is a picture stone classified as Lindqvist type C/D, with a runic inscription surrounding an image of a riding human on side A, and a ship depiction characteristic of type-C/D stones on side B. Side B seems more worn than side A, and is probably the older and original depiction. When the runic inscription was made, however, the ship had lost its symbolic importance, and instead a weapon-equipped rider (meeting a valkyrie?) was depicted.

The picture stones of Gotland show the importance of the ship in mythology, in the first phases probably as symbols of a deity, but in the Viking Age as parts of a rich set of myths. But the stones can be interpreted as more than mere illustrations of the prevailing mythology. Andrén sees in the picture stones active expressions of a mark of identity from the Gotlanders towards the surroundings (1989a). Varenius has added an interpretation of the picture stones that includes an explanation for the significant changes in the motifs depicted on the stones during the 9th and 10th centuries. The point is that they are not only Nordic, but also heathen, something that is expressed and emphasised more in the younger stones. They were part of a religious struggle for power, with the missionaries of the Catholic Church in Hamburg-Bremen as a counterpart (Varenius 1992:128). When the picture-stone tradition was taken into use in Christian monuments, it was ‘de-heathenized’.

As Varenius (1992) has observed, the motifs on the picture stones also occur in another conflict-loaded contemporaneous situation: namely on the Hedeby coins, with ships, pairs of birds, snakes, men’s faces and triskele, just as on the picture stones of groups I-IV. The symbols are also found on the tent frames in the Oseberg ship (Shetelig 1917a:327). Later these representations of the old ideology are manipulated to mediate a new message: in their final phases both the ships depicted on picture stones and those on rune stones show namely a clear Christian framework, despite the preceding heathen references (Varenius 1992:132).

Detlev Ellmers has studied the content of the scenes on the C/D-stones (1995). He interprets these as depicting the journey to Valhalla, where the deceased is welcomed by a valkyrie, and on some stones the deceased rides Odin’s eight-legged horse, Sleipner, to Valhalla. Other scholars such as Müller-Wille (1970), Schön bäck (1983) and Crumlin-Pedersen (1995) argue that there is no support in literary sources for the idea that a ship would be necessary for the journey to Valhalla. This is not entirely true, however. At least in several sources there is mention of water between the world of the living and the afterworld. A boat could be suitable for the journey, but mostly a bridge is mentioned. A way to enter the afterworld across the water was to use the bridges Gjallarbrú or Bifrost. According to Grimnismál (strophe 28) it is the river Gjoll that separates our world and Hel. This river is said to fall til Heljar nedan ‘downwards to Hel’ (Holtsmark1981:334). Also Gylfaginning (chapter 49) mentions the bridge Gjallarbrú. It is covered with lýsigull, and Hermod shall ride across it on his journey to Hel to fetch Balder. Also, according to Volsunga poem water separates the world of the living and the world of the dead, and it is possible to pass by means of the Vindhjælm bridge.

In Finnish tradition there has also been an idea of a river separating the world of the living from the world of the dead. This was Tuonis svarta flod ‘the black river of Tuoni’, but also here it could be crossed by means of a bridge called Tuonis bro ‘Tuonis bridge’. In the traditional Finnish cosmog-
raphy we also find clues as to which direction to find the death realm. It is said to be situated far north at the end of the world where heaven meets earth, and where the gloomy village of Pohjola with screaming iron gates is situated beyond a churning rapid (Honko 1981:337).

Another feature may support Ellmers as well, at least concerning the interpretation as a journey to the afterworld, though maybe not to Valhalla. If we interpret the valkyrie as Freya, who is entitled to half the share of the fallen warriors as mentioned in Grímnismál (see below), it is natural that in almost all cases the ships are filled with fallen warriors, and the ships themselves with few exceptions are warships. When the valkyrie meets them, it may be toward Folkvangr the journey is directed.

Figure 202. Freya (?) meets the fallen warriors. Stora Hammars I, Lärbro Parish.

That the boat was considered as useful for this journey to the afterworld is known from many places around the world. According to an ancient belief among the inhabitants of Greenland, one came to heaven after death by sailing across the sea (Rink 1868).

Andrén (1989) also discusses the picture stones in relation to mythology and beliefs and concludes that they are shaped as, and may have been considered as, ‘doors’ between different spheres. He bases his interpretation on the fact that in several ways they are positioned on borders between infields and outlying land. He argues that this is rooted in a dualistic world-view, where the places at which the stones are erected also may represent other borders, such as between midgård and utgård, between the ordered and the wilderness, between the realm of the living and the world of the dead. In his opinion, the shape of the stones is that of a door, representing the gate between these different realms, and he also recalls the famous description by Ibn Fadlan where the slave-girl is lifted up so she could see above a gate, and also see her dead relatives that she would soon meet in the afterworld. Brink (2004:292ff) has pointed out that the situation may be more complex than just a conception of a dualistic world, since the ON sources mention many different realms, not only two.

Oriental influences?
If we interpret the ship motifs as a way of communicating a message, we need to find the language and the grammar to interpret them. One way is to trace the other motifs that occur in a context together with the depicted ships. On the early Vendel Period type B-stones, especially the birds become a favourite together with the ship symbol, single or in pairs. The birds are central motifs in the area around the Black and Caspian Seas, where we find them among the Sassanids, Persians, Kurds, Turks, and Armenians, as well as among the different Georgian groups and the southern steppe peoples. In the same area, where especially in the SW part of the Caucasus the same symbolic language has survived until today, in the kilims, we also find what some scholars have interpreted as the mother goddess, more or less stylised, together with the pairs of birds (Mellaart 1989; Özkahraman 2005:34).

The pattern along the frame of the stones is found on the kilims (Özkahraman 2005:34). On what are probably the latest B-stones and on the C/D-stones, the ‘entwined figure’ that sometimes resembles the number 8 occurs, which is a very common symbol on the Kurdish kilims, where it is called ‘hook of love’ and symbolises fertility (Özkahraman 2005:35).
I.2.2. Ships on coins

Among the coins from the prehistoric and medieval periods in Scandinavia, the ship symbol occurs only on the coins of the 8th to 10th centuries. It has been discussed whether these ‘Birka-coins’ or ‘Hedeby-coins’ were merely minted in Birka or Haithabu. Here the high number found in Birka (at least 30 in the 1870s) together with Birka’s position in a possible mercantile and administrative organisation, convinced for instance Lindqvist that they were minted in Birka (Lindqvist 1926) while other researchers have looked at the distribution outside Birka, at the weight and some of the motifs and seen the minting place as Haithabu (Hauberg 1900:39; Malmer 1966:182). Some of the Hedeby coins are imitations of Carolingian coins, as indicated by the text CAROLVS and DORSTAT. Important here is to look at the motifs on the other side: man, house, two cocks, deer A, and deer B, which seems to be a backward-looking horse.

Malmer has shown that the face with rays and the deer image may be borrowed from the Frisian area. However, the attention has never turned eastward. The majority of the coins found in Swedish soil during the Birka/Haithabu period were struck in the Caliphate, often in the former Persian provinces east of the Caspian Sea. Here the cock is a special and frequently used motif on the silk textiles, as is the deer (Porada 1962). My analysis (chapter 7) shows that it was the Svear that had control of the communication eastward. What about the ship types then? On the coins we see ships with high hulls of the merchant-ship type, both box-shaped and the ‘Scandinavian type’. The sails, on the other hand, are of two types. One type is much smaller than those on, for instance, the contemporaneous Gotlandic picture stones of south Scandinavia; and the other is a large sail that more resembles the depictions. The combinations of the motifs on the front and back side have been analysed by Malmer (1966). A closer study of these combinations on the coins with different ship types, in relation to the find sites and with an additional comparison with
the other finds of so-called Birka/Hedeby coins, reveals clues for the interpretation of the minting place and indicates that the situation may be more complex than earlier assumed.

In addition, among the Nordic coins studied by Malmer (1966) there are also the types ‘Face with rays’, ‘Face without rays’, ‘Arcs’ and ‘Crosses’, but those motifs will not be dealt with here, since no boat images occur in combination with them.

On the coins with cocks, which is an Oriental motif (fig. 203), the back sides have a ship with a small sail that is raised on top of the yard, a feature that boat constructors and sailors connect with river traffic to catch the wind high above the shore of the river. Experiments have shown that the low and light ships of central Sweden cannot take larger sails. A too-large sail on the replica Embla, of the type used in northern Norway on the fishing boats of the Atlantic Ocean (the Nordland boats), was borrowed and used in 1997 for this smaller boat (based on Prästgården 3, Gamla Uppsala) in Foteviken, Scania. In the hard wind the boat capsized and filled with water.

8.2.3. Ships on textiles
During the last decade many textiles have been 14C analysed, and several have turned out to be of Viking Age date (Nockert & Possnert 2002). In the earliest phases, from the 9th to the 12th century, ships occur as important motifs. Often the compositions of motifs and ornaments are similar to those on coins and picture stones.

The Kyrkås tapestry, used as an antependium in Kyrkås old church in Jämtland and recently 14C dated to AD 990–1160, shows a ship and other images within octagons and in a strongly geometrical pattern. As was shown earlier, the ship resembles the Norwegian Viking ships. The choice of motifs in the octagons here – the pair of birds and the backward looking animal – is also found on the Birka coins. These motifs are influences from Islamic art, just as are the single big bird, the tree, and the geometrical pattern. However, the crossed crosses that fill the frames are Byzantine, representing influences that become stronger in the late 10th century.
While most of the elements in the patterns are the result of influences from the long-distance journeys, the ship is the Nordic addition to the variety of images displayed on the textile. It was probably made when the ship still had a central ideological meaning and value, i.e., in the late 10th century or beginning of the 11th, since, as we have seen from the picture stones, by the late 11th century the ship had lost its role as a central motif (Franzen & Nockert 1992:66ff; Nocker & Possnert 2002, Nordic Museum nr 10038).

Regarding the tapestry found in a building beside Överhogdals Church in Jämtland, one of the five textile pieces composing the tapestry (fragment IV) has a similar pattern as Kyrkås. It has octagonal fields with a decoration of geometrical ornaments such as crossed crosses, ships, and birds (Nockert & Possnert 2002:77). It is dated between AD 900 and 1100.

The two tapestries from Överhogdal in soumak technique, Ia and Ib, were according to Nockert woven on the same warp but by different weavers, perhaps a mother and daughter (in Nockert & Possnert 2002:69). What is probably the older tapestry has a 14C cal. date between AD 656 and 852, 1 σ (Ua-1942), while Ia has two dates: 14C cal. 772–950, 1 σ (Ua-1940), and 965–1170, 1 σ (Ua-1941).
Of these tapestries, Ia has a varied pattern including horses, ships, people, deer, elk, birds, and a central tree. The ships do not have sails; and there is probably part of a procession, like the one on the Oseberg tapestry, with one of the two ‘valkyrie’-looking female figures found behind. Both these female figures are emphasised on the tapestry, being more than twice the size of the other people depicted. The central tree has one bird at the top and one below, recalling the myth about the peacock that sits on top of Yggdrasil, the world tree, and that crows to wake the fallen warriors in Valhalla.

Figure 210. The ship and a female figure on Överhogdal 1a. After Nockert & Possnert 2002.

Fragment III also has a ship with high stems and a small, almost square sail, as well as a crew of six persons. Like 1a, it has a rich pattern with similar motifs showing a procession, a big tree, horses, houses, people and female figures of double size (one bearing a staff as on the Oseberg tapestry). This has been 14C dated to AD 900–1160 1σ (Ua-1944). Interesting to note is that, because of the churches depicted on the remaining tapestry, it is interpreted as younger than 1a, 1b and III (Nockert & Possnert 2002:72) despite the early 14C date, cal. AD 794–963, 1σ (Ua-1943). This tapestry completely lacks ships, which indicates it was made at a time when the ship began to lose its symbolic value. This may support the dating by Nockert.

Figure 211. The ship depicted on Överhogdal III.

According to my study of the medieval Swedish textiles dated by Nockert and Possnert (2002) the same motif language has survived to a large degree, but ships are no longer depicted.

Scandinavian ships on textiles abroad

The soumak technique and the motif world with octagons, the pair of birds and the different types of geometrical and other patterns, which are seen on the Swedish Viking Age textiles, are all found in the area of the *kilim carpets* around the Caspian and Black Seas and especially in the Caucasus. On the kilims of Daghestan (Ramsey 1996:78) there is also a ship-like motif (fig. 212) that greatly resembles the Scandinavian ships with curved stems and animal- or birdlike stem decorations. Some symbols resemble cut-out stems, that pars pro toto may represent whole ships.

Figure 212. Ship motifs on flatweave in Daghestan, NE Caucasus. After Ramsey 1996:78 fig. 4.

In the few regional depictions within Sassanid art east of the Caspian Sea, the ships differ from these. Especially interesting on these flatweaves from Daghestan is the shape of the ships’ hull. It is often box-shaped as on the Birka/Hedeby coins. Here, the character of the river systems requires light ships to be used, which means that these ships must have a completely different hull than the cog, which is commonly associated with the box-like hull shape. On the Daghestan kilims, for which the Avar word is *dums*, the dragon motif is also central in more or less stylised form (Ramsey 1996) and often appears as a dragon-snake. This is well known from Scandinavian Viking Age art. In the Caucasus it has been assumed that this motif was introduced with the Mongolian expansion in the 13th century and originated in China, but Western sources have shown that it appears earlier (Ramsey 1996). The similarity in ship types may indicate early contacts between Scandinavia and the Caucasus.

An interpretation

The obvious parallels between the ship types and other motifs on the earliest Swedish textiles from Överhogdal, and the ship types and symbolic language in the Caucasus and the Orient, must be seen in relation to the journeys to these areas in the 8th to 10th centuries. The intense commercial contacts
have resulted in an exchange of ideas as well as cultural influences in both directions. As will be shown in a dissertation on textiles (A. Larsson forthcoming), not only the motifs but also the textile techniques used are the same. Annika Larsson will also present results showing that the silk fragments in the Birka material originate in these areas or eastwards, and not in Byzantium as earlier assumed (Hägg 1974). The parallels seen in the ship-type motifs and textiles with the areas surrounding the Caspian Sea, especially in the ‘Birka period’ (Annika Larsson, personal information), correspond well to the earlier discussion (chapter 7) about the orientation of the first long-distance journeys to these areas, and secondarily with the Byzantine Empire. The contacts with the latter that intensify starting in the late 10th century (see chapter 7) are reflected in the mixture of Islamic and Byzantine influences seen on the later Kyrkås tapestry. In the 11th century, to which the Kyrkås tapestry probably belongs, the foreign material in for instance Sigtuna shows that cultural impulses from Byzantium have to a large extent replaced the earlier Oriental influences that were strong in the Birka material. This is visible, for instance, in recently published analyses of glass from Sigtuna, where the Byzantine influences are strong from the 11 to the 14th century (Henricson 2006). This reflects the change in the communication pattern and seafaring, which corresponds to the transition in the late 10th century between the periods that Jansson has identified as the ‘older phase’ and the ‘younger phase’ (2005:39).

8.2.4. Ship graffiti

The ship graffiti has been thoroughly discussed by Arne Emil Christensen (1969, 1980, 1988, 1995), and concerning the medieval graffiti in churches of Norway by Martin Blindheim (1985). In churches on Gotland, a complete investigation was done and published by Peter von Busch together with Sibylla Haasum and Erland Lagerlöf (1993). The term ‘graffiti’ is used for the informal pictures, generally carved or scratched into wood and stone (Christensen 1995:181). In contrast with the textiles and the depictions on picture stones, ships in graffiti survive much longer, throughout the medieval period and in coastal areas until the 19th century. Graffiti, in my opinion, represents the local tradition of ordinary people in contrast with the ‘official’ use of the symbol on coins, picture stones and the exclusive textiles intended to be used in a sacral context within the churches. Among the population many of the motifs from heathen mythology have survived in different forms (see below), while the authorities use symbols related to the prevailing ideology and political intent. There is probably also a social difference. While the ship symbol is completely absent among the aristocrats in the Middle Ages, peasants and fishermen use it in, for instance, graffiti. Christensen has observed that the amount of ship graffiti is reduced in the late Middle Ages and the Renaissance, compared to the Early Middle Ages (1995:183). In my view, it may reflect the general lowering of the value of the ship symbol in these periods. From the 17th to 20th centuries, in the interior, people adopted the ‘land’ motifs represented by horses and riders, a few cattle, dogs and hunting scenes. In the coastal areas, however, ‘on a narrow strip of land’, nearly all the graffiti show ships (Christensen 1995:181). Here there is a visible geographical difference. The reason, in my interpretation, is that on this narrow strip a kind of ‘maritime society’ has survived, and so have the symbolic expressions related to it, although it is no longer shared with the rest of society or part of official ideology.

8.3. THE BOAT IN THE GRAVE

8.3.1. The boat-burial custom

Why a boat in the grave?
The high value of the ship symbol in Late Iron Age society is also evident in that it was placed in the burials of some of the wealthiest and most powerful individuals. As will be seen, there is a relationship between the type of boat and status in the burials. It was a necessity for some people in this maritime society to include a splendid, clinker-built ship among the status-indicative inventory in the grave. In addition to the social aspects, there are many other aspects that need to be investigated with regard to the use of the boat symbol in a burial context, not least the religious aspects.

The boat graves have been a topic of discussion since their earliest discovery in the late 17th century (Stenberger 1971:605). The interpretation of the boats in the burials has varied, but there are three ways of explaining them according to a classification by Susanna Vestman (1996): the political model, the economic perspective, and the religious aspect. There is no doubt that there are many explanations for the occurrence of boats in burials. However, these should not be regarded as mutually exclusive. Instead they should be seen as interacting since they are related to each other through the ship symbolism, especially in the Late Iron Age society.
The boat in the burials provides the most obvious examples of the symbolic properties that the Iron Age people associated with the boat. But what did the boat symbolise in a burial context? What was the deeper meaning of the boat in the burial ritual? I will argue that there are many interacting explanations to be found, and that they do not exclude, but instead reinforce each other. In the research history many interpretations have been put forth. The main explanations for the occurrences of boats in graves are:

- Symbol of descendants of the Ynglinga dynasty.
- Social aspect; the boat symbolises power in general.
- The boat symbolises wealth of the deceased.
- Economic aspect; burials of influential people in control of trade.
- Military aspect; burials of naval leaders linked to the leiðangr organisation.
- The boat is a practical container for the deceased and for firewood.
- Religious aspect; the boat symbolises the connection and/or is a means of communication with the otherworld.
- The boat symbolises or is a means of connection and communication with certain deities.

In this chapter the religious aspects of the boat in the burial will be discussed. A reinterpretation of the boat burials will be made based on an analysis of the orientation of the buried ships. The orientation is established by a study of the hull shape, and is interpreted by analogy with the Viks boat and with ethnographical information.

The religious aspects are important, since they are part of the ideology used by the central power in the formation of the Late Iron Age society.

The distribution of the boat-burial custom

The earlier-discussed boat graves have primarily been the Western European ones (Andersson 1980; Müller-Wille 1974:199?). As Phyllis Andersson summarises the previously known boat burials in her thesis: ‘The practice of burying a boat with the dead was widespread in both time and space. Boat graves, which number more than 430, are known today from almost 300 different locations. They are primarily known from Scandinavian and Northwest European countries but are found as far N as Iceland, W to Great Britain, S to Brittany’s southern coast and to the East as far as Finland’ (1980:1). The distribution was thought to be Denmark, Finland, Germany, Great Britain, Iceland, Norway and Sweden (Müller-Wille 1974:199 ff). The picture given by the distribution of boat graves clearly has a Western European bias: ‘France 1, Germany 1, Iceland 5, Denmark 7, Great Britain 12, Finland 35, Sweden 141 and Norway 234’ (Müller-Wille 1974:199 ff, Andersson 1980:4).

The distribution in time was thought to be from the Early Iron Age, i.e., around 400 BC, until the end of the Viking Age in AD 1050/1100, when they were thought to disappear under the influence of Christianization (Müller-Wille 1974:187, 193, 197). Andersson summarises the earlier discussion: ‘The Vendel period boat graves may perhaps mark the earliest real trend in the development of a new grave tradition’ (1980:20).

Today it is known that the custom is widespread in time, with the earliest occurrence in Mesolithic Denmark (Rieck 2001), later a few neolithic boat burials from Kiaby in Scania (Järbe 1950), and several from Roman Iron Age at Bornholm (Crumlin-Pedersen 1991), Veclice (Okulicz 1992) and Barkarby in Uppland (Holmquist 1956).

The distribution of boat burials in Late Iron Age

In Late Iron Age the distribution of the boat burial custom is dominated by the central and north part of Scandinavia. The diffusion of the custom from the central areas of Sweden and Norway from Migration Period to Viking Age is clearly visible on the distribution maps made by Müller-Wille 1974 (figs. 215-217).
Late Iron Age is visible also in the distribution of cremation burials with boats (fig. 218).

8.3.2. The boat-burial ritual in written sources

Although limited and often fragmentary, the ON material provides important information for the interpretation of the boat burials. Müller-Wille has summarised the different types of boat-burial rituals that can be identified in the written sources (1970):

* Burial in a boat that is sent out to sea (*Beowulf* 26-52)

* Burial in a burning boat that is sent out on the sea (*Ynglinga saga* ch. 23, *Gylfaginning* ch. 48; *Arngrimur Jónsson* latin transl. of lost part of *Sogubrot*)

* Burial in a boat that is burnt on land (*Ynglingatal* 8; *Saxo Gesta Danorum* III:74, VIII:264; *Ibn Fadlan* § 90)


These historical sources consist of contemporary accounts with high information value (*Beowulf*, *Ibn Fadlan*) as well as later descriptive accounts. The first two categories of burials above have not yet been found or identified as such, but the last two categories are confirmed by a rich archaeological material. The interpretation and translation of *Ynglingatal* 8 where it is said *ok sá brann á beþe skútu* has mostly been based on Snorri’s interpretation of the text as ‘was he burned on the bank of Skúta’ (transl. by Hollander). This was done by
The idea of the orientation of the burials

Among archaeologists an idea of the typical boat burial developed early on. Even Stolpe had his opinion clear by the late 19th century as to how the artefacts were distributed within the boat. He launched the idea that the boats were placed with the stem heading SW, which had a deep impact on his own interpretations and on those of many later archaeologists regarding the placement of the deceased and the grave-goods in the boats. His conclusions were based mainly on the rather badly plundered and disturbed graves of Vendel and Tuna in Alsike, where the remaining rivet-rows of the boats were not preserved in such an order as to allow for sure conclusions. This mistake has been repeated by many other archaeologists.

The idea about how a ship should be oriented has influenced the contents of reports. One example from Norway is Shetelig’s report on the ship in the grave from Holmedal. The orientation of this ship can easily be established because part of the rudder was preserved in its original position. But in the publication Shetelig, like so many others, was influenced by the old opinions that have prevailed since the excavation of the first boat graves in the 19th century. He writes: ‘The boat was placed with the stem oriented towards the sea in WSW, the stern against ESE, as it could be seen as the lower part of the rudder was found in place at starboard side towards the stern, see the plan. The orientation of the grave is the same as all the other large ship graves, where the ships are positioned with the stem towards the south, surely a result of a religious belief. The orientation is the same independent of how the grave is located in relation to the sea. Smaller deviations in single cases just mean a small variation in orientation, not a break in the ritual they were following’ (Shetelig 1939:54, my transl.).

The information that the ship is oriented WSW-ESE is cause for some suspicion, because that means the ship has been angled 90°. If we follow Shetelig’s instructions and look at the plan, however, we can see that the ship is oriented with the stem towards WNW, with the rudder in ESE.

The supposed orientation of the boats in the burials has guided the interpretations regarding the spatial positioning of the grave-goods inside the ship in most publications of boat burials. Statements such as, ‘In contrast to the rear of the ships the front part was filled with household equipment and food’ (Schönbäck 1994a:152 my transl.), are not uncommon and many examples can be given showing how cemented this hypothesis has become after having been repeated again and again.

As in the later Norwegian ship graves from the Viking Age, a chamber was placed over the middle of the ship. Because of plundering, not much of the grave-goods remained, and no trace of the deceased. On the basis of a chest in the chamber containing stones, a clay cup, glass and textile fragments, Shetelig made an analogy with the Oseberg grave and interpreted the burial as that of a woman. The Holmedal boat grave can, if it really is a woman’s grave, be seen as following the same scheme as most of the non-military boat graves in Uppland, which we find primarily in Tuna in Alsike Parish. Like Holmedal, these are oriented towards NW, and several of them are women’s graves. This reminds us of the statement that Valhalla was reserved exclusively for fallen warriors, which might explain the difference.

The aft of the ship could, like in other graves, have been reserved for food and kitchen utensils. Here only three staves from a wooden cask were found, and therefore the question must remain open.
Bengt Schönbäck writes:

The position of the deceased in the middle of the ship is a common feature that separated these burials from their male counterparts on the earlier known boat burial cemeteries. Also concerning the two burials with women that have been excavated in the otherwise male dominated boat burial cemetery at Tuna in Alsike, the deceased had been placed amidships in their burials in the same way as in the Badelunda boats (Arne 1934, Taf. XXVI, XXX). In the male boat burials the deceased had usually been placed in the aft part of the ship (Dyfverman 1929; Fridell 1930; Oderkrantz 1933; Arwidsson 1942, 1954, 1977), a position that is associated with the place of the "captain’s or the helmsman’s natural place within the boat. In the women’s boats the rear is remarkably empty, which possibly could indicate that these women, despite their dominating position, did not play the role of helmsmen. Any observations in the rear that could indicate the presence of a joining helmsman for the boat, was not found and the empty stern must be interpreted as symbolically reserved for the helmsman, who in real life took care of the boat for his mistress of the household. (Schönbäck 1994a:151 ff my transl.)

8.3.4. Ship construction: How to determine prow and stern in a boat burial

The orientation of the ship in the burials can be determined on the basis of an analysis of ship construction. In this case the following criteria should be observed:

- Position of the steering oar.
- Position of the mast.
- Remains of rigging details.
- Position of anchor.
- Position of gangplank.
- Hull shape: where is the hull widest?
- The direction of the scarves.
- Where is the hull highest?
- Position of pervading rivets.
- Distance between ribs.
- Distribution of rivets contra nails.

The direction of the boat can be established on the basis of knowledge and boat-building principles used through the millennia. The hull shape and technical solutions reveal orientation.

The position of the steering oar
Most people take for granted that the steering oar is found on the starboard side. Maybe so, but there often have been misconceptions when interpreting remains in the burial that are thought to be those of the steering oar. The preconceived opinion about the direction of the boat has often guided the interpretations. Most common is to interpret a big ring as the remains of a steering oar, an invented device thought to be used to pull up the oar. This ring has instead been on the anchor-stock (see below). A hole through the oar was instead used to haul up the oar. We are well provided with Scandinavian finds of steering oars. A total of 24 finds have been documented in some detail from Scandinavia and England (Christensen 1985:229; Hutchinson 1995; Crumlin-Pedersen 1997:140; Sundqvist 1998).

The position of the mast
A good indication of the orientation of the boat is the position of the mast, when this can be determined. The mast is always placed in front of amidships. In Galtabäck it is 1.2-1.5 m in front of amidships. Here the mast bite is the bite above the frame station 3F.

Figure 219. Mast placed forward on stone carving.

The Viks boat has the mast stepped in the frame station 2 F (see chapter 2.). How far forward the mast has been placed is dependent on where the boats were to be used. Rausing (1984:96), in his work on the ships of NW Europe, discusses the problem concerning the position of the mast in ships. Riverboats, he says, are destined to sail before the wind and ‘[do] not require any lateral resistance, the main requirement being low longitudinal resistance. In the sailplan the center of the effort should, if possible, be in the centerline of the hull and near the bow’. This explains why rowed ships and riverboats have the mast in a forward position. This is a condition that has been taken into account in most of the world when designing rig construction. The use and function of the boats on rivers have also left traces in the transverse section of the ships. Rausing observed this in connection with several boat types, for instance in the Nile riverboats.
Those boats ‘which are designed for downwind work only, are flat bottomed or round bottomed, and with the mast far forwards’ (1984:96). Ethnological studies, where the designs have been examined in relation to the main field of use, also clearly illustrate this kind of adaptation to local circumstances. Jerzy Litwin has documented different boat types along the river Vistula in east Poland and in the Vistula lagoon. (1991:212). Upstream the river the low, flat-bottomed boats are found without a mast. In the middle and lower Vistula, narrow, flat- or round-bottomed vessels are used with a mast stepped forward. In the Vistula lagoon, on the other hand, the ships are higher and wider, like the zadówka and angielkahn, with a more centrally placed mast. The same scheme for boat-type design can be found in most rivers in Northern Europe, and probably many other places as well.

The boats of the boat burials have a construction that generally corresponds to the boat types within the ethnological analyses recorded from the middle and lower Vistula River (Litwin 1991) and areas in Scandinavia that are similar. When these boats are rigged, the masts are stepped farther forward than on the vessels for open-sea sailing.

In Sweden in the historical period, the Sámi boats were mainly built for and used on the river and lake systems of the north. The same is true here. As in other places, this is reflected in the position of the mast.

The mast is usually stepped especially far forward in rowed ships for river traffic, like the Viks boat and the boats in the Valsgärde burials. In the historical period light boats built mainly for river and lake traffic, and types similar to these, have been used by the Sámi. In a depiction one can see how the Sámi have a square sail on a forward-placed mast as they sail with a strong downwind in a storm on Lake Saggat.

Remains of rigging details

The shrouds beside the mast have often had some arrangement for fastening them to the hull, so-called spreaders along the gunwale. The most well-known example is the rings of iron for the shrouds in the Ladby ship, but similar such are also found in the Swedish burials like Valsgärde 12 (UMF archive report). The rings, however, are not reliable devices for determining the position of the mast and the orientation, since they are often, like in the Ladby ship, placed at a distance behind the mast instead of beside it. The incline of the mast and other factors have been decisive for the placement of the spreaders.

Position of the anchor

The anchor of the boat was kept in the prow, as can be seen in several places on the Bayeux Tapestry. It is very unusual that a complete anchor has been preserved, as in the Ladby ship where it was completely of iron. Several types were used, both the ordinary type and a stone anchor. The anchor cable went through a big ring on top of the anchor-stock, and usually it is this ring that has been preserved in the burials. In the Oseberg ship, the anchor had one iron ring at the top and one at the bottom, approx. 8 cm in diameter (see fig. 220).
**Position of the gangplank**

In some cases there may be remains of the gangplank. As can be seen on the Bayeux Tapestry, the place for this is in the bow of the ship, a place where it was also found in both the Oseberg and the Gokstad ship.
Hull shape

The main way to determine the orientation of a boat in a burial is to study the hull shape. An ancient boat-building principle is that the hull of the boat is wider forward from amidships than in the aft part. The greatest width is found in front of amidships. Albert Eskeröd, an ethnologist who has documented boat building and boats from different times and different areas (1970), has also made a thorough survey of the church-boats (1973), i.e., special boats used on the journey to church that are mainly found in Lake Siljan, Dalarna (see chapter 3). They are also the traditional boats that most resemble the Iron Age rowed boats such as those from Valsgärde. After having studied the principles of boat building at Anders Bondesson’s boatyard in Siljan, a building place for such boats, Eskeröd concluded that:

It is very important that the greatest width in the boat is not amidships, but a little closer to the stem. The strakes must not lie and press in the water behind amidships when the boat is moving forward. It should let the water pass easily. Every boat constructor knows this whole principle. (1970:238 my transl.)

This is well illustrated in a boat that Bondesson built on commission in 1941. The aft part was made narrower to release the water easily. The same principle seems to have guided traditional boat building in most of Sweden and for a very long time. This is obvious when studying the Viks boat from the 11th century (Larsson 1997). When the boat builder Axel Lindberg participated in the reconstruction work on the Viks boat at the National Maritime Museum in 1993–1994, he immediately saw what was the prow of the boat. The long continuity of this way of designing the hull is also evi-
dent in that it was used already in the creation of the ship-shaped stone-settings in the Bronze Age. Today also aeroplanes are shaped in this way because of the same effects within aerodynamics. The Viking Age ships from Gokstad, Oseberg and Tune are all built in this way. The Tune ship, for instance, has its greatest width 0.7 m in front of amidships.

The shape of the hull can in many cases be determined for the boats in the burials by measuring the distance between the outermost rows of rivets when these are undisturbed. It has been possible to analyse the orientation in those cases when the exact position of each rivet is carefully documented and when most parts of a ship have been buried in the grave, as in most of the Valsgärde burials (Arwidsson 1942; Arwidsson 1954) and in Prästgården, Old Uppsala (Nordahl 2001). In grave no. 3 in the latter place, the width between the outermost rivets 1.5 m from the east-south-east stem is 1.0 m, while the width 1.5 m from the west-north-west stem is only 0.82 m. Measuring at 2 m from the east-south-east stem, it is possible to see that the width is 1.03 m, while at the same distance from the west-north-west stem the width is only 0.85 m. Here it is thus possible to see that the hull is wider in the east part and narrower in the west, and consequently the prow of the ship is found toward the east.

Distribution of nails and rivets
The situation with a wider prow and narrower stern part of a ship also has an impact when nails contra rivets have been used. The experimental shipbuilding performed when the replica Embla was built showed that, in the narrowest aft part of the hull, there was not enough space to hammer the plate in place onto the rivet on the inside. Instead it was easier to knock down the inside end of a nail from above, for which less space was needed. As a consequence, there are more strake-nails in the aft part of the ship than in the prow. Such nails have the ends bent inwards on the inside, in contrast to the straight nails used at the hood-ends of the planks at the side of the stems.

The orientation of the boat graves has probably had religious significance. As was shown in chapter 2, aspects of boat building and the shape of the boat indicate that often the stems point towards N-NE-E. For what reason? Was the ship heading toward another world presumed to be in that direction, or was it a consequence of the way the ship was pulled ashore and up from the adjacent waterway? Before we try to find religious explanations, the possibility of a practical explanation needs to be ruled out

8.3.5. An analyse of the orientation of the boats in some of the burials

The boats in the Valsgärde burials.
The boats in the Valsgärde burials are the easiest to determine prow and stern in, because of the thorough and careful documentation in both plan and section of the position of each rivet, preserved in the UMF archive.

In Valsgärde 1 (Fridell 1930) the widest part of the hull is in the East, where also extra “kneerivets” indicate the position of the mastbite. Here the stem is higher as well.

Valsgärde 2 (Dyverman 1929) has a slightly wider and higher hull in the East, where also an iron ring of the type used on anchors is found. The biggest width is found 1.9 m East of amidships.

Valsgärde 3 is harder to determine the orientation for, and the hull is here higher in the South-West, indicating a stem in the South-West, at the same time as the transverse rivets are found in the North-East. The rivet rows seems to be disturbed. If looking at the sheer-line, it is clearly raising higher until ca 4 m North-East of amidships, but further to the North-East the stem has fallen to the South side. Slightly to the North-East of amidships, the hull is also widest.

Concerning Valsgärde 4 (Odencrants 1933), the hull is both wider and higher in the East-North-East, and the widest part of the hull is found East-North-East of amidships, clearly indicating that in this burial the boat has been placed with the stem towards East-North-East.

The boat in Valsgärde 5 is wider in the North-East. The stem has thus been in North-East and stern in South-West. On the place for the rudder there are some extra rivets and mounts on the side, nr 274 and 200, on the gunwale above the rudder-frame. Those have probably been used to secure a reinforcement on the side where the band holding the oar to the side has passed through the gunwale strake, like in many boatfinds, such as the Oseberg ship.

The boat in Valsgärde 6 (Arwidsson 1942) is almost symmetrical, the widest part seems to be 0.23 m West of amidships, a small but uncertain indication of a stem towards West.

In Valsgärde 7 (Arwidsson 1977) the boat is both wider and higher in the North-East, where the stem has been. The widest part of the ship has been North-East of amidships. Like on the Gotlandic picture stones, the spear has been placed in the stern, here in the South-West.

The probably earliest boat in the cemetery, in Valsgärde 8 (Arwidsson 1954), is almost symmetrical. The hull is however widest East of amidships, showing that the stem has been placed in the East.
The small boat in Valsgärde 9 is significantly wider and higher towards East-North-East, with stem in the East-North-East.

The small boat in Valsgärde 11 is significantly wider and a little higher in the East-North-East. It has also 1.72 m East of amidships double knee-rivets, indicating a mast-bite with an extra bite. The stem is placed towards East-North-East.

The boats in Valsgärde 12 and 13 are on the other hand wider and higher in the West, and have been placed with the stems in West.

<table>
<thead>
<tr>
<th>Boat burial</th>
<th>H W stem m</th>
<th>2 m W, width m</th>
<th>1.5 m W width m</th>
<th>1.5 m E width m</th>
<th>2 m E width m</th>
<th>H E stem m</th>
<th>Other indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Va 1</td>
<td>0.50</td>
<td>1.08</td>
<td></td>
<td>1.14</td>
<td>0.64</td>
<td>E mast-bite?, E widest</td>
<td></td>
</tr>
<tr>
<td>Va 2</td>
<td>0.82</td>
<td>1.2</td>
<td>1.65 (1 m)</td>
<td>1.7 (1m)</td>
<td>1.2</td>
<td>1.2</td>
<td>E Anchor ring, E widest, E mast-bite</td>
</tr>
<tr>
<td>Va 3</td>
<td>1.42</td>
<td>1.3 (at 3 m)</td>
<td>1.35 (at 3 m)</td>
<td>0.87</td>
<td>E transv</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Va 4</td>
<td>0.9</td>
<td>1.1 m (at 1.8 m W)</td>
<td>161 (at 1 m)</td>
<td>162 (at 1 m)</td>
<td>1.25 (at 1.8 m E)</td>
<td>1.47</td>
<td>E widest</td>
</tr>
<tr>
<td>Va 5</td>
<td></td>
<td>1.0</td>
<td></td>
<td>1.11</td>
<td></td>
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<td></td>
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<tr>
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</tr>
<tr>
<td>Va 7</td>
<td></td>
<td>2.95</td>
<td></td>
<td>3.2</td>
<td>E widest, W spear</td>
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<td>0.71</td>
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<td></td>
<td></td>
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</tr>
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<td></td>
<td>1.32</td>
<td>0.43</td>
<td>E mast-bite</td>
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</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Va 13</td>
<td>0.96</td>
<td>1.47</td>
<td>1.3</td>
<td>0.84</td>
<td>W widest</td>
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</tr>
</tbody>
</table>

Table 30. Factors indicating orientation of the boats in some of the Valsgärde burials.

The results of the analysis show that earlier assumptions about the orientations of the boats should not be taken for granted, and that in most cases the stems are placed towards N-NE-E, though not as a rule without exception. Stems in S-SW-W also occur sometimes. There may be many different reasons for the variations, such as from which direction the boat was pulled out of the river, in which direction the death realm was thought to be, or which orientation was most highly valued. Some of these factors will be discussed here.

**Vendel**

In Vendel (Stolpe & Arne 1912) the burials were greatly disturbed, but there are still some indications of orientation. In Vendel XIV an anchor-ring was found in the east part of the ship, possible to determine as the stem. In Gamla Uppsala the best-preserved rows of rivets are in grave 3 and show that the stem was placed in the east, where the hull is significantly wider and higher.

**The Årby boat**

The Årby boat (Arbman 1936) is worth analysing with regard to orientation, since much of the wood of the hull is preserved.

In the Årby boat it is possible to determine the position of the prow by looking at the direction of the scarves. As can be seen, the scarves point towards the better-preserved west part, whereas the damaged east part must be the stem. In the photo (below) it can be seen how the first strake in the north (to the right) is placed on the outside of the strake behind, and the remains of the former edge
of the second strake are grounded on the outside for a scarf to the end of a missing strake in front of it.

Figure 223. The Årby boat seen from stem towards stern. Scarf pointing backward to the right, beside the keel. Photo Finn Martner. After Cederlund 1993.

8.3.6. Other indications of the orientation of the ships in the burials

The position of the spears on the Gotlandic picture stones

The orientation of the boats in the burials may indirectly be indicated by the use of space and the position of artefacts in the boats. For instance, the position of spears in boats may be a good indication, if studying the depictions on the Gotlandic picture stones:

<table>
<thead>
<tr>
<th>Picture stone</th>
<th>A</th>
<th>M</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alskog Parish, Tjängvide</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ardre Church VIII</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halla Parish, Broa IV</td>
<td>x?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halla Parish, Broa XVI</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hejnum Parish, Riddare</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lärbro Parish, Lärbro</td>
<td>x?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lärbro Parish, Hammar I</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lärbro Parish, Hammar III</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lärbro Parish, Stora Hammar</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stenkyrka Parish, Smiss I</td>
<td>x</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 31. The position of the spears on the Gotlandic picture stones. A=Aft, M= Middle, F=forward. Based on Lindquist 1941-42.

As can be seen in table 30, the spears are placed in the stern. The position of the spears is thus also a perfect indication of the orientation of the boat in the burial.

Figure 224. Detail showing the spears in the stern on the picture stone Hammars I from Lärbro Parish. After Lindqvist 1942.

In Valsgärde 7 and 8, as well as in the boat in Vendel XI, the spear is in the westernmost part of the ship. This can be interpreted as the stem, based on an analogy with the position of the spears on the picture stones.

Symbols on stem and stern in depictions

The boats in the burials also offer some insight into the use of symbols. As we have seen, whereas the stems in depictions and in the Norse sagas were equipped with an animal’s head and sometimes with a weather vane, the stern could be equipped with a religious symbol of divine protection. In burial no. 4 in Valsgärde, a ring with hammer pendants – a so-called Thor hammer-ring – was found on what according to my analysis is clearly the stern. A similar example was also found in boat burial no 1. at Prästgården, Gamla Uppsala Parish (cf. Nordahl 1994), according to my reinterpretation in the stern. The iconography offers information on the use of symbols on the stem and stern in the Late Iron Age. On the picture stone from Smiss I, Stenkyrka Parish on Gotland, the stem is equipped with a dragon’s head (Lindqvist 1942:128). On the stern, on the other hand, there is a ring decorated with hammer symbols, like in Valsgärde 4 and Prästgården in Old Uppsala.
Contemporaneous finds show that the stern was used for symbols of other deities as well. The spearhead, which is the symbol of Óðinn, also occurs, such as on the stern of the Ladby ship. A similar amulet-ring with a spearhead as symbol has also hung on the stern of a ship in a burial on the island of Ile de Groix, situated outside the coast of Brittany, France (Arbman 1952:332). Here, in a 10th-century grave, a ship had been burned. The ship had been larger than the average ship in the central Swedish burials, with the hull joined by 850 rivets and 200 nails. The amulet-ring on the stern has been reconstructed by Arbman (fig. 226).

Besides the spearheads pointing outwards there are rings on the inside, probably with the same symbolic content as the type A picture stones (Lindqvist 1942), as well as a sun symbol or perhaps a symbol of the fertility goddess Freya (?). An iron rib with big rivets has secured the amulet-ring to the stern, situated southwest of the main hoard of grave-goods in the central part of the grave. This ship seems to have been oriented to the northeast.

Groix. One of the four spearheads in the burial had been deliberately burned and bent before it was put in the grave. According to a smith, a very high temperature is needed to bend a spearhead or a sword, and an ordinary hearth will not suffice. It has to be heated in, e.g., a forge to get it to bend in such a way. Thus treatment with fire has in several ways been an important part of the boat-burial ritual. As a symbol of Odin, the spearhead has been sacrificed before the burial.

After Christianization, religious symbols sometimes continued to appear on the stern. On the Bayeux Tapestry, we can see that the stern of William’s ship is equipped with an angel blowing a horn.

A comparison with the orientation of a ship-shaped stone-setting

To interpret the ideological intention behind the boat burials can be ambiguous. Rivets may have fallen out of place, and stem-pieces that inform about orientation may be missing. The ship-shaped stone-settings, however, can offer a clear-cut message about the emphasised aspects, such as orientation. The best preserved, and also the largest, ship-shaped stone-setting is the one in Runsa, Ed Parish (fig. 227). The 55-m-long image of a boat has the high-raised, leaning stem-stone in NE, and also the adjacent raised stones show a marked sheer line towards the stern, while the stern is significantly lower. Also emphasised is the position of the mast, which is marked by a large boulder a little bit in front of amidships, 27 m (?) from the stem and 30 m (?) from the stern. This monument is erected in a cemetery one passes when approaching the Runsa hillfort – a large Late Iron Age fortified manor – from the land side. The monument is not placed on top of a hill in a monumental way as, for instance, the Kåseberga ship. Instead the ship is heading straight towards a steep cliff (fig. 227), similar to the steep cliff from which the boat of the Lake Söderby find had been thrown (see 8.1.). Maybe not only the cardinal direction in which the ship is heading, but also this particular cliff has a special importance; in rituals it may have been connected with the transition between life and death, where the ship may once again have been used as a ‘liminal agent’.
The orientation of other ancient monuments

Jonathan Lindström has in several articles (1991, 1993, 1994, 1995, 1997, 1998) discussed the orientation of ancient monuments. He has in the last article (1998:497 ff) summarised the orientation of graves, monuments, buildings and churches on the basis of material from south Sweden, mainly Gotland. His conclusion is that they are roughly oriented towards the cardinal points, but that contemporaneous monuments, even of different categories, share the same slight deviation from the cardinal points as we define them today.

A closer examination of the spatial organisation inside the hall-buildings, as well as on the farms that have a hall, reveals traces of an ideology in which the evaluation of orientation has played an important role, and which shows the same main tendencies I have shown here for the boat graves. For instance, it is clear from the spatial organisation of the dominating farm in Vallhagar that the hall (house 16) is placed separately on the northernmost part of the farmstead. In contrast to the other houses on the farm that have entrances in north and south, the hall has no entrance in the northern wall, only in the south and east. The entire farm has a similar plan, surrounded by a stone wall (?) with its main entrance in the southwest and an additional entrance in the east, but the innermost part to the north lacks an entrance.

Frands Herschend has discussed the emergence of the hall in Scandinavia (1993:175 ff). He points out that in the 4th century AD we can see the introduction of a third house on the large farms (1993:182). It is not common, but it can be found on such farms. It consists of one room with special-purpose hearths, and the finds here differ from those in dwelling houses (1993:183).

On a terrace running NNE-SSW, north of the burial-ground at Valsgärde in Old Uppsala Parish, traces of a hypothetical hall, were uncovered during investigations in 1994 (Norr & Sundkvist 1994:395). It could maximally have been 65 x 10-11 m, but the traces are very uncertain. Today one of the excavators estimates the length to hardly more than 40 m (Norr, personal information).

8.3.5. An attempt to trace the factors behind the orientation of the boat

The orientation of the boat graves has probably had ideological and religious significance. As was shown in chapter 2, aspects of boat building and the shape of the ship indicate that often the stems point towards N-NE-E. Why is that? Why not always? What is the reason for the diverging directions? Was the ship heading towards another world presumed to be in that direction, or was it a consequence of the way the ship was pulled ashore and up from the adjacent waterway? Before we try to find religious explanations, the possibility of a practical explanation needs to be ruled out.

Boat graves and waterways

The normal procedure for landing a boat at a shore was to arrive with stem first, as is also visible on the Bayeux Tapestry. Thereafter, either the anchor was dropped and the crew jumped over the gunwale, or, if the boat was closer to shore, the gangplank was hauled out from its storage place in the fore. When docking at a jetty the stem part was first with the gangplank at port side, and on a sloping shore the ship was pulled ashore stem first. It was probably done this way when the ship was drawn ashore on rollers or in a special ditch towards the burial site. As can be seen in a graphic presentation, this might explain the direction of the stem in the Valsgärde boat burials.

![Figure 228. Orientation in Valsgärde and Vendel in relation to waterways. Drawing by Phyllis Andersson. Based on Andersson 1980.](image)
The sacred directions
In Northern Asia and Northern Europe there is a tendency to consider north as situated east of the astronomical north (Ekblom 1938). In Estonia, many NE orientations have been observed in both pre-Christian and Christian graves, and Heiki Valk has seen a possible connection between the importance of the northerly direction in the graves and beliefs reflected in Estonian folklore collections (1995:141). He refers to the belief that keeping a dying person with the head towards the north prevented the soul from leaving the body. In folklore north was also considered to be linked to the beginning of life, and south to the end of it (Valk 1995:141). In the barn the corpse was placed with the head towards the north to avoid the stench. A burial with the head towards the north was believed to prevent the corpse from decaying. It was also thought to keep wild animals away from the grave.

The conception of cardinal directions: past and present
In Northern Asia and Northern Europe there is a tendency to consider north as situated east of the astronomical north (Ekblom 1938). In Estonia, many NE orientations have been observed in both pre-Christian and Christian graves. As was touched upon earlier, Sedov has found that burials among the Finno-Ugrian tribes were oriented towards N, with seasonal shifts to NW or NE (1990:141ff), and with N as the intended orientation based on a belief in a death realm in this direction.

Lindström has observed that graves from the Bronze Age and Early Iron Age differ in southern Sweden clockwise from today’s cardinal points, in the Vendel Period backwards and in the Late Iron Age clockwise again about 10-20 %, which also can be seen in the orientation of buildings including churches (Lindström 1997:505). He explains the differences with that the main cardinal points have been defined differently in different times (Lindström 1997:506), probably based on an orientation towards a celestial phenomenon, such as the point of sunrise or sunset in the beginning of summer or winter, as has been documented from medieval sources (Nilsdotter 1934).

That the perceived directions deviated from the real, is visible if ON sources are studied. The sea route along the Norwegian coastline was considered to run N-S, though in reality it runs more to NE if one comes from the south (Norr 1987).

8.4. Remains of a value system

8.4.1. The evaluation of space within the boat
The boat graves are equipped according to a common scheme that constitutes a reflection of an ideology of longue durée, which, apart from minor variations, can be traced continuously over 500 years. The organised structure of the grave is probably a manifestation of cosmological beliefs, but also ideas of the evaluation of space that are mirrored in ship terminology and that guide the boat-burial ritual.

The orientations of the boats in the burials comprise traces of cognitive structuring principles that were in play during the burial ceremonies. Although it might seem reasonable and possible that practical concerns lie behind the orientation of the boat, there are also factors that strongly suggest impacts of religious beliefs as well as different meanings and evaluation of the cardinal points and these can be seen in the traces of burial ritual in the archaeological material. The hidden norm governing the boat burial is even more visible if one looks at the interior spatial organisation of the boat graves. But what is the value system behind it? Is it related to the body metaphors of the boat?

The boat as a body
When the ranking goes from stem to stern, this can be related to notions of the boat as a body and to the belief that it was better to be placed in the part of the ship associated with the ‘head’ rather than in the ‘rear’ of the ship. The terminology used for the different parts of space on board the ship reveals this use of the human body as a metaphor, and indicates a related evaluation of the different parts of the ship.

The stem could be called Hofuð ‘head’ and hauss ‘skull’. Hofuð could also designate the attached stem-head (Jesch 2001:141; Falk 1995:52). The association between the (human) head and the front of the ship has been further developed. The ship’s bow is called ON hlýr ‘the area around the ears’, and the lower part kinnungr from kinn ‘cheek’. A part of the stem, or the stem itself, is also called barð (Jesch 2001). In Egils saga it is said that kom barð skutunnar á kinnung karfans ‘the barð of the skuta hit the kinnung of the karv’ (ch. 57, my transl.). The word barð could also be used alternatively with skipskegg ‘ships beard’ (Krók 36). The hole in the stem, visible in the Viks boat, is called barðhole, from barðhole.

Hals ‘neck’ is the name for the foremost place in the ship (Falk 1995:103), naturally situated behind
the head. The stems occur in the composition *halsstefni* (Falk 1995:47). There are plenty of references to this in the Norse material and the skaldic corpus. In Fostbrödrasagan 93, for instance, ‘Thor-kel rei i halsi, Tordr I midjuskipi, falgeirr I austr-rumi...’ In Iceland *barki* at the same place means ‘throat’, a term also in use in the Faeroe Islands on fishing boats and a parallel to *hals* and *framsstaðn*. *Hals* was, and still is, the name for the front part of the lower rope from the sail (Falk 1995:79). *Bogr* has given name to the front part of the ship (Falk 1995:66) and also to the *boglina*, i.e., the rope tied to the stem (80), in the poetry the fore part of the ship (66).

In the aft part of the ship we find *laer* (thighbone), *laterr, laring* (Falk 1995:66). The aft part of the keel is also called (*kjalar*) *haell* ‘heel’ (Falk 1995:45). Skrog ‘hull’ has a second meaning as ‘body of an animal’ (Falk 1995:67).

The names for the different parts of the ship often use, as can be seen, the human body, and sometimes an animal’s body, as a metaphor, and thus also reveal an evaluation of the different parts of the ship. Such associations must be taken into consideration when interpreting the use of space within the ship in a burial, especially regarding the position of the deceased, the animals, and the distribution of the grave-goods. My belief is that the norm may have been to place the deceased in the front or central part of the ship, and the rest of the animals further back in the ship and in accordance with the value given to the different species. Behind the deceased and foremost in almost all the burials, if the stems have been within the range north to east, are the horses and the dogs, which were highly valued in Late Iron Age society. In the aft part of the boat, beside the aft part, or behind the boat with this orientation of the boat, are the cows, pigs and other animals. This value system regarding animals has endured until the 19th century in the spatial use of the farm in Sweden, where the stable can be found closest to the manor house, where also the dogs are found. Beside a separate yard, the buildings for the other animals are found (see below).

**Sacred directions?**

As can be seen from an analysis of the orientation of the boats in the burials, many are placed with their stems in a N to E direction. Also the position of the boat burials in relation to other burials is sometimes to the northeast, such as the boat burials at Norsa in Köping, Västmanland, which are placed in the northeast part of the cemetery while the simpler graves are to the southwest. The boat burial at Smedby in Hammarby Parish, Uppland, is situated to the northeast in relation to the other burials in the cemetery.

With regard to many other ancient monuments, especially cultic and other important sites, the same orientation seems to have been sought. In the northeastern part of Old Uppsala, at Södra Kungsgårdsplatan, the remains of two large buildings were revealed during excavations in 1988–1992 (Nordahl 1993:59 ff; Hedlund 1993:64 ff). One of the houses was 40 m long with curved walls of wattle and daub; it was 10 m wide at the middle, but only 3.5-4.5 m in the south part. The other house was rectangular, 26 x 10 m, with walls of planks and posts in stone-lined postholes, with an annex or a separate house to the south (Hedlund 1993:67). Radiocarbon dates point to the early Vendel Period for the smaller house, and the late Vendel Period for the large house. The excavated buildings were oriented N-S. On the south side, the large hall building has remains of an entrance, 3 m wide, with a 12 x 3.5-11 m large entrance-hall, as well as remains of a connecting rampart. This may indicate that the innermost part of the building, situated to the north, was the most sacred part of the hall.

As a parallel can be mentioned a few of the excavated west Slavonic worship halls. One of these, found at Gross Raden and dated to the 9th century AD, has an entrance from SW, and the innermost part is situated to the NE (Slupecki 1993:270). Ralswiek cultic hall, from the 8th–10th centuries, is situated in ENE-WSW, with an entrance and ‘offener vorbau’ (Herrmann 1984:132) in WSW and the sacred innermost part in ENE. Remains of a hall were also discovered in Chodlic, oriented NE-SW, with a narrowed entrance room in SW (Gardawski 1970:49).

A closer examination of the spatial organisation inside the hall, as well as on the farms that contain a hall, reveals traces of an ideology in which evaluation of the orientations has played an important role, and the same main tendencies are visible in the boat graves. For instance, in the spatial organisation of the dominating farm in Vallhagar it is clear that the hall (house 16) is placed separately in the northernmost part of the farmstead. In contrast to the other houses on the farm with entrances in north and south, the hall has no entrance in the northern wall, only in the south and east. The whole farm has a similar plan, surrounded by a stone wall (?) with its main entrance in the southwest and an additional entrance in the east, but the innermost part to the north lacks an entrance.

The humans and animals in the Valsgärde cemetery are placed according to the same scheme, following a fixed order from N-NE-E towards S-SE-E: humans first generally amidships, and behind the humans and close to them are horses and dogs, which are the most highly valued animals. The horses are normally towards or outside W-N (generally port side), and the dogs in the ship at E-SE-S
The worship of the east

There is evidence that worship was associated with the cardinal direction east. This is related to an early sun-cult, as the researcher Edsman has concluded: ‘Heathen men worshipped the sun as a god, and therefore they bowed to the East, where the sun rises...’ (1982:422). An early heathen worship of the rising sun in the east in connection with the antique sun feast on 25 December is well known. It was replaced by the Christian celebration of Christmas in AD 337. That the earlier cult continued long afterward is evident from Pope Leo the First’s complaint that even the Christians on Christmas Day stood on the stairs to St. Peter’s Basilica and greeted and welcomed the rising sun by bowing (Migne 1954:218f). That this type of sun-cult was also practised in Scandinavia is evident from the Old Swedish Pentateukparafrasen, where the Christian sun symbolism stands in opposition to the heathen sun worship: ‘Heathen men worshipped the sun as a god and therefore they bowed to the east. Now our Lord wanted that his people should not have such habits that the heathens had...’ (SFSS 60:377). The text also says that efforts were made to try to get Christians to bow to the west instead, at the same time as it is important that at the Second Coming they turn to the rising ‘spirit-like’ sun in the east when the risen Jesus Christ returns. The rising sun as a symbol for the risen and returned Christ is found in several places in early Nordic Christianity. For instance, the Icelandic priest Einarr Skúlsson in his drapa to Olav the Saint describes Christ as heims ljós ‘the light of the world’ and bjartr rodull ‘the bright sun’ that was born from the ‘clear star of the sea’ (Edsman 1982:425).

The ancient habit of worshipping the east continued, because the rising sun was also a deeply rooted symbol of Christ. In the introduction to the Christian part of both the Gulating law and the Borgarting law, it is said that praying should be done turned eastward. This is also prescribed in GNH, with the motivation that, ‘our parental earth, paradise, is situated in the East; the Sun that is a sign for the king Christ, the true Light, flows up in the East; at the Resurrection the righteous shall shine like the sun’. In Óláfs saga helga 113, by Snorri Sturluson, the king encourages the heathen peasants to look towards the east, as ‘there comes now our God, surrounded by light’. The moment of sunrise may have been important. Norr has (1998) discussed a sentence in the inscription on the Sparlösa stone, amass natu auk takar ‘between day and night’, and suggests that this has to do with the time for the birth of Aiuls and Alrek, and that it has had a symbolic meaning.

The Christian sun symbolism resulted in that churches, and the altar in churches, were oriented towards the sunrise in the east. This may be seen as a continuation of a prehistoric sun-cult. The higher value given to north and east can also be seen in the use of space inside the church, with the eastern part, i.e. the chancel, so sacred that only an initiated priest was allowed to enter it. The church is often seen as a symbolic ship, and this is mirrored in terminology, where in the Swedish language one speaks of mittskepp ‘central ship’ for the midsection, and sidoskepp ‘side ship’ for the areas on the sides in a treskeppig kyrka ‘a church where space is divided into three parts lengthwise by columns and architecture’. The holy eastern part is the front while the west is the back, and in this part common people are situated. There is a symbolic ranking of the places and people, with rank getting lower the farther west one comes. Poor people have their places farthest to the west, and criminals placed in chains outside the church by the western entrance. The Christian graves, as is well known, were placed E-W with the head in the west, since the awakened dead should rise and look eastward and face Christ when He returns at the Second Coming.

The value of north from prehistoric to historical time

The north as an important and quite highly valued direction continues into the beginning of the Christian period. On the basis of churchyard finds from Gotland, Lena Thunmark-Nylén (1995:161) has concluded that, in the earliest Christian time in this area, burials also occurred to the north of the church in the churchyard (1995:161). These graves, dated to the 11th century, have a clear female association. All the graves found here belong to women. The same division of space along gender lines has prevailed up to the 20th century inside the church, where north is the female side and south is the male side. There is also a ‘women’s gate’ in the north wall of the church. An ideological change is visible during the Middle Ages. North becomes bad, and the burials on this side of the church cease; also, women are now buried in the south (Thunmark-Nylén 1995:161). Behind this is partly a belief that
churches would fall in this direction on Judgement Day. Sacred springs believed to have healing capacity should have their water running northward (Flentzberg 1909; Tillhagen 1997; Kättsström Hök 2004). By washing there, the bad things would go back in the same direction they came from, i.e. from the north, and persons would be freed of diseases. In some towns and parishes, the execution place for the lowest ranked in society, the criminals, is also close to the northernmost borders.

In the Baltic, a division of Christian burials along gender lines has been observed in some districts, but here governing the orientation of the body. In Estonia, in the Voruma district, as well as in the southernmost cemeteries in the Tartuma district, the males are buried with their heads between NW and SW, and the females between NE and SE (Valk 1995 p. 138).

According to Britt-Marie Näström (2001:280), during Christianization there was a succession from a cult of Freya to the Virgin Mary. When pre-Christian traditions concerning Freya were transformed in the Christian community, the rituals instead became devoted to the Virgin Mary. Perhaps also associations between deities and orientations were transformed along the same lines? In the medieval churches there is an ‘Arch of Triumph’ that separates the sacred chancel from the rest of the church. Crowning this arch is the crucified Christ, but to the north was in the Middle Ages almost always found a sculpture of the Virgin Mary and an altar dedicated to her. The southern end of the arch has a wooden sculpture of the local saint, who was also the patron saint of the church, and an adjoining altar (Boethius 1980). In Uppsala Cathedral, a special phenomenon involving the Virgin Mary occurs at vernal equinox. At midday, the sunlight through the window shines directly on the northern wall painting of the Virgin Mary, which is shaped like the window.

There may have been a change both in the cult of the Virgin Mary and in the evaluation of cardinal north. In the earliest Christianity in central Sweden the Virgin Mary had a strong position, as exemplified by the prayers in runic inscriptions. This was probably an influence from Eastern Orthodox Christianity. Ingmar Jansson has shown that the early medieval burial practices are also in accordance with what was acceptable within the Orthodox Church but not within the Catholic Church, such as continued burials at the heathen cemeteries (2005:37ff). In the Valsgärde boat-burial cemetery there are also a number of Christian inhumation burials in wooden coffins, continuously throughout the 13th century. They cease at the latest in the first half of the 13th century in connection with other big changes in society, and probably also as a result of the ideological changes in which also north loses value. With the kings from Sverker’s dynasty and Birger Jarl with his descendants, the Catholic Church got a firm grip on central Sweden and successfully expelled all previous ‘heathen’ influences.

Partly behind the degradation of north is a new set of ideas, such as a belief that churches will fall to the north on Judgement Day. Another is the idea that sacred springs with healing capacity should have water running northward. By washing there, the bad things would go back in the same direction they came from, i.e. from the north, and a person would be freed from diseases. In some towns and parishes we also find the execution place for the lowest ranked in society, the criminals, close to the northernmost borders.

**The relation between orientation and myth: examples from the East**

Is it really possible to explain the orientation of the boats in the burials by myth? In Scandinavia, despite the large ON material, the relation between orientation in general and myth is not clear. East of the Baltic Sea there are traces of similar beliefs as in ON mythology, which include traditional explanations for why the deceased has been oriented in a certain way. Here it is clearly related to cardinal directions, a fact that also has value for the interpretation of the orientation of the boats in the Swedish burials.

Concerning the archaeological material in the east, Sedov has studied the orientations of the dead among several of the Finno-Ugrian groups during the 6th to 14th centuries AD (1990:141ff). The Finns and Tavastians buried their dead with the heads to the north, or to the west with some variation, the latter because of influence from Christianity. The Livs buried their dead with the head laid to the north, sometimes northeast or northwest. Among the Vodians, Ingrians and Karelians in the inhumation burials the heads were laid mainly to the north, with but seasonal shifts to northeast or northwest (Sedov 1990:142). In the Vepsian region, cremation prevailed until the 11th–13th centuries, when inhumation began to appear. They were integrated with the Slavs, and have a diverging orientation, first to the south then to either west or east, which Sedov interprets as attributed to newly-arrived tribes (1990:143). Among the Merians by the Volga, in the 5th to 10th centuries, the dead were buried with their heads pointing north, and after that time also eastern orientation occurs. Among both the Baltic–Finnish tribes and Finno-Volga tribes, Sedov finds that the northern orientation of the dead dominated, except for among the Moksha, where the dead were placed in the opposite direction (1990:144).
Sedov has found the background to the orientation in the myths and legends, which necessitates a short review. In all preserved legends of the Finno-Ugrian peoples, the world was seen as divided into three zones. The middle zone was the earth, surrounded by the waters of an ocean. The lower zone was a zone of cold and darkness, and the upper zone – the sky with the North Star in the centre – was the habitat of heavenly gods. In Finnish and Karelian myths the rotating firmament has a motionless centre, the North Star. The firmament was seen as supported by either a world mountain, a world pillar, or a world oak tree, the top of which touches the North Star. This supporting mountain (pillar/tree) is in the north, and beyond the river Manala (Tuonela) is the kingdom of the dead. Among the Ostyaks and Voguls there are similar legends. Here in the far north, behind the mouth of the river Ob in the cold sea, there is an inaccessible ‘upper world’ for ancient people, which was the heavenly dwelling for the souls of the dead. In the legends of the Ob-Ugrians, the souls were taken there on the back of a bird, and the North Star was the entrance to the ‘upper world’. In the Finnish legends, the land of the dead is situated in mythical waters far north, and is called ‘Northern House’ (Pohjola). Among the Karelians the land of the dead is in the Arctic Ocean. Based on these beliefs, Sedov has shown that ‘...it is quite clear why the Finno-Ugrians buried their dead with their head pointing to the north. According to the beliefs of the ancient Finno-Ugrians a man’s soul was in the head, and the soul of the dead moved to the next world and continued to live there. The orientation of the dead with the head pointing to the north, to the North Country and to its entrance – the North Star – may have furthered the quickest transference of the soul to the realm of the dead.’ (1990:148).

The important study shows many connections with Scandinavia. A belief of a similar division of the world is found among the Sámi in the north, and the ‘world tree’ has close connections with the in ON mythology well-known tree Yggdrasil, though this was an ash. As will be shown later, the association between the death realm and a place beyond /within water in the form of a river or a sea, was also common in Scandinavia. My belief is that it was most important to place the deceased in the correct position according to the cardinal directions, but also, if possible, to have the ship oriented towards a death realm in what was considered to be north. As will be seen, north was not always considered in the same way as today, but often further to the east.

To summarise: it seems as if the cardinal directions have had an influence when the boat was put in the grave, and when the grave-goods were positioned within the ship.

**Ideology and cosmology reflected in the use of space on the farm**

What is most important is that the value system that *always* occurs in the boat burials, is the one related to cardinal directions. A similar, symbolic expression of the same evaluation can be seen in the spatial arrangement of the traditional farm of central Sweden and to some extent northern Sweden. This goes back at least to the time when solskifte steered the land division, when farms and fields were oriented in rows from east to west, though many excavated Iron Age farms show that the same ideas were established early on. The ethnologist Sigurd Erixon studied the traditional buildings of Sweden and documented differences in traditions concerning house types and the spatial distribution on the farms. Of interest, for example, is that in the type of farm he called ‘the central Swedish farm’ (1982:685), i.e., the type ‘characteristic for the Mälar- and Hjälmaren landscapes’, the ideology concerning the evaluation of space in relation to cardinal directions is the same as found in the boat graves.

The use of space is as follows. In the northernmost, inner part of the farm is the mangård ‘the yard of man’, with the manor in the front (north) where humans lived, and flanking one side of it (usually in the west) the undantagståg ‘the house of exception’ i.e., the house for the retired couple that were the parents of and preceded the present farmer. By the same ‘yard of man’, often on the eastern side, is the stable for the horses. South of this yard and separated from it by a building, a fence or a hedge, is the fägård ‘the yard of the cattle’ (?). This square area is surrounded by barns for the pigs, cattle and other animals of the farm, and by buildings for carriages and equipment. Farthest to the south is the portilider ‘the house of the gate’, with the gate to the village road and the outer world. Though mainly found in Uppland, Västmanland, Södermanland and Närke, this type of farm is also known from Dalarna, southern Götaland, and eastern Östergötland. In this area Erixon identified two similar farm-types: the ‘Middle Swedish farm-type’ (1982:676) with the mangård and fägård as two squares separated from each other, and ‘the gothic farm-type’ (1982:686) in Östergötland, with a fence instead of a building separating the two yards. Here and in northern Sweden, where the ‘north Swedish farm-type’ consists of one square (1982:642), the same ideology prevails for the spatial distribution and orientation.

The ‘west Swedish farm type’ (1982:701) only occasionally follows this scheme, and this also applies to ‘the south Swedish farm-type’ (1982:702). Concerning the farm types of interest here, Erixon states that ‘in Middle Sweden the farms have been double as far back in time as the
sources can be followed – and that in this case an apparent correspondence exists between different social groups’ (1982:672 my transl.). The chieftains’ estates and the castles had the same plan, but with additional rooms and a second floor with a sal. This can, for instance, be seen in the medieval Mörby Castle in Uppland. Here, in the northernmost part of the fortress area, the manor house was built on a cliff by the lake Skedviken in the 15th century. This was a rectangular stone house in two floors, with the barn and sheds in the south. The plan was similar to that of peasant farms, but in the stone house an additional floor was added. Here was the sal, a room for feasts, and in the eastern part the castle church. The area for this type of farm, with the same fixed position in relation to cardinal directions, is central Sweden, mirroring an ancient evaluation of space within this area.

The orientation of the boat: was the buried ship heading towards an afterworld?

There may be other explanations for the orientation besides the evaluations of the cardinal directions, such as conceptions of the location of the afterworld together with an idea that the boat was heading towards a death realm. Greta Arwidsson has pointed out that the boats in Valsgärde were equipped for a long journey (1942). On the other hand it must be questioned whether the ship was really intended to be used for this journey, and if it was oriented towards the afterworld. A study of, for instance, the Oseberg ship shows that it was clearly not intended to make a journey in this world since it was tied to a large stone (Shetelig 1919). Perhaps one thought that it could be used in another realm? The regularity in the orientation for longer periods indicates that there may be a connection between the orientation of the ship in the burial and ideas about the direction in which the death realm was situated, but the occurring exceptions must also be explained. But in which directions were the death realms believed to be situated? How many worlds existed in the mythological landscape? And which of them could be entered by the deceased? These are complex questions. Concerning the worlds, the binary model Midgarðr-Utgarðr has been questioned (Simek 1993:54, 255; Ross 1996:59ff; Brink 2004:292). Instead, in the Edda poetry, several worlds and mythological spheres appear. Besides Mannheimar ‘the world of man’, there are Brúðheimar ‘the home of the powers’, Jötunheimar ‘the home of the giants’, Muspelheimr ‘the world of fire’ situated in the south, Prynhheimr ‘the home of giants’, Niflheimr ‘the dark, cold world’ situated to the north, Álfheimr ‘the home of alfs’, Vanheimr ‘the home of the vanir’ which according to Brink was probably made up by Snorri (2004:294), Ásaheimr/Midgarðr ‘the home of gods’, Himinbjörg ‘the heavenly home of Heimdall’, Hel ‘the death realm’, Iðavolr ‘the central place in Ásgarðr’ and Midgarðr ‘the home of man’, to mention some of the possible ‘worlds’, or ‘spheres’, or ‘homes’ that Brink has identified in the complex mythological landscape (Brink 2004:294). Utgarðr is, according to Ross (1996:59), not verified in the Edda poems and occurs only once in Snorri. Places related to death include, in addition to Hel, also Nástrond with the interesting meaning ‘the shore of the dead’ (Brink 2004:294), as well as Valholl ‘the hall of the fallen (warriors)’, one of the halls and buildings of the gods in the world Ásgarðr (Brink 2004:295).

The death realms are sometimes specified in relation to cardinal directions. Hel is considered to be situated downwards and towards the north. It is on the opposite side of the river Gjoll, but can be reached across the bridge Gjallarbrøen.

Jötunheimar, which was interpreted by early scholars as a death realm (Schöning 1903:9), is according to ON sources probably situated to the north or east. For instance, when the leader of the giants, Hrymr, arrives he comes from the east (Lokasenna verse 69). When Thor is going to Jötunheimr he travels eastward and to the sea (Gylfaginning ch. 44), but it is also said that Frey looks northward when he tries to catch sight of Jötunheim (Gylfaginning ch. 44). This is in line with the information in Skáldskaparmál (ch. 17) that when Thor comes from Jötunheimr with the giant on his back, he comes from the north. In this stanza it is also stated that he waded across the water Élivágar.

Was the ship oriented towards the moon? This could explain the diverging directions in the burials (see above). The moon is mentioned in connection with the journey to the afterworld in Draumrskvædet (Liestøl & Moe 1920:32). The similarity with the shape of a ship has been used to explain why the ship has become a symbol of the moon (Tallquist 1947:133ff). In the Mediterranean the moon has been considered the dwelling place for the souls of the dead and has had great importance in burial rituals as a symbol of eternity and rebirth. However, there is unfortunately no reliable evidence that the moon has played a part in the Late Iron Age cult in Scandinavia.

Was the ship oriented towards the celestial body that symbolised the divinity associated with the ship or for which the boat in the burial was destined? The planet that has been most associated with a fertility deity is Venus. The regular appearance of this planet, and the divine associations with it, has placed it in focus at religious calendar feasts around the world. Göran Henriksson has calculated the position of Venus at the vernal equinox and concluded that every 8th year Venus is in conjunction with the sun at this time, but in the middle of
this period between the big festivities (Henriksson, oral information). He has also revealed that the concept 'every 9th year', mentioned for the disablót, in fact was every 8th year since the 9th was also the first in the next cycle. In the same way Jesus was considered to rise from the dead on the third day, which we celebrate on the day that is the second since we count from Good Friday, but which in the Middle Ages was counted starting from the day of death. According to Henriksson’s calculations, the disablót was celebrated in the middle of these 8-year cycles (Henriksson 1996:109ff).

Possibilities and problems
It seems from the sources that the location of a death realm as direction for the boats heading towards north to east cannot be ruled out. Though, as we have seen above, there are also other directions that occur in the orientation of the burials. What is most consistent is the position of the deceased in relation to the cardinal directions, but the boat itself may be heading either to the northeast or southwest, though the former seems to dominate and possibly may be heading either to the northeast or southwest. Though, as we have seen above, there are also other directions that occur in the orientation of the burials. What is most consistent is the position of the deceased in relation to the cardinal directions, but the boat itself may be heading either to the northeast or southwest, though the former seems to dominate and possibly is the rule. The boats in the Valsgärde burials with a southern direction occur in the centuries when the contacts with the Islamic world are strong, in the 8th to 10th centuries, which may have had an influence since south is an important direction there. When the Byzantine journeys become more intense at the end of the 10th century (see chapter 7), the boats are again placed with the stems towards the northeast. More research is needed to answer the question of why the boats are oriented in different ways.

The boat burials in bogs
The association between ships, water and the chthonic deities that assist on the journey to the afterworld probably lie behind the custom of placing burials in bogs. This might explain, for instance, the little-recognised fact that the Oseberg grave – the burial mound with its magnificent ship burial – is erected in a bog, with a clear connection to the wetland deities, in the same way as several details in the burials have been shown to be associated with the cult of Freya (Ingstad). The location of boat graves in bogs underlines the link between the sacrifices to the water deity and the ship. Boat graves in bogs are known from the Late Iron Age in central Sweden and Norway. The Norwegian finds are several and include the well-preserved Holmedal ship burial (Shetelig 1927:62, 1928:50, 1929:44 no.15) in a bog at Holmedal, Holmedal Parish in Sunnfjord (BM 7893) and the burial in a ship covered with a mound of stones in a bog at Skarstein, Rugsund Parish, Nordfjord (Shetelig 1929:44). Unfortunately most of the ship remains from Skarstein were removed by the farmer, some of them used for the manufacturing of tools and shafts at the farm, before the Bergen Museum learned of the find and could take care of the remaining keel and stem (BM 5682). This ship was oriented NNE-SSW. Another example of this burial practice is the boat grave in a bog at Öksnes, Öksnes Parish, Nordland (Gjessing 1941) and perhaps also the find from Mork, Volda Parish, Sunnmøre where also split logs were found that might be remains of a wooden chamber similar to the one found in the Holmedal boat burial (Shetelig 1929:46). Shetelig is very reluctant to characterise the find from Mork as a boat grave, since the boat fragments were intentionally broken like in Kvalsund. In Sweden the Årby boat (Arbman 1936:249) was situated beside a spring, where a modern-day well was being dug when the boat was found. This is another outcome of the connection between the water deity and the ship.

The wish for fertility meant a wish for new life, not only for vegetation and growth but also for animals and humans. Probably the dead would be guaranteed a rebirth in the special death realm governed by the fertility deities.

The habit of sacrificing in bogs is well attested in the Old Norse sources. The blót in the bogs is described as being done in pits, just as was done at places such as Örsmossen and Rickebasta in Uppland, as well as at Kvalsund in Norway where the sacrifices were in pits with open water in the bog (Näsström 2001:256). For instance in Kjelnesingarnas saga it is said, ‘But the humans that one sacrifices were thrown into the bog that was outside the door; it was called ‘the blót well.’ Of a man called Torolf it is said, ‘Torolf stole the property of others and was the biggest thief; he had also blót pits because people thought that he sacrificed both humans and animals’ (Vatnsdoela saga ch. 41).

8.3.6. The spatial distribution within the ship in the burial

The position of the deceased
The position of the deceased has earlier been based on preconceived notions concerning the orientation of the ship in the burial that the ships are always placed with the stems towards S-SW-W. These assumptions have been the base for most interpretations of the use of space within the burials, and not at least, the position of the deceased. When Schönböck describes a typical boat burial he says:
...richly dressed the deceased was put to rest in the aft of the boat, the man surrounded by his weapons, the woman with her jewellery, and the boat otherwise filled with necessities including food provisions that could be prepared on the cooking equipment brought on the journey. (1980:110 my transl.)

There are often fragments of human bones in the boat burials, which can be used to decide the position of the deceased in the ship. In the following scheme I have divided the space within the ship into three equal parts in order to check the validity of earlier statements:

<table>
<thead>
<tr>
<th>Boat</th>
<th>Deceased</th>
<th>Human remains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valsgärde 1</td>
<td>M-</td>
<td>Tibia?</td>
</tr>
<tr>
<td>Valsgärde 2</td>
<td>M+</td>
<td>526 klippben</td>
</tr>
<tr>
<td>Valsgärde 3</td>
<td>M</td>
<td>Skull, spine, vertebrae, pelvis</td>
</tr>
<tr>
<td>Valsgärde 4</td>
<td>M+</td>
<td>One bone</td>
</tr>
<tr>
<td>Valsgärde 5</td>
<td>M</td>
<td>Fragment cranium, +some bones</td>
</tr>
<tr>
<td>Valsgärde 7</td>
<td>M+</td>
<td></td>
</tr>
<tr>
<td>Valsgärde 9</td>
<td>M-E</td>
<td>Tooth and pieces of cranium</td>
</tr>
<tr>
<td>Valsgärde 10</td>
<td>M</td>
<td>Cranium, teeths</td>
</tr>
<tr>
<td>Valsgärde 11</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Valsgärde 12</td>
<td>M</td>
<td>Tooth enamel, dissolved bone fragments</td>
</tr>
<tr>
<td>Valsgärde 13</td>
<td>M+</td>
<td>Cranium, tooth enamel, dissolved bones</td>
</tr>
<tr>
<td>Valsgärde 15</td>
<td>M</td>
<td>Tooth+</td>
</tr>
</tbody>
</table>

Table 32. The human remains in the Valsgärde boats. W= western 1/3; M= middle 1/3; E=eastern 1/3 part of the space within the ship. +=east of amidship. - = west of amidships. After find register in UMF archive.

As can be seen from this scheme, the deceased is instead placed amidships. This may recall the early text Beowulf, in the ritual performed when Scyld, the father of Beowulf, died, the deceased is placed by the mast:

aledon þa leofne þeoden,
beaga bryttan on bearm scipes,
mærne be mæste. Þær wæs madma fela

of feorwegum frætwa gelæded;

“They laid their dear lord, the giver of rings, in the bosom of the ship; they put the glorious one by the mast” (Beowulf 35, tr. by Heatt 1967).

The ship was then equipped and put to sea. The results of my investigation show that the deceased in the Valsgärde boat burials has not been placed as earlier has been suggested, neither at the helmsman’s place, nor in the prow, but instead by the mast amidships.

The position of the animals

The position of the animals within the ship, in relation to the deceased and to the cardinal directions, follows a fixed scheme based on an ideology that lasted for 500 years, as can be seen from the Valsgärde burials. Smaller changes occur over time, for example a decrease in the number of animals buried with the dead, but the main structure remains the same.

The different species of animals also have their set places in the ship that are determined beforehand and that derive from a cognitive idea of the use of space shared by the participants in the burial ritual.

How should this be interpreted? The standardised manner of placing the grave-goods reveals a ranking of artefacts and animals, either in relation to the body metaphors in the boat, or in relation to the evaluation of cardinal directions (see below). Closest to the ‘head’ of the ship we find the deceased. Behind the deceased are the highly valued animals like horses and dogs, and in the back part or behind the ship are the less valued ‘food-source’ animals like pigs and cattle. This kind of symbolic expression corresponds to the evaluation of animals known from ethnographic documentation of 19th-century Sweden, where it is expressed in material culture. The finest materials with the most elaborate decorations and carvings were used for the farm horses, while the other animals such as cattle and pigs had their equipment made of materials of lower value, often of secondarily used material and undecorated such.

The idea of the ‘empty’ part of the ship

What was to be found in the northern to eastern part (prow) of the ships, which in most cases seems to be empty? Because of the interpretation of the boat as placed with the stem towards SW, and because of an idea that the deceased was placed in the helmsman’s seat, it has often been assumed that the ‘empty’ northeast part of the ship was reserved for the dead in the role of ‘helmsman’ by the rudder.
The limited or absent human remains in the boat burials have favoured this kind of hypothesis. However, in most graves there were a few bones left that revealed where the dead had been placed, and in most cases this was amidships, by the mast.

The use of space on board ships; analogies with better-preserved finds and information from depictions

The Norwegian ship burials
The ship burials in Norway are a guide to the positioning of the grave-goods inside the ship. They make it possible to study the use of the different parts of a ship in a burial because the hull and rudder in many cases are preserved, so that there is no doubt about the orientation of the ship. Here the richly equipped Oseberg ship will suit our purposes perfectly, though one can object that the example is situated far from the east Swedish boat graves that will be interpreted here.

The Oseberg ship burial (Shetelig 1917a) in Vestfold was investigated in 1904. The ship grave had been placed in a bog, where the ship was covered with blue clay and with a large mound 6.5 m high and 40 m in diameter. Two women were buried in the grave inside a specially built chamber of timber, which was placed just behind the mast. The front of the ship was not empty. Here were found a wagon, four sledges, two tents, three beds, two wooden pails, oars, a gangplank (?), an anchor, and much more. Placed with the dead in the chamber were beds, several chests and casks, two looms, a tapestry, and rattles. In the back of the ship – just as in the Swedish boat burials if the orientation is reinterpreted – was the kitchen equipment, including two iron cauldrons, a tripod, plates and spoons, a hand-mill, as well as food provisions such as an ox (Shetelig 1919:263; Brogger 1988:109).

In the same way, the front of the Gokstad ship (Nicolaysen 1882) was not empty but filled with wooden artefacts which, unlike the case in the Swedish burials, were preserved: 3 boats, 6 beds, a tent, oars and possibly a sleigh, as well as a barrel for water, a kettle, a trough and wooden plates, bast rope, and textiles (for a sail or tent?). In the central part behind the mast was the burial chamber with the deceased, as well as a bed, textiles, fishing equipment, riding equipment, a gaming board, a pouch, and boxes. In the aft part of the ship was the cooking equipment. It included a kettle with hanging arrangement, wooden pails, six wooden cups, a plate, and a peacock.

The position of the grave-goods in the Oseberg and Gokstad ship burials, where the ships’ preservation allows a determination of what is stem and stern, corresponds well to the positioning of the artefacts in the east Swedish boat graves if these are re-orientated. If the organic material had not been preserved in the Norwegian graves the front of the ships would have appeared as empty as in the Swedish burials, where as we can see in most cases the ships are placed with the stem towards north to east. The apparently ‘empty’ front part of the ships may, like in Gokstad and Oseberg, have been filled with oars, beds, possibly also wagons and sledges, tents and wooden equipment for the ship, a gangplank, as well as wooden casks for water, all of which consist of organic material that would not leave many traces. At least the oars and the gangplank could be expected to have equipped the rowing boats of the Swedish graves as well. The aft part of the ships, which accordingly is usually found in south to west, is filled with cooking equipment and food provisions just as in the Norwegian burials.

Bayeux Tapestry
The organisation of space within the ship is partly adapted to practical purposes. The explanation for this can be seen on the Bayeux Tapestry, and it has not changed much since that time. For instance, in the burials as well as during the seafaring the kitchen utensils are almost always placed in the back part of the ships. This has a practical reason. When you land with a ship, you reach the beach with the front part first, and it is from this part that the gangplank is put ashore. When leaving the ship you don’t want to walk over the food and the kitchen utensils. For the same reason the kitchen utensils are kept in the innermost part of Sámi tents, on the opposite side from the entrance. The horses in the graves are placed either beside the ship or in the back of the ship but in front of the kitchen utensils (?), and in some cases even in the front of the ship (Ladby). The horses also leave the ship either from the front, as on the Bayeux Tapestry, or possibly from the port side, i.e., the side that is laid toward the shore or quay in order to protect the steering oar on starboard side. When landing the horses it is best not to have them walk among and through the food provisions and equipment, just as it isn’t good for the crew to do so, as mentioned above. That is why kitchen equipment is stored in the back of the ship.

In the aft of the ship, equipment could easily be stored under the helmsman’s seat, a triangular platform filling this end of the ship. As can be seen in the Viks boat, this area in the back of the ship, which originally has been concealed, does not have the decoration lines that are otherwise visible. In the boat burials the cauldron is sometimes placed under the helmsman’s seat, and in this area the food
provisions were stored together with the kitchen utensils. As for the front of the ship, we can already conclude after studying the Bayeux Tapestry that both the anchor and the gangplank were stored here (see above).

This is comparable to the use of space within the ship in the Norwegian burials at Gokstad and Oseberg, where there is no doubt about the orientation of the ship. As the experiments with Embla and Tälja have shown, during longer journeys, this is also the most rational solution to storing equipment.

The boat as a hall or the hall as a boat
Herschend compares the space in the boat of the burials with the hall (1997). He interprets the burial boat as divided into two rooms, similar to the hall in e.g. Helgö, where a hallroom and a chamber are interpreted from the distribution of artefacts, and where the dead resides in the chamber. The dead sits in his high-seat with his game-boars in front of him together with the dining set, while in the hall-room the kitchen utensils are found. This can be questioned on some points. First, it is possible that the hall at Helgö has a distribution of artefacts in three parts, rather than two. The distribution of the artefacts seems more to be divided into ‘east’, ‘central’ and ‘west’. In the ‘east’ part the remains of weapons are found, in the ‘central’ part the golden amulets, and in the ‘west’ part are the hearth and household work utensils (also found in other parts).

The area within the boat in the grave is separated not into two, but three parts, as shown by the distribution of artefacts. The ‘east’ is the so-called ‘empty part”; in the ‘central’ part we almost always find the deceased by the mast, his weapons and his game; and finally, in the ‘west’ are the kitchen utensils and food provisions. The area within a ship is otherwise never conceived as two parts, but instead as three, and on the merchant ships as four parts (see chapter 7).

In the following will be discussed how the boat was used as an idea to structure space in the architecture of actual halls, further underlining that the boat was the central symbol.

8.5. The ship as an idea in structuring space

8.5.1. The house as a ship

The ship shape was a value-loaded symbol featured in many different aspects of Late Iron Age society, and it was also sometimes used in the layout of houses. The ship was thus not only used to define social relations, but also to define a social space. Within this social space, special social relations probably came into practice. One hypothesis is that the space within ship-shaped houses had fridr, and was used for assemblies of people on occasions when this was proclaimed, such as religious festivities in connection with the deities related to the ship symbol, but also for military assemblies where the participants were under the special jurisdiction.

The houses built like ships had special purposes, and were often larger than average. Of the houses published in the ‘Hus och Gård’ project (issued by the National Heritage Board in 1995) and documented from central Sweden (Uppland, Västmanland and Södermanland), there are 15 houses with convex walls that may be interpreted as ship-shaped (see appendix). Here it is clear that houses where the ship symbol is evident in the layout were built mainly during two periods: the Roman Iron Age-Migration Period and the Vendel-Viking period. However, all the houses of the Roman Iron Age, except for Lunda in Badelunda Parish (Wilson 1992), and Ås in Romfartuna Parish, Västmanland (Hyenstrand 1973), have only slightly convex walls and are more doubtful. From the Late Iron Age in Uppland, ship-shaped houses have been documented at Hässelby in Börje Parish, Freszt in Sanda Parish, Görla in Frötuna Parish, and Skäggesta in Litslena Parish.

The ship shape has also been used in some of the most important buildings excavated from the Late Iron Age, with a central function in the Scandinavian society and related to the kingship: Gamla Uppsala (Nordahl 1993), Lejre (Draiby & Komber 1999) and Tisso (Jørgensen 1999).

What is worth noting is that the buildings with strongly convex walls begin to appear in the Late Iron Age and disappear after the 11th century, which is also the time in focus in this thesis. This may be interpreted as an expression of a strong emphasis on the ship symbolism in architecture, and, equally important, a symbolism which during this period is used by the central power.

Ship-shaped houses in a military context

The ship as a metaphor in a military context will be described in the next chapter. That this belongs to the Late Iron Age may be indicated by the use of the ship symbol in another military context: the buildings in military camps. The clearest ship shape in buildings is found in the so-called Trelleborg houses, named after the special houses built within the enclosed camp at Trelleborg, Denmark, dating from the 10th to 11th centuries. These are interpreted as military camps, where the naval crew gathered before an expedition. In Skabersjö Parish also a so-
called Trelleborg house was excavated, dating to the 11th century (Nielsen 1980:197).

The ship-shaped house has been used several times in a military context, even in Sweden. In Birka the large hall-building by ‘Garnisonen’ ‘the garrison’ at the fortress hill has similar, curved walls (Holmquist Olausson 2001). This hall, which is 19 m long and 9.5 m wide, has the same kind of double curved walls that earlier in Sweden were known only from the hall-building at the king’s plateau in Old Uppsala. The hall at ‘Garnisonen’ was a gathering place for the warriors. A large amount of spearheads, ferrules, and fragments of ringmail and lamella armour have been found here.

8.5.2. The churches as ships

The idea of the ship as a powerful symbol in defining a special, sacred space is visible to a great extent in the churches. The names for the nave and aisles of the church – mittskepp ‘central ship’ and sidoskepp ‘side ship’ – relate to the ship.

The connection with the fridr-concept is here even more obvious, since the concept of kyrkofrid ‘church peace’ occurs in the Middle Ages. Some of the earliest churches, like Trondenes in Norway, have had an outer roof, now the inner roof, which is constructed of overlapping, clinker boards and with ‘the outer face of the board facing out and the pith facing in as is common in shipbuilding’ (Godal 1994:274). Just as in shipbuilding, in the overlap between the clinker roof-boards a caulking string is placed, which is also of the same type as the one used in shipbuilding, spun by mixing wool and cow hair. Jon Godal, who is a marine archaeologist, has studied the church roof construction and concluded that, ‘The parallel with shipbuilding is so strong that even the boards lying nearest the peak of the roof have the pith side facing the exterior, as is also the case with the garboard nearest the keel in a ship’ (1994:274).

The first Christian church at Brattahlid on Greenland had a boat-like shape. Boats as dwellings can be seen in the reliquaries from Kamiën Pomorski, Limoges and Vatnas, as well as on the Bayeux Tapestry and some Gotlandic picture stones. In Ireland we find boat-shaped oratories in early monasteries (Kobylnski 1995:16).

8.5.3. A reliquary as a ship-shaped house

The power of the ship symbol could be related to legitimacy in a juridical context, as will be discussed in chapter 10. This is probably the explanation for why a ship-shaped house was used as a model for the sacred box with relics seen on the Bayeux Tapestry, on which an oath is sworn. The ship-shaped house may hypothetically have been used on occasions when special fridr was proclaimed, which, as will be discussed, is related to the ship symbol (see chapter 10).

8.6. From a means of communication to a symbol and an icon

The boat has at an early stage changed from being only a means of communication, to being a symbol and an icon. Ships occur already in the Mesolithic Arctic rock carvings. The custom of burial in real boats began already in the Mesolithic (Rieck 2001) but is absent during the Bronze Age, and it returns, as has been mentioned, already in the Roman Iron Age in different places around the Baltic Sea: in Prussia (Okulicz 1992), on Bornholm (Crumlin-Pedersen 1991), in Barkarby (Holmquist 1956) and other places. Birgit Arrhenius sees the boat burials as a custom inspired by the Isis cult that arose among the heathen, barbaric peoples around the Baltic Sea (1997:180). This is, as we can see, part of a ship symbolism that was spread in many parts of Scandinavia during this period, a pattern that was to change in the Late Iron Age.

8.6.1. Pars pro toto

Like in the sacrifices, the boats in the burials were symbols of the idea of the boat, representing unknown religious aspects. This may explain why sometimes only parts of boats were deposited in the grave. Since the Early Iron Age the rituals involving a boat could also include the destruction of it, by burning it or chopping it to pieces. In this way objects were made non-useful for the contemporary society.

One of the boats in the Nydam bog sacrifice (Engelhardt 1865) was also hewn to pieces, as were the boats in the Swedish sacrificial sites at Örs mossen, Söderby Lake, and other places (see above).

Boats in burials that had been chopped to pieces also occur. The large merchant ship from Ultuna (Almgren 1902) is one example. Almgren interpreted the site as a boat burial, in spite of its unusual construction and complex stratigraphy. The boat was hauled up onto a low mound with a burial from the Migration Period, in which the excavators later found a gold-foil figure. Then it was cut to pieces and placed on the spot together with rich equipment consisting of 16 arrowheads, a spindle whorl, buckles, and bones of horse, cow, and sheep. Later, above the burial, two Viking Age burials
were placed. Based on the dates of the graves above and below this burial, and on the arrowhead, the burial can be dated to the 7th century AD (Ljungkvist 2006). Lindqvist viewed this find as having no parallel in Scandinavia with respect to its construction, and was of the opinion that the rivets were just material for the mound (1958). Harald Andersen argued that it was a boat burial with a boat that was not placed in a ditch. John Ljungkvist has recently discussed this burial and he believes that the number of rivets, together with the observation that the layer in which they were found resembled moldered wood, speaks in favor that a complete boat was buried. He argues that it is unlikely that a complete boat would be used simply as material for the mound as Lindqvist has suggested, but concludes that there are few indications for a boat burial. He means that since the preservation conditions for bones are good, some human remains should have been found. His interpretation is that this may either be a cenotaph or a site for ritual activities involving a ship. He sees a parallel with the Norwegian Kvalsund boats, which were broken and deposited in a bog in connection with ritual activities at a site where also burials occur, like in Ultuna. Ljungkvist points out that the arrowheads as well as the boat are attributes of the fertility god Ull according to Snorri, and that Ull is also appar-\textit{\textbf{tions}} for bones are good, some human remains should have been found. His interpretation is that this may either be a cenotaph or a site for ritual activities involving a ship. He sees a parallel with the Norwegian Kvalsund boats, which were broken and deposited in a bog in connection with ritual activities at a site where also burials occur, like in Ultuna. Ljungkvist points out that the arrowheads as well as the boat are attributes of the fertility god Ull according to Snorri, and that Ull is also apparent in the place name, Ultuna.

The burial boat from the Flosta estate in Altuna Parish consisted of the sharply cut-off stem or stern of an unburnt, oaken logboat, in which burnt bones were placed together with a filling of clearly fire-cracked stones (ATA Altuna, Flosta; Dnr. 1109/1916).

8.6.2. The ship in the Iron Age fertility cult

The link and symbolically expressed connection between the fertility goddesses and the boat image is first described by Tacitus in his descriptions from AD 98 of the people in the North:

Part of the Suebi sacrifice also to Isis; I have not ascertained the source from which this foreign rite originates, but the fact remains that the image itself, fashioned in the form of a light ship, proves that the cult is imported. (\textit{\textbf{Germania}} 8.1)

Birgit Arrhenius holds the opinion that there was an actual cult of Isis in the North. The statue from Gråsgård on Öland could be an Isis statuette. Her diadem as well as her thin gown has been interpreted by Arrhenius as signifying Isis (1997:178). A similar figure with a thin gown, a ship and a horn is kept in Aachen Cathedral. Arrhenius also claims that the Roman Iron Age boat-burials at Slusegård and the Migration Period grave at Augerum, and probably also the Uppland boat burials, can be seen in connection with the Isis cult (Arrhenius 1997:180).

In the Mediterranean, Isis earliest had a central role in the fertility cult. According to Herodotus, in pre-Roman time she was primarily a fertility goddess. She ruled in the house of life and had the lives of all living things in her hands. Isis was, like Freya later in the North, also a chthonic goddess. In the Roman world she was thought to have the power of life in her hands, as illustrated by the hieroglyph for life, the ankh, which she often is seen holding. Death did not really exist, it was only a transition to another life, but Isis was the one that held the power to restore every kind of life. In the beginning of the Book of the Dead she is depicted in her ship. Besides being involved in childbirth, she also could influence the rebirth of human life after death. She was thought to have created heaven and earth and everything that lived. As a fertility goddess she had the power to restore life as well, not only to nature but also to humans, and she brought back her husband Osiris from the dead (Witt 1989).

In early Roman time Isis also had a principal role in the protection of seafarers. This is why the great rituals in connection with the beginning of the sailing season were devoted to her. These included ‘the procession of the ship’, \textit{\textbf{Isidis Navigium}}, with several days of festivities that ended with the launching of the ship Isis. This festival was held annually in Rome on 5 March. A similar ritual is described by Apulejus in \textit{\textbf{Metamorphoses}} in the 2nd century AD. An Isis festival in one of the ports of Corinth is described. A richly ornamented ship is christened and put to sea bearing an inscription with well wishes for the seafarers in the coming sailing season. Children arranging a ship procession are depicted in a wall painting found in Ostia, one of Rome’s ports (p. 32.). In Venice, the sacrifice of a golden ring is known on this occasion.

Isis’s role in the protection of seafarers is also the reason for dedicating the Lighthouse to her, a monument considered one of the Seven Wonders of the World. Her ability to protect ships and seafarers has probably been of great importance in the choice of the ship as one of her key symbols, especially in the North. In the Mediterranean the boat is only one of many symbols connected with her. She was a very popular goddess among the Roman emperors (Witt 1997), and on coins she was often depicted standing in the prow of her ship. Throughout Europe, too, there are images of different kinds of goddesses in a ship, or holding a ship in their hands. Isis was known to the scholars of antiquity as the goddess ‘whose names cannot be numbered’ (Witt 1997), a feature that is similar to what Snorri describes for Freya.
In Europe the Isis cult probably has had influence on the Celtic fertility goddesses Don, Nehalennia and Nerthus. It is interesting to see that, in the Late Iron Age, we find many of the animals of Isis as gifts in the boat-burial ritual. The rituals involved in sacrifices and burials tell us by symbolic means that the boat, the deceased, and the animals are gifts to the fertility goddess. Isis shared the connection with fertility and water with the Greek Aphrodite and the Roman goddess Venus.

It is likely that this same fertility goddess of the North, as described by Tacitus, is the deity as is known only from place names in Sweden: Njördh. She is only known in this material in (genitive singularis) as OSw N(i)ærðhar, according to Vikstrand (2001:94) corresponding with (fnn) Njóðr, which is etymological identical with an (Proto-Germanic) *Nerþuz and ought to correspond with the goddess Nerthus in Tacitus text (chapter 40). Nerthus too, had her own spring festival, according to Tacitus (chapter 40). Another variant of her cult is the worship of Nehalemmia. She is often speculated to be the Isis described by Tacitus. On a Roman votive stone from Walcheren, Holland, she is depicted standing with one foot in a ship (Helm I p. 383). This goddess shares with Isis not only the ship symbol but also a fruit basket – a cornucopia – and a dog, which shows that her cult probably is a variant of the Isis cult that had spread to the Roman provinces and to neighbouring ‘barbaric’ tribes that tried to the utmost to resemble and imitate Roman ideology, practices, rituals and material culture. On the island of Walcheren in the Rhine (delta) more than 20 stone plates were found as votive gifts to Nehalemmia, several showing the goddess depicted with a ship. Her shrines were placed at the mouths of rivers (Näsström 2001:137).

Njord is another of the fertility deities associated with ships and seafaring. He was thought to live at Noatun, which means ‘the place for the ship’, i.e., the harbour. He has a strong association with the harbour. He has a strong association with the ship symbol with Frey, who possessed the ship Skidbladner. They may be seen as two sides of the same deity, as the masculine and the feminine side, or as a divine couple (Näsström 2001:146). In the Swedish language the name Freya means frun, härskarinna ‘the lady who rules’, and Frey accordingly means herre, härskare ‘the master who rules’. Näsström has suggested that Njord and Njärd, the divine couple of the Early Iron Age, sometimes were called fru ‘lady’ and herre ‘master’ (2001:146). This supports the idea that they were a divine couple in the early mythology, similar to and maybe influenced by the ancient Indian divine couple Yama (m) and Yami (f) or the Roman Faunus and Fauna. Freya and Frey were later seen as children of Njord, and Njärd disappeared from the stories.

Frey, the reminiscence of ‘the Great Goddess’ of the Bronze and Early Iron Ages, is known for her many names. According to Snorri, no other god besides Odin has appeared with as many names as Freya. In his view, this was because she travelled around a lot in the world in search of her lost husband Od, and on those occasions called herself by other names. He mentions Mardöll, Hörn, Gefn, Syr, Vanadis, Thrungva and Skjalf. According to Näsström, she is also hidden behind names that occur in other myths, such as Menglöd, Gulfveig and Heid (2001:150). Here the name Mardöll is of interest in connection with boats since it is directly related to the sea, composed of mar- ‘sea’ and – döll, which can be translated as ‘the glimmering, the shining’. An association can be made with Stella Maris ‘the star of the sea’ which was one of the extra names borne by Isis, and which in Christian tradition was transferred to the Virgin Mary.

The goddess’s name Hörn is of interest as well, since it is related to one of the sacrificial (?) sites with boats, namely Lundby in Husby-Långhundra Parish, where the parish name earlier was Husby Årnavi and where the element Årnavi means the sacred place of the goddess Hörn’ but with a loss of ‘h’ typical for east Sweden. Hörn or hörn is otherwise a name related to hörr ‘flax’. This recalls the bundles of flax found in several of the sacrificial places, some in connection with boat finds.

Gefn is related to Gefjon, ‘the one who brings gifts’. It can be linked to the myth of Gefjon’s ploughing, when the central lake of the Svear, Lake Mälaren, was created (cf. the byname of Freya as loga dis below). Syr has the meaning ‘the protector’, and it may be related to the divine protection of the fríðr on board ships, at markets, at things and public holidays, since these are often associated with the ship symbol which according to my hypothesis is a symbol of Frey/Freya. Skalf or Skalv was, according to Snorri in the Ynglingasaga, the name of the Sámi daughter of a king who was cap-
tured and taken away by King Agne. She did not accept this, and when King Agne was well drunken she hanged him in his own golden necklace, which gave rise to the place name Agnefit (generally interpreted as an older name for Stockholm at the outlet of Lake Mälaren). Snorri has based this story on Ynglingatal, a poem in which Skalf is called loga dis; the name can be translated as ‘the love goddess’ according to Näsström, and it points directly to Freya (2001:151). Agne is also called Skjal-fabonde in the sources. It is possible that Freya was the ancestress of the branch of the Ynglinga dynasty called skilfingar (Näsström 1995, 2001), but there is no firm evidence to support it. Since the Bronze Age the cult of a fertility goddess has been visible in the sacrifices. When the boat burials begin to appear in the Early Iron Age it is probably, as Arrhenius has shown, a local adaptation of the Isis cult by the people around the Baltic Sea (1997). I agree with this and can conclude that there is much evidence in the Late Iron Age to show the symbol of the fertility goddess has survived and kept its central importance, mirrored in boat burials as well as sacrifices. As archaeological evidence for a cult of Freya inspired by Isis, Arrhenius points to the occurrence of provincial Roman statuettes such as the Venus from Gräsgård Parish, Öland (1997:179). Besides the early boat burials as indications of this cult, Arrhenius also refers to the so-called guldgubbar, ‘gold-foil figures’ (see below), which often are depictions of a couple – a man and a woman. The man (mostly discussed) has been interpreted as Frey (Hauck 1993, 1994; Steinsland 1992), while the women is more seldom discussed. Hauck and Steinsland mean that the woman is the giant’s daughter Gerd, while Arrhenius has questioned this on the basis of the extremely big fibula. Such has been found, up to 30 cm large (1969:56), and it must have been placed on a wooden idol. Similar large fibulas are known from the Isis cult; these were related to the fertility cult and had insets of garnets, like the Scandinavian ones (1997:183).

It is important to note that in the sources Freya has an immediate link to sacrifices, at least to those performed in Old Uppsala. When Snorri, in the sagas about the kings, tells how the gods immigrate to Uppsala and establish the sacrifices, Freya becomes the goddess and priestess of the sacrifices (Näström 2002:149). When the other deities die, she continues to perform the sacrifices in Uppsala according to his story. But this is an oral tradition that cannot be used to say anything certain about when the custom of boat sacrifices began or when the boat-burial practice became common in the 6th century.

Frey was connected with both the boat symbol and the fertility cult. In Gisla saga it is mentioned that a priest of Frey is buried in a ship. In the Ynglingasaga, Frey is described as the mythical ancestor of the ruling dynasty in Old Uppsala, the ynglingar. The connection between Frey and the kingship among the Svear has been discussed by Olof Sundqvist, who stresses that there was no question of a ‘sacral kingship’ where the king was seen as a god, but rather a king who had ritual functions during, for example, calendar feasts, crises, and in transition situations (Sundqvist 2000:335). Instead there were probably political motives for the rulers to use Odin and Frey as ancestors, just as there were to use the cult of St Erik, according to Sundqvist (2000:331).

The Frey cult was of great importance among the Svear. Information in the Flateyjarbók says: ‘At that time they (the Svear) celebrated great sacrifices (blót) and Freyr was the one they always (worshipped) most’ (Näslund 2001 p.55). In another passage Frey is called ‘the powerful blótgod of the Svear’ (Flateyjarbók I pp 338-339). Speaking about Frodis’ time, Snorri says that ‘the Svear believed that Njördr ruled the crop and a man’s riches’ (Hkr.9).

Odin is more seldom discussed in relation to the ship symbol. It is possible, however, that the name of the burial-ground Valsgärde is related to him. The name has most recently been discussed by Brink (1997). An alternative interpretation is that the place name may relate to the name ‘val’ and the fact that Odin is known by the name Valfather, ‘the father of the fallen in battle’. The name of his dwelling is Valhalla. Odin is known by many names and is also called the Helmed One, Glad of War, Spear-THRuster, and Father of Battle, which refers to his position as God of warriors (‘The De-luding of Gylfi’, The Prose Edda transl. J.J. Young). The boat burials as warriors’ graves may also be related to Odin. A journey by boat to Valhalla may be illustrated on the Gotlandic picture stones according to Ellmers’ interpretation, and one example is the Tjängvide stone. In his interpretation of the type-C/D stones, they depict a ship filled with fully equipped, deceased warriors on their way to Valhalla, where they are met by a valkyrie and Odin himself on his eight-legged horse, Sleipnir. Above is often seen a house, probably Valhalla itself. The glamorous life of eternal fighting outside Valhalla is also sometimes depicted. Other names for Odin in Norse mythology are the god of warriors, god of men, all-father, and god of the hanged. The last name is mindful of the illustration of a hanging ritual in the boat burial from Oseberg (Ingstad 1995), as well as on the Gotlandic picture stone nr 184 Stora Hammars, Lärbro Parish. Although the association with Freya is much stronger, this possibility should not be entirely ruled out.
The continuation of ship sacrifices

As can be seen above (chapter 8.1), in Sweden and Norway the custom of depositing ships in bogs and lakes as sacrifices continues and becomes more dispersed in the Late Iron Age, in contrast with Denmark where these kinds of sacrifices diminish. This is a result of the greater importance of the fertility cult in this area, but it was also an important part of the use of ship symbolism by the leadership here.

The cultural contacts with Norway have also been observed in, for instance, the use of the bow and arrow in warfare during the Late Iron Age (Lindbom 2006). Concerning the boat symbol, in both areas boat burials are widely dispersed in the Late Iron Age as well, in sharp contrast to Denmark. The ship symbolism in a religious context is distributed in an east-west belt from Norway, through Sweden and to Russia.

8.6.3. Ships in processions

Tacitus has described the procession of the wagon with the goddess Nerthus. The wagon is pulled among the villages in the springtime. The presence of the goddess means divine peace at her arrival, probably corresponding to the concept of fridr. Tacitus mentions many Germanic peoples who have in common that they worship Nerthus (40.2): the Reudigni, Aviones, Anglii, Varini, Eudoses, Suarines and Nuitones. Before the journey the consecrated wagon is kept in a holy grove on an island in the ocean, and a priest observes when the goddess is present so that the tour can begin:

In an island in the Ocean is a holy grove, and in it a consecrated wagon covered with hangings; to one priest alone it is permitted so much as to touch it. He perceives when the goddess is present in her innermost recess, and with great reverence escorts her as she is drawn along by heifers. Then there are days of rejoicing, and holidays are held wherever she deigns to go and be entertained. They do not begin wars, they do not take up arms; everything is shut away; peace and tranquility are only then known and only then loved, until again the priest restores to her temple the goddess, sated with the company of mortals… (Germania 40.3-4)

The ship as symbol is so closely connected with the fertility goddesses that we can assume the ship played a significant role on these tours, and that ships on wagons may have been drawn between the villages. In Western Europe such tours have continued into the historical period, perhaps as reminiscences of the same tradition (see below).

The Scandinavian spring festivals as reminiscences of the Isis cult

The Isis cult was probably the forerunner of the Scandinavian Freya cult, as Arrhenius has suggested (1997). In Rome these festivities continued into the 5th century (Vidman 1970), but in the rest of Europe we find traces of similar feasts into the historical period. My hypothesis is that in Scandinavia the spring festival of Isis Navigium was probably mixed with the local fertility cult performed at the disablót, as earlier discussed probably earliest performed at the vernal equinox during the same time of year, and which was devoted to the great dis, i.e., Freya, who was also called vanadis (Näström 1995). Throughout the world, in different religions, this occasion had fertility associations since it was the time when dualities met – day and night equally long, light and dark, male and female, winter and summer, cold and warm. It was an occasion that preceded the fertility of nature. Often there has been a notion that on this occasion different rituals were necessary to secure the return of the fertility of nature, of growing seeds, of livestock, of men and women, as well as the return of warmth and summer.

The ship symbol continued to be an important part of the fertility cult in central Sweden, which despite the arrival of new deities still had a dominating position in central Sweden. As we have seen above, real boats and ships were more than ever before used as part of sacrifices (see above chapter VI.1) especially in water and wetland areas, before this type of sacrificial ritual finally ceased and was transformed in south Scandinavia. Like the bog deposits, also the use of the ship symbol in a burial context continued mainly in an E-W belt from Norway to central and northern Sweden and eastwards toward Finland and Russia, where the practice of burials in boats occurred at least when there was a Scandinavian (= central Swedish) context.

The ship as symbol is so central that we can assume that it played a role in processions even in the Late Iron Age, and that ships on wagons may have been drawn among the villages. The main elements of the Nerthus cult as described by Tacitus (see above), the sacrifices, the journeys by the goddess on a wagon, and the holy island where she dwelled, continued into the Late Iron Age. This is evident from the Flateyjarbók that has the following information about the Freya cult: ‘the Svear sacrificed to her and moved her to an island’ (I, pp. 579-581). The journey around the villages to benefit harvest continued in the Christian era, but now it was Saint Erik’s relics that were carried around the fields in springtime in the surroundings of Uppsala ‘to hollow the fruit of the earth’ (de Vries II o. 483).

The ship was used as a symbol in the fertility cult until the High Middle Ages. In Denmark, for
instance, a ship was carried in procession during ceremonies to bless the fields.

According to several historical accounts, such traditions have continued into the historical period. Spring carnivals with ships on wagons have also endured in continental Europe, such as in Flanders and France during Lent and at markets held during that time. Carnivals with ships on wheels or sleighs are also known from Germany and Belgium (Almgren 1927:24). A probable origin of the word carnival has also been suggested to be 'carrus navalis' = 'ship wagon'. Also in the Danube area a ship was drawn around the villages in springtime, but here it was on rollers. In Ulm during Lent, another variation of the same theme is known where instead runners were put under the ship in order to pull it around the streets to the accompaniment of music and festivities (Mannhardt pp. 555, 594). Ship festivals are also known from other occasions, such as Advent; a ban on pulling ships and ploughs during Advent is known from 1530 (Almgren 1927:27).

The ship processions were not appreciated by the Church, but were a rooted tradition that was difficult to stop. For instance, a ship procession is known from 1133, described in a monastery chronicle from Belgium. Here a ship was drawn around the villages in springtime, but here it was on rollers. In Ulm during Lent, another variation of the same theme is known where instead runners were put under the ship in order to pull it around the streets to the accompaniment of music and festivities (Mannhardt pp. 555, 594). Ship festivals are also known from other occasions, such as Advent; a ban on pulling ships and ploughs during Advent is known from 1530 (Almgren 1927:27).

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According to the chronicle this was harmful to the people of the Church, who saw these procedures as a heathen exercise.

8.6.4. Freya symbols in connection with the ship symbol

I will stay a while with the relation between Freya and the ship symbol as seen in the archaeological material. Although the absence or presence of images of this goddess may be debated, in the sacrifices and the burials there are many artefacts that according to the mythology are attributed to Freya. This is important, since it may underline the continuity of the cult of a fertility goddess in central and northern Scandinavia, shaped under the influence of the Isis cult. Many of the similarities have already been pointed out by Arrhenius.

The connection between the goddess Freya and flax as a material, as well as with spinning, is documented. As mentioned, her byname Hörr is related to hör, an old word for flax. In several of the sacrificial sites with boat parts, flax was found, for example in Bokarn, Stavby Parish, Uppland. The occurrence of two bundles of flax and one flax holder in Käringsjön is interpreted by Carlse as indicating that the site was a cultic place with fertility sacrifices (1998:23). The assumption among historians of religion that flax has a meaning in the fertility sacrificial cult is based on the story about Völsetätten in Flateyjarbók, where it is said that after autumn slaughter the phallos of the farm stallion was ‘strengthened with flax and supported by onion’ and worshipped and used as a sacrifice in order to secure fertility in the household (Steinsland & Vogt 1981:93; Ström 1985:87; Hjørungdal 1991:103). The story is late, written down in the 15th century, but archaeological finds may give support, such as the find of a knife from Flösand in Norway with the runic inscription ‘linalaukaR’ meaning flax and onion.

Freya also occurs in the shape of a bird. Freya, like Frigg, can take the shape of a falcon and move between the different worlds. Like a valkyrie she also rides across the battlefield and chooses her share of valen ‘the fallen warriors on the battlefield’ (Grimnismal). In connection with this it is also interesting to study the image of the so called ‘Valsgärde bird’, found on Valsgärde 7. If turned 90 degrees it very much resembles the image of the lady on the pendants. Is this perhaps Freya in the shape of a falcon?

Arrhenius has in several articles drawn attention to Freya’s large jewellery called Brisingamen and discussed the connection it may have to a fibula worn by women on images such as guldgubbar, the pendant from Hagebyhöga Öland, and other finds (1969, 1975, 1997). The guldgubbar ‘gold-foil figures’ often have depictions of a pair, a man and a woman. The man (most often discussed) has been interpreted as Frey (Hauck 1993, 1994; Steinsland 1992), while the woman is more seldom discussed. Hauck and Steinsland mean that the woman is the giant’s daughter Gerd, while Arrhenius has questioned this on the basis of the extremely big fibula. An example of such has been found, up to 30 cm large (1969:56), and presumably it was once placed on a wooden idol. Large fibulas are also known from the Isis cult in relation to fertility, and like the Scandinavian ones they have insets of garnets (1997:183). In the Isis cult the big fibulas are shaped like an ibis; examples of such have been found in the Petraossa find and the Mediterranean Isis cult where the ibis characterises Isis. When this cult spread to the Baltic region, the boat burial custom became established there as a local adaptation. Arrhenius explains the absence of Freya images in the Late Iron Age in that there was opposition to depicting deities, and argues that instead there may be different kinds of allegorical images, such as the bird. In her opinion, the common motif in east Scandinavian animal ornamentation of a helmeted man kissing a bird (1997:183) may be an older version of hieros gamos (the sacred wedding).
The female figure with the big fibula also appears as a pendant in several boat burials, such as grave no. III at Tuna in Alsike Parish (Arne 1934; Nordahl 1984).

Anne Stine Ingstad in her article ‘The Interpretation of the Oseberg-find’ views the finds of rattles and hooks in the Oseberg ship burial as ‘closely connected to Freja’s cult’ (1995:144). She believes these may have been carried during processions; their sound kept evil spirits away and perhaps also called upon the benevolent powers. Hackman, too, has earlier interpreted them as magical equipment (1938:127), whereas Almgren sees them as belonging to riding and driving equipment (1946:127), an opinion shared by Petersén (1951:56) and Serning (1966:58). In the Oseberg grave, however, there was no driving equipment like a harness or horse-gear, and only a man’s saddle as riding equipment. This may support Ingstad’s interpretation. In Sweden the rattles and hooks have a close connection with boat burials. They have been found in at least 15 boat graves, all situated in central Sweden: Valsgärde 2 (Dyfverman 1929), 4 (Odencrants 1933:225 ff), 10 (UMF 5910) and 14 (UMF 5902), Vendel III, IV, VI, IX (Stolpe-Arne 1912), Tuna graves I and II (Arne 1934 pl. 2:17), Tuna in Alsike SHM 9404:17, grave IV (Arne 1934 pl. 8:9), and in the mixed material with boat-burial remains from Kräkberg in Mora Parish, Dalarna (Serning 1966:58 ff), and from the same province also the burned boat burials in Sollerö Parish at Bengtsarvet and Rothagen, grave 254 (Serning 1966).

The ritual connection is further underlined in the spiral-shaped pendants, which occur in four of the five finds from Dalarna (the finds from Bengtsarvet, Oljonsbyn, Kräkberg and Rothagen). They also occur on votive rings. Scissor-shaped metal plates occur in Mora-Kräkberg and Bengtsarvet 2 (Serning 1966).

Among the wooden artefacts in the Oseberg burial that may be related to the Freya cult but have not been preserved in the Swedish burials are the staff in the burial chamber and on the tapestry, the wagon ornamented with nine cats, and one of the sleighs whose back is decorated with cats, the animal of Freya (Ingstad 1995:142). In the procession on the tapestry one can also see a woman wrapped in a shawl and in the shape of a bird of prey – the shape Freya adopted in order to travel to the underworld, according to ON mythology.

8.6.5. The time for sacrifices of ship symbols

The sacrifices at alfablót and midwinter

There were also other annual sacrifices related to the fertility cult. Sundqvist has observed that Agrip mentions four different occasions for the annual festivities: Christmas, Easter, St. John’s Eve, and Michaelmas (Sundqvist 2000:173). He writes: ‘...fellði blót ok blóðdrykkjur ok let i stað koma i víld við lýðin hátiðadrykkjur jól ok páskar Jóansmessu munget ok haustol at Míkjálmessu’ (Agrip IF 29 p. 22). Here we have Easter, which according to the calendar rule is celebrated the first Sunday after the first full moon after vernal equinox and thus is related to the spring festivities when, as we have seen, the most important gathering and blót most likely took place. But there are also other occasions, at least one of which is related to Frey and the fertility cult and which is a suitable occasion for the use of the ship symbol. The importance of the fertility god Frey cannot be underestimated in central Sweden, and some of the ceremonies involving a ship may be attributed to him as well as to Freya, his female counterpart. Saxo mentions annual sacrifices to the god Frey, called Froblot, in Swithiod:

…thein order to mollify the divinities he [Hading] did indeed make a holy sacrifice of dark coloured victims to the god Frō. He repeated this mode of propitiation at an annual festival and left it to be imitated by his descendants. The Swedes call it Froblot.

In Ynglingasaga, Snorri mentions three calendar feast days that are celebrated in Swithiod every year:

A sacrifice was to be made for a good season at the beginning of winter, and one in midwinter for good crops, and a third one in summer for victory.

(ch. 26, transl. by Hollander)

On several occasions, Snorri mentions the same or similar feasts for Norway as well. According to Olafs saga Helga in Trondheim:

It is their custom to perform a sacrifice in the fall to welcome winter, a second at midwinter, and a third in summer to welcome its arrival. (Ch. 27, transl. by Hollander)
The same three also occur in Snorri’s narrative about Sigurd Thorisson (Olaf’s saga Helga ch. 27, transl. by Hollander). As mentioned above, the spring festivities in connection with the disablót were according to some sources seen as occasions to welcome summer, and I believe that this is the third sacrifice mentioned of these annual sacrifices and that it has nothing to do with the midwinter sacrifice which instead, as later, should be connected with the concept of Christmas (see below).

Of interest in connection with the ship symbolism are the sacrifices to Frey. In Gisla saga Súrssonar there is mention of the autumn feast and the fact that on this occasion people gather to sacrifice to Frey (ch. 6, after Dillmann 1997:61). The autumn blót to Frey was called alfablót, mentioned by Sigrvat Thordarson in Austrfararvisur as a private sacrificial feast (st. 4-7). Some scholars believe that this feast was identical to ON jól (Ström 1985:194), but it is more probable that it is the midwinter sacrifice that is called jól. Since the feast around the time of All Saints Day, the alfablót, was considered to be the beginning of winter, and the disablót at vernal equinox as the end of winter, it seems most likely that the midwinter blót was conceived as the time in between, i.e., the time when the present-day SW jul is celebrated. Jól was also associated with Frey, as indicated by a praise poem to Harald Fairhair in Haraldskvædi composed by Thorbjorn Hornkløf in c. AD 900, where King Harald is said to be longing to drink ‘his jól feast in the open’ and to perform ‘Freys leik’ ‘the sport of Frey’ (transl. by Turville-Petre). It is uncertain whether Freys leik really should be translated as ‘the sport of Frey’, or as ‘battle’, ‘sacrifice’, ‘offering’, ‘gift’ or something else (Sundqvist 2000:174). Ceremonies during the winter solstice are mentioned by Proprius already in the 6th century AD. The month is called ylir and is the same as jul, the pre-Christian name that has survived in the Scandinavian languages (Näsström 2001:220). An interesting item of information about the Yule celebration is given by Snorri in the Saga of Hókon the Good:

He had established in the laws that the Yule celebration was to take place at the same time as is the custom with the Christians. And at that time everyone was to have ale for the celebration from a measure of grain, or else pay fines. Before that, yule was celebrated at midwinter night, and for the duration of three nights ...

(ch. 13, transl. by Hollander 1964:106)

Due to the short year in the Julian calendar, the midwinter day that was 25 December in Julian time had been pushed back about five days in the 10th century, and also in the 1750s when the Gregorian calendar was introduced; before the Reformation it was 11 days, but that was corrected. But were sacrifices performed on this occasion, and was there any connection with the ship symbol? In the same saga, several of the components at the documented sacrificial sites (see above), such as twigs and animals, are described as being sacrificed during the heathen Yule celebration:

It was ancient custom that when sacrifice was to be made, all farmers were to come to the heathen temple and bring along with them the food they needed while the feast lasted. At this feast all were to take part in the drinking of ale. Also all kinds of livestock were killed in connection with it, horses also; and the blood from them was called hlaut [sacrificial blood], and hlautbolli, the vessel holding that blood; and hlautteinar, the sacrificial twigs [aspergills]. These were fashioned like sprinklers, and with them were smeared al over with the blood the pedestals of the idols and also the wall of the temple within and without; and likewise the men present were to be sprinkled with blood.

(Ch. 14. ‘The Heathen Yule Celebration Described’, transl. by Hollander 1964:106)

The use of ship symbolism during Christmas is known among the Sámi of northern Scandinavia in the historical period. Sacrifices of boat models have occurred here especially during Christmas. A boat model was made of birch bark, with mast, sail, and oars. All the remains from the feast on Christmas Day were collected and put into this boat, and the boat was then placed in a tall pine tree or in a spruce (Rheen, Mallmer, Högström). Both the boat and the tree should be smeared with blood and marked with crosses. This was done for a protective spirit called ruotta, or Bieogo-Olmaj ‘the windman’, who was responsible for water, wind and weather. In this capacity he must have been a central deity among the Sámi, who prior to the intensified reindeer herding in the 16th and 17th centuries mainly had fishing as their subsistence (Fjellström 1986) in combination with hunting. Forbus in the 18th century mentions how they also sacrificed a shovel to this deity, but it could also have been an oar for a boat (Reutersköl 1910:33). Even today the lake-Sámi of northern Norway live on a mixture of fishing and small-scale agriculture. In the 18th century they practised a boat sacrifice at Christmas, but when a person had become sick. For this sacrifice a reindeer calf was slaughtered at Christmas Eve; the meat was boiled and put together with bread, cheese and butter, and then placed in a special boat built for the occasion (Fjellström 1986:25). Thereafter the boat was put on a pile of firewood and left there during the holiday.
In central Sweden there was a tradition that candles should be saved at Christmas, to be placed alit on the keel a short while before the first launching of the skötbåt (fishing boat) in spring (Sune Ambrosiani 'Från Uppsala läns strandkust: strandkulturer' p. 305).

A summer sacrifice?
Ágrip mentions a sacrifice on Jóansmessu, i.e., St. John’s Eve. This is the time when the traditional, annual, Swedish Midsummer festivities are held, but it seems absent in ON sources. A decree in the medieval Norwegian Frostating law was that ceremonial drinking should be done on St. Hans’ Day (St. John’s), sometimes interpreted as a continuation of earlier ceremonial drinking habits (Näsström 2001:227). Ethnographic accounts are rich concerning early practices on this occasion. While the Midsummer tree is a late German influence, ceremonial drinking from holy wells is in many places in Sweden associated with this occasion, and in some places so are Midsummer fires. Here it should be remembered that at several places associated with the ship symbol, holy wells also occur. Springs are found in connection with the sacrificial sites at Rickebasta and Vickeby bog in Knivsta, as well as with the boat burial from Årby, Rasbokils Parish, Uppland, and with regard to the first two places they are ‘Holy Trinity springs’ that were visited for ceremonial drinking until the 19th century. An explanation for why these ceremonies do not occur much in the sources may be that they did not have an official character, but were performed locally. The cultic springs are situated in almost every parish, and in the historical period they were visited annually on Trinity Day or Midsummer, without an official organisation or presence.

8.6.6. The problem of the time for boat burials

The time for the boat burial and the mystery of the disappearing humans
The most striking observation when studying a boat burial is the poor state of preservation, or in many cases the lack of human bones. This stands in contrast to the animal bones, which are always very well preserved. The most probable explanation for this is that the deceased has lain on ‘lit de parade’ for a long time before the burial, so that the bones in many cases have decayed and perhaps also been a target for carnivores (?) and birds. If this is the case the period of display must have varied a lot, from a short while to as much as years, since the variations are so great concerning the preservation of the bones.

One explanation for the variations in preservation may be that the deceased was such a prominent person that the burial ritual was performed at an annual regional gathering, or at the national gathering that took place every ninth year. Many of the ship burials discussed are elite burials of prominent leaders and their kin. From many places around the world it is known that burials of such persons were social and public events attended by many people. In this case, the closer in time to the fixed date for the gatherings, the more well preserved is the skeleton of the deceased. Examples of such gatherings are the blót and thing assemblies. With regard to the most prominent persons, the burials may have occurred in connection with the ‘thing of all Svear’ and the disablót (see below) in the presence of the king.

A related explanation may be that the time for the burial was when it was considered possible for the deceased to enter the afterworld. In European prehistory there are indications in many places that the gate between the world of the living and the afterworld was believed to be open only on certain occasions.

The animals have probably been killed in connection with the burial ritual, and are therefore well preserved.

The time for the boat-burial ritual will be discussed, since it was part of a ritual in which the societal and cosmological order was displayed and reproduced.

A hypothesis: boat burials at the disablót?
The boat sacrifices and burials were probably performed in connection with the yearly gatherings when people came together for festivities and blót. The festivities connected with the fertility goddess, which as we have seen were associated with the ship symbol, took place in spring. Tacitus informs that the arrival of the goddess and spring was celebrated when the wagon with the goddess came to the villages. Almost one millennium later, Adam refers to a big sacrifice in springtime. Now the ritual is centralised, led by the king and performed in connection with the thing of all Svear when the population was gathered in Uppsala. In Adam’s Gesta, scholion 140, it is said that the sacrifice was at vernal equinox ‘hoc sacrificium fit circa aequinoctium vernale’. The sentence is uncertain, since it has been observed that it is attested only in manuscript A3 from 1434 (Sundqvist 2000:172; Hultgård 1997:30). The name of this festivity was disablót, named after the disir and probably performed in honour of the main dis, Freya, also called Vanadis. She is seen as the successor of Niærdh, and she
may have inherited the boat symbol associated with many of the Iron Age fertility deities. If we put aside Adam’s biased account from a Christian propagandist’s point of view mentioning Odin, Thor and Frey, we can see there are several accounts relating to one female goddess in focus for the cult at Uppsala, such as in Snorri’s YnglingGasaga about the death of King Athils:

Contrary to Adam, the sacrifice is said to be ‘at disablóti’, which can be interpreted as ‘in honour of the Disar’, and the hall in Uppsala is called ‘the hall of the goddess’. A hall of the disir in Reidgotaland is also mentioned in the Saga of Hervor and King Heidrek the Wise (Näström 2001:197). Snorri has written down the prevailing tradition concerning these spring festivities:

At the time when heathendom still prevailed in Sweden, it was an old custom there that the main sacrifices were held in Uppsala in the month of Göi. Sacrifices were to be made at that time for peace and victory for the king, and people from all over Sweden were to resort there. At that place and time was to be the assembly of all Swedes, and there was also a market and a fair which lasted a week. Now when Christianity was introduced, the general market and the assembly was still held there. But at present, when Christianity is general in Sweden and the kings have ceased residing in Uppsala, the market has shifted to meet at Candlesmas; and thus it has been ever since, but now it lasts only three days. The general assembly of the Swedes is there, and they resort to it from all over the land.

(Ǫlaf’s Saga Helga ch. 77 after transl. by Hollander)

In the Middle Ages the disting was held between 21 January and 20 February, and originally it took place about a month later in the month of Göa between 23 February and 31 March, in accordance with Snorri’s note that the disting was put back a month (Näslund 1995:132).

There is another late information by Snorri that the disting was held between 21 January and 20 February, and originally it took place about a month later in the month of Göa between 23 February and 31 March, in accordance with Snorri’s note that the disting was put back a month (Näslund 1995:132).

In light of the association between the ship symbol and the fertility deities, it may be assumed that the boat-burial ritual took place on occasions devoted to some of these. But is there any evidence this was the case? Ibn Fadlan has given an eyewitness account of a ship-burial ritual performed for a chief-tain when the Rus were assembled on the shore of a river. According to him, after several days of prepa-
ration for the chieftain’s burial, the ship-burial ritual itself took place on a Friday SW fredag ‘the day of Frigg’. On this day the servant girl who will be killed to accompany her master in death is ritually lifted above an erected frame, where she will claim to see into the afterworld and see her relatives and master. This frame very well symbolises the gate to the afterworld, where she is supposed to join him. That the burial takes place on ‘Friggs day’ is another important observation. Odin’s wife Frigg may have been underestimated in connection with boat rituals. The women on the picturestones on Gotland receiving the ship with (fallen?) warriors, is sometimes surrounded by symbols that relates to Odin and Valhall, for instance Sleipner, Odin’s horse appears occasionally.

8.6.7. Continuity and change: the ship symbol in the Early Middle Ages

From Freya to the Virgin Mary

After Christianization the Virgin Mary was given many of the attributes and associations that earlier belonged to Freya. In relation to ships and seafaring it is worth noting that the main star of navigation, the North Star, was sometimes called saevarsjärna or sjövarsjärna, a name that was also used as a byname for the Virgin Mary (Falk 1995:26). The Virgin Mary also has had a strong connection with activities related to water and the sea, such as fishing. It was believed she could grant a good catch to fishermen, according to the runic staves, and the connection with the sea is also evident in that the sea is often called Mariavisthusbod ‘the storehouse of Mary’ in ON sources (Näsström 2001:281). Later, on the Hebridean Islands, we also find the name Mary’s storehouse for the sea. When stormy weather caused the fishermen to stay at home, this was called Mariumessa ‘Mary’s mass’ because it was thought that Mary provided them with a needed day of rest. Seasonal fishing camps have been named after the Virgin Mary. In legends the Virgin was known to help people in trouble at sea.

There are also ancient monuments in the archipelago that may be related to similar beliefs, for example the stone mazes, where fishermen traditionally walked in order to get a good catch. These are also called jungfrudanser ‘Virgin dances’, a name that might show a link to the Virgin Mary.

The Virgin Mary came to inherit many other qualities of Freya, such as those connected with vegetation and the fertility of the soil (Näsström 2001:280). Instead of the disablót, which was celebrated at the vernal equinox 25 March, Jungfru Marie Behådelsedag was celebrated. This day was associated with fertility, too, in that this was the time when the Virgin Mary became pregnant with Jesus through divine help. The Virgin was also called upon at childbirth, as were earlier Freya and Frigg (Näsström 2001:149). The herb Gulmåra, called Freyagrás ‘Freya-grass’ before Christianization, was after that time also known by the name Jungfru Marie sånghalm ‘the bed-hay of Virgin Mary’ because she was thought to have put this herb in the manger for the infant Jesus.

Freyja’s connection with flax is probably also reflected in the name for the constellation Orion – Frejarocken (or Friggerocken), ‘the spinning wheel of Freya’. Later, attempts were made to replace this with the Virgin Mary, but it was the name from Greek mythology that finally survived. Stars within the constellation have been important for navigation, especially Betelgeuse (with a red light) and Rigel. At the latitude of Sweden it is possible to see, with the naked eye, the five brightest of the 22 stars in this constellation. Also worth noting is that immediately NW of this constellation related to Freya, closest to Betelgeuse, is the constellation Gemini ‘the twins’, with Castor and Pollux as the brightest stars and bearing the Roman names of the divine twins who accompanied the fertility and sun goddess in the older Indo-European mythology. Of these, Pollux has been used for navigation.

The saints and the ship symbol

The ship was used as a symbol in the fertility cult until the High Middle Ages, during which time in Denmark a ship was carried in ceremonial processions to bless the fields. Kobylinsky has pointed out that the Russian saint Gleb, connected with agrarian magic and the fertility cult of the soil, was according to legend buried under a ship turned upside down (Rybakov 1971:93-97). Processions around the villages to benefit harvest were continued in the Christian era, when instead Saint Erik’s relics were carried around the fields outside Uppsala ‘to hallow the fruit of the earth’ (de Vries II o. 483). Sometimes the reliquaries were shaped like a ship, creating a link between the holiness represented by the bones of the saint inside, and the ship symbol. A ship-shaped reliquary is seen on the Bayeux Tapestry.

Supernatural beings in association with water, ships and seafaring

Long after the heathen period, seafarers have continued to believe in divine or supernatural female
beings as protectors of the journey and of luck in fishing activities. The sjörå, also called havsfru ‘sea lady’ or sjöjungfru ‘sea maiden’, is particularly well known (Schön 1998:173). She was thought to inhabit and rule in lakes, the archipelago, and the sea. The term sjörå comes from the verb råda ‘to rule, to be in charge of’. She was in charge of and ruled the water, the winds and weather. It was necessary to be on good terms with her. To fishermen she gave a good catch. This being was the most beautiful to watch, but she had a hollow back (like the skogsrå who was thought to rule the forest) or a fish tail. She was often looking for love and male company and therefore tried to seduce the seafarers, but sometimes she only sought goodness, such as a piece of bread, for which the generous would be richly rewarded. She warned when a storm was approaching, as is known already from Olaus Magnus in connection with her presence on Blå Jungfrun in Kalmarsund. It is possible that the ritual use of the labyrinth here and at other places was connected with fishing magic to acquire a big catch. There seems to be an age-old belief that heathen powers ruled fishing luck. A priest should not be brought on board, as this would bring bad luck or even make the boat capsize, and neither should the word ‘priest’ be mentioned on board. Women were not always bad, as has sometimes been suggested. Instead, in popular belief there were ‘good-luck women’ and ‘bad-luck women’ (Schön 1998:51). When a sailing wind was needed, people could call on a female being for help by shouting, ‘Blow KaJsa’ (Schön 1998:172). On a belt mount from Solberga, Östergötland, dated to c. AD 700, a female being is seen in the water under the boat with a fisherman (fig. 229). She is depicted holding the hook and thus helping the fisherman to get a rich catch. This illustrates the long tradition of beliefs among the local population. She could be the sjörå who was never recognised by the official religion, neither during the prehistoric nor the historic period. However, the depicted lady has a hair-knot, jewellery on her chest, and a dress that resembles the one seen in depictions on silver pendants and on the women receiving the fallen warriors in Valhalla on the Gotlandic picture-stones (Ellmers 1995). The lady is probably not a valkyrie, but she may be an unknown side of Freya, or Ran.

On big ships, on the other hand, there was a documented belief in a male being called skeppsrået ‘the one ruling over the ship’.

8.6.8. The boat as a liminal agent

The boats occur in a liminal zone between land and water, between the living and the dead, as well as between humans and deities. Because of its role as ‘a liminal agent’, a term taken from van Gennep (1960) and Turner (1997), the boat was also thought to possess special powers. In the archaeological material of central Sweden this is especially apparent in the Late Iron Age, when the symbolic value of the boat is strengthened and used in many different contexts. As we will see in chapter 10, these powers enabled the boat symbol to be used in jurisdiction, in house construction, and in other spheres of society. That the liminal state as an area for transgression of a border has been considered both dangerous and advantageous, as expressed in cosmology and rituals, has been discussed by Westerdahl (2005). For people living by the sea, the primary antagonism between sea and land has shaped their cognitive ritual landscapes. The boat represents this limit – a mobile bridge between land and sea. In the maritime culture of Sweden, the meeting of these various opposing spheres was dangerous and had to be treated with caution. The things associated with land were forbidden at sea, for instance everything connected with agriculture, which shouldn’t even be mentioned. Woman and children were land-associated and should not be named or taken on board, and neither should land mammals or domestic animals, especially not animals with claws like cats and wolves (Westerdahl 2005:3). Stone and what belonged to it were taboo. It was even dangerous and taboo to name animals and things from land, and from Sweden and other
places a great number of *noa* names, or euphemisms, are recorded for them (Jakobsen 1921; Westerdahl 2005). As Åke Hultkrantz noted in his analysis of the taboos within the fishing culture:

The opposition between sea and within fishing and hunting culture has undoubtedly contributed to the emergence of taboos in fishing. It is here the question of more than a categorization in a dichotomy between land and sea motivated by the structural ‘order’. It is a question of deeply-felt division between two worlds within surrounding reality. The ancient fishing culture – ancient in structure and general patterns, not in details modified over time– has survived up to our own times in marginal zones, where it has existed since antiquity. Isolated but populous fishing settlements have best withstood modernization following the steps of agriculture, high culture and industrialization. In particular maritime fishing villages have preserved their continuity. (1992:42; transl. Westerdahl)

Westerdahl has noted that this contrast is seen most clearly in societies where there is no such specialisation in fishing. However, I argue that it is found in both types of fishing communities. In Sweden it is found both among the specialised fishermen on the Swedish west coast and among the ‘fishing farmers’ of the eastern archipelago. The encounter between both worlds has been conceived of as strong and powerful in both areas.

The boat was associated with borders. Still in Estonia it is possible to see boats placed upside down on top of stone fences (fig. 230).

*Figure 230. A boat placed on a stone fence. Photo Annika Larsson.*

As a liminal agent, the ship was also used by the leadership of the Late Iron Age. It was a powerful symbol used to secure divine protection of the social order, as we shall see in the next chapter and also in chapter 10 where the occurrence of boats in the town rampart of Birka is discussed.
9. MARITIME IDEOLOGY AND SOCIETY

The essence of what I call a ‘maritime society’ is that the ship was a key symbol and used as a structuring principle in a society where status, culture and communication were related to seafaring. Almost every aspect of human activity was organised according to a maritime structure and systematized by the naval territorial organisation, i.e., the leiðangr. As it is described in the early medieval provincial laws, the warship of a Late Iron Age type became the cognitive framework not only for administrative, military, religious, and judicial activities, but also for different spheres of ordinary life, such as rights to lands and forests, and maintenance of water routes, roads and bridges. Because of the key importance of the ship metaphors at the time the society was organised and divided into a hierarchy of territories as part of a central planning, it is necessary to analyse and date the leiðangr organisation. The leiðangr appears in some of the provincial laws up to the 13th century, where it occurs as a well-developed combined naval and fiscal organisation, based on a territorial division into districts in a hierarchy called land, hund and hundare, skeppslag, Fierlunger, attunger, and the smallest units called hamna. As I discussed earlier, it is only when the Late Iron Age settlements are studied within the known medieval districts without altering the borders that a regular structure appears. I will return to this issue later in this chapter, and relate it to the question of how and why this structure was introduced, as well as concerning the dating. There are two main lines of thought that were followed earlier. One is that the name hundare applies to a counted number of one hundred, or a storhundrade ‘big hundred’ (the Germanic concept for one hundred and twenty), settlement or land units (Ekbom 1974; Söderlind 1968; Hyenstrand 1974; Ambrosiani 1982). The other main line is that the hundare got its name from its function as a district that equipped 100 men for the navy (Hafström 1949; Hjärne 1952; Schuck 1949; Lönnroth 1982).

What has also been discussed is the purpose of the leiðangr and the intention behind its creation. In recent years it has been suggested that the leiðangr was only a metaphor; not a real organization of the navy, but rather a medieval invention using a well-known symbol to territorialize society and tax the inhabitants. There have also been speculations that it was an idea invented by 17th century history writers.

The leiðangr organisation, as it appears in the early medieval laws, has been viewed by most researchers as connected with the manning of the warships in a royal navy (Hafström 1949; Hjärne 1979; Larsson M.G. 1987; Larsson G 1989, 1993; Westerdahl 1989), as a centrally organised division of settlements into districts called hundare ‘hundred’ (from 1351 onwards known as härads) and skeppslag ‘ships’ crews’ for this purpose.

The organisation, as it appears in the provincial laws, has often been traced back to the prehistoric period. Suggestions as to the dating of the leiðangr organisation have, however, varied greatly, between the time around the birth of Christ and the
thirteenth century, ‘if it ever existed’ (Varenius 2000:30). Hafström (1949) dates the division into _hundare_, based on Tacitus, to the Roman Iron Age–Vendel Period; Lönnroth (1977) and Varenius on the other hand believes it to be secondary to the Christian territorial organization.

Using differently constructed models for the _hundare_-district by roundabout means, and without examining the archaeological material, researchers have made attempts to compile an idea of the appearance of the warships from a possible hypothetical _skeppslag_. The smallest district, ‘hamma’, named after the hamlaband by the oar and the place on the ship whose rower the district should provide and equip, has by many scholars been thought to correspond to a prehistoric settlement, and the number of such settlements has been counted and calculated to establish the hypothetical size of ships’ crews, often related to the number and district name _hundare_ ‘hundred’. The historian Erland Hjärne, who took up this problem in the work _Land och leiðangr_ (Land and Ledung), believed, for example, that the _priþunger_ (organisation into thirds) of the _hundare_ would have equipped a 12-oared ship during prehistoric times, and thereafter a ship with 24 oars up to the twelfth century, finally manning a ship with 40 oars in the time of the provincial laws. (Hjärne 1979:253 ff).

The legal historian Gerhard Hafström proposed instead that the _hundare_ in prehistoric times was divided into four _Fierþunger_ (quarters), each of which would have equipped a ship with 24 oarsmen and a helmsman, making one hundred people altogether and so giving the _hundare_ their name (Hafström 1970:13 ff). As source material he mentions, for example, the Höggeby Stone.

In contrast another legal historian, Carl Axel Ekborn, in his work _Vietnetionde och hundaresin- delning_ (Vienntaxes and Hundred Boundaries), came up with the idea that the _hundare_ may even in the eleventh century have equipped three 40-oared ships from three _priþunger_, and this was supposed to have produced a _storhundrade_ (large hundred), i.e., 120 oars altogether (Ekborn 1974:76 ff, 178f, 313f). He pictured the ships as being large and broad, with 3 men per oar and places for 120 men per ship; perhaps he was inspired by the Icelandic sagas or by the writer Frans G. Bengtsson’s large ships.

The archaeologist Mats G. Larsson has (1987a), like Hyenstrand, observed that the _hamnas_ often occur in groups of twelve, which makes him suggest that the small ship with 12 rowers must be the normal _leiðangr_ ship. This is a hypothesis that is founded on empirical studies, and I fully agree with Larsson that this must have been if not the normal then at least one of the most common ship-types used, corresponding well to the Viks boat and many other finds (see chapter 2). As has been shown in chapter 7, the small ships were also the only ships possible to use on maritime expeditions that involved the shallow rivers of the East, a conclusion also drawn by Edberg concerning the experimental voyages along Russian rivers in 1994 and 1996, as well as Mats G. Larsson after Expedition Vittfärne in 2004 (oral information).

Among the archaeologists, Åke Hyenstrand sees the connection with ships as more diffuse, and the number one hundred, which also here is interpreted as lying behind the district designation _hundare_, would according to him mean a count of one hundred settlement units (1974:119). Björn Ambrosiani, following a similar discussion, regards a _hundare_ as consisting of a _storhundrade_ – meaning settlement units – in the first phase, divided into four ships’ crews. This level of organisation would possibly belong to the eleventh century (1982:80).

The earlier division into _hundare_ in Södermanland and its relation to the distribution of Tunaband Husaby-villages, has been discussed by Keith Wijkander in his thesis (1983).

With regard to these different suggestions proposing warships of equal sizes, I have earlier been opposed to them on the basis of historical, iconographical and archaeological material (G. Larsson 1989). The naval fleet seems almost always to have consisted of different sizes and classes of ships (see chapter 3).

In archaeology there is a growing interest in research on the _leiðangr_ organisation and the early maritime warfare and defence system. Mats G Larsson has discussed different aspects of the organisation. In his work _Hamnor, husabyar och leiðangr_, the district _hamna_ was dated by means of the archaeological date for the habitation unit that had given name to the _hamna_, and he concluded that the majority of the name-giving units in some areas derived from the 10th century (1987). This coincides with the introduction of the military levy in Norway by means of a territorial division of the country into _skeppsrêdar_ ‘ship-supplying districts’, which according to both _Heimskringla_ and _Fagrskinna_ occurred during the reign of Hakon the Good. Most of the Norwegian scholars have accepted Hakon as the creator of this organisation and dated it to c. 950–960 (Björkvik 1965a:434). Larsson has observed that an indication of the establishment of this organisation in Sweden in the 10th century appears in the saga of Styrbjörn in _Flateyjarbók_, where it is said that the Swedish king Erik Segersäll, prior to the battle with Styrbjörn, received advice from Torgny lawspeaker to improve the laws greatly and ‘to decide which weapons and war clothing each peasant should own’.

Varenius’s point of departure for the discussion is completely different. The _leiðangr_ is for him not
a military levy at all, but ‘a fiscal system in the
disguise of a warfleet’, used by the king to get con-
trol over powerful landowners and their retinues
(1998:2). He connects it with the social structure
and argues that earlier the social ideal was the fam-
ily as a male structure, and that it also constituted
the model for the retinue (líð) where the social roles
were defined in terms of ‘fathers’, ‘brothers’ and
‘sons’. The retinue had an economical and political
importance and was a threat to the king. In response
to this situation, Varenius argues, ‘the levy was a
logical (metaphorical) medium for the medieval
kings when legally making themselves supreme
chiefs of all other retinues in order to take control
over economic and military resources’. This reason-
ning leads him to conclude that:

The ‘military’ levy has in all probability not ex-
isted in the form the organisation is described in
the laws. Warships have existed, of course, and
bands of men have been recruited by local chiefs,
but it seems highly unlikely that kings during the
11th and 12th centuries had the kind of territorial
and personal control needed for raising these fleets.
The levy was ‘invented’ to get control, and was
mainly intended for taxation purposes. (1998:142)

This is an artificial construction of the societal
development during these time periods, and it is
greatly influenced by a trend among historians
during the later years, for instance by the ideas of
Niels Lund, who sees the lack of documents sup-
porting a military levy as proof that it never existed.

It rests on an evolutionary view that prehistoric
man was not capable of creating complex societies
in the North, which was situated too far away from
‘the centres of civilisations’ that were presumed to
be by the Mediterranean Sea and perhaps in West-
ern Europe. This is reflected in the terminology
used, where Iron Age society is characterised as a
‘chiefship’ (Varenius 1998:142), which many
archaeologists have contrasted with the idea of a
medieval, more developed society called ‘kingship’
and ‘state’. This is a modern model of the develop-
ment, projected onto the prehistoric society. As
will be shown in this chapter, there is evidence of a
complex administrative and military territorial
structure in the Late Iron Age, which is partly de-
stroyed as a part of a political transformation pro-
cess aiming to increase royal control in the 13th
century. From the 13th to the 15th century it exists both
as a military and a fiscal levy, but the organisation
is seldom called upon for naval duties, only annu-
ally for taxation.

The leiðangr organisation in Varenius’s work is
reduced from a war fleet to, as he says, ‘an excuse
for the king to claim various services. This was a
taxation system, explained with historical reference
to plunder and/or naval defence’ (1999:179 my
transl.). The king now made clear that he was the
sole commander with a monopoly on the use of
force, which according to Varenius meant replacing
and prohibiting ‘a former habit of keeping private,
armed retinues as the basis for private enterprise’
(1999:179). By swearing an oath to the king these
large landowners and ‘other chiefs’ with their pri-
vate parties put themselves under the king’s com-
mand. Contrary to this, I mean that most expedi-
tions in the Late Iron Age and Early Middle Ages
were led either by the king or ‘the one who the king
has decided should perform the duty as leader of
the fleet’, as the law puts it. I interpret the latter as
the jarl, who was a member of the royal family or
someone closely related to it, and I will discuss this
on the basis of skaldic poetry and runic inscriptions.

Varenius lacks a discussion about the different
districts within the organisation, for example the
hundare that are central in the leiðangr organisa-
tion and that evidently, according to runic inscrip-
tions, existed already in the mid-11th century. Also
missing is a discussion about the many naval expedi-
tions led by theLate Iron Age kings, as described in
the skaldic poetry, many chronicles, and the sagas.
He does not explain why several of the districts,
fundamental within the organisation, disappear
after the 13th century. It is hard to find these argu-
ments in line with the historically known develop-
ment, where the earlier territorial division repre-
sented in the leiðangr organisation was replaced by
a territorial division into län (see below) as a means
for the king to get control over the local influential
leaders.

The questions of the many paragraphs of legisla-
tion dealing with real naval ships and seafaring,
which are so central in the laws Varenius refers to,
are not explained. If the levy in the laws was in-
tended for taxation, all these legal paragraphs
would not have been necessary. Instead I will show
below how the building and maintaining of ships in
a naval levy was intertwined with the territorial
organisation as described in the laws. In the next
chapter, with the laws as an important source, I will
also show how the ship as a sacred symbol is treated
as a special jurisdiction area, a feature that can be
traced back to the Iron Age and the divine
protection associated with the ship as a religious
symbol. The paragraphs in the Uppland law relate-
to the jurisdiction on board ships, the rodha rätt,
are almost identical with the oldest Russian law
code, Russkaja Pravda, an influence that must be a
consequence of the Viking Age contacts. This is
something that also will be discussed in chapter 10.

What is generally lacking in the debate concern-
ning the leiðangr is the meaning and use of the word
fráls ‘freed’ in the Middle Ages, and the conse-
quences of its introduction in 1280. Fráls means
‘to be freed from the both the military duties and
the tax within the leiðangr organisation’ (see be-
low). Since the tax part was introduced at the same time as the new military organisation with elite troops supporting the royal power at the castles in every län, those who could supply an armed warrior and a horse to these royal military forces were freed from both the tax and the naval demands.

Nielsen (2002:70) has underlined the ‘massive participation’ of the leiðanger fleet in the crusades in the Baltic, which earlier has gone unnoticed in the discussion.

Among the words used for the different districts, it is the word hundare that has received most attention by scholars. The most thorough research was presented by Thorsten Andersson (1982). His interesting results concern the etymology of this district term. According to him, the earlier version is the district term hund that appears in some of the province-names. Hund is etymologically identical with the Proto-Germanic word hunda ‘a hundred’. This word has already in the Nordic language been replaced by the extended term hundra corresponding to the German hundert and the English hundred. He has also shown, as earlier suggested by Hjärne and Sandström, that the district term hundare derives from a combination of the elements hund ‘a hundred’ and the Proto-Nordic *harial ‘army’, with the meaning of ‘army of one hundred men’. These results can be related to a kind of chronology used by linguists. The Proto-Germanic language was spoken c. 500-1, and the language that is called Proto-Nordic was spoken in the period AD 1–800, followed by the Old Swedish language c. 800-1526 (Williams, personal information). Thus, one can conclude that the language, in which the meaning of the word hund was understood, was spoken in the Early Iron Age. This means that if this old district term had been created later, the word hundra probably would have been used instead. As will be shown, a hundred groups of units of any kind are not applicable to the territorial structure of Late Iron Age society. The hund and hundare districts must have been introduced in a much earlier phase, when there probably existed groups of one hundred men without any connections with territorial units and perhaps not with the manning of ships either. As will be shown, however, there is a close connection between, on the one hand, the structure involving the territorial districts Fjärrunga, skeppslag, attunger and hamma and, on the other hand, the Late Iron Age warships.

The discussion about the territorial organization and origin of the hundare in central Sweden is summarized in Tunberg’s work Studier rörande Skandinaviens äldsta politiska indelning (1911), and Stefan Söderlind’s article Häradet (1968). Though the age of the hund/hundare division is subject to strongly differing opinions among researchers, most scholars (Ambrosiani 1983; Schück 1949; Hafström 1949; Hjärne 1952, 1979; Hyenstrand 1983) agree that the hund as a district term has preceded the hundare, a theory, which also has gained support from the linguists (Andersson 1983, see above).

Stefan Söderlind has instead proposed an influence from the Roman allotment of land to soldiers after military service. When Roman colonies where established, the estates and land was divided into territorial provinces called centuriae ‘hundreds’, in which 100 units of land called hereida, consisting of two jugera (Sw plogland) were given to the soldiers, who became the peasants of these provinces and colonies. This division into centuriae, called centuriatio, was the origin of the division into härad and hundare. Arguments against the theory have concentrated on Söderlind’s interpretation of the Sw place-name element kind as deriving from cent in centuria; for example, Andersson argues that kind means ‘kindred, people’ (Söderlind and Andersson 1969).

The ‘land hypothesis’ has been supported by Ekborn, who follows Söderlind and means that hund has been a cultivated area of 100 plogland, based on ecclesiastical taxation lists of the early 14th century (DS 1946 from 1314; DS 1947 from 1343).

The leiðanger-related taxes of Sweden was thoroughly discussed by Lönnroth 1940 and soon after commented on by Ståhle in 1941.

The idea of societal development

The territorial division among the Swear into hundare and skeppslag for administrative and military purposes, represents an ordered, state-like society. That something like that could have occurred already in the prehistoric period, and before any written sources can verify it, goes against the general idea of many historians and archaeologist about the development of Swedish society. For instance, Thomas Lindkvist (1988) means that before the early Middle Ages, kings and chieftains gained all their wealth by sharing tribute and booty from raids.

The leiðanger is described in detail as a complex organization for manning the ships on a territorial base in the early medieval provincial laws of central Sweden. This is the first and last time the leiðanger is described in detail before it disappears. An interesting discussion about the concepts lið and leiðanger in the Uppland law was initiated by Hafström work in 1949. Hafström had viewed both concepts as synonymous, while Schück, as also Hjärne, saw a difference. Schück meant that lið should be interpreted as the king’s and chieftains’ personal followers and retinues, while the leiðanger signified the ordinary peasants under obligation to participate in the navy (Schück 1950:466 ff).

The view on these concepts and their origin is largely depending on what society people believed
 existed in the Late Iron Age. Carl Göran Andrae (1960:64) and Arup (1914) believe that the medieval leiðangr grew out of the earlier, private leið of chieftains, over which the king gradually took control. Andrae believes, based on runic inscriptions, that the Late Iron Age was dominated by powerful chieftains. Peter Sawyer (1991:44f) has later pointed out that these powerful chieftains blocked the unification of Sweden until the 13th century. Lindkvist (1988:59ff.) believes that this organization and the territorial division with the royal estates Husaby in central Sweden belong to the early Middle Ages when a royal power based in Östergötland tried to put central Sweden under its increasing influence.

To argue that the leiðangr belongs to a time when no historical sources can verify it is according to Lund (2002:274) to ‘rely on arguments from silence’. This would mean that no societal organization could have existed before there were historical evidence, and an elimination of the possibility to use other sources, like archeology to put light on this question.

The relation between the Svealand and Götaland

Svealand has, despite the occurrence of the territorial organisation related to the military levy, often in later years been regarded as secondary to Götaland, and as a retarded area to which both Christianity and a state-like society came late. I will not penetrate too deep into the debate here, and will only comment upon a few of the different standpoints as a background for my analysis; for a summary of the discussion, see Gahrn 1988. Thomas Lindkvist is of the opinion that the early medieval royal power was centered in Götaland and that Götaland had the earliest taxes and organised society. This forces him also to believe that the taxes in Götaland are old, that the Husaby-institution there is the oldest, and that the royal levy both as a fleet and tax are later than those (Lindkvist 1988:28, 30, 55, 61). With this argumentation, the speed of societal development would have been immense. In 100–150 years, the kings would have acquired all the holdings they have in late Middle Ages, gained control over the leiðangr fleet and invented and imposed taxes for the people. As the historian Lars Gahrn (1993) has shown, this does not hold if a closer examination of the few available sources is made. By the end of the Iron Age and the early Middle Ages many kings belong to Svealand, and it is here that their main holdings are created, the ‘Uppsala Öd’. He also stresses the facts that the kingdom got its name from the Svear, that the Svear in the sources always are treated as superior to the Götar in that they are always accounted for before the Götar, twice in Adam’s Gesta and in the letters from the Pope, and once in Saxo, Svend Aggesen, Historiae Norwegiae, Knyttinga saga, the Swedish Norwegian agreement of 1319, the National Law of Kristoffer, the Prosaic Chronicle, and not the least in the royal title (Gahrn 1993:43). Gahrn observes that the king is called sveakonung ‘king of Svear’, ‘king in Sigtuna’ or ‘Uppsala king’ in the sources, such as in the border commission document of ca 1050, Landamärke 2, and Ari’s Islandingabok. Uppsala was the religious centre and the earliest main centre for the king and national activities (Gahrn 1993:43, 46). Gahrn also points out that when Saxo compares Svear and Götar, he characterises the Götar as in aliquid obscurior populos ‘in many ways a more unobserved people’, with the word obscurus originally meaning ‘dark, dusky’, but here also ‘unknown, unnoticed, insignificant, unobserved’ (Gahrn 1993:62). This may reflect a contemporaneous view, and is not contradicted by Snorri’s information, that mainly derives from the lawspeaker of Västergötland, Eskil Magnusson and his wife in Skara, whom he visited in the summer 1219. Snorri lets the king’s counsellor Freyvith say that ‘It has always been the custom in this country that what the Uppland Swedes had agreed upon between them, that counsel was adopted by the people in other parts of the country. Our forefathers did not need to accept the advice of the West Gautar as to how the country was to be governed’ (Olafs saga Helga, ch. 94, transl. by Hollander). Although both Saxo and Snorri are questionable as informants due to the distance in time and space, their statements cannot be proven wrong by other sources.

9.2. The leiðangr and territorial division

The provincial laws up to the 13th century present the leiðangr as a well-developed naval organisation, based on a territorial division into districts in a hierarchy called land, hund and hundare, skreppslag, Fiærþunger, attunger, and the smallest units called hamna-districts. Fully developed this naval organisation occurs only in the material from central Sweden. Here it is primarily in the provincial laws of Uppland and Södermanland, and partly also in Västmanland, that this hierarchical organisation for the building, manning and maintaining of naval ships is known. The hamna-districts have also been introduced into the coastal areas of Östergötland and Hälsingland.

In central Sweden, the obligation to be prepared for naval service involved all free men who were adults and owned agricultural land (see under hamna below). The obligation to join the leiðangr fleet had, according to the provincial laws, a territorial base in central Sweden. Here, everything
needed for a naval expedition was regulated by law: food provisions, weapons for the rower, how many ships that should be built, when the fleet should be prepared, how long the inhabitants had to join an expedition, and how long they had to wait for the correct winds for the journey before they could return to their farms without fines. In some areas there were also special law codes, such as those in the Uppland law, which applied to the crew when the expedition had left the country for a leiðangr journey. When on board, abroad and at the foreign landing places, fines and punishments were fixed at a higher rate than at home.

When we encounter the leiðangr in the provincial laws, it is as a naval organisation, such as in the following introduction in the Uppland law:

Nu buiþær kunnungær liþ ok leþung utt
biuþær utt roð ok rep
da skal mæmne hampn ok stampn,
ok styriman ok hasætæ allæ
ok han skal bippæs a kyndilþingum
ok stæþæs a lîpstæmpnun
um alle kununx utt gierþir
skal bû þuþhuðurtan natum fyrð konæ
æn þæt ut görs.

§ 1. Þæt ær laghæ leþungær
fiughur skip aff hundæri hwariu.
will kunungaæ siælwær utrikis faræ,
ælær hær sin ut sendæ
þæt siælwær huru længi han will uti
wæræ.
ok æpti þy wærþær han leþung ut biuþæ.
han will siælwær uti wæræ.

Transl. into English:
Now the king bids out *lid* and *leiðangr*
bids out rod and red
then harbour and ship shall be named
and helmsman and all rowers
and it shall be called out at Kyndilting
and be ready at lid-meeting
about all the king’s *utgjørdir*
message shall come fourteen nights before
it shall be delivered

§ 1. This is legal *leiðangr*:
four ships of each hundare
if the king wants to go abroad himself
or send his navy
he himself may decide for how long
he will stay abroad
and he shall call out the *leiðangr* for as long
he himself wishes to be away.
(UL KgB X, my transl. and italics.)

That this *leiðangr*, as it is mentioned in the law text above, should only be a levy for fiscal purposes and not an actual navy (Varenius 1998), does not seem realistic.

In the Uppland law, it may seem as though the transformation of the districts into tax-paying units has gone far if one reads the first chapter, which some scholars have limited themselves to, but the leiðangr in itself as a naval organisation is clear if one continues, for instance, with a study of Manhêldsbalken:

*Kunnungaer buiþær leþung utt,
Skip liggær j leþgi
Lyptingær tildeþær
Siþlþør a stampni
Wærþær þær man dreþpin
Fore børþe oc bryggin sporþe,
Liggþ i twæþôte.

(UL Mh 11:3)

In this colourful presentation of a naval leiðangr called out by the king when the ships are prepared, equipped and ready, it becomes clear that when the red shield is raised on the stem as a sign and symbol of ‘royal peace’, it means that the *rodarâtt* has come into action, i.e., the special law on board during maritime expeditions which is characterised, as in other instances of royal peace, by doubled fines for crimes as compared to ‘at home’.

The leiðangr as described in the provincial laws, however, had already in the middle of the 13th century begun to be partly replaced by another military organisation based on elite troops. In Sweden the king followed the general trends on the Continent and had his troops stationed at the royal castles that he had built at strategic places. The provincial laws present a picture of a disappearing naval organisation. According to the documents, it was seldom used for expeditions during this time. After the crucial battle at Sparrsätra, it began to be exploited by the king for financing and providing food for the elite troops.

Still in the 15th century the leiðangr organisation was used for naval purposes. The conquered areas that now were incorporated into Swedish territory were also given naval obligations to be ready if needed in the same way as in ‘old’ Sweden. In a letter from Karl Knutsson 6 May 1450 the naval leiðangr is demanded from Finland Proper, though the word leiðangr is no longer used:

*Ithem om idher snekke lagh j Norrfinna oc Sudherfinna wilia wy tillota at hwart haerede haffue j snekkia aff XVI lesther oc en sköttabaath aff VI lesther eller VII ferdoghe till rikisins tienist jnnan pingx daga nest komandhe. (REA 555)*
Here the term *snække lagh*, as well as the district that should supply it, the *härad*, shows that this is an ordinary leiðangr expedition that the king wants prepared. The term *hundare* had in the 14th century been replaced by the southern term *härad*. Like the *hundare* earlier, the *härad* was now the *snække lagh* for equipping and keeping a ship ready for the fleet. As earlier stated in the provincial laws, the time when the fleet should be ready was during Whitsun tide.

In the 16th century, the memory of the earlier maritime organisation was so vivid that Olaus Magnus, when describing the arrangement for naval defence, does it in present tense and describes how the defendants of Stockholm’s archipelago:

…drag their ships a shorter distance over ridges and slopes towards the place, where they suitably could be used against the enemies. (Historia 11:9 my transl.)

A possibility is that the leiðangr-organisation was never formally abolished, only complemented, and at last replaced by the new military structure that from the 13th century was the main way of mobilizing the military forces. Parallel to the new system, the earlier way of summoning the peasants was also used on single occasions until the 15th century.

9.2.1. Land and folkland

*Land* was the area in which a provincial law was valid. *Land* and *folkland* are synonymous with the later term *landskap*. The name *folkland* is used for the three former *land* – *Attundaland*, *Tiundaland* and *Fjæþrundraland* – which with the establishment of the Uppland law in 1296, together with Roden, came to follow the same law. The different *land* of Sweden had their own laws until 1350, when the national law was established by Magnus Eriksson as a means of increasing central power (*Magnus Eriksson’s National Law*).

<table>
<thead>
<tr>
<th>Attundaland</th>
<th>Tiundaland</th>
<th>Fjæþrundraland</th>
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<tr>
<td>Prouincia brohundæri</td>
<td>Habohundæri</td>
<td>Prouincia aashundæri</td>
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<td>Prouincia sollendahundæri</td>
<td>Prouincia hagund</td>
<td>Prouincia simbohundæri</td>
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<td>Prouincia valendahundæri</td>
<td>Prouincia vllarakir</td>
<td>Prouincia thorsakir</td>
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<td>Prouincia sæmingahundære</td>
<td>Prouincia belling</td>
<td>Prouincia laghund</td>
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<tr>
<td>Prouincia langhundæri</td>
<td>Prouincia vaxalldh</td>
<td><em>Prouincia trögdh</em></td>
</tr>
<tr>
<td>Prouincia lhyhundæri</td>
<td>Prouincia norundh</td>
<td></td>
</tr>
<tr>
<td>Prouincia arlendahundæri</td>
<td>Prouincia olandh</td>
<td></td>
</tr>
<tr>
<td>Prouincia saehundære</td>
<td>Prouincia resbohundæri</td>
<td><em>Prouincia vendil</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Prouincia gestrikaland</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rodhin</td>
</tr>
</tbody>
</table>

Table 33. *Folkland* and *hundare*-provinces based on the so-called Vienne tionde accounts from 1314 (DS 1946); the *hundare* with a diverging internal structure italicized by the present author.

The original folklands

The names of the folklands – *Attundaland*, *Tiundaland* and *Fjæþrundraland* – are descriptive and mean land with eight, ten, and four *hund*-districts, respectively. The names include the next district within the hierarchy: the district term *hund*. The existence of the folklands is confirmed already in the document *Landakameri* I in an addition to the earlier provincial law of Västergötland, written down ca 1285, which concerns the drawing of a borderline between Sweden, Norway and Denmark which should have occurred c. AD 1050 during the reign of Emund Slæme (Andersson 1982; Lindqvist 1941:75). The dating has been questioned by P. Sawyer, who would rather date this document to the 13th century (Sawyer 1991:28, 64-73). Here are mentioned representatives from *Tindæ landi* and *Fixdrunde landi*, showing also that these different hund-provinces had been combined into the bigger unit *folkland* at the time the document was issued. This division is in any case verified at the latest in 1120 in the so-called Florence Document, where, in a somewhat corrupt form, all three folkland – *Tindia*, *Fedundria* and *Atanht* – are mentioned (SD, p.3)). Here scholars agree on the authenticity of this document. The folkland are also mentioned in a document from 1160 (DS 51) and in the Heimskringla from c. 1230.

![Figure 231. Land and folkland in central Sweden. After Ambrosiani 1983.](image_url)
9.2.2. Hund and hundare

The concepts *hundare* and *skeppslag* have a prominent position in the provincial laws. In the Uppland law of 1296, the obligations and rights of the *hundare* are described in the *Kungabalken* ‘the King’s section’, where the function of this district as part of a primarily naval organisation is immediately visible:

This is the law of the *leiðangr*: four ships from every *hundare*. (UL KgB X my transl.)

The law is also using the separate concepts *utfärd* and *utgärd*. According to the translators of the law texts, there is a clear distinction between the *utfärd*, which deals with the military expedition, and the latter *utgärd* with the former food provisions transformed into different payments and proto-taxes that must be paid the years the fleet was not called out. That the Uppland law was still being used for naval purposes is sometimes beyond any doubt if other paragraphs in the law text are studied, such as those concerning juridical matters:

...ha kunungær biuþær leþung utt. ha aghu allir friþ hawæ. her j. þy hunderi ælir skiplaghi boe, sum leþungær ær utt gangin aff. þadi maþok man-num. Ok hin annur skiplag och hunderi sum matter ær utt aff gangin ok æi man þær laþþingis swa friþe sum meullum, ok sökis æptir lanzlaghum. (UL R 14:1)

My translation:

When the king calls out the *leiðangr*, then all will have peace who live in those *hundare* and *skeppslag* where the *leiðangr* has gone out in both food and men. And in the other *skeppslag* and *hundare* where (only) food has gone out and not men, there the thing shall be held and cases tried after the land’s law.

This is a very important part of the law. *Friþ* ‘peace’ is called upon in those *hundare* where the *leiðangr* ships had gone out; in other parts of the law it is connected with the *rodarätt* jurisdiction which was the heavier law with fines stipulated for the *leiðangr* journeys. In the other districts without naval participation, it was the ordinary jurisdiction after the land’s law that was valid. As this is an important question in relation to the *leiðangr* and the maritime society, it will be dealt with separately in the next chapter. The text here also tells us that sometimes the naval levy that included *both* food and men, was called out from only some of the *hundare*-provinces, and that the others that did not have the naval levy still had to deliver food provisions, the so-called *skeppsvist* (see under *hamna*), as a tax (UL R 14:1).

The *hundare* here appears as a district that should keep ships and crew for a royal navy. The role as leader of the navy was probably earlier the main function of the king in the society, representing a loose federation of different land and with more a symbolic than real power. When the laws were written down this was rapidly changing and the king was increasing his power by military means. This is why, in my opinion, the *leiðangr* organisation, as representing the earlier system, disappears from the law text already in the first national law by Magnus Eriksson in 1350.

The most important fact to remember is that the *hundare*, a basic district in the *leiðangr* organisation, is known only from central Sweden; that is, Uppland (the main part), Västmanland and Södermanland (see fig. 236). This is the only area where a real hierarchical organisation is in use for the naval supply of men. It would seem very strange if a king of 13th century Sweden, which included most of present-day Sweden, introduced a system for taxpaying only in some parts of his realm. Instead it seems probable that this system was introduced before the different regions of Sweden were united into one country. I therefore suggest that the geographical distribution of the different parts of this structure can be a means of dating the introduction of the different levels in the territorial organisation, an issue I will return to.
The function of the hundare

The hundare appears in many parts of the provincial laws of central Sweden, in regard to most of the important aspects of society. The hundare here is a territory with defined borders, whose inhabitants gathered for a joint thing-assembly and with the shared responsibility to maintain bridges and the rights to the products of the common forests. The hundare was above all the main naval and tax-supplying district.

Hundare and thing

The hundare was also closely connected with the thing-institution. The hundare was the area of the provincial thing, and sometimes the thing-place gave name to the hundare. One example is the thing-place near Vallentuna Church in what was earlier Valenda hundare. Here an interesting rune stone with an informative inscription was erected:

\[\text{§A x iarlibaki x lit x raisa x stan + pina x a...}\]
\[... kuan + han x ati x tabu x alan x ...}\]
\[... ont hans +\]

\[\text{§B x iarlabaki x lit raisa x stain x hin- at sik...}\]
\[kuikuan x auk x ðinkstæb x pina x kapri +}\]
\[auk x ati x alt hu-(t)ari x ðita +\]

\[\text{§A iarlabanki let ræisa stæin þenna alt sik kvijkvan. Hann ati æinn Tæbyy allan. [Gud hi-alpi] and hans.}\]

\[\text{§B iarlabanki let ræisa stæin þenna alt sik kvikvan, ok þingstað þenna gærði, ok æinnatti alt hú[n]dari þetta.}\]

\[\text{U 212}\]

\[\text{§A Jarlabanki had this stone raised in memory of himself while alive. He alone owned all of Täbyr. May God help his spirit. §B Jarlabanki had this stone raised in memory of himself while alive, and made this Assembly-place, and alone owned all of this Hundred.}\]

(Transl. from the Runic Database)

Jarlabanke who made the thing-place by the church is said to have owned the hundare according to the interpretation of this word, but a more correct interpretation is probably that he was a ‘proprietor’ (?), a kind of provincial leader of the kind mentioned in the sources, later serving as a häradshövding. Already in the Early Iron Age on the Continent the denomination hunno was used as a continental Germanic term together with a suffix to signify a leader, in the same way as OVN fjóðam ‘chieftain’ comes from the denomination for the collective of fjóð ‘people’ (as in e.g., SvITHiod). Hunno signified ‘a leader of one hundred men’, and hund initially ‘a (group of) one hundred men (Andersson 1982:54). Andersson also draws the conclusion that groups of one hundred men must have been important in the Germanic society, otherwise it would not have been necessary to use hunno as a special term for a leader.

The thing-institution follows the same hierarchy as the leiðangr organisation, with a national level ‘the thing of all Svear’ in Uppsala, a regional thing for the land, and a local thing for the province hundare. Since the attunger and hamna went out of use in the language already in the 14th century, we don’t know if these, too, had a juridical instance. There is, however, a strong possibility that the sockenstæmma ‘assembly of the parish’, and the bystæmma ‘assembly of the village’ (Isaksson 1967; Hellspong 1979:63ff; Ehn 1982), corresponded to the level of the attunger and hamna. The collective duties of the latter require some kind of collective institution to make decisions, regulate duties and settle disputes.

The skeppsflag in Roden were mostly territories for the thing, but here also separate tingslag ‘thing communities’ developed.

In Uppland the hundare was divided into four Fiærþunger, probably corresponding to the supply areas for the four ships that the hundare had to equip. It was also divided into eight attunger and a varying number of hamnor.
The age of the hund- and hundare-division

As has been shown above, the origin of the older district term hund should be sought in the word hunda that was used in the Early Iron Age, and that later was replaced in the ON language by hundra (Andersson 1982). The terms hund and hundare were initially related to ‘groups of one hundred men’ under a leader that in some places is known as hundo. Such groups of one hundred men are described by Tacitus, and were according to him popular among Germanic peoples in different spheres of activity:

Definitur et numerus; centeni ex singulis pagis sunt, idque ipsum inter suos vocantur, et quod primo numerus fuit, iam nomen et honor est.

The number to be sent is also ascertained, out of every village an hundred, and by this very name they continue to be called at home, those of the hundred band: thus what was at first no more than a number, becomes thenceforth a title and distinction of honour. (Germania 6, transl. by Gordon 1910)

Their number is fixed – a hundred from each canton; and from this they take their name among their countrymen, so that what was originally a mere number has now become a title of distinction. (Germania 6, transl. by Church and Brodribb)

The word used in the Latin text is centeni, and Andersson means that linguistically this word in a Germanic language ‘ought to have been named *hunda (or a word formed from that)’ (1982:55). The group identity of this territorial unit may have been displayed in different symbols, which later, in the historical period, remained as signification of different hundare, both in symbols that became part of the territorial heraldic, specified colours, and in oral tradition in the nickname for the inhabitants, something that will be dealt with later.

In spite of these clear indications it is almost always hard to accept that humans already by this time were able to create a more complex organisation within society, at least with regard to these ‘remote’ areas (seen from the imagined ‘centre’ in the Mediterranean). It is close to hand to assume that the territories from which these hundred-men groups came were named hund, and that various prefixes were appended to hund as distinguishing denotations. The quotation above may mean that, what had earlier been a number among the crew and included distinguishing designations and probably also symbols for these units, had now become a name and a dignity; in other words, it had become a pride to belong to a certain group and a certain province. That different expressions of such pride in a group identity related to the hārad (=hundare) still existed in the 19th century will be dealt with below. As Söderlind (1968) has shown, there are early traces of a widespread territorial division into some kind of hund district among the Germanic peoples. However, this must not be confused with the territorial organisation of the Late Iron Age and the Early Middle Ages in central Sweden. My belief is that this society was completely reorganised between the 7th and 10th centuries AD, perhaps within an earlier framework of hund-districts, but introducing new districts with the ship as a metaphor.

However, an interesting aspect to consider is that Tacitus is referring only to the military organisation of the Svear when he emphasises the prominent position of the ships and the fleet.


Next occur the communities of the Suiones, situated in the ocean itself, and besides their strength in men and arms, very powerful at sea. The form of their vessels varies thus far from ours, that they have prows at each end, so as to be always ready to row to shore without turning nor are they moved by sails, nor on their sides have benches of oars placed, but the rowers ply here and there in all parts of the ship alike, as in some rivers is done, and change their oars from place to place, just as they shift their course hither or thither. (Ch. 44, transl. by Thomas Gordon)

The earliest use of the term ‘hundare’ is otherwise in the runic inscription U 212 from the 1050s AD, erected at the thing-place beside Vallentuna Church in Uppland.

U 212

§A × iarlibaki × lit × raisa × stan + þina × a... ...kuan + han × ati ain × tabu × alan × -... ... ont hans +

§B × iarlabaki × lit raisa × stain × þin- at sik kuikuan × auk × þinkstaþ × þina × karþi + auk × ain ati + alt hu-(t)ari × þita +

The word used in the Latin text is centeni, and Andersson means that linguistically this word in a Germanic language ‘ought to have been named *hunda (or a word formed from that)’ (1982:55). The group identity of this territorial unit may have been displayed in different symbols, which later, in the historical period, remained as signification of different hundare, both in symbols that became part of the territorial heraldic, specified colours, and in oral tradition in the nickname for the inhabitants, something that will be dealt with later.

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The earliest use of the term ‘hundare’ is otherwise in the runic inscription U 212 from the 1050s AD, erected at the thing-place beside Vallentuna Church in Uppland.
Already in the above-mentioned document concerning the drawing of a borderline between Sweden and Denmark (Lindqvist 1941:75), with a discussed dating to the mid-11th century, the names Tindaelandi and Fiaedrundaelandi are mentioned, showing that these different hundare-provinces had been joined into folklands. If any uncertainty exists about the age of this document, scholars at least agree on the authenticity of the Florence Document of AD 1120, where in a somewhat corrupt form all three folklands – Tindia, Fedundria and Atanht – are mentioned.

The cantons of Tacitus have probably earliest been naturally developed settled areas, separated by forests. Even today it is possible to see the former, common, forested areas as marking the borders between different settled areas in the härad, such as the forest Görvån (earlier Hjulveden) for the forest between Sjuhundra and Närdinghundra, the big forest between Lyhundra and Närdinghundra, etc. These may not have had fixed borders, though in several places Bronze Age burial cairns appear at the boundaries, as observed by Dan Carlsson on Gotland (1979), but according to my observations they also occur in Uppland. On Sjuurán, ‘the border of seven’, which comprises an ancient border between seven villages, Edsbro, Fasterna, Lohåråd and Rimbo parishes, as well as Närdinghundra and Sjuhundra hundare, there is a big cairn at the centre and smaller cairns surrounding it, marking the direction of the village borders. Along some of the borders there are field walls or stone fences, and these can also be seen on the border traditionally pointed out as separating Sjuhundra from Lyhundra hundare. At the latter place, also burial cairns appear, at places where the borderline turns off at an angle. If these borders could be dated, an indirect date for the territorial districts would be obtained.

A half hundare

A half hundare is also mentioned in the hierarchy of Uppland (UL KgB 10).

9.2.3. Skeppslag within the hundare-area

Skeppslag ‘ship supplying [area]’ was within the hundare in Södermanland and Västmanland the designation for the district that corresponded to the Fjärplunger in the hundare of Uppland. The hundare of Västmanland should equip and maintain two ships, and was divided into two territorial skeppslag (VmL KgB VII). Concerning Södermanland, we don’t know how many skeppslag there were in each hundare. Holmbäck/Wessén interprets the leiðangr regulations in the Södermanland law (SdmL KgB X) as such that only one ship should go out from each hundare in Södermanland (Holmbäck/Wessén 1940:61). The skeppslag of both Västmanland and Södermanland was divided into Fjärplunger, which probably corresponded to the attunger in the hundare of Uppland. Since both the structure of fines and the internal division is the same, it would not seem improbable that the hundare in Södermanland consisted of two skeppslag as well. However, an early source for the number of hamna-districts – i.e. the districts supplying one rower each – is known from some hundare-provinces in Södermanland in the accounts of Raven von Barnekov for Nyköping Castle-län in 1361 (see below). Here it is obvious that each of these hundare had been supplying only one ship, since they are generally small.

The internal structure of the hundare differed in different parts of central Sweden. The four ship-teams of Uppland are probably connected with the territorial district in the law called Fjärplunger. The coastal area of Uppland was probably a land by itself together with Åland in the east (see discussion below). This coastal area was called Roden and was divided into the provinces that in many respects were treated as equal with the hundare, called skeppslag ‘ship supplying [area]’, which supplied one ship each with rowers for the navy.
9.2.4. Fjærþunger 'fourth part'

According to the Uppland law the hundare of Uppland was divided into four Fjærþunger, which probably constituted the skeppslag, i.e. the ship-supplying districts that should build, equip, and maintain the leiðangr ship. In Västmanland it was instead the skeppslag that was divided into Fjærþunger (VmL KgB VII §2), just as it was in Södermanland (SL KgB X §2). The towns constituted separate jurisdiction areas, and those were also territorially divided into Fjærþunger, as is known from some early medieval towns like Uppsala (Östra Aros). We do not know of a spatial division into four parts for the warships, but the merchant ship was technically divided into four parts, separated by three heavy bites (transverse timbers). Here the four men who in the Bjærkøa rætter are called rædu menn under the helmsman, were responsible for the administration of justice on board (Bj IV 172). The merchant ships were thus organised as mirrors of the merchant town, and on the merchant ship the helmsman took 'the right that the king takes in a merchant town' (Hjärne 1979:93). We may assume that the warship in a similar way was reflecting the territorial division of the hundare and skeppslag, and, as will be seen in the analysis, it is especially the division into hamna-districts that seems to be identical. The social structure was closely intertwined with territorial division and probably also with the use of space on the ship. In Västmanland the helmsman of the skeppslag was assisted by four Fjærþunger-men (Hjärne 1979:104), who may have been the counterparts on the warship to the rædu men on the merchant ship.

The Fjærþunger had a function when the so-called buþkafli, a kind of fiery cross was sent to summon the people to a thing-assembly. The länsman had the obligation to call people to the thing by making a buþkafli for every Fjærþunger, in which it then was circulated in a fixed order (UL Rb 1, VmL Rb5, SdmL Rb 2). The thing-place was divided into four so-called brofjäl, one for each Fjærþunger (VmL Rb 3). Representatives at the thing in Södermanland were four from each Fjærþunger (SdmL Rb2), whereas in Uppland (UL Rb 2) it was two men from each attunger (see below); thus in both areas 16 representatives were assembled at the thing-meeting from these districts. The district was also used for tax purposes, and the king demanded one cow from each Fjærþunger annually (UL och VmL KgB 10:3).

The district-division Fjærþunger also occurs outside the hundare-divided area. The skeppslag of Roden and Hälsingland were divided into Fjærþunger. In addition, this division is also known from the härad in south Sweden that had no obligation to, or connection with, the naval organisation. In Västergötland the Fjærþunger was a thing-district, with Fjærþungers-thing and Fjærþunger’s board.

9.2.5. Tolft

The word tolft occurs in the Uppland law as a name for a group of twelve men at the thing, but not as a territorial area (Lundberg 1972:17). Despite this, many researchers have used it as an important part of their models of the hundare. One reason for this is probably that archaeologists have observed that the prehistoric settlement structure often involves groups of twelve settlements. Indirectly an unknown kind of tolft is indicated in the Uppland law when the ecclesiastical organisation is described and a tolptekirkju is mentioned.

9.2.6. Attunger ‘eight part’

The hundare in Uppland consisted of eight attunger, and two attunger together constituted a Fjærþunger/skeppslag. When the food provisions should be delivered to the royal storehouse in every hundare-province, one man from each attunger and one man from each hamna (see below) should be present. In 16th-century Sweden the skeppsvist – the tax that earlier was the food provision associated with the leiðangr – was still demanded. In the accounts for public finances it is sometimes rendered under the heading ‘attunger’ and sometimes under ‘socken’ (‘parish’).
The word *attunger*, OSw *attunger*, simply means ‘eight part’, and within the old Swedish society it has been used to signify ‘eighths’ of different entities. Unlike the *hundare*, these entities are not always described in the documents and known, giving rise to several suggestions as to what they imply: a *hamna* (Styffén 1911), a *village* (Hildebrand 1879-1903), or a *ploughland* (Ekholm 1974). Research has shown that in Östergötland, where a village *attunger* is known, the size corresponds to the normal size of a farm, i.e. a half markland (Dovring 1947).

Hafström (1949) has earlier argued that the *attunger* was identical with the parish, but later research (Lundström 1972; Rahmqvist 1982; Larsson, G 1989) has shown that it is not. The relation between *attunger* and parish will be discussed below when I compare the naval with the ecclesiastical territorial organisation (see). A complete division into *attunger* has survived in the accounts of public finances from all of the *hundare* in Fjädrundaland, from seven out of ten of Tiundaland’s *hundare*, and concerning Attundaland from only one *hundare*. On the other hand, it is partly preserved in three of Tiundaland’s *hundare* and fragmentary in five of the *hundare* of Attundaland.

According to Birger Lundberg, the *attunger* mentioned in the Uppland law is an area with known extent, whose inhabitants have to fulfill or mentioned in the Uppland law is an area with

The noun occurs in the Eddic poem *Atlamal* where it is said that *hamlar slitnodo, hair brotnodo* ‘the oar-bands and the rowlocks were broken’, in *Piöreks saga, Grettis saga* and *Heilagrammannsögur II* (Zetterholm 1936:34). In Sw *hamla* has become a verb meaning ‘to back with the oars’ (Zetterholm 1936:37).

Figure 235. Há (har, ar) ‘rowlock’ and hamna (hamla) ‘oar-rope’. After Zetterholm 1936.

Prior to the 13th century this type of rowed warship dominated the fleet, but in this century the cog came into service. From this period on the cog became the main warship, though from time to time rowed warships could once again be taken into use, for instance when the peasants’ leiðangr fleet was called out or when small boats were needed as complements to the fleet. Rowlocks of this kind are first seen in the Late Roman Iron Age ship-finds from the Nydam bog in Denmark (Engelhardt 1865), and they were used on all Scandinavian rowed ships during the Migration and Vendel periods. In Norway and Denmark rowlocks of this type disappeared already in the Viking Age, and on warships they were replaced by oar-holes along the sides (Gokstad, Oseberg, Skuldelev 2/4, Skuldelev 5, Skuldelev 6). In Sweden, however, the old type survived on the warships at least until the 14th century (the Helgeandsholmen 5 ship from Stockholm). In the northern part of Scandinavia the same type of Iron Age rowlock continued to be used on the fishing boats (Eskeröd 1970), in Sweden from north Uppland and northwards along the coast. In naval warfare, this type of oarlock is thus connected to a Late Iron Age warship, and in the Viking Age it mainly occurred in east Sweden. That this type of oarlock was used longer in eastern Scandinavia was because the warships here were smaller and lower than in the rest of Scandinavia, as was observed already at the Battle of Svolder according to the saga (*Óláfs saga Tryggvasonar*). The east Swedish ships were adapted to river traffic, where it was important to reduce weight; this was partly done by reducing the size of the vessels as well as the dimensions of their parts, and not least by employing the building methods discussed in chapter 4.

Vigher man
To be qualified to participate in the naval crew meant personal status in the society. You were a *vigher* man. This included everyone who had
reached the required age for military service, 20 years of age in Uppland (UL KgB X) and 18 years in Hälsingland (HL RB 14:2), and who owned enough land to achieve the status of a vîgher man. In some areas also a thrall, if he owned house and property, was allowed to do rod and red, i.e., to participate (Vml MB 25:9).

The public duty to participate in the leiðangr went in turn and order among the leiðangr-qualified peasants of the hamna. If a dispute occurred over whose turn it was to participate a certain year in the naval crew, it was settled by lot-casting. The man who should go was the one who was ‘oldest’, which means the one who had been at home the longest period.

By hamna the provincial laws meant the territorial district whose inhabitants commonly had the obligation to provide men and weapons for service in the naval fleet, the leiðangr, and that paid the fines demanded if they did not fulfill this obligation. From the mid-13th century the hamna also contributed with skeppsvist, i.e. ‘food provisions for the ship’, during the years when the fleet was not called out. This was our earliest tax, and it has caused confusion among some scholars who see this tax as the main purpose of the leiðangr, instead of as a step in a transformation process from naval duty to a tax during this century (Varenius 1995; 2000).

As mentioned, there was a fixed set of fines if the hamna, the attunger or hundare failed to fulfill their obligations to provide men and ships for the fleet. These fines were called ledungslama, where the last part, ‘lam’, derives from the adjective lami OSw *lâm (Köbler 1995) that was later used in Sw förlamad ‘paralysed’, meaning that ‘the leiðangr was paralysed’.

‘Fulla folkvapen’
The weapon equipment of the leiðangr warrior was called fulla folkvapen ‘the complete set of people’s weapons’ (UL Mb 11:2), and is specified in an appendix to the provincial law of Södermanland:

These should be the weapons of the hamna: shield and sword, spear and iron hat. Every hamna should have a cuirass or armour. Every hamna should also have a bow and three tolfter ‘twelve-arrow quivers’. (SdmL T.2 my transl.)

These were called folkvapen ‘people’s weapons’. If a person was killed who was too young or too old to bear fulla folkvapen, the fines were doubled (UL Mb 11:2). These ‘people’s weapons’ could also be inherited:

But son should have folkvapen after his father, cutting weapons and protection weapons, and three twelve-arrow quivers, string and bow. (HL ÅB 14:1, my transl.)

The last quotation is from the Hälsinge law, valid in southern Norrland. This law is late, written down in the beginning of the 14th century, when a transformation process from collective to individual duties had begun. Aristocrats probably had their personal set of weapons since the Iron Age, and the set of weapons stated in the laws corresponds well to the set of weapons in the rich, aristocratic burials of Vendel and Valsgärde in Uppland. Ulf Bodin has studied the weapon equipment in 261 closed grave finds, and concluded that this weapon combination with sword or axe, spear and shield occurs in only 19 % of 220 graves (Bodin 1987:87). That the equipment corresponding to fulla folkvapen occurs in so few burials may be explained in that this weapon equipment did not follow the deceased peasant-warrior into the grave. These weapons were to a large degree collectively owned by the hamna, and when they were privately owned they were inherited instead and passed down to the next generation, as in the paragraph of the Hälsinge law above. The weapons were very precious items and in some cases had their own names, if personally owned. In the case of the collectively owned weapons, the hamna probably had, like the rote, a special house for storing the weapons, as was the case later in the indelningsverk ‘military division institution’. The latter institution was modeled after almost the same idea as the leiðangr, where the villages were divided into men-supplying districts called rote that had the obligation to provide subsistence, food and weapons for a rider or seaman in war and peace. The rote also had the obligation to provide the rider or seaman with a cottage and some land for cultivation, as well as support for their families, in return for military service. Each rote had a small storage house where they kept the weapons when not used (Hellspong 1979:49). We find a similar system in the introduction to Saint Erik’s Chronicle, which mentions Birger Jarl’s campaign on Finland, organised as a leiðangr expedition in the form of a crusade to baptise and conquer the Tavastians in central Finland. Here it is also clear that the fleet was rarely summoned:

Mangt eth gamalt fildernisswerd
Wart tha nidher aff naglom kränkt,
Som ther haftfdo manga dagha hengt.

Many old ancestors’ swords
that had not been drawn in a long time
were taken down from their nails.
**Skeppsvist, the food provision**
The food provision for each member of the crew, the *skeppsvist*, should be supplied by the *hamna*. In Uppland there were two *skeppsvist*: 8 *pund* (1 *pund* = 6.87 kg) butter and pork together with 8 *spann* (1 *spann* = 60 kg) barley in the first *skeppsvist*, and 5 *pund* and 5 *spann* in the second.

The discussion and interpretations of the *leiðangr* organisation in the last years have all too often focused on the *tax* *skeppsvist* in the Uppland law, introduced according to the Sigtuna Annals after the Battle of Sparrsätra in 1247 when the peasants of Uppland lost their freedom and were imposed with the burden of *skeppsvist* and *spannmål* (grain). The earlier provision was turned into an annual payment to be made even when the fleet did not go out.

In the Södermanland law the old meaning of the word *skeppsvist* as ‘food provision’ is still used, synonymous with *matu* ‘food’ (SdmL KgB 10 pr.; SdmL T.2). This consisted of 24 *pund* (pounds) of which 2/3 should be pork and 1/3 butter, but no barley like in Uppland (SdmL T.2), and according to the law this *matu* ‘food’ should be carried to the ships (KgB 10 pr).

What must not be forgotten is that the *skeppsvist* payment is only part of the legislation in the Uppland law dealing with the stated *leiðangr* obligations, but as will be discussed also below, also building, keeping and guarding naval ships, and other issues related to the ships and seafaring.

**The hamna and the village**
The *hamna* at the time of the provincial laws seems to have been the size of a village. This is visible in a comparison between the fines for the *hamna* when the *leiðangr* duties were not fulfilled, and the fines for the village if the obligation to build bridges was not fulfilled (see table. 34). In both cases, the same territorial hierarchy is used, as in many other spheres of society.

<table>
<thead>
<tr>
<th>District level</th>
<th>Fines if <em>leiðangr</em> and tax duties are not fulfilled</th>
<th>District level</th>
<th>Fines if obligation to build bridges is not fulfilled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>3 öre Peasants’ share unbuilt</td>
<td>Hamna</td>
<td>3 mark Village’s share unbuilt</td>
</tr>
<tr>
<td>Eighth part of <em>hundare</em></td>
<td>5 mark Eighth part of <em>hundare</em></td>
<td>Fourth part of <em>hundare</em></td>
<td>10 mark Fourth part of <em>hundare</em></td>
</tr>
<tr>
<td>Half <em>hundare</em></td>
<td>20 mark Half <em>hundare</em></td>
<td>Whole <em>hundare</em></td>
<td>40 mark Whole <em>hundare</em></td>
</tr>
</tbody>
</table>

Table 34. Fines according to the Uppland law 1296. A comparison between the fines for the *hamna* (UL KgB X) and for the village (UL BB XXIII).

The high age of the *hamna* is implied by a statement in the Östgöta law where it is said that it is the villages that have burial mounds, i.e. cemeteries of Late Iron Age type, that are divided into *hå* and *hamna*:

> Now a village is founded from another village, which belongs to *hå* and *hamna* and knows its boundary markers; then it must protect its right to what it has, and shall not cross the boundary markers to the village with mounds. (ÖgL BBXXVIII, my transl.)

**The number of hamnas, and the size of the ‘skeppslag’ and its relation to the size of ships**
There was no norm regulating the number of *hamnas* in the *skeppslag*, the district that should supply a ship for the *leiðangr* navy, or the size of
the ships that the *skeppslag* should supply in Sweden. As we will see, the size of ships and districts instead varied a lot. Some scholars dealing with the issue have given the false impression that there was a norm (Varenius 1998). Others have assumed there was a norm, and invested great effort in trying to figure out and make hypothetical models of it (Hyenstrand 1974; Ambrosiani 1982; Hafström 1949). The confusing situation is caused by the scarcity of sources that can inform us of the case. The models are based mainly on late medieval and 16th-century material, when the *hamnas* probably had been adjusted in order to create an even and somewhat fair fiscal burden on the remaining few taxpaying peasants, but also to include the many new settlements in marginal areas. We do, however, have a few sources from less than a century after the *frälsereform* (tax-exemption reform) that can give an indication of the size of the original naval *hamna* and *skeppslag*. This is preserved in Raven von Barneckow’s account for Nyköping Castle and the former naval districts of the län belonging to the castle’s financial support. Here we find information about the number of *hamnas* in each *hundare* as well as the number of peasants in each *hamna*, whose fines and taxes von Barneckow used to maintain the armed cavallery stationed at the castle in the new military organisation from the 13th century.

<table>
<thead>
<tr>
<th>Hundare</th>
<th>Number of persons</th>
<th>Number of hamna (hafnæ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rönehundare 1365</td>
<td>46</td>
<td>17</td>
</tr>
<tr>
<td>Junakers hundare 1365</td>
<td>38</td>
<td>20</td>
</tr>
<tr>
<td>Daga hundare 1365</td>
<td>28</td>
<td>17</td>
</tr>
<tr>
<td>Vester Rekarne 1365</td>
<td>100</td>
<td>32</td>
</tr>
<tr>
<td>Öster Rekarne 1365</td>
<td>78</td>
<td>?</td>
</tr>
</tbody>
</table>

Table 35. Raven von Barneckovs records of number of hamnas in some hundare in Södermanland 1365. Based on Styffe Bidrag 1:62.

The size of the ship-supplying districts, here the *hundare*, varied a lot. In two cases the ships they could equip had about 8 pairs of oars, in one case 10, and in one case 16 pairs of oars.

<table>
<thead>
<tr>
<th>Härad</th>
<th>Ships nr</th>
<th>Nr hafnæ</th>
<th>Nr hafnæ</th>
<th>Nr hafnæ</th>
<th>Total crew</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fjäre</td>
<td>2</td>
<td>26</td>
<td>32</td>
<td></td>
<td>58</td>
</tr>
<tr>
<td>Viske</td>
<td>1</td>
<td>28</td>
<td></td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>Himble</td>
<td>2</td>
<td>25</td>
<td></td>
<td>40</td>
<td>65</td>
</tr>
<tr>
<td>Faurás</td>
<td>2</td>
<td>35</td>
<td>42</td>
<td></td>
<td>77</td>
</tr>
<tr>
<td>Halmstad</td>
<td>2</td>
<td>16</td>
<td>40</td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>Tönnersjö</td>
<td>3</td>
<td>23</td>
<td>25</td>
<td>26</td>
<td>74</td>
</tr>
<tr>
<td>Högs</td>
<td>4</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>Årstads</td>
<td>2</td>
<td>33</td>
<td>42</td>
<td></td>
<td>75</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>531</td>
</tr>
</tbody>
</table>

Table 36. Number of hamnas in skeppslag according to the Halland list.

As can be seen above, the number of hamnas in the hundare and skeppslag of the 14th century records corresponds with known sizes of ships in the archaeological material, in sharp contrast with the 16th century records where the division into hamnas seems to have been completely revised for causes that shall now be examined.

The late *hamna*

The word ‘*hamna*’ disappears from the laws already in the 14th century. In Magnus Eriksson’s national law, the word is no longer used. The calling out of the *leibangr* fleet is seldom done. But annually, as a part of an increasing number of different taxes, the oldest tax – the *skeppsvist* – survives throughout the Middle Ages; and in Uppland the heading ‘*hamna*’ for the *skeppsvist* payments has been preserved in some accounts from the 16th century, mostly in those provinces that have a completely different internal structure, such as Tegelsmora, Våla and Trög. The first two are to a large extent medieval settlement areas, where the original structure has been changed and adapted to changing circumstances during the Middle Ages. This is why a smaller number of the name-giving units of the 16th century records have cemeteries. The same
applies to an even greater extent to Åkerbo härad (see Larsson, M.G. 1987:17; Larsson G., 1989), where the division into hamnas completely changed when the medieval settled areas were included as tax-paying units (see also above).

As I have proposed above, the areas with a complete hamna-division in the accounts from the 16th century probably did not belong to the original folklands and were not part of the early Svithiod at the time the internal structure of the hundare into Fiærþunger and attunger was created. That calls for caution. Still, Mats G. Larsson (1987) has shown that the provinces which I see as diverging from the others in the folklands – i.e. Vendel and Trögd, areas that were fully cultivated by the end of the Iron Age – were part of the area in central Sweden where a hamna-division was made in the 10th century; and at least by the time of the creation of this last district-level of the leiðangr organisation they can be assumed to have been included in Svithiod. These have not been subject to medieval transformation, and Vendel of 1312 and Trögd of 1540 both have a preserved prehistoric division into hamna-districts (Larsson, M.G. 1987:17).

The hamna from the 14th century could occasionally be used for military purposes, for the leiðangr but also for the new military organisation, and like the other districts it could be used to exploit the peasants as a means of financing and maintaining the troops at the castles. In this way it was used in 1309, when the dukes Erik and Valdemar demanded aid for the castle from the inhabitants of Tiundaland. Each hamna should here deliver one cow, 6 lisund pork and 3 lisund butter (1 lisund = 8.502 kg). In each hamna a man should also be kept ready for service with horse and weapons (DS1636).

9.2.8. Other divisions

Skeppslog outside the hundare-area
The coastal area of Uppland in the Middle Ages was called Roden. It was not divided into hundare, but into skeppslog and tingslag, each of which had to supply a ship for the navy. In Roden there was both a personal tax and a collective tax that should be delivered by the skeppslog. The personal tax was 8 marker butter and 1 ortug penningar. The collective obligation of the skeppslog was 10 marker of a tax called attargäld and 6 lisund hops. The skeppslog of Roden was, like the hundare, a thing-district. It was earlier assumed by Holmback/Wessén that tingslame was paid because there was no thing there, but this is completely wrong. A thing was held there and is often mentioned in the sources, such as a Danarö thing in 1356 (SRP no. 261). For the thing the coastal area was divided into thing-districts which roughly corresponded in size to a parish, and which was called by the parish name (Lundberg 1972:85). The thing was held at specified places. For instance in one source it is said that, "Erikker I Lydby sold on the right thingplace in Åkerbo skiplagh the 21" of May 1394 3 örtugsländ in Husaby, Åkerbo Parish, to the archbishop" (my transl. after Styffle 1911:391).

Beside the thing-place in Frötuna skeppslog, situated near Frötuna Church, there was at one time a large (burial?) mound, now removed, which could have been a thing mound (ATA Frötuna). Sometimes the coastal skeppslog had their own royal estate with the king’s bailiff, and in several cases these were called Husaby.

The skeppslog in Roden were divided into Fiærþunger, like the skeppslog in the hundare of Södermanland and Västmanland. These have survived in the Färingsö thing-law, in the Värmdö and Frötuna skeppslog, as tax-collection districts in the records from the 16th century. Vädö skeppslog is divided into four districts that are not called Fiærþunger in the records, while (Roslags-) Bro is divided into four parts, for which the hundare-term ‘attunger’ instead is used, plus two districts by the coasts in Vätö Parish that have no denominations. Västlanda is divided into three districts called attunger, and Lösta, like Bro, into four attunger (Lundberg 1972:41ff).

Ar
In Roden there was also a district in the leiðangr organisation that probably corresponded to the hamna, called ar, named after the rowlock, which was in OSw called har, meaning ‘an object bent at an angle’. In Hälsingland the rowlock was called har or hå, the latter the name that has survived to modern time (Zetterholm 1936:34). The terminology used for this territorial division is thus closely connected with the ships, and especially the warships.

The Uppland law states that, if the inhabitants of the ar did not participate in the leiðangr, the fine was mark aff hwari ar ‘one mark from every ar’ (UL KgB X). Here, ar. It is not known whether the ar had a fixed territorial extension. Hafström believes it did (1949:19), while Holmback/Wessén thinks that the fine is personal with one mark for every rower. Since the participation did not include everyone, but went in fixed turn and order, there must have been a territorial district in which this obligation rotated. The law usually specifies when the obligations are personal, but here a neutral term ‘ar’ is used, which is very close to the use of the word ‘hamma’ for the lowest district in the hundare, which I see as strong support for the interpretation
of år as a fixed territorial district fully comparable to the hamna.

Priþiunger
The district-division called priþiunger, OSw priþi-unger ‘third-part’, is not mentioned in the provincial laws for the lands of the Svear, and neither has it occurred within the hudnare-partitioned area, with the exception of Trögd and perhaps also Vendel in Uppland as well as some areas in Västmanland and Dalarna. It is known from Gotland and Närke, Hälsingland, and from the earlier Sweden also Åland. It is so seldom used that, in my opinion, it can be seen as an original division only in the priþiunger-areas in the 14th-century sources.

The hypothesis must be that, when the territorial division into hudnare was created, with its internal hierarchical structure into Fiærþunger, the priþiunger-divided areas like Trögd and Vendel were not within the realm of the central power that made this reform; instead, they formed lands of their own, governed by separate ‘chieftains’. Trögd is the additional, fifth hudnare that was added to the four original hudnare in Fjädrundaland, in the same way that this structural analysis reveals that Vendel’s hudnare and Gästrikland are later additions to Tiundaland.

Trögd as an original separate land has its own law preserved, Tröghbolagh, with rules regulating the inhabitants’ use of the common forests, the military guard, and the thing (Lundberg 1982). It was divided into three priþiunger that were also called tolfter, and that had their own Husaby and, like on Gotland, their own thing-assembly. Trögd as a land is a very interesting area in the middle of Svithiod. Earlier, Adelsö Parish belonged to Trögd, and therewith our earliest town Birka. Trögdbo-lagh also encompassed the main town in Fjädrundaland, Enköping, which is mentioned, divided into Fiærþunger ‘four parts’.

Towns
The towns were separate jurisdiction areas with fixed territorial borders. Already in Vita Anskarti, Birka is treated as a separate jurisdiction area with its own thing-assembly. According to this, it seems that the thing of the town had a lower status in the hierarchy, since the king in decisions also had to get approval from a thing-assembly outside the town (see chapter 10). As a territory, the border of the town was symbolically marked by a rampart.

The towns also had a separate administration and economy, and, starting in the late 13th century, a royal bailiff. The town area was, as earlier mentioned, divided into Fiærþunger ‘four parts’.

Parishes
The socken ‘parish’ in the Uppland law is in focus for all matters concerning the Church and the ecclesiastical organisation. In the ecclesiastical accounts of 1314 and 1343, the division into parishes was largely completed, and Uppland had 171 parishes. In the 14th century, this district came to be used for other purposes as well, such as the delivery of taxes like the markgäld (Lundberg 1972:86). The question of whether or not the parish was identical with the attunger will be discussed below concerning the investigated provinces. Some parish names are believed to have included the district name ‘tolft’, such as Lunda, Fröshult, Tolfta and Husby-Sjutolft. As was pointed out by Lundberg (1972:87), in the records of public finances of the 16th century all four of these places have a territorial division that is completely different from the division into parishes. I will not enter into the intense discussion about the origin of the division into parishes, since this is too far from the main topic of the thesis, but I will instead refer to a summary in Brink’s work (1991).

9.3. The territorial organisation established in the 13th century

9.3.1. The division into castle-län
In the late 13th century the military and territorial organisation was completely changed as a result of the introduction of an armed cavalry after continental model. This is mirrored in the establishment of län ‘counties’ centered around royal castles as stations and operational bases for the army (Frits 1983). One of the first steps in this process was Alsnö stadga, a decree by King Magnus Ladulås in 1280, which stated that everyone who provided a horse with a fully equipped, armed rider would be freed from the earlier, leiðangr-related, taxes and obligations. This new group in society was called frälsip from Sw frälse ‘free, liberate’. The peasants who provided an armed rider became lágfräls ‘low fräls’, separated from the aristocrats in the group called högfälse ‘high fräls’, metaphorically marking the higher status of the latter (Tunberg 1908).

The castles that were built for the military crew often were created around older stone towers, so called kastaler, which were strategically situated by the river-routes at the entrances to the mainland of the different parts of the country. Such royal castles were for instance built at the kastaler in Stockholm, Nyköping, Stäkeborg (close to Söderköping) and Lödöse, that guarded the entrances to Lake Mälaren, the interior of Södermanland, the central

The län was the area from which the earlier taxes in payment and in nature of the inhabitants were redirected to be a financial support for the garrisons of the royal castles, and the län was named after the castle that the area should maintain and provide subsistence for – Stockholms län, Skaraborgs län, Stegeborgs län, Uppsala län, etc.

By the help of the commander and garrisons at the royal castles, the king could now effectively control also those parts of the country where he was not present. High-ranked aristocrats were appointed as commanders and were granted the royal incomes of their administrative areas. Birgitta Fritz (1983:140), who has studied the development of this territorial organisation, concludes that during the 13th to 15th centuries, the number of län increased and their administrative areas diminished; in the last phase sometimes even a härad could be equal to a län in size.

The changes of the military organization are important, since it is related to an ideological change in society, from the ideal of the naval leader in his ship, to that of the armed rider, particularly the knight. In medieval literature and poetry, knighthood and chivalry are profusely praised. The cog is taken into service as a warship, especially for troop transports. The location of the royal castles also meant that they were accessible to the deep cogs that were unable to navigate shallow river-routes and needed deep harbours and quay constructions, preferably by the sea and the river outlets.

The new military organization used the earlier territorial divisions into land, folkland and hundaren/häraden, and to some extent the län correspond with either an earlier land, or a group of earlier existing hundaren, härad and skeppslag (Fritz 1983).

9.3.2. The härad

The new military and territorial organisation demanded a completely new terminology, and when the first national law was established in the 1350s, the earlier leiðangr-related terminology was replaced. Hundare and hamna are no longer mentioned. The term ‘härad’, earlier used in southern Sweden, replaces the term ‘hundare’ in the provinces. The new military organisation used the earlier territorial divisions into hundaren/häraden for the economic support of the castles. The härad either became an administrative district under a bailiff within a county, or a county of its own (Fritz 1983:140). The taxes, earlier delivered to the bailiff at the royal estate in the härad, often called Husaby, was now sent to the commander of the royal castle in each county.

9.3.3 From collective naval duties to personal obligations

When several of the farms in the villages/hamnas became frälse and were relieved from the earlier collective duties of the hamna, the tax-payment became unevenly distributed between the remaining peasants of the different hamnas (Larsson 1989). In some areas, whole villages became frälse and were freed from the earlier taxes. Inevitably, either the hamna-division had to be fundamentally revised, as was done in some areas where the division documented in the 16th century records can be proven to be medieval (M.G. Larsson 1987), or individual taxes had to be imposed, as was done in the Late Middle Ages (Hafström 1949).

9.3.4. A hypothesis of the causes of change from a territorial organization representing ‘a maritime society’ to the feudal-inspired society in the High Middle Ages

As earlier mentioned, there was an ideological change in the Early Middle Ages, from the maritime ideal to ideals related to knighthood. The main break seems to have occurred in the 13th century in connection with several political changes.

Central Sweden was until this century oriented eastwards, having close contacts with Russia and the Byzantine Empire. This is reflected in the archaeological material by for instance the Byzantine glass in Sigtuna (Tesch 1996:49ff; Roslund 1997; Henricson 2006:43ff), as well as the abundance of Baltic ware (Roslund 1997). This shows that ‘Sigtuna has continued to be a flourishing town with wide international contacts’ (Tesch 1996:49). The eastern contacts also show in the traces of religious burial practices; for instance, the acceptance of burials at pagan cemeteries may be seen as an eastern, Orthodox trait (Jansson 2005). In the 13th century the Mongol invasion of Russia and the conquest of the Byzantine Empire, including Constantinople by the Islamic Osman nomadic tribes almost put an end to the eastward trade journeys and contacts. At the same time, serious internal struggles in Sweden since the 12th century threatened the ‘maritime society’ around Lake Mälaren.

What was the threat that finally eliminated the society of the Svear? In my view, clues to the answers are found in the events documented in the 13th century.
9.4. The territorial organisation during Christianization

Land and bishopric

There is important information indicating the order in which the different territorial structures – the naval and the ecclesiastical – were established. In an edict from the archbishop Niklis dated 2 July 1298, it is demanded that the ecclesiastical division into dioceses should follow the division into folklands. There is also an obvious correlation between the established bishoprics and the lands/lawspeakers’ realms, which clearly shows that the ecclesiastical organisation has been adjusted to an already existing territorial division into lands. This is seen in Adam’s description of the appointments of bishops for the lands, in the Florence Document, but even more detailed in an appendix to the provincial law of Södermanland.

In Adam’s description the realm of influence of the Catholic Church is primarily Götaland. In one appendix Adalvard the Elder was appointed bishop for both the Göta lands (Gesta III:76), and in another Thorgot was ordained as bishop of Götalund and for the seat in Skara (Gesta school. 135). Thorgot’s successor Gotschalk is called ‘episcopus Gotorum’ (II:64,66). An interesting difference is Adam’s mention of bishops for the area around Lake Mälaren. Here the Catholic Church seems not to have gained control over all the lands in the region. The bishop is not appointed for a land, but for ‘ecclesia Sictonensis’ (Adam III:76). Similarly, still in the 12th century, Rome had not gained control of central Sweden, though we know that this region had completely converted to Christianity during this century, and the bishop’s seat is referred to as the seat in Sigtuna, not a territorial province (Hellström 1971:53). After the move to Uppsala, for instance, Bishop Siwardus is called Obsalensis episcopus in 1141 (Hellström 1971:57). In my opinion, this distinction means Christianity in central Sweden was mainly influenced from other directions, from the Anglo-Saxon Church, but perhaps mostly from the Orthodox Church. That this was the case already in the 11th century is evidenced by the archaeological material, such as types of crosses depicted on rune stones and the formulation used in the inscriptions, as well as the burial practices, which have only recently begun to receive attention (Jansson 2005).

Ecclesiastically the land, or several lands together, formed a bishopric (Hellström 1971:3; Smedberg 1982). The archbishop’s estates were not freed from the obligation to participate in the military part of the leiðangr organisation until the beginning of the 14th century (Styffe 1911:336).

My translation:

Now a church has begun to be built with foundation and upwards rising with a hood; then the church shall have land, where the priest shall live. It shall be one mark land for every hundare-church, and a half mark land for every tolft church.

As can be seen, the distribution of land and the hierarchy of churches is based on an existing territorial division into hundare and tolpte, with the latter representing a kind of lower stratum. Since a district tolpte is unknown in earlier sources, it may have been a district introduced for the ecclesiastical organization. It is possible that it closely corresponded with an earlier district in the administrative organization. If so, it is most likely that this was the Fiærþunger, and in Vendel and Trög the prîpi unger. The list of 1314 (DS 46) have the Latin words provincia for the hundare and parochia/annexa for the parishes.

9.5. An analysis of hundare-districts of central Sweden

There are, as I have earlier shown, indications of a well-organised society that is associated with the naval structure for manning ships (1989). Within the framework of the historically known districts, to judge from archival material, the Iron Age settlements show a regular pattern. Based on the hypothesis that a hamna corresponds to a village, but without rearranging the borders of the hundare-district to suit the model, ship-supplying districts could be reconstructed that correspond to the varying sizes of warships used and that are not of an equal size like in earlier models.

Here, some results of my analysis of 1989 will be reconsidered in order to serve as a basis for the discussion later about the birth, development and death of this structure representing the maritime society. The same provinces as in 1989 are dealt with, apart from Sjuhundra, which replaces Seminghundra härad in Attundaland. The former has been chosen and included because of a study done earlier on the long-term changes in settlement structure. By analysing the settlement pattern from the Early Iron Age to the Middle Ages, it was also possible to date the different district-levels. Be-
cause of my familiarity with the area and knowledge of the local history and development, I have also been able to reconstruct the settlement structure before the big changes of the last 200 years, and it differs in important aspects from what has been suggested earlier in discussions (Ambrosiani 1983, Hyenstrand 1983). These results were kept in mind and used when the reconstruction of the other hundare-provinces was done in 1989, and I have therefore decided that it is valuable to begin with this hundare.

For this analysis, one province in Attundaland, one in Fjädrundaland, one in Roden, and one in Västmanland have been selected.

Material and method
The division into hundare known from medieval sources is the framework for the analyses. Styffe’s (1911) study of the territorial division in Scandinavia in the Union period has been used, and I have also used my earlier (Larsson 1989) studies of 16th century records of public finances, where traces of an earlier division into hundare, skeppsdrag, attunger and hammad are available for some provinces. This has been complemented with the results by Birger Lundberg (1972) concerning these records from Uppland. From these sources I have tried to reconstruct the territorial division and settlement structure of the Late Iron Age within the area. In contrast to several earlier studies (Hyenstrand 1983; Ambrosiani 1983), I have not adjusted the borders of the hundare so that the results would suit better with any hypothesis of a Late Iron Age settlement structure.

The settlement units are identified by cemeteries of at least 5 registered burials, datable to the Late Iron Age in the National Survey for Ancient monuments (see chapter 1). Because some cemeteries have been destroyed by plowing or urban growth, also older maps have been used to some extent. Especially the maps of the older Geological Survey by SGU, made in the late 19th century, have proven to be very valuable for the finding of destroyed or lost cemeteries.

9.5.1. Sjuhundra hundare in Attundaland
Sjuhundra hundare is situated along a water route from the Norrälje bay westwards through the lakes Björkarn, Kundby Lake, Lake Syningen, Lake Skedviken to Lake Gavel-Långsjön, with branches to the lakes Långsjön and Metsjön as well as to a route towards the southwest to Lake Rösjön. The area settled in the Iron Age and the historical period in the province is clearly distinguished. In the north the hundare is separated from Närdinghundra hundare in Tiundaland by a large, 15-km-wide forest called Görväln, earlier Hjulveden. An uninhabited forest also formed a border to Gottörå and Närtuna parishes in Långhundra hundare, also in Attundaland. In the east, on the other hand, the settled area joins the west part of Lyhundra hundare and the border between the provinces is artificial.

In the historical period Sjuhundra hundare consisted of six parishes: Esterna, Fasta, Riala, Rimbo, Rö and Skederid. As will be discussed below, probably also Seboeræred, which is mentioned in 1314 (DS 1946) and 1388 (Sebo hoerreda) as situated in the province, formed a separate parish. This has earlier been interpreted by scholars as another name for Fasta Parish (Styffe 1911:374, Ståhle 1946:329). In the administrative territorial division it is important to note that also a part of Husby – namely the villages of Husby, Östra Syninge and Vallby – belonged to Skederid in Sjuhundra. Not until 1889 were these villages also moved administratively to Husby Parish in Lyhundra (DMS 5:1589). The records of public finances are accounted for both on the basis of remains of a division into attunger (1541:17), and also on the basis of the division into parishes (1541:8), which makes a comparison possible between the administrative and the ecclesiastical territorial organisation.

The development of the Late Iron Age settlement structure
The settlement structure in the area that later became Sjuhundra hundare has changed radically during the Iron Age. If the settlement pattern is analysed on the basis of the cemeteries registered at the National Heritage Board (Rai), it is clearly visible that the regular structure – which, as we will see later, appears if the Late Iron Age settlements are recorded within the framework of the historically known territorial division – does not exist at all in the Early Iron Age.

The cemeteries of Roman Iron Age type are located centrally in what was later to become attunger and parishes. They constitute the core of the later district, and correspond to what Hellberg (1967) calls primärbygd ‘elementary areas’. These have one-syllable, often nature- and terrain-related names (Olsen 1926:139ff), in contrast to the migrations to secondary units, often with the name –by.

Esterna
Esterna is separated from surrounding parishes in the north, south and west by forests, making it a naturally distinguished area. Here the Early Iron Age settlement was concentrated to the area of the present-day village Uggelnäs, situated on the west-
ern shore of Lake Skedviken, with a large cemetery of 115 burials (Rä 96) and a nearby elevation with 14 graves (Rä 97). The earlier name was Näs, which is in line with the naming of so-called primary settlements (Olsen 1926:139). Besides the occurrence of single graves at for instance Mjolsta, the cemetery beside Uggelmås is the only one in this elementary area during this period. In the Late Iron Age, according to the distribution of cemeteries, an expansion occurred and settlements were established at the places for the historically known villages of Gillberga (Rä 83), Källberga (Rä 86 and 87), Ubby (Rä 74), Mörby (Rä 4), Kyrkbyn (Rä 54, Ösby (Rä 52) and Alby (Rä 92-95), together with the now vanished village of Medevi. A central place in the former parish is the Kyrkbyn village, which has a cemetery much larger than the other, ordinary village cemeteries. Here I have also observed that the hill where the church is situated has several built up terraces, especially visible on the west side. Esterna Parish corresponds to Esterne Ottungh.

Fasta
The settled area in Fasta Parish is naturally distinguished and separated from other parishes with forests, except for the border towards Rimbo that follows the Vallby River. The early Iron Age settlements are concentrated to a place situated apart from the historic villages, northeast of the present-day Rånäs foundry. At the site today, besides the festivity area there is a cemetery with 44 graves including the typical standing stones and threecornered stone-settings (Rä 6), but also a spring which served as the Trinity well of the parish, called Lotterångskällan, and which was visited regularly until the 19th century. Here there is also a stone fence of the type often occurring in connection with settlements from the Early Iron Age, but also known from other periods (Maria Petersson 2006). It seems probable that this village has had the name Rånäs, and in the historical period was situated further to the southwest. This is in line with the naming principle for primary units (Olsen 1926:139; Hellberg 1967). In the Late Iron Age there was an expansion of the settled area to new locations where the historically known villages are situated, to Svärlinge (Rä 99, 100), Granby (Rä 17), Söderby (Rä 20), Råby (Rä 22), and Prästgården (Rä 15).

North part of Rimbo: Säbohärad?
Hellberg has observed the character of the north part of Rimbo as an elementary area of its own, which like the former ones is naturally distin-

17), Söderby (Raä 20), Råby (Raä 22), and Prästgården (Raä 15).

The name Säbohärad ‘the area of the people living by the lakes’ suits well the area situated in the middle of the three lakes Svingen, Skedviken and Långsjön. It may also have a connection with the village name Säby in the westernmost part of ‘Bydingen’.

The name Säbohärad ‘the area of the people living by the lakes’ suits well the area situated in the middle of the three lakes Svingen, Skedviken and Långsjön. It may also have a connection with the village name Säby in the westernmost part of ‘Bydingen’.

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Earlier discussion has focused on an interpretation of Sæboræred as another name for Fasta Parish (Styffe 1911:374; Stähle 1946:329). Gillingstam (1947:9) and Rahmqvist (DMS 5:118) have discussed a note from 1383 (CIK 55) where Gillberga is said to be in ‘Esterna in Säbo Härad’, and based on this they have concluded that the name intended both parishes Fasta and Esterna in the meaning, ‘the area of the people settled by the lake’. However, Säbo härad is probably a misinterpretation for ‘Sæhunderi hæredhe’, since it is mentioned after the parish name in accordance with the way places usually are. Rahmqvist (DMS 5:118) also has the argument for the ‘settlement area hypothesis’ that, in the list of sexårsgärd in 1314 (DS 1946), besides Riala there is also Rimbo ‘with annex’ and ‘Säbo-härad’. The latter is mentioned without annex, which would be natural if it was another name for Fasta that was annex to Esterna Parish. This is also a support for my theory, that it could not be Fasta Parish, but an earlier separate parish in north Rimbo.

Figure 236. The ‘elementary area’ of north Rimbo according to Hellberg 1967., with Bodhunge as the primary unit, surrounded by secondary units with place names ending with the name element –by.

South part of Rimbo

The settlement area of south Rimbo is clearly distinguished from the surroundings by forests that were uninhabited in the Iron Age. The only cemeteries that date to the Early Iron Age are found close to Finnby (Raä 28, 29, 30) on the ridge that crossed the ‘Sjuhundra River route’. Here there is also a hillfort (Raä 35). As I suggested earlier (1990), the parish name Rimbo, earlier Ringboheredhi (1303 DS 1400), should be seen in relation to this hillfort, and Ring- should be interpreted as ‘fortress’, thereby the parish name ‘the area of the people living beside the fortress’. Outside this area only single graves from the period are found.

In the Late Iron Age several secondary settlement units were established, represented by cemeteries at Framskälby (Raä 50), Västertorp (Raä 78), Tomta (Raä 82-84), Söderby (Raä 17, 18), Vibi (under present village SGU) and in Finnby’s territory (Raä 22). Local inhabitants (Axel Rimsén, Nils Andersson, Ingvar Berg) tell of several big mounds at Vallby, close to the place where the main road crosses Vallby River in the Sjuhundra River route and removed when the new road was built. Dybeck mentions that the local peasants also were trying to remove some big mounds in the 19th century. Of these, only one remains (Raä 206). Several mound-like elevations in the surrounding field (over-ploughed graves?), observed by the researcher Kjell Silver (oral information), were removed when the area was exploited for a housing complex in the 1990s. One mound has traditionally been connected with a Ragnar (Ransakningar) mentioned in the runic inscription (U 513) on the stone in the church wall (see chapter 7).

North part of Skederid Parish, with parts of Husby

The north part of Skederids Parish comprises, together with the villages Syninge, Vallby and Husby in Husby Parish, a defined settlement area. Here two nuclei of primary settlement units occur in the Early Iron Age, represented by the large cemeteries on the ridge north of Finsta on land that belongs to Simlunda (Raä 4, 5, 13, 49), as well as by Syninge to the east (Raä). In connection with these settlements there is, like in south Rimbo, a hillfort (Raä 60).

The same pattern as in the previous areas is repeated here in the Late Iron Age. Several settlements are established where the historical villages were situated in the 19th century; Salmunge (Raä 22 and 68), V Syninge (Raä 2) Ö. Syninge (Raä 97), Finsta (Raä 10, 11), and Husby (Raä 17 and 95), at the same time as the settlement Simlunda continues (Raä 3, 4, 5 and 48).

Here, like in north Rimbo, there is also a local tradition that a now vanished church once existed in the vicinity of the big mound (Raä 9), and that this was the only place in the county where three churches could be seen at one and the same time. Besides the vanished church (?), also Husby-Sjuhundra Church and Skederids Church could be seen surrounding the fields. In 1947 in connection with clay-taking close to the mound (Raä 9), a Christian cemetery was found and excavated by B. Einerstam and I. Wallin (report ATA) The mound and the Christian graves are probably part of a larger cemetery extending from the cemetery above the road (Raä 10), where additionally two big mounds are situated.
South part of Skederids Parish

The area that was settled in the Iron Age in south Skederid, is in the south, west and north distinguished by smaller forests from the other areas, but in the east it meets the central area of Husby Parish in Lyhundra. The primary settlements of the Early Iron Age are found close to Darsgärde hillfort, represented by three cemeteries (Raä 17, 64, see Ambrosiani 1964), and in the south at Ledinge (Raä 38, 39, 80, 82, 83, 84).

Here, the structural change in the Migration-Vendel period resulted in the establishment of the settlements Skedersby (Raä 45), Rilanda (Raä 23, 24, 25, 53), Norrby (Raä 26), Målby (Raä 31, 32), Ösby (Raä 30) and Gullunge (Raä 54 and 85) The habitation at Darsgårde continued (Raä 35, 36 and 41), as well as at Ledinge, which split into two villages: Ö. Ledinge (Raä 37) and V. Ledinge (Raä 40).

Here the parish church is situated (ecclesie Skåedarghi 1317 DS 2085), built at the end of the 13th century, and as Wilcke Lindqvist suggests, perhaps with the owner at Finsta, Birger Peterson (lawspeaker in Tiundaland), as building master.

Rö Parish

Rö is together with Riala the best distinguished elementary area in Sjuhundra. Surrounded by forests on all sides, the settled area surrounds the lakes Rösjön and Sparren, reachable by a branch from the main river route through the hundare. In the Early Iron Age the parish had one primary settlement called Eke by a small lake above the valley with the river route, where today there is a cemetery with about 60 burials (Raä 74).

In the Late Iron Age the villages of Risby (Raä 34 and 42), Ösby (Raä 54), Ticksta (Raä 687), Listinge (Raä 50), and Näs (Raä 24) were established at the same time as a settlement existed at Eke, but which later was moved to the valley where it is now located in connection with the river route.

Riala Parish

The settled area in Riala is located in connection with a river leading to the sea. The main, inland part constituted a defined elementary area with forests separated from the surrounding parishes as well as from the outer part of the parish, which administratively belonged to Lo skeppslag in Rosden. Traces of Early Iron Age settlements include the cemetery at Bergby with 50 burials, of which several are standing stones, also recorded from Punskog.

In the Late Iron Age the settlements continue at Bergby (Raä 128) and Punskog (Raä 140), but with new cemeteries. The border between the historic villages of Punskog and Lundby is drawn across the Early Iron Age cemetery, probably underlining the establishment of a new structure. The forest is cleared and the villages of Eneby, Rickebä 115) and Pråstgården (Raä 46) are established.

The birth of a maritime society?

What can be seen in Sjuhundra in all the defined elementary areas is that primary units are replaced by secondary units sometime between the 5th and the 10th century, if the settlement pattern is analysed on the basis of the registered cemeteries. The resulting territorial division shows a very regular structure within the borders of the four known and the four reconstructed attunger. One hypothesis is that this was not a random movement and expansion of settlement, but a result of pre-state planning, the creation of a division into hamnas in an established leiðangr-organisation. That the division into hamnas was connected with some kind of land reform, is evident in that the obligation to supply and equip a rower from the hamna was rooted in land ownership, engaging all with a holding of 1 mantal or more (UL KgB X). The mantal named a unit that could support one ‘man’ (household), and it varied between 4 and 8 öresland, the normal size of a farm in the historical period (Dovring 1947).

<table>
<thead>
<tr>
<th>Attunger</th>
<th>Spann</th>
<th>Parish</th>
<th>Spann</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Esterne Ottungh</td>
<td>12</td>
<td>Esterna</td>
<td>11</td>
</tr>
<tr>
<td>B. Rimbo Ottungh</td>
<td>6</td>
<td>Rimbo</td>
<td>9</td>
</tr>
<tr>
<td>C. Riala Ottungh</td>
<td>14</td>
<td>Riale</td>
<td>6</td>
</tr>
<tr>
<td>D. Skedri Ottungh</td>
<td>5</td>
<td>Skederid</td>
<td>14</td>
</tr>
<tr>
<td>E. Förlänthe Ottungh</td>
<td>10</td>
<td>Fasta</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 37.

The payments accounted for from the attunger Esterne, Rimbo, Riala, Skedri, and Förlänthe Ottungh have, according to Lundberg’s investigation and comparison of parishes, revealed both similarities and differences.
The four known attunger correspond to defined elementary areas (see above): Esterna (A), the southern part of Rimbo (B), Rö (E), the southern part of Skederids Parish (D), and Riala (C). The northern part of Rimbo has not belonged to Rimbo attunger, and the northern part of Skederid was not part of Skederids attunger. In my hypothetical reconstruction of the four unknown attunger, the former is called Sæbohæred and the latter Husby, since Husby village administratively belonged to Sjuhundra and north Skederid. Rö and Fasta are interpreted as separate attunger.

<table>
<thead>
<tr>
<th>Rimbo attunger</th>
<th>Säbohärads attunger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finnby (Rää 22)</td>
<td>Ekeby (Rää 160)</td>
</tr>
<tr>
<td>(Fram-)Skälby (Rää 50)</td>
<td>(Bydings-)Skälby (Rää 119)</td>
</tr>
<tr>
<td>Söderby (Rää 17, 18)</td>
<td>Ösby (Rää 127)</td>
</tr>
<tr>
<td>Tomta (Rää 82, 83, 84)</td>
<td>*Mälby (Rää 120)</td>
</tr>
<tr>
<td>Viby (not reg. in Rää)</td>
<td>*Bodhunge? (Rää 176)</td>
</tr>
<tr>
<td>Västertorp (Rää 78)</td>
<td>Säby ?(Rää 118)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Riala attunger</th>
<th>Fasta attunger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eneby (Rää 114)</td>
<td>Svärlinge (rä 99, 100)</td>
</tr>
<tr>
<td>Rickeby (Rää 115a)</td>
<td>Ränäs (Rää 6)</td>
</tr>
<tr>
<td>Punskog (Rää 116)</td>
<td>Granby (Rää 17)</td>
</tr>
<tr>
<td>Bergby (Rää 128)</td>
<td>Söderby (Rää 20)</td>
</tr>
<tr>
<td>Präästgården (Rää 146)</td>
<td>Räby (Rää 22)</td>
</tr>
<tr>
<td>Rumsättra (Rää 162)</td>
<td>Präästgården (Rää 15)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Esterna attunger</th>
<th>Rö attunger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kyrkbyn (rä 54)</td>
<td>Näs (rä 24)</td>
</tr>
<tr>
<td>Ubby (Rää 74)</td>
<td>Lisinge (Rää 24)</td>
</tr>
<tr>
<td>Ösby (Rää 82)</td>
<td>Risby (rä 34, 42)</td>
</tr>
<tr>
<td>Gillberga (Rää 83)</td>
<td>Eke (Rää 54, 74)</td>
</tr>
<tr>
<td>Källberga (Rää 86, 87)</td>
<td>Ösby (Rää 54)</td>
</tr>
</tbody>
</table>
9.5.2. Lagunda hundare in Fjädrundaland

Lagunda härad is situated by the water route which from the west, by the Örsunda River, runs out into Lärsta Bay and Ekoln on Lake Mälaren. To the east it meets Hagunda and Håbo hundare in Tiundaland, to the west Torstuna and Åsunda hundare in Fjädrundaland, and to the south it meets Trögd’s hundare (map fig. 238).

In the 16th-century public finance records, the tax from the land that was so-called skatte (meaning that the land under taxation belonged to the peasants) is shown only under the heading ‘attunger’. Because the farms within this district are known, it is also possible to see the relation between the parish and the attunger. The following reconstruction of the prehistoric Lagunda hundare is divided into attunger, based on the public records combined with an analysis of the ancient monuments:

<table>
<thead>
<tr>
<th>Attunger</th>
<th>Parish</th>
<th>Attunger</th>
<th>Parish</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Giresta attunger</strong></td>
<td></td>
<td><strong>Hielsta attunger</strong></td>
<td></td>
</tr>
<tr>
<td>Skällby (Raä 6)</td>
<td>G</td>
<td>Eneby (Raä 12, 20)</td>
<td>H</td>
</tr>
<tr>
<td>L:a Bärby (Raä 17)</td>
<td>G</td>
<td>Vängsta N (Raä 58)</td>
<td>H</td>
</tr>
<tr>
<td>Röloppe (Raä 20)</td>
<td>G</td>
<td>Vängsta S (Raä 25, 26, 28)</td>
<td>H</td>
</tr>
<tr>
<td>S. Bärby (Raä 29)</td>
<td>G</td>
<td>Hjälsta (Raä 36, 38, 47)</td>
<td>H</td>
</tr>
<tr>
<td>Mälby ? (Raä 30)</td>
<td>G</td>
<td>Bälsunda (Raä 2, 3, 4)</td>
<td>H</td>
</tr>
<tr>
<td>Furuby (Raä 31, 36, 42)</td>
<td>G</td>
<td>Til V (Raä 10)</td>
<td>H</td>
</tr>
<tr>
<td>Hälke (Raä 3, 16)</td>
<td>F</td>
<td>Til O</td>
<td>H</td>
</tr>
<tr>
<td><strong>Kulla attunger</strong></td>
<td></td>
<td><strong>Tunbo attunger</strong></td>
<td></td>
</tr>
<tr>
<td>Älvlösa (Raä 4, 5, 10)</td>
<td>F</td>
<td>Tuna (Raä 52)</td>
<td>H</td>
</tr>
<tr>
<td>Vifärna (Raä 12)</td>
<td>K</td>
<td>Tuna S (Raä 55)</td>
<td>H</td>
</tr>
<tr>
<td>Hällmyra (Raä 13)</td>
<td>K</td>
<td>Tuna N (Raä 69)</td>
<td>H</td>
</tr>
<tr>
<td>Gryta (Raä 17, 18)</td>
<td>K</td>
<td>Bärsta (Raä 9, 14)</td>
<td>G</td>
</tr>
<tr>
<td>Vreta (Raä 19)</td>
<td>K</td>
<td>Bärsta S (Raä 11)</td>
<td>G</td>
</tr>
<tr>
<td>Valsta (Raä 23)</td>
<td>K</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fröslunda attunger</strong></td>
<td></td>
<td><strong>Biskopsskulla attunger</strong></td>
<td></td>
</tr>
</tbody>
</table>
Klista (Raä 3) Fr Villsberga S (Raä 16, 18, 25) B
Knyllinge (Raä 26, 29) Fr Villsberga N (Raä 19) B
Brunna (Raä 33) Fr Högstena (Raä 26) B
Varsta (Raä 37) Fr Håmsta Ö (Raä 33) B
Noppsgärde (Raä 44) Fr Håmsta V (Raä 41) B
Enberga S (Raä 85) Fr Vrå (Raä 48) B
Enberga N (Raä 57) Fr Rönna B
Kvek (Raä 19) Fr Gällinge (Raä 57, 58, 59, 60, 75) B
Härvesta (Raä 51) Fr Berg N (Raä 53) B
Hamra (Raä 13) Fr Berg Ö (Raä 65, 76) B
Ramsta (Raä 117) Br Kälkesta (Raä 70, 205) B
Österby (Raä 108) B Viggeby (Raä 101, 104, 105) B

Långtora attunger Nysättra attunger
Långtora N? (Raä 4, 8, 88) L Nysättra (Raä 41) N
Långtora O? (Raä 6) L Nysättra N (Raä 138) N
Långtora S? (Raä 90) L Resta Ö (Raä 35) N
Lyngesta SV (Raä 21) L Resta V (Raä 30, 31, 33) N
Lyngesta N (Raä 27) L Högby (Raä 56) N
Jädra N (Raä 34) L Alsta S (Raä 100) N
Jädra (Raä 38, 40) L Alsta N (Raä 88, 89) N
Högby (Raä 79) L Årby? (Raä 103) N
Vallby (Raä 42) L Ryda? (Raä 49) N
Nyby (Raä 53, 67) L Alöppe? (Raä 3) N

Figure 239. Settlement units that could correspond to hamnas and ancient monuments from the Late Iron Age in Lagunda hundare. After Larsson 1989.

The southeast part of this hundare was extensively cultivated in the Iron Age. Located here are the three parishes of Giresta, Fittja and Kulla (formerly Bondakulla), with 15 settlement units (see table, figure 239). The main part of this area constitutes a settlement area of its own, difficult to define, with the village Furuby that does not belong here. This part of the hundare was divided into two attunger: Kulla and Giresta. The two settlement units at Bärsta in Giresta Parish did not belong to Giresta attunger, but to Tunbo attunger. What remains in this area are 13 settlement units that may have formed their original group of 12 units, divided among the two attunger and probably constituting a Fiærþunger/skeppslag which, with its 12 hamna and one styrmanshamna, may have equipped a small karv or skuta with 6 pairs of oars. This type of boat is represented in the archaeological material by the Viks boat, several of the Valsgärde boats, and the Fjörtoft boat.

The prerequisite for this regular structure among the settlements is that the artificial borders between the different attunger-districts derive from the Late Iron Age. If medieval settlements are included, this regular structure disappears.

West of the above-mentioned area is Hjälsta Parish with 11 units from the Late Iron Age. The parish is part of a larger settled area on the shores of Hjälsta Bay. In this area, between the river and Dumdal’s ditch, there were two attunger: Tunbo and Hjälsta. These have, besides the settlement units that are included in the parish, also consisted of the two units at Bärsta in Giresta Parish, which means that also here we have altogether 13 settlement units, 12 hypothetical hamnas, and one helmsman’s hamna that could have equipped a small karv of the same type as above.

In the same valley as Hjälsta are Fröslunda and Biskopskulla parishes which consist of 26 settlement units, including the settlements of Hälke and Älvösa which, according to the records, were not situated in the attuner with the same names. The remaining 24 settlements may have constituted a skeppslag/Fierburger, consisting of two groups of 12 hamnas that equipped a ship of the type karv or skuta with 12 pairs of oars, in the archaeological material represented by Skuldelev 5. The borders of the attunger-territories do not correspond to natural borders in the environment, and also here the regular structure of the Iron Age settlements is dependent on artificial borders dating to the Late Iron Age.
Tuna in Lagunda

In the Iron Age, Tuna in Lagunda hundare occupied a special position. It has one of the largest cemeteries in the hundare: Raä no. 49 with over 90 burials. It also has no. 42 with at least 10 preserved burials, which together with no. 49 amount to more than 100 burials of mostly Late Iron Age type. Located here are also cemeteries no. Raä 55 and Raä 69, with 15 and 12 graves respectively. Among the graves in Raä 52 is also a big mound, 18 m in diameter and 1.5 m high. Tuna is one of the largest villages in Fjädrundaland, and has a plan that divides the village into four parts resembling the structure of the fort Trelleborg. An early religious context at the site is the presence of cup-marks, a Bronze Age type of rock art. Rich finds have been made, dating to the Roman Iron Age and Viking Age (Holmberg 1969:142).

Tuna was the place for the hundares’ thing. The thing-place is called Tunalund, which indicates a connection with religious activities since, as is known, the heathen cult was practised outside, for instance in special lundar ‘sacred groves’ (Gutasaga). There is also a sacrificial spring here, used into the 19th century by the local population and situated beside a small field called korsvreten ‘the field with the cross’. It is remindful of the cross raised beside one of the most famous Swedish sacrificial spring Helga Kors källan ‘the spring of the holy cross’ at Svinemång in Uppland. This was probably a prehistoric spring that had been Christianized. During the oldest Christian time in the 11th to 12th centuries, springs served as baptismal waters and an adult converted by entering them (Warns 1923). In the Early Middle Ages there was also a church on land belonging to this village, indicating cultic continuity (Holmberg 1949:141).

As can be seen above, many of the prehistoric settlement units have disappeared and been taken into use by the farms belonging to Tuna and Bälsta villages. This may be a result of the Black Death in the 14th century, which also has had a great effect on the late medieval settlement structure, a fact that has not been considered in the reconstructions of hundare done earlier and based on the later historical villages. The Black Death diminished the population base, so that it became too small to support a church. I have earlier shown that the same situation existed in, for instance, parts of Sjühundra hundare in Attundaland, where in the northern part of present-day Rimbo Parish in the Early Middle Ages Säbohärad Parish was situated; the place for its church is still known among local inhabitants (Emmy Borg, oral information). In Sjühundra several prehistoric villages disappeared in the medieval period. Some are mentioned in the records, though not from the late 14th century, and in this period also the parish disappears from the records. In the beginning of the 15th century a new, larger church was built in Rimbo after the merger, which must have been a result of the population reduction, which in turn may have been caused by the Black Death (Norberg 1985).

The most interesting aspect of Tuna in relation to the leidangr organisation is the area called Visthuset in the map from 1728, and Visthusbacken on later maps, situated immediately east of the sacrificial well. Visthus meant ‘a storage house’; and for the population, the visthus that distinguished itself from the other ordinary storage houses was the visthus for the skeppsvist (food provisions/tax) of the hundare. It belonged to the king and is mentioned in the Uppland law, where we find the statement ‘now the food provision skeppsvist shall be collected and delivered to the king’s visthus (UL KgB 10).

The occurrence of the royal visthus at the Tuna-village is further support for the idea that the Tuna-settlement had a position within the leidangr organisation, perhaps because of a more protected harbour site than the royal estate of Landsberga in Biskopskulla, but there may also have been a chronological difference. Tuna seems to be an earlier establishment as a central place, while Kulla becomes a centre for the whole Lagunda and retains this position.

Landsberga

Landsberga was earliest called Lagenzberg (1286 SD). The royal estate of Lagunda härard was, contrary to many other places, not permanently given the name Husaby, though the king sometimes tried to establish this. In the accounts 1541:10 and 1550:18 we find one of the few occasions when it is called Konungs Husaby together with the adjacent Räby. According to Styffe, this was an old royal estate until 1348, when King Magnus Eriksson exchanged it with his closest man, Israel Birgersson. The earlier name is no less interesting – Laghundzbærgha ‘the hill of Lagunda’. It is situated by a very significant hill close to the parish church that was earliest called Kulla (1343), later called Biskops-Kulla (1409). The word kulle that gave name to the parish also means ‘hill’, and probably relates to the monumental hill where Landsberga is situated. The hill appears from a distance for the ships that arrive from Lake Mälaren into the narrow inlet forming the entrance to the folkland Fjädrundaland. It is covered with large terraces. Below Landsberga are the remains of an earlier church. Here the remains of a ship have been found, and according to Styffe (1911:330) also iron rings in cliffs for tying boats.

As Annika Larsson has suggested, this may very well be the Col (MLat for Kulla) mentioned on the earliest coins minted by Olof Skötkonung in c. AD
995–1000, where he titles himself ‘Rex an Col’. Collum is the Latin form for Kulla mentioned in several medieval sources, so the identification may be correct. Larsson has proposed that Olof Skötkonung initially only ruled over Fjädrundaland, and minted coins there, before he was accepted as king over the rest of Sweden and moved the coinage to Sigtuna, where the coin stamp for the later coins was found in the 1990s (Annika Larsson, oral information). That Olof Skötkonung should have resided among the Götar on Kinnekulle in Västergötland is not probable. Until he was deposited by the Svar, sent to Västergötland, and replaced by his son Anund, he had his main sphere of activity in central Sweden. In this region – e.g. at Husby-Sjuhundra Church, Rimbo Church, and at Adelsö, Strängnäs, and Gripsholm – we also find runic inscriptions connected with parts of the royal family, probably an offshoot of Erik Segersäll.

Kulla was an early donation to the archbishopric, and later this was underlined by naming it Biskops-Kulla. The donation was a kind of skötning, a term which according to one interpretation lies behind the by-name ‘Skötkonung’ for King Olof Eriksson, the son of Erik Segersäll.

**The relation between division into parishes and division into attunger**

When the settled area was Christianized, there was coincidence between attunger and socken ‘parish’ in Biskopsskulla and Nysättra. Almost the same area has been used to create the socken as the attunger in Frösunda and Långtora. The contemporary parish Hälsinga was composed of Tuna and Hälsinge attunger, but earlier there were two additional parishes of unknown extent. In the area of the remaining two attunger, Bonde-Kulla and Giresta, three parishes were created: Bondekulla, Giresta and Fitja. All the attunger have had names that were transferred to a parish. Half of them have an almost identical distribution territorially, while the others have been subject to changes when the ecclesiastical organisation was made.

With some reservation it can be concluded that the Tuna-village had a role as a central place in the hundare when it was divided into attunger, and maybe also in connection with Christianization in the 11th to 12th centuries. But in the later parish- transformation processes it lost its original importance, to such an extent that it was not allowed to give name to a parish or become a parish of its own.

### 9.5.3. Bro skeppslag in Roden

Bro skeppslag consists of Bro and Vätö parishes, with the exception of the villages Norrsund, Stentorp and Brotorp on the west side of the river route that formed the border between Bro skeppslag in Roden and Estuna in Lyhundra hundare, Attundal.

The main part of the skeppslag is situated on what was still in the Middle Ages an island, called Örboholm (Styffe 1911:382). The parish as well as the skeppslag received its name from the location of its central place, with the church beside the bridge that connected the mainland with the island of Örboholm. Vätö Parish consisted of the eastern shore of this island, the island Vätö with the church situated on the opposite side of the strait Vätösand, the south part of Björkö Island, which in the 11th century was an island of its own, and some smaller islands in the outer archipelago. It was through Vätö Parish that the national defence line of watch fires, the bötar, passed along the coast, as mentioned in the Uppland law. It continued eastwards to Åland and SW Finland, which were part of Sweden at least from the Middle Ages and until the war in 1808, when Finland was lost to the Russian empire. A probable place for a watch fire in Vätö is Betteberget, ‘the hill with the böte’, on Gissingö Island, where also a watch fire is marked on older maps. Other names for watch fires in the national defence line were vät-, vär- vät- and vittur – (Hafström 1949:73), which is probably also behind the name of the island Vätö and the parish as well. Additionally, three places for watch fires are mentioned by Radloff: Arholma (where the 13th-century coastal route turned east to Åland), Simpnäs klubb (on Björkö), and the small island of Högskär (Radloff 1805:183).

It has been suggested that the skeppslag in Roden were divided into administrative territories later than the hundare-area, because the area should have risen later from the sea (Hjärne 1947:2). This is not completely true, however. The main parts of Bro skeppslag were dry, settled land already in the Bronze Age, as evidenced by several ancient monuments. The same situation is seen in most of the skeppslag along the coast. For instance in Lo skeppslag (part of Riala and Roslagskulla parishes) as well as Frötuna-Läna skeppslag and Åkerbo skeppslag, Stone Age settlements and finds have been made (Larsson, G. 2006). In Bro the settled areas of the Bronze Age seem, like many other marginal areas, to have been abandoned in the Early Iron Age, or at least there is an absence of finds from this time. In the Late Iron Age, an intensive ‘re-colonisation’ (?) was initiated, but only in the well-protected inland part along the ‘lyhundra River route’ leading from the Norrtälje bay of the Baltic Sea towards Söderby-Karl, along the now-drained northern lake system at Brošjön, Osmaren eastwards to the Baltic Sea, and on the shores towards the old water route through the strait Vätösand (mentioned in the Itinerary of King Val-
demar from the 13th century). This is reflected in Late Iron Age cemeteries, in most cases beside the historic villages known from the 16th-century land taxation books. All the outer settlements are part of medieval colonisations and thus lack Iron Age burials (see fig. 240).

The territorial division in Bro skeppslag

The territorial division of Bro skeppslag is preserved in the records of public finances from 1549, where the land belonging to tax-paying peasants is divided into four parts called ‘attroger’ in the document. The territorial structure with Late Iron Age settlements is very regular:

<table>
<thead>
<tr>
<th>Röcsta Ottingh</th>
<th>Ösby Ottingh</th>
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</thead>
<tbody>
<tr>
<td>Röcsta</td>
<td>Andersvedja</td>
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<tr>
<td>Kvilunda</td>
<td>Övernäs</td>
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<tr>
<td>Inál</td>
<td>Yternäs</td>
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<tr>
<td>Billinge</td>
<td>Ekeby</td>
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<tr>
<td>Röcsta 13</td>
<td>Raä 52</td>
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<tr>
<td>Röcsta 14</td>
<td>Raä 35</td>
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<td>Raä 104</td>
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<td>Raä 11</td>
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<td>Röcsta 18</td>
<td>Raä 122</td>
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<tr>
<td>Röcsta 19</td>
<td>Raä 30</td>
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<tr>
<td>Röcsta 29</td>
<td>Raä 129</td>
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<table>
<thead>
<tr>
<th>Utåle Ottingh</th>
<th>Wessby Ottingh</th>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Tomta</td>
<td>Bredsättra</td>
</tr>
<tr>
<td>Rosättra</td>
<td>Ö. Söderby</td>
</tr>
<tr>
<td>Överlöpc</td>
<td>N. Söderby</td>
</tr>
<tr>
<td>Nysättra</td>
<td>Nor</td>
</tr>
<tr>
<td>Brännström</td>
<td>Raä 160</td>
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<tr>
<td>Utål 11 in V</td>
<td></td>
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<tr>
<td>Utål 14 in V</td>
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<tr>
<td>Utål 10 in V</td>
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<tr>
<td>Utål 21</td>
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<td>Utål 24</td>
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<td>Utål 48</td>
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<td>Utål 50, 51</td>
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<td>Utål 43</td>
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<td>Utål 44, 45</td>
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<tr>
<td>Utål 160</td>
<td></td>
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</table>

Table 39. Territorial division of Bro skeppslag in Roden, settlement units with Late Iron Age cemeteries. V = Vätö Parish, the other in Bro Parish. After Larsson 1989:72.

As can be seen, there is a regular division of the skeppslag. Of interest is that it is Bro Parish and the westernmost part of Vätö Parish that are affected by the administrative division, the same areas as where we find the Iron Age settlements. The part of the skeppslag that was colonised in the Middle Ages lacks this kind of territorial division. In a later document from 1557, the medieval villages are distributed in two corresponding districts that have no territorial denomination but are called ‘Vädö S part with several islands in the sea’ and Vätön’ (UH 1557:8, my transl.). That it is only the western part of the skeppslag which was settled in prehistoric time and which is divided into the so-called attunger, indicates that this territorial division is prehistoric.

The settled area is divided into geographically distinguished areas. Utåle Ottingh covers the area in the southeast and east towards the sound Vätösund, as well as the shores around the fiord-like bay that in the Late Iron Age extended into the southwest from the sea passing Utålsviken to the present-day Lake Tombäsgjön.

Röcsta Ottingh is found in the southwest, bordering the ‘Lhyhundra River route’ from the Norrtälje bay back and upwards along its southeast shore.

Ösby Ottingh covers the central part of the settled area on the northwest part of the former Örboholm Island, with the southern shores of the lake and river-system that until the Middle Ages connected Lake Brosjön with the Baltic Sea.

On the northern shores of the now-gone waterway eastwards from Lake Brosjön, and thus not situated on the former Örboholm Island, are the villages belonging to Wessby Ottingh.

It is hard to be certain about a regular division, since many settlements are missing. A regular division of a ship-supplying district with 40 ar would mean that each Fiárþunger had 10 ar each, and was supplying a larger ship of the type snäcka with 20 pairs of oars, the most common warship in the Middle Ages. This is in line with a hypothesis based on the Iron Age settlements, whereby the skeppslag supplying the biggest ships may often be found along the coast, and along the shores of Lake Mälaren, since they are too big to navigate the narrow and shallow river routes of the interior (see below).

The skeppslag has been called Bro and Vätö skeppslag, and the possibility cannot be excluded that the denomination of the districts as attunger indicates they have equipped two ships, as was done in four comparable attunger in the hundare. If that was the case, from each skeppslag 20 hypothetical hamnas have equipped a ship with 20 pairs...
of oars. The size of this ship is more in line with the size of the other skepps lag in Roden.

Figure 240. The development of settlement structure in Bro skepps lag. The shore level at 5 m a s l. Diagonal lines = Bronze Age area; big filled dots = settlements of the Late Iron Age with more than 60 registered graves; small filled dots = other registered settlement units of the Late Iron Age; open dots = medieval and later settlement units. After Ambrosiani 1982:71.

The relation between parish and skepps lag

The division into parishes has partly used the earlier division, since the main part of the old Bro skepps lag came to be a parish of its own – Bro Parish. The medieval colonisation of the eastern, coastal part of the skepps lag resulted in that early on there was a sufficient population base for creating a parish of its own – Vätö – which of course could not derive from an older territorial division since this part was not settled until the Middle Ages.

In the vicinity of Bro Church are the three villages of Norrsund, Stentorp and Brotorp, which belonged to Bro Parish, but in connection with the leidang organisation did not belong to Bro skepps lag; instead they belonged to Estuna in Lyundra hundare.

9.5.4. Åkerbo hundare in Västmanland

Åkerbo hundare in the Middle Ages consisted of 14 parishes: Arboga, Bro, Björskog, Kungs-Barkarö, Fellingsbro, Himmeta, Köping, Linde, Malma, Medåker, Näsbys, Odensvi, Skedvi and Ervalla. Of these, Odensvi, Malma, Bro and Köping are situated in the northeast part of the hundare around the rivers Hedströmmen, Kölstaån and Valstaån, which at Köping enters into Mälaren. The other four are situated north of Arboga River, which from the west runs out into the bay of Lake Mälaren called Galten.

According to information about home addresses in a court document from 1484, it is clear that öster skiplag ‘the east skepps lag’ (1484) included the parishes of Bro, Odensvi, Köping and Malma (Libri Causarum no. XXXIX). In Gerhard Hafström’s opinion, by using the exclusion method it is possible to conclude that the vestra skiplag ‘the west skepps lag’, mentioned in another court document from 1423, has consisted of Medåker, Arboga, Björskog and Himmeta parishes. As support for this he also refers to the fact that each of these parishes had its own Fierapungers man ‘bailiff for the Fierapunger’. The same internal division into Fierapunger in Fellingsbro, which before the 16th century was included in Åkerbo hundare, led Hafström to conclude that Åkerbo hundare originally had three skepps lag and four Fierapunger in each skepps lag (Hafström 1949:102).

The division into Fierapunger in öster skiplag may be original, while in vestra skiplaget and Fellingsbro this division must be secondary and a late adjustment of the number of tax-paying units to the change that was a result of the partitioning off of Fellingsbro from the hundare and probably also from vestra skiplaget. That this territorial division, as it appears in the 16th-century public finance records, could not have been valid 200 years earlier is also clear from paragraphs in the provincial law which state that Västmanland’s hundare was divided into two skepps lag, not three (VmL KgB 7).

If we go further back in time and look at the settlement structure at the end of the prehistoric period, it is obvious that the division into Fierapunger in vestra skiplaget was created in the historical period. Arboga Parish, for instance, completely lacks Late Iron Age settlements, and the other parishes still have a very limited settlement area. This part of the hundare must have been subject to an intensive colonisation and increase in the number of settlement units during the Middle Ages. In order to create an even and fair tax pressure during these circumstances, the administrative territorial division must have been transformed and adjusted continuously to the changed settlement situation. This fact makes it impossible to reconstruct the territorial division in the Late Iron Age on the basis of the 16th-century material. On the other hand the administrative framework in öster skiplag was in no need of change, since the area was fully settled and had acquired the structure that remained until the 19th century already by the end of the prehistoric period, with almost no changes in the Middle Ages.

Mats G. Larsson has used Åkerbo härad as it appears in 1539 as an investigation area in his study of the division into hamna-districts. Contrary to some of the other areas he studied, he concluded that the hamna-division here was medieval. Of the villages that had given name to the hamna, only 24 % had prehistoric cemeteries. (1987:12). This is in line with my own conclusion, that the division into hamna-districts which we see in the records from
1539 is, like the division into Fjärrpung in the western areas, a medieval adjustment and adaptation to the enormous increase in population and settlements that had been occurring since the end of the Viking Age. Out of the 259 settlement units, 191 were established in the Middle Ages and only 68 derive from the Late Iron Age (Larsson, M.G., 1987:12). This does not mean that a prehistoric division into hamnas did not exist, but that the 16th century division, because of the big changes in settlement structure, must be of a medieval date, especially in the west part of the härad.

Figure 241. The location of Lagunda hundare in Västmanland. After G. Larsson 1989.
<table>
<thead>
<tr>
<th>öster skiplag</th>
<th>Malma Parish/Fjärrunger</th>
<th>Odensvi Parish/Fjärrunger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holm under 1</td>
<td>Råll 1, 2</td>
<td>Kindbro</td>
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<tr>
<td>“Normarken”</td>
<td>Råll 3</td>
<td>Bällsta</td>
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<tr>
<td>Åsby S</td>
<td>Råll 5</td>
<td>Gista</td>
</tr>
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<td>Åsby</td>
<td>Råll 11, 12, 41</td>
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<tr>
<td>Myra V</td>
<td>Råll 6</td>
<td>Hagby/</td>
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<tr>
<td>Rya</td>
<td>Råll 23, 24</td>
<td>Rockhundra</td>
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<td>Skästra</td>
<td>Råll 33, 34</td>
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<td>Råll 46</td>
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<tr>
<td>Flyinge</td>
<td>Råll 50</td>
<td>Mesta</td>
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<td>Torp</td>
<td>Råll 54, 61</td>
<td>Västerby</td>
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<tr>
<td>’Sedbacken’</td>
<td>Råll 58, 60</td>
<td>Präästgården</td>
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<td>Råll 70</td>
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<thead>
<tr>
<th>Bro Parish/Fjärrunger</th>
<th>Köping’s town/Fjärrunger</th>
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<tbody>
<tr>
<td>Ekeby</td>
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<td>Gällsta</td>
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<td>Vägby/Gällsta</td>
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<td>Råll 6</td>
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<tr>
<td>Lyfinge S</td>
<td>Råll 7</td>
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<tr>
<td>Lyfinge N</td>
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<tr>
<th>vestra skiplag</th>
<th>Medöker Parish/Fjärrunger</th>
<th>Björsvik Parish/Fjärrunger</th>
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<tbody>
<tr>
<td>Smedby</td>
<td>Råll 11</td>
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<td>Berga</td>
<td>Råll 27, 61</td>
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<tr>
<td>Präästgården</td>
<td>Råll 68</td>
<td>Långtåby</td>
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<td>Västindalfiholm</td>
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<tr>
<td>Skedvi village</td>
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<thead>
<tr>
<th>Arboga Parish/Fjärrunger</th>
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<tr>
<td>Ancient monuments missing</td>
<td>Guldmedshyttan (Råll 102, 103)</td>
</tr>
</tbody>
</table>

Fellingsbro Parish/ Fjärrunger

| Fellingsbro Parish/ Fjärrunger |
|-----------------|-----------------|
| Västvalla       | Råll 26         |
| Fellingsbro     | Råll 24         |
| Sparsa          | Råll 44, 50     |
| Häkasta         | Råll 216        |
| Svillinge       | Råll 99         |
| Öby             | Råll 77         |
| Äby             | Råll 230, 265   |
| Norlund          | Råll 142        |

| Fellingsbro Parish/ Offstera Fjärrunger |
|-----------------|-----------------|
| Lund            | Råll 22         |
| Ängeby          | Råll 59         |
| Västersätter    | Råll 63, 82     |
| Varu            | Råll 83, 84     |
| Fäkryte         | Råll 97         |
| Nyckelby        | Råll 92         |
| Sällinge        | Råll 210        |
| V. Sörby        | Råll 206        |
| Ö. Sörby        | Råll 90         |
| Spånga          | Råll 218        |
| Eke             | Råll 207        |
| Finnaker        | Råll 130        |

Table 40. The territorial division into skeppslag, Fjärrunger and hamnor with Late Iron Age cemeteries.
If the hypothesis that a village has constituted a hamna is tested, and the traces of an older territorial division are sought by searching for a structure in the archaeological material, it can be observed that the Fjærþunger in öster skiplagh have a regular structure with almost the same number of settlement units in each: 12, 13, 13 and 15 units, respectively. This would be a suitable number of hamnas to equip a longship of the type snäcka or skeid. It is close to hand to interpret the settlement pattern as if the skeppslag has had an internal division of four Fjærþunger with a 12-group in each, equipping a ship with 24 pairs of oars and 48 rowers. This kind of hamna division gives a crew that also is in line with the archaeological material. The largest of the Skuldelev ships, wreck no. 2/4, was propelled by 20-25 pairs of oars (Olsen & Crumlin-Pedersen 1967; Crumlin-Pedersen 2002).

The division into Fjærþunger and its relation to parishes
The analysis of the settlements shows that the division into parishes in öster skiplagh has been based on the existing division of the skeppslag into Fjærþunger, consisting of 12-15 units and perhaps also comprising original 12-groups that may have been called tolfer. The division into parishes in öster skiplagh has preserved the earlier division into Fjærþunger and skeppslag in this part of the hundare.

The division into parishes in vestra skiplaget, on the other hand, is an adaptation to the medieval expansion of settlements there and to the need for more parishes to be created in this colonisation area. In many of these parishes, ancient monuments from the Late Iron Age are partly or completely absent.

Also the territorial division in vestra skiplaget, both in the Iron Age area and the colonisation area, is adjusted to the development and changes in the settlement structure.

Central places in both the skeppslag-districts
The royal estate was in the Middle Ages situated at Kungsbarkarö, strategically in between the two skeppslag of the hundare. This estate lacks, however, ancient monuments and must have replaced older royal centres in the area. During the Viking Age a bay of Lake Mälaren extended to this site.

Where the rivers running through the east skeppslag flow out into Mälaren at Köping, comprised the central area of this part of the hundare in the Late Iron Age. Here was the royal presence with the Husaby, preserved in the name Norsa, a former Nor-Husa and also marked with the big burial mound. Here was also the naval or aristocratic centre, marked by the boat-burials (Lamm 1980:330).

In the vestra skiplaget, a royal presence was situated at the mouth of the Arboga River, where Kungsör is today.

In öster skiplagh there are two settlements with Tuna-names: Östtuna by Hedströmmen with a Late Iron Age cemetery, and Jämmertuna situated by the town-border to Köping, with an investigated Late Iron Age cemetery.

In the vestra skiplaget there are also two settlements with Tuna-names: Hälltuna and Tuna in V. Skedvi Parish, both lacking preserved Iron Age cemeteries, though at least Tuna is centrally placed, 500 m north of the church.

9.6. Organised naval expeditions in the Late Iron Age and Early Middle Ages
A key question in relation to the leiðangr is whether there were leiðangr journeys, i.e. well-organised naval expeditions under the leadership of a king or someone appointed by him, or if maritime warfare and attacks were carried out as random raids by local chieftains and their retinues, as has been suggested (Varenius 1998). The source material to take into consideration is primarily the contemporaneous sources, such as skaldic poetry and runic inscriptions, and secondarily information given in chronicles and the Norse sagas.

9.6.1. Linguistic evidence
The first occurrence of the words ‘leiðangr’, ‘lid’ and ‘allmenningr’
The meaning and occurrence of the words lid and leiðangr and allmenningr in the Viking Age sources have generally been neglected in the discussion about the Scandinavian leiðangr or levy organisation and its origins.

A thorough survey of maritime-associated vocabulary in the Viking Age has been done by Judith Jesch (2001). The results of Jesch’s survey show that the word leiðangr occurs five times in the skaldic corpus from the late tenth century onwards (Jesch 2001:197). The runic evidence on the other hand might seem weak, with only one less reliable case. In the runic inscription the words ‘lid’ and ‘allmenningr’ are used more often instead (see below). Jesch is also careful to point out that the
use of the word does not demonstrate the occurrence of a levy system. The etymology of the word leiðangr has been touched upon by Nilsson (1999:49-53). The occurrence of the word has been discussed by Malmros (1985), Kuhn (1991) and Lund (1993).

The runic evidence is limited to the inscription GS 13, where in fact the text uses the word ‘lánk’. Sven B.F. Jansson argues that this should be read as leiðangr, though his interpretation has been questioned since it is based only on the fact that he can see no other word that could have been intended (GR). Thomppson as well as Jesch, for instance, sees his suggestion as improbable and unprovable, and that there is no reliable runic evidence for the word (Thompson 1975:108; Jesch 2001:196). Williams instead suggests an interpretation as ‘long lance’ for the expression (2006).

Concerning the skaldic corpus, we are on safer ground. In Tindr I:9, ÞKolb III:4, ÞjóðA III:12, ÞjóðA IV:22 and Þolv 8 the word leiðangr is used under such circumstances that it can be translated as ‘fleets’ (Jesch 2001:196). The five occurrences of the word shows that the word ‘was clearly known from the late tenth century onwards’ (Jesch 2001:196). The concept can, like the words lið and floti, include men as well as ships. The word is more like floti, since the primary meaning seems to be ‘fleet of ships’, with lesser emphasis on the crews. She also stresses that the word does not demonstrate the existence of a levy system at any particular date, but that ‘it is important to distinguish between a meaning “expeditionary fleet”, for which the skaldic examples provide ample evidence, and the more specific meaning “fleet called up according to the levy system described in the medieval Norwegian laws”, for which the skaldic examples do not provide any evidence. She therefore thinks it is ‘reductive of Lund (1993:117) to claim that “the word leiðangr simply means a campaign”, he is right to stress that the skaldic material does not and cannot provide evidence for an early introduction of the levy system and that we must look for other evidence for the date of that’ (Jesch 2001). A related word, laeidheang, occurs in a number of Irish texts from the tenth century, which Bugge has interpreted as meaning the Irish were imitating ‘the Norse custom of summons to arms, the leiðangr’ (Bugge 1031 CCS:151), a statement that Jesch does not agree with. She believes that in this regard the texts show only an association between Scandinavia and fleets of ships (2001:198).

The occurrence of the word has contexts that ought to be analysed if we want to correctly understand and interpret what leiðangr really meant to the Viking Age skald, as well as to the society that used it in their ordinary language. In ÞKolb III:4 it is said that leiðangr renndi langt med landi ‘the

Allmenningr

Allmenningr is a word used in many medieval texts as synonymous with leiðangr, complementing the cavallery and knights in military attacks. In the later Norwegian laws it is used for the general levy system. Malmros has observed that the use of the term allmenningr also occurs in ÞjóðA IV:22, and that this demonstrates the existence of a levy system already during the reign of Harald Hardrada (1985:113). As Jesch correctly has pointed out, the term is used with a range of meanings, both general and legal, most frequently in connection with land and property (2001:196), and is not evidence for an organised levy system. Maybe not, but in this context at least, in contrast to what Jesch states, it can clearly be interpreted as nothing other than a centralised military organisation. Here it is part of a sequence of stanzas ÞjóðA IV:18-24 that are preserved in ch. 60 of Snorri’s Haralds saga Sighardarson. In the first four stanzas it is described how the king leaves Trondheim, and in stanza 22 how the king and his fleet enter Denmark: first they have to take shelter from a storm, where it is said about an allmenningr that it liggr innan hverja vík í skerjum ‘takes shelter within each cove in the skerries’. In stanza 23 the fleet is anchored in the storm, and in stanza 24 the fleet approaches the border at Göta River, where the king has an appointment with King Sveinn of Denmark. In the beginning only the king in his dreki or skeid is described, later the fleet. The discrepancy has been explained by Snorri as that Haraldr háfdi úti almenningat at lidi ok skipum ‘Harald Hardrada called out the general levy, both in troops and ships’ (Hkr III:143). This was written down by Snorri in the 1220s, and may possibly not relate to earlier conditions at all. However, Snorri’s words suggest that, long before the Swedish laws, in the early 13th century, there was a common knowledge about the presence of a levy system in the hands of a royal power. It seems unlikely that the levy system would suddenly have appeared during Snorri’s lifetime, and that the words allmenningr and leiðangr related to the levy system would have had another meaning when they were first used in the 10th century.

The poem is more reliable than Snorri’s statements, and is probably preserved in original shape, because of the fixed form used in skaldic poetry.

Evidence for the leiðangr organisation can also be seen in the occurrences of the synonyms lið and allmenningr. That they are used as synonyms is
apparent from the formulation in some stanzas. While leiðangr and lið – as well as the names for the directly leiðangr-associated districts such as hamna, attunger and hundare – almost become obsolete after the restructuring process of the military organisation in the 13th and 14th centuries, the word allmenningr continues to be used for the peasant-based local navy that is occasionally called out. The explanation for this might be that this word serves as a kind of counterweight to the opposite phenomenon: i.e., the introduced elite troops stationed at the royal regional castles in the län-organisation that functioned as a base for most military activities.

Malmros (2002:283) has found in her study of the skaldic stanzas that the levied navy is most often called leiðangr, and on one occasion allmenningr.

Lið

The lið is the second most central concept in the legislation concerning the leiðangr organisation, besides the leiðangr itself. We might recall the introductory words in the Uppland law: ‘Now the king calls out lið and leiðangr...’ (UL KgB X).

The word has been interpreted as ‘group of people’, ‘troops’, ‘retinue’, ‘help assistance’ and ‘fleet’ (Jesch 2001:157). Against the background of the use of the word in law texts, as well as the context of many of the inscriptions where maritime expeditions are intended, Lindow (1976:72) proposes that lið is a ‘verbal abstract’ of līða and therefore originally meant ‘a going, an expedition’. Jesch means that the fact that a group of people could go on an expedition does not prove the etymology (2001:187). However, she believes that the use of the word for a company of ships with or without crews makes it interesting enough to consider more closely in connection with the fleet and the troops in the Viking Age (2001:187). In contrast to leiðangr, lið is quite commonly used both in the runic inscriptions and in the skaldic corpus (Jesch 2001:287).

The runic evidence for the word ‘lið’

The nautical connection is obvious in Sö 338 where the deceased is said to have been bistra mana a lanti auk i liði uti ‘the best of men in the country (or on land) and out in the lið’. Jesch sees the contrast between land and the adverb uti ‘out (at sea)’ as an indication that the host was shipborne or a fleet (2001:187). The deceased died in a battle in Russia and was liðs forungi ‘leader of the lið’, a whole expedition with men, ships and all. Another well-known leader of a maritime expedition is Ingvar. In U 778 he is mentioned as the leader of the lið, and the commemorated as having served on his ship. The commemorated, a son to those who erected the rune stone, austr stu[rd]i i ikuars lið ‘steered/commanded it eastwards in Ingvar’s lið’. A fragment of another stone erected over a person in some connection with Ingvar’s lið is U 837. These are not the only cases showing a naval connection when the word ‘lið’ is used. Jesch has several examples where the commemorated has died in a lið, often abroad: U 611, Sö 160, Sö 217, Sö 254, N 184 and Vg 184. She means that insofar as the expedition had to travel by ship, the term lið ‘could encompass the idea of a fleet and might in some cases involve death in a sea-battle, but this is not the primary connotation and the meaning ‘troop’ is the predominant one’ (2001:188). In this connection it is interesting to consider whether this expedition was undertaken by a local chieftain with his retinue, or if it was a national expedition called out by the king.

Ingvar is one of the most common leaders mentioned in the inscriptions (U 778, U 837, Sö 254 and others), but there are others worth a closer examination. The leader of the lið in U611 is Fröger, and the stone was erected for Gisle who died abroad in Fröger’s lið. Sö 217 mentions Gudve’s lið.

The attacks on England were organised expeditions that according to several historical sources were led by the king. It was in connection with these expeditions that Sö 160 was erected, commemorating Skärder who was ‘dead in England in līð’.

Lindow has summarised all this evidence and says that, ‘a lið was an expedition of a warrior band functioning abroad under a single leader’. As we can see above, the leader is in several cases specified in expressions such as ‘X’s lið’ (U 611, U 837, Sö 217, Sö 254).

In a couple of cases the deceased himself was liðs forungi ‘commander of the lið’. In U 112 Ragnvald had the stone erected for Fastvi, his mother, and uses the occasion to tell that he had been in Greece where he was liðs forungi ‘leader of the lið’. Another leader was Torsten who died in a battle in Gárdarike ‘Russia’ as liðs forungi (Sö 338).

9.6.3. The leaders of naval journeys

The question of the leadership on the maritime expeditions

The question of who was the leader of the naval expeditions is crucial to the discussion about whether these were centrally planned by a king and
organised at a national level, or if they were led by local chieftains who together with their followers composed a local fleet, as suggested by Varenius (1999). The answer depends very much on the choice of source material. The runic inscriptions give in brief words a hint that the deceased has fallen in military combat; they give the name of the person who died, the people who want to commemorate him, who raised the stone, often vague references as to where he died such as he fell in the East, but they seldom inform about the circumstances in the limited space of the stone itself. Based on the inscriptions, it is possible to interpret the expeditions as ventures of local chieftains, as Varenius has done. If one looks at the historical sources, such as the skaldic poetry, chronicles and letters, one gets another picture, namely that most expeditions were organised and led by either the king himself, or a jarl who often is mentioned as being appointed as leader by the king. Descriptive sources of an early date, such as Beowulf, Vita Anskarii and Adam of Bremen’s Gesta Hammaburgensis can be used to illuminate this question. The medieval Saxo and the Norse sagas are of less value as source materials, and should be evaluated primarily as products of their own time. Here, the earlier, contemporaneous material on naval expeditions and who their leaders are said to be will first be analysed. After that a closer examination of the jarl will be done concerning his probable role as a leader of both the naval fleet and of the regional level in the territorial organisation.

The leader of the leiðangr in the skaldic corpus

Who was leading this leiðangr when it is mentioned in the skaldic corpus? Was it local chieftains with their loyal retinues, or was it larger expeditions called out and directed by the king? Judging from the evidence, it seems that in the Viking Age the leiðangr was led by the king. In Æða IV:22 it is also underlined in the poem that King Harald is leiðangr visi ‘leader of the leiðangr’, and later in the stanza that he læisir lond herskipa brøndum ‘locks the land with the brandar of warships’. The leiðangr here was also used by the king as a fleet that guarded his country, in that the skald gives an image that the gunwales of all the ships were so many that they could bar the coastline from enemies.

Judith Jesch (2002:57) has discussed the sea-battles mentioned in the skaldic poetry. She has found at least eleven battles at sea celebrated by the skalds: Hjørungavåg c. 980; Svolvr 999/1000; Nesjar 1015/16; Dýrnes (Orkney) after 1023; Áín Helga 1025/1026/1027; Bókn 1027/1028; Áróss 1043/1044; Rauðahjorg (Orkney) c. 1044; Helganes 1044/1045; Niz 1062; Menai Strait (Anglesey) 1098. These are battles between naval fleets under the command of kings and regional chieftains.

The size of these fleets, when mentioned, shows that these are ventures, impossible to achieve without an organization to assemble the crew. In the poem that is devoted to Olaf Tryggvason’s opponent Eirik jarl, the Norwegian king brought seventy-one skeiðar (Hókr 2). In the encounter between the fleets of Harald hardradi and Svein Ulfsson, Svein is said to have had sex hundruð, i.e. 720, ships (Pfrag 4). Harald had halft annat hundrað, i.e. 180 ships at the battle of Niz, where Svein had primr hundraðum, 360, ships (Steinn I, 2). There were also smaller-scale battles. At Deeress, Þorfinn jarl of Orkney used five snekkjur to attack Karl Hundason’s eleven skeiðar (Arn V, 6). These figures may, as Jesch also underlines be as much propaganda as historical accuracy, but she still believes that these numbers give an idea of the number of ships that one leader could command (Jesch 2002:59).

An important conclusion from Jesch’s results is, that to summon fleets of this size, it was probably necessary to have some kind of naval organization. Since the fleets were commanded by kings and regional leaders, the organization must have been on a national and regional level. The regions were to a large degree independent, and the jarl, who often was the regional leader, seems to have functioned as a sub-king. It is also of interest to note, that all these battles between big navies occur within the century after the leiðangr organization is said to have been introduced in Norway. A third observation is that the number of ships are counted in hundrað, which is another indication that the district term hundare used in Sweden may be interpreted in a naval context.

The leiðangr was called out by the king, in the same way as we find the procedure in the early medieval provincial laws of central Sweden. In Boðl 8 King Harald ‘bjótt leiðangr af láði forg’ ‘You called out the leiðangr from the fair land’. This expression resembles to a remarkable degree the introduction in the provincial law of Uppland, in the paragraph that deals with the leiðangr obligations: Nu buiþer kunningar lip ok lefjung utt … ‘Now the king calls out ló and leiðangr …’ (UL KgB X).

Malmros (2002:63) has found 10 skaldic stanzas mentioning how inhabitants follow the king to war.

The jarl and the royal navy

The jarl functioned as the king’s ‘right hand’. He was often trusted with the role of leading the navy on operations and was also granted the rule of and fines from a fixed territory within the country.
As Arne Odd Johnsen has pointed out, Hakon Jarl had a very important position in the history of the second quarter of the 11th century, and his position is verified on several occasions. He became the closest man to Canute the Great based on his loyalty and military skills. As a jarl, he got defined territories to rule with the title. Already in 1019 he advanced from the title *thegn* to *dux* in English letters (Johnsen 1981:7ff), and he acquired Worcestershire to rule, after having been the military leader of the conquest of this area through brutal violence, destruction and robbery in 1017–1018. Along with Canute he was the leader of the expedition from England in AD 1026, which headed towards the coalition created by Olav Haraldsson and for which also the Swedish king Anund Jakob was recruited together with the disobedient Ulv Jarl, appointed as earl of Denmark (Johnsen 1981:18). The role of Hakon Jarl is in *Heimskringla* described as, *Var Hákon jarl annar hofuðsmaðr fyrir þvi liði* ‘was Hakon jarl the second main leader for the *liði*’. How Hakon is described here in the original text is of vital importance for the understanding of the provincial laws. Here the word *liði* is used, just as in the almost contemporaneous Uppland provincial law. As we see, in both cases *lið* refers to the men in the crew of a royal navy.

The jarls on both sides in the Battle of Helgeå were important leaders, the main leaders below the king in the royal navy and military organisation. Below the *jarl* in rank were the most important men in the aristocracy. According to Snorri, in the naval expedition of 1026 the retinue that belonged to Hakon also included Erling Skjalgsson, his sons, Tore Hund, and others who had turned against Olav. After major trouble in Helgeå, when a broken barrage created a wave that capsized many ships (Gräslund 1986; Johnsen 1981), Canute was successful in a following battle on land. As mentioned, Canute later calls himself ‘king of a part of the Svear’, and strikes coins with Anund Jakob’s coin stamp in Sigtuna. It is possible that Hakon during this short period acquired this part of Sweden as a territory to govern (Gräslund 1986; Johnsen 1981).

As we have seen illustrated in the life of Hakon Jarl, the title was connected with the privilege to rule a defined territory, given by the king to persons who were loyal and belonged to royal kindred. In return for this privilege, the jarl was also expected to be the main military leader together with the king on naval expeditions.

<table>
<thead>
<tr>
<th>Year</th>
<th>Destination</th>
<th>Leader</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th century</td>
<td>Curonians (Seeburg, Apulia)</td>
<td>King Olof (Vita Ansargarii)</td>
<td></td>
</tr>
<tr>
<td>9th century</td>
<td>&quot;Eastward&quot;</td>
<td>R Kälvesten Ög</td>
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<tr>
<td>988</td>
<td>Old Uppland</td>
<td>Styrbjörn Starke</td>
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<tr>
<td>Early 11th century</td>
<td>Finland</td>
<td>U 582</td>
<td></td>
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<tr>
<td>1040s</td>
<td>Tavastland</td>
<td>Fröger</td>
<td></td>
</tr>
<tr>
<td>Middle 11th century</td>
<td>Finland</td>
<td>GR 134, GS 13</td>
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<tr>
<td>&quot;</td>
<td>Livland</td>
<td>U 340, U 356</td>
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<td>&quot;</td>
<td>Finland</td>
<td>U 698</td>
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<td>&quot;</td>
<td>Kvänland</td>
<td>U 533, Torbjörn Scald</td>
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<tr>
<td>&quot;</td>
<td>France</td>
<td>&quot; Snorri’s <em>Heimskringla</em></td>
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<td>Russia</td>
<td>Torsten</td>
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<tr>
<td>1142</td>
<td>Novgorod</td>
<td>A Sw. ‘knjas’ (?), NK (FMU nr 15)</td>
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<tr>
<td>12th century</td>
<td>Johan jarl</td>
<td>Grave stone, Linköping</td>
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<td>12th century</td>
<td>Russia</td>
<td>Jon jarl</td>
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<td>12th century</td>
<td>Finland</td>
<td>Erik’s chronicle</td>
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<tr>
<td>1164</td>
<td>FMU nr 23</td>
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<tr>
<td>1196</td>
<td>Curonia</td>
<td>Sweden’s jarl</td>
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</table>

Table 41. Naval expeditions and their leaders in some historical sources. If the abroad stones are considered, there are several probable expeditions through the whole 11th century, based on an analyse by Ann-Sofie Gräslunds dating method (1994, 2002, 2006).

9.6.3. Naval expeditions in the written sources

The expeditions that I call naval are the ones led by a king, or a jarl, and not by local, influential leaders. If the Norwegian expeditions were included, the list would be very long, even if only the contemporaneous sources were included. Almost all maritime expeditions by the end of the Viking Age were led by the king or jarl, as can be seen from the skaldic corpus where also the word ‘leiðangr’ is used on several occasions. Here I will limit my discussion to illuminating the material that relates to expeditions from Sweden, for which the levy system might have been used. As has been pointed out by several scholars, some kind of military levy system ought to have been a prerequisite for the

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summoning of a large amount of readily available ships with crews from a large area.

As far back in time as the earliest Vendel Period, if we are to believe the information in *Ynglingatal* written between the 10th and the 13th century (Norr 1998) and *Ynglingasaga* of the early 13th century, the kings suddenly began to make naval raids across the Baltic Sea, on the Estonians. It was the kings Yngvar and Onund who were leading these expeditions. About Yngvar it is said in *Ynglingatal*:

18. Þat stók kupp, at Yngvari
Sýslu kind um sóat hafði
Ok liðshönum við lagar hiarta
Herr einkr at hilmi vá
Ok austmarr íofri fellnom
Gymis liðð at gamin kveðr

It was heard that Yngvar
By the king of Sysla had been slain;
And fair, at the hearth of the lake,
by the Estonian host the helmbeare was attacked.
And the eastern sea of the fallen boar
Gymi’s lay sings for the pleasure.
(Transl. by Norr 1998:65)

We do not now for sure whether Yngvar really existed. In the Vendel Period, archaeological remains of Scandinavian visits begin to appear in the Baltic countries (Markus 2004), but the presumed time for this first-mentioned expedition fits well with the time for the introduction of the radial splitting technology in shipbuilding and with the introduction of the sail, both of which were important for creating the possibilities for overseas expeditions. Of course, journeys across the Baltic Sea may have been occurring for thousands of years, but now, within a short period, long-distance journeys were facilitated in several ways, which may have served as a ‘vitamin injection’ for the overseas voyages. In *Ynglingasaga* the events are presented in greater detail, and Yngvar is described as:

...a great man of war and frequently on board his warships, because before his time there had been many incursions made in Sweden, both by Danes and hordes from beyond the Baltic. King Yngvar concluded a peace with the Danes, and then took to harrying in the Eastlands. One summer he summoned his fleet and proceeded to Estonia where he harried in the district of Stein. Then the Estonians came upon him with a great host, and there was a battle. The army of the Estonians was so strong that the Swedes were unable to withstand them. King Yngvar was slain then, and his host fled. He is buried in a mound there, close by the sea, in Athalsýsla District. (*Ynglingasaga* ch. 32, transl. after Hollander 1964:35)

The prehistoric date of the *Ynglingatal* and the reality of the *Ynglingasaga* have been questioned (Norr 1998). Of course in the early 13th century the pope was eager to make crusades on the Estonians and other heathen or non-Catholic peoples, so there was a political interest in presenting them as barbarian and vicious tribes. There was also an interest in Estonia on the part of both Sweden and Denmark at that time, motivating the creation of a historic legitimacy for a crusade and a conquering expedition. On the other hand most people around the world without literacy have had their historical development preserved in oral traditions, and although these change, they often have a core of truth.

Continuing with the next overseas traveller, Yngvar’s son King Onundr, *Ynglingatal* says:

19. Varð Onundr Iónakrs bura
Harmi heptr und himinfjollum,
Ok ofvæg Eistra dólgi
Heipt hrisungs at hendi kom,
Ok sá fromuðr foldar beinum
Hogna hreyrs [or hrørs] um horfinn
Var.

Was Onund by Ionaker’s son’s
Grief halted under the heaven-mountains,
And the over-strong the enemy of the Estonians
Wrath the bastard came to reach;
And the promoter with the bones of the Earth
Of Hogni’s corpse [or cairn] was wrapped
(Transl. after Norr 1998:66)

Snorri describes Onund’s expedition as a case of revenge in combination with raids to acquire wealth:

King Onund proceeded with his host to Esthonia to avenge his father. He landed, and harried far and wide and made great booty. In the fall he returned to Sweden. (*Ynglingasaga*, ch. 33, transl. by Hollander 1964:36)

The Edda poems about Helge Hundingbane – *Hlaukgviða Hundingshana I* and *Hlaukgviða Hundingshana II* – include interesting information about the gathering of crew and ships for the fleet. In *Hlaukgviða Hundingshana I* the people are summoned by sending an áru ‘message’/’messanger’ (or a buþkafli ‘fiery cross’?) everywhere ‘feiðar at býðja’. In connection with this, in the provincial laws, there is mention of the leibangr council called valstefno ‘war council’, to which the territorial groups, fykir, arrive. The numbers of crews on the
fleets are counted in hundreds ‘tólf hundrað tryggrar manna’, and the fleet is called liðondom.

The next naval journeys to be mentioned are found in a reliable source, in the contemporaneous Vita Anskarii. Rimbert talks about a ‘populi multudo’, that there was not enough time to gather when the attack on Birka was made. Olausson discusses this expression (2000:136), whether it means lots of people or, as in descriptive sources, is used as synonymous with exercitus (army), as noted by Green (1998). The historian Timothy Reuter is sceptical to equating the words, since there is no evidence of a people’s army in the Merovingian, Frankian or Ottonian period (1990:397). What was Rimbert trying to say? Considering the use of the word in other sources, it might be an indication that there was not enough time to gather a leiðangr and defence in the prescribed manner as we know it from both the skaldic poetry and the provincial laws, namely by sending a bukkafl ‘fiery cross’ in a certain order among the villages as was the procedure in case of threat to the country. The inhabitants must have been taken by surprise. The coastal guardian line of watch fires had probably not yet been established in the 9th century; otherwise this would have been an effective way to make the threat known and deliver a warning to the country.

Styrbjörn Starke, a nephew of King Olof, tried to seize power and launched a fleet of about 300 ships that headed towards Uppsala. He met King Erik at the Battle of Fyrisvallarna, c. 988, in which the king won the battle and after that got the epithet inn sigrsæll ‘the victorious’. The Danes tried to escape, but to stop them Styrbjörn burnt their ships. Probably commemorating these events are two runic inscriptions from Scania, which at that time was part of Denmark: ‘he did not flee in Uppsala’ (Sjörup, Scania).

Bitter because of the Danish help to Styrbjörn, Erik launched a fleet towards Denmark with troops ‘uncountable as the grains of sand in the sea’; he triumphed over Sven, and raided and finally conquered part of Denmark (Weibull 1921:57; Moberg 1937:140; Körner 1962:396).

Ingvar the Far-traveller’s journey has been interpreted as a leiðangr expedition (Larsson, M.G. 1983, 1997). The geographical distribution of the runestones with inscriptions dedicated to the memory of a participant in this expedition might speak in favour of this, but on the other hand there are several differences in the organisation and performance of the leiðangr duties as we know them from the early medieval sources. The Novgorod Chronicle informs both about an expedition in 1142, and another in 1164. It tells us of a naval fleet with 60 ships led by the king himself together with a bishop, which in 1142 headed towards Novgorod. The fleet is said to have attacked merchants and captured three merchant ships on its way (Novgorod chronicle I FMU I:15). In the battle following an attack on Ladoga, the Svear were conquered and, according to one source, lost 43 of 55 ships and the majority of the crew (Novgorod chronicle I FMU I:15). According to a translation in Polnoi Sobranie Russkich Letopisej, did the Svear retreat and were defeated on Voronaj river (1851:162). The fact that the bishop was part of this expedition may indicate that it also constituted an early crusade. The king ruling in Sweden at this time was Sverker the Elder. The earliest known crusade in the documents is otherwise the expedition led by his successor, King Erik (the Saint), on the Finns, which we know from Erik’s Chronicle was organised like a leiðangr expedition. Both the Finns and Russians belonged to the Orthodox Church that was not accepted by the Catholic Church, and they were considered and described as heathen peoples even though they had accepted the Christian faith. Thus they were legitimate targets for crusades, and one should keep in mind that a strong motive was, as earlier, external exploitation and expansion. The size of the fleet corresponds maybe to a call from for instance the skepslag of Attundaland, Roden and Södermanland (7).

In 1164 a Swedish fleet of almost the same size, 55 ships, undertook a naval expedition eastwards. First it followed the Neva to Lake Ladoga, and then to the Volkhov, and it attacked Staraja Ladoga. The town was burnt but the inhabitants defended themselves until help arrived from Novgorod. The Swedes lost 43 of their ships. According to the translation of the Novgorod Chronicle in FMU I:15, they retreated to the town of Voronak (today Voronaja) and were defeated on the Voronaj River. The attack took place during the reign of Karl Sverkersson.

In 1188 the Novgorod Chronicle reports on an attack from the west by Varjags, the Novgorodian name for Scandinavians, together with German forces from Gotland (!!). We don’t know whether the people from Gotland really were Germans or if this was part of the Novgorodian habit of calling all Roman-Catholics for Germans. The attackers were victorious at Choruschka and Novotorschek. They stayed over the winter, but in the spring were totally defeated. This event occurred during the reign of Knut Eriksson.

During Sverker Karlsson’s reign a crusade was launched on Curonia in 1197 together with Germans and Gotlanders; the earl Birger Brosa was appointed as a leader for the Swedish part of the forces. When the plan was about to be realised, a storm arose and the ships were swept away to Vironia in Estonia, where the crew went ashore and plundered for three days, after which the expedition probably was terminated (Sundberg 1999:46).
A large expedition was launched in 1240 towards the East after many demands from the pope for a crusade on people that were not Catholic Christians. The joint forces of Swedes, Finns, Norwegians, Danes, and Germans sailed into the mouth of Lake Neva. The site was being guarded by a Filip Perguj, who immediately alerted the Novgorodian prince Alexander, son to Jaroslav. Alexander arrived, and went to attack and defeated the Scandinavian forces. Among the wounded and captured leaders was a person who in the Novgorod Chronicle is said to be called Spiridon, which has been translated as Birger by Rianovsky (Sundberg 1999). Sundberg means that it is not impossible that this is Birger Jarl, which would give the expedition an official character (1999:68). Alexander was celebrated after the victory and got the epithet ‘Alexander Nevski’.

9.7. Archaeological remains of a leiðangr organisation

9.7.1. Husaby villages and royal mounds
In each hundare there was a royal holding, and in many cases in the Middle Ages it constituted a large village called Husaby, which in the 16th-century land-taxation records was the size of 4 markland agricultural fields, i.e., almost twice the size of an average village which generally was 2-3 markland. These royal possessions were called Uppsala öd. The origin of these royal holdings, was by Stenberger (1979) traced back to the beginning of Late Iron Age, where he used Snorri’s information in the Ynglingasaga (ch.), as a support for the hypothesis. Later it has been shown that the situation is very complex, where the Husabyar can be dated both to Iron Age and later periods, but I will not enter this large discussion here. The so called ‘royal mounds’ are according to Hyenstrand seen in connection with the villages called Husaby, (Hyenstrand 1974; Silver forthcoming).

9.7.2. The ‘leiðangr harbour’
To refer to the places where warships were kept as ‘leiðangr harbours’ is not entirely correct, since these ships did not need a harbour arrangement. They could be landed or launched directly at the beach, and often on rollers from a boathouse a bit above the beach (Rolvsen 1984).

The remains of the leiðangr harbour consist of the house for the food provisions and the church of the hundare, but also of the boathouses. The latter have been surveyed and documented mainly in Norway.

Naust
The many preserved boathouses of Norway have today in many cases been possible to connect to the naval organization (Myhre 1997; Grimm 2002). In Norway, 250–300 huge boathouses (18–40 m in length) are known (Grimm 2002:105). They have been built for ships bigger than fishing boats (in Norway up to 15 m long), and usually for only one ship. Today they are seen as multifunctional (Grimm 2002). Other or complementary uses have been suggested for at least some boathouses. Finds and written sources indicate that the boathouse in Bjelland, Stord, Hordaland, may have been used as a banquet-hall (Hinsch 1960). A boathouse in Jarlen, Rogaland, may have been built for a trading vessel, based on finds of several bucket-shaped pots (Rolvsen 1974), and in Borgund, Sunnmøre, the boathouse was beside a trading spot (Grimm 2002). Culture layers often indicate many different working activities in the houses (Grimm 2002). What is of most interest here is the military function that Grimm (2002) sees as important and obvious from the fact that the early, long and narrow boathouses are built for warships of the Nydam type. The later boathouses from the period of the leiðangr, long and wide, can in many cases be related to this organization, since they are situated at central places named as skipreide centres (Myhre1997:176; 2002:118).

Westerdahl (2002:169ff) has documented several types of place-names that could indicate the presence of boathouses in Sweden, especially names related to storage houses for boats like hāphusa, skepphusa, but also names related to the warships sneckja, karv and skeið, and to some extent also general names, Båt and Skut(a).

In an earlier study I have discussed the presence of kastaler ‘fortified stone towers’ and churches with towers built in this way, as possibly related to leiðangr harbours and possibly the storage of the food (skeppsvist) and equipment for the leiðangr ship (Larsson 1997). Grimm (2002) has recently observed that the nausts that can be connected with the leiðangr organization are situated beside churches, where, according to Norwegian law, the sail and equipment of the leiðangr ship should be kept (see below). As I have shown, in central Sweden the earliest churches of the hundare which have storage facilities in towers, often have names related to the hundare, such as Sollentuna in Solenda hundare. They are often also situated beside sheltered harbour sites and are related to central-place indicating names like Husby and Tuna. The lack of boathouses in this region may be due to a lack of
survey for such structures. On the other hand, the local boat building technique may have made boat-houses redundant, because experimental archaeology has shown that radially split planks (see chapter 4) do not dry and crack, like tangentially split planks. In Norway, tangentially split pine was often used for boat building, like in the Bårdset boat. It may also be that the high status of the warship in itself also created a need for and a habit in Norway of underlining its presence in the landscape by erecting a monumental boathouse on the shore.

King Magnus Lagaböter, ‘the law uniter’, replaced the old provincial laws with a new, common law in AD 1274. In this law the rules concerning the sail are repeated:

Those living closest to the church nearest the ship (‘leiðangskip’) are responsible for protecting the sail. The crew shall carry the sail and other equipment to the church for safe storage. (Christie 1986)

That the church was the safest place to store the sail and other equipment is linked to the fact that the main church in each province was the earliest building constructed of stone, and thus could protect the equipment from both thieves and rats. These provincial churches, in central Sweden called hundareskyrkor, were located by the main harbours and therefore were well suited to the storage of equipment. That the clergy did not approve of this is clear in that the archbishop Jon, already in 1280, tried to prohibit this habit of using the church as a storage place. He stated that if anyone carried sail, butter or other goods into the church and had not removed it after being reminded three times, he would be excommunicated (Godal 1994).

The bishop was unsuccessful. In King Hakon V’s law of AD 1309 it is said:

Sails and other equipment used in the protection of the country shall hang in the church according to ancient tradition. (Christie 1986)

A leiðangr harbour at Trondenes, Norway

Although in Sweden the remains of boathouses have never been systematically surveyed, and the information in historical sources is ambiguous, the research situation concerning the Norwegian leiðangr organisation has improved in the last decades. At Trondenes there are several archaeological remains from the leiðangr organisation. Above was mentioned the sail found in the church and the facilities for hoisting sails to the attics, including the windlass. Three hundred metres from the church is the harbour site by the bay at Altevågen, where the remains of three large boathouses still can be seen.

Trondenes continued to be used for the storage of warships after the medieval period. The practice of keeping a warship in northern Norway continued...
into the 18th century. A report from an inspection in 1609 explains that Trondenes Church was used for the storage of the equipment for two small warships. At that time one ship was kept in Harstads harbour and the other in Trollvik, Sand Parish (Brattrein 1984).

As the law of 1309 stated, it was important to have ‘safe storage’ for the equipment. The church was also used as a fortress, and the walls surrounding the church were at one time 5 m high (Godal 1994).

Trondenes is known already from the saga of Olav the Saint as the place where Asbjörn Selsbane lived. Asbjørn had in opposition to Olav’s wishes purchased grain. Tore Sel overpowered Asbjørn in a confrontation at Avaldsnes in 1025, and took the grain and replaced Asbjørn’s sail with an old, worn-out sail of poorer quality. Asbjørn sailed home, but returned later and took revenge on Tore Sel, after which he was called Selsbane ‘Sel’s death blow’.

9.7.3. Reflections of the naval organisation visible on the ships

From early on there was a need to distinguish the different ships within the navy from each other, and from enemy ships. Paintings and colours on the ships, and the shields, hanging along the gunwales, were used as visual signs. Probably also the stem decorations and the sails identified ships from a distance. Another important signal in the 11th to the 14th century was the so-called weather vane of bronze attached to the mast top or stems, which will be discussed in chapter 10.2.2.

Pre-heraldic symbols?

One of the scholars who have discussed the possibilities of provincial symbols is Christer Westerdahl (1992). He has observed that one and the same bird-like symbol, often a cock capercaillie, occurs in depictions and runic inscriptions in both Österhaninge and Västerhaninge parishes in Södermanland (1992:20 ff). This symbol is depicted with a runic inscription on a flat rock that has a central position in Tyresta village, Öster-Haninge Parish (Sö 270, Raå 140), as well as on the rune stones at Tungelsta in Västerhaninge (Sö 245) and near Ålsta in Västerhaninge (Sö 245). The cock capercaillie is a forest bird which in OSw is generally called hane. In connection with these runic inscriptions is the forested area called Hanveden, which could be translated as ‘the forest with the forest birds’. It is also possible that the name of the forest is associated with the names of the parishes Väster- and Österhaninge. The concept haningarna ‘the hane people’ may lie behind the parish names, and it is not impossible that the symbol of the area, the hane, has given name to the area, or that the parish name has contributed to make the hane a symbol of this province (1992:22).

The symbols of the skeppslag provinces were also important to use on the ships, to distinguish them from one another and from the enemy ships. Olaus Magnus has a description of the leiðangr fleet before the period of the Vasa kings in his work Historia om de nordiska folken, from 1555 under the heading ‘About the ships, that have long been used in Scandinavia, and about their shape and use’:

In old days it was common that every province, even those that did not reach the sea, kept ships together with equipment in some safe harbour along the coast, often enough in covered sheds on the shore, as I myself have had the opportunity to observe on the Norwegian and also the Swedish coast. If needed, these ships could in a hurry be equipped with necessary equipment, food provisions and an armed crew, as best as people in those days could, whereupon the ships were put to sea and sent on a naval expedition (‘in aquam & expeditiorem…emittebant’), more or less ships in accordance with the decree issued by the prince. These were by signs, colours and names (‘signis, coloribus, et nomonibus distinctae’) so easy to distinguish from one another, that they, whenever a battle occurred with an enemy fleet, could each time without disorder manoeuvre in accordance with the wishes of their commander. However, it could happen that a storm arose and scattered the ships at sea. (Olaus Magnus 10:2, my transl.)

Olaus Magnus was born in 1490, and the last leiðangr arrangements were made in 1450 in Åbo County (Dahlström 1947). The last, bigger, military levy using the leiðangr organisation was summoned in 1439 under the Union king, Erik of Pomerania. When Olaus Magnus wrote his history, less than half a century had passed since the that event, and thus it was still in the minds of an older generation who could inform him on the basis of their own experiences and memories.

I am prepared to agree with Westerdahl when he suggests that the ‘colours, signs and names’ mentioned by Olaus Magnus as distinguishing the naval ships, could for instance have intended territorial separating symbols like the hane in Haninge (p. 21), which today is being reused in a similar function in the municipal coat of arms of Haninge.

Another example is the bird figure on a rune stone in Hökhuvud Parish, Uppland (U 590). This has a bill bent forward and marked gripping claws, and it could be interpreted as a hawk. Westerdahl is doubtful concerning the interpretation of this bird, but is of the opinion that it is a hawk intended in the parish name, which earliest is written ‘de Hökhodhi’ ‘hawk head’ in 1314, and that it is a symbol in the district coat of arms that is intended in the parish name. This is also the only animal-indicative
Symbols of the skeppslag in the 20th century

In relation to the leiðangr organisation, the colour codes for the provinces within the coastal districts of Roden that prevailed until the 20th century are of interest (Eklund 1989). These provincial colour codes have been in use on the skutor of the fishing population, to distinguish the ships from different skeppslag and other territorial areas from each other (see fig. below).

Figure 243. The colour codes used on the skutor in the skeppslag of Roden on the Uppland coast. After Eklund 1989.
Symbols in action, related to a territorial organisation

The social structure was, as we have seen, closely intertwined with the territorial structure. Within this framework, probably also group identity was based on the belonging to a certain hundare group and skeppslag, expressed in different ways such as special symbols, colours, clothes, attributes, jewellery, etc., as is documented ethnographically from the historical period. That this kind of territorially based group identity may have begun already in the Early Iron Age is indicated in Tacitus’ text about the pride in belonging to a certain ‘hundred group’:

What was earlier a number had become a pride. As was concluded earlier, there is a possibility that these hundred-men groups belonged to a territorial hund, since the term hund was used even before the ON language developed with its designation for ‘hundred’, representing territories much older than other districts like the attunger and hamna. To separate the different hundred-men groups from each other, distinguishing names and symbols were probably used. These symbols may have been associated with these areas for a very long time, and they were also used in the leiðangr organisation when this got its final shape in the Late Iron Age, according to my hypothetical development of society. Höfler has described the different animals used among Germanic tribes as distinguishing symbols (1934). This is reminiscent of the many different animals, birds, fantasy creatures and dragons that are featured as stem decorations on the naval ships in iconographic material.

In Haraldskvæði, Torbjörn Hornklofi gives a description of the warship during the time of King Harald Fairhair (c. 860–940), where red ‘brandar’, red shields and tarred oars are mentioned in strophe 5 in addition to the decorative brandar, the ships at war had ginomund hauflum auk groghum tinglum. The sea battle described in the text was between King Harald and a chieftain called Kjötve the Rich. The colour of the shields was a signal of naval provenience, and according to strophe 5, the same, signifying colour may have been used on the brandar. Kjötve’s warriors are said to have white shields, which at a distance clearly distinguished his crew and ships from Harald’s, which had red shields.

Symbols, territories and group identity

The significance of the hundare and skeppslag for group identity and belonging has endured into modern time, as have the symbols that are associated with these provinces. The inhabitants of Vendel’s hundare are called vendelkráka ‘vendel crows’ (Stjerna 1905 b; Linderholm 1919; Vikstrand 2000a, MS). The symbol here may have been a crow. The high age of this provincial symbol is indicated by the naming of King Egil as Egil vendilkráka in Ari and in Historia Norwegiae. The Svea king Ottar, who according to Ynglingatal died in Vendel, was called Óttarr vendilkráka by Snorri.

Special symbols may also be related to other territories, like towns. In Birka, double falcons are known from several artefacts, and it may have been a special symbol associated with Birka (Holmquist-Olausson oral information).

The main symbol of the fighting group composed of many different local groups was otherwise the merki, and to hold this was an honour; likewise, to wrest it from the enemy during battle was a symbol of victory. We often meet this key symbol in skaldic poetry. This kind of military sign, merkis-stangir, is mentioned for instance in Vinaheiðarvisur 3 by Egil Skallagrímsson (AD 910–990). Men who fought framarr merkijum ’before the mark’ are also mentioned in an untitled poem by Göppormr sindri, active in the 10th century.

9.8. The question of Roden

Roden, the coastal area of Uppland and south Gästrikland, has a central position in many theories of the development of the territorial organisation related to the leiðangr, and most scholars believe that Roden was a late development, composed of skeppslag that had broken loose from an inland hundare (Ambrosiani 1983; Wijkander 1983; Hyenstrand 1974; Hafström 1949; Hjärne 1952). These theories do not hold for a closer examination, however, as will be seen below. What is also obvious is that Roden in written sources from the 11th to the 13th century is treated as a separate land, comparable to the other lands and folklands, as will be examined here.

Roden is important, since it has a special paragraph in the King’s section in the provincial law of Uppland dealing with the obligations to the leiðangr. As mentioned earlier, the area had to equip one ship from every skeppslag and one rower from every ar, corresponding to the hamna.

The question of Roden is also related to the sea-faring of the Svear, since the name may be related to the people who travelled east, the Rus, as well as to the Finnish name for east Sweden: Ruotsi (see below).
9.8.1. Roden in the earliest sources

The earliest known reference to Roden is the inscription on the so-called Hovgårdsstenen (U 11), an 11th-century rune stone on Adelsö:

\[\text{ráþ | þu : runaR : ret : lit : rista : toliR : bry[t]:i : i} \\
\text{roþ : kunuki : toliR : a(u)k : gylia : litu : ris... ...:} \\
\text{þaun : hion : eftiR ...:k : merki smri... haku(n) *} \\
\text{(b)þþ : rista}

Interpret the runes: Tólir the steward of Roðr had them rightly carved for the King. Tólir and Gylla had [the runes] carved ... this married couple as a landmark in memory of themselves (?) ... Hákon ordered (it) be carved.

Here, according to one interpretation, Roðr/Roden appears as a territory, administered by a bryte ‘bailiff’, ‘steward’, for the king.

Another early source is the inscription on the marble lion from Athen’s port-town, Pireus. Later this ended up as war booty in Venice, where it now can be seen at the entrance to the naval district of the town. The damaged runic inscription mentions roþrs lanti as the home area for the 11th-century travellers who cut the runes. It is hard to interpret the inscription in any other way than as ‘the land Roden’, where land has the medieval meaning of the word and therefore supports the interpretation of Roden in the Adelsö-inscription as a defined territory. This is thus described as a separate land parallel to, and probably contemporaneous with, the folklands and the other lands within the realm of the Svear.

Roden as a separate territory is encountered in the provincial laws, such as the ratification document by King Birger Magnusson for the Uppland law in 1296:

\[\text{We will also forcefully demand, that all in common and everyone by themselves, that live in North Roden, shall follow the same law without any objections (UL)}\]

I interpret this statement as that Roden earlier formed a judicial area of its own, with a separate law, and it was not without objection that it would subordinate itself to and follow the Uppland law. As we shall see below, most researchers have been of the opinion that the development was the opposite, i.e., that Roden in the Early Middle Ages was an area separate from, and not joined to, the folklands of Uppland.

In the provincial law of Östergötland there is reference to iarls bryti i ropes bo and kunungxs bryti i upsala bo (ÖgL DrB XIII §1). This is a peculiar feature that still awaits a reliable explanation since it is often stated that Roden had no extension south of Stockholm. Also here, as in the Adelsö-inscription, we encounter a royal administrator, a bryte, in Roden. At this time there is general agreement that there is a defined territory, at least in Uppland, called Roden. My explanation for this is that at least eastern Östergötland belonged to the Svea king when the land reform and territorial division into hamna-districts – the last phase in the creation of the leiðangr organisation – was instigated. Like other remote lands within the realm, this territory was controlled by a jarl; and like the king, the bishop and other officials, the jarl could have a bryte as administrator of his estate. The jarl often appears as a leader of naval expeditions (see above), and is thereby also associated with the naval districts. During the Middle Ages there were mostly only partial calls for leiðangr expeditions, and probably mostly from the skeppslag in Roden, since the inland districts may have begun to have problems using the waterways due to land upheaval and bigger ships. Roden was also situated outside the extensive defence arrangements constructed of pilings along the water routes (see chapter 6) that had been created in the 11th to 13th centuries.

9.8.2. The problem with the extension of Roden

According to Holmbäck-Wessen, the area called ‘North Roden’ in the ratification document of the Uppland law was considered as, ‘the part of Roden that is situated North of Stockholm, that is the present area called Roslagen including Gästrikland’s coastal areas’ (1979:10). This is in line with the results obtained by the historian Birger Lundberg (1972), and Styffe (1911) according to whom Attundaland’s Rod also included Færingö thinglagh 1280, Loghbo skeppslag 1409 (today Lovö), and Solnö skeppslag (today Solna). Furthermore, in another statement in the law it is pointed out that the part of Roden belonging to the jurisdiction area of the Uppland law, is situated north of Stockholm:

\[\text{Róþin liggær j. lanzlaghum, aldær þen Owen stokholm ær. (UL ÞB XIII)}\]
Rodent is in the area of the land’s law, or it is situated above Stockholm. (My transl.)

At the time of the Uppland law, the town of Stockholm had recently been established and the earlier *skeppslag* Solnö, and maybe also Loghbo, had come within the town’s jurisdiction area. This may explain the meaning of the words in the law, i.e., that the part of Rodent that belongs to the Uppland law’s jurisdiction area was ‘above’, north of the area under the town law within Stockholm’s borders.

Rodent is best known in its extension along the coast of Uppland, where the following *skeppslag* are mentioned:

<table>
<thead>
<tr>
<th>Attundalands Rodh</th>
<th>Tjundalands Rodh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loghbo skiplagh</td>
<td>Edbohaerad</td>
</tr>
<tr>
<td>Solnö skiplagh</td>
<td>Frösåker skiplagh</td>
</tr>
<tr>
<td>Danarö skiplagh</td>
<td>Börstil skiplagh</td>
</tr>
<tr>
<td>Rydhbo skiplagh</td>
<td>Östhamars skiplagh</td>
</tr>
<tr>
<td>Akerbo skiplagh</td>
<td>Skaedhundare skiplagh</td>
</tr>
<tr>
<td>Lo skiplagh (after 1423 included in Akerbo)</td>
<td>Vestlands skiplagh</td>
</tr>
<tr>
<td>Vaermdö skiplagh</td>
<td></td>
</tr>
<tr>
<td>Frötuna skiplagh</td>
<td></td>
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<tr>
<td>Telgboa skiplagh (after 1280 included in Frötuna)</td>
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<tr>
<td>Bro skiplagh</td>
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<tr>
<td>Vaeddö skiplagh</td>
<td></td>
</tr>
<tr>
<td>Haever skiplagh</td>
<td></td>
</tr>
</tbody>
</table>

Table 42.

This list is based on the research results by Styffe concerning the known territorial division (fig. 245) during the Union period (1911:376ff). He also mentions districts within Rodent that constituted separate *tingslag* ‘thing-districts’ with unknown relation to a *skeppslag*, and also *skeppslag* that by themselves or together with others composed thing-districts. The Färingsö thing-district included Loghbo *skeppslag*, Öslabo (Yxlan) and Birke (Björkö Island by Arholma) thing-districts, as well as Huldanaes and Lösta thing-districts in North Rodent. In Gästrikland Hambrunge, Hille and half of Valbo Parish have belonged to the area called Rodent.

Figure 244. The *skeppslag* and *tingslag* in Rodent in the Middle Ages. Based on Styffe 1911.

The location of the thing-place is sometimes known. For instance, for Vaermdö *skeppslag* it was near Värmdö Church; for Frötuna *skeppslag* it was near Frötuna Church (where earlier a big mound
had stood), and for Vestlanda *skeppslag* it was at Stumne. (Styffe 1911)

9.8.3. Roden: a lost part of the *hundare*?

It has sometimes been suggested that Roden originated when a *skeppslag* broke loose from the *hundare* that it was supposed to have been part of. For instance, the archaeologist Björn Ambrosiani is of the opinion that the *skeppslag* is one of the Upplandic ‘big *hundare*’ á 120 units, divided into quarter-parts or 30 units (1983:80). This model implies that, since the *hundare*-districts that border to the area we know of as Roden have lost settlement units to the *skeppslag* situated outside the *hundare*, they ought to be smaller than the inland *hundare*-districts without any borders to this area and that cannot have lost this quarter-part of the settlements. The table below shows the actual situation:

<table>
<thead>
<tr>
<th><em>Hundare</em> with a border to Roden</th>
<th><em>Hundare</em> without a border to Roden</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Hundare</em></td>
<td>Number of settlement units</td>
</tr>
<tr>
<td>Attundaland</td>
<td>Attundaland</td>
</tr>
<tr>
<td>Lyhundra</td>
<td>80.5</td>
</tr>
<tr>
<td>Sjuhundra</td>
<td>44.5</td>
</tr>
<tr>
<td>Långhundra</td>
<td>100</td>
</tr>
<tr>
<td>Vallentuna</td>
<td>91</td>
</tr>
<tr>
<td>Sollentuna</td>
<td>91</td>
</tr>
<tr>
<td>Bro</td>
<td>44</td>
</tr>
<tr>
<td>Tiundaland</td>
<td>Ulleräker</td>
</tr>
<tr>
<td>Norunda</td>
<td>59</td>
</tr>
<tr>
<td>Oland</td>
<td>94</td>
</tr>
<tr>
<td>Närđinghundra</td>
<td>78</td>
</tr>
<tr>
<td>Vendel, Våla, Tierp</td>
<td>108</td>
</tr>
</tbody>
</table>

Table 43. A comparison of size between *hundare* with and without a border to Roden.

As can be seen from the table above, it is very seldom that we find large districts inland, and never with 120 settlement units. On the contrary the majority are small, such as the ones in the interior of Tiundaland ranging between 44 and 66 settlement units. The *hundare* that border to Roden are on average larger than the inland *hundare*, in spite of the supposed loss of ¼ of the original area to what was to become Roden in Ambrosiani’s model. He explains this as that these *hundare* should have been split into halves due to population growth. Ambrosiani also makes a hypothetical reconstruction of the division into *hundare* in Uppland. Without support from historical source material he puts together different *hundare* districts, and includes in them the *skeppslag* of Roden, in order to obtain a working model and achieve the ‘ideal’ size of the *hundare* with 100-120 settlement units (Ambrosiani 1983)

The table above shows that for instance Bålänge, Vaksala and Ulleräker, which lack a border to the *skeppslag*-divided area of Roden, have a very small number of settlement units, while *hundare*-districts beside Roden, like Långhundra, have a significantly larger number.

Ambrosiani’s idea that the *skeppslag* of Roden represents units that have broken loose from the *hundare*, has also been proposed by Hjärne, Schuck and Gerhard Hafström (Ambrosiani 1983; Wijkander 1983; Hyenstrand 1974; Hafström 1949; Hjärne 1952) (see table 44). This kind of theory about *hundare* districts which are bigger than the ones documented and known from the Middle Ages, and from which the *skeppslag* in Roden has been separated, indirectly presupposes that all *hundare* have a border to the *skeppslag*. However, in Tiundaland, for instance, more than half of the *hundare*-districts lack a border to the *skeppslag*-divided area.

9.8.4. Roden and Roslagen, Rospiggar and the Rus

The name *Roden* derives from people’s relation to naval seafaring and is associated with the ON word *rodr* ‘rowing’. Related to this is the name *rospiggar* for the inhabitants of this area, a word that derives from *Røpsbyggjar*, which means ‘inhabitants of Roden’ or ‘skeppslag-inhabitants’. The word *rodr* is also behind the Finnish term for the eastern part of central Sweden, *Ruotsi*, as is most probably the nationality name *Rus*, which by this time was used
we do not know, but probably they were allowed to be taken into custody. What happened then to the Rus, were actually spies, and therefore he had them interrogated more closely the reason for them coming here, he discovered that they belonged to the people of Swedes. He suspected that they had really been sent as spies to this kingdom of ours rather than as seekers of our friendship, so he decided to keep them with him until he could find out for certain whether or not they had come in good faith. He lost no time in sending a letter to Theophilus through the same envoys to tell him all this, and to keep them with him until he could send them home safe conduct to travel through his empire and any help of practical assistance they needed to return home, for the route by which they reached Constantinople had taken them through barbarous tribes that were very fierce and savage and Theophilus did not wish them to return that way, in the case disaster befell them. When the emperor investigated more closely the reason for them coming here, he discovered that they belonged to the people of Swedes. He suspected that they had really been sent as spies to this kingdom of ours rather than as seekers of our friendship, so he decided to keep them with him until he could find out for certain whether or not they had come in good faith. He lost no time in sending a letter to Theophilus through the same envoys to tell him all this, and to add that he had received them willingly for the sake of his friendship for Theophilus and that if they were found to be genuine, he would supply them with means to return to their own fatherland without any risk of danger and send them home with every assistance, but if not, he would send them with envoys of ours back to Theophilus for him to deal with as he might think fit. (Transl. by Nelson 1991:42-43)

Here we get the indisputable fact that the Rus were a sub-group of the Svear that later gave rise to the name Rossija 'Russia'. The origin of Rus has been much discussed, but what is the evidence? Recently Professor Władysław Duczko made a thorough study concerning this topic in his book, Viking Rus (2006).

The first time we hear of Rus is in the Annals of St. Bertin, with records of events in the Carolingian Empire 830–882 and with several authors (Nelson 1991:6-13). The Annals describes how a Greek embassy arrived at the imperial residence in Ingelheim on 18 May 839. In the group were also members of a people called Rhos. The embassy was sent to the German emperor Louis the Pious by the Byzantine emperor Theophilus. They brought splendid gifts as well as a letter from Theophilus to Louis explaining the main reason for their visit, namely to renew and confirm a peace treaty. However, when the German emperor learned that they belonged to the ethnic group called Svear, he became very suspicious:

...He [Theophilus] also sent with the envoys some men who said they – meaning the whole people – were called Rhos and had been sent to him by their king called chacanus, for the sake of friendship, so they claimed. Theophilus requested in his letter that the Emperor in his goodness might grant them safe conduct to travel through his empire and any help of practical assistance they needed to return home, for the route by which they reached Constantinople had taken them through barbarous tribes that were very fierce and savage and Theophilus did not wish them to return that way, in the case disaster befell them. When the emperor investigated more closely the reason for them coming here, he discovered that they belonged to the people of Swedes. He suspected that they had really been sent as spies to this kingdom of ours rather than as seekers of our friendship, so he decided to keep them with him until he could find out for certain whether or not they had come in good faith. He lost no time in sending a letter to Theophilus through the same envoys to tell him all this, and to add that he had received them willingly for the sake of his friendship for Theophilus and that if they were found to be genuine, he would supply them with means to return to their own fatherland without any risk of danger and send them home with every assistance, but if not, he would send them with envoys of ours back to Theophilus for him to deal with as he might think fit. (Transl. by Nelson 1991:42-43)

The first place encountered if following the water route from Russia across the sea, is the area called Roden in Sweden in the Middle Ages, and which is still called Ruotsi by the Finns.

9.8.5. Roden, Sjælland and Sjaland

The area that shows a different internal territorial organisation within the hundare, such as the friðiunger-divided Trögd, or a complete lack of hundare such as the skeppslag-tingslag-divided area called Roden, could well have constituted the Sjaland in Snorri’s Heimskringla (OHS 77):

In Sweden proper there is a province called Suthrmannaland which forms one bishopric. The there is
Vestmannaland, also called Fjàðryndaland, which form one bishopric. A third part of Sweden [proper] is called Tróndeland; a fourth, Attundaland; a fifth, Sjælland and the region contiguous to it east along the sea…(trans. by Hollander 1964)

Sjælland could be translated as ‘the land of the sea’, and thus is named after the sea. The name has never been fully interpreted, but together with Attundaland, Tróndeland, Fjàðryndaland/Vástmanland and Södermanland it was considered as Sviþjóð sjálf ‘real Sviþjóð’.

This area also corresponds surprisingly well to the location of Sjælland in the mythological scene about Gefion’s ploughing, as described in Gylfaginning (chap. 1) and Snorri’s Heimskringla, Ynlingasaga (5):

King Gylfi ruled the lands which are now called Sweden. Of him it is told that he gave a wayfaring woman, as reward for her entertainment, plowlands in his realm – as much as four oxen could plow up in one day and one night. But this woman was of the race of the gods: she is called Gefion. She brought four oxen from the north out of Jotunheim. They were her sons by a giant. She hitched them to a plow, and that plow went so wide and so deep that the land came loose, and the oxen drew it westward out into the sea and stopped in a sound. There Gefion set down the land and gave it name and called it Sjælland. But where that land had been before there was water. It is now called Lake Mälar in Sweden, and its bays answer to the headland of Sjælland.

The last sentence shows that this Sjælland can hardly correspond to Sjálland (i.e., Zealand) in Denmark, and the sound where the oxen stopped could just as well be the sound at Stockholm where Lake Mälaren ends in a narrow outlet surrounding the island where Old Town is situated. Lake Mälaren is the heart of the realm of the Svear, which earlier comprised only the central part of Sweden (Sviþjóð) and whose extension Snorri has described, and its shores connected the five parts of the so-called ‘real Sviþjóð’.

The account in Gylfaginning is a mythological description of how Lake Mälaren, so dominating in the area, came to be. Not surprisingly, the goddess thought to be behind Gefion is Frigg, Odin’s wife (Hollander 1945:27).

9.9. The maritime society

9.9.1. Sviþjóð and the national level in the hierarchy

The national level of the territorial organisation, of which the leiðangr was a part, was in the Late Iron Age called Sviþjóð, an area that probably earliest was of a very limited size. It was represented by Old Uppsala – the royal seat, the largest settlement in Sviþjóð in the Early Middle Ages, and the place for ‘the thing of all Svear’ with the associated big sacrifices and market (see chapters 8 and 10). The king was more a symbol of the loose unity of the regions in the realm, than a real exerciser of power. One of his main duties was to lead the navy. In the leiðangr organisation of the provincial laws, it was the king who decided if the leiðangr navy was to be launched during the year. This was proclaimed at the national thing in Old Uppsala, but also at the regional thing.

In Old Uppsala, within the societal organisation of the Svear where the part of the population that were free consisted mainly of armed peasants that had substantial power, the peasants could show their support or disapproval of the king at the national thing (Gahrn 1988).

The extension of Iron Age Sviþjóð has been much discussed (Gahrn 1988, 1989; Lindström 2006). One opinion is that the area north of Lake Mälaren was the area that originally was intended by the name Sviþjóð (Lindström 2006). Already in the 11th century the term was also being used for the other regions around Lake Mälaren, for Södermanland and Vástmanland. This can, for instance, be seen on the rune stone at Aspa löt thing-place, where an inscription was made for a person who was ‘the quickest in Sviþjóð’. At least in the minds of people in the 13th century, Sviþjóð was considered as the part of Sweden situated around Lake Mälaren. Snorri in Heimskringla separates the area called Sviþjóð sjálfri from the wider area with the concept Sviþaveldi. Here is the text in the original and in translation:

Icelandic original text:
Sviþaveldi ligr í morgum hlutum. Einn hlut er Vestra-Gautland ok Vermaland ok Markir ok þat, er dar liggir til, ok er þat svá mikít ríki, at under þeim byskupi, er þar er yfir, eru elfi hundrað kirkna. Annar hlut lands er Eystra-Gautland, þar er annar byskupdómr. Þat fylgir nú Gotland ok Eyland, ok er þat allt saman mikla meira byskupveldi. Í Sviþjóð sjálfri er einn hlut lands, er heitir Sudmannaland, þar er einn byskupdómr. Þá heitir Vestmannaland eða Fjàðryndaland. þar er einn byskupdómr. Þá heitir Tróndeland inn þróli hlutur Sviþjóðar. Þá heitirinn fjöðri Attundaland. þá er inn fimmti Sjálland. Tróndaland er gøgast ok bæt byggt í Sviþjóð. Þangat lýtr til allt ríkit. þar er konungsstóll, ok þar er erkibyskupsstóll… (Saint Ólafr Saga, ch. 77)

Translation into English after Hollander:
Sweden is divided into many parts. One part is West Gautland, Vermland, the Forest Districts, and contiguous areas that are so large a dominion that under the bishop presiding over it there are eleven hundred churches. Another part of the country is East Gautland, which contains another bishopric. With it go the islands of Gotland and Eyland, and all together that constitutes a much larger bishopric. In Sweden proper there is a province called Suthmanland which forms one bishopric. Then there is Vestmanland, also called Fjathyrndaland, which forms one bishopric. A third part of Sweden proper is called Tiundaland; a fourth Attundaland; a fifth, Sjælland and the region contiguous to it along the sea. Tiundaland is the best and most populous district of Sweden proper, and there is the residence of the king and also the seat of the archbishop, as is the “Uppsala treasure” as the Swedes call the possessions of the Swedish king.

This society, composed of influential regions known as land, is sometimes called landskapssamhälle ‘society of landskap’. Hellström assumes that this type of society existed from the 11th to the 13th century (1971:3), before it was territorially replaced by the king with a new division into län. Another concept often used for this kind of society is tingsamhälle ‘society of the thing-institution’. The situation within such a society in the beginning of the 13th century is described by Snorri in Heimskringla.

Every part of the country has its assembly and its own laws about many things. In every legal district there is a lawspeaker, and he has the greatest power among the farmers, because whatever he decides to be law stands. And whenever the king or an earl or a bishop travels around the country and holds an assembly with the farmers, then the lawspeaker makes answer for them, and they all go by him in such fashion that even the most powerful chieftains hardly dare to come to their meetings unless the farmers and their lawspeaker permit them. But whenever there is a conflict in the laws, the Uppsala law prevails; and all the other lawspeakers have a lower rank than the one who functions for Tiundaland. (St. Olafs Saga, ch. 77, transl. by Hollander 1964:316)

Here we get an impression of a peasantry whose free men had a significant amount of power, and whose consent the king had to get from every part of the country – an armed peasantry that also the chieftains feared. In this system every adult male that owned more than (4 öresland) had the right to bear arms (see more under hamna above) (UL KgB 10). The same situation seems to have prevailed in the 11th century if we are to believe Snorri in his description of the events at the thing in Uppsala. He describes a heated argument between the lawspeaker of Tiundaland, Thorgny, and the king, and how Thorgny and supporting peasants with threats and vapentak ‘weapon scrambling’ force the king to accept their proposals. This finally caused a reaction among the displeased chieftains and the kings of the dynasty that had evolved in Östergötland, and after victories over the local, political party – the Folkungar – in several battles in the mid-13th century (see below), a transformation process began that finally ended this system of a free and powerful, armed peasantry.

The position of central Sweden within the realm

The old system and the central position of the Svear is mirrored in the Older Västergötland law from c. 1220 (in a contribution by bishop Brynolf Algots-son in Skara, written between 1279 and 1280), where it is said that:

Sveaer egho konung at taka ok sva vraeae.

The Svear have the right to take and depose a king. (VgL R 1, my transl.)

This annoying fact to the people of Götaland was later taken away, and is not found in the Younger Västergötland law, revised after 1281. Svear and Götar were, according to Saxo Grammaticus, still in the 12th century seen as two different peoples, as is clear when he describes the battles for the throne in the 1120s. The political position of the Svear in the Early Middle Ages is also obvious in the provincial laws of both Uppland and Södermanland, where it is said that the folklands of Attundaland, Tindaland and Fjädrundaland first shall take the king. It is also said that the election of the king was confirmed when the lawspeaker of Uppland formally appointed him as king, and thereafter the king rode out on the so-called Eriksgata to visit the things of the other lands and to be appointed king by the other lawspeakers as well.

9.9.2. The age of the maritime society

As was shown in the study of Sjuhundra hár, and the analysis of the other hundare-härad, a settlement structure is created that can be related to the structure within the leiðangr-provinces, a settlement structure is established with the foundation of the
*harma*-district in the organisation, which supplies a rower for the warship. By dating the villages that have given name to the *harma* districts, Mats G. Larsson has shown (1987) that these ought to have been established at the latest in the 10th century.

There are indications that fundamental changes in settlement structure occurred in the transition period between the Early and the Late Iron Age, to judge from the results of rescue excavations in the last decades. Although there are places with continuity, many Early Iron Age settlements are abandoned and new ones established. The break with the old structure is marked by the (intentional?) drawing of the borderlines right across the earlier settlement sites, as can be seen in Old Uppsala (Price & Viklund 2000). The borders have remained almost unchanged and the villages prevailed in the same places until the 19th century.

The memory of this radical reform may have been preserved in oral tradition, written down in the Icelandie Sagas in the early 13th century. The *Ynglingasaga* has the following information:

King Onund bestowed great diligence and expense on clearing the forests and cultivating the land which had been cleared. Also he had roads made through the uninhabited forests. The many tracts were found throughout the forests which were not covered with wood, and these came to be populated districts. In this manner the land was populated, for there was no lack of people to cultivate it. (Chapter 33, transl. by Hollander 1964:36)

This mythical history of a king who combines large reorganisations of settlement structures with, as discussed earlier (see above), a system of royal estates in every province, may or may not be rooted in prehistoric reality. However, in Sjuhundra härad above, it is possible to see that large areas without any traces of Early Iron Age settlements were cleared, taken into use, and settled in the Late Iron Age. It is important to note, however, that excavations in recent years have revealed the presence of Early Iron Age settlements on the clay fields that were transformed into agricultural land in the Late Iron Age. In this process of change, the settlements were relocated to dry elevations in order to free areas for intensified cultivation at the expense of reduced cattle breeding (Zachrisson, oral information). Agricultural land became more valuable.

9.9.3. Evidence of the *leiðangr* as a naval organisation

There is plenty of evidence showing that the *leiðangr* was a real and working naval organisation in medieval, central Sweden; this is clear from early written sources of various types. If one uses the early medieval laws as a source material, as Varenius has done, the results will be the same. In fact, those laws that deal with this organisation constitute a goldmine of information related to maritime warfare – the ships, life on board, when and by whom the ships were built, when the fleet should be called upon, when the ships should be equipped and ready, how to deal with issues, crime and punishment on board or in foreign lands, as well as many other things about the ships, the manning of them and seafaring (see above).

In order to show that the *leiðangr* levy system with its territorial base was not introduced solely as a metaphor when organising tax-collecting activities in the 13th century, but instead was an ancient organisation rooted in the ideology and society of Iron Age Sweden, a discussion of the primary sources is needed.

A more thorough study of the same medieval laws that Varenius uses reveals that the *leiðangr* is a true naval organisation for the manning of the ships of the navy, including:

- Rules specifying the obligations for building ships.
- Rules for the maintenance of the ships.
- Rules for how the navy shall be called out on a regular basis.
- Rules for how the *leiðangr* shall be called out if an enemy fleet is sighted.
- Specification of the weapons that the *hamna* shall equip their warrior with.
- Specification for the food provisions for the *leiðangr* warrior.
- Date for the time when the fleet should assemble.
- Fines if a warrior, ship or hundare did not respond to a call for *leiðangr*.
- Specification on how long the appointed participants needed to wait for wind, before they were free to return home.
- Special legislation on board ships, including doubled fines for crimes committed on a *leiðangr* journey.
- Specification of the geographical points where the special legislation for ships on *leiðangr* would come into action.
- Specification of how the ships were to be guarded abroad.

These are the rules of an offensive organisation for maritime expeditions and warfare.
The building of leiðangr ships

The provincial laws of central Sweden give information on how many ships each hundare and skeppslag had to build and provide for the naval fleet. In Uppland it was 4 ships from each hundare and 1 ship from each skeppslag (UL KgB 10:1). In Västmanland the law states that 2 ships should be built from each hundare, which also was composed of 2 territorial skeppslag (VmL KgB 7:1). The Södermanland law has not specified the number of ships from each hundare, but the limited size of the hundare indicates that only 1 ship was required.

Despite the thorough restructuring of the military organisation in the 13th to 14th centuries, in combination with the advent of new types of heavy warships for the heavily armed specialist troops and another type of maritime warfare, the leiðangr organisation was still used and called out when it was needed, and it was seen as a resource and a necessary complement.

The obligation to keep ships for the navy

That the leiðangr was not only introduced as a means for the authorities to acquire incomes, is visible also from the fact that there were rules and regulations concerning the obligation of each naval district to build, keep and maintain real warships ready for naval duty, and also to keep the ships in a state prepared for expedition when the need arose or if the king called upon the navy.

The naval leiðangr continued to exist also after the introduction of annual taxes. In an addition to the Södermanland provincial law, in a manuscript written down shortly after 1335, we get insight into the continued use of the leiðangr as a royal navy:

In this way shall the king’s leiðangr be called out, that snäcker and skutor shall be ready at Whitsun-tide with the equipment that belongs to them. (SdmL T.2)

By the end of the 13th century, the Decree of Alsnö did away with an important basis for the way in which the leiðangr organisation worked. When many persons, parts of districts and also complete naval districts were released from the leiðangr obligations at this time, the duties became a heavy burden for the remaining persons. This also included the shipbuilding obligation, and as a result, in 1387 King Albrekt of Mecklenburg released Norrbo hundare in Västmanland from the obligation to keep one of the two ships that the Västmanland hundare were obliged to keep, as long as the holdings of the nobility were released from the duty to take part in the equipping of leiðangr ships.

The regulations in the law concerning life on board warships in the leiðangr

The jurisdiction in the Uppland law concerning the leiðangr has already in Kungabalken the ‘royal section’ in the law included the set of rules called rotharætter ‘set of rules for warships’ (UL KgB XI p.1, Hjärne 1979:28). These rules came into action when the crews were on board real warships, which contradicts the general thesis stated by Varenius that the ship was used only as a metaphor introduced for tax-coll ecting purposes. This will be discussed further in chapter 10.

9.9.4. A model for the maritime society

Visualising an Iron Age maritime society?

The leiðangr organisation is closely related to the territorial division into hundare, skeppslag and hamnas. In this chapter the evidence for the leiðangr as a levy has been discussed and analysed on the bases of both historical sources and ancient monuments. The regular pattern visible in the settlement structure of the analysed hundare-provinces above would not have been possible if:

5. Early Iron Age settlements were included.
6. Medieval settlements were included.
7. The boundaries in the main agricultural areas were not artificial.
8. Other boundaries than for the medieval leiðangr-associated districts were used, such as parish boundaries.

The structure as well as the organisation can thus be interpreted as representing a Late Iron Age maritime society. It was the result of central planning. Although the organisation was well planned it did not strengthen royal power, because unlike the medieval military organisation based on län and fortresses it was not backed up by forces.

The discussion above in this chapter can be summarized in a model for what I call ‘the maritime society’ of the Svear in the Late Iron Age. It seems evident that the naval organization has become the framework within which other spheres of the society were also organized, such as social structure, juridical organization and ownership of land. At least after Christianisation, in central Sweden the sacral organization to some extent used the prevailing territorial framework. The model is presented in table 45.
<table>
<thead>
<tr>
<th>Territorial level</th>
<th>Representative</th>
<th>Size of central settlement</th>
<th>Naval organisation</th>
<th>Juridical instance</th>
<th>Sacral organisation</th>
<th>The church as symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realm</td>
<td>King</td>
<td>30 markland <em>Gamla Uppsala</em></td>
<td><em>Leidangr fleet</em></td>
<td>All Svears’ Thing</td>
<td>Archbishopric</td>
<td></td>
</tr>
<tr>
<td><em>Land</em></td>
<td>Jarl</td>
<td>8 markland</td>
<td><em>(Lið)</em></td>
<td><em>Land’s thing</em></td>
<td>Bishopric</td>
<td>Cathedral C, D</td>
</tr>
<tr>
<td><em>Hundare</em></td>
<td>Bailiff</td>
<td>4 markland <em>Husaby</em></td>
<td><em>Lið</em></td>
<td><em>Hundare thing</em></td>
<td>Clerical district E</td>
<td><em>Hundare church</em></td>
</tr>
<tr>
<td><em>Fjärfunga</em></td>
<td>Helmsman</td>
<td></td>
<td><em>Skeppslag</em></td>
<td><em>Fjärfunga thing</em></td>
<td></td>
<td><em>Tolft church?</em></td>
</tr>
<tr>
<td><em>Attunga</em></td>
<td></td>
<td></td>
<td>Parish assembly</td>
<td>Parish <em>Parochia</em></td>
<td></td>
<td>Parish church</td>
</tr>
<tr>
<td><em>Hamna</em></td>
<td>Vigher-man peasant</td>
<td>2-3 markland Village</td>
<td>Rowers</td>
<td>Village assembly</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 44. A model for the maritime society.
10. The Ship Symbol in Social Interaction

The social relations between the different strata in society as represented by the kings, local leaders and the peasant population of free men, were regulated and expressed at the thing-institution within the same territorial organisation as the military levy system. Here the ship symbol was important as an expression of *frídr* during the thing-peace, and it also marked an area of *frídr* on actual merchant ships as well as warships. Real and symbolic ships marked the borders between different jurisdiction areas, as will be discussed below.

By using the ship symbol, social status could also be expressed, as well as gender relations. In this way the burials offer an excellent opportunity to answer the question whether there were women acting among the local leaders and seafarers.

Group identity was another factor related to the territorial organisation of the *leiðangr*. On ships it was expressed by symbols and colours, and by wearing specific clothing and other distinguishing material expressions. Militarily the symbols became pre-heraldic signs, but even in civil life the territorial affiliation was important and survived until the 19th century.

10.1 The ship symbol in jurisdiction

In the cognitive world of medieval and prehistoric people, territories were separated by special jurisdiction. As is known from *Vita Anskarii*, already early on the towns had their own jurisdiction. At a very early stage the archipelago, Roden, acquired a separate position, too. Marketplaces and fishing communities here were included under the laws of the so called OSw *bjaerkøa rætter*.

**The ship as a juridically defined space**

In the early medieval provincial laws there are definitions of different jurisdiction areas, in which different sets of rules are valid. They are defined territories, and the law specifies when or where the inhabitants enter from one territory into another. These jurisdiction areas are:

* the area of the *land*, i.e., the area to which the law book pertains.
* the town area.
* the warship, the area of the *roðar rætter*.
* the area of the *bjaerkøa rætter*: the merchant ships, marketplaces, seasonal fishing camps, and the archipelago.

It is the last two areas that are of particular interest here. In my opinion, the ship as a special jurisdiction area is a relic from a time period when the ship functioned as a key symbol in society, with divine associations and special sanctity. When the ideology changed in the medieval period, the ship lost its status as a jurisdiction area and became just an ordinary boat, a transport vessel.

The interplay and differences between the early medieval jurisdiction areas have been studied thoroughly by the legal historian Erland Hjärne (1979). These areas were of vital importance for the inhabitants, since the ruling jurisdiction actually defined what was considered to be a town, a marketplace, a cargo ship, or a warship. To pass the defined limits meant either a raising or a lowering of fines, and demands for evidence needed when judging unlawful actions. Each of these clearly defined spaces had their own set of rules for behaviour, crimes and punishment. On board the warships the special jurisdiction in Sweden called OSw *roðær rætter* came into action. On the merchant vessels, however, a different law code was used called *Bjaerkøa rætter* (Hjärne 1979:23 ff). It was also valid on fishing boats at the fishing sites and in seasonal fishing camps, as rules for such are specified in the better-preserved documents from Nidaros (Storm in NGL, 4:XII, Bj II 42).

10.1.1. The warship as a special jurisdiction area

The special jurisdiction on the warship came into action when the naval fleet was launched and had left the harbour. The *roðar rætter* is best preserved in sections of the provincial law of Uppland. Under the heading ‘Vm roðar rät’ in § 1, the special jurisdiction area where this legislation was valid is specified:
Now the ship is out in leiðangr and has come in ward ok j waku. If one steals from someone else, or breaks any other rule in this law, it will be half more expensive in fines than what is paid at home and half lower oaths and witnesses.

Now be a deed done, then fines are paid in three parts, one part to the helmsman another to the plaintiff the third to all the rowers.

This jurisdiction was, as can be seen, valid on a warship when it had gone out in a leiðungr, that is, within a true naval organisation. Characteristic is the level of fridr, which penally is seen in the doubled fines, and judicially in the lowering of demands for evidence by half. The special conditions on board ship demanded discipline, since all disputes were a serious threat to the safety and security on board. These double fines concerning different crimes committed on board a warship in leiðangr are repeated in several places in the law. Concerning manslaughter, the fines of the roþær rætter began to apply already before the ship had left the harbour, but was equipped and prepared to leave with the (red) shield raised as a symbol of the fridr:

Kunungær buþær leþung utt.
skip liggær j læghi.
lyptingær tældæþær
sköldær a stampni.
warþær þar man draepin
fore borþe ok bryggiu sporþe
liggi j twæböte
tiughum attæ.

The king calls out the leiðangr.
ship is in position.
lyfting has tent.
shield is on the stem.
if a man is killed
inside the strakes or on the landing plank,
lay double payment
eighty mark
(UL M 11:3, my transl.)

Although in the Uppland law the transformation of the districts into tax-paying units may seem to have come far if one reads certain parts of the King’s section, the presence of the leiðangr as a naval organisation is clear from other parts, such as the one quoted above from Manhelgdsbalken. The leiðangr called out by the king here is not an organisation for collecting taxes. The place called lyfting mentioned in the quote is the raised platform in the stern of the ship which was the helmsman’s place, and which was probably covered with some kind of tent as protection. As in all (?) instances under the raised red shield, the king was entitled to one third of the fine, the plaintiff to another third, and the hundare to the remaining third (UL MB XI §5, my transl.).

As we have seen above, already in the ‘King’s section’ in the introductory part of the Uppland law, the set of rules called OSw roþær rætter ‘set of rules for warships’ is described (UL KgB XI p.1; Hjärne 1979:28), a jurisdiction that comes into action when the crew are on board a warship. The roþær rætter concerned all events that could occur on board the ship, as well as matters related to the guarding of the ship in harbours.
The ship in leiðangr was a juridical area was clearly differentiated from the juridical area at home where the ordinary law of the land Uppland applied. The ropær rætter ‘naval ships’ legislation’ is also dealt with in connection with the leiðangr rules in the Södermanland law:

Comber skip utan warþ ok wacu,  When the ship is
þa wari þet i fullum ropa ræt out of ward ok wacu,
then it is under total ropa ræt...
(SmL KgB XI pr., my transl.)

Also here, ropa ræt meant that heavier legislation came into practice on the ship, like the case in Uppland:

Gerningæ þere liggin i gildi sinu æ halw dyrræ Deeds there have fines half more expensive
æn þa þet hema wari giort. than if they were done at home.
skiptin þe bot, styriman, malseghande the payment be divided among helmsman, plaintiff,
oe hasæter aller and all the rowers
(SmL KgB XI pr, my transl.)

Already from these few quotations it is obvious that what Varenius stated about the provincial laws – that what is ‘common to them all’ is that ‘the leiðangr obligations have just been altered, from the duty to participate in royal expeditions at sea, to the duty to pay taxes’ (Varenius 1998:142) – has no validity. When the leiðangr is mentioned it is usually in the paragraphs concerning a naval fleet, and thus it has by no means ceased completely to exist and is not used only as a concept for royal tax collection. Instead the laws are fully occupied with providing juridical solutions to every potential situation that could occur on board the leiðangr ship.
10.1.2. When the ship is out of ‘ward ok wacu’

The special rules and total naval legislation came into action when:

9. On board a leidangr ship.
10. On a naval expedition outside the Swedish realm.

The concept ward ok wacu mentioned in several places in the laws, as quoted above (SmL KgB XI pr.), pertains to the coastal guardian line that followed the shoreline of Sweden during the time of the law. Ward refers to a vårðkase ‘beacon, lit.watch fire’ that was lit when a foreign fleet was in sight, and that rapidly spread the information along the coast and into the country along the water routes (see chapter 5). Wacu means ‘watch’ and is connected with this, since the law texts contained rules governing the watch as well as fines that should be paid when the watchman failed to do his duty: in a first line along the outer coast, bótesvakt (watchman at the coastal beacon called bóte); from there to the second line of strandvakt (shore watch), probably a watchman of a beacon at the local naval harbour along one of the main water routes into the country; and, finally, from there to byvakt ‘village watchman’. The distribution of place names involving bóte follows the coast that formed part of Swedish territory in the Middle Ages (see chapter 6). To be out of chain of beacons, was indeed to be out of the country. It is known from Norway that a similar chain of beacons could deliver a warning along the 1500-kilometre-long Norwegian coast in seven nights (Saga of Hakon the Good). This means that when the beacon on Kökar was lit, the alarm could reach all of central Sweden in one night. The Norwegian law stipulated that the fires should be lit if an enemy fleet of more than five ships was in sight (Gulowsen 1909:507).

10.1.3. The raised shield on a ship as a sign of ruling jurisdiction

The ruling jurisdiction was symbolised by the skiólfær a stampni ‘shield on the stem’ (UL Mh 11:3). From different paragraphs of the law it it is also clear that the red shield was raised on the stem as a sign and symbol of ‘royal peace’; it meant that the roper rätter had come into action. The shield had an important symbolic function. If the shield was raised on a mast it could indicate the arrival of the ship in peace, as mentioned in Saxo and Ordinicus Vitalis, and if raised during a battle at sea it could signify the will to surrender. The shield was present on the stem as long as peace and negotiations were at hand, but lowered when the peace was broken. When a merchant vessel arrived at port, the bjёрkøa rætter also stipulated that the shield should be raised on the mast, signifying an arrival in peace and the will to obey the town’s legislation; but when leaving, the shield was lowered and the ship’s own jurisdiction resumed. The Rus chieftain Oleg in the 10th century put his shield on the gate of Constantinople to mark that his peace was ruling, and the concept of peace implied a certain defined jurisdiction, a law code, and a set of rules for fines and legal treatment.

Fridr

The ship was a jurisdiction area with fridr. Other areas were the thing, the churchyard and the homestead. Women, as well as persons who were too young or too old to bear the ‘weapons of the people’ and fulfil leidangr obligations, were also protected by this judicial concept.

Important to note is that, with regard to any crime committed against the land’s (provincial) law when fridr was proclaimed, such as on the ships in leidangr, the law stated that the punishment should be ‘double the amount of such fines paid at home, and the demands for oaths and witnesses be reduced by half’ (UL KgB 11:1 my transl.). It is also significant that the fridr relating to naval expeditions was restricted to the provinces around Lake Mälaren and Hälsingland. The ‘King’s peace’ is related to the concept of fridr. The shield symbolised that this special fridr, king’s peace’, was in action on the ship and also on the gangplank; in other words, it was the special jurisdiction of the Røper rätter or the Bjёрkoyarått that applied.

The divine guardian of fridr

The ship jurisdiction in the early medieval law codes should be seen as a relic from a time period when the ship was a symbol loaded with value and associated with divinity and sanctity. The fertility deities have, since the beginning of the first millennium in Scandinavia, been associated with the fridr concept.

Earliest we find of a special peace mentioned by Tacitus in AD 98 (Germania, 40), which prevailed when the wagon with the image of Nerthus was travelling around, as later Frey and Lytir did, among the different peoples. When Nerthus arrived at a village, pax et quietes ‘peace and quiet’ were demanded. Later, according to Adam of Bremen, the god Fricco (Frey) gives pax et voluptas ‘peace and well being’. The spring blót was repeatedly said to be done ‘til árs ok frídær’ ‘for fertility and peace’. According to Snorri, during the blót in
Uppsala – which was the biggest in all of Swithiod and done by people for the whole country – sacrifices ‘for peace and for the victory of their king’ were performed in connection with ‘the thing of all Svear’ (NKS II:77).

When Snorri describes the ceremonial feasts in Tröndelag, he says that the second toast here was *Njarðar full ok Freys full till árs ok fríðar* ‘a toast to Újord and Frey for prosperity and peace’. In connection with the largest assembly in the region, the *Frostapating*. Snorri tells that when King Hakon the Good arrived *þeir vilja, at konungr blóti til árs þeim ok fríðar* ‘the peasants wanted the king to make a sacrifice so as to procure prosperity and peace for them’ (Sundqvist 2000:177).

Also in the oldest Swedish fragment of a written law code, the *Forsaringen* from the 12th century in Hälsingland, the crime against a *frîdr*, the *church-frîdr*, is characterised by doubled fines (Hafström 1981:532; Brink 1996).

Still in the 19th century, in local tradition, *helg* was associated with days in which *fridd* was proclaimed. The concept of *julfrið* ‘Christmas peace’ began on St. Thomas’ Day on 21 December.

### The roþær rætter, Rus and Russkaja Pravda

There is no doubt that an organisation and legislation like the *roþær rætter* would have impressed people who encountered the Svear. It is perhaps no coincidence that in the turbulence among the NW Russian tribes in the mid-9th century after the Varjags had been driven away, the methods used by the Svear of central Sweden to maintain order were seen as attractive. As the Primary Chronicle puts it for the year 6370 (= 862):

> "Let us search for an emperor who rules over us and creates laws for us’. And they went across the sea to the Varjags, to the Rus. Because this people are called Rus, like others are called Svear. Some are called Norsemen, Anglians, others Goths. In the same way they have their own name. The Chud, the Slavs, the Krivichs and the Ves said to the Rus’ people: ‘Our land is large and fertile, but there is no order among people. Come and govern and rule over us! (My transl. and italics)"

As has been discussed in chapter 7, the contacts were with the part of Sweden that had a territorially based legislation, namely east Sweden.

The *Russkaja Pravda* is a law code preserved in several manuscripts, the oldest of which is the Novgorod manuscript from 1282. The language used (Old Church Slavonic, Old Bulgarian) reveals that it is much older, and the belief is that it was codified during the reign of Jaroslav.

The similarities between *Russkaja Pravda* and the *roþær rætter* were observed already by Hjärne and are quite obvious when a comparison is made. Despite the many correlations, Russian historians such as Budanov have often denied that there is any relation between the two law codes and that the likeness is due to general similarities among people at a certain stage of society. Karskij, on the other hand, sees the *Russkaja Pravda* as a West Germanic law collection that later had been translated into Old Church Slavonic.

### The veche of old Rus

In the larger cities of the Kievan state, there appeared in the late 10th century popular assemblies called *veche*. These were composed of all adult males, and one of the purposes was to give the prince advice on important policy questions (Piper 1995:31). In Novgorod and Pskov the *veche* are said to have succeeded in giving themselves legislative authority, with the ability to force the princes to execute their will. The similarity with the thing-institution of central Sweden is striking.

The word *veche* is derived from a proto-Slavic word *viet*, which means ‘council’ or ‘talk’ (also represented in the word ‘Soviet’). The semantic meaning of the word is parallel to that of ‘parliament’ (Vasmer 1962). The earliest occurrence is in Russian chronicles that refer to *veche* in Belgorod-on-the-Dnieper in AD 997, Novgorod the Great in 1016, and Kiev in 1068. In Kiev the assembly was held in front of the cathedral of St. Sophia. In Novgorod the population of the whole city was summoned by the *veche* bell to an assembly at Jaroslav’s courtyard, while in Pskov the *veche* assembly was held in the court of Trinity Cathedral. A kind of hierarchical structure of the assemblies, like in Sweden, can be traced since separate assemblies were also held in the different local districts of Novgorod (Pipes 1995).

The territorial organisation of Old Rus included a division into different *volosti*, which were adjoining territories to the provincial towns (Pipes 1995:35). These were ruled by the princes, and they passed from one hand to another upon the death of their rulers without any orderly system. The power of the princes of the ruling Rurikid dynasty in Rus was as weak as the kingship in Sweden, partly because the consensus of the (free) population at the institutionalised *veche*-assemblies held a significant power. The heads of families in the entire region of a *veche* were entitled to participate in its sessions (‘veche’ in Encyclopaedia Britannica 2006).

What is apparent is that the organised maritime society of Iron Age Sweden must have been renowned and well known among the peoples encountered on the eastern journeys. The Varjags/Rus were associated with law and order, a standing and
reputation commemorated in the Primary Chronicle for being the main reason that the Varjags were brought back.

In my view, one of the concrete results of the influence of the Swedes on the society of Rus was the law code which is preserved in the oldest version of Russkaja Pravda, and which is almost identical to the roþær rætter of the Uppland law. This was the ‘law and order’ described in the Chronicle, and the main institution for executing this order was the vechе, modelled on the thing-institution of central Sweden. This was, like in Sweden, performed within a hierarchical territorial base, and based on similar social structural relations between the different strata of society.

Also in other social contexts within the Russian society, the Scandinavian influence may be traced. Like in Scandinavia, there was a retinue for the Rus princes, called družcina, a term based on the IE stem *družg, which in OSl means ‘friend’ and which is related to ON draugr ‘warrior’ (Green 2000:111). The družcina was an association of men serving someone of high standing (Duczko 2004:246).

10.1.4. The merchant vessel and the Bjærkøa rætter

In early medieval Norway and Sweden there was a special law codex in action on the merchant ship, called the Bjærkøa rætter (Hjärne 1979:23 ff), and it was also valid on fishing boats at the fishing sites and in seasonal fishing camps, according to specifications in the better-preserved documents about the Bjærkøa rætter from Norway (Storm in NGL, 4:XII, Bj II 42). The oldest and most informative fragments derive from the time before Magnus Lagabòte’s town law, and in a fragment that has been established as belonging to Nidaros Bjærkøa rætter (Storm 1878:XII) we are informed that:

About who shall settle juridical cases.

All the juridical matters, that occur on a ship, then the helmsman owns half the fines and the crew half, if less than a manslaughter fine for a free man, then the king owns that, where they unload the whole cargo and where there is a Christian king. Because all the court cases the redu menn has to judge at the end of the gangplank and have the red shield up, as long as they are landed. But if they could not reach land, then their ship court is at the mast, like otherwise at the end of the gangplank. None of the court decisions shall not be altered. But all the cases that have not been settled when they enter into town area, in those the king owns the fine. That is called town area and is under town law. (NGL 4:73: Bj IV 173, my transl. after Hjärne 1979:24)

Here the ship court was valid on the ship and on land at the gangplank, with the raised red shield as a symbol of the ruling jurisdiction. This was not altered until the ship entered a town, an area under the town law. That other smaller harbours and marketplaces also were included under the Bjærkøa rætter is clear from another version in a fragment, which is also usually seen as connected with Nidaros. Here the jurisdiction area of the Bjærkøa rætter is defined:

Here is stipulated how Bjærkøa rætter shall be valid on trade journeys.

Bjærkøa rætter is valid at every fishing camp and at herring catch sites and on trade journeys. If men fight on trade journeys and the case is settled there, then the helmsman owns the right that the king takes in a merchant town, and the crew the right that the townsmen take in a merchant town. But if they come to a town under Bjærkøa rætter without the fines having been settled, then the king and townsmen take that right, as if it had been done within the town, if they had not had the case settled before.

This version is very interesting, since it tells us that the law code was not only valid on the ship, but also in the archipelago, the area with the fishing camps and herring catch sites. This area in central Sweden, at least along the coast of Uppland and Gästrikland, was called Roden. In the Uppland law of AD 1296 it is stated that this area should also be subordinated to the Uppland law. Roden was also the area through which the coastal sailing route between different towns and marketplaces passed. In this light it seems natural that, like in the Norwegian case, the area was either under Bjærkøa rætter , or, as discussed in the letter, it comprised an area with a separate law. That this area surrounding the sailing route might have had a special legislation is also evident from other sources concerning the jurisdiction of the warship.

In Sweden the Bjærkøa rætter was written down later, ca 1300. The only completely preserved manuscript was intending Lódöse (Royal Library, Stockholm). Here it is said that it is valid until konungshann is reached, when instead the jurisdiction of the town comes into action (Bj 13 p.2). Towns with their own town law each seem to have had a special royal harbour called konungshann ‘king’s harbour’. Harbours called konungshann thus constituted the interface between the jurisdiction of the merchant ship and marketplace of the Bjærkøa rætter on the one hand and the town’s law on the other. As Bjærkøa rætter (13:2) expresses it: ‘A crime that is not settled upon arrival at konung-
shamm shall be punished according to the town’s law’ (my transl.).

In Magnus Eriksson’s town law, which applied to all towns, this ship jurisdiction of the merchant vessel and in the archipelago was absorbed into the town law’s jurisdiction area:

If juridical matters occur for men in other countries or other towns abroad, and if these are not settled when arriving at Aspasund, then they pay the fines according to the town law (Stockholm). § 1. All the crimes committed between Aspasund and Stockholm, by foreigners or inhabitants, except those who live in the archipelago, are under the same law. If a man, peasant or other commits crimes between the town (Stockholm) and the king’s harbour, or between Stockholm and Korshamna, or in Åsö which belongs to Stockholm, all of these are under the same law. (MESL RB XII, my transl. after Hjärne 1979:28)

When a merchant ship entered a town or a marketplace in order to trade, a special agreement of fídr ‘peace’, Lat. pace, was made for a specific time period, also symbolised by the shield on the stem. The episode in Egils saga about the journey of Egil and Torolf to Curonia tells how, after getting a deal of half a month’s fídr, they docked in order to trade. When this peace period ended, they stopped trading and started to raid the country. In the saga of St. Olof, the traveller Tore Hund from Bjarkó went with his retinue to Bjarmaland, and docked at a marketplace. They carried out trade under fídr, but later cancelled the peace and instead sailed upstream the Dvina to raid and plunder.

This peace was also seen as ‘king’s peace’, symbolising that the merchants were under the king’s protection. A similar trade peace proclaimed under the king’s protection is known from many places in Europe (see Lehmann Der Königsfriede der Nordgermanen).

10.1.5. Birka, town jurisdiction and the ship symbol

The special ‘town law’ established by Magnus Eriksson was not the first. Already in Vita Anskarii we find that the town Birka had a thing separate from the surrounding countryside, and that decisions had to be taken in both places in order to be valid in the different jurisdiction areas, which clearly must have had territorially defined borders at this time in order to be functional in this matter. The border between the area under town law and the area under the law of the land was symbolically marked in several ways. One was the town rampart; another was probably the use of the powerful ship symbol by burying boats in the rampart.

The buried boats in Birka

The buried, unburnt boats in Birka were all found in the town ramparts (Bj. 824B, Bj. 879 and Bj. 1137). The buried boats Bj. 879 and Bj. 1137 had no traces of a deceased or grave-goods, but in Bj. 824B a female skull, an iron hoop from a wooden bucket and a pot may indicate the presence of a boat burial (Gräslund 1980:54). A possibility Gräslund discusses is that all the boats could have been part of the town’s rampart-barricade, and that the skull and objects came from an earlier grave at this site (1980:56; see also Arbman 1943:297 f.). What speaks against this interpretation, however, is that the boats found in the rampart are almost complete. Reused boat parts would occur in no special order if utilised in the construction of the rampart. The important question is thus why complete boats had been buried in the town rampart. The main function of many ramparts was not to protect the area behind them since they were often too low or too small for that, but instead to manifest and make visible a border. One example of this is the so-called Götavirke, the modern name for the Iron Age rampart in Östergötland that might have symbolised the border between the provinces situated Óstanstång and Västanstång, since these differed slightly in jurisdiction according to the provincial law of Östergötland. Another border was between areas of different sacredness, as seen, for example, in some circular ramparts or enclosures from the Bronze Age that were earlier interpreted as hillforts, but that recently have been reinterpreted as symbolising the border between the enclosed sacred space devoted to rituals and ritual activities, and the pagan space outside (Olausson).

It is also possible that the rampart at Birka symbolised a border that had to be passed in order to participate in the trade within the town, i.e., a fee had to be paid when crossing it.

To return to the buried boats: their presence could symbolise the border between the jurisdiction area of the town and the jurisdiction area of the land. The use of the ship symbol could also work as a divine protection for the peace within the enclosure of the rampart, a permanent peace in the same way as the raised shield on the trade ship marked a temporary peace during the visit to a marketplace or a town that was not under town law.

10.1.6. The ship-setting at Valsgärde and related monuments

At the Valsgärde cemetery, as earlier mentioned, poles placed in post-holes in the shape of a ship were discovered during investigations (fig. 246-247), called Valsgärde A.
Schönbäck has (1957) discussed this ‘ship-shaped pole setting’ and suggested that this arrangement, dated to c. AD 500, has been used for either cultic or juridical purposes, or both. It is situated on top of the same ridge where boat burials nos. 5, 6 and 7 were found, as well as the mound on the highest part of the ridge, no. 57. From here the ridge stretches out in a point as a narrow plateau towards the east, with steep slopes. The eastern part of the plateau is closed off by a row of evenly sized stones 15-20 cm in length, with their long sides placed beside each other. East of this symbolic border (?) is the ship-shaped arrangement (figs. 246), constructed of 14 post-holes (Schönbäck 1957:136). There was also a larger post-hole inside the others, just east of the midsection. The fact that a larger post-hole lay in the place of the east stem, indicates, at least if the rules of shipbuilding are followed, that the ship symbol was arranged so that the higher stem of the ship pointed towards the east. West of the ‘mast-pole post-hole’ was a hearth, 0.7 m in diameter. This feature was covered by later graves. The dates of the graves indicate that the ‘pole setting’ may be from the Migration Period.

Schönbäck (1957:144) refers to several occasions when people assembled for a thing at a cemetery. The cemetery with the two ship-settings beside Anund’s mound in Badelunda Parish, Västmanland, was still in the Middle Ages used as a thing place. Sigurd Curman (1938) interpreted these ship-shaped stone-settings as ‘the central area of the thing place.’ The 25-metre-long, ship-shaped stone-setting at Åsa on Sela Island in Lake Mälaren was called Domaresätet ‘the judge’s seat’. When the 55-metres-long, ship-shaped stone-setting at Runsa, Ed Parish, Uppland was investigated, no finds were made, which indicates that the monument was a place for an assembly (Schönbäck 1957:145). An important support for Schönbäck’s hypothesis is also the information in the Manhelgdbalke of the provincial law of Uppland:

He shall bid on the cemetery, on three hundares’ thing and on two folklansd’s thing (UL M, my transl.)

Schönbäck has also drawn attention to medieval documents, which confirm that cemeteries really were used for juridical acts:

Stadhfestum wi that forscre(f)na testament og gawo ok antwardhum wi that forscrefna godz (opp) her oppa grawabacka. (NS I:435, 1405)

Schönbäck means that there may have been interplay between cult and juridical acts at the Valsgärde cemetery. To this shall be added that the ship symbol may have played an important role in connection with such activities, once again underlining the power of the ship symbol that seems to have existed in the Late Iron Age within jurisdiction.

10.1.7. The leiðangr organisation and the thing

The ship symbol’s connection to jurisdiction also made it a powerful symbol in the thing-institution. As such, the same hierarchical structure was used both for the naval obligations of the leiðangr and for the judicial organisation with the thing-institution.

Fa bot takum j. haender. Han skal biuþae a grafvæ bakkæ a hunderis þingum, þhrim. Ok folklanz tingum twem.

…þa kunungær biþær leþung utt. þa aghu allir friþ havæ. þer þy hunderi ælir skiplagi boæ, sum leþunger ær utt gangin aff. þadi maþok mannum. Ok hin annur skiplagh och hunderi sum mataer ær utt aff gangin ok ær mien þer lagþingis
swa friðae sum mellum, ok sökis æptir lanzlaghum.  
(UL R 14.1).

When the king calls out the leiðangr, then all will have peace who live in those hundare and skepps slag where the leiðangr has gone out in both food and men. And in the other skepps slag and hundare where (only) food has gone out and not men, there the law thing shall be held and cases tried after the land’s law. (My transl.)

This is a very important part of the law. Frid ‘peace’ was called upon in those hundare where the leiðangr ships had gone out; in other parts of the law this is connected with the rodarätt jurisdiction, which was the heavier law with increased fines valid on the leiðangr journeys. In the other districts without naval participation, the ordinary jurisdiction after the land’s law was valid.

The territorial organisation discussed in the previous chapter was related to the leiðangr, the military levy, and was also the main structural framework used for the juridical organisation. The hundare, as it appears in many parts of the provincial laws of central Sweden, is a territory with defined borders whose inhabitants had the duty, in addition to the naval and other obligations, to gather for a joint thing-assembly under a länsman ‘county bailiff’.

**Hundare and thing**

The hundare was also closely connected with the thing-institution. The hundare was the area of the provincial thing, and sometimes the thing-place gave name to the hundare. One example is the thing-place at Vallentuna Church in what was earlier Valenda hundare, where the inscription on the rune stone U212 could also be interpreted as that Jarlabanke þingstað þenna gærði ‘made this assembly-place’.

The thing-institution followed the same hierarchy as the leiðangr organisation in central Sweden, based on a structure that seems to have originated before the unification of Sweden, since it differs from the structure in south Sweden. On top of the hierarchy was according to the Uppland law Allra Svía thing, also called disting, which was held by Missa Candelae (Lindgren 1980:90). This was also the occasion when leiðangr should be proclaimed. This ‘thing of all Svear’ was only valid for the area north of Lake Mälaren, while Södermanland had its own thing, the sentially in Strängnäs, and Götaland aldra Göta thing in Västergötland. This may support Hjärne’s hypothesis that Svitihiod, the land of the Svear, originally comprised this small area north of Lake Mälaren; he argues that Allra Svía thing was the common ting for Attundaland, Tiundaland, Fjädrundaland and Västmanland, which earliest should have been held in connection with the disablot (Hjärne 1952). According to Snorri Allra Svía thing was originally in the month göi in Old Uppsala, and Adam of Bremen places it at the Vernal Equinox. The time was earlier decided based on the full moon in the ‘month’ named after this thing, distingstunglet (Lindgren 1980:30). Because Christianity demanded that one of the four annual fasting periods, Lent, should be held 40 days before Easter, this thing was moved to Missa Candelae in the beginning of February (Lindgren 1980:30).

The regional level of the thing was represented by the thing of the land and folkland.

The lowest level in the thing-hierarchy of central Sweden, was the ting of the hundare, which in OSw was called hundaris þing. According to the law, one thing place should be i. hunderi hwariu ‘in every hundare’ (UL R 1:pr).

Since the attunger and hamna had gone out of use in the language already in the 14th century, we don’t know whether these earlier had a juridical instance, too. There is, however, a possibility that the sockenstämma ‘the assembly of the parish’, and the bystämma ‘the assembly of the village’, corresponded to the level of the attunger and hamna in some kind of decision-making procedure. The collective duties of the latter required some kind of collective institution to make decisions, regulate duties and settle disputes.

The skepps lag in Roden were mostly also territories for things, but here also separate tingslag ‘thing areas’ had developed.

**Export of law and order**

In contrast to the popular notion of the society of the ‘barbarian Vikings’, the concepts and organisation of law and order were an integrated part of the Scandinavian social, administrative and judicial structure. They not only left imprints in Russia, but also in England, in areas where the traces of Scandinavian influence are most obvious. Rune Palm writes that ‘In the English language the Nordic influence is greatest concerning words related to warfare, shipbuilding, judicial matters, and administration’ (Palm 2004:75). He adds: ‘A strong influence in the field of law is visible in the name Thingwall – compare with Icelandic þingvelli, the name of the place where the althing ‘the thing of all Icelanders’ was held – but also in words in like law, bylaw, outlaw and ransack from the Nordic lag ‘law’, bajarglag ‘village law’, útlagi ‘outlawed’, and rannsak or rannsaka ‘ransacking’, ‘ransack’.” (Palm 2004:75, my transl.). Another influence that Palm has seen as Scandinavian is the word fellow of
félagi ‘companion’, which has the meaning ‘the one you own (gods) together with’ (Palm 2004:75, my transl.).

Important changes in the 13th century
There are small but important differences between the thing-assembly as described by Snorri in the beginning of the 13th century, and the description of the thing in the Uppland law. During the national ‘thing of all Svear’ we see in Snorri’s description a participation of all people, which created an enormous political force since they were also allowed to arrive bearing arms, to put force behind their opinion. In every instance in Heimskringla both the regional and the local thing are described as large assemblies of common people, which the king summoned during his journeys around the country. In the Uppland law the participation is representative instead, with one man from each hamna and one from each attunger for the hundare thing, and there is no longer a large number of people nor are there armed peasants, a feature that has just been prohibited.

10.2. Ships in social communication

10.2.1. The glory of the ships as described in skaldic poetry
In the poetry devoted to kings and chieftains, the ships have a special position and seem to be one of the main ways for the owner to exhibit his power; the ship was the main object that could display his status and position in society. This is, for instance, visible in the description of how Harald arrives at Constantinople:

Before the cold sea-curling blast
The cutter from the land flew past,
Her black yards swinging to and fro,
Her shield-hung gunwale dipping low.
The king saw glancing o’er the bow
Constantinople’s metal glow
From tower and roof, and painted sails
Gliding past towns and wooded vales.
(Bolverk; Haralds saga Sigurðarsonar 1:3)

Here it is obvious, just as it is in iconography and archaeological material, that the ships had a special status and a central position in society, and by means of ships social relations were expressed as well as the social order, wealth and descent. The examples could be multiplied; here only a few typical cases are presented. However, it should once again be stressed that the ship as a key symbol is a feature that belongs to the Late Iron Age society. In the Middle Ages, the ship is transformed from a symbol of glory into a work tool of the poor. The seafaring man is no longer an ideal, and instead the heavily armed, mounted knight appears in poetry, depictions and ideology.

10.2.2. Social hierarchy displayed on the ships

The veðrviði as a symbol of naval leadership?
The bronze weather vanes found in Sweden have mainly been interpreted as items used on the ship to show the wind direction, as is also evident from their name (Wigren 1971; Satin 1921; Bugge 1931; Blindheim 1983 a,b). As Ekberg (2002:12) has pointed out, several factors speak against this interpretation. The angle of 110° on some vanes shows that they could not fully rotate. The fact that many also are pierced means that they cannot have been effective in catching the wind and showing the direction. Engström and Nykänen (1996:139ff) have suggested that they could also have been used for navigation. However, as was mentioned, Arne Emil Christensen (1998) has shown that they were not suitable for this purpose.

To understand the meaning and function of these so-called weather vanes it is necessary to look at the context of the finds and to interpret their symbolic function. Nine have been found in Scandinavia, with dates from the 11th to the 14th century. Most of them were found in connection with churches, but nothing indicates that they had been used on church towers. Some had been cut to suit this as a secondary purpose. According to the medieval laws, the equipment of the naval ship of each district should be kept in the church; thus, the churches were used as storage places in the leiðangr organisation (Bugge 1927:34; Blindheim 1983a: 107). Why were some, but not all, of the ships in the navy equipped with these magnificent weather vanes of bronze? The answer can be obtained by a closer study of the Bergen engraving and of some descriptions in the Old Norse material.

The wooden piece from Bergen is dated to the 13th century and shows a fleet of 48 ships as well as an inscription in runes saying, ‘here comes the brave of the sea’ (Herteig 1962). Only seven of the ships have stem decorations; two are animal heads, one is rectangular, and the remaining three are weather vanes of a similar shape as those found in the archaeological material (fig. 248).
Figure 247. The wooden piece from Bergen with an engraving of a fleet. After Herteig 1962.
The weather vanes in the Bergen engraving have some metal (?) pieces attached on the outer sides, and similar pieces have probably been inserted into the holes of the recovered vanes. All three are differently made. One has three diagonal marks and three pendants; another has a diagonal cross with a dot in each triangular field and five pendants; the third has two or three vertical lines and possibly the traces of a fourth to the left of the third line. In the ship with the weather vane with a diagonal cross, there is also a pole with a flag of some kind, with textile bands fluttering in the wind in the opposite direction the fleet is moving, indicating that the ships are approaching.

The most important information concerns which ships have weather vanes. Two of the three ships have the highest stems of all; on all three, these are vertical and extend above the other ships. The ship with the vane with a diagonal cross is depicted with five visible staves, while the other ships have three to four staves. This most probably indicates that this was the largest ship with most staves. There is a correlation between the number of staves and the size and height of the ship. As they are depicted, perhaps also adjusted to the shape of the wooden piece, the perspective clearly shows that the highest ships with the weather vanes are the ones leading the fleet.

On the Bergen engraving, weather vanes are only attached to the leading ships of the naval expedition. One ship surpasses the others, namely the one with the diagonal cross, where also the pole with the merki ‘mark’ (‘flag’, ‘banner’), is placed. This is probably the royal ship leading the whole expedition. That this should be both larger and more beautifully decorated than the others is evident from the Norse sagas. The other ships with vanes could represent other naval leaders ranking below the king, each heading a (regional?) division of the participating ships summoned by the leiðangr organisation. The chieftain Haarek af Tjóøü (?) who assisted the king as one of the leaders in the battle at Helgøa in 1027, is said to have sailed a snekke with a gilded veðrviti. In 1221, the king had the larger ships with the gilded veðrviti hidden in the background, behind the smaller ships, in order to give a false impression of the composition of the fleet. He also had the bigger ships with the mast left standing, so that they would appear as the slow cargo ships, byrdingar, that never had the mast felled.

It is more difficult to explain why the two ships with the animal heads on the Bergen depiction have been singled out from the others. Perhaps they relate to some famous private ships of local chieftains that participated in the expedition.

The underlined difference between the weather vanes indicates that they were not only symbols of rank. They could also have had a ‘heraldic’ function, displaying either the symbol of the regional division these ships were leading, or of the participating leading chieftains themselves.

It has been debated whether the vanes were placed at the mast top, or on the stems. Salin (1921:20) means that they were used as wind indicators and were placed at the top of the mast, while Wigren and Bugge mean that they were placed on the stems. Wigren says that there is no written evidence that they were used on the masts (Wigren 1971:31, Bugge 1931). Blindheim has observed that one group has an angle at 110°, another group an angle of 90°. In his view, the ones with an angle of 110° are older. To have a horizontal upper line, they had to be put on an oblique pole, and were thus placed at the top of a sloping mast, functioning as veðrviti. On the other hand, the ones with an angle of 90° were positioned on a straight pole and should be the ones called glað (Blindheim 1983a:103ff; 1983b:47).

One hypothesis is that the variety of stem decorations visible in illustrations like the engraving from Bergen, the Bayeux Tapestry, and the Gotlandic picture stones, reflects decorations placed on the stems to distinguish the ships from each other and to show what skeppslag they belonged to. The stem decoration could be connected with a kind of ‘heraldic’ symbol of the district, and with the name of the ship. Could this perhaps be reflected in the following words of the Upplandic law concerning the assembling of the navy:

‘Then the name of the harbour and of the “stem” shall be told, and of the helmsman and of all the rowers’ (UL KgB 10)

The harbour mentioned is the common harbour of the hundare, and the ‘stem’ is equal to the ship, because according to my hypothesis it has a head connected with the name of the individual ship and the ‘heraldic’ symbol of the skeppslag. The weather vanes could be taken down and used as the merki that is often mentioned in the written sources. That the weather vanes could have been owned by chieftains and used as signs of command in battles has been suggested by Wigren (1971:371) and also by Roosval, who sees the vanes as symbols of command and of the military organisation (Roosval 1930:371).

The king’s merki can be seen as a symbol both of the king himself and of his reign. As such, it is also pictured on coins, where the shape resembles the weather vanes, such as on the coins of Canute the Great, and Olof Sigtryggsson. The merki on both coins seems to be a ‘weather vane’, taken from a ship and used as a merki mounted on a pole. Both have the triangular shape and the extension on the lower end that is also visible on the weather vanes mounted on the stems, depicted on the wooden piece from Bergen. The coin of Canute shows the image of the king with the vane mounted on a pole in front of him. The coin of Olof Sigtryggsson has on one side the depiction of a vase mounted on some kind of pole in the central field of the coin. Törnquist (1993:27) has discussed these images, and interprets them as a military and a ruler’s sign that symbolised kingship and royal power.
The banner of the land

The merki 'banner' was a main symbol of the fighting unit, and to hold it was an honour; to take it from the enemy was a symbol of winning the battle. This kind of military sign, merkisstangir, 'poles with banner' is also known from the skaldic corpus and is mentioned for instance in Vinaheiðarvisur 3 by Egil Skalla-grímsson (AD 910–990). Men who fought 'framarr merkjum' 'before the mark' are referred to in an untitled poem by Goþþormr sindri, active in the 10th century.

The lank lans: leiðangr or a merki?

The expression lank lans occurs on the runic inscription GS 13. This is interpreted by Holmbäck and Wessén as leiðangr, 'the land's levy':

"× brusi lit rita s... [(a)br]–R (i)h(i)(l) brur sin : in h-n varp tauþ a taifatalonti × bo brusi farþi lank lans ‘ abtíR [br]ér sin h(o)l[n] fur (m)íR froukíR kuþ hialbi honi] [sali] [uk] [kuþ(s)] (m)í]R ‘ suain ‘ uk osmunt ] ‘ RaíR markaþu ]‘"


"Brusi let retta [stein þenna] æftiR Ægil, broður sinn. En h[a]m varð dauðr á Tafeistalandi, þá Brúsi førði læiðang(?) lands æftiR broður sinn. Hann fór með FrøygæiRi. Guð hjalpi hans salu ok Guðs móðir. Svæinn ok Asmundr þær mörkuðu."

Transl. after Runic database:

‘Brúsi had this stone erected in memory of Egil, his brother. And he died in Tafeistaland, when Brúsi brought (= led?) the land's levy(?) (= army) in memory of , his brother. He travelled with Freygeirr. May God and God's mother help his soul. Svæinn and Asmundr they marked.’

This interpretation of lank lans as ‘the land's levy’ has recently been questioned by linguists such as Henrik Williams (2006), who instead interprets this expression as ‘long lance’. Long lances carrying the merki ‘banner’ are mentioned in Old Norse sources and depicted in various contexts (see chapter 10.2.2). Two persons with long lances with banners can for instance be seen in a depiction from Preslaw, dated by Hensel (1965:341) to c. AD 1000 (fig. 252). It may be that the merki is mentioned in GS 13. In my view, a ‘long lance’ with a merki can probably also be seen as a territorial sign for a land, in the case of Gs 13 for the land Gästrikland.

10.2.3. The most valuable possession on the journey

The prestigious ships of the aristocrats, and the splendid warships, were the most precious valuables on the journeys. As such they were not left unguarded, and sometimes when overnighting they were not left at all. Of course the ships were not left in the hands of foreigners or exchanged for other boats. Much work was invested in these types of ships: in the finish of the planking, in the decoration, and in the choice of material. Although the merchant journeys in the 11th century were done with boats built by the local population and purchased by the Rus, the expeditions for exploration and warfare continued to be made in the ships brought from the North, as is clear from e.g. Ingvar’s saga

The evidence in the sagas is quite uniform: in most cases the ships were treated as the most valuable possession on the journey, and a status object to display for foreigners. The power and glory of the owner was probably visible in the ship’s colours, ornamentation and sail.

The care-taking of Ingvar’s ships according to the saga

In the Saga of Ingvar the Far-Traveller, when the ships were leaving Russia it is told that ‘they set out onto the river with thirty ships, and Ingvar turned the prows to the east and made a rule that no one should go ashore without his leave. And if anyone did, they would lose a hand or a foot. Someone had to stay awake at night on every ship.’ The ships were well protected, wherever the expedition arrived, and were never left without a guard. When the expedition came to Citopolis (present-day Kutaisi), the care-taking of the ships for protection was the first act of hospitality that Queen Silkesvi showed to Ingvar and his men:

The inhabitants took their ships with sails and yards and all equipment, and carried them up under the town walls. (The Saga of Ingvar the Far-Traveller 5, my transl. after Larsson p. 110)
The same procedure took place when the expedition arrived at Heliopolis:

So they went with their fleet to the harbour, went ashore and took off for the town. When they looked back they saw the men from the fortress carrying their ships on their shoulders up under the fortress, where they could be repaired. *(The Saga of Ingvar the Far-Traveller, my transl. after Larsson p. 111).*

In other places where the ships had to be left at jetties by the river, guards were placed on every ship. This procedure is well known in the provincial laws of the Mälaren Basin in rules connected with the *leiðangr* organisation (see chapter 10.1.).

The decoration and treatment of the ships, as shown here, is a good indication of the value and social status of the ship, and also reveals how the Late Iron Age-Early medieval ships was used as a key symbol also in social communication. This opens up new possibilities to enlighten gender aspects by the use of the ship symbol, as will be done in next chapter.
Ships have mostly been seen as connected entirely with men, as has seafaring in our present view of the past. Concerning ship graffiti, Christensen compares it to drawings of cars and airplanes by boys, and he interprets the depictions as ‘the work of men’ and means that it is ‘depicting a male field of interest’ (1995:184). Following this idea, he continues with the related conclusion that, ‘One important task for future research is to identify female graffiti, if they exist, and to explain why, if they cannot be found. Probably women were simply too busy’ (1995 184). Nothing in the depictions themselves says that they should be purely male expressions. Christensen bases his hypothesis on the idea that men (not women?) were interested in ships, they saw ships as important tools for trade and warfare, and they may well have accepted the ships of kings and nobles as symbols of power and glory, and they carved them as expressions of preoccupation and strong interest, not as symbols. (1995:184)

The problem, here, is that nothing says that women were not interested in ships or saw them as important tools. There is no evidence that the graffiti was not made by women as well. There are many similar, preconceived notions concerning women in the boat burials, and concerning the occurrence of women on the voyages. In fact, women seldom occur in the discussion of the abroad journeys, and in the cognitive conception of the archaeologists they are usually placed at home. Since women constitute a large share of the society, the gender aspects are of importance in the discussion of Late Iron Age maritime society, and therefore some questions related to this will be discussed in the following.

11.1. Gender aspects on the interpretation of the boats in burials

The funerary custom of boat graves has often been seen as synonymous with burials of males with weapons in boats, a generalisation made by among others Schönbeck: ‘...in the Upplandic boat graves deceased are buried with rich weaponry’, and the visible differences could be explained in that, ‘the people of the boat graves belonged to a societal stratum of warriors’. ‘People’ here are men, and only the male burials in boats are considered. The general idea as presented in both scholarly and popular works is mainly founded on the boat-burial cemeteries of Vendel and Valsgärde, which differ from the other boat-burial cemeteries in Uppland like Tuna in Alsike, Prästgården in Gamla Uppsala, Årby, etc. in that they are exclusively male and the equipment in the graves has a military character. It is very obvious that several other types of boat graves are missing, such as the female graves and those of children. The gender aspects of ships and seafaring are important, since we often have based our image of the Late Iron Age situation on preconceived ideas that often are rooted in our own society.

Several literary sources mention boat burials. These occur in connection with gods and heroes, kings and chieftains, most of which are male. However, in one source (Laxdœla saga ch. 7) a woman is buried in a boat.

Else Nordahl, who, like Schönbeck, is one of the foremost authorities on the central Swedish boat burials, writes about the female boat-burial in Prästgården, Gamla Uppsala:

What is notable is that a woman has been buried in a boat, which never occurs. In the big boat-burial cemeteries of Vendel and Valsgärde, the latter completely excavated, there are only men in boats. In Vendel no female burials have been found (Stolpe & Arne 1912), and in Valsgärde the women have been burned. In the boat-burial cemetery at Tuna in Alsike, which was greatly damaged before the excavations, the circumstances are unclear (Arne 1934). Crema
tion burials have not been investigated. Instead in one case a woman was buried in a boat, where earlier a man had been buried, while in another case the woman had got a boat of her own. This was, however, of a much simpler construction than the other, which was clinker-built; it consisted of a logboat with a nailed upper strake. (Nordahl 1984:114, my transl.)

Even the most experienced archaeologists are influenced by the conventional way of viewing the boat burials. Today, the exceptions to ‘the rule’ are many, and maybe it is time to reconsider the interpretations.

11.1.1 Prosperity, power, priesthood, symbolism or descent?

Many scholars raised their eyebrows when women were found in boat burials. According to the prevailing myth of the powerful Viking, who, as we have seen earlier, is associated with a ship, we ought to find a well-armed male in the vessel. When men are found in the graves, everything seems to be in order;
they are men of wealth and power, perhaps naval chieftains or in control of trade. They could also be seen as representing persons descended from the royal Ynglinga dynasty, whose mythological ancestor is thought to be associated with a ship symbol. But when women were found in wealthy boat burials, the picture was broken. In fact, the preconceived image of the typical boat burial was so strong that when female burials turned up in the late 19th century at sites like Tuna in Alsike (Arne 1934), they received only limited attention and were soon forgotten, at least in the scientific discussion, and the previous picture of the male military chieftain in his boat burial was returned to.

Sometimes the issue of female boat graves is not dealt with at all. In other cases a woman in a boat grave can be interpreted as a Freya priestess, but the explanations used in the interpretation of the male boat-burials are carefully avoided. A common view is that a woman could not have had any power of her own, and that the prestigious artefacts probably reflect the power and wealth of her husband. These aspects are important if we want to understand the role of the boat in the social symbolism of Iron Age people and the ideology behind why it was used in the burial ritual. Some statements concerning the central Swedish boat graves will be discussed in relation to an actual analysis of these aspects at the boat-grave cemeteries.

Michael Müller-Wille, who has made the most extensive study of the boat-burial custom, believes that the literary sources, despite the exceptions, support the assumption that the boat burials were mainly reserved for the male members of the elite (1970). But if this is the case, how do we explain the many occurrences of female boat-burials in the archaeologically material? If we begin with Uppland, which according to Schönbläck had warriors in the boat burials, and consider the boat-burial cemetery of Tuna in Alsike Parish (Arne 1934) situated in the heart of the distribution area of the boat graves, we find at least four female boat-burials out of a total of 14 at the cemetery. Another female boat-burial is found in Årby, Rasbokil Parish, Uppland (Arbman 1940), and there is at least one such in the burials at Prästgården, Gamla Uppsala Parish (Nordahl 2001), situated close to the sacred grove beside the big royal mounds at this former royal seat. Thus it is evident already from a glance at the central area of Sövghid that also the female members of the elite were buried in boats, and not just as rare exceptions.

If we turn to the neighbouring province of Västmanland, close to the border of Uppland there are two rich female boat-burials in Sala (Almgren 1907) as well as eight more famous boat burials at Tuna in Badelunda Parish (Nylén & Schönbläck 1994a, 1994b). Close to the western end of Lake Mälaren, yet another female boat-burial (the only one excavated at the cemetery) was documented in Norsa outside Köping town. Södermanland does not lack female boat-burials, either. In the two known burials, one at Fittja in Botkyrka (Weiler 1974) and one at Turinge (Tesch, forthcoming), at least the latter representing a rich burial from the 10th century is clearly a female burial.

The question of the relation between gender, boat burials and power is complex. That the men are not found in boat burials in Västmanland does not necessarily mean that the women had more power than the men in this area. Here there are male elite burials as well, but these men are buried in chamber graves, in sledges/wagons (Sala 4), or under big mounds. In the same way we must not forget that the male boat-burials in Valsgärde and Vendel need not necessarily be interpreted in terms of male power and status, since very rich high-status burials also occur among the female cremation graves at Valsgärde, in one instance also together with a burned boat.

11.1.2. Women, power and boats at Tuna in Badelunda Parish

The cemetery at Tuna in Badelunda consists of at least 91 graves from AD 300–1050, of which eight are inhumation boat burials, 51 are cremations, and 27 are not possible to determine as to type. The boat graves dominated by rich, female burials have received some attention, but they belong primarily to the end of the cemetery’s period of use, in the late Vendel and Viking periods. Are the rich burials an expression of prosperity, high status and/or actual power? To answer this question it is necessary to study the boat graves in relation to the other ‘rich’ burials with artefacts that signal status. How have the representatives of the upper strata of society been buried before boat burials came into use? Are there any changes concerning the status of females buried over time? Are there, from the same time period as the boat burials, high-status burials of other kinds? If so, what separates the deceased in those graves from the women of the boat burials? The high-status graves of all kinds at the cemetery are analysed for the entire period in which the cemetery was used: Of the 91 excavated burials at the cemetery, 22 are the remains of richer burials, and by ‘rich’ I mean a burial with more than seven categories of artefacts. The number of high-status burials over a period of 750 years is approximately 1 per 37.5 years, an average of 1 per generation. Both women and men are found in these graves, but the women dominate clearly: 13 women in contrast to only 5 men. In addition, the two child burials are female.

In the beginning, during the Roman Iron Age and Migration Period, two of the three gender-determined burials are female burials; the third is the only pre-Viking Age male burial among these ‘elite burials’. The Vendel Period has only female burials among the (archaeologically) determined rich burials. In the Early Iron Age (9th century) there are only women. In the 10th century women dominate and are buried in
five out of seven ‘rich’ burials, and the situation is the same at the end of the Viking Age (11th century) when we find women in three of five high-status burials.

At Tuna in Badelunda, the burial custom associated with the high-status graves has not always been a boat burial. In the Roman Iron Age the high-status graves are chamber graves; whereas in the Migration Period they are cremation burials, and the same is true in the Vendel Period with the exception of the first boat burial at the site, 46 B. In the 9th century, boat burials begin to dominate among the high-status burials: both of the elite burials are boat burials, 35 and 75. In the 10th century the boat burial is found in three of seven rich graves – 23 B, 79, and 48 – while the other rich burials comprise three chamber graves and one cremation burial. In the 11th century, cremation burials are more common in this context and are found in three of the rich graves, as opposed to only two burials in boats, nos. 84 and 76.

The boat burials at Tuna in Badelunda belong to the period AD 600–1050, but all except one have a Viking Age date. During the cemetery’s long period of use, a religious or political change occurred between AD 550 and 600. There are seven, damaged burials of which six (17, 19, 27, 69, 70 and 77) belong to AD 300–550, the period before the establishment of the first boat burials. The same phenomenon occurs in other places in the Lake Mälaren area, for example at Gamla Uppsala where it has been interpreted as such that a new ruling dynasty had established themselves in the area, without respect for the earlier burials.

In Badelunda the political changes when the old burials were partly destroyed and the filling and building material were taken to the later graves, can perhaps be related to the arrival of the dynasty that in Tuna is represented by the boat burials, in which it seems that older leading women have been buried. The first such grave, no. 46 B, is just roughly dated to the Vendel Period, while the others seem to be evenly spaced during the Viking Age: grave 35 is from c. AD 800; no. 75 from c. AD 850; graves 23 B and 79 from c. AD 900–950; grave 48 from AD 950–1000; grave 84 from AD 1000–1025; and grave 76 from AD 1025–1050. These dates also support the idea of one boat burial per generation.

The female attributes of power attested in the grave-goods, dress and ornaments at the cemetery of Tuna in Badelunda, and which are also evident at other places in the western part of the Mälaren Basin, seem to originate at a very early stage. In Tuna, already from the Early Iron Age the wealthiest graves are female (Schönstäck 1994).

Is it possible that in Badelunda one female leader, or one member of a ruling dynasty, in each generation was buried at the cemetery, similar to Valsgärde where probably one male member of the local elite family was buried in each generation? Were there female leaders at all in Västmanland? Although of a much earlier date, since it is long before the first of the rich, female burials in Badelunda, some information on the general region given by the Roman author Tacitus may nevertheless be of interest:

Suionibus Sitonum gentes continuantur. Cetera similis uno differunt, quod feminam dominat; in tantum non modo a liberate sed etiam a servitute degenerant. (Germania ch. 45)

Upon the Suiones, border the people Sitones; and, agreeing with them in all other things, differ from them in one, that here the sovereignty is exercised by a woman. So notoriously do they degenerate not only from a state of liberty, but even below a state of bondage. (Germania ch. 45)

The archaeological material seems to support Tacitus’ statement about the presence of female leaders in the region, with power of their own, and it does not seem improbable that the neighbouring people of the Svear, the Sitones, could be localised to Västmanland. The area of the Svear, Svitiod, is seen by most scholars as having originated in the folkland area of Uppland, before an expansion took place in the Late Iron Age; and from Sagán at Sala and westwards the prominent position of women is obvious, though it is doubtful whether this gender structure could have lasted for such a long period, i.e., a millennium. It is, however, not contradicted by the material, and even archaeologists need to have an open mind to see structures that stand in contrast to our preconceived expectations.

Interesting information on the source of the ideological influences reflected in the female-dominated burials of Västmanland can be gleaned from a study of the building technique in the better-preserved boat grave 75 at Tuna in Badelunda. In this boat the parts are sewn together in a technique later known from the Sámi area (see chapter 4). The social structure of the neighbouring hunting and fishing Sámi population in the northwest is here of interest, since it might have inspired the population of Västmanland. Among this people in the Early Iron Age equality seems to exist, according to Tacitus’ description of them. They are here called by their original name Fenni:

The Fenni are astoundingly savage and disgustingly poor; they have no weapons, no horses, no homes; herbs for food, hides for clothing, the ground for a bed; their only hope is in arrows, which in the absence of iron they tip with bone. The same hunt feeds men and women alike, for the latter are with them everywhere, and seek their share of the kill. (Germania 46.3)

Their way of life has not altered much during 1500 years, since we find the Sámi presented in a similar way in the detailed descriptions by Olaus Magnus, where he also provides an illustration of the collective
hunts performed by men and women together, a picture of ‘the hunter’ that we are not used to.

11.1.3. Aspects on gender, ships, and the use of space in the ship based on the boat burials at Tuna in Alsike

The boat-burial cemetery at Tuna in Alsike Parish is the one in Uppland that has received least attention, partly because this cemetery contradicts our preconceived image of a boat burial. Here some of the earlier statements will be examined, since the cemetery offers very good opportunities to compare male and female boat burials at the same cemetery.

It has often been argued that the deceased male was placed in a different way than the buried female. As mentioned earlier, Schönäch discusses this:

The position of the deceased in the middle of the ship is a common feature that separated these burials from their male counterparts at the earlier known boat-burial cemeteries. Also concerning the two burials with women that have been excavated in the otherwise male-dominated boat-burial cemetery at Tuna in Alsike, the deceased had been placed amidships in the burials in the same way as in the Badelunda boats (Arne 1934, Taf. XXVI, XXX). In the male boat-burials the deceased had usually been placed in the aft part of the ship (Dyfverman 1929; Fridell 1930; Oderkrantz 1933; Arvidsson 1942, 1954, 1977), a position that is associated with the ‘captain’s’ or the helmsman’s natural place within the boat. In the women’s boats the aft is remarkably empty, which possibly could indicate that these women, despite their dominating position, did not play the role of helmsmen. No observations were made that could indicate the presence of an accompanying helmsman here, and the empty stern must therefore be interpreted as symbolically reserved for the helmsman, who in real life took care of the boat for the mistress of the household. (Schönäch 1994:151 ff my transl.)

Here, an analysis is given of how gender is defined in the boat burial on the basis of the cemetery at Tuna in Alsike.

<table>
<thead>
<tr>
<th>Boat</th>
<th>Gender</th>
<th>Position</th>
<th>Boat type</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Man a+o amidships expanded logboat + 1 strake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Man? A (spear) ?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>Man A (weapon) amidships keel + 4 strakes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIb</td>
<td>woman o+a amidships keel + 5 strakes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VII</td>
<td>man End section Keel + 2 strakes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIII</td>
<td>Boy o Approx. amidships Expanded logboat + 2 strakes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>woman Approx. amidships expanded logboat + 1-2 strakes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 45. Gender, position of deceased and boat type at the cemetery Tuna in Alsike. Based on Arne 1934.

The men in burials I and IV are placed amidships, like the boy in burial VIII. The men in burials VII and XII are on the other hand placed in one end of the ship. The woman in grave XII is placed together with the man in the end of this ship, while the women in both burials VIb and X have been placed amidships.

The position of both the men and women varies, but in the majority of both the male burials in Valsgärde and the female burials in Alsike, the deceased have been placed amidships. The conclusion must be that other factors than gender were decisive for the position of the deceased in the boat. As was pointed out in chapter 6, there is no support in the archaeological material for the conclusion that men should have been placed at the helmsman’s place, either. Despite the orientation of the ship, we find the men mostly amidships.

11.1.4. Gender and boat type in Alsike and Badelunda

Another statement that has shaped our views on the position of women in the Late Iron Age is the relation between gender and boat types. It has often been argued that, if a woman was buried in a boat as an exception, it was in a much simpler boat than those used in the male boat-burials. This will also be investigated below. An example of the previous view in this case is the conclusion by Schönäch concerning the female boat-burials in Badelunda:

In comparison to the much mightier boats with which the men were equipped in the boat-burials of Uppland, the disparate collection of floating vessels of the Tuna women seems to indicate that the boats have not had such a decisive role for their status and for their function at the farm as those of their male counterparts. (Schönäch 1994, my transl.)

To find out the real situation, it is necessary to put aside the very special burials at Vendel and Valsgärde that have always been in focus for the interpretations, and see whether the same results are achieved when studying the relations between gender and boat burials at the two other main cemeteries: Tuna in Alsike and Tuna in Badelunda. Here the results are presented in a table (48).
As seen from the table above (table 48), when Tuna in Alsike and Tuna in Badelunda are used as a source material, the picture one gets of the relation between gender and boat burials contradicts earlier statements. The mightiest boats at these cemeteries, which are clinker-built on keel with 5 strakes, are the boats in burial VI b in Alsike and no. 84 in Badelunda, and these are female burials. In contrast, several of the simple logboats, extended with only 1-2 strakes, belong to male burials, such as Tuna in Alsike I and VII. When women are buried in logboats, it is often in the more advanced and sophisticated expanded logboats, which require special skill to manufacture (see chapter 3).

The boat in the female burial Tuna in Alsike VI b is also the longest boat in the cemetery, and the woman is buried with a rich inventory. Of the other clinker-built boats in Alsike, the archaeological determination is uncertain. Of the so-called male burials, only graves IV and XII:1 contain more than one weapon, which ought to be one of the basic criteria for archaeological gender-determination as a male burial. In grave III only a spear and miniature axe were found, and in grave XI only arrowheads in combination with a spindle whorl, which is usually regarded as a female grave-gift; in grave VII and grave XIII there were no archaeologically determinable finds at all.

If we turn to other parts of Scandinavia, by far the most advanced and mightiest ship ever found in a boat burial comes from a female grave – Oseberg in Vestfold, Norway (Shetelig 1818). The proud Oseberg ship, in which a woman and her maidservant were buried in the 9th century, has wooden decorations that still lack a counterpart among boat finds. Not even the long warship Skuldelev 2 comes close to this ship in investment of labour and skill into the appearance of the ship and ornamentation.

11.1.5. Chronological and geographical differences from a gender perspective

It might seem, from an Upplandic point of view, that the Vendel Period boat-burials are dominated by male burials. This is the case in Vendel and Valsgärde, but if other Swedish burials are included in the interpretation, the situation is altered. If restricted to the Late Iron Age here, one of the earliest Swedish boat burials that is contemporaneous with the first burials in Vendel is the one investigated by Oscar Montelius in 1895 in Augerum, Blekinge. Here, in a clinker-built boat approx. 5 m long, a woman was buried with a rich inventory of jewellery. Further, the female boat-burial Tuna in Badelunda no. 46 B belongs to the Vendel Period. The excavated burial in Norsa, Västmanland is also a female burial (Lamm 1980:330).
From 7th-century Småland there are two boat burials, above which monumental mounds had been erected. In one of these, Gunnerstad at Gamleby, the boat had been burned but the keel had left an imprint in the clay in the grave. The grave-goods included a rich array of weapons, with fragments of a helmet, ringmail, glass, gaming pieces, and other things. The other boat burial is from Skrästa. It was osteologically determined as a male burial, but contained no weapons.

A rich 8th-century weapon burial is represented by the grave at Lackalånga, Scania, destroyed already in 1853, but described by the local historian Nils Gustaf Bruzelius (Stenberger 1979:618).

On Öland a very special boat burial with four individuals was excavated in Nabberör, Böda Parish (Anderbjörk 1939). Here, three men and one woman had been buried during the 8th century in a boat covered by a stone cairn.

From this short review it is clear that, already from the start, the Late Iron Age burials represented a custom that included both male and female burials.

### 11.1.6. Gender aspects on the maritime journeys

Although often absent in the general view of the voyaging Vikings, women in the Viking Age seem to have been very engaged in the journeys abroad. In a report from the Nature Publishing Group (NPG), researchers from Oxford University and from an institute in Reykjavik have analysed two different kinds of DNA among the present-day British and concluded that the Scandinavians who colonised the areas around Scotland, especially the islands of Shetland and Orkney, consisted of equal shares of men and women (Sanna Boman SVD 7/4 2005).

The Svear mostly made journeys to the East, but also here we see the traces of female participation on the journeys, in the burials of Russia as well as in historical records. Anne Stalsberg has summarised the information on the Russian boat burials:

<table>
<thead>
<tr>
<th>Locality</th>
<th>Gender</th>
<th>Date</th>
<th>Nr rivets</th>
<th>Size of mound</th>
<th>Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaplosha</td>
<td>K</td>
<td>9th-10th c. AD</td>
<td>2</td>
<td>9 m</td>
<td>N-S</td>
</tr>
<tr>
<td>Ost-Ribeschna</td>
<td>M</td>
<td>9th-10th c. AD</td>
<td>100</td>
<td>9.9 x 43 m</td>
<td></td>
</tr>
<tr>
<td>Iliński-pogost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plakun 1</td>
<td>K</td>
<td>9th-10th c. AD</td>
<td>200</td>
<td>7.5 x 5.5 m</td>
<td>SSW-NNE</td>
</tr>
<tr>
<td>Plakun 3</td>
<td>M</td>
<td>9th-10th c. AD</td>
<td>100</td>
<td>6 x 3 m</td>
<td>SW-NE</td>
</tr>
<tr>
<td>Plakun 5</td>
<td>K</td>
<td>9th-10th c. AD</td>
<td>40</td>
<td>13 m</td>
<td>-</td>
</tr>
<tr>
<td>Plakun 6</td>
<td>K</td>
<td>10th c. AD</td>
<td>1</td>
<td>8 x 5.5 m</td>
<td>SW-NE</td>
</tr>
<tr>
<td>Plakun 7</td>
<td>K</td>
<td>9th-10th c. AD</td>
<td>100</td>
<td>12 m</td>
<td>-</td>
</tr>
<tr>
<td>Plakun 8</td>
<td>K</td>
<td>9th-10th c. AD</td>
<td>2</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Plakun 11</td>
<td>M</td>
<td>9th-10th c. AD</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plakun 13</td>
<td>K</td>
<td>9th-10th c. AD</td>
<td>-</td>
<td>Ca 6 m</td>
<td></td>
</tr>
<tr>
<td>Gnezdovo Ciz 20-1885</td>
<td>K+M</td>
<td>After 906 AD</td>
<td>20</td>
<td>33 m</td>
<td></td>
</tr>
<tr>
<td>Gnezdovo Serg. 65 (7)</td>
<td>K</td>
<td>9th-10th c. AD</td>
<td>200</td>
<td>17 x 10.5 m</td>
<td>S-N</td>
</tr>
<tr>
<td>Gnezdovo Serg. 74 (16)</td>
<td>KK (M)</td>
<td>9th-10th c. AD</td>
<td>234</td>
<td>10 x 4-10 m</td>
<td>SW-N-E</td>
</tr>
<tr>
<td>Gnezdovo Serg. 86 (18)</td>
<td>K+M</td>
<td>10th c. AD</td>
<td>50</td>
<td>23.5 x 12.8 m</td>
<td>E-W</td>
</tr>
<tr>
<td>Gnezdovo Ab. 23</td>
<td>K+M</td>
<td>After 914-915 AD</td>
<td>35</td>
<td>10.7 x 7.8 m</td>
<td></td>
</tr>
<tr>
<td>Gnezdovo Ab. 24</td>
<td>M</td>
<td>9th-10th c. AD</td>
<td>200+</td>
<td>16 x 8 m</td>
<td>SW-N-E</td>
</tr>
<tr>
<td>Gnezdovo L-13</td>
<td>K+M</td>
<td></td>
<td>61</td>
<td>Diam 8 m</td>
<td></td>
</tr>
<tr>
<td>Gnezdovo L-33</td>
<td>K+M</td>
<td></td>
<td>3</td>
<td>Diam 18.3 m</td>
<td></td>
</tr>
<tr>
<td>Gnezdovo L-47</td>
<td>K+M</td>
<td></td>
<td>276</td>
<td>9 x 2 m</td>
<td>SW-N-E</td>
</tr>
<tr>
<td>Gnezdovo Ts-2 verch</td>
<td>K(M?)</td>
<td></td>
<td>7</td>
<td>11 x 9.5 m</td>
<td>E-W</td>
</tr>
<tr>
<td>Gnezdovo Ts-2 NL3</td>
<td>K+M</td>
<td>6</td>
<td>21 x 14 m</td>
<td>E-W</td>
<td></td>
</tr>
<tr>
<td>B. Timerevo -100</td>
<td>K+M</td>
<td></td>
<td>7</td>
<td>13-15 m</td>
<td></td>
</tr>
<tr>
<td>B. Timerevo -383</td>
<td>M</td>
<td></td>
<td>1 fragment</td>
<td>8 m</td>
<td></td>
</tr>
<tr>
<td>B. Timerevo rask. 1976</td>
<td>K</td>
<td></td>
<td>1 fragment</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>


Here it shall be noted that, although the general view is that mainly male warriors entered the Russian routes, archaeological material in stray finds and graves shows a significant number of Scandinavian women. In the Plakun cemetery, 5 out of 8 probable boat burials are female, while 2 are male and 1 is uncertain. These women were buried alone, and are not sacrificed slave girls buried together with their lord in a grave of the type described by Ibn Fadlan and often referred to. Neither are they buried in a simpler way than the men, as has often been suggested concerning the Swedish female boat-burials. On the contrary, these women have been buried in ships and graves equal to those of the men. In the largest and most ‘advanced’ ship (no. 1), twice the size of any other ship at Plakun and containing the most rivets, a woman had been buried. The boat burial with the largest mound at Plakun, no. 5, is also a woman’s grave. Three of the graves at Plakun have more than 100 rivets and probably represent complete boats and ships, while the others are fragments of boats, or boats manufactured within the local sewing.

The double burials with a man and a woman that fit Ibn Fadlan’s description are found primarily in Gnezdovo, where this probably applies to nine out of eleven boat burials. There is also a double burial in one of the three graves at Timerevo, situated by the Volga River route not far from the place where Ibn Fadlan met the Rus. It is also important to note that boats of the same types and sizes as found in Sweden and also in Plakun, were found at Gnezdovo by the Dnieper, south of the portage. (personal analyse of rivets in Moscow Archaeological collections).

In sum, although the male burials with boats are dominant (72.5 %), almost one quarter of the material are female burials (22.9 %), and in only a few cases (4.5 %) do the boat burials contain a pair of individuals like in the double burials described in detail by Ibn Fadlan (percentages after Duczko 2004:152). Thus, we should get used to a completely different picture of the Scandinavian travelling eastward in the Viking Age, one that is far from the traditional image of the male Viking warrior in the prow of a big warship.

Ibn Fadlan’s information

In almost every description about the Rus in the East that also makes mention of women, the latter are portrayed as the slaves sacrificed to their chieftains in burial ceremonies, and often Ibn Fadlan is quoted. In contrast, when men are discussed they are chieftains, warriors and merchants. However, if the sources are revisited, and the archaeological material is taken into account for a deeper analysis, we do find opposite gender relations as well. It is obvious that we have to alter our previous view and not only repeat statements from the 19th century that have rooted themselves as a kind of ‘truth’. The general, prevailing idea is based on quotations from a limited part of Ibn Fadlan’s description of the burial of a Rus chieftain. We shall take a closer look at Ibn Fadlan’s own information on this issue. In the translation of the Polish edition of the Risala, which Duczko has worked with in his study, the following information is given as an introduction to the more often quoted passages dealing with the boat-burial custom among the Rus:

When one of their chieftains dies, his family says to his manservants and maidservants, ‘Which one of you will die with him?’ One of them replies, ‘I will.’ When anyone has said this, it is obligatory and it cannot be taken back, and no one who wishes to withdraw is allowed to do so. It is usually maidservants who do this. (§ 8 Transl. after Kmiętowicz et al. 1985; Duczko 2004:139, my italics)

This passage precedes the most commonly quoted parts, § 88-92, and especially the description of the last parts of the ceremony that is most well known, § 90. Taking this into consideration, we should not be surprised if some couples buried in boats consist, on the contrary, of a sacrificed manservant and his mistress – an influential, noble woman.

Women of the Rurikid clan

The treaty of 944 has interesting information on the Rus’ Rurikid clan members, who held the social and political position that enabled them to send their own envoys:

...Ivar, envoy of Igor, Great Prince of Rus, and the general envoys as follows: Vefast representing Sviantoslav, son of Igor; Isgaut for the Princess Olga; Slothi for Igor, nephew of Igor; Oleif for Vladislav; Kanitarz for Predsla; Sigbjorn for Svanhild, wife of Oleif; Freystein for Thord; Leif for Arfast; Grim for Sverki; Freystein for Haakon, nephew of Igor; Hegri for Elling; Voist for Voik; Eistr for Amund; Freystein for Bjorn; Yatving for Gunnar; Sigfrid for Halfdan; Kill for Klakki; Steggi for Jotun; Sverki; Hallvarth for Guthi; Frothi for Throand; Munthor for Ut; the merchants Authan, Authulf; Ingivald, Oleif, Frutan, Gamal, Kussi, Heming, Thorfrid, Thorstein, Bruni, Hroald, Gunnfast, Freystein, Ingjald, Thorbjorn, Manniu, Hroald, Svein, Halfdan, Tirr, Askbrand, Visleif, Sveinki, Borich: sent by Igor, Great Prince of Rus, and from each prince and all the people of the land of Rus...

The Norse origin of the names has often been pointed out, but less attention has been paid to the fact that three women of the clan are mentioned and that these women are represented as equal to the men. There is not just the envoy Isgaut for Princess Olga, but also Kanitarz for Predsla, and Sigbjorn for Svanhild, Oleif’s wife. Is it possible that Thorfrid, listed as a merchant, is a female name?

As Duczko has pointed out, this treaty may be an almost complete list of the important members of the Rurikid clan (212), since 22 persons of the princely family are named, each of them sending one representative and one merchant. (Primary Chronicle).

The empress Olga

The empress Olga is an excellent example of a woman in the East with a significant amount of power, in contrast to the picture usually presented of women of Scandinavian descent in the East. After Igor was killed by the Derevlians in 945, his widow Olga became empress of the Rus while her son Svja-toslav was still a minor. She led several successful revenge expeditions on the Derevlians in 945 and 946. During her rule, important reforms towards state formation were made, as she centralised state rule by establishing pogosti as administrative trade centres. They were also financial and judicial centers, and were probably important for Russian ethnic unification. When Olga became Christian, the first churches were erected in these pogosti. Still a decade later she ruled Rus, and according to the Primary Chronicle the Byzantine emperor received her and her delegation gloriously in 957, at which time Olga was baptised along with many in her delegation. Interestingly
enough, we also can see that the same status was held by the women in the Rurikid clan in the scrupulous account by Constantine, *De ceremoniis aulae byzantinae*, about the payment they received as a gift on this occasion: thirty for their closest relative, 20 gold coins for each of their six female *archonis* ‘relatives’, as well as for their eight male relatives.

**The attitude towards women among Rus according to the Scylitzes Chronicle**

It is from the eastern journeys that we have the best information on the position of and general attitudes to women among the Rus, which differ from the general view of women as mainly being the target of raids and rape by barbarian Vikings. Mats G. Larsson, in his book *Väringar*, draws attention to an episode in the Scylitzes Chronicle from 1034. In this we get a completely different picture than the usual. Here there is written evidence on how an offended woman’s right was defended by the Varangians, as seen in the following:

A man among the Varangians, which were assembled in winter camp in the province of Thrakesion, met a woman from the neighbourhood at a private place and tried to seduce her; and when he could not get her voluntarily, he tried to rape her, but she got hold of the foreigner’s sword and stabbed him through the heart, so that he died immediately. When this event became known, the Varangians assembled and honoured the woman by giving her all that had belonged to the man who had tried to rape her, and they threw away his body without a funeral, the same as if following the law for suicides. (My transl. after Larsson 2003:41ff).

These ‘Vikings’ or Varangian men of the 11th century were on a journey to the East to serve in the Byzantine emperor’s army. These are the men that we also meet on those ‘abroad stones’ that mention journeys to ‘Greece’ (Larsson 1990). As we can see, the attitude towards women is respectful, to a large degree differing from the ordinary portrait of the Scandinavian and of the seafarer abroad.

This shows that earlier statements concerning ships, seafaring and society need to be critically analysed and reevaluated, since they are based on assumptions and hypotheses that have come to be regarded as truths. I hope that I with this thesis have begun to alter these views and come one step closer to the Late Iron Age society of the Svear.

*Figure 249. Depiction in Scylitzes chronicle. After Larsson 1997.*
12. THE MARITIME SOCIETY

The maritime society is a society structured after maritime principles, using the ship as a key symbol and a metaphor. It is not a passive response to the development during the time period, but an active part of the changes that occur. I have argued that it is the strategy of a central, royal power. The most visible outcome is the organisation called the leiðanger. A deeper analysis has shown that the ship types, as well as the ideological and religious factors that influence them, belong to the Late Iron Age.

The maritime organisation that shaped the society

The maritime organisation was not introduced simultaneously in all the land ‘regions’ of Sweden, but instead reflects the influence of the state-formation process initiated by part of the so-called Svear under the Uppsala kings. Beginning with the core area of what may first have been Svithiod, Tiundaland and Attundaland, the gradual expansion of the territorial organisation according to a maritime structuring principle is visible in different chronological stages in the distribution of the use of the ship symbolism, such as in boat graves, as well as in the military and administrative centres of the provinces in this organisation, often represented by the names Tuna and Husby. In the area where the organisation began to be practised, we find the earliest hamnas, where the villages that gave name to the hamna-districts have Late Iron Age cemeteries. Here we also find the earliest boat burials and the Husaby-villages with royal mounds. Thus, the distribution of these symbols of power at different dates may reflect the expansion of the influence of the Svear and Svithiod.

The use of the ship as a metaphor when the society was organised occurred at the latest in the 10th century according to the dating of the earliest hamna-districts by Larsson, and the use was based on the Iron Age warship. The hamna-districts were probably introduced in the last phase of the creation of a territorial organisation, together with a division into Fiærþunger, attunger and skeppsflag, all of which were formed within the framework of earlier established provinces called hund and hundare. The organisation was created by a royal leadership for naval purposes, and the naval sphere was the only one in which the kingship could exercise its rather limited power, aside from the religious sphere where it had symbolic functions. This was done before the unification of Sweden, as it appears today, when the realm consisted only of Svithiod, the area of central Sweden around Lake Mälaren. When Östergötland and southern Norrland were included in the realm, these areas were also divided into hamna-districts for supplying naval crews, but the creation of provinces called hundare had long since ceased. The central Swedish hundare organisation was an expression of a society with a rather weak, royal power that rested on the consent of the free peasantry, expressed within the thing-institution. It is important to note that the peasants had the right to be armed, that by vapentak ‘the rattling of weapons’ they showed their opinion, and, not least, they had the right to select as well as depose the king. The last supporters of this type of society were the political group called Folkungar, who according to the latest investigations were connected with, and had their estates in, central Sweden, especially in Uppland’s folkland. When they were finally defeated at the Battle of Sparrsättra and ‘Uppland’s peasantry lost their freedom’ (Sigtuna Annals), the society in which the free peasants and their regional leaders had the power – a society that had been shaped in the Mälaren region – finally ceased to exist. This organisation was not created in the 13th century, but instead began to disappear during that time. From the 14th century and on, the term hamna was no longer used by the authorities, although in some areas it endured in fiscal documents.

In the 13th century, when Sweden was finally united after centuries of rivalry between royal pretenders from central and south Sweden, the kingship increased its power by reorganising the society into territories called län ‘counties’, whose inhabitants had to finance the military forces placed at royal castles. There was one castle in each län, and the castle also gave name to this regional province. With inspiration from feudal Europe, the rights of the peasants were taken away, such as the right to bear arms and to choose or reject their leaders, and the peasants could no longer threaten the kingship by rattling their weapons at the thing. This was accompanied by a change in ideals, whereby the warship that had represented even the free peasantry of the leiðanger organisation was replaced by the mounted knight of the frälse, the new nobility who held their power by military means. The change was also reflected in shipbuilding and in new attitudes to ships and seafaring.
Central Sweden was characterised by small and very light boat-types, as represented by the boats in the burials but also by the numerous finds of boats of the ‘åsping-type’, the expanded logboat that occurs in burials, wrecks and sacrifices. These boats were extremely light and suited for the communication system of the Lake Mälaren basin, where all kinds of river routes were used, including portages between the river systems and beside rapids, at places often memorised in place names with name-elements such as –ed, -bor and -drag.

Experiments have shown that replicas built as the burial boats, especially when built with contemporary methods, were very suitable for voyages across the Baltic Sea, and thanks to a pliable hull they were more seafaring than present-day boats with sawn planking. The low weight and draught made them extremely well suited to journeys along the eastern, shallow, river systems that required portaging. Hauling boats over land has been proven to be impossible with vessels that are larger and heavier than those used by the Svear and their neighbours among the Finns, Karelians and Russians. In Norway both the southern and the eastern boat-types are found. Here there was a need for light boats that could be used on rivers and on portages between the fjords, and also for boats that could cope with the rough North Sea that provided completely different conditions for seafaring than the Baltic Sea.

In central Sweden as well as Finland, northwest Russia and the Baltic, the light, expanded dugout was very popular during the Late Iron Age, and it was also used during later periods in these regions, apart from in Sweden. In the late 10th century, this type of boat was taken into use by the Rus in the trade with Byzantium.

In this thesis I have tried to focus not only on the construction of the ships and boats themselves, but also on the societal and historical context of their construction and use. The changes in shipbuilding methods were a prerequisite for the political and social events in the Late Iron Age. The changes were not random, and instead should be seen as reflecting the intentions of a leadership to use the ships for specific purposes. The aim was not only external exploitation in an organised manner, but also to seize the opportunity offered by the economic development in Europe, at a time when the western trade routes to the Byzantine Empire were suffering from the Arab expansion. This was done by the establishment of a network of eastern trade routes using river systems that were navigable only by the light ships of the central Swedish type. The trade between Western Europe and Constantinople, the Caliphate and Asia was relocated, and in the 8th century it went via Scandinavia and formed the basis for the marketplaces at Birkasjön and Staraja Ladoga that were established almost simultaneously in the middle of the century.

Leiðangr: the maritime structuring principle

The Late Iron Age society of central Sweden, I argue, was organised according to naval principles that are later found in the legislation concerning the leiðangr. This system is not found fully developed in any other part of Sweden, which indicates that it was created before the ‘unification’ of Sweden, that is, during a time when the king’s power and influence did not extend outside the Lake Mälaren area. The settlement pattern changed considerably in the 6th and 7th centuries in a way that suggests it did not happen randomly, but instead was a result of centrally administered reforms limited to east Sweden. The settlements established in the 7th to 10th centuries have given name to 90% of the hamnas in the naval organisation that we find in the medieval sources (Larsson), while the later ones may be seen as early medieval adjustments.

The settlements that were established are located along the main river routes that connect to the sea. In central Sweden they are generally found at 5-15 m a s l. These river routes functioned as the veins of society, vitalising it by constituting the main routes for ideological influences from the world outside, cultural contacts, technological developments, and also for providing necessities for everyday life. Already at an early stage there were regulations in the law as to how these river routes should be kept open. The contacts with the outside world could also constitute a threat. The villages therefore were situated along the inland river routes, where from time to time the entrances and other places were blocked with poles, sunken boats and rocks to form obstacles for hostile fleets. The archipelago was avoided for permanent settlement in the Late Iron Age. The vast areas that are situated at higher altitudes, 30-50 m a s l, were uninhabited forest areas; later they came to constitute border areas between the different districts in the naval and religious organisations.

The settlement pattern appear with a very regular structure in Late Iron Age, within the medieval borders of territorial division, indicating over-regional planning in this period, related to the system later known as the leiðangr.

Continuity and change

The disappearance of the maritime ideal and the maritime society based on a territorial division into hundare and skeppslag around the water-routes as the main veins, must according to my view be seen in relation to the events in the 13th century. During this century, the political struggles ended with fundamental changes. Earlier territorial divisions were replaced with a feudal-inspired society based on a division into län. The heavily armed knight and horseman became a key symbol. An important note in the Sigtuna annals summarises what happened in the year 1247:
This year the people of Uppland at Sparrsätra lost the battle and their freedom and were imposed with grain tax, skeppsvist och several other burdens. (My transl.)

The people of Uppland lost the battle and their freedom, which according to my interpretation means that the population of landholding peasants lost the right to elect kings and make other important decisions at the thing-institution. The hundare-based society of the Svear, where the people of free, armed peasants either by themselves or through representatives had a significant influence was replaced after this battle. The earlier food provision was transformed into a tax to support the military crew at the royal castles, replacing the armed peasants of the leikangs organization. But who lost the battle? Who were the supporters of the society of the Svear, and in a series of battles fought for the old system? Before the main series of decisions that transformed the society in the last quarter of the 13th century, we find in the sources a group called folkungar, mentioned in connection with the internal wars 1210, 1229, 1247, 1251 and 1278. They were fighting against the kings Sverker Karlsson, Erik Eriksson, Birger Jarl and Magnus Ladulås, and were finally defeated by the last two kings who after the last victory began the above-mentioned fundamental transformation of society. But who were these folkungar? In my opinion, to answer this question is part of the answer as to how and why the maritime society disappeared. The discussion will only briefly be touched upon, but it is important. The historical situation in my view is often misinterpreted, because the remains of the earlier maritime society is described in the historical sources for the first time in the same century as it begins to disappear.

The first and most widespread hypothesis of the background for the name folkungar was already made by Olaus Petri. He mentions a register from the 14th century about the ancestors and kindred of Birger Jarl, beginning with a Folke Fijibiter, grandfather to Folke the fat, son-in-law of Canute the Great, and means that the name folkungar should derive from one of those Folke (Schück 1981). That this was a pure guess, and that the dynasty of Birger Jarl never called themselves folkungar was later shown by Bolin (1936).

Pipping (1926), who wrote the comments to the Erik’s Chronicle, instead meant that folkungar was the name for the supporters of the Folke, killed in 1210, corresponding with the naming of other political parties, such as ‘kufungar’. Bolin (1936) showed that the folkungar was the group that was the main enemies of Birger Jarl and Magnus Ladulås, a group that was severely punished by them.

Elias Lönnroth (1944) is also of the opinion that the folkungar was a political party, fighting for the preservation of the free society of a strong peasantry which elected their kings, a party that was in opposition with Birger Jarl and his dynasty. The name folkungar should according to him derive from their first leader Folke jarl. Sten Carlsson (1953), though critical towards Lönnroth, has also shown that the folkungar was not from a single family, but from several related, high-ranking families.

One of the most interesting interpretations of the name folkungar was made by Adolf Schück (1957). He sees it as related with the concept folc-cyning used in Beowulf and the OSax poem Heliant, where peod-cyning signifies those ruling over a people (peod), and folc-cyning could be interpreted as ‘leader of an military division’. It should correspond with West Nordic words herkonungr and fylkiskonungr, the latter signifying ‘the ruler of a fylki. A fylki was according to Schück both meaning a ‘military division’ and a ‘military district’. The Swedish folkland corresponds with the Norwegian fylke. The folkungar would thus be high-ranking aristocratic leaders and “kings” of both military units and folkland. That there is substance in this argumentation is evident from the fact that first, the folkungar are by territorial possessions tied mainly to the folkland area of central Sweden. Second, they claimed and were entitled to the title king, which for instance was received by Knut Långe after having defeated King Erik Eriksson in 1229. The third fact that supports Schück’s interpretation is that they were also the main military leaders, appointed as jarls. The latter title was, as will be shown later, since the 11th century used for leaders of naval expeditions beside the king, and from the 13th century the documents shows that the jarl was leading a territorial district, the land. In the 14th century, the term hertig ‘duke’ replaced jarl representing the closest relatives of the king with a territorial base that was and is still the land. In the 21st century, the hertig is more a symbolic title for the relatives of the king, connected with a land, such as for instance ‘hertig of Södermanland’.

That the folkungar in line with Schück’s hypothesis had a connection to central Sweden, and especially the folkland area, is evident from their property holdings. Knut Magnusson, killed by Birger at Herrevadsbro, was a grandson of Birger Bosa and owned Ekolsund. Filip Pettersson and Filip Larsson, also killed at the same time, were the grandson and great-grandson of Birger Bosa and they owned Rumby in Eds Parish, Uppland. Knut jarl, a son of Birger who was killed already at the Battle of Lena in 1208, owned estates in Närke, and the morning before the battle, he donated Frösvi and Åkerby villages in Närke to Riseberga Monastery, founded by his father. Among the witnesses are King Erik Knutsson and some cousins such as the lawman Eskil. On the folkunga-side in the battles are participants of the royal kin. Knut Långe (king 1230-1234) was the great-grandson of King Erik the Saint, who also was connected closely with the Lake Mälaren area and owned Ångsö by the northern shore. Knut Långe himself and his son Holmger had Skokloster as their estate by the shore of
the bay beside the sailing route to Uppsala. Ulf Jarl Fase had large estates in Södermanland, such as Tullgarn, and his son owned the farm Flastad in Sko Parish in Uppland.

The first time we hear about folkungar is already concerning the year 1210, when the king-list in the Västgöta law says that at the battle of Gestilren when king Sverker d.y. Karlsson died ‘folkungar took his life’ fighting on the side of the competing royal family line with Erik Knutsson. Because one of the leaders was named Folke jarl, the hypothesis that the folkungar was named of him has become rooted. After this the Erik’s chronicle uses the term folkungar about a number of men that were the enemies of king Erik Eriksson and Birger Jarl.

The different interpretations of the term folkungar are not mutually exclusive. It is very probable that the folkungar represented a political party that defended the elective society of the Svear, which I call ‘a maritime society’ with roots in Late Iron Age. At the same time, they were also members of a royal kin descended from Erik the Saint, who possibly could also have been related to the 11th-century kings of the Svear through an offshoot. This is what lay behind the claims for, and sometimes the possession of, a royal title among the folkungar, and also their rights to hold the title of jarl, which was reserved for members of the royal kin who were not kings themselves. Thus, they were in the 13th century a political group consisting of members of not one, but several families related to the kin associated with king Erik the saint. The author of the Erik’s chronicle supposes that the folkungar is members of a kin that lost their political power in 1251 (Schück 1981:472), which fits well with my hypothesis. They appear in the sources at the same time as attempts are being made to transform the society, the probable cause for the battles. They appear for the first time in 1210 when Folke jarl and nobilis de folkungiis are engaged in battle, and the last time in connection with an uprise towards king Magnus Ladulås in 1278, after which the king who succeeded had the leaders of the folkungar Johan and Birger Filipsson executed (1280). After the final defeat of the folkungar, radical changes are introduced, which supports Lönnroth’s (1944) hypothesis that they were a political party fighting to preserve the old, elective society. Immediately after this, King Magnus Ladulås took the first main steps to create a feudal-inspired society, starting with the Decree of Alsnö in 1280 (see chapter 9). Alsnö was a symbolically heavily loaded place that for long had been used by the Svea kings, situated in the heart of the realm of the Svear.

To summarise, the maritime society in reality ended in the 13th century. It was created in a time when the ideal was the naval warrior and when the ship had such a fundamental symbolic value that it became a key symbol used in religious, social and juridical contexts, and maybe most important, as a metaphor when the society was organized for military and administrative purposes into hundare and skepps slag. When this was done, as I have shown, it was the Late Iron Age warship that came to be used.

The maritime society ended when the political party that tried to preserve it, the folkungar, was defeated by a royal power that wanted to centralize power in the 13th century. The change was made by reorganizing the society through a new territorial division into län, as well as by limiting the power of the peasants and the local chieftains. As has been suggested in this thesis, the ideological change had already begun in the 11th century. The ship changed from a symbol back to be a means of communication, and in the high middle ages a man of honour was a knight depicted, not in a ship, but armed on horseback, fighting for his king and stationed in a royal castle.

The ships of a maritime society
The improvements in shipbuilding during the 5th and 6th centuries resulted in ship types that enabled the maritime society. These were the light, low and round-bottomed boats of the type found in for instance the Valsgärde cemetery, but also in boat burials in northwest Russia, to judge by an analysis of the rivets in the graves. These boats enabled the use of an extensive network of internal river systems, as well as the journeys along the eastern river systems. With boats of this type, obstacles like rapids and land isthmuses between lake systems were overcome. The light and pliable hulls made the boats seaworthy and capable of crossing the Baltic Sea. The main vehicle for external exploitation and for long-distance trade was created.

The boats and ships of the Svear
The boats and ships used by the Svear were partly of types similar to those in the rest of Scandinavia. The Enköping ship represents a large knarr of the same type as Skuldelev 1. But a closer examination also reveals great differences between the ships of central and south Scandinavia. The most common ship types used by the Svear were smaller and lower, had fewer and thinner strakes, and were thus lighter and more suitable for river traffic and portaging than the ships of south Scandinavia. The burial boats of the Svear have a low and wide T-keel, a rounded bottom, and bites used as thwarts. They represent boats for personal transports and warships, while the merchant ships occur only rarely in burials, such as Ultuna. Some of the small and light boats may have been used on the commercial journeys in the first phase, when these were directed towards the eastern Caliphate, the central Caucasus, the Khazar realm, and southwest Asia. When regular trade with Byzantium was estab-
lished in the 10th century, the Rus purchased light, expanded logboats from the dependent, surrounding Slavonic and Finno-Ugrian tribes. Such boats were also among the most common types built and used in the prehistoric period and not least in the Viking Age in Sweden, from which time most of the dated finds derive. This type disappeared from central Sweden after the Viking Age, but it continued to be used by the Finns, the Karelians and the Russians, who also continued to travel on the extensive lake and river systems, and who, thanks to the boats, could dominate the early medieval fur-trade of northern Scandinavia.

Seafaring and cultural contacts

Seafaring brought cultural contacts and an exchange not only of merchandise but also of ideas, customs, myths, art and religious influences. In the initial phase, the long-distance journeys were directed toward the eastern part of the Caliphate, the Caucasus, the steppe regions, and south Asia. With regard to the journeys to the areas east and south of the Caspian Sea, which at the time were controlled by the Caliphate, the ideological influences affected three main spheres of Swedish society – seafaring, economy and naval warfare – which also has resulted in a set of loanwords from the Arabic language in our own. From the Arab peoples the Scandinavians, probably already in the 8th to 10th centuries when the contacts were intense, learned the skill of sailing and navigation, which the Arabs in turn had inherited from the Persians. The navigation instruments, the terminology, and the names of the stars, all of which were important for latitude sailing, derive from Arabic seafaring and were first used in Europe by the Scandinavians. They were probably also necessary prerequisites for regular, long-distance voyages to Iceland, Greenland and Vinland, as well as to the groups of islands in the North Atlantic colonised by the Vikings.

Culturally, the influences were important. In Baghdad and other places the Scandinavians encountered the dragon-snake motif (see Rogers 1976:46). The decorative motifs of the Sassanid silk that prevailed in the areas around the Caspian Sea, such as various patterns and birds like cocks, were soon adopted here and were depicted already on the B-type picture stones of the 6th and 7th centuries, at the same time as the first sails made their entrance. The cock-motif continued to be used after that time, for example on coins, and the special Arabic patterns still appeared on textiles.

The ship as an idea

Power, ideology and religion

Power and religion have almost always been intertwined. The rulers have claimed ancestry to the gods, just as kings and leaders have done during many periods of history to strengthen legitimacy to the throne. In Late Iron Age society the rulers of the Ynglinga dynasty presented themselves as the descendants of the god Frey.

What could be more appropriate than to bury the members of this clan together with the main symbol of their ancestor, i.e. with a ship, and at the same time perform sacrificial rituals in honour of the fertility deity Frey? According to one interpretation, the boat burial was limited to the members of this dynasty. This may be true concerning the clinker-built ships of the aristocrats, but according to Ibn Fadlan even the poorer people could be buried in boats, though in simpler ones. The more complex ships were intended for chieftains’ burials, such as the one witnessed by Ibn Fadlan.

However, the rulers in the Late Iron Age were clever enough to use the main symbol of the most appreciated deities in central Sweden, the ship symbol, in a number of different contexts. The Late Iron Age warship became the model for the organisation of society for military and judicial purposes. The ship symbol, as associated with Frey and the peace of Frey, also ensured the special peace called frídr, which had a special jurisdiction including doubled fines and which came into action on board warships and merchant ships, during market in towns, at the thing, and on public holidays. The rituals in Old Upsala, the royal seat in the Late Iron Age, are also connected with the cult of Frey, who, according to Ynglingatal, was one of the supreme gods at Uppsala, with his main cult during the alfablot in autumn.

In Birka the boats buried in the town rampart probably marked the border between, on the one hand, the area under the town law with a variant of the ‘ship peace’ frídr under town jurisdiction, and, on the other hand, the surrounding countryside that was subject to ordinary law. A connection to thing-peace may be behind the presence of the wooden ship-setting in the Valsgärde cemetery, as well as the ship-shaped stone-settings at Anundshög in Västmanland. The ship peace also came into action on naval expeditions, which may explain the use of the ship symbol in the layout of the houses in the Trelleborg camp. Further, the ship symbol has been used to a great extent in large halls on the farms as well as large houses that occasionally could have been used as ceremonial localities for, among other things, ritual eating and drinking in honour of Frey during the calendar feasts.

The ship symbol originated in a heathen environment and belonged to an ideology displayed in a variety of contexts in the Late Iron Age society. As a
key symbol, it was actively used by the leaders when the society was organised during the state-formation process.

The boat burial: a central public ritual in the Freya cult?

In the thesis has also been discussed the connections between the ship symbol and the female counterpart of Frey, namely Freya. The boat burial may have been an important ritual in the Freya cult. The fertility deity Freya was one of the disir. In the eastern, public, form of the cult, the principal sanctuary was in Old Uppsala in Sweden. The king and queen took part in the celebrations there, a fact that underlines the importance of the site, and in the month Goi each year the great disa-sacrifice took place in Old Uppsala and offerings were made for peace and victory. At the same time a thing called disting and a ‘disting market’ were held. Was this a central ritual of the Freya cult, one that included boat burials? The name dis- for the blót, the thing and the market indicates the connection with Freya. Certain artefacts found in the boat burials, and the historical relation between the fertility goddess and the ship symbol, indicate a connection between the boat in the burial and Freya. If so, it would be appropriate to perform the boat burial in connection with the main ceremonies in her main cult.

The disablót in Old Uppsala was the largest of all sacrifices among the Swear. It is possible, I argue, that burials of important persons, such as nobilities and priests, took place in connection with this event, when the population was assembled. The burial of a prominent deceased would thus have to wait, sometimes for a long time, until this occasion. This is suggested as one of the probable explanations for:

- The bad state of preservations of human bones.
- The well preserved animal bones, representing sacrifices during the burial ceremony.
- The occurrence of (broddar) in most of the boat burials.

Religion and ideology within the central Swedish royal dynasty in the Early Middle Ages

Our knowledge of the kings associated with central Sweden in the late 11th and 12th centuries is very limited. Names like Hakon, Erik, Anund and Sven occur in the 11th century as pretenders to the throne, after the reign of Stenkil. In the history-writing of the Catholic Church, these names are related to heathen practices. Recent research has shown that the area around the royal seat at Old Uppsala was Christianized already in the first half of the 11th century, and all over Uppland the influential people commemorated in the runic inscriptions are remembered with an additional formula that God and God’s Mother shall preserve their souls, and/or with a centrally placed cross. What was considered ‘heathen’ by the Catholic Church may in fact have been the Christianity of either the Orthodox or the Anglo-Saxon Church. The Christianization in central Sweden was, according to my hypothesis, based on the societal organisation of the Swear: the division into hundare and skepslag. This is evidenced by the fact that already in the 12th century a hundareskyrka ‘hundare church’ was present in almost every one of these territorial provinces. This was the main church, and later it was complemented by other churches corresponding to lower levels within this organisation, such as the toftkyrka ‘tolft church’ and annex churches. As I have shown earlier, in the settled areas of the 12th century there is often coincidence between the attunger-district within this organisation and the socken ‘parish’. In areas settled in the medieval period, such as northern Uppland, no such coincidence has been observed (Ramqvist) because here the division into parishes, as well as other territories, has been adjusted to a changed settlement structure after the medieval expansion in this area.

The 12th-century coffin burials of Valsgärde have not been discussed much in the literature in relation to this important site; Ljungkvist, for example, does not mention them when he discusses the elite in the Uppsala area (2006). By continuing to bury their dead in this cemetery after Christianization, the elite and leaders of early medieval Uppland mark their religious affiliation, and clearly display a connection with the Eastern Orthodox Church. Perhaps also the Erik’s dynasty should, as I have argued, be seen in connection with the society and ideology of the Swear.

What is also of importance to note is that on this cemetery, in use from the Roman Iron Age until the 12th century, it is mainly from the 6th to the 11th century that the boat is used as a symbol in the burial context. Already in the 11th century, the glory of the ship seems to have diminished a little. The latest boat burials, in grave 9 and 11, are not any big ships, but only smaller boats.

People in the past and in the present

The idea that the leiðangr organisation was introduced almost at the same time as it disappeared derives from the conception of the primitive, prehistoric person held by the evolutionist scholars in the 19th century. In this it was (and is) stated that the West European type of civilisation, as practised by the Catholic Church, had enlightened the primitive peoples in the north and elsewhere, taught them to read, write and have the right values, and that prior to this occurrence these peoples were not developed enough to manifest a complex social organisation. The evolu-
tionist ideology still prevails, especially within the historical discipline, where the view is that nothing more advanced could have existed before there were written sources, because there are no written sources that could be used as evidence that it did. Within archaeology and social anthropology this argumentation has also had effect, and inspired scholars to neo-evolutionist models of a societal development in stages from simple to complex structures, from small to large associations of people, from people organised into tribes and via chieftdoms and kingdoms to the societal level of the state. The last step, which in effect is another word for western-style ‘civilisation’, was not reached until the beginning of the medieval period if this model is applied to Swedish society. According to this view, the influence of civilisation spread from the south (the antique world in the Mediterranean) to the north. In this same world-view, the further back in time, the more unable people were to travel very great distances. The voyages to Vinland-America were questioned until the first settlements of Norsemen were discovered in the 1980s. The journeys to the Caspian Sea and Black Sea by boat are still questioned, largely on the basis of experiments with boats. A closer look, however, shows that many such experiments used boats constructed with modern techniques to the Caspian Sea and Black Sea by boat are still questioned, largely on the basis of experiments with boats. A closer look, however, shows that many such experiments used boats constructed with modern methods, as well as portaging methods for which there is no basis in the ethnographic documentation.

Iron Age people had the same brain as we have, and were as clever as we are. The wooden handicraft and the goldwork show more skill than today. We are the same Homo sapiens sapiens with the same limitations and possibilities. Humans have always been innovative, but are to a large degree guided in their acts by irrational ideas connected with prestige, greed, religion, a desire for prestigious or beautiful artefacts, as well as the conquest of neighbouring countries. States have fallen apart to kingdoms, and in the fragmented kingdoms ‘tribes’ under local leaders have tried to define themselves as ethnic groups. There has been devolution as well as evolution.

The cradle of the maritime society
According to a hypothetical model based on the results in this dissertation, central Sweden can be seen as not just the cradle of Sweden, but as both the cradle and the grave of the maritime society of the Svear. This was based on the ships, seafaring and a ship symbolism that dominated the social, juridical, and religious aspects of life. Here the Iron Age warship was a structuring principle when the society was organised into territorial districts such as hundare, skeppsholm and hamna by a leadership whose influence, at the time this division was created, did not extend beyond the borders of Svithiod, the area surrounding Lake Mälaren. The shipbuilding technology and the ship types used were the main factors behind the expansion of seafaring, which, together with the territorial organisation, created possibilities for external exploitation on a large scale. They also enabled the establishment of a far-reaching trade network based on the eastern river systems, navigable only by the small and light boats of the central Swedish type. The waterways were the veins of society, where not only merchandise but also ideas and religious influences spread along a wide communication system where the E-W contacts dominated. This maritime society took shape in the Late Iron Age and began to disappear in the Early Middle Ages, and the political system related to it was finally replaced in the mid-13th century.

In this dissertation I have presented a model for the related changes within shipbuilding and society. It is, perhaps, bold to enter into this heated discussion, but I think it is necessary to present a model that is not biased by evolutionist ideas on societal development, and that considers the possibilities for a complex society in the Iron Age even though there are no written sources from the time to support it, as is usually required by historians. Instead we have to use the archaeological sources to trace the ideological, spatial and material expressions. The remains of ships tell about the construction and use of ships, seafaring, and long-distance contacts. The ancient monuments are not randomly distributed, but fall within a structure that is possible to relate to historically known territories, within the same hierarchy. The ideology and social structure are also visible in the boat burials, and the key symbols of society shine through in art, depictions, runic inscriptions, and not least in the skaldic poetry.

In my hypothetical model, there is a close association between technological and societal changes. These changes were not random, but rather, behind them was a political intent. Based on the results of my analysis in this work, my interpretation is as follows. The development within boat-building technology in combination with the introduction of the sail enabled long-distance journeys along shallow waterways with often occurring portages. This opened up a possibility to establish and effectively use trade routes between the fur-producing areas of the north, and the areas for silk, silver, spices and slaves in the southeast, especially the Caliphate, the Caucasus, the Asian steppe areas, and not least the important silk-route. This coincided with the drop in trade along the western route through the Mediterranean. When the route through Khazaria was cut off in the 10th century, alternative routes to the east were sought, and the route ‘from the Varangians to the Greeks’ was taken into active use during this century when the tribes surrounding the Dnieper came under control of the Rus khagan. Trade agreements with Byzantium were written, and the Varangians were taken into military use in the army and imperial guard of the Byzantine emperor.

The boat-building technology made it possible to begin using the internal river system for not only smaller boats but also ships, thanks to the shallow draught of the vessels. With the water routes as veins,
a maritime territorial organisation, the leiðangr, was created in central Sweden based on the Iron Age warship as a metaphor, with a hierarchical division consisting of land, hundare, skeppslag, Fiærþunger, attunger and hamna – a division fulfilled only in the area that was then Svithiod, that is, central Sweden around Lake Mälaren. Together with the ships, this was an important factor for the success of the naval journeys and external exploitation that intensified starting in the 7th century. As a last phase, the hamna-districts were introduced before the end of the 10th century by the kingship, perhaps by Erik Segersäll, as Larsson has suggested.

The leiðangr organisation was not only a naval organisation, but also the means by which many other parts of society were organised, such as the thing-institution and religious activities that were incorporated into this hierarchy. At the top of this loose federation (?) was a rather weak kingship that had more symbolic than real power. This maritime society based on hundare and skeppslag represented a society of free and powerful farmers that were allowed to bear weapons and express their opinions at the thing on the local, regional and national levels. At the ‘thing of all Svear’ they could overthrow or even kill the king if they pleased.

At the Battle of Sparsättra, this society died and ‘the peasants of Uppland lost their freedom’. Ideologically, ships and seafaring had gone out of fashion already a couple of centuries before this battle, as is clearly evidenced by the archaeological material. In the 13th century, the regional leaders that had their territorial base in the area around Lake Mälaren, the Folkungar, had as a political party tried to defend the social structure based on what I call ‘the Maritime society’ against Birger Jarl and the king of Östergötland, but had lost. When the leiðangr organisation was first described in detail in the provincial laws it was already beginning to disappear, and it was soon replaced by a territorial division into län, where the new kingship protected and strengthened its power by military means, with the help of the knights and warriors placed at the royal castles. At the same time the peasants were forbidden to carry weapons; and the hamna that earlier should equip an armed peasant for the warship, was transformed into a tax-paying unit to finance the new military and social organisation. Already in the late 13th century, the base for the collective duties of the hamna collapsed when certain farm-owners that could provide the king with a warrior and a horse were freed from all duties and taxes related to the leiðangr organisation. These farm-owners were called lögfrälse, and they constituted the new aristocracy and represented the new ideals.

When the maritime society died, it was replaced by a society inspired by feudal Europe. The ship as a key symbol was replaced by a knight on a horse. The ideological change is reflected in art, in material culture, and in poetry. Knighthood and life in castles were praised, while boat journeys were reduced to an occupation for poor fishermen. The slender, elaborate logboats were replaced by rough, hollowed-out, floating trunks, often used for fishing by people who had received permission to fish in lakes in the expanding areas within the frälse holdings. This was the end of a society shaped by a maritime ideology among the Svear, in my view, in Late Iron Age.
Abbreviations

ATA – Antikvariskt-Topografiska Arkivet, Vitterhets akademien, Stockholm.

BAR – British Archaeological Reports, Oxford.

DAUM – Dialekt och ortnamnsarkivet i Umeå

GA – Gotländskt Arkiv, Årsbok utg av Gotlands fornsal, Visby.

GAM – Göteborgs Arkeologiska Museum, Göteborg.

HT – Historisk tidsskrift (Sweden, same title for Norway; Finland’s HT is called Historisk tidsskrift för Finland).

INJA – The international Journal of Nautical Archaeology and Underwater Exploration (1972-). London, New York, etc.


LMV – Lantmäteriverket, Kartarkivet, Gävle.

LUHM – Lund University Historical Museum.

Medd/MAS – Meddelanden från marinarkeologiska sällskapet, kvartalstidsskrift, 1979-. Stockholm.


OAU – Ortnamnsarkivet i Uppsala.

RAÄ – National Heritage Board (Sw. Riksantikvarieämbetet), Stockholm.

SHM – Statens historiska museum, Stockholm.

SOA – Svenska Ortnamnsarkivet = OAU


ULMA – Dialekt och folkmintesarkivet, Uppsala.

UM – Upplandsmuseet, Uppsala.

UMF – Muséet för Nordiska Fornsaker, Uppsala University.
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### Appendix 1

Summary of the interpretation of boat finds in Sweden

<table>
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<tr>
<th>Ship find</th>
<th>Context</th>
<th>L m</th>
<th>W m</th>
<th>Strake nr</th>
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<td>1.07</td>
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### Smaller warships and boats for personal transports

| Valsgärde 8 | Boat burial | 9.5 | 0.86 | 4 |
| Vendel X | Boat burial | 9.35 | 1.6 | 3 |
| Vendel XI | boat burial | 9 | 1.87+ | 4 |
| Valsgärde 5 | Boat burial | 13 | 2.1 | 4 |
| Valsgärde 6 | Boat burial | 12.76 | 2.01 | 3 |
| Valsgärde 7 | Boat burial | 10.45 | 1.95 | 4 |
| Vendel I | Boat burial | 10.4 | 1? |     |
| Vendel III | Boat burial | 10? | 1.72+ | 4 |
| Vik | Wreck | 9.6 | 2.1 | 5 |
| Vendel VII | Boat burial | 9 | 1.84+ | 4 |
| Valsgärde 13 | Boat burial | 11.15 | 2.5 | 3 |
| Valsgärde 14 | Boat burial | 12.14 | 2.16 | 5 |
| Valsgärde 3 | Boat burial | 14.1 | 2.25 | 5 |
| Valsgärde 10 | Boat burial | 9.85 | 1.44 | 6 |
| Valsgärde 12 | Boat burial | 11.45 | 1.88 | 6 |
| Valsgärde 15 | Boat burial | 12.15 | 1.7 |     |
| Valsgärde 1 | Boat burial | 9.06 | 1.72 | 5 |
| Valsgärde 2 | Boat burial | 8.4 | 2.2 | 5 |
| Vendel IX | Boat burial | 9.6 | 2.1+ | 6 |
| Bulverket 2 | Wreck | 8-10 | Ca 2 | 5-6 |
| Foteviken 1 | Wreck | 10.3 | 2.4 | 7 |
| Foteviken 2 | Wreck | - | - | - |
| Nabberör | Boat burial | 10 | - |     |

<p>| 20-25 m |</p>
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References:

Material used for table: Ribbingebäck, Skogstibble Parish, Uppland (Gezelius UM 107/64), Nyboholm in Sorunda (SHM 12 068, Westerdahl 13), Runsa, Ed Parish, Uppland (SHM 3041/73, Westerdahl 12); Vreta, Värmdö Parish (SHM 192 48), Penningby, Läns Parish; Gavel-Långsjö, Fasterna Parish (Fasterna Hembygdsförening; Fiholm, Rytterne Parish, Västmanland (SHM 4064/4278 Lindquist 1924, Westerdahl 1985:61), Mosjön, Kumla Parish, Närke (SHM 30 713, Westerdahl 13:1985), Skärjsjö 2, Skinnskatteberg, Västmanland, Amanningen, Väster Våla Parish, Västmanland; Lertjärn in Säter Parish, Dalarna, (Lundqvist-Hjelmqvist 1941:129; Serning 1966:85); Kvarnsjön, Rikssten, Botkyrka Parish, Södermanland (Andersson 1997) Ribbingebäck (fig. 4), Skogstibble Parish, Uppland (Gezelius UM 107/64), Söderbysjö, Nacka Parish (Bauger 2002), Enköping, Vårfrukyrka Parish (UM 624/60, Norrgården 1961:18), Eskilstuna (Lorin 1999), Vreta, Värmdö Parish, Uppland (Westerdahl 1980), Penningby, Penningby Parish, Uppland (Penningby slott), Örsmossen 1 (Sernander 1913), Örsmossen 6, Tensta Parish, Uppland (Tensta Hembygdsförening), Runsa, Uppland (Westerdahl 1980), Vik 1, Söderby-Karls Parish (EM Larsson 1997), Vik 3 (EM 2049), Salsta (UMF); Nyköping (Florin & Olsson 1965), Viks boat 1, and 2, Söderby-Karls Parish, Uppland (Larsson 1997). Valsgärde 1 (Fridell 1930); Valsgärde 2 (Dyerverman 1929); Valsgärde 3 (UMF), Valsgärde 4 (Odenkantz 1933), Valsgärde 5 (UMF); Valsgärde 6 (Arvidsson 1942); Valsgärde 7 (Arvidsson 1977); Valsgärde 8 (Arvidsson 1954); Valsgärde 9, 11, 12, 13 (UMF); Vendel I-IV; Vendel VI-VII, X-XIV (Stolpe 1912). Tuna in Badelunda 23b, 35, 46 b, 48, 75, 76, 79, 84 (Nylén & Schönbäck 1994a, b); Tuna in Alseke nos. I-IV, VII-VIII, X-XIII (Arne 1934); Præstgården, Gamla Uppsala 1, 2, 3, 36 (Nordahl 2001); Arbyboat (Arbman 1936, 1940), Sagån 1, 2 (Almgren 1907); Birka 879, 1137 (Arbman 1943); Fittja (Weiler 1975); Ultuna (Almgren 1902), Norsa, Köping Parish (UMF).
## Appendix 2

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**Tiundaland**

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**Fjädrundaland**

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**Roden**

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<td>Frötuna Telgboaskiplagh* (Frötuna and Länna skepslag)</td>
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<td>Bro and Vätö skepslag</td>
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Table based on Larsson 1990, UR and datings from Gräslund 1992, with the addition of Pr 0 (not ornated), and Bird perspective.
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Pr 2  c. 1025-1050
Bird persp. c. 1025-1050
Pr 3  c. 1050-1075
Pr 4  c. 1060/70-1100
Pr 5  c. 1100-1130

Style (Ann Sofie Gräslund 1992) Number of runic inscription
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Pr 1  6
Pr 2  7
Pr 3  24
Pr 4  11
Pr 5  1
Bird perspective 8
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<td>14.1</td>
<td>2.25</td>
<td>12</td>
<td>10</td>
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<td>10th century AD</td>
<td>8.65</td>
<td>2.02</td>
<td>6</td>
<td>4</td>
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<td>630/640-670/680 AD (A)</td>
<td>13</td>
<td>2.1</td>
<td>9</td>
<td>7</td>
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<td>Valsgärde 6</td>
<td>630/640-670/680 AD (A)</td>
<td>12.76</td>
<td>2.01</td>
<td>9</td>
<td>6-7</td>
<td>12-14</td>
</tr>
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<td>Valsgärde 7</td>
<td>600-630/640 AD (A)</td>
<td>10.45</td>
<td>1.95</td>
<td>9</td>
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<td>14</td>
</tr>
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<td>Valsgärde 8</td>
<td>560/570-600 AD (A)</td>
<td>10.95</td>
<td>1.86</td>
<td>9</td>
<td>7-8</td>
<td>14-16</td>
</tr>
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<td>Valsgärde 9</td>
<td>1000-1050 AD BS</td>
<td>5.45</td>
<td>1.07</td>
<td>-</td>
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<td>-</td>
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<td>Valsgärde 10</td>
<td>End of 10th century AD BS</td>
<td>9.85</td>
<td>1.44</td>
<td>7</td>
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<tr>
<td>Valsgärde 11</td>
<td>Mid’11th century BS</td>
<td>6.5 (?), 0.9, 1.2 m</td>
<td>9</td>
<td>7</td>
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<td>Valsgärde 12</td>
<td>Mid’10th century BS</td>
<td>11.45</td>
<td>1.88</td>
<td>-</td>
<td>-</td>
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<td>Beginning of 9th century AD BS</td>
<td>11.14</td>
<td>2.5</td>
<td>9</td>
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<td>2.16</td>
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<td>Valsgärde 15</td>
<td>950-1000 AD BS</td>
<td>12.15</td>
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## Appendix 4

### Boat burials and gender. Tuna in Badelunda Parish

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<thead>
<tr>
<th>Period</th>
<th>Grave nr</th>
<th>Grave type</th>
<th>Sex</th>
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<tr>
<td>AD 300–400</td>
<td>X</td>
<td>Chamber grave</td>
<td>Woman</td>
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<td>AD 400–550</td>
<td>1</td>
<td>Cremation</td>
<td>-</td>
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<tr>
<td></td>
<td>34</td>
<td>Cremation</td>
<td>Woman</td>
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<tr>
<td></td>
<td>41</td>
<td>Cremation</td>
<td>Man</td>
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<tr>
<td>AD 550–800</td>
<td>26</td>
<td>Cremation</td>
<td>Woman</td>
</tr>
<tr>
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<td>46 A</td>
<td>Cremation</td>
<td>Woman</td>
</tr>
<tr>
<td></td>
<td>67</td>
<td>Cremation</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>46 B</td>
<td>Boat burial</td>
<td>Woman</td>
</tr>
<tr>
<td>AD 800–900</td>
<td>35</td>
<td>Boat burial</td>
<td>Woman</td>
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<td></td>
<td>75</td>
<td>Boat burial</td>
<td>Woman</td>
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<td>AD 900–1000</td>
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<td>Boat burial</td>
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</tr>
<tr>
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<td>48</td>
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<tr>
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<td>23B</td>
<td>Boat burial</td>
<td>Woman</td>
</tr>
<tr>
<td></td>
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<td>30</td>
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<td>Man</td>
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<td></td>
<td>33</td>
<td>Cremation</td>
<td>Man</td>
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<tr>
<td>AD 1000–1050</td>
<td>84</td>
<td>Boat burial</td>
<td>Woman</td>
</tr>
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<td>76</td>
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<td>Woman</td>
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<td>37</td>
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<td>Woman</td>
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<td>2</td>
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<td></td>
<td>59</td>
<td>Cremation</td>
<td>Man</td>
</tr>
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Based on Nylen & Schönbaäck 1994a, b.
Aun

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