Coastal Communities on the Move

House and Polity Interaction in Southern Ostrobothnia 1500 BC – AD 1

Peter Holmblad
Preface

Several persons and organisations have contributed to my thesis project. First of all I want to thank my supervisor Karin Viklund and my second supervisor Mika Lavento (at Helsinki university). I also want to thank my colleagues at my department. Philip Buckland made the paperback of this thesis; Johan Linderholm guided me through my soil chemical analyses, Jan-Erik Wallin performed the pollen analyses; just to mention a few examples. I have had many interesting discussions with Radoslaw Grabowski. Thomas Larsson has contributed with valuable comments. Hazel Moesly has reviewed my English texts.

I send my gratitude to all the amateur archaeologists in Österbottniska fornforshningsällskapet and in Laihian kotiseutuyhdistys that have supported my project by assisting me in the field. Pentti Risla and Kaisa Lehtonen have been two valuable colleagues in Ostrobothnia. Ronny Smeds and Johan Björtin helped me with my mapping projects. Furthermore; this thesis had not been written without the important fieldwork that had been conducted over many years in Laihia by Esko Luoma and Mirja Miettinen.

I have been financially supported by Svensk-Österbottniska Samfundet, Siri och Olof Granlunds stiftelse, Svenska kulturfonden i Finland, Etelä-Pohjanmaan maakuntarahasto and Kempes minnes stipendiefond.

And finally I wish to send may gratitude to my parents and my brother, whom I have sadly neglected lately due to this thesis project; and to my dear Sandra, who has endured my absence during my late night shifts at the university, during my field expeditions, and also the partial transformation of our home into a second work office.
Table of contents

1. Introduction...........................................................................................................7
   1.1. Background and aims of the thesis...............................................................7
   1.2. Problems of Early Metal Period communities in Southern Ostrobothnia........9
   1.3. Geographical and chronological frames.....................................................10
   1.4. The structure of the thesis..........................................................................11

2. Theoretical and methodological platform..........................................................13
   2.1. Introduction...................................................................................................13
   2.2. Perspectives on social organisation.............................................................14
       2.2.1. Archaeology of communities...............................................................14
       2.2.2. Houses and House societies...............................................................17
       2.2.3. The political economy and modes of exchange..................................19
       2.2.4. Local polities......................................................................................20
       2.2.5. External networks and relations.........................................................23
   2.3. Habitation practices.....................................................................................24
       2.3.1. Residential sedentarism.......................................................................26
       2.3.2. Logistic mobility..................................................................................30
   2.4. Subsistence practices..................................................................................31
       2.4.1. Foraging subsistence practices............................................................32
       2.4.2. Agrarian subsistence practices............................................................33
   2.5. Summary......................................................................................................35

3. The source material and its chronology..............................................................37
   3.1. General archaeological chronology..............................................................37
   3.2. Early Metal Period research in Southern Ostrobothnia.........................39
   3.3. Shoreline chronology and land-uplift related processes.........................41
       3.3.1. The shore-line displacement chronology..........................................42
       3.3.2. Ecological succession processes in uplift coastscapes.....................46
   3.4. Palaeoecology and environmental archaeology......................................48
       3.4.1. Palaeoclimate and Baltic Sea history...............................................48
       3.4.2. Palynological analyses......................................................................49
       3.4.3. Archaeobotanical and osteological analyses.................................50
   3.5. Sites and construction types........................................................................50
       3.5.1. Open settlement surfaces...................................................................50
       3.5.2. Visible dwelling constructions...........................................................54
       3.5.3. Burial cairns and stone-settings.........................................................56
       3.5.4. Clearance cairns and stone clearances..............................................63
       3.5.5. Cooking-pits and burnt mounds.........................................................64
       3.5.6. Trapping-pits......................................................................................66
       3.5.7. Storage pits and storage cairns.........................................................66
       3.5.8. Stray finds and artefact depositions.................................................67
       3.5.9. Ritual stones......................................................................................67
   3.6. The portable material culture......................................................................68
       3.6.1. Metal artefacts and metal crafting......................................................68
       3.6.2. Ceramic types.....................................................................................73
       3.6.3. Lithic artefacts and lithic crafting.......................................................77
       3.6.4. Wooden and bone artefacts...............................................................80
   3.7. Summary......................................................................................................81

4. The structuration of coastal Bronze Age communities.....................................83
   4.1. Introduction..................................................................................................83
   4.2. Collective sealing in the Late Neolithic and the Bronze Age..................83
       4.2.1. Social and ideological aspects on sealing.......................................83
       4.2.2. Sealing bases and stations.................................................................85
       4.2.3. Shifts in sealing practices.................................................................90
   4.3. The spatiality of coastal settlements and mortuary monuments..............96
       4.3.1. Spatial orientation and localisation strategies....................................96
4.3.2. Spatiality and time-scales in uplift coastscapes

4.4. The Laihia settlement district

4.4.1. The Early Bronze Age in Laihia

4.4.2. The Late Bronze Age in Laihia

4.4.3. Palaeodemographic considerations

4.5. The cooking pit distribution in Laihia

4.6. Peltomaa; expressions of Bronze Age centrality

4.6.1. Heated stone technology and the logistic nodality of Peltomaa

4.6.2. Burial rituals and symbolic expressions in Jätinhaudanmaa

4.6.3. The settlement in Jätinhaudanmaa

4.6.4. Palaeoecological considerations

4.6.5. Signs of agricultural intensification

4.6.6. Jätinhaudanmaa as a high-rank house

4.7. Logistic ridge system networks

4.8. Hunting of cervids

4.9. The organization of Bronze Age coastal communities

4.9.1. Interacting Houses

4.9.2. Local and regional polities

4.10. External contacts and long-distance networks

4.10.1. Networks in the coastal zone

4.10.2. Contacts with inland groups

4.10.3. Trans-Baltic contacts

4.11. Summary

5. The coastal communities in the Early Iron Age

5.1. The Early Iron Age communities, issues of change and continuity

5.1.1. Patterns of residential sedentarism

5.1.2. Agrarian subsistence practices

5.1.3. Logistic mobility and foraging subsistence practices

5.1.4. Social organisation and external networks

5.2. Towards the Middle Iron Age societies

5.3. Summary

6. Concluding discussion: durées, conjunctures and the resilience of the coastal communities

Summary

References

Abbreviations
1. Introduction

1.1. Background and the aims of the thesis

In the summer of 2002 I visited the Alatalo cairn cemetery in Laihia for the first time. Until then I had only read about the site, for instance in a text published by Mirja Miettinen (Miettinen 1998). I was instantly impressed by the relatively large cemetery consisting of several very densely arranged cairns, of which many were quite large. I also noticed that the site was perfectly situated for an agrarian subsistence economy as the site was located on a low promontory where the ground was composed of silty moraine. There was also an adjacent clayey valley. I made a test with my soil drill and I noticed that there was a thick and a well articulated cultural layer at the site and that the soil was saturated with clay daub. If I had not known my location, I would have guessed that I was observing a schoolbook example of a wealthy Migration Period farm site with a farm cemetery. The structure of the large cairns (with central boulders) and the cemetery, the obvious settlement remains in the cemetery context and the topographical location of the site all seemed very Migration Period to me (as this is the typical structure and topographical location of Migration Period farms, cairn cemeteries and cairn constructions in the Vaasa area). Still, the razors that had been found in the cairns in the 19th century clearly indicated a Late Bronze Age date for the site. The altitude indicated also clearly a Bronze Age date for the site. My next thought was that this site definitely needs to be investigated.

During the Middle Iron Age (AD 200-800) we have comparatively good knowledge of the densely inhabited settlement districts in the area around the current town of Vaasa. Cemeteries with richly furnished burials manifest social hierarchies and maritime contacts across the Baltic Sea. The stratified and centralised character of the material manifestations of the Middle Iron Age communities point to the emergence of a regional polity that perhaps reached the chieftain level of social complexity. The richest finds and the most monumental burial cairns belong to the Migration Period. The subsistence economy of the Middle Iron Age was founded on pastoralism, partly on field cultivation, and apparently to a lesser degree on foraging (see Herrgård & Holmblad 2005 for further references). The visit to Alatalo had made an impact on me. I started to wonder about the similarities and the differences between the Migration Period and the Bronze Age in the region. What kind of society was present in the region in the Bronze Age? How was it different from the Middle Iron Age society and how did it differ from Bronze Age societies in other regions? I started to question some of the ways in which the coastal Bronze Age in Finland was presented by various scholars.

When I wrote my PhD project application in 2005, I decided that it should deal with the Bronze Age and the Pre-Roman Iron Age in Southern Ostrobothnia. Admittedly, my thoughts about the Alatalo site and the coastal Bronze Age still intrigued me and I hoped that I could fill at least some of the knowledge gaps. I was given the opportunity to do this, and I collected data at Alatalo and in the surrounding areas during the following summers. I soon realised that I needed to develop a more sophisticated theoretical basis for my interpretations on the coastal Bronze Age and the coastal Pre-Roman Iron Age, but which way should I go?

Mika Lavento has problematised the use of the concept of Scandinavian Bronze Age culture in coastal Finland, and even the very concept of the Bronze Age itself (Lavento 2009). The Scandinavian oriented Bronze Age in Finland has traditionally been seen as a uniform culture
that was basically an extension of the South Scandinavian Bronze Age (Lavento 2009:128). Despite some similarities between coastal Finland and Southern and Central Scandinavia, Lavento stresses that there are also differences, and that the coastal area was also affected by influences coming from the east and from Estonia (Lavento 2009:125). He writes that the perception of the South Scandinavian Bronze Age in Finland has largely been based on the occurrence of the coastal burial cairns, while the number of bronze artefacts and recorded longhouses is low (Lavento 2009:131). Lavento concludes that the coastal Bronze Age of Finland was a cultural mosaic that included influences from different directions, and that coastal Finland seen from a South Scandinavian standing point was a marginal area. Coastal Finland cannot, according to Lavento, be included as a part of the proper South and Central Scandinavian Bronze Age culture (Lavento 2009:133).

Lars Forsberg has presented similar ideas in an article on coastal societies in Norrland during the Bronze Age. He states that the traditional interpretations of coastal areas have been based on top-down perspectives where the societies come only in two alternative and pure guises: the Nordic and the Arctic; however the archaeological source material does not show such a clear-cut distinction (Forsberg 1999:281). Forsberg moves on to criticise the traditional culture concept, suggesting that the culture concept has subsumed and repressed all variability and that it has distanced the archeologist from dealing with local configurations of social action (Forsberg 1999:281).

Then one might ask how these societies should be approached. Forsberg provides an answer. The alternative approach is to see society as built from the bottom up by the interaction of humans on a local scale, because it is the everyday life of the individuals and their interactions that constituted the local societies (Forsberg 1999:281, 251). Forsberg suggests that instead of two opposing cultures, the societies of the Gulf of Bothnia should be viewed as local societies that used various external stimuli and material culture according to their own local strategies. First an interpretation should be made of the character of the coastal communities and only then should this interpretation be related to the the wider question of the relationship between the south and the north (Forsberg 1999:281, 284). This suggested approach corresponds well to my own thoughts.

This work attempts first of all to seek new insights in understanding the archeological phenomena traditionally labelled as the coastal Bronze Age and the coastal Pre-Roman cultures of Finland by studying the phenomena from a socioeconomic practice-oriented community perspective (see chapter 2), rather than macrogeographic cultural historical perspectives or large-scale system theories. In some sense this work deals with creating biographies and thus with the construction of archaeological identities for some Early Metal Period communities. This work also attempts to position some Ostrobothnian Early Metal Period coastal communities in the matrix of their contemporary world - but also to position them in the succession of time, between the Late Neolithic and the Roman Iron Age worlds. The real trick is to find out how these communities; peripheral from contemporary political centres and wavering at the very edge of the agrarian world - navigated their way through history.
1.2. Problems of the Early Metal Period Communities in Southern Ostrobothnia

A particular mix of some apparent features could be described as historically specific elements of the Early Metal Period communities of coastal Ostrobothnia. This mix includes rapid shore displacement and a gradual settlement relocation, a relatively well articulated cultural dualism as well as a high-frequent cairn production and a mixed subsistence economy (see chapter 3 and Herrgård & Holmblad 2005). Another particular characteristic trait of Ostrobothnia is that the area was one of the most northern agrarian regions in prehistory, situated at the very climatic limit of sustainable cereal cultivation. These communities were perhaps only partly metal using, partly agrarian and even partly sedentary, and they still apparently managed quite well over a long time span in a landscape that was rapidly transforming by isostatic uplift related processes.

In some abstract general sense, some of the apparent Early Metal Period changes in Ostrobothnia are comparable to the process of neolithisation (as the concept is understood in its widest sense) in Southern Scandinavia or Central Europe. Such issues concern the apparent breakthrough of agriculture and agricultural values, an emphasis on monumental burial traditions and the role of the farm as a basic institution of habitation. But on the other hand, traditional foraging practices did survive throughout the Early Metal Period. Mixed subsistence practices arguably affected the habitation practices, the social organisation, the ideology and other aspects of the Early Metal Period communities, but how did habitation practices relate to the mixed subsistence practices? Furthermore, how did these practices affect other aspects of society? The mixed subsistence and habitation practices indicates the presence of different social contexts for economic production and social cooperation, but how were the different organisational levels integrated, and how did they interplay? This takes us to a community archaeology that studies interactions, structures and changes in the overall land use of ancient communities.

Despite some apparent similarities with the process of neolithisation and preserved foraging traditions, it is obvious that we are not dealing with semi-Stone Age communities. It is clear that the South Ostrobothnian coastal communities were linked to the Bronze Age world of strongly ritualised and extroverted modes of display and maritime long-distance networks. In my view, the coastal communities were clearly connected to a South Scandinavian sphere of influence. The archaeologically materialised expressions of the coastal communities changed, apparently quite radically, at the transition to the Pre-Roman Iron Age. The Pre-Roman Iron Age communities are archaeologically articulated in more introverted and discrete ways than the Bronze Age communities. Also this is a general trend that is apparent in South Scandinavia and in much of the Baltic area. It is obvious that the South Ostrobothnian communities changed in tandem with the farming societies in the south, but how were the South Ostrobothnian communities linked to the external world?

Problems to be addressed in this thesis can be formulated as follows:

What was the interrelationship between the subsistence practices, habitation practices and the social organisation of the coastal communities in Southern Ostrobothnia?

Which types of social groupings were essential for the structuration of the coastal communities and how did they interplay and relate to external networks?
Which spatial and temporal scales can be considered as essential for the structuration of the coastal communities?

How did the coastal communities manage change over time?

1.3. Geographical and chronological frames

The geographical range of this thesis is limited to the former province of Vaasa (Vaasan lääni/Vasa län), with a special emphasis on the southern part of Ostrobothnia. As this thesis deals with the coastal communities of the Early Metal period, the focus is largely on the coastal area which harbours the great majority of the Early Metal Period sites and source material. It is clear that the Early Metal Period settlement was concentrated in the coastal region. The analyses are treated with different degrees of detail at different geographical scales. The Vaasa area and particularly the parish of Laihia is studied in close detail. The reason for this detailed treatment is that this area can be considered to be the best surveyed and the most extensively excavated and researched area in Southern Ostrobothnia when considering the Early Metal Period. This is also an area where settlement continuity is easy to trace into the Middle Iron Age, which makes diachronic comparisons easier. Other parts of Southern Ostrobothnia are treated in a more superficial fashion and they are mainly referred to when they can contribute with some important data or observations.

Chronologically this thesis is limited to the Early Metal Period. The core periods of study will thus be the Bronze Age and the Pre-Roman Iron Age, but for the sake of long-term comparison and contextualisation, preceding and proceeding periods will also be touched upon. My empirical definition for the onset of the Early Metal Period is only indirectly related to the actual emergence of metal objects, due to the low number of recorded Early Bronze Age metal artefacts in Southern Ostrobothnia. The empirical definition for the start of the Early Metal Period is therefore based on the new monumental “landscape paradigm” that is empirically highlighted by the frequent and systematic construction of large and rounded burial cairns of the Bronze Age type in the second millennium BC. This change can however be related to a more frequent emergence of Early Bronze Age metal objects of South Scandinavian types in South-Western Finland. The end of the Early Metal Period is in turn marked by the increasing frequency of recorded Iron Age grave goods around the beginning of the Common Era. The Early Metal Period is thus used as an umbrella term that encompasses the time span when mortuary monuments were built continuously and systematically at a frequent pace in the coastal landscape, but prior to the time of the frequent inclusion of grave goods. In absolute terms this study thus encompasses roughly the time from 1500 BC until AD 1. There are also other empirical materials and considerations that relate to the definition of the Early Metal Period and its sub-periods (see chapter 3.1).
1.4. The structure of the thesis

In chapter two some major theoretical and methodological considerations that will be applied or direct the line of thought in following parts of the thesis are presented. Chapter three consists of a presentation of the source material and its chronology, as well as some palaeocological considerations and the research history. Some problems that are related to the source material and its chronology are discussed in this chapter, and some interpretations are made that will guide the interpretations in the following chapters. Chapter four contains an analysis and an interpretive discussion of the structuration of the Bronze Age coastal communities. Chapter five continues with a discussion of the Early Iron Age communities, largely in comparative terms of continuity and change in relation to the results achieved in the Bronze Age chapter. Then follows chapter six where a concluding discussion is conducted on the major research issues of the Early Metal Period coastal communities.
2. Theoretical and methodological platform

2.1. Introduction

At a basic theoretical level I view archaeological research as a hermeneutical process of pre-understanding, interpretation and understanding. This implies a research process that is based on a constant dialog between theory, interpretation and empirical data. This does not mean that I denounce the use of deductive methodology; I rather view the use of hypothesis testing as a part of the overarching hermeneutical process.

The archaeological source material is activated within diverse contexts of discourse in order to interpret its meaning. The contexts are created out of necessity in order to structure and to make relevant use of the source material from a problem-solving standpoint. The establishment and the delimitation of different discursive contexts is based on the questions of research. The first type of contextual meaning refers, according to Hodder, to the environmental, technological and behavioural contexts of action. Understanding of an object comes about through placing it in relation to the larger functioning whole (Hodder 1986:153). But Hodder defined also a second type of contextual meaning. A network of relationships around an object can be "read" as a text in order to reach an interpretation of the meaningful content (Hodder 1986:153). The third type of context mentioned by Hodder is the current sociocultural context of the researcher him- or herself (Hodder 1986:154). The creation of the specific discourse contexts can thus be regarded as subjective because they are based on research issues that are choosen by a reasearcher who is embedded in the context of the contemporary society and in the context of current archaeological research.

I will make use of general social theories, a practice which at first glimpse may seem to stand in conflict with the aims of the particularistic contextualism described above. I will for instance make use of social anthropological theory which is based on generalised observations of ethnographically studied preindustrial and precapitalistic societies. I view the use of general social theories as one of several means to reach a more well informed level of preunderstanding, where general social theories provides some frameworks of understanding that hopefully stand in a more independent position when compared to the current sociocultural context of myself as an individual researcher. A hermeneutic process that starts off with a preundestanding that relies on pure "common sense" as its basic social theory is in my view more likely to be biased by the current sociocultural context as well as the prejudices of the individual researcher. I do admit that the sole and final truth about prehistoric societies is never to be found. The best we can do is to make as credible, well informed and self-critical interpretations as possible within the context of contemporary research. Subjectivity of the interpretations should be delimited by the source critical use of empirical data and, hopefully, by the well-informed use of relevant theoretical considerations.

Fernand Braudel defined three temporal levels of historical change (Braudel 1972). He called the short history of specific events as *les évenéments*, medium duration cycles were defined as *les conjunctures*. Almost unchanging structures were termed as *les longues durées*. In some historiographical sense this thesis deals with the identification of different conjunctures and longue durées. The concepts provided by Braudel are used in the concluding discussion of this thesis where they work as historiographical tools to guide my description of some
archaeologically identifiable continuities and large scale changes within the coastal communities. I find it also important to try to understand the dynamics of temporally overlapping conjunctures of different kinds and to search for their underlying causes. The concepts given by Braudel are therefore also used as tools to describe my perception of the various scales of change and how the various changes were interrelated in an overarching perspective. Furthermore I regard the concepts given by Braudel as a way to approach a discussion on the management of change in ancient communities.

In my view the management of change can be related to the concept of resilience, because this concept relates to the stability and to the more or less controlled transformations of communities. Folke states that resilience deals with the flexibility or the ability of a community to withstand disturbance to its social infrastructure and to maintain its essential function and structure. Resilience deals thus with the capacity to absorb stress, disturbances and shocks, but it deals also with the capacity to cope with change, adapt to change, and to shape change. Furthermore it deals with a community's capacity for renewal, re-organization and development (Folke 2006:253f, 259). Various practices that were maintained in an ancient community could therefore reproduce or increase the resilience of the community while other practices could have negative impacts on the resilience. This issue will also be dealt with in the final chapter of this thesis where the conclusions are tied together to form a final discussion of the studied communities and their changes in a general long-term perspective.

In the following part of this chapter I will present some theoretical ideas that may hopefully be useful for the study of relatively small-scale, pre-state and pre-capitalistic communities; in how they were internally organized, how they interacted with each other and how they dealt with the surrounding world in a larger perspective. The discussion is mainly designed to explain some important concepts that are used in later chapters of this thesis. The discussion is therefore deliberately kept on a relatively general, mostly social-anthropological level, and quite few direct references are made to archaeological interpretations of specific communities. Such interpretations of Early Metal Period communities and human practices in Northern Europe are instead dealt with in chapter 4 and 5. Firstly, some ideas are presented that deal with the question of how ancient communities should be perceived and studied and by archaeologists. Secondly, a number of important concepts are presented that deal with ancient human practices in terms of social organisation, external networking, habitation and subsistence. In addition to this, some methodological thoughts are presented on the subject of how these issues can be studied by archaeological means in the study area.

2.2. Perspectives on social organisation

2.2.1. Archaeology of communities

Throughout this thesis, community is used to signify small local societies in general. Community corresponds closely to the spatial-analytical settlement district (see chapter 2.3.1), or to the sociopolitical construct of the Local Polity (see chapter 2.2.4). Community corresponds in other languages to the German Gemeinschaft and to the Finnish yhteisö. In Swedish it corresponds to lokalsamhälle (or even to samfund in a wider sense of the word). Bygd could also be considered to be a closely related synonym in Swedish. I will generally use the word society when I refer to human social organisation on higher levels of abstraction, which corresponds to German Gesellschaft, Finnish yhteiskunta and Swedish samhälle.
The study of small social formations has been embraced with renewed enthusiasm since the 1990s, especially in household oriented archaeology. Fokke Gerritsen argues that the study of households and communities bears great potential to make a contribution to better accounts on social and cultural change, even in larger long-term change perspectives. Households and local communities provide a level of analysis between individual artefacts and grand narratives (Gerritsen 2004: 141, 151). Canuto and Yaeger argue that a more focused and explicit study of communities, that is situated between household archaeology and regional studies, promises to yield unique insights into identity and group membership, social organisation and socioeconomic integration (Canuto & Yeager 2000:2).

The archaeology of communities has, however, not had the same recognition as household archaeology and the field is described as amorphous and little theorized. Canuto and Yaeger criticise what they term a methodology-first approach in settlement archaeology that focuses on static building-block typologies and functionalist frameworks (Gerritsen 2004:141, Canuto & Yaeger 2000:4, 12). Gerritsen criticises the inexplicit use of the community concept in archaeology and the "natural" community idea that has been prevalent in settlement archaeology (Gerritsen 2004:144). The "natural" community concept means that the social group is taken as pre-given as if self-evident identities emerge automatically through co-residence and the nature of the social group is not called into question. The "natural" community concept is difficult to combine with human agency as a shaping factor in social relationships and identities. Furthermore it fails to take into account that social collectivities are constituted in historically and culturally specific ways (Gerritsen 2004:145). Similar problems are discussed by Susan Gillespie who deals with the issues from a more social-anthropological standpoint. Gillespie states that in order to define group membership, social anthropologists have endeavoured to find ways to combine the role of descent with the roles of residence, locality and territoriality. One concept created by social anthropologists for such aims is the "localised kin group" (Gillespie 2000b:468ff). Gillespie criticises what she terms a classificatory approach to kinship in social anthropology that focuses merely on abstract models or idealized rules that one-sidedly promotes the role of lineages (Gillespie 2000a:1). This classificatory approach escapes the mechanisms that linked groups together into networks that encompassed different levels of society (Gillespie 2000b:475).

Canuto and Yaeger argue that communities are socially and historically constituted institutions that should be studied from an interactionist, practice-oriented standpoint by investigating how they are constructed through social interaction and agency (Canuto and Yaeger 2000:3ff). Gillespie recommends in a similar fashion what she calls a "processual" approach (as opposed to a classificatory approach) that focuses on the everyday local practices by which social relationships are constructed (Gillespie 2000a:1, 2000b:475). Gerritsen regards communities as symbolic constructs of identity and he stresses that we have to recognize the historically and culturally specific forms of communities. We need to try to recognize the indigenous notions of social relationships and the ways they contributed to senses of community. He acknowledges that common residence or at least frequent interaction was an important element of community construction, but community identities were also fostered by interaction in other spheres of social life. We need to address the specific constitution of local groups to be able to understand issues such as social change in local settings; we also have to study the interactions between local groups and larger social networks (Gerritsen 2004:145).

Social and cultural change involves human agency that operates within structures but it also changes and shapes the structures (Gerritsen 2004:150). This account can be compared with
Giddens, who states that social structures stand in a dialectic relationship to human actions. Structures create a constraining basis for human actions, and the reproduction of dominant social and economic structures may take place completely unintentionally. A society always undergoes small gradual changes because humans lack the capacity to fully oversee the possible unintended outcomes of their actions, and the unintended results attach to existing structures. Structures are therefore also an outcome of human actions and they create possibilities for change (Giddens 1984). Agency forms thus a crucial dynamic of social and cultural change (Gerritsen 2004:150). Archaeologies of communities should however not shy away from external factors to social change as demographic growth, climate change, or the availability of natural resources. Other external factors include external political authority, conquest or long-distance trade. We need to acknowledge the use of agency in confrontations with external forces, where it is used to react to situations that have emerged outside of local human control (Gerritsen 2004:150f). This agency-including approach does therefore not equate to a mere identification of external root causes and to predictable, passive human reactions. Salzman states that an important aspect of societal change is the social capability to manage the change. This capability can be inherent in the multiplicity of a community. This can be seen in a number of alternative patterns of practices, values and identities (Salzman 2004:138f). Communities may thus contain “institutionalized alternatives” that are available to be activated at the opportune time when conditions are changing. Inactive and countercurrent practices can be maintained verbally, ritually or in minority groups (Salzman 2004:139).

The inhabited landscape can be regarded as one of the elements that constituted peoples identity (Gerritsen 2004:147). The traditional dichotomy of socio-natural connections with reactive or proactive conceptions has recently been replaced by an interactive society-nature perception (Fischer & Feinman 2005:64). Environment and society change in tandem and their relationship is continually renegotiated at a variety of temporal and spatial scales. By engaging with their environment, humans construct their own landscape. The landscape becomes invested with anthropogenic capital and the built landscape creates long-lasting legacies of socio-landscape relationships (Fisher & Feinman 2005:64). Historically contingent landscapes constantly reconfigure and condition human practices at all scale (Fisher & Feinman 2005:65). There is thus a reciprocal and a dynamic relationship between humans and the landscape. Humans order a landscape mentally and physically. The landscape becomes inhabited and inscribed with memory and cosmology and acts then in turn as an instrument in creating social identities and collectivities. Identities are constructed through social practices taking place in shared localities. The nature of these activities needs therefore to be investigated (Gerritsen 2004:147). Or put in other words, the shared experiences and common visions of the community with regard to the character of specific places affect the formation of areal group identities (Asplund 2008:46).

Some of the mentioned authors provide also more tangible ideas on how communities should be approached in more practical methodological ways. Perhaps the most important (and self-evident) idea is that questions regarding the constitution of the communities can be linked to questions and themes in settlement archaeology and in landscape archaeology (Gerritsen 2004:146f). A comparative and diachronic, multi-proxy approach is mentioned as a way to strengthen the interpretive studies on communities. A broad perspective is needed in the study of the construction of local communities because all social interaction can construct, maintain or contest collective identities. It is therefore necessary to investigate all archaeologically traceable activities that ordered the landscape and that may have contributed to a sense of community or that may have contested it (Gerritsen 2004:147, 150). Canuto and Yeager pinpoint the correlation of spatial and social units, the problems of scale and sampling, the
recognition of interaction and the question of palimpsestered data (where the establishment of contemporaneity is difficult) as the most important methodological issues and challenges for the archaeology of communities (Canuto & Yeager 2000:9, 11). Gillespie suggests that the strategic purpose or the function of social groups should be explained first, in order to understand their existence. How the mutual relationships are enacted or conceived should be studied afterwards (Gillespie 2000a:1, 2000b:475). But as Gerritsen noted: communities cannot be studied in a vacuum because they are cross-cut by identities that are not directly related to localities or localized social practices (Gerritsen 2004:147). In order to understand the position of communities in social and cultural change we need to combine the synchronic small scale models of domestic activities with models of broader diachronic development and structural change (Gerritsen 2004:144, 151). I regard all the presented ideas as helpful for my study on Early Metal Period communities in my study area; they provide a theoretical basis for my socioeconomic practice-oriented community approach.

2.2.2. Houses and House societies

An approach which Susan Gillespie personally promotes is based on the concept of the *House* and that of the *House society* as originally established by Claude Lévi Strauss (*maison* and *société à maisons*). He noticed that people often referred to their "houses" as the units from which they derived their identities (Gillespie 2000a:1, 2000b:476). In the current anthropological critique of kinship: "lineage" is increasingly becoming replaced by the "House" (Gillespie 2000b). Gillespie claims furthermore that the "House" approach is of great value for archaeology because of its emphasis on the significant material and physical manifestations of the House and its property as the constitutional basis of social groups. The House approach is also related to the study of the construction of meaningful places (Gillespie 2000a:2, 15, 2000b:468). Historical long-term perspectives are furthermore considered to be essential for the understanding of Houses (Gillespie 2000a:11, 15). The functional, material, spatial and long-term aspects of the House approach would thus altogether make it attractive for archaeology. The "House approach" provides a heuristic model that is based on the pragmatic actions of people.

By reference to Lévi-Strauss, Gillespie states that the *House* as a social group was much more than a household. The Houses could be extremely flexible entities, with multiple forms of expression. A common theme was that the named Houses formed long-lived corporate bodies that maintained an estate that was made up of material and immaterial property. A House was organised by the shared residence, subsistence and means of production, origin, ritual actions and metaphysical essence. The House was socially reproduced by the actions of its members. Their commitment to preserve the corpus of joint House property materialised the House members as a social group (Gillespie 2000a:1f,7; 2000b:476).

The *House* was the basic social institution in *House societies* and it formed an important part of their ideological structure. House societies were not universal, but they evolved independently in both egalitarian and in ranked societies, both with foraging and with agrarian based economies. House societies could innovate in place, but their institutions and values could also be acquired from neighbouring peoples (Gillespie 2000b:476ff; 2007:29). The emergence of Houses could be patchy and uneven in the same society and societies could also become less or more "house-y" over time (Gillespie 2008:29f).

House societies appear generally to have emerged when more or less egalitarian kin-based societies shifted towards more complex structures of organisation. We are dealing with non-
class societies with differential access to wealth, rank and power. The emergence of House societies is connected to new space and time related social values. House societies emerged when continuity, political power, property rights, property growth and intergenerational transfer of property became important social values. Houses were organized for specific functions and purposes as economic, political and ritual units, but their main role was to keep and to enhance property. There is a general link to a growing importance of landed property as a value that was materially manifested in the landscape. This included the maintenance of land rights, a recognition of boundedness and durable ownership. We are mainly dealing with resources that required a substantial investment in labour or that had a relatively slow rate of return on investment, such as animal herds (Gillespie 2000b:468, 476ff; 2007:29, 39; 2008:32,36,40ff). House societies declined when contractual and class-based relationships started to bind people together. House societies were in these cases replaced by class-based societies or by societies that were dominated by market forces and wage labour (2007:41f). Logically a House society could also vanish by returning into its former state of a kin-based society.

House societies were still rooted in kinship structures, but real kinship was undermined, kinship became sort of a disguise mantle for sociopolitical manoeuvres. The social relationships were functionally employed as strategies to legitimate and to reproduce the unity and the longevity of the Houses. Kinship became thus employed as a "language" and the recruited House members acted in real and in fictive kinship terms (Gillespie 2000b:468, 2008:32,36,40ff). The names and titles of the House members could be reproduced in a cycle of generations, down a real or imaginary line. The concern for shared origins served to localise and to bind the social group, but actual biological descent was only one of the components. The House members replaced and embodied their forebears and the sum of their life spans contributed to the status of the House (Gillespie 2000a:12f, 2000a:12; 2001:7). Eternity and House heritage were therefore fundamental values in House societies and ties were maintained to the glorious founders and the past members of the Houses. The names, origin narratives, ritual performances and ancestral spirits were important immaterial property of the Houses (Gillespie 2000a:12f). The heritage of a House defined its legitimacy, its prestige and its standing as an institution. It provided long-term stability even if the residential buildings were rebuilt or moved. But even when publicly claimed, eternity could have little basis in fact, especially when a House reached for higher status (Gillespie 2000a:12f; 2001:7).

When House societies emerged, efforts were made to materialise the eternity of the Houses. When the immaterial House heritage and the life histories of its members were materialised, the outcome was a materialised House biography. Manifestations in the landscape could consist of constructions as residential buildings and monuments (Gillespie 2007:35). Also ancestral relics and curated heirlooms could be foci for social memory. House valuables acquired in marriage exchanges could serve as mnemonics for alliance relationships that once had linked houses together. Such objects were especially activated at marriage ceremonies, but also at mortuary ceremonies (Gillespie 2000a:12f; 2007:36). Valuable items, especially those with long biographies and distant provenances could be repositories for the fame of the House members (González-Ruibal 2006:165).

Status differences were generally present both within and between Houses, which also showed differences in their economic, social and symbolic capital. The House as an institution was generally most manifest amongst the high-rank Houses and they were particularly articulated in their alliance interactions with other Houses. High-rank Houses could display their status and their resources through their physical constructions, heirloomed valuables, ancestral shrines, their titles or through their elaborate wedding and funeral rituals that
manifested their exchange relations with spouse giver and spouse taker houses. The social rank of a House could on the other hand also be situational and tied only to its renown instead of its accumulation of material wealth. (González-Ruibal 2006:161; Gillespie 2000a:2,8,11; 2000b:8,477; 2007:38).

Houses also gained and they lost in status over time. There was a continuous manoeuvring among commoner Houses to elevate themselves. There was a continuous competition among the noble Houses for rank and they acted to increase their labour force by attaching commoners. Low-rank Houses could even cease to be regarded as Houses if they were attached to a high-rank House (Gillespie 2000a:8; 2000b:477; 2007:38). The long-term strategies of Houses and the cumulative outcome of the individual choices made by generations of House members lead to different outcomes. The differential success in the long-term strategies in their management of resources and social relationships were the basis for status and power differences. In the long run these factors constituted hierarchies and they resulted in historical change (Gillespie 2000a:2, 11; 2000b:8). House statuses could also fluctuate when new sources of wealth became available or when interactions with other societies changed the local dynamics (Gillespie 2000a:10).

I think that the House perspective can be useful for my study on the Early Metal Period communities. Several material traits and elements that are related to Houses appear to be present in the research area (see chapter 3). Unfortunately there is a lack of adequately documented residential building remains in Southern Ostrobothnia. It is however important to note here that the actual definition of a House does not refer to the residential building constructions and their physical qualities. Residential buildings may have been regarded as important parts of House property, but they were not necessarily the most important constructions of the Houses, and they were not necessarily the structures that were best suited to materialise the Houses (Gillespie 2007:34f). Ritual buildings, burial monuments, or even hearths and rubbish heaps may in some communities have been regarded as better means to manifest House eternity in the landscape (Gillespie 2007:35). I can therefore not see a reason why a house perspective could not be applied in the research area, at least it can be applied for experimental purposes and its utility can be evaluated later (see chapter 4.6.7 and 4.9.1). Gillespie pinpoints the materiality, long-term place continuity, references to eternity and the strategic group agency as the factors that are easiest to operationalize archaeologically when a House perspective is applied (Gillespie 2007:33). She states that the application of a House society model in archaeology should consider the specific societal factors that could prevent house formation and that could stimulate house creation (Gillespie 2007:30). It can furthermore be added that a House society perspective has recently been applied in the study of the South and Central Scandinavian Bronze Age society (Artursson 2009), in a study on the Neolithic foraging "village" communities of North and Central Ostrobothnia (Vaneckhout 2009), but also in a historical-anthropological study on the rural Karelian society in Post-Medieval times (Armstrong 2004:57ff).

2.2.3. The political economy and modes of exchange

The concept of the political economy refers to the exchange of goods and services in a community of interconnected families, in other words to all parts of the economy that fall outside the immediate sphere of the subsistence economy (see chapter 2.4). The concept has originally been developed as a means to understand the relationship of the three interlocked processes of subsistence intensification, political integration and social stratification in relatively complex societies, but Johnson and Earle states that every society must have at least
a rudimentary political economy, because families can never be entirely self-sufficient but are linked by needs for security, mating and trade (Johnson & Earle 2000:2, 25ff). The political economy could thus in its widest sense be defined as the sum of all economic production and work that is conducted within or for a public sphere, and that is consumed beyond the immediate family-level. I regard the political economy as a useful concept that bridges the gap between the subsistence economy and the social and political spheres of society.

Most complex societies exhibit a cyclical pattern where the political economy expands to its limit, collapses by internal conflict and then begins to expand again. The political economy is thus inherently unstable and dynamic and it bears a potential for dramatic changes (Johnson & Earle 2000:25ff). In competitive political domains it becomes growth-orientated and geared to mobilise surpluses from the subsistence economy. The surplus is used to finance social, political, and religious institutions. These institutions can in turn become used to support and legitimise elite control of the productive resources of the region. A growing political domain of the economy is thus vital for the rise of social complexity (ibid.).

Feinman has described two major political-economic strategies which can lead to social stratification. They are not necessarily mutually exclusive and their relative importance may vary over time. The first strategy is the group-oriented corporate mode where redistribution is important. The emphasis is on collective rituals, public construction, integrated social segments, kinship affiliation, and relatively suppressed economic differentiation. The other strategy is the network mode where the strategic efforts of political elites and their individual prestige are important. The emphasis is on wealth accumulation, personal networks, long-distance exchange, and the specialized manufacture of status-related craft goods (Feinman 1995: 273ff).

Exchange of goods and services may be instituted in three fundamentally different ways as reciprocity, redistribution and exchange. Reciprocity denotes customary give-and-take of equivalent value over time amongst small, roughly equal social groups. Redistribution requires a central authority as a Big Man or a chief who controls a flow of goods into a centre from where it is redistributed, often disguised into feasts and gift-exchange. Exchange refers to the modern market economy characterized by a marked driven flow of goods under the regime of supply and demand (Johnson & Earle 2000:18).

2.2.4. Local polities

A community or a settlement district (see chapter 2.3.1) could be bound together by an areal identity and some form of a socio-political superstructure. These units were thus both territorial and organizational entities (Asplund 2008:36f). They may have emerged either as a result of some external force or as local constructs that were based on common aims and spontaneous cooperation. Interdependences were shaped between closely situated settlement units and a formalisation of rules for information exchange, leadership and obligations took place (Asplund 2008: 37, 331). In connection to the House societies (see chapter 2.2.2), Gillespie acknowledges that important structural units could operate above the level of the individual Houses. In the absence of a centralising authority, interhouse relationships could form the basis for integrative socio-political and economic relationships. Interhouse competition and cooperation functioned thus to create a "communal ethos" (Gillespie 2007:32, 37).
When classifying diverse communities according to their respective levels of socioeconomic integration and political complexity, Johnson and Earle use the typological terms of the family-level, local group and the regional polity (Johnson & Earle 2000). I have chosen to focus on the local group type of society, because I assume that it bears the highest degree of relevance in terms of correspondence to the Early Metal Period communities that are studied in chapter 4 and 5. The local group model corresponds largely to the tribe category as previously defined by Service (Service 1962), but he emphasised the regional organisation of clans at the expense of local group autonomy (Johnson & Earle 2000:129). From an archaeological point of view, I find it more convenient to relate my archaeological data to the spatially confined local group model of Johnson and Earle than to the more abstract and regionally dispersed tribe model of Service. I find the word "group" unnecessarily blunt however and for the sake of clarity I will talk about local polities instead.

In Renfrew’s terms polities refer to the highest order of autonomous socio-political units in any given region in terms of scale and organisational complexity. Polities are thus not subject to the jurisdiction of a higher power. Pre-historic polities show a range in variation that extends from egalitarian hunter-gatherer bands to stratified agrarian empires. A basic question for the archaeologist is thus to determine the scale of the polities in the society under study (Renfrew 1996:118f, 125). Polities contain at least habitually working internal procedures for decision-making, which in practice affect the behaviour of most of its members (Renfrew 1996:119). Nearly all polities show territorial behaviour, even in cases when they are not formally defined in territorial terms but in kinship terms. The polity and its members occupy an area of land and enjoy usually privileged access to the resources of the area (Renfrew 1996:119).

Local polities can emerge in societies based on foraging, farming or pastoralism. The settlement pattern of local polities can vary from co-residential villages to dispersed hamlets and even to mobile nomadic units. The organising principles are developed for specific purposes and they are maintained out of tradition and utility. Population densities among farmers is typically 0.5 - 12 persons per km², but generally lower among foragers and pastoralists (Johnson & Earle 2000:123). Anthropological studies suggest that communities of six or more family units would need some higher level of decision making (Asplund 2008:320).

Asplund provides four partly coinciding and overlapping stages in the formation process of an areal identity: 1) territorial shaping, when an area is distinguished from others through the recognition of naturally or culturally created borders or the recognition of some kind of centre; 2) symbolic shaping, when icons and symbols characterising the area are formed as a cemetery or places for common rituals; 3) institutional shaping, when institutions of importance for the area are established; and 4) consolidation and stabilisation of the role of the area (Asplund 2008:46).

Johnson and Earle link the rise of local polities to the rise of ceremonialism and leadership, but also to a rising frequency of warfare. A dominant theme is the role of ancestors. (Johnson & Earle 2000:126). In local polities, the economic considerations extend beyond the individual families and even beyond the territorial limits of the local polity (Johnson & Earle 2000:123). The institutions of local polities could be founded on kinship based subdivisions into clans and lineages, or on House based subdivisions; that defined personal relationships and group associations. Competition in turn created local and regional political rivalry that further intensified production to fuel ceremonial competition (Johnson & Earle 2000:131,
The surplus created through the political economy was not only used to finance social and political, but also religious institutions. In local polities the ceremonials may have become major household expenses that began to affect the basic productive decisions in the subsistence economy. Local leaders mobilized families to generate a surplus that was periodically consumed by ceremonial feasting, public displays and competitive gift-giving. Calendric group and ancestor celebrations were used to negotiate the social institutions. Ceremonies constituted the forum where decisions of the local polity were legalized and proclaimed. The ceremonies were invested with supernatural power because sanctity enforced group cohesiveness by making violations of ritually sanctified agreements dangerous. Ancestral spirits could also contribute to fertility, food production and success in battle. Cemeteries or sites where ancestors continued in connection with living descendants were thus important places within local polities. The personal identities were largely defined by descent and kin relations or by House membership that was in turn defined by ancestral connections (Johnson & Earle 2000: 25ff, 129f, 135, Gillespie 2007).

Kinship ties (or House membership), as well as status and power positions of the settlement units and districts, were crucial in alliance formation. The credibility of the organization was maintained by wealth displays and status related co-acting, the provision of security as well as other real and symbolic profits for the population (Asplund 2008:348). Partnership does not exclude competition and the power relations within the polities and the organization of cooperation may therefore have been unstable and changeable (Asplund 2008:347).

I regard an archeologically observed settlement district, which is an area marked by a cluster of several contemporary settlement units (chapter 2.3.1), as the analytical spatial definition of a local polity. The obvious weakness of such an interpretation is naturally the question of ancient perceived polity cohesiveness, practical cooperation or a shared power structure. The interpretation is strengthened if it is coupled by data that for instance indicates shared economic activities, or if a settlement hierarchy ties the settlement district around a redistributive centre. The study of the infrastructure network with routes and nodes of communication and transportation may also be helpful. Considering the fragmentary and the spatial character of archaeological data, it is perhaps more convenient and neutral to talk about centralised or decentralised local polities in analytical terms. A decentralised local polity could be roughly synonymous to an acephalous group and a centralised local polity...
could roughly correspond to a redistributive Big Man society or even to a simple chiefdom. The issue of local polities in the research area is discussed in chapters 4.9.2 and 5.1.6.

2.2.5. External networks and relations

External networks connote here contacts and exchange that go beyond the sphere of the local polity. The first level of contacts beyond the polity-level would naturally be some kind of interaction with the neighbouring polities. In peer-polity interaction strong interchanges takes place between polities of relatively equal scale and status that are situated close to each other in a region. This interaction is of greater significance than external links with other areas. The peer polity relations include imitation and emulation, competition, warfare and the exchange of goods and information (Renfrew 1996:114,123). Polities that are involved in peer polity interaction develop basically the same political institutions, symbolic and religious systems and spoken language. In an archaeological sense they share the same culture (Renfrew 1996:116,118). In a peer polity approach societal change is seen to emerge from the assemblage of interacting polities. It is at this level that uniformities emerge which appears to have a significant role in determining the future pattern of development, as processes of ethnic formation (Renfrew 1996:124).

In his framework of peer-polity interaction Renfrew states that when one polity is recognized in a region, neighbouring polities of similar scale and organization will be found. When a significant organisational change such as an increase in complexity is recognised within one polity, similar changes are likely to have taken place synchronously in at least some of the neighbouring polities. Transformations are furthermore likely to be accompanied by several institutional novelties as well as changes in production and in social hierarchies, and the changes appear in several polities at the same time (Renfrew 1996:125f).

Renfrew tends especially to stress the importance of symbolic entrainment and competitive emulation in peer-polity interaction. Symbolic entrainment, which includes belief systems and models for social organisation, refers to the trend of adoption of a more developed symbolic system when it comes in contact with a less developed system. The more advanced system of a neighbouring polity is adopted because it carries a higher level of assurance and prestige, given that the systems are not strikingly conflicting (Renfrew 1996:127). Competitive emulation refers to an interaction where neighbouring polities become spurred to ever greater displays of wealth and power to achieve higher inter-polity status. Polities may engage in mutual status boosting feast-giving and gift-giving activities or in a competitive creation of monuments. The gestures of the polities remain structurally similar however, in order to maintain a degree of comparability (Renfrew 1996:126f). Peer-polity networks in the study area are dealt with in chapters 4.10.1 and in 5.1.6.

Ceremonials were one means of creating external networks; to obtain allies, regulate conflict, make marriages, and to trade for desired products. The competitive displays of food and valuables at these ceremonies corresponded to the productive potential of the polity and thus the attractiveness of its members for marriage, trade and alliance. A leader’s prestige depended on his ability to mobilize supporters to provide goods, labour and warriors to demonstrate the economic and military might of his group (Johnson & Earle 2000: 123, 129f, 134ff, 142). Through symbolic means, such as rules of proper behaviour, group identities, sanctifying rituals and the "language of kinship" people were able to treat distant kin and strangers with a similar respect and concern they showed close kin (Johnson & Earle 2000:25ff, for the "language of kinship" see chapter 2.2.2). Also "food alliances" against
times of scarcity and starvation were established through ceremonial feasting as in the case with coastal Inuit polities and inland Inuit families (Johnson & Earle 2000:137f). Aggression could have had the character of raids between rival leaders. This would have meant endemic or ritual war consisting of small-scale incidents that were often governed by normative rules of conduct, comprising raids, ravaging and small battles between leaders and their retainers (Asplund 2008:363f).

The higher levels of external contacts relate to long-distance interaction that was directed to areas outside the peer-polity network. Such interaction may have taken place with communities or polities that possessed qualitatively different structures or statuses. Contacts with societally dominant centres can be interpreted in the sphere of exogenous dominance models as core-periphery relations (Renfrew 1996:121f). Giddens states that most large-scale historical changes were inspired by contacts between structurally different types of societies, which had different perceptions of time and space (Giddens 1984:23). Major episodic changes were inspired by the conflicts and frictions that appeared along the edges of time-space. The stress that was created during the external contact could merge with existing internal conflicts within the society. This could lead to the promotion of alternative worldviews and practices that broke down the existing ideological glue of the society (ibid.). Episodic changes would thus basically depend on structural conflicts within the societies, even if they were triggered by external contacts.

Because this thesis deals largely with the Bronze Age, it must be added here that long-distance networks are regarded as a fundamental element in the formation of the Bronze Age societies in Europe. The higher social stratum of the polities of southern and middle Scandinavia was part of extensive long-distance networks that included elites in large parts of Northern and Central Europe. The networks enabled the establishment of political alliances and the exchange of material culture, technologies, ideologies, ideas and the exchange of prestige goods. The routes of the long-distance networks altered over time. There can thus be considerable regional variation in social stratification, settlement structure and organisation from one period to another depending on the relative positioning, or the degree of centrality, that was possessed by any specific region over time (Artursson 2009:238ff, 245). Long-distance external contacts and communication may thus be of crucial importance for the understanding of change in the communities that are studied in chapters 4 and 5. Long-distance contacts are especially discussed in chapters 4.10.2, 4.10.3 and in 5.1.6.

2.3. Habitation practices

With the term habituation practices I seek to refer to any given community’s physical, social and functional organisation of the localisation, density, shape, temporality and function of the sites that people use as the bases for their everyday living and domestic activities. Habitation practices results in what is known as the settlement pattern, but the latter can be regarded as the passive physical outcome of the active practices. The specific habitation practices of communities vary according to the specific character of the social organization and the underlying economy (Johnson & Earle 2000:123).

According to formalist economic logic (Johnson & Earle 2000:23f, 26), it could be argued that the habitation practices would have been organised as beneficially as possible in a cost-efficiency and economic risk-management perspective, simply because this would be the
safest and the easiest way to produce the necessary daily subsistence basis. Asplund has on the other hand pointed out that settlement patterns and thus habitation practices do not always have to be logical, since humans may have been poor interpreters of cultural and environmental situations (Asplund 2008:45).

Excavations in the Turku area indicate general settlement site continuity from the Late Neolithic or Early Bronze Age Kiukainen Culture to the Pre-Roman Iron Age. The unusually long-term site continuity in the Turku area is thought to result from a relatively weak shore-displacement in the area (Asplund 2008:13). It should however be inferred that stable landscapes may only provide the mere opportunity for stable settlement patterns. Natural landscape stability does not automatically cause settlement stability, not even predating continuity of site for as little as a century, which is shown by the "wandering farmsteads" in Northwest Europe (see Gerritsen 2008). It was thus not solely environmental and technical aspects of the economy that brought about changes in areal settlement structure, but also conceptions of the function of society and of how people should act in relation to each other (Asplund 2008:388). An attempt to understand prehistoric habitation practices should therefore involve spatial, environmental, economic, demographic, social, psychological and behavioural perspectives. Existing social and ideological conditions must be taken into account in attempting to understand human responses to differing environmental conditions (Asplund 2008:44f).

In a heuristic sense I want to separate the study of habitation practices into two major subtypes, the direct and the indirect method. Direct studies are conducted by direct observation and analysis of individual settlement sites. This involves qualitative data which sheds light on local conditions and it may provide an opportunity to discuss the number of people and the composition of the social group that inhabits the site under study. The directly studied settlement sites will preferably also provide some absolute and independent dates for the time of the habitation practices and some knowledge of the absolute length of the settlement phase. Indirect studies of habitation practices are conducted by a regional and sub-regional analysis of the spatial and quantitative distribution of sites that are for instance marked by mortuary monuments and cooking-pits, which function as proxy-data for the regional settlement distribution. Indirect studies of the settlement structure are generally also more relative and blurry in terms of the date of settlement and in terms of the length of the phase of settlement.

Directly studied sites receive a wider context from the regional study and the interpretive models of the regional settlement structure become more informed and well based by the results from the analyses based on the qualitative data from the directly studied sites. In other words, the analysis results of the indirect study can be addressed in a source critical dialog aided by the results of the directly studied sites. Analogies from absolutely dated sites, the spatial relation to ancient shorelines and palaeoenvironments as well as the number and occurrence of certain types of mortuary monuments provide ways to reach some conclusions on the temporality and the function of the indirectly studied parts of the settlement structure. But as Asplund has pointed out, reconstructed settlement patterns are even in the best case mere constructs based on the evaluation and interpretation of field work results of varying representativity and validity (Asplund 2008:32).

As will be demonstrated in later chapter of this thesis; directly studied sites in Southern Ostrobothnia show that major palaeoenvironmental differences between different habitation sites can be argued to reflect differences in the subsistence and habitation practices performed at the sites (see for instance 3.5.1 and 3.5.2). The habitation practices of the Early Metal
period communities can therefore at least partly be subdivided according to the palaeoenvironmental zones in which the habitation sites were situated. Indirect studies of habitation practices are conducted in order to model the overall regional occurrence of settlement districts, but also to shed some light of the basic internal structure of some settlement districts.

2.3.1. Residential sedentarism

*Residential sedentarism* refers to a habitation practice where at least a part of a group is settled at the same location year-round. Under ideal circumstances sedentarism should be proven empirically through intensively used dwelling sites which show traces of domestic and multipurpose activities that cover all seasons of the year as well as remains of dwelling constructions that were suitable for habitation all seasons of the year.

Spatially defined analytical concepts that will be used in this thesis are that of the sites, settlement units and the settlement districts. These levels are spatially defined in terms of different scales of geographical clustering. These analytical concepts can furthermore be linked to socioeconomic or socio-political concepts of more functional or interpretive character like the single farm and the hamlet or the House and the local polity.

An individual *site* is defined as a place that exhibits a single ancient structure or a place that exhibits two or more ancient structures that are located in an immediate spatial association of each other. Based on quantitative criteria, a site defined by mortuary monuments may for instance consist either of single monuments, small groups of monuments or entire cemeteries. In technical terms I will generally use a maximum distance limit of 50 metres for the structures that are counted to the same site (provided that the accuracy of spatial data allows it).

Settlement sites and cemeteries are grouped into *settlement units*, which I use only as an analytical term for spatial analyses, this corresponds to what Asplund calls settlement zones (Asplund 2008:32f). The settlement unit refers only to areas with assumed sedentary settlement. A settlement unit is defined in spatial analytical terms as a local cluster of individual sites that are in close geographical proximity of each other. In studies on Middle Iron Age settlement patterns in Southern Ostrobothnia the absolute limit has been set at 500 metres (for analytical purposes) as the maximum distance that has been allowed between the individual sites that have been counted to the same settlement unit (see for instance Katiskoski 1988). I suspect however that some flexibility concerning the maximum distances may be necessary in similar studies concerning various parts of the Early Metal Period. Bronze Age settlement units especially appear to show a quite large variation in terms of spatial scope (see chapters 4.3.1 and 4.4).

Asplund defines the *single farm* as a sedentary, economically self-supporting settlement unit, which inhabitants practise agriculture. A single farm is archaeologically manifested as a settlement site or a nearby cemetery which is situated within a resource area that is suitable for an agricultural subsistence strategy (Asplund 2008:33). Welinder defines the Neolithic and the Bronze Age farm as a relatively robust residential building that was inhabited by a group whose subsistence largely was dependent on agriculture. The agriculture should have been of such a magnitude that the inhabitants had a lifestyle of farming (Welinder 1998:127). It can furthermore be added that an agricultural unit should have required a constant population of at least 6-8 persons in order to remain sustainable (Aartolahti 2009:20).
The longevity of farm sites varies from site to site, but there are also more generally occurring patterns that show regional and chronological variation. The different types of settlement succession practices can be discussed in terms of what Gerritsen terms as practices of house relocation and practices of house replacement (Gerritsen 2008:154ff). The various residential practices are grounded in factors as local environmental conditions, agricultural practices and cultural traditions (Gerritsen 2008:157).

A practice of *house relocation* means that the residential building was built in a new location for each human or building generation, which in the long-run caused a settlement pattern of wandering farmsteads (Gerritsen 2008:157). Moving house locations or wandering farmsteads was a common structural phenomenon during the Bronze Age in northwest Europe, where farmsteads often exhibit a single phase of occupation. New house locations were chosen some tens or hundreds of metres, or even further away from the previous dwelling site. Practices of house relocation were probably integrated with agricultural strategies, which relied on periodic relocation of cultivated land. Relocations took thus place according to established routines (Gerritsen 2008:154). The practice of *house replacement* refers to a prolonged or constant rebuilding of houses at the same farmyard, which in the long run causes a settlement pattern of spatially stable farmsteads. At this type of sites, there are only minor shifts in house location, the houses can maintain the same orientation and even be built on the same spot. In these cases, the devotion to one location was of great significance (Gerritsen 2008:157). In Northwest Europe the gradual change from relocation towards replacement practices took place in the last centuries of the Pre-Roman Iron Age (Gerritsen 2008:157).

The archaeologically observed house succession practices described by Gerritsen can perhaps be linked to the anthropologically identified household reproductive strategies described by Blanton. The house replacement practice may correspond to the *household continuity strategy* and the house relocation practice would in turn correspond to the *neolocal household strategy* (see Blanton 1994:7,105). The former refers to the tradition of emphasising the continuity of the household within the confines of the dwelling through several generations by encouraging married children to stay in the parental home. The latter refers to a tradition where the main goal of parents was to aid married children to establish themselves in independent nuclear households as early as possible.

There was undoubtedly a household-level production, but farms were also more or less interdependent of other farms. In interpretive functional terms the settlement units may have consisted of single farms or hamlets, which in social terms may have formed Houses (*maisons*, chapter 2.2.2) or village-like cooperative socioeconomic units. A village, or preferably a *hamlet* is defined by a quantitative criterion as a settlement unit that is formed by at least two farms, but also by a functional criterion as a unit that cooperates in the use of land and resources and that has opportunities for daily communication (Asplund 2008:33,36). It should be added that this village or hamlet definition implicitly seems to presuppose cooperation in agrarian activities that are performed close to the sedentary settlement. A distinction should therefore be made from cooperation that takes place in terms of logistic mobility, as in the case of the collective sealing teams that operated at hunting stations in the archipelago (see chapter 2.3.2 and 4.2).

Asplund has presented a chart of landscape and settlement organization that consists of nine alternatives which comprises the categories of settlement location, the co-operation in economic matters and the way in which cemeteries are related to settlements. The alternatives are based on the dichotomies live together/live apart; work together/work apart; and bury
together/bury apart (Asplund 2008:35). Farms may have cooperated with each other in a permanent and an institutionalised fashion, or within the frames of seasonal or casual projects. The cooperation can have been manifested in a spatial aggregation of farms, but this is not necessary.

A settlement district is defined in spatial analytical terms as a sub-regional cluster of settlement units (corresponding to the Swedish bygd). A more or less corresponding synonym used by Asplund is the micoregion (Asplund 2008:31f). In interpretive socio-political terms I consider the settlement districts to correspond to some type of communities or local polities (see chapter 2.2.4).

The temporality of the settlement poses special problems. Issues of settlement longevity, contemporaneity and change are related to the issue of settlement continuity and discontinuity on various spatial analytical levels, namely on the site, the settlement unit and on the settlement district level (Asplund 2008:31f, Baudou 1991:150). The practices of house relocation and that of house replacement would also logically cause quite different outcomes in terms of archaeologically materialised settlement data, even if the overall settlement pattern and the population density remained the same in both cases. Relocation practices would result in a large number of weakly articulated farm sites. Replacement practices would instead result in a low number of strongly articulated farm sites. A shift from relocation to replacement or vice versa could easily be misinterpreted as changes in population size or in dramatically altered settlement structures, even if both given examples represent similar sedentary single-farm settlement structures.

A further topic related to the field of the settlement structure is the issue of the presence of settlement hierarchies. Settlement hierarchy refers to qualitative differences in function and status between settlement units. Three main types of centrality are distinguished by Valter Lang. These consist of settlement cores, of centres of social, economic and political power and of religious centres (Asplund 2008:343). A power centre is a settlement unit that appears to dominate the other settlement units of a certain area due to its location, function or find material. At first glimpse it may however be archaeologically relatively indistinguishable from ordinary settlement units (Asplund 2008:343f).

According the traditional Bronze Age settlement model for southern and central Scandinavia, single farmsteads would have been spread out quite evenly and occasionally existing units of higher complexity would have consisted merely of small clusters of two or three farmsteads. The level of cooperation between the individual farms would have been relatively low. Artursson has recently criticised this view and he states that it is based on a simplified model of a standard long-house and a standard farmstead, and furthermore on a simplified model for the positioning of the farmsteads and their landscape organisation (Artursson 2009:238). Artursson brings forward an updated view of a more complex and varied settlement structure with temporal and spatial variations in the composition of the long-houses, the farms and in the more general organisation of settlement. The variations are closely related to general economic, social and political changes in various areas (Artursson 2009:243). There is also a clear variation in size of contemporary long-houses and the variation changes over time. The size-variation in houses is a sign of social stratification (Artursson 2009:239). Artursson states furthermore that there was a great regional variation in the organisation of the settlement units (Artursson 2009:237, 239). The variation was larger in rich and central regions of southern and central Scandinavia. Here the variation ranged from single farms to complex hamlets and even to small villages. The variation was instead moderate in marginal regions. Here single farms formed the basic form of settlement units, only in more central parts of the marginal
regions did small farm clusters or hamlets with two or three farms show up (Artursson 2009:239).

Early and Middle Neolithic dwelling sites in Finland and particularly in coastal Ostrobothnia exhibit an aggregated settlement pattern that is marked by sites with dense clusters or rows of dwelling-pits that are situated close to the contemporary river estuaries. Perhaps half a dozen of foraging family-units or households co-resided in village-like settlement units, which can be regarded as more or less sedentary base-camps. The families shared a common permanent base-camp and a common foraging territory that contained a dispersed pattern of seasonal hunting stations and temporary activity sites (Vaneekhout 2009, Saukkonen 1994, Halinen 1997). At some point towards the end of the Neolithic, roughly coinciding with the advent of agriculture, a more dispersed single-household settlement pattern appears to have emerged within the Kiukainen culture in south-western Finland. The phenomenon of dispersed single-household residential units may however have originated already within the Middle Neolithic Corded Ware Culture in south-western Finland (Salo 1981:417). The western Bronze Age and the Early Iron Age settlement units of coastal Finland are generally thought to have been constituted by dispersed single farms (Salo 1981:415). A decisive step towards more aggregated settlement districts consisting of regionally clustered, but still single farms in agriculturally optimal areas appears to take place along the coast during the Roman Iron Age. In the late Iron Age this process culminated in the formation of agricultural villages or hamlets in south-western Finland (Asplund 2008). Asplund has stated that the decisions leading to the Iron Age aggregation may have been due to factors as the natural environment, technology, the social and political structure, ideology, economics, demography, health and disease, or the impact of external societies (Asplund 2008:320). The same could also be said about the former process of settlement dispersion.

Earlier in this chapter I described what I perceive as the ideal empirical criteria for the establishment of sedentarism. The archaeological fulfilment of these criteria is unfortunately rarely the case, but circumstantial evidence makes residential permanence a credible interpretation for several Early Metal Period sites, and residential sedentarism was arguably an important practice of habitation in coastal Ostrobothnia (see chapters 4.4, 4.6, and 5.1.3). The most important direct study of Early Metal Period residential sedentarism in this thesis is conducted on the Late Bronze Age farm sites in Peltomaa in Laihia (chapter 4.6). This direct study functions in modelling the function and the internal structure of a permanently used settlement unit and it provides some tangible notions on how the phenomenon of residential sedentarism should be understood in the research area. The Peltomaa case is also used for a discussion on settlement hierarchies.

An evident source critical problem that concerns the reconstruction of settlement units and settlement districts is related to the issue of spatial proximity between the mortuary monuments and the contemporary settlements. If we assume that the distribution of the mortuary monuments is related to territoriality in general, at least some general spatial correspondence should exist between mortuary monument sites and the distribution of the sedentary settlement. The degree of accuracy probably varies depending on the analytical spatial level. It is plausible that the overall distribution of the mortuary monuments gives a relatively reliable view of the regional distribution of the settlement districts. The problems of representativity become larger when we move towards the local patterns of settlement distribution. Quantitative, but also palaeoenvironmental issues need to be dealt with in a source critical discussion when evaluating reconstructions of the permanent settlement units. The higher the number of sites and structures that are present within the areas of the
reconstructed settlement units, the higher is the reliability of the actual existence of the reconstructed settlement units.

2.3.2. Logistic mobility

Sites that indicate a function as temporary shelters or seasonal hunting camps are discussed separately from settlement units, as a parallel and a complementary form of habitation practices that relates to the field of the logistic mobility. Logistic mobility is originally a concept that was invented by Lewis Binford. Logistic mobility refers to a strategy where specialised task forces, like hunting parties, move from centrally located residential sites to obtain resources from surrounding locations. The resources or products of these activities are brought back to the residential site to share with the group. The resources may also be brought back to the residential site for additional processing, where the necessary workforce and facilities are present. In Binford’s view, logistic mobility was characteristic of groups that he termed as "collectors" (Lovis et al. 2005:672f). The particular benefit from logistic mobility is that different members of the group can obtain important resources that are available at the same time in different locations. Following the same thread, it logically would also enable some group members to perform necessary work tasks at the residential site during the absence of one part of the group. Essential for logistic mobility, therefore, was the use of a division of labour.

According to Binford, collectors employed logistic mobility to procure spatially or temporally scattered resources. An environmental structure where diverse habitats that provided potential food and other resources were spatially and seasonally separated from one another favoured the use of logistic mobility (Lovis et al. 2005:671ff). Logistic mobility results in archaeological evidence of multipurpose residential sites occupied by an entire group, in addition to short-term and limited activity sites used by a portion of the group, such as hunting stations (Lovis et al. 2005:673).

Logistic mobility is not to be confused with residential mobility. The term of residential mobility refers to the regular movement of the entire group between residential sites to exploit several key resources found in high productivity areas within a short distance of the site. Residential mobility would archaeologically be reflected by a pattern where most dwelling sites are of multipurpose type. In Binford’s view, residential mobility is characteristic of foragers as opposed to the logistic mobility of collectors. A strict division into collectors and foragers, where logistic mobility would be an exclusive characteristic of the former is however disputed in the article of Lovis et al. (Lovis et al. 2005:671ff).

Living and working in terms of logistic mobility can be related to the social anthropological concept of the cognatic network. Such networks formed flexible personal relationships that crosscut the vertical lines of descent. Such networks could for instance consist of informal or formal working teams as well as occupational associates (Johnson & Earle 2000:132, Salzman 2004:147f). Each such subgroup may have been organised by flexible relationships from within, but their interactions, rights and obligations could still have been sanctioned within the greater level of the local polity (Johnson & Earle 2000:123). Spatial on-site studies of activity sites such as hunting camps may be informative in respect of the size and the internal organisation of the work groups, as will be demonstrated (chapter 5.1, 5.5).

Logistic mobility will mostly be studied directly through empirical material of the maritime seasonal hunting stations that were situated in the Early Metal Period archipelago. For the
inland areas, logistic mobility can mostly only be studied indirectly through the trapping-pit systems, ridge networks and stray finds, but also through one directly studied inland hunting station. Important issues in relation to logistic mobility concerns the seasonality, group size and composition, the targeted resource as well as the underlying organisation of the groups that visited these sites (chapters 4.2, 4.8, 5.1.5).

2.4. Subsistence practices

The general concept of economy is the way people provision the basic material needs of their existence. It includes the production and the distribution of food, the technology and other material goods that are essential for the survival and the reproduction of human beings and their social institutions (Johnson & Earle 2000:22). In an analytical sense, the economy can be subdivided into the subsistence economy and into the political economy (Johnson & Earle 2000:23). The concept of the subsistence economy refers to the part of the economy that is organised at the household level to meet the basic needs for survival. The subsistence economy is considered to be inherently stable and enduring through time, particularly when compared to the fluctuating political economy (Johnson & Earle 2000:23f, 26; for a definition on the political economy see 2.2.3).

According to formalist economic logic the main goal of the subsistence economy is to fulfil the needs of the household at the lowest cost that provides security (Johnson & Earle 2000:23f, 26). Availability of natural resources and the ecological prerequisites set the outer frames for possible subsistence economies. Factors that enable specific subsistence strategies consist of the available technology, know-how and labour. Substantivistic perspectives infer however that the subsistence economy is largely structured according to time and culture-specific social preferences (as the local cuisine or taboos). Subsistence practices may also become altered by pressures from the political economy (Johnson & Earle 2000).

Many societies exhibit some kind of mixed subsistence economies. Benefits of a mixed subsistence economy are that it allows security in cases of failure in one economic branch and that it provides a broad range of products. Resources of each sector can furthermore be used to support other forms of production. In order to fit together mixed economies, arrangements are needed to satisfy conflicting labour and cost requirements of each branch of the economy (Salzman 2004:8ff). Mixed subsistence strategies would have required a composite toolbox of technology, knowledge and memory of what, where and when different tasks needed to be performed. In other words it requires and results in composite or parallel taskscapes as well as in composite or parallel cyclic calendars that are necessary for a mixed subsistence economy (Rathje 2001:157ff).

All societies have, it is assumed, contained at least some form of time and culture-specific labour division. The divisions may be based on different subgroups that were defined by inherited or acquired characteristics as gender, age, skills or status. Animal husbandry may for instance have been regarded as a female task as opposed to male-dominated sealing activities, but the performance of the activities could itself be fundamental for the creation and the reproduction of gender identities (Rathje 2001:159f). Cooperation in various tasks could have had wide implications for the social structure of a society. Cooperation could enhance social cohesion within parts of the society, but it could also be the source for conflicts. If closely situated farms cooperated in agrarian matters we would be dealing with an emergence of
village structures. A labour division coupled with logistic mobility could on the other hand lead to the formation of sharp gender and age specific subcultures, as Salzman has noted in the case of pastoralists that performed transhumance (Salzman 2004:3ff). Also different mythologies and ritual spheres can be related to the different branches of the subsistence economy, to their related taskscapes and to the subgroups that acted in the particular taskscapes (Westerdahl 2005).

Studies of the Early Metal Period subsistence economy involve qualitative data from a number of directly studied settlement sites as sedentary farms and seasonal hunting stations. Sites or structures that are directly linked to the subsistence economy consist of fossil fields and clearance cairns, storage structures, trapping pits and cooking pits. Archeobotanical studies of macrofossils, osteological analyses of bone discard as well as artefactual studies comprise important on-site evidence for the subsistence economy, even though the taphonomy of such materials naturally needs to be addressed in a source critical discussion. Pollen analyses form another important method of study.

There is also an indirect, spatially grounded method of studying the subsistence economy that relies on the palaeoenvironmental aspects of the settlement structure. The settlement structure can be subdivided according to the basic palaeoenvironmental zones in which the subtypes of settlements were situated. This palaeoenvironmental subdivision reflects arguably more or less the basic economic activity performed at each site, and thus it enables an indirect spatial method of studying the subsistence economy.

2.4.1. Foraging subsistence practices

Foraging refers to food procurement of wild animals and plants by hunting, fishing, trapping and collecting. Foraging could be conducted both in maritime and in terrestrial environments, including for instance sealing, fishing and forest reindeer hunting. Foraging of different species require deep knowledge of the particular behaviours of the targeted species. Foraging strategies needed to be adapted to the season, the behaviour of the targeted species and to the environment where the particular species was procured. Foraging methods could be either passive, for example using trapping pits; active, through direct hunting of the species; or combinations of these methods. The foraging strategy also required specialised strategies for the transportation and for the further processing as well as the storage of the harvested resources.

Social anthropologists stress that economic causes, risk management and technological necessity were prominent reasons for local polity formation and regional networking in forager communities. Hunting was unpredictable and demanded families to share risks throughout the community. Economic intensification among foragers often focused on highly productive resources and the special technologies to exploit them (Johnson & Earle 2000:137,171,201). Intensification and large scale technologies within forager economies were especially evident in maritime environments and where seasonal variation and food storage were important. The necessary technology could be quite complicated and it could require a collective organization to build and operate it (Johnson & Earle 2000:137,171,201).

A complex technology and an intensified use of the maritime environment, as coordinated efforts by large cooperative crews, enabled people like the Coastal Inuit and the Northwest Coast Indians to manage risk by harvesting and storing vast but unpredictable maritime resources that were abundant only for short seasons. The huge surpluses were stored and
shared over the lean seasons (Johnson & Earle 2000:137f, 240). The coastal whaling Inuit were closely related to inland reindeer-hunting Inuit, but the level of social complexity was noticeably higher among the coastal groups. The coastal Inuit were organised into local polities living in sedentary villages. The inland reindeer-hunting Inuit were instead organised at the single family level and lived as mobile nomads. The village organization of coastal Inuit was directly linked to the technological necessities caused by whaling, which required substantial capital investment in the equipment and a division of labour (Johnson & Earle 2000:171, 201).

Structures that directly relates to foraging activities consists for instance of trapping pits and of storage constructions. Foraging activities could have been conducted from the sedentary farms, but they are probably more clearly articulated in the context of the logistic mobility and they are thus most clearly materialised at hunting stations. The foraging practices are dealt with in chapters 4.2, 3.5.5 and in 5.1.5. Ritual perceptions that can be linked to foraging activities, as some animistic ideas are discussed in chapter 4.2. It seems possible that animistic Stone Age worldviews were reproduced in the contexts of foraging activities, taskscape and hunting teams.

2.4.2. Agrarian subsistence practices

*Agriculture* refers to food production of domesticated plants and animals. Agriculture contains pastoralism or animal husbandry as well as cultivation of cereals and other plants. Cultivation could be intensive, as in the cultivation of permanent manured fields, or it could be more extensive, as in slash and burn agriculture. In environments marginal to cultivation, especially those with grasslands, economic intensification often resulted in the development of pastoralism, which means the raising of livestock on natural pastures. Many pastoralists have therefore adapted to environmental conditions that were marginal for cultivation (Johnson & Earle 2000: 33, 172, Salzman 2004:1f).

The agricultural technology, both in regard of cultivation and in regard of pastoralism is considered to be generally relatively simple in societies at the local polity level, and their execution did not necessarily require cooperative efforts beyond the family-level (Johnson & Earle 201, 240). In horticultural and in cultivating societies local polities and leaders were primarily needed for political manoeuvring, regulation of war and for defensive matters (Johnson & Earle 2000:139, 240). The primary causes for the emergence of local polities and leaders among pastoralists were risk management and warfare, sometimes also external trade (Johnson & Earle 2000:139, 240). The local polities institutionalised solidarity and common defence among its pastoral members (Salzman 2004:14).

Even when it was of secondary importance, pastoralism could have a substantial impact on communities because it presented certain problems and opportunities (Salzman 2004:137). Livestock was mobile and it both provided and required some form of spatial flexibility. Animals had to be moved in order to maintain their security and nurturance, the latter demanded a constant access to pasture and water. Livestock also needed supervision for guidance, protection and labour to extract products. Logistic mobility and nomadism were two basic pastoral strategies. Logistic mobility was applied when specified individuals temporarily left the residence of the sedentary groups. In nomadism, entire families moved with the herd. The chosen pastoral strategy of a society was an adaptation to the particular environment through the culture of the specific community (Salzman 2004:3ff, 11, 13, 104f). Livestock was furthermore a major capital resource or a repository of value in pastoral
societies and was an indicator of prestige and wealth. Another important issue was the self-reproducing ability of livestock and the potentials of increasing the number of livestock (Salzman 2004:10, 104f).

Most pastoral societies had mixed subsistence economies, especially when pastoral production was primarily subsistence oriented (Salzman 2004:8ff, 139). Many pastoral societies had an innate flexibility with common shifts in production strategies and trade relations (Salzman 2004:140f). Within the pastoral sector itself usually multiple species were held in order to spread the risks against misfortune, but also to provide a wider range of products and to maintain a flexibility in the offsetting or in the coverage of differently sized expenses (Salzman 2004:6f, 40).

Certain types of mythological perceptions can be related to the agrarian subsistence practices. According to scholars of religion, shamanistic institutions may have been replaced by sorcerer institutions at the transition to agriculture (Sarmela 2007:38f). Salzman notes that many pastoralists’ self-identification, ritual and symbolic life were exaggeratedly focused on their roles as herders and livestock owners. Being a pastoralist meant having pastoralism also as part of one’s psychic and social repertoire (Salzman 2004:8ff, 142). Several rituals could concern the safety and the well being of cattle, as has been noted amongst herders in historical times.

The man-cattle relationship had an important social and ideological dimension in pastoral societies in North-West Europe in the Bronze Age and the Iron Age where the ideological importance of cattle far exceeded their dietary importance. Wohnstallhäuser or longhouses with byre sections emerged along the North-Sea coast in 1800-1500 BC and a special Hauslandschaft was created. Protection against institutionalised cattle raiding could have been a major reason to this innovation. That humans and cattle begun to share the same house is an expression of the high cultural valuation of cattle (Roymans 1999:292, Pedersen & Widgren 1998:256). The ritual exchange, sacrifice deposition and consumption of cattle were important elements in Bronze Age and Iron Age North-West Europe. Cattle meat was probably a more prestigious and ceremonially important than cereals (Roymans 1999:297f). The reducing size of cattle in the Bronze Age and the Pre-Roman Iron age indicates that breeding strategies were focused on the maximization of the number of cattle rather than the quality of the stock (Roymans 1999:295). Cattle played an important role also in social transactions in Bronze Age Scandinavia. The long-house itself can be regarded as a symbol of a pastoral ideology. Long-distance cattle raids were a popular sport of war and it was apparently a highly ritualized social practice. Cattle raiding is linked to the mythological perceptions of the “Indo-European cattle raid cycle”. Kristiansen links the large number of flange hilted swords in Northern Europe to the institution of cattle raiding (Kristiansen 2006:186).

Natural scientific analyses and methods of environmental archaeology are necessary in order to gain knowledge about human landscape impact, the role of the agrarian economy and about technological changes within the agricultural sphere. Some agrarian activities could be centred to the farm sites and their vicinities, but some activities may have been located to other sites and even been practiced according to a logistic mobility strategy. The agrarian subsistence practices are dealt with in chapters 4.6.5 and in 5.1.4.
2.5. Summary

In this chapter I have presented some theoretical ideas and concepts which can guide my study on the Early Metal Period communities in the research area. Also some methodological thoughts are presented on how various issues can and will be studied by archaeological means in the study area. This chapter can in other words be said to form a tool-providing pre-understanding for my further analyses and interpretations. The chapter is designed to relate to the basic aims and research questions outlined in chapter 1, but it also relates to my pre-understanding of the empirical material that is described in chapter 3.

To sum up the core of my community perspective; it can be defined as a socioeconomic practice-oriented perspective where various localised practice-defined social subgroups formed important community constituting agents on various scales of social organisation. The social groups were constituted in socially, historically and culturally specific ways. The size of the groups that constituted agents can (depending on the scale of the context) have been anything from one influential person to an entire community. The same individuals could also be members of different agency constituting subgroups in an overlapping manner. I regard it therefore as crucial to study the local practices in terms of social organisation, habitation and subsistence. The mix of the various practices that were conducted in meaningful landscapes created the playgrounds for different social fora. These practices form therefore my starting points from which to study subgroup formation. It is furthermore important to identify the various scales of organisation and to try to understand the interaction between the agents within and between the different scales of social organisation. The organised agents, their practices and their mutual interaction are therefore regarded as the central factors that created and shaped the history of the communities.

From a methodological point of view, it appears to be clear that a broad perspective with a comparative, diachronic and a multi-proxy approach is needed in the study of the structuration of communities. Spatial analyses are important to identify patterns of practices and changes in space and time. The constitution of the communities is therefore largely approached through different themes related to landscape and settlement archaeology.

A number of important concepts are presented in the chapter that deals with the habitation and subsistence practices that can be used to study the internal social organisation of communities. Some elementary concerns in the study of habitation practices are the correlation of spatial and social units, the spatial and social scales of various habitation units and the spatial and the temporal representativity of the archaeological sources. The methods to study habitation practices are divided into direct studies of settlement sites and into indirect studies that are based on spatial proxy-data. Residential sedentarism and logistic mobility are discussed as two fundamentally different and parallel habitation practices. The former relates to permanently settled sites as farms and hamlets, while the latter is related to seasonally used sites as hunting stations. A number of spatial-analytical concepts are related to the study of residential sedentarism. Such concepts include the site, the settlement unit and the settlement district. House replacement practices and house relocation practices are two basic concepts that relates to the temporality and to the spatiality of the settlement units.

The subsistence practices are divided into foraging subsistence practices and into agrarian subsistence practices. Various subsistence practices can in turn be related to the different habitation practices, as the foraging subsistence practices relate especially to logistic mobility and the agrarian subsistence practices relate largely to residential sedentarism. Also the
subsistence practices can be studied through direct and indirect methods of analysis. The various subsistence and habitation practices can furthermore be related to various meaningful taskscapes and probably to partly different ritual landscapes. Contextual analyses of the combinations of various subsistence and habitation practices form the basis for the identification of different community constituting subgroups of agents.

The House is presented as a possible basic agent in the social organisation of communities. An attempt will be made to apply the House society perspective, as it provides an interesting approach to understand some of the social dynamics that was caused by the relations and the interactions within and between different settlement units. The most intriguing consequence of the House society approach is, however, that historical social transformations can largely be viewed as the cumulative long-term effects of the strategic actions of Houses. Historical change would thus largely be an outcome of the deliberate and the unintentional actions of House members.

The polity is presented as the highest level of social organisation of the communities. The polity can be viewed as a social agent that could encompass an entire community or several communities. The polities could be politically and economically decentralized or centralised, but there was however always a certain degree of decision-making and societal integration that affected the members of a polity. Communal feasting and ceremonialism are mentioned as important means to sanction collective decisions and to maintain social cohesion. The polities were financed (even in the most rudimentary polities) by the resources of the political economy that were extracted from the subsistence economy. I therefore regard the political economy as an important concept that bridges the gap between the subsistence economy and the sociopolitical spheres of society. Attempts should be made to understand the functions and the roles of the polities and their level of centralisation should be investigated. The latter notion relates to the internal differences in status and power within the polities.

A community can however not be understood without considering the networks that integrated the community into the contemporary world. The small-scale activities of the communities must therefore be connected to the broad long-term structural changes that took place during the Early Metal Period in Northern Europe. The outside world consisted of various communities that could possess very different qualities. I have divided the intercommunity interaction and external networking into peer-polity interaction that signifies the frequent communication between neighbouring polities and into long-distance interaction that signifies communication with spatially or culturally distant polities and communities. An important issue is the identification of the agents that were involved in this communication. It is furthermore important to try to identify their motives and to evaluate the consequences of this communication.
3. The source material and its chronology

3.1. General Archaeological Chronology

A selection of the calibrated archaeological chronology for Finland is presented here. The chronology is based on *Maiseman muisti, valtakunnallisesti merkittävät muinaisjäännökset* (2003). The national chronology of cultural groups and subphases that is presented here should only be regarded as a rough tool that can guide the reader. In reality there are some problematic aspects and a certain degree of disagreement related to the chronological boundaries and there are probably also some regional deviations. I have added a division of the Stone Age into Early, Middle and Late Neolithic and a division of the Iron Age into an Early, Middle and a Late phase, which I use in this thesis. Some periods are overlapping, due to alternative period definitions.

Mesolithic: 8600-5000 BC
   Suomusjärvi culture 8300-5000 BC

Early Neolithic: 5000 – 3200 BC
   Comb ware culture 5000-3200 BC
   Kierikki group 3600-3100 BC

Middle Neolithic: 3200 – 2300 BC
   Corded ware/Battle axe culture 3200-2300 BC
   Pöljä group 3100-1900 BC
   Pyhensilta group 3200-2800 BC

Late Neolithic: 2300 – 1500 BC
   Kiukainen culture 2300-1500 BC

Early Metal Period: 1900 BC – AD 300.
   Western Bronze Age: 1500-500 BC
   Eastern Bronze Age or Textile ceramic group: 1900 - 500 BC

Early Iron Age: 500 BC- AD 200
   Pre-Roman Iron Age 500 – 1 BC
   Early Roman Iron Age AD 1 – 200

Middle Iron Age: AD 200-800
   Late Roman Iron Age AD 200 – 400
   Migration Period AD 400 – 575
   Merovingian Period AD 575 – 800

Late Iron Age: AD 800-1150/1300

As the archaeological source material and its chronology will be described in further detail in chapters 3.6 and 3.6, only some general chronological information is provided here with a focus on the basic material elements that are used to define the borders or the starting points of the different subperiods of the Early Metal Period.
Period I bronze objects of South Scandinavian types are extremely rare in Finland. If the western Bronze Age is defined on the basis of bronze artefacts the start can be set at period II (Asplund 2008:68). Also the introduction of the round cairns of the characteristic South Scandinavian Bronze Age type is dated to period II, at least in South Western Finland (Salo 1981:120). The starting point of the Scandinavian oriented coastal Bronze Age culture in Finland can thus be set roughly to 1500 BC. The transition to the South Scandinavian inspired cairn tradition may however be blurred in Ostrobothnia, due to an apparent existence of a Middle and Late Neolithic cairn tradition in the region (Okkonen 2003:230). The Scandinavian division of the Bronze Age into the Early Bronze Age and the Late Bronze Age with a boundary at 1100 BC is kept in this dissertation. The youngest Kiukainen culture dwelling sites appears however to be chronologically overlapping with the Early Bronze Age (Asplund 2008:66). A continuity or contemporaneity between the Kiukainen Culture and the western Bronze Age is also suggested by the close connection between cairns and many Kiukainen culture sites (see tables in chapter 3.5.1. and 3.5.2.). The exact end of the use of the Late Neolithic Kiukainen ware and the establishment of the Bronze Age Paimio ware may furthermore be difficult to establish because the latter may have evolved gradually from the former ceramic type during the Early Bronze Age (see chapter 3.6.3).

The start of the Eastern Bronze Age has been mainly defined with the emergence of textile pottery and with the emergence of the Seima axes (Lavento 2001:119). The Russian Seima-Turbino metal industry is dated to 1600-1300 BC and it reached Finland already around 1600 BC (Lavento 2001:90, 120). According to Lavento, the breakdown of the use of asbestos pottery took place in Finland in 1700-1500 BC and it became replaced by textile pottery around 1600 BC (Lavento 2001:91, 131f). Also the emergence of the even-based arrowheads is mentioned as one important indicator of the transition between the Late Neolithic and the Eastern Bronze Age (Lavento 2001:182). The breakdown of the Late Neolithic asbestos ware culture may however have taken place earlier or at least have begun to break down earlier. Nunez and Okkonen postulates that the use of the asbestos tempered Pöljä ware had already ended in Northern Ostrobothnia at 2000 BC and that dramatic changes in settlement patterns took place at this point in time (Nunes & Okkonen 1999).

The beginning of the coastal Pre Roman Age is marked by the end of the occurrence of Scandinavian Bronze Age bronze objects. Tools and weapons made by bronze were replaced by implements in iron. This transition took place roughly around 500 BC. The number of discovered iron (and other metal) artefacts is however very small and it is difficult to give them as exact dates as the Bronze Age bronze objects (see chapter 3.6.1). The Bronze Age Paimio ware is transformed into the Pre-Roman Morby ware, but this transformation may have taken place even somewhat earlier (Edgren 1999:325f). A change in burial traditions takes place roughly at the transition to the Pre-Roman Iron Age. Large round cairns of the characteristic Bronze Age type becomes rare, instead some new grave types or construction elements emerge, as the quadrangular sandstone covered stone-settings (chapter 3.5.3).

The inland Pre Roman Iron Age is marked by the end of the occurrence of eastern Bronze Age bronze object types and with the establishment of an iron technology (Lavento 2001:184). The former ended in the 3rd century BC and the latter began in the 4th century BC. Another major change is the replacement of the textile ware by the asbestos tempered Säräisniemi 2 pottery types. This replacement appears to have been gradual and it may have already begun at 1000 BC and ended one thousand years later (Lavento 2001:184).

The beginning of the Early Roman Iron Age in the coastal area is marked by a relatively rapid increase of grave goods from around AD 1. This transformation includes a series of new
Eastern Baltic and South Scandinavian artefact types, but there is also an appearance of some more exotic artefacts. This change is accompanied by some new burial traditions (Salo 1968). This transformation was on the other hand probably not as abrupt as previously believed. Asplund has pointed out that several artefact types, and thus cemeteries, that have traditionally been dated to the Early Roman Iron Age may in fact have been in use already in the latter part of the Pre-Roman Iron Age (Asplund 2008:235, 245) and this may to some extent be valid also in Southern Ostrobothnia. Another aspect that contributes to make this transition blurry is the suggested continuity of the Morby ware in the coastal area (Edgren 1999:325f), before it eventually transformed into the coarse "Iron Age" ware (see however Asplund 2008:220). There is furthermore a continuity in the Säräisiniemi 2 ware types in the inland area (Lavento 2001:103). It can furthermore be added that Southern Ostrobothnia seems to be dominated by rather archaic (Pre-Roman) burial customs throughout the Early Roman Iron Age (see chapter 5.2).

When considering the absolute chronology in Southern Ostrobothnia, it should be noted that there are still large gaps due to the low amount of radiocarbon dates from settlement sites and burials (see for instance tables in chapter 3.5.1 and 3.5.3). Shoreline chronology can however to some extent reduce the effect of the low number of radiocarbon dates. Shoreline chronology is therefore discussed in further detail later (in chapter 3.3.1). One aspect that makes absolute chronology difficult, especially at the Bronze Age-Iron Age transition is the extremely wide margin of error that is caused by a plateau in the calibration curve at this point in time (see for instance Asplund 2008:220). Only calibrated radiocarbon dates are used throughout this thesis. I have used OxCal version 3.8. for the calibration of radiocarbon dates. The calibrated dates are normally given with the probability of 94.5%.

3.2. Early Metal Period research in Southern Ostrobothnia

Only a very short presentation is given here of the history of research in Southern Ostrobothnia. Articles that are related to research history, especially since the 1970s in Southern Ostrobothnia have been published by Mirja Miettinen (particularly Miettinen 1982, 1987, 2000, 2002). A short research history that concerns the Bronze Age in Finland has, for instance, been presented by Lavento (Lavento 2006:126f).

Johan Reinhold Aspelin started the scholarly archaeological research in Finland during the 1860’s. One of his very first excavations was undertaken at the Late Bronze Age cemetery at Alatalo in Laihia where he excavated two cairns (Aspelin 1871:107ff). During the late 19th century and the early 20th century settlements and cultivated lands were considerably expanded in Ostrobothnia, often to areas that had remained deserted since prehistory. Hundreds of cairns and stone settings were found in surveys along the coast. Both research and rescue excavations of cairns started to take place (Katiskoski 1988:5, Miettinen 1998:19). If one considers the altitude, the finds and the structure of the excavated cairns, a significant portion of them appears to be of Early Metal Period date (see table in chapter 3.5.3). The statistics of these excavations reveal that an early wave of cairn excavations took place from 1910s until the 1950s, with a peak in the 1930s, but as these cairns and cairn like structures were usually empty of finds or contained only some burnt bone or simple non-typologised artefact finds, they could obviously not be properly dated or put into any meaningful contexts. This goes especially for the Pre-Roman graves that were modest also to their size and appearance. The large cairns at 30-40 metre elevations were on the other hand recognised as
Bronze Age cairns according to dated parallels elsewhere and the presence of some datable artefacts (see Meinander 1950:47ff). Most of the scholarly focus of the Metal Periods remained on the richly furnished large cairns and flat-ground cemeteries of the Middle Iron Age in the Vaasa area (Miettinen 1994:155f).

When Meinander published his synthesis in *Etelä-Pohjanmaan historia I* on the prehistory of Ostrobothnia in 1950, not much could be said about the Early Metal Period. He covers the Bronze Age cairns and artefacts in a few pages and the Pre-Roman period is barely mentioned. This stands at a stark contrast to the Iron Age AD that is offered very detailed and lengthy analyses of the material culture. Archaeological research into the Bronze Age and the Iron Age had obviously a cultural historical approach that largely emphasised burials and comparative analyses of grave goods and burial customs. The Bronze Age of Ostrobothnia is also shortly dealt with in Meinanders doctoral thesis *Die Bronzezeit in Finnland* from 1954. A closely related study on the Late Neolithic was published by him in the same year in the publication *Die Kiukaiskultur*. In his next regional synthesis *Forntiden i svenska Österbotten* from 1977, only slightly more is said about the Pre-Roman period. A major change was nevertheless underway, which is also indicated in the latter synthesis. In 1969 Meinander had published his article *Dåvits, en essä om förromersk järnålder*. In this article Meinander defined the Morby ware and suddenly the chronological gap between the Bronze Age and the Iron Age AD became filled. Meinander identified a few Morby ware sites in Southern Ostrobothnia; by the late 1970’s also a new wave of fieldwork had just started that eventually would dramatically increase the empirical data of the Early Metal Period.

The research into the Early Roman Period was synthesised in 1968 when Unto Salo published his study *Die frühromische Zeit in Finnland*. What particularly stands out in Salo’s publication is his identification of a strong external influence in the material culture and in the burial customs in western and southern Finland. Salo still wrote from the perception that the Pre-Roman period had been largely a period of depopulation and that the cemeteries from the first centuries AD mostly belonged to newcomers from overseas, but he acknowledged the presence of a native population and he acknowledged a possible settlement continuity in Southern Ostrobothnia (Salo 1968:218,234f). This assumption was based on some relatively archaic burial traditions in this region, with graves that resembled cairns of Bronze Age type. Salo also had a strong cultural historical approach in his work.

After what seemed like a relatively lean period of fieldwork in the 1960s, a new wave of archaeological research started in the 1970s that would last at least until the 1990s. The excavations of cairn like structures of confirmed or possible Early Metal Period origin peaked in the 1980s (see table in chapter 3.5.3). Characteristic of this era was the strong engagement of local amateur archaeologists. Amateur archaeologists performed local surveys and began also to initiate archaeological fieldwork by engaging the interest of scholarly archaeologists. A large number of small-scale excavations took place, often performed as field-courses (Miettinen 1994:155).

In contrast to the previous era of archaeological fieldwork, scholars appears now to have been especially keen to study the Pre-Roman Iron Age, perhaps due to an awareness of the huge knowledge gaps related to this period, but also because new methodological tools made deliberate research into the Pre-Roman Iron Age possible. The identification of the Morby ware, the introduction of radiocarbon dating and the new topographical maps with elevation curves of relatively high-precision, coupled with new shore-line chronologies must have provided new powerful tools. I regard these tools to have formed the prerequisites that largely enabled the researchers to lift the Pre-Roman period out of the darkness of history. These
tools also improved the ability to study the Bronze Age in a more systematic manner (see for instance Kotivuori 1986, 1987).

New surveys led to a considerable increase of Early Metal Period sites. These sites contained stone settings and small cairns, dwelling sites and cooking-pits (Miettinen 1994:155ff). The rising number of excavations that concerned dwelling sites and cooking-pits can probably be regarded as part of a generally increasing settlement archaeological perspective in Finnish archaeology at this time (see for instance Asplund 2008:38f). Palaeoecological considerations and palynological analyses started to be applied in order to understand the prehistoric economy, even if these studies were generally more focused on the Iron Age AD (see for instance Miettinen & Vuorela 1988, Wallin & Segerström 1994).

The greatest amount of recent fieldwork and research into the Early Metal Period in Southern Ostrobothnia has been performed or organized by Mirja Miettinen. She was appointed as the researcher with regional responsibility over the province of Vaasa at the National Board of Antiquities. From the 1970’s onwards she has regularly published the results from Early Metal Period related field-work and discoveries in a series of diverse articles and books. As pointed out by Carpelan, the sum of her long-term undertaking of a series of small scale-studies resembles the fulfilment of a larger research project (Carpelan 2006:28). The most recent publication that largely deals with the Early Metal Period is her synthesis on the prehistory of Laihia in Laihian historia I (Miettinen 1998). This is also the most important publication for the aims of this thesis. Other researchers that have published important articles relate to the study of visible dwelling constructions, which mainly can be related to maritime resource utilisation during the Early Metal Period (for instance Kotivuori 1988 and Seger 1986). In 2005 I published a synthesis on the Pre-history of Southern Ostrobothnia in Formminnen i Österbotten: från Neandertalare till sockenbor, where an attempt was made to summarise all important research results achieved at that point (Herrgård & Holmblad 2005).

In order to keep this historic description short, I refrain from mentioning additional scholars; their names will appear in references throughout this thesis. Names that rarely appear due to their lack of scholarly publications are those of the local amateur archaeologists. The role of their contribution and long-term commitment to the revelation of ancient sites in the research area can however not be overestimated. Without their input, this thesis and several previous publications would probably not have been written.

### 3.3. Shoreline chronology and land uplift related processes

Modern day researchers studying ancient societies in Ostrobothnia have to deal with the uplifting landscape all the time, but this issue affected the ancient settlers as well. The isostatic land uplift, in combination with the flat landscape profile causes a fast shore displacement along the coast. Bronze Age shorelines can in some places in Southern Ostrobothnia be found about 50 kilometres from the current coastline. The main part of the settlement remained in coastal proximity throughout the pre-history, which implies a process of continuous settlement relocation. Southern Ostrobothnia may thus exhibit the strongest coastal change of all prehistoric agrarian and sedentary habitation areas in Europe. Few, if any settled areas and agrarian societies have underwent such dramatic changes due to land uplift. The rapidly moving coastscape may have posed some special challenges and possibilities for the Early
Metal Period societies in Ostrobothnia. Except the ecologic, economic and geographical aspects; land-uplift related processes probably had also social and ideological implications, which will be touched upon. Changes were fully recognizable within a single human life span. The constantly changing coastal landscape opens up for a discussion on various spatially related temporalities. The moving cultural coastscape may have had both stressful and dynamic implications for the Early Metal Period communities.

3.3.1. The shore-line displacement chronology

Ostrobothnian Early Metal Period sites have so far largely been dated according to different shore displacement chronologies. Some shore-displacement curves or diagrams have been developed by archaeologists on the premise that dated settlement finds or structures correspond to directly shore-bound phases of settlement (see Siiriäinen 1974, 1987). One main problem concerning this method is that it may end up in a circular reasoning concerning dates and degrees to which sites are shore-bound. In the end it can even distort our basic perceptions of the Ostrobothnian settlement of the Early Metal Period. Incisively spoken, the Ostrobothnian coastal sites of the Early Metal Period have often been regarded as extremely shore-bound (see for instance Kotivuori 1992:129ff, Edgren 1999:317). A dating performed in a routine manner based on the altitude of the site would result automatically in a date to when the site was shore-bound. Eventually this may result in an apparent confirmation of the presupposition of the shore-boundness of the settlement (see also Holmblad 2008:47). I therefore prefer to use shore-line chronologies that are based purely on geological data that are independent from archaeological data.

There are two basic alternatives to the establishment of geologically based shore-displacement diagrams. One way of creating shore-displacement curves is by extrapolation from current land uplift data which rely on precise levellings and tide gauge results, combined with a theoretical coefficient of decreasing regression. Another method is to base shore-displacement curves on dated sediment layers in lake beds from the time of lake-basin isolations and to relate the dates of the lake basin isolations to the altitudes of the lake-basin isolation thresholds (see Kylli 2001). I prefer the latter method, because the long-term rate of regression has altered, basically decreased over time.

One series of radiocarbon dated lake isolations in northern South Ostrobothnia and Central Ostrobothnia has been published that is relevant for the Early Metal Period. Most of these lake isolations are situated in the Kronoby area and one site is located in Alahärmä (Glückert et al 1998, Vuorela et al. 2009:79ff). The shore-displacement curve for this area is relevant for the northern part of the research area, but further south we need additional data to create reliable shore-displacement curves. There is another series of dated lake isolations in the Lauhanvuori area at the border between Southern Ostrobothnia and Satakunta. These lake isolations are however (except one case) situated too high to provide points for a reliable shore displacement curve for the Early Metal Period (Vuorela et al. 2009:83f). We therefore have to go to the Rauma area in Satakunta to find a series of several dated lake isolations that provide points for a reliable shore-displacement curve for the Early Metal Period (Eronen et.al 2001). All radiocarbon dated lake isolations in the above mentioned cases have been reviewed in a recent Posiva report (Vuorela et al. 2009). The lake isolations are given new elevations according to the new national height reference system, the radiocarbon dates are recalibrated and the shore-displacement curves are redrawn in this report.
The shore-displacement curves in the Posiva report have not been corrected according to the base-lines of the dated lake isolation sites. A comparison between the new baseline map presented by Mäkinen and Saarinen and the map of dated lake isolation sites in the Posiva report shows however that the relevant sites (which the curves are based on) cluster around specific baselines (Mäkinen & Saarinen 1998). The dated lake basins in the Kronoby area are clustered around the current 8.0 mm baseline and the Early Metal Period lake isolations in the Rauma area cluster around the 5.4 mm baseline. I therefore regard the Kronoby and the Rauma area shore displacement curves, as they are presented in the Posiva report; to be relevant for the 8.0 mm and for the 5.4 mm baselines during the Early Metal Period.

I have used the Posiva report’s shore displacement curves for the Kronoby and Rauma areas as end points for an interpolation of Early Metal Period shore-level altitudes in the intermediate coastal area (lower figure 49 and figure 57 in Vuorela et al. 2009). The altitudes are calculated for each intermediary uplift baseline (with 0.2 mm intervals) for every half millennium from 2500 BC until AD 1000. The baseline map of current relative isostatic uplift is based on series of precise levellings that have been conducted at three different occasions during the 20th century (Mäkinen & Saarinen 1998). It is possible that the isostatic baselines were somewhat different during the Early Metal Period, but this is probably as close as we can get for the time being. A positive consequence of using the Rauma shore-level curve as the southern end-point is that it provides a consistent and a comparable shore-level chronology for the sites in Satakunta that are discussed in this thesis.

The successively descending land-uplift rate towards the south results in relatively large longitudinal differences the farther back in time we go. If the Bronze Age is defined in absolute terms as the time span from 1500-500 BC, the highest Bronze Age shore-line level at the onset of the period is to be found at the current 36 metre altitude in the north, but only at the 31 metre altitude at the southern border of Ostrobothnia. The shore-line at the beginning of the Pre-Roman Iron Age at 500 BC would correspondingly be found at the 25 metre elevation in the north and at the 21 metre elevation in the south. Similarly, the shore-line of the onset of the Roman Iron Age at AD 1 is to be found within a 19-16 metre altitude span. The different rates of shore-displacement in South and Central Ostrobothnia are compiled and presented in another graph that shows the successively descending shore-level in 500 year intervals according to the baselines.

The resulting shoreline chronology for Southern Ostrobothnia differs from previously used shore-displacement chronologies in archaeological studies. This new shoreline chronology places systematically Early Metal Period shorelines a few metres lower at any given point in time. This means that all shoreline dates presented in previous studies needs to be revised. This revision may also affect former interpretations concerning the relation between sites and shorelines and the palaeoenvironments of Early Metal Period sites. The deviation is however quite negligible in comparison with the recent works of the Oulu archaeologists (for instance Okkonen 2003).
Sea-level relative annual isostatic baselines (mm/year) in Southern and Central Ostrobothnia. Redrawn from Mäkinen and Saarinen 1998. The 8.0-7.0 mm curves are regarded as relevant coastal baselines for the Early Metal Period coast.

<table>
<thead>
<tr>
<th>Baseline</th>
<th>-2500</th>
<th>-2000</th>
<th>-1500</th>
<th>-1000</th>
<th>-500</th>
<th>0</th>
<th>500</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0</td>
<td>48.8</td>
<td>42.5</td>
<td>36.4</td>
<td>30.5</td>
<td>25.0</td>
<td>19.5</td>
<td>14.3</td>
<td>9.0</td>
</tr>
<tr>
<td>7.8</td>
<td>47.5</td>
<td>41.3</td>
<td>35.4</td>
<td>29.6</td>
<td>24.3</td>
<td>18.9</td>
<td>13.9</td>
<td>8.7</td>
</tr>
<tr>
<td>7.6</td>
<td>46.2</td>
<td>40.1</td>
<td>34.3</td>
<td>28.7</td>
<td>23.5</td>
<td>18.3</td>
<td>13.4</td>
<td>8.4</td>
</tr>
<tr>
<td>7.4</td>
<td>44.8</td>
<td>38.9</td>
<td>33.3</td>
<td>27.8</td>
<td>22.8</td>
<td>17.7</td>
<td>13.0</td>
<td>8.2</td>
</tr>
<tr>
<td>7.2</td>
<td>43.5</td>
<td>37.7</td>
<td>32.3</td>
<td>27.0</td>
<td>22.0</td>
<td>17.1</td>
<td>12.5</td>
<td>7.9</td>
</tr>
<tr>
<td>7.0</td>
<td>42.2</td>
<td>36.5</td>
<td>31.2</td>
<td>26.1</td>
<td>21.3</td>
<td>16.5</td>
<td>12.1</td>
<td>7.6</td>
</tr>
<tr>
<td>6.8</td>
<td>40.9</td>
<td>35.3</td>
<td>30.2</td>
<td>25.2</td>
<td>20.5</td>
<td>15.9</td>
<td>11.6</td>
<td>7.3</td>
</tr>
<tr>
<td>6.6</td>
<td>39.5</td>
<td>34.2</td>
<td>29.2</td>
<td>24.3</td>
<td>19.8</td>
<td>15.2</td>
<td>11.2</td>
<td>7.1</td>
</tr>
<tr>
<td>6.4</td>
<td>38.2</td>
<td>33.0</td>
<td>28.2</td>
<td>23.4</td>
<td>19.0</td>
<td>14.6</td>
<td>10.7</td>
<td>6.8</td>
</tr>
<tr>
<td>6.2</td>
<td>36.9</td>
<td>31.8</td>
<td>27.1</td>
<td>22.5</td>
<td>18.3</td>
<td>14.0</td>
<td>10.3</td>
<td>6.5</td>
</tr>
<tr>
<td>6.0</td>
<td>35.6</td>
<td>30.6</td>
<td>26.1</td>
<td>21.7</td>
<td>17.5</td>
<td>13.4</td>
<td>9.8</td>
<td>6.2</td>
</tr>
<tr>
<td>5.8</td>
<td>34.2</td>
<td>29.4</td>
<td>25.1</td>
<td>20.8</td>
<td>16.8</td>
<td>12.8</td>
<td>9.4</td>
<td>6.0</td>
</tr>
<tr>
<td>5.6</td>
<td>32.9</td>
<td>28.2</td>
<td>24.0</td>
<td>19.9</td>
<td>16.0</td>
<td>12.2</td>
<td>8.9</td>
<td>5.7</td>
</tr>
<tr>
<td>5.4</td>
<td>31.6</td>
<td>27.0</td>
<td>23.0</td>
<td>19.0</td>
<td>15.3</td>
<td>11.6</td>
<td>8.5</td>
<td>5.4</td>
</tr>
</tbody>
</table>

Isostatic baseline specific shore-level interpolation (from 2500 BC to AD 1000) based on the shore-displacement curves for the Kronoby area (8.0 mm baseline) and the Rauma-area (5.4 mm baseline).
The current altitudes of synchronic shorelines (from 2500 BC to AD 1000, with 500 year distances) in relation to coastal isostatic baselines in Southern Ostrobothnia.

A critical assessment of the source must point out that the regression curves that are presented in the Posiva report show only the main long-term average regressive trends, which is consequently the case with the shore-displacement chronology presented here. In reality there have most likely been eustatic sea-level fluctuations of various lengths and magnitudes that have caused periods with faster and slower shore-displacement. In order to provide some impression of the eustatic fluctuation I refer to the shore-displacement curves for South-Western Finland that have been presented by Eronen et al. (2001). These curves imply a relatively slow shore displacement during 2100-1300 BC, a slightly faster shore-displacement during 1300-300 BC and again a slower displacement from 300 BC to the Middle Iron Age. It therefore seems conceivable that the low peaks at 2100 and at 300 BC signify points in time when the actual shore-line stood lower than indicated by the main average regressive curve and that the actual shoreline stood higher at the high peak at 1300 BC. The deviations from the main regressive curve appear to be of the magnitude of one metre or slightly more as indicated by the fluctuations of the curve presented by Eronen et al. (2001). For the sake of clarity I will in this thesis only refer to shore-line dates that relate to the main average regressive trends of shore-displacement that are presented in the figures in this chapter. The reader should however be aware of the fact that there are margins of error that affect the reliability of the shore-line dates.
3.3.2. Ecological succession processes in uplift coastscapes

Landscapes consist of a heterogeneous mosaic of patches undergoing distinct successional regimes (Fisher & Feinman 2005:65f). In the coastal landscape of Ostrobothnia the most important successional regimes are directed by land-uplift related processes. Helmer Smeds describes the major physical-geographical processes in the coastal area of Ostrobothnia that bear significant consequences for human inhabitants in relatively short, human time-scales; whereof shore displacement and paludification are most important for the discussion in this thesis. Also long-term processes take place, but they work on longer geological scales of time (Smeds 1935:24ff).

Shore displacement caused by isostatic land uplift has taken place at such a speed that humans have observed it within a single lifespan. Topography determines largely how shore-level changes affect coastal environments. The increase of the land area at any given shore is indirectly proportional to the slope of the sea bed. The greater the slope, the smaller is the increase of the land area within a given time span (Smeds 1935:26). The main shore displacement effects are changes of the land area and the length of the shoreline. These processes correspond to an earlier maritime archipelago phase and to a later land phase of reducing sea and bay areas (Asplund 2008:168ff). Another effect from shore-displacement is that it creates a landscape where the original moraine has become sorted by the influence of
the sea water. Surged stony areas or bedrock appear especially where the strength of the waves was high in the shore phase, which usually characterises elevated topographic areas. Sediments build up instead where the wave power was weak, which is usually noted in topographically low lying areas. Sedimentation is also the most important process that strengthen the impact of the land uplift, increasing the pace of shore displacement, particularly in bays near river estuaries (Smeds 1935:26).

New scerries emerge from the sea, previous scerries merge into large islands, old straits and bays vanish and former islands eventually merge with the mainland. A trip from the outermost scerries towards the mainland gives a picture of the historical succession of the archipelago. The outer archipelago consists of small barren islands. The waves have washed away finer grains of soil so that only stone fields, boulders and rocks remain. The vegetation consists initially of grasses. Later, when bays and surroundings with finer grained soils emerge, deciduous trees cover the island. The inner archipelago consists of larger islands surrounded by narrow straits and bays. A richer tree vegetation emerges, containing a growing number of coniferous trees. The shallowing bays become increasingly covered by dense stands of rush and reed (Smeds 1935:27ff).

The process of paludification has made a great impact on the landscape. The most important reason to the emergence of peat bogs in the coastal area is the paludification of former bays and straits cut off from sea by land uplift. As soon as a bay or a strait becomes isolated from the sea, a paludification process starts (Smeds 1935:36ff). Often a "flade" takes shape, which is initially a shallow and a seasonally fluctuating lake that is framed by a treeless zone of surrounding vegetation. These types of areas are very common in the inner archipelago and along the coast. The seasonal tides of the sea affects the "flade", but a similar process may also take place in poorly drained areas in river valleys, where spring flood water remain standing for weeks or months (ibid.).

Initially, when sea tides still occasionally cover or enter the flade, the vegetation consists of diverse water plants as Common Reed (Phragmites australis) and Grey Club-rush (Schoenoplectus Tabernaemontani). When high tides no longer reach to the flade, Horse tails (Equisetum) and Sedges (Carex) take over and the peat formation process increase. Other frequent plants are Marsh Cinquefoil (Potentilla palustris) and Bog Arum (Calla palustris) as well as an increasing tree and shrub vegetation with Willow (Salix), Alder (Alnus) and Birch (Betula). From a pastoralist perspective, this natural meadow stage is ecologically the most productive and favourable, both in the respect of grazing and fodder harvesting activities. Human inference can diminish tree vegetation as well as prolong the productive phase for pastoralism (ibid.).

Eventually the productive phase of the "flade" is replaced by a lasting unproductive regime with moss and brushwood as Spagahnum and shrubs takes over (ibid.). Once the paludification process has started at a wet site, the paludification tends to transgress over surrounding, poorly drained forested grounds, a process that kills the tree vegetation. The transgression process may take place quite rapidly and have significant implications within a few human generations. Areas dominated by clayey soils become usually more paludified than others due to the poor drainage on compact clayey soils with only miniscule sloping (ibid.).

Thus, a stony and often more or less topographically uneven maritime environment became gradually overlain with more or less flat valleys and plains with sediments. An environment that had been suitable for a maritime foraging economy changed into an environment that was
more suitable for agriculture. All these changes could affect the local resource utilisation and the settlement development in various ways. An important issue in regard of coastal settlements is therefore to figure out whether the sites were settled during periods of increasing or decreasing shoreline length in the vicinity of the settlements (Asplund 2008:168ff). A settlement site that belongs to a phase of increasing shore-line length can also to some extent be related to the sea oriented settlement type while a settlement that dates to a decreasing shore-line phase is more or less related to the valley oriented settlement type described below in chapter 4.3.1.

3.4. Palaeoecology and environmental archaeology

3.4.1. Palaeoclimate and Baltic Sea history

Asplund has recently published an extensive overview of the palaeoclimatic results that concern the Early Metal Period and the possible palaeoclimatic consequences for agriculture in Northern Europe. I will only quote some of his major conclusions (see Asplund 2008:272ff for further references). The climate has undergone a long period of gradual decline since the Middle Neolithic. The most evident cooling in a long-term perspective happened during the Late Bronze Age, while the Pre-Roman Iron Age saw periodic fluctuations of both favourable and unfavourable climate. Asplund considers it difficult to make more precise correlations between changes in the archaeological and palynological records with recorded indications of climate change. Different types of climatic proxy data also give somewhat incompatible results. The continuous and generally increasing land-use during the first millennium BC in most areas around the Baltic and in Finland suggests, according to Asplund, that climatic oscillation did not lead to major setbacks within agriculture. In times characterised by harsher climatic conditions, agricultural development may have slowed down, but still remained progressive. Periods with more favourable climate may in turn have accelerated the agricultural development. The vulnerability of the agriculture is also regarded to have been comparably low as it was probably based on a mix of resources (Asplund 2008:272, 275, 280ff).

Another question of interest relates to the changes in the biological productivity and the annual ice conditions in the sea, which in turn relates to the availability of diverse fish and seal species in the Gulf of Bothnia. Tallavaara et al. refers to four studies on past salinity levels in the Baltic Sea. All of the studies concludes that a phase of relatively high salinity took place around the Early Neolithic. Even if the indicated lengths and the time-spans of the early Neolithic salinity phase vary in the studies, a common result is that they show a peak in salinity at the end of the Neolithic at around 3000 BC (Tallavaara et.al 2010). Three of the studies indicate lower salinity levels that have persisted until modern times. Interestingly one of the studies performed on sediments in the central part of the Baltic Sea suggests the start of a new trend around 1100 BC that lead to a new salinity phase that continues to this day (Emeis et al. 2003).

Emeis et al. concludes that the salinity of the Baltic Sea decreased and that the productivity of the sea surface was significantly reduced from 3100 to 1100 BC. The period of where freshwater diatoms occur most frequently started at 1700 BC. The isotopic reconstruction shows that the trend to lower salinity reversed at 1100 BC, and that salinity started to increase. The maximum abundance phase of freshwater diatoms did however not end until
AD 200. The time span from 1700 BC to AD 200, which corresponds to the entire Early Metal Period, is therefore termed by the authors as the low salinity phase of the Baltic Sea (Emeis et al. 2003:figure 5). The Early Metal Period low salinity phase consists however of an older sub phase of decreasing salinity and one later sub phase of increasing salinity with a turning point at 1100 BC. The authors conclude furthermore that the major variations in Baltic Sea salinity records agree with temporal patterns of reconstructed summer warmth and winter precipitation in southern Scandinavia. The climatic evolution during the Mid and Late Holocene thus had a significant impact on environmental conditions in the Baltic Sea (Emeis et al. 2003:420).

The salinity decline and the process of cooling that started in the Mid Neolithic would thus have continued until Mid and Late Bronze Age. This process would logically have increased the annual ice cover of the sea. Lower salinity would also have contributed to a poorer biological production in the sea and perhaps to a decrease in the number of marine species. The formerly large cod population of the Gulf of Bothnia as well as the large-sized Baltic herring would have disappeared due to the lower salinity (Ylimaunu et al. 1999:149). These changes would naturally also have affected the seal populations. Hypothetically the mentioned trends in maritime ice conditions and productivity would have started to reverse during the Late Bronze Age due to a new trend of gradual increase of salinity and the end of long-term climatic deterioration. This trend may however be complicated to discern archaeologically due to the short-term climatic fluctuations during the Pre-Roman Iron Age.

3.4.2. Palynological analyses

About 20 palaeoecological pollen analyses have been published from the coastal area of Southern Ostrobothnia prior to this project. Most of them have been conducted in the Vaasa area, and with some exceptions the usual aim of the analyses appears to have been to study agricultural activity during the Iron Age AD (for instance Wallin & Segerström 1994 and Miettinen & Vuorela 1988, for clear exceptions see Vuorela 1989 and 1997b). Some of the analyses shed some light on the Early Metal Period, but they were still lacking any signs of actual cultivation prior to the latter part of the Pre-Roman Iron Age. I therefore recognised a general lack of pollen analyses that were conducted with the specific aim to investigate Bronze Age conditions (see however Vuorela 1989). Put in other words there was an apparent lack of pollen analyses conducted in suitable Bronze Age palaeoenvironments. Within the frames of this thesis project a series of pollen analyses were conducted by Jan-Erik Wallin in the Laihia and Malax area (Wallin 2008, 2009). The results are discussed in later chapters of this thesis (chapters 4.6.5. and 5.1.4).

The immigration of spruce is regarded as the most important long-term change in vegetation and forest cover in Finland since the Early Neolithic climatic optimum (Vasari 2004:198). In southern Ostrobothnia this change is dated to 2000-1500 BC, or to the Late Neolithic. The immigration of spruce is here defined as the time when the pollen frequency of spruce (Picea abies) reached a 5% threshold in pollen analyses (Giesecke 2004:22). The forested grounds became more shaded, the incidence of deciduous trees decreased and a general decline took place in the variation of the species of the forests. Also, soil degradation took place and the soils became more acidic (Vasari 2004:199).
3.4.3. Archaeobotanical and osteological analyses

Archaeobotanical analyses have been performed in a very limited scope. Miettinen mentions that floatation was conducted on soil samples from the Brännskogen site in Petalax in the early 1980s. The floatation and screening of soil samples did however not yield any interesting finds (Miettinen 1982:45f). Also at other Early Metal Period excavations in the 1980s soil samples were taken, particularly in Laihia, but analyses were apparently not conducted. Prior to this project no macrofossils at all had been published from Early Metal Period sites in Ostrobothnia. When planning for this thesis project I therefore identified the lack of archaeobotanical analyses as one of the major research gaps concerning the Early Metal Period in Ostrobothnia. Soil samples were for that reason taken at different types of dwelling sites and activity sites in the Laihia and Malax area. Some soil samples were obtained from ongoing excavations that were conducted in Southern Ostrobothnia by the National Board of Antiquities and Oulu University; some of the samples taken by the NBA in 1980s were also screened for macrofossils. The most important materials were however obtained at the Peltomaa sites in Laihia. The results will be presented and discussed in further detail below (in chapters 4.6.5 and 5.1.5).

Due to the bad general preservation conditions for bones, archaeological research has to deal mostly with small fragments of burnt bone and occasionally with sub fossil bones from wetlands. There are nevertheless also some interesting specimens of unburnt bones from some Early Metal Period contexts (see chapters 4.6.5 and 5.1.4). Osteological analyses have been performed for a number of Early Metal Period sites, but most sites lack published results, and many sites seem to have escaped analysis completely. Keeping in mind that burnt bone has been recorded in as many as 55 cairn-like structures of confirmed or possible Early Metal period date in Southern Ostrobothnia (see table chapter 3.5.3), the situation is not satisfactory. Some synthesising work on analysed refuse fauna and burial finds have been conducted, for instance in Deckwirth´s study on bones from domesticated animals (Deckwirth 2008). Miettinen has published some analysis results on bone materials from Laihia (Miettinen 1998:177f) and Seger has published analysis results for the hut foundations in Korsnäs (Seger 1987). Also some analyses of sub fossil bone finds are relevant for this study, especially Ukkonen´s study on sub fossil seal bones from geological contexts, which sheds some light on the availability of diverse species (Ukkonen 2002). The field-work of this thesis project yielded some additional osteological material that is discussed later (in chapters 4.6.5. and in 5.1.5).

3.5. Sites and construction types

3.5.1. Open settlement surfaces

The beginning of the Metal Period involves traditionally a fundamental shift in the available archaeological source material. For the Mesolithic and the Neolithic periods the focus of the research has been strongly on dwelling sites. Stone Age dwelling sites have for various reasons generally been much easier to detect than Early Metal Period settlement sites, in the meantime the graves become much easier to find.

Open settlement surfaces are here defined as dwelling sites with no visible dwelling structures above ground. In some instances open dwelling sites may be discernible as flat, stone cleared
surfaces, as will be described in further detail later. Open dwelling surfaces are marked by cultural layers and find materials that relate to domestic activities. A number of Early Metal period open settlement surfaces have been partly excavated in Southern Ostrobothnia (see table below). It is however often a matter of interpretation whether a site should be counted as a settlement surface or not. There are for instance some pottery finds from cairns that may derive from overlying settlement layers, but that could belong to the cairn as well (see tables in chapter 3.5.3). There are also some "settlement surfaces" where the amount of recorded domestic activity related finds is very low or qualitatively monotonous. This issue can in turn be related to the problem of identification of special activity sites. All settlement sites would logically have been activity sites, preferably multi-purpose sites, but all activity sites were not necessarily settled, and it would thus be erroneous to label them as settlement sites. In my view some “settlement surfaces” that are related to cooking pits but that are situated far from cairns could be activity sites that were only used for some specific cooking pit related activities (compare with the table in chapter 3.5.4). Also this issue will be touched upon in some later instances in this thesis.

Due to the blurry border between the Late Neolithic and the Early Bronze Age, also Late Neolithic sites with Kiukainen culture materials are included in this list. The Late Neolithic also provides a historical background to the understanding of the Early Metal Period.

<table>
<thead>
<tr>
<th>Site</th>
<th>Artefact date</th>
<th>C-14 date</th>
<th>C-14 Lab nr.</th>
<th>Calib 94.5%</th>
<th>Other structures</th>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lestijärv, Anttila</td>
<td>Spearhead Per IV, Pai</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>142</td>
</tr>
<tr>
<td>Lappfärd, Mössäsen</td>
<td>Kiu (lithic only)</td>
<td>3710±120 Hel-4311</td>
<td>2500-1750 BC</td>
<td>49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lappfärd, Rävåsen</td>
<td>Kiu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>Seinäjoki, Aapaiminnäki</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>Oravais, Färnmossen 2</td>
<td>Kiu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>Esse, Kvarnnabba II</td>
<td>Kiu</td>
<td></td>
<td></td>
<td></td>
<td>Cairns</td>
<td>44</td>
</tr>
<tr>
<td>Isokyrö, Viitaluoma</td>
<td>Kiu (lithic only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>39</td>
</tr>
<tr>
<td>Pörton, Langback</td>
<td>Kiu</td>
<td></td>
<td></td>
<td></td>
<td>Cairns</td>
<td>38</td>
</tr>
<tr>
<td>Pörton, Raineåsen</td>
<td>Kiu, Tex, Pai?</td>
<td></td>
<td></td>
<td></td>
<td>Cairns</td>
<td>38</td>
</tr>
<tr>
<td>Lappfärd Norrviken</td>
<td>Kiu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Lappfärd, Kärräkern</td>
<td>Kiu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Laihia, Kurunkangas</td>
<td>Kiu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>Ylistaro, Varesvuo, Saari</td>
<td>Kiu</td>
<td></td>
<td></td>
<td></td>
<td>Cairns</td>
<td>37</td>
</tr>
<tr>
<td>Lappfärd, Langång</td>
<td>Kiu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>Alahärmä, Puisaarenkytö</td>
<td>Porous ware</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>Lappfärd, Risåsen N1</td>
<td>Kiu</td>
<td></td>
<td></td>
<td></td>
<td>Cairns</td>
<td>35</td>
</tr>
<tr>
<td>Lappfärd, Bergåsen 1C</td>
<td>Kiu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>Laihia Alatalo</td>
<td>Coastal ware</td>
<td>2738±41, 2590±40, 2555±40</td>
<td>Ua-38385, Ua-33250, Ua-34505</td>
<td>980-400 BC</td>
<td>Cairns, Cooking-pit</td>
<td>35</td>
</tr>
<tr>
<td>Laihia Palomäki W</td>
<td>Coastal ware</td>
<td>2785±30, 2563±35</td>
<td>Poz-23351, Ua-38387</td>
<td>1000-540 BC</td>
<td>Cairns, Burnt mound</td>
<td>35</td>
</tr>
<tr>
<td>Laihia Palomäki E</td>
<td>Coastal ware</td>
<td>2578±36</td>
<td>Ua-38386</td>
<td>830-540 BC</td>
<td>Cairns, Cooking-pits</td>
<td>35</td>
</tr>
<tr>
<td>Site</td>
<td>Type</td>
<td>Material 1</td>
<td>Material 2</td>
<td>Material 3</td>
<td>Material 4</td>
<td>Material 5</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>Laihia Annikkalanmäki E</td>
<td>Mor, Lau, Co</td>
<td>2630±60, 2500±40</td>
<td>Su-2430, Su-2431</td>
<td>820-520 BC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kronoby, Borghacken 2</td>
<td>Asb</td>
<td>3000±90</td>
<td>Hel-2924</td>
<td>1440-970 BC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia, Nikkonkallio</td>
<td>Pai, Tex? Lus? Mor?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia Viirikallio 1A</td>
<td>Tex, Lus, Pai? Mor</td>
<td>2360±120</td>
<td>Hel-2684</td>
<td>800-150 BC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia, Kotaneva-kaakko</td>
<td>Mor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alahärmä, Karkaus</td>
<td>Luu, Sär2, Mor?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purmo, Tormbacken</td>
<td>Sär2?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jeppo, Råbacken 2</td>
<td>Mor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia Luhtalanmäki C</td>
<td>Mor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia Kullerinmäki A</td>
<td>Mor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Usually Early Metal Period open settlement surfaces have been found in close spatial relation to contemporary cairns and/or cooking pits. Cairn and cooking-pit excavations have sometimes provided indications of underlying or adjacent settlement surfaces (Miettinen 1998:93). Another way of finding open settlement surfaces has been through visual observation of recent disturbances in the ground that had revealed domestic find materials (Miettinen 1998:85). Due to the often prevalent close proximity of cairns and open settlement surfaces, it would seem probable that many open settlement surfaces are sedentary dwelling sites or farmsteads, especially if the local topography provided a sheltered location and if the palaeoenvironment was favourable for agricultural activities. This interpretation appears on the other hand to be contested by Miettinen’s observation that the Early Metal Period open settlement surfaces usually exhibit quite meagre cultural layers and only few structures. The cultural layers have usually been thin with only weak colourings of the soil and, except for hearths and cooking pits, no other constructions have usually been encountered. The strongest cultural layers appear instead to have been found in cooking-pits and in their immediate surroundings (Miettinen 1994:162ff, 1998:110ff). Miettinen also infers that most sites would have been highly shore bound and that they were not particularly well situated for agricultural activities (Miettinen 1998:111). It should be noted however that the excavated trenches have usually been small and the relation to the shore line should be scrutinised by the use of new calibrated shoreline chronologies and by calibrated radiocarbon dates for settlement sites. The number of radiocarbon dated settlement surfaces has remained low as shown in the adjacent table.

The third alternative way to find and to delimit open dwelling surfaces in forested grounds is through thorough surveys with soil drills and soil chemical prospection, which was undertaken by the author in Peltomaa in Laihia. As an outcome of this fieldwork, one incontestable agrarian sedentary farmstead was discovered at Alatalo. The open settlement surface at Alatalo, as well as the other similar surfaces in Peltomaa (Palomäki W and Palomäki E) seems to have been very intensively used, but in the mean time they are spatially quite confined to rather small surfaces that furthermore are rather sharply delimited. A similar
observation is made by Unto Salo concerning the Bronze Age settlement sites in Satakunta, where cultural layers appeared to be confined almost only to the extensions of the house floors (Salo 1970:150). Excavating only a few metres outside the core of the settlement surface or house foundations could thus give an impression of a quite meagerly attributed dwelling site. The settlement surfaces in Peltomaa are discussed in further detail in chapter 4.6.

Neolithic settlement surfaces are usually relatively easy to detect due to the vast amounts of well preserved lithic and ceramic materials that are often spread over large areas in soft and sandy soils. Then why are Early Metal Period settlement surfaces so difficult to detect when compared to Neolithic settlement surfaces in western Finland? The last paragraph may contain a part of the answer. Approximately at the transition to the Bronze Age the settlement surfaces appear generally to become smaller in size, and are seemingly quite often situated on stonier and harder grounds (Salo 1970:150). There are thus physical and topographical changes that probably relate to changes in the habitation and subsistence practices. There may for instance be a general transition towards single family farms. Very confined cultural layers could either depend on a strict practice of house replacement where houses were constantly rebuilt on the same spots (see chapter 2.3.1), but in cases where the cultural layers are weakly attributed, perhaps a house relocation practice with relatively short settlement phases at each site could be a better explanation for the confined character of the settlement sites.

Due to the confined character of the settlement sites and their location on harder grounds, the domestic waste (or the archaeological material) may have become damaged to a great extent due to continuous trampling and domestic activities. The ceramic and the burnt bone materials recorded at Early Metal Period settlement surfaces in western Finland appear consequently to be quite small and badly preserved (Salo 1970:151, Deckwirth 2008:123, Edgren 1999:314). The same observation is valid for the sites in Peltomaa (see chapter 4.6).

There are other probable explanations for the difficulties related to the Early Metal Period settlement surface detection. During the Bronze Age the use of lithic and ceramic materials appears to decrease, which probably relates to technological changes (Salo 1981:284f,308; Asplund 2008:208). There appears at least to be a general decrease in the number of diagnostic, easily datable and recognisable artefact types in these materials. Coastal Early Metal Period pottery types are for instance of poor quality and they are sparsely decorated when compared to Neolithic ceramic types (Salo 1981:309, Edgren 1999:314). Stone tools and well decorated pottery sherds are easily identified as pre-historic objects even by ordinary citizens, but clay daub, tiny bone fragments and anonymous pottery fragments are hardly noticed.

Also, waste management practices may have changed. If field manuring was introduced (see chapter 4.6.5), a large portion of the domestic waste may have been spread over the cultivated fields. Due to the enrichment of nutrients in the grounds of the settlement sites, they may finally have become cultivated during a short phase after the abandonment of the settlement sites. The cultural layers may thus have become cleared of stone and worked already in prehistory. Some or all of these explanations may be the reasons behind the relatively low amount of discovered Early Metal Period settlement surfaces.
3.5.2. Visible dwelling constructions

Sites with visible building foundations are found especially in places with a very stony surface as surged moraine and boulder fields. These types of structures and sites are discussed in closer detail in chapter 4.2. Here only a short description is provided.

Clearances in boulder fields and building structures made of stone are relatively easy to detect and thus this category of sites may easily become overrepresented in comparison with the open settlement surfaces that lack such obvious dwelling structures. The category of settlement sites with visible dwelling constructions above ground surface during the Late Neolithic and the Early Metal Period can be subdivided into sites with big and roughly rectangular building foundations, and sites with small and rounded or quadrangular foundations. Apparent storage pits and even some possible storage cairns have been detected at these types of sites.

So far the dated and/or excavated sites with visible structures seem to cluster chronologically in the Late Neolithic and the Early Bronze Age and later during the Pre-Roman Iron Age. The large rectangular constructions are situated above the 37 metre altitude. One such excavated structure at Vitmossen in Vörä yielded at least Kiukainen ware and Textile ware, possibly also Paimio and Lusatian inspired ware (Kotivuori 1992:44f, Lavento 2001:229, Miettinen 1998:106). Radiocarbon dates are unfortunately lacking from these sites. Most of these sites are furthermore closely situated to cairns of Bronze Age character (see table below). All excavated structures of the small and rounded or quadrangular type are instead situated below the 25 metre elevation and some of them have yielded Morby ware and most of them have produced Pre-Roman radiocarbon dates. Cairns are more rarely found close to these sites (at least in the excavated cases).

The current picture thus indicates that there is a chronological difference between these two types of building foundations. The table of non-excavated sites indicates however that there probably is some chronological overlapping between the types, but the trend is that the small structures dominate later than the large structures. The topographical contexts of the types indicate furthermore that there are some utilitarian differences between the types. The small dwelling constructions appear to have been built on small scerries in the outermost archipelago. The large structures were instead apparently constructed on the coast of the mainland and on islands that were situated close to the mainland in the inner archipelago (see more detailed discussion in chapter 4.2).

My impression is that the survey situation varies heavily between the parishes when considering the occurrence of small dwelling constructions. Sites of this type have probably often either escaped detection or they are falsely classified as cairn sites, as in the Rintavainio case in Alahärmä (Pentti Risla, e-mail 03.07.2009). The work of one local amateur archaeologist is furthermore the reason for the discovery of all of the Esse cases. Especially in the north, this type of structure appears to have been constructed in sandy grounds as indicated by the registered sites in Esse. It should however be noted that none of the Esse structures have been excavated or dated and it is still unclear whether they really should be included in the same category as the stone built small hut foundations that is known from the Vaasa area.
<table>
<thead>
<tr>
<th>Site</th>
<th>Constr. Size</th>
<th>C-14/Artefact date</th>
<th>C-14 Lab.nr.</th>
<th>Calib. 94.5%</th>
<th>Other structures</th>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kronoby, Högryggen</td>
<td>large</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Vaasa, Öjberget</td>
<td>natural/small</td>
<td>3495±50</td>
<td>Hela-726</td>
<td>1940-1680 BC</td>
<td></td>
<td>47</td>
</tr>
<tr>
<td>Vörå Vitmossen 3</td>
<td>large</td>
<td>Kiu, Tex (Pai, Lus?)</td>
<td></td>
<td></td>
<td>Cairns</td>
<td>41</td>
</tr>
<tr>
<td>Orava, Bäckishällor NB</td>
<td>large</td>
<td></td>
<td></td>
<td></td>
<td>Cairns, storage pits, storage cairns?</td>
<td>41</td>
</tr>
<tr>
<td>Ylistaro, Viinapräinniakso</td>
<td>small</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>41</td>
</tr>
<tr>
<td>Malax Hudholmen 1</td>
<td>small</td>
<td>2200±35</td>
<td>Ua-34506</td>
<td>380-170 BC</td>
<td>Storage pits</td>
<td>23</td>
</tr>
<tr>
<td>Korsnäs Ormoan</td>
<td>small</td>
<td>2220±70</td>
<td>Su-1486</td>
<td>400-90 BC</td>
<td>Storage pits, labyrinth</td>
<td>22</td>
</tr>
<tr>
<td>Korsnäs Trofastbacken</td>
<td>small</td>
<td>2300±110, Morby</td>
<td>Su-1485</td>
<td>800-50 BC</td>
<td>Cairns</td>
<td>23</td>
</tr>
<tr>
<td>Vaasa Djupkärzbacken</td>
<td>small</td>
<td>2110±100, Morby</td>
<td>Hel-3271</td>
<td>390 BC-AD 70</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Korsholm, Malbacken</td>
<td>small</td>
<td>1890±80, crossbow projectile?</td>
<td>Hel-2236</td>
<td>60 BC-AD 340 (too old)</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

Data compiled from: Kotivuori 1988, 1993:23f, Andersson 1999, Seger 1986a, 1986b, Pesonen 2002:19 and from the register of the NBA. The C14 date for Hudholmen has been obtained within this thesis project (see chapter 5.1.5). "Other structures" includes recorded structures within a 200 metre radius from the settlement sites.

<table>
<thead>
<tr>
<th>Site</th>
<th>Constr. Size</th>
<th>Altitude</th>
<th>Other structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kronoby, Hammarbacken</td>
<td>small</td>
<td>55</td>
<td>Cairns, Storage pits</td>
</tr>
<tr>
<td>Kronoby, Borrbacken (destr.)</td>
<td>large</td>
<td>45</td>
<td>Cairns</td>
</tr>
<tr>
<td>Nykarleby, Västerbacken</td>
<td>small</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Maxmo Knappelbackhällorna</td>
<td>small</td>
<td>43</td>
<td>Storage pits</td>
</tr>
<tr>
<td>Jeppo Dalalandet 3</td>
<td>large</td>
<td>38</td>
<td>Cairns</td>
</tr>
<tr>
<td>Alahärmä Rintavainio</td>
<td>small</td>
<td>38</td>
<td>Cairns, Storage pits?</td>
</tr>
<tr>
<td>Korsholm Tölby Brännskogen</td>
<td>small</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Esse Spänbacken C</td>
<td>small</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Esse, Överesse Bjoebacken</td>
<td>small</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Esse, Bäckby Bjoebacken</td>
<td>small</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Esse Nystbacken</td>
<td>small</td>
<td>35</td>
<td>Cairns</td>
</tr>
<tr>
<td>Esse Spänbacken A</td>
<td>small</td>
<td>35</td>
<td>Cairn</td>
</tr>
<tr>
<td>Nykarleby, Pilkabacken</td>
<td>small</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Esse Storbrännbacken</td>
<td>small</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Esse Spänbacken B</td>
<td>small</td>
<td>30</td>
<td>Cairns</td>
</tr>
<tr>
<td>Esse, Spänbacken D</td>
<td>small</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Settlement</td>
<td>Size</td>
<td>Number</td>
<td>Feature</td>
</tr>
<tr>
<td>--------------------</td>
<td>------</td>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td>Esse Messisbacken W</td>
<td>small</td>
<td>30</td>
<td>Cairn</td>
</tr>
<tr>
<td>Esse, Häranmossbacken</td>
<td>small</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Kvevlax, Platsberget</td>
<td>small</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Esse, Bolimbacken B</td>
<td>small</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

Data compiled from Björklund 1997:35f, Kotivuori 1993 and from the register of the NBA. The list is probably far from complete. "Other structures" includes recorded structures within a 200 metre radius of the settlement sites.

The difference between open settlement surfaces and sites marked by visible dwelling structures may to some extent depend on the natural amount of stones in the ground at each respective site, as visible structures should be easier to detect in stony grounds. This is however not a complete answer. Great differences in soil quality are indicative of different topographical and ecological preferences for the different types of sites. Local topography, palaeoenvironmental reconstructions and excavation results shows clearly that there must be real differences in utilitarian terms. The difference is particularly obvious between the open settlement surfaces with burial cairns on sandy grounds and the sites that exhibit small dwelling constructions and storage pits in boulder fields. The latter sites are obviously seasonal maritime hunting stations (Seger 1986) and at least parts of the former are sedentary farms (see chapter 4.6.3). As already indicated by some previous authors; coastal dwelling sites in Finland can be divided into two subtypes; into agricultural settlement sites on sandy ground where buildings are marked by post-holes and burnt clay daub, and hunting sites that are located on very stony ground and where buildings are marked by stone foundations for huts (Edgren 1999:317f, Asplund 2008:264). The sites that exhibit large stone built dwelling constructions have an intermediary geographical and ecological position, but they are apparently more closely related to maritime resource utilisation than agriculture; sites of this type have also been regarded as seasonal hunting stations, at least in their initial phases of utility (Kotivuori 1992:48f, Andersson 1999:150ff).

### 3.5.3. Burial cairns and stone-settings

The Early Metal Period is still visually very much present in the current cultural landscape. This is mainly due to the great number of cairns and stone settings built along the ancient coastal area. Hundreds of cairns of a characteristic Bronze Age type were built during the first part of the Early Metal period, and even more stone-settings and small cairns seems to have been built during the Pre-Roman Iron Age.

According to the ancient monuments register of the National Board of Antiquities there are about 21000 registered cairn-like structures and stone settings of various kinds in Finland. This number includes all kinds of stone built heaps or mounds. About 8200 structures are registered in Southern and Central Ostrobothnia. The research area thus possesses a high percentage of the national stock of cairn-like structures.

According to my estimates some 330 cairns or cairn-like features have been at least partly excavated in Southern and Central Ostrobothnia. This number includes also a number of very early and poorly documented cases. My estimate of the maximum number of excavated cairn-like features of confirmed or of possible Early Metal Period date leads to approximately 170 excavated constructions in Southern and Central Ostrobothnia (see the table below). If I try to make an estimate of the chronological subdivision of these cairn-like features, about 70 may
be of Bronze Age origin and perhaps about 100 can be of Pre-Roman date. These estimates are only tentative and rely mostly on the altitude of the sites. It is uncertain how great the amount is that actually contain graves, but burnt bone has been documented in at least 55 cases. The table below includes all at least partly excavated cairn-like structures that are situated on Early Metal Period elevation zones. Structures that clearly belong to other time periods have been excluded. Instead some non-excavated cairns that contain artefacts have been included.

<table>
<thead>
<tr>
<th>Site</th>
<th>Exc.cairns</th>
<th>Bone</th>
<th>Artefacts</th>
<th>Altitude</th>
<th>Excavation</th>
<th>Finds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esse Myråsbacken</td>
<td>2</td>
<td></td>
<td></td>
<td>45</td>
<td>1930</td>
<td></td>
</tr>
<tr>
<td>Kannus Karjakangas</td>
<td>7</td>
<td>6</td>
<td>43</td>
<td>44</td>
<td>1982</td>
<td>worked quartz</td>
</tr>
<tr>
<td>Lappfjärd, Eskola</td>
<td>6</td>
<td>3</td>
<td>43</td>
<td>39</td>
<td>1950</td>
<td>pottery, grinding stone</td>
</tr>
<tr>
<td>Oravais, Finndalen</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>42</td>
<td>1988</td>
<td>pottery, worked quartz, stone tool fragm.</td>
</tr>
<tr>
<td>Pörtom Smästenrösback</td>
<td>1</td>
<td></td>
<td></td>
<td>42</td>
<td>1950</td>
<td></td>
</tr>
<tr>
<td>Vörå Vörsholmen</td>
<td>2</td>
<td></td>
<td></td>
<td>42</td>
<td>1934</td>
<td></td>
</tr>
<tr>
<td>Vörå, Vitmossen 3</td>
<td>2</td>
<td>1</td>
<td>41</td>
<td>44</td>
<td>1986</td>
<td>pottery, quartz scrapers</td>
</tr>
<tr>
<td>Isokyrö Marjamäki</td>
<td>1</td>
<td></td>
<td>43</td>
<td>40</td>
<td>1938</td>
<td></td>
</tr>
<tr>
<td>Tjöck, Kilberget</td>
<td>1</td>
<td></td>
<td></td>
<td>40</td>
<td>1869</td>
<td></td>
</tr>
<tr>
<td>Närpes Jättehöjden</td>
<td>1</td>
<td></td>
<td></td>
<td>40</td>
<td>1927</td>
<td></td>
</tr>
<tr>
<td>Vörå, Kroks</td>
<td>2</td>
<td></td>
<td></td>
<td>40</td>
<td>1921</td>
<td></td>
</tr>
<tr>
<td>Pörtom Karkäsback</td>
<td>3</td>
<td></td>
<td></td>
<td>38</td>
<td>1959</td>
<td></td>
</tr>
<tr>
<td>Övermark Källäshäckbacken N</td>
<td>1</td>
<td></td>
<td></td>
<td>38</td>
<td>1939</td>
<td></td>
</tr>
<tr>
<td>Laihia Annikkalankangas</td>
<td>1</td>
<td></td>
<td></td>
<td>38</td>
<td>1939</td>
<td></td>
</tr>
<tr>
<td>Laihia Järvinevankangas</td>
<td>1</td>
<td></td>
<td></td>
<td>38</td>
<td>1991</td>
<td></td>
</tr>
<tr>
<td>Oravais Bäckishällorna N</td>
<td>1</td>
<td></td>
<td></td>
<td>37</td>
<td>1976</td>
<td></td>
</tr>
<tr>
<td>Pörtom Langback</td>
<td>2</td>
<td>1</td>
<td>37</td>
<td>1958</td>
<td>1938, 1975</td>
<td>pottery, worked quartz</td>
</tr>
<tr>
<td>Närpes Furuedet</td>
<td>1</td>
<td></td>
<td></td>
<td>37</td>
<td>1977</td>
<td></td>
</tr>
<tr>
<td>Kronoby Bastön</td>
<td>1</td>
<td></td>
<td>35</td>
<td>35</td>
<td>1934</td>
<td></td>
</tr>
<tr>
<td>Esse Linjärsvbacken NW</td>
<td>1</td>
<td>1</td>
<td>35</td>
<td>35</td>
<td>1880</td>
<td></td>
</tr>
<tr>
<td>Isokyrö Tuomannämäki</td>
<td>1</td>
<td></td>
<td>35</td>
<td>35</td>
<td>1800</td>
<td></td>
</tr>
<tr>
<td>Isokyrö Poikkisaranmäki</td>
<td>1</td>
<td></td>
<td>35</td>
<td>35</td>
<td>1939</td>
<td></td>
</tr>
<tr>
<td>Laihia Murhaastonkangas</td>
<td>4</td>
<td>3</td>
<td>35</td>
<td>35</td>
<td>1938, 1975</td>
<td></td>
</tr>
<tr>
<td>Laihia Alatalo</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>35</td>
<td>1846, 1869</td>
<td>2 bronze razors, leather fragm.</td>
</tr>
<tr>
<td>Solf, Södermästersberget</td>
<td>1</td>
<td></td>
<td>34</td>
<td>34</td>
<td>1984</td>
<td></td>
</tr>
<tr>
<td>Vörå Helsinge</td>
<td>2</td>
<td>1</td>
<td>34</td>
<td>34</td>
<td>1923</td>
<td>bronze spiral ring</td>
</tr>
<tr>
<td>Esse Spånbacka</td>
<td>1</td>
<td></td>
<td>33</td>
<td>33</td>
<td>1880</td>
<td></td>
</tr>
<tr>
<td>Malax Mårkäneva</td>
<td>1</td>
<td></td>
<td>32</td>
<td>32</td>
<td>1901</td>
<td></td>
</tr>
<tr>
<td>Lappfjärd Åbackberget 3</td>
<td>1</td>
<td>1</td>
<td>32</td>
<td>32</td>
<td>1861</td>
<td></td>
</tr>
<tr>
<td>Solf Finnmosbacken 2</td>
<td>1</td>
<td>1</td>
<td>31</td>
<td>31</td>
<td>1992</td>
<td></td>
</tr>
<tr>
<td>Kokkola Farfäringsbacka</td>
<td>1</td>
<td></td>
<td>30</td>
<td>30</td>
<td>1945</td>
<td></td>
</tr>
<tr>
<td>Kokkola Brännbacka2</td>
<td>1</td>
<td></td>
<td>30</td>
<td>30</td>
<td>1945</td>
<td></td>
</tr>
<tr>
<td>Kokkola Dalaskogen</td>
<td>1</td>
<td>1</td>
<td>30</td>
<td>30</td>
<td>1945</td>
<td>bronze spiral ring</td>
</tr>
<tr>
<td>Kronoby, Borgbacken 1</td>
<td>2</td>
<td></td>
<td>30</td>
<td>30</td>
<td>1931</td>
<td></td>
</tr>
<tr>
<td>Kronoby Lillkettusbacka</td>
<td>1</td>
<td></td>
<td>30</td>
<td>30</td>
<td>1946</td>
<td></td>
</tr>
<tr>
<td>Esse Röstasgiutan</td>
<td>1</td>
<td>1</td>
<td>30</td>
<td>30</td>
<td>1935</td>
<td>iron fragment</td>
</tr>
<tr>
<td>Jeppo Mårtensberget</td>
<td>1</td>
<td>1</td>
<td>30</td>
<td>30</td>
<td>1980</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Units</td>
<td>Dated</td>
<td>Finds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------</td>
<td>-------------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oravais Fallback</td>
<td>1</td>
<td>30 1934</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sideby Storpåttback</td>
<td>1</td>
<td>30 1912</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sideby Stenringsbacken</td>
<td>1</td>
<td>30 1912</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Närpes Törvesäsen</td>
<td>1</td>
<td>30 1912</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solf Kalasar</td>
<td>1</td>
<td>30 1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia, Nikonkallio</td>
<td>3</td>
<td>30 1938, 1945, 1946</td>
<td>pottery, quartz &amp; flint flakes, bone tool, mould &amp; crucible fragm.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia Kärmesnevamäki A</td>
<td>3</td>
<td>29 1985</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esse Storsvede</td>
<td>1</td>
<td>28 1880</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lohtaja, Rajakallio</td>
<td>1</td>
<td>28 1947</td>
<td>bronze spiral ring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia, Viirikallio 1</td>
<td>1</td>
<td>28 2009</td>
<td>quartz flakes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia Viirikallio 1</td>
<td>2</td>
<td>28 1987</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia Kotaneva-Kaakko</td>
<td>1</td>
<td>28 1991</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kälviä Silanpää</td>
<td>1</td>
<td>27 1975</td>
<td>burnt flint</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kronoby Rifinnön</td>
<td>8</td>
<td>27 1928</td>
<td>iron fragment, whetstone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jeppo Råbacken 2</td>
<td>1</td>
<td>27 1987</td>
<td>pottery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isokyrö Niemenmaanmäki</td>
<td>4</td>
<td>27 1937, 1938</td>
<td>2 bronze razors? iron knife</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korsholm, Storhällorna</td>
<td>3</td>
<td>27 1983, 1984</td>
<td>pottery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pörtom Pörtbäck</td>
<td>2</td>
<td>27 1954, 1976</td>
<td>pottery, grinding stone, hammer stone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia Riitasaari A</td>
<td>4</td>
<td>27 1936</td>
<td>grinding stone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lappfjärd, Starrängen</td>
<td>1</td>
<td>27 1912</td>
<td>pottery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purmo, Granbacken</td>
<td>27</td>
<td>Not excavated</td>
<td>bronze bracelet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solf Mässbäcksskogen E</td>
<td>1</td>
<td>26 1995</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kokkola Brännbacka 1</td>
<td>1</td>
<td>25 1945</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kronoby Kåtabacken</td>
<td>1</td>
<td>25 1928</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purmo Närpebacken</td>
<td>1</td>
<td>25 1982</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Munsala Mickelsbacken</td>
<td>2</td>
<td>25 1980</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pörtom Velkanëbäck</td>
<td>5</td>
<td>25 1912</td>
<td>pottery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sideby Sorakangas</td>
<td>2</td>
<td>25 1912</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solf, Bentasängen</td>
<td>1</td>
<td>25 1984, 1987</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malax, Snickariserget</td>
<td>2</td>
<td>25 1989, 1992</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petalax, Rimossbacken</td>
<td>3</td>
<td>24 1974, 1975</td>
<td>bronze spiral ring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Närpes Fåbodbacken</td>
<td>1</td>
<td>24 1987, 1988</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solf, Knivnässkogen</td>
<td>4</td>
<td>24 1982, 1983</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia Kalkkivuori 2</td>
<td>3</td>
<td>24 1993, 1994</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia Luhtalanmäki C</td>
<td>1</td>
<td>24 1993, 1994</td>
<td>pottery, burnt clay, quartz flake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kronoby Koberget</td>
<td>1</td>
<td>23 1928</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petalax Brännskogen</td>
<td>4</td>
<td>23 1976, 1978</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malax, Susabacken</td>
<td>1</td>
<td>23 1869</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esse, Träskbacken</td>
<td>23</td>
<td>Not excavated</td>
<td>bronze spiral ring, spearhead</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pörtom Raineuddarna</td>
<td>1</td>
<td>22 1981</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malax, Helenelund</td>
<td>1</td>
<td>22 1951</td>
<td>bronze bracelet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia Kullerinmäki A</td>
<td>2</td>
<td>22 1986</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laihia, Muhanvainio</td>
<td>2</td>
<td>22 1937, 1938</td>
<td>Meinander 168b, 169</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vähäkryrö, Vallinnmäki</td>
<td>1</td>
<td>22 1938</td>
<td>Meinander 125</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table: Cairns and cairn-like structures with datable finds and radiocarbon dates

<table>
<thead>
<tr>
<th>Site</th>
<th>Altitude</th>
<th>Cairns</th>
<th>Datable artefacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lappfjärd, Eskola 1</td>
<td>43</td>
<td>2</td>
<td>Morby ware</td>
</tr>
<tr>
<td>Oravais, Finndalen</td>
<td>42</td>
<td>1</td>
<td>Lusatian inspired ware</td>
</tr>
<tr>
<td>Vörå, Vittmossen 3</td>
<td>41</td>
<td>1</td>
<td>Paimio ware</td>
</tr>
<tr>
<td>Pörtom Langback</td>
<td>37</td>
<td>1</td>
<td>Kiukainen ware</td>
</tr>
<tr>
<td>Laihia Alatalo</td>
<td>35</td>
<td>1</td>
<td>bronze razor (spiral handle)</td>
</tr>
<tr>
<td>Laihia, Nikonkallio</td>
<td>30</td>
<td>1</td>
<td>Textile ware</td>
</tr>
<tr>
<td>Jeppo Asplandet</td>
<td>33</td>
<td>1</td>
<td>Maaninka celt, even-based arrowhead</td>
</tr>
<tr>
<td>Korsholm, Storhällorna 1</td>
<td>27</td>
<td>1</td>
<td>Morby ware</td>
</tr>
<tr>
<td>Pörtom Pörthäkäck</td>
<td>27</td>
<td>2</td>
<td>Morby ware</td>
</tr>
<tr>
<td>Lappfjärd, Starrängen</td>
<td>27</td>
<td>1</td>
<td>Morby ware</td>
</tr>
<tr>
<td>Jeppo Råbacken 2</td>
<td>27</td>
<td>1</td>
<td>Luukonsaari &amp; Sär2 ware</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2990±110, Hel-2558</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2430±110, Hel-2557</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2310±90, Su-1596</td>
</tr>
<tr>
<td>Pörtom Velkanebäck</td>
<td>25</td>
<td>1</td>
<td>Morby ware</td>
</tr>
<tr>
<td>Laihia Luhtalanmäki C</td>
<td>24</td>
<td>1</td>
<td>Morby ware</td>
</tr>
<tr>
<td>Vähäkyrö, Pajunperkiömäki</td>
<td>20</td>
<td>2</td>
<td>Late Pre-Roman weapons (?)</td>
</tr>
</tbody>
</table>


Long-cairns seem to represent a Late Neolithic burial tradition. According to Jari Okkonen long-cairns were built along the coast of the Bothnian Bay during the latter part of the Late Neolithic. Long-cairns occur regularly at elevations around or just below 40 metres, which gives them a shoreline date to 1800-1500 BC (Okkonen 2003:111), which would roughly correspond to period I of the South Scandinavian Bronze Age. Sporadically excavated long-cairns at diverse locations around Finland have provided artefact or radiocarbon dates that seems to confirm a Late Neolithic or a Early Bronze Age date (Asplund 2008:72,75; Taavitsainen 2003:38f). In South and Central Ostrobothnia two long-cairs have been excavated; at Karjakangas in Kannusand at Annikkalankangas in Laihia. Both were situated at Late Neolithic shoreline altitudes, both lacked finds and no function could be determined, but
Meinander interpreted the latter structure as a grave (Okkonen 2003:92f, Meinander 1944:40f). Alongside with long cairns also some round cairns can have been built during the Late Neolithic, as suggested by Okkonen for the North and central Ostrobothnian coast and by Forsberg for the Northern Norrlandic coast (Okkonen 2003:220, Forsberg 1999:257).

The typical Bronze Age cairn is usually characterised as a circular structure with a diameter of ten meters or more. The stone filled structure has ideally a relatively high, rounded profile. Miettinen notes though that this is an idealised description and she refers to Salo’s statistical study on Bronze Age cairns in Satakunta (Miettinen 1998:61). The statistics for Satakunta provides a more varied picture. The Bronze Age cairns of this area consist to 40 % of monuments that are less than five metres in diameter. 42% are 5-10 metres in diameter. 12 % have a diameter of 10-15 metres and only 4 % exhibits a diameter that exceeds 15 metres (Salo 1981:131f). It is currently not possible to provide such accurate statistical figures for Southern Ostrobothnia, but the general trend should be similar in this area, as Miettinen has pointed out. The largest Ostrobothnian cairns are approximately 20 metres in diameter and about two metres high. Cairns of especially large dimensions are known in Lappfjärd, Pörtom, Laihia, Oravais, Jeppo and Esse (Miettinen 1998:60f). Coastal cairns of Bronze Age character are found in Southern Ostrobothnia either singly or in groups from just above the 40 metre altitude to just below the 30 metre altitude. This interval is what I call the Bronze Age level zone, despite the fact that the actual Bronze Age shore line levels are generally situated at somewhat lower altitudes.

A general trend in the Nordic countries is that the oldest internal burial custom comprised inhumations in stone cists, a tradition that also seems to be present in Ostrobothnia as shown by some large cist remains in looting pits in non-archaeologically excavated cairns (Meinander 1954:97f). Soon cremation burials became dominant and the stone cists diminished and even disappeared. The oldest Bronze Age cairn cremations in Finland date to the late Period II and to Period III. There are however also some Late Neolithic cremations, for example the flat ground burial from Hangaskangas in Oulu dated to 1940-1730 BC (Asplund 2008:74). As the grave contained a bronze dagger it could perhaps also be regarded as a very early Bronze Age cremation. Bronze Age cairns are often delimited by a circle of large stones or dry wall structures and concentric stone circles are interpreted as signs of successive expansions of cairns. The most common feature of Bronze Age cairns is however the central depression. Usually they have clearly been made in relatively recent times by grave looters. There are, on the other hand, some cairns that exhibit so regular depressions that they seem to constitute original features of the monuments, perhaps remnants of burial chambers (Meinander 1950:47ff; 1977:22f, Miettinen 1998:63ff).

The diversity in the cairn burial traditions seems to increase during the Late Bronze Age, but large round cairns were still a dominating element. Late Bronze Age burials consisting usually of burial monuments with large central boulders and concentrations of burnt bone at the bottom of the monuments appear to become a relatively common feature in round cairns in Ostrobothnia (Miettinen 1998:71, 75f, 79). A special monument type is the Late Bronze Age ship-formed stone setting, of which only one has been documented in Murhaasto in Laihia (Meinander 1944:36ff). Three additional ship-settings of the same type were identified during the fieldwork of this thesis project in Jäinthaudanmaa in Laihia (see chapter 4.6.2).

Bronze Age grave finds are rare. Grave gifts may have consisted of materials that have not been preserved. Except burnt bone, only few excavated Bronze Age cairns have yielded finds (see adjacent table). Two finds consist of the razors found in the Alatalo cemetery in Laihia (Miettinen 1998:52f). Some fragments of ceramic vessels and quarts scrapers were found in
a cairn at Vitmosen in Vörå (Kotivuori 1988:47,45). Some fragments of a bone artefact were found at from Nikonkallio in Laihia (Miettinen 1998:79,178). Also some of the finds regarded as belonging to the cultural layer discovered under the latter cairn may in fact belong to the cairn. A couple of Bronze plates from Niemenmaanmäki in Isoykrö may also constitute Bronze Age grave finds (Meinander 1950:52). A cairn in Finndalen in Oravais contained some small ceramic sherds, worked quartz and fragments of stone tools. The excavator dated the cairn to the very start of the Bronze Age, but as has Okkonen pointed out, the dating of the cairn is uncertain and the finds may derive from an older dwelling site (Okkonen 2003:122). Bronze Age cairns have nevertheless been looted for centuries. Nearly all normal and large-sized cairns exhibit looting-marks, as was previously mentioned in the discussion of central depressions. The looting activity is already documented in 17th century documents (Edgren 1995). Looters are said to have found a bronze sword and bronze rings in Storstenrösback in Pörtem (Meinander 1977:20). A cairn with a stone cist at Krakabacken in Esse is said to have contained an arrowhead and a knife of blue stone. Edgren suggests that the latter description refers to a flint dagger (Edgren 1988:20). Some looting finds have been preserved, for example the celt and the arrowhead from Jeppo. Also the Isoykrö sword is said to have been found in a cairn (Miettinen 1994; Meinander 1977:20).

It has been known for a long time amongst archaeologists that a huge number of stone settings and small cairns are located in the coastal area that are not proper Bronze Age cairns and that are not proper Iron Age AD cairns (Baudou 1991:157). It was not until the 1970s that researchers realised that they formed an important source of information about the settlement in Pre-Roman time. These sites are mainly found slightly below the 30 metre elevation and just above the 20 metre elevation. Important contributions to the study of these structures have been published by Mirja Miettinen (1980, 1982, 1986, 1994, 1998) and by Kotivuori (1992).

Roughly around 500 BC changes take place in the dominant burial traditions. The large, high cairns of the characteristic Bronze Age type decrease in occurrence and apparently also in size. Instead almost solely stone settings and small cairns are built (Miettinen 1998:67). They often appear to form dense groups of some 20-30 structures in average. Several closely situated groups may in turn comprise huge complexes with hundreds of cairn-like structures (see for instance Miettinen 1982:17ff). The groups of cairn-like features are often situated in slopes or on crests of low hills. The only structuring principle seems to be that the largest monument is situated at the centre of the group (Miettinen 1998:67). The cairn-like structures are usually low and completely overgrown. They are difficult to detect and they have thus usually escaped looting efforts, but instead they are very vulnerable to contemporary forestry. Another problem is that graves of this period are often difficult to distinguish from a clearance cairns (Miettinen 1998:115).

Laihia is probably the best surveyed area in Southern Ostrobothnia in respect of ancient sites located at Pre-roman shore levels. When moving from Bronze Age altitudes towards Pre-Roman Altitudes, the amount of cairn-like features increase quite dramatically. The total number of cairn-like structures is about more than 4000 in Laihia. The peak is reached at the 25-22 meter elevation, where some 60 sites occur (numbers are based on appendix 1A in Miettinen 1998). The site amount is about four times higher in comparison with an altitude interval of equal width on Late Bronze Age elevations. Coupled with the increase in the number of sites is an increase in the average number of cairn-like structures at each site. The average number of cairn like features on pre-Roman elevations is about 25 at each site in Laihia. At the sites corresponding to Late Bronze Age elevations the number is about 10 (Holmblad 2002, based on Miettinen 1998: appendix 1A).
When viewed against the background of a very large number of cairn-like structures at Pre-Roman elevations, the number of excavated structures is miniscule. An unanswered question is how big amount that actually is Pre-Roman graves. It is also uncertain whether the rise of the number of cairn-like features is related to a phase of field clearance during the Pre-Roman time. Some patterns have been induced from the body of cairn-like features that have enabled some generalisations (Miettinen 1994:156, 1998:115). The shape of most cairn-like structures is round or oval, but also boat-shaped, elongated, quadrangular, rectangular and structureless shapes exist. Constructive elements consist of edge-boulders, edge circles of stones and dry stone wall edges. In some cases internal dividing walls have been documented, which possibly indicates different expansion phases. Some structures have been built on top of large boulders (Miettinen 1986:63; 1994:159; 1998:60, 82,115).

A general impression is that relatively many South Ostrobothnian Pre-Roman graves appear to exhibit a four-sided shape when compared to other periods. This appears be a general trend also in Northern and Central Ostrobothnia as well as within the tarand grave tradition in Southern Finland, in Estonia and in central Sweden (Okkonen 2003:141, Feldt 2002, Asplund 2008:102f). At least two excavated graves can be regarded as tarand graves or as very closely related to tarand graves in South Ostrobothnia. One is situated at Riitasaari in Laihia and the other is situated at Helenelund in Malax (Meinander 1944:33ff, Katiskoski 1988: liitte 1); both consisted of stone-settings with internal parallel rectangular cells with dry walls. The Riitasaari grave contained only a grinding stone and some burnt bone, and the Malax grave contained a simple bracelet. Both graves seem to resemble (as far as I can judge) the early tarands that have been described by Feldt (Feldt 2002:17ff), so both graves could be Pre-Roman. The altitude of the graves and the objects discovered do not to negate this dating. The Riitasaari grave was covered by red sandstone slabs.

The size ratios can be illustrated by the thoroughly surveyed complex at Rimossbacken in Petalax. Of about 200 documented stone settings and cairns only three have a diameter that exceeds 10 metres, some 20 structures are 5-10 metres in diameter and the remainder has a diameter of 2-4 metres (Miettinen 1986:64).

The most notable graves of the Early Iron Age consist of stone settings and cairns that have a covering of red sandstone slabs. Such sandstone graves have so far been documented on Pre-Roman elevations between Nykarleby and Näpces (Kotivuori 1992:107). The sandstone graves are usually the largest, the best built and the most centrally located graves of their cemeteries. Sandstone graves have been noted in approximately 20 % of the groups of cairn-like structures at Pre-Roman elevations in the relatively well surveyed area in western Pörton (Miettinen 1986:63). The red sandstone covered graves have required a somewhat greater investment and they are really meant to be seen. The internal burial customs and the grave goods of sandstone graves do not appear to differ from other contemporary graves (Miettinen 1994:159ff). Red sandstone slabs were also used frequently to diverse grave construction elements in Satakunta during the Bronze Age and the Early Iron Age. It does seem however that sandstone slabs were used exclusively as a grave covering in a systematic fashion only in Southern Ostrobothnia. The sandstone covered graves seem therefore to constitute a special Ostrobothnian feature. Red sandstone occurs naturally in the moraine but in order to cover an entire grave, some efforts must have been made in order to collect the amount of stone needed. This differs from Satakunta where red sandstone could be quarried from the bedrock (Miettinen 1986:65). So far only the sandstone grave at Råbacken has been radiocarbon dated. The date turned out to be of Pre-Roman age, as expected on the basis of the altitude and the ceramic finds (Kotivuori 1992).
The cremation burial tradition is well established due to the burnt bones that frequently have been found in grave excavations (see adjacent table). The burnt bone is usually found as a concentration at the bottom of the graves. Also inhumations are supposed to have existed, due to the lack of burnt bone in many obvious mortuary monuments. Also a human-sized cist of sandstone slabs was recorded in a sandstone covered cairn at Fäbodbacken in Närpes points in this direction (NBA 545010054). The Pre-Roman graves are usually considered to have been constructed for single individuals. Grave finds are very rare. Only one third of excavated graves have yielded any kind of finds other than burnt bone, and even in those cases the number of finds is low (see table in Miettinen 1994:158). Proper grave goods are not found, instead some single personal belongings are found, for example, simple bracelets or finger rings. It can nevertheless not be excluded that grave goods may have existed in materials that are nowadays vanished. Pottery, whetstones, worked flint and cube shaped grinding pestles have occasionally been found in graves as well, but these types of finds may often derive from underlying dwelling site layers. The grave find material can on typological grounds usually only be given a quite blurry Early Iron Age dating to the Pre Roman Iron Age and to the Early Roman Iron Age.

The Early Roman Iron Age can be characterised as the beginning of a transformation period to a society that is manifested in considerably different ways compared to the preceding Pre-Roman period. Around AD 1 great changes are discernible in the burial customs in Southwestern Finland, where new elements are introduced according to traditions in other parts of the Baltic area. Changes are discernible also in Ostrobothnia, but here the changes are more modest. Pre-Roman burial traditions seem to prevail. Stone settings and cairns with pure stone fill remain in dominance in Southern Ostrobothnia. The sandstone cover tradition seems to have continued until about AD 300 (Miettinen 1998:115, 1986:84). The Early Roman Iron Age cemetery at Pajunperkionmäki in Vähäkyrö provides nevertheless clear evidence of the introduction of the weapon burial custom in Ostrobothnia (Salo 1968:78ff).

A simplified chronology of major characteristic types of mortuary monuments:

1. Long cairns 1800-1500 BC
2. Large round cairns 1500-500 BC
3. Four-sided stone-settings, sandstone cover 500 BC-AD 300
4. Increase of grave goods AD 1
5. Large round cairns, richly furnished AD 300-600

3.5.4. Clearance cairns and stone clearances

These are largely difficult and still quite tentative categories of structures. As already mentioned in 3.5.3., there is a large number of cairn-like structures, especially in the Pre-roman altitude zone, that appear to be some kind of clearance cairns rather than burial cairns (Miettinen 1998:115). If they are cultivation-related clearance cairns, they could either be contemporary with the adjacent burial cairns and stone settings, or they could be much younger (this issue is touched upon later in chapter 5.1.4). There are also some stone constructions in Bronze Age contexts that appears to be clearance cairns rather than burial constructions. Some very small heaps of stone were noted in Jätinhaujanmaa in Laihia. My impression is however that most of them related to cooking pits, so it is possible that they were heaps of raw material for use in cooking pits (see chapter 4.6.1). Some small stone heaps and narrow row-like features of stone at Alatalo could still be Bronze Age cultivation related clearance structures. Some well cleared surfaces at Alatalo did not appear to be settlement surfaces so it is possible that they could have been cleared for cultivation purposes (chapter...
Kotivuori reports that some of the clearances at Vitmossen in Vörä were probably not aimed for the creation of dwelling constructions, but for the creation of open and even spaces for outdoor activities near the buildings (Kotivuori 1988:48). Here I have not regarded obvious dwelling constructions in boulder fields as clearances or intensively used and stone cleared parts of settlement surfaces, even though they, naturally, were stone cleared. With clearances I refer only to surfaces that were cleared for outdoor activities.

3.5.5. Cooking-pits and burnt mounds

Cooking-pits seem to be relatively frequent during the Early Metal Period in Southern Ostrobothnia. The concentration of radiocarbon dates to the first millennium BC shows that cooking-pits can be considered as a characteristic trait for the coastal settlement areas of the Late Bronze Age and the Pre-Roman Iron Age. This notion should be seen in relation to an uneven and often insufficient survey activity that affects the numbers of cooking pits between the parishes. The same trend seems to be valid at least for the coastal areas around the Bothnian Bay in Finland and Sweden (Okkonen & Äikäs 2006, Baudou 1995:107f, Forsberg 1999:258ff) but it is valid also for large parts of Southern Scandinavia. In South-Western Sweden cooking-pits are most frequent during the Late Bronze Age. In Bohuslän they date almost exclusively to the Bronze Age and to the Early Iron Age (Lönn 2007:17ff). Cooking pits appears to be less frequent in Southern Finland, and there most have yield Pre-Roman dates (Asplund 2008:262). Seven cooking-pits were however found at Luistari in Eura where the cooking-pits were related to a dwelling site and a cairn cemetery from the Late Bronze Age (Lehtosalo-Hilander 2000:100ff). Some cooking pits have also been found in inland areas around the Bay of Bothnia (Äikäs 2009:150, Forsberg 1999:259).

<table>
<thead>
<tr>
<th>Site</th>
<th>Type</th>
<th>C-14/Artefact date</th>
<th>C-14 Lab.nr</th>
<th>Calib. 94.5%</th>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lappfjärd, Varggrottan</td>
<td>Cooking pit?</td>
<td>2500 BP (seal bone 2502±75)</td>
<td>(Hela-230)</td>
<td>(seal bone 800-410 BC)</td>
<td>116</td>
</tr>
<tr>
<td>Laihia, Jätinhaudanmaa NW</td>
<td>Cooking pit</td>
<td>2710±90</td>
<td>Hel-2446</td>
<td>1200-500 BC</td>
<td>35</td>
</tr>
<tr>
<td>Laihia, Alatalo</td>
<td>Cooking pit</td>
<td>2738±41</td>
<td>Ua-38385</td>
<td>980-800 BC</td>
<td>35</td>
</tr>
<tr>
<td>Laihia, Palomäki E</td>
<td>Burnt mound?</td>
<td>2578±36</td>
<td>Ua-38386</td>
<td>830-540 BC</td>
<td>35</td>
</tr>
<tr>
<td>Laihia, Annikkalanmäki E</td>
<td>Cooking pit</td>
<td>2630±60, Lus, Mor</td>
<td>Su-2430</td>
<td>820-520 BC</td>
<td>35</td>
</tr>
<tr>
<td>Laihia, Annikkalanmäki E</td>
<td>Cooking pit</td>
<td>2500±40, Lus, Mor</td>
<td>Su-2431</td>
<td>820-520 BC</td>
<td>35</td>
</tr>
<tr>
<td>Laihia, Annikkalanmäki E</td>
<td>Burnt mound</td>
<td>Lus, Mor</td>
<td></td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Laihia, Viirikallio 1A</td>
<td>Cooking pit</td>
<td>2350±110</td>
<td>Hel-2683</td>
<td>800-150 BC</td>
<td>34</td>
</tr>
<tr>
<td>Laihia, Jätinhaudanmaa NW</td>
<td>Cooking pit?</td>
<td>2325±130</td>
<td>Hel-2447</td>
<td>800-50 BC</td>
<td>35</td>
</tr>
<tr>
<td>Laihia, Palomäki W</td>
<td>Burnt mound</td>
<td>2563±35</td>
<td>Ua-38387</td>
<td>810-540 BC</td>
<td>35</td>
</tr>
<tr>
<td>Laihia, Viirikallio 1A</td>
<td>Cooking pit</td>
<td>2360±120, Textile ware</td>
<td>Hel-2684</td>
<td>800-150 BC</td>
<td>30</td>
</tr>
<tr>
<td>Kronoby, Borgbacken 2</td>
<td>Cooking pit</td>
<td>3000±90</td>
<td>Hel-2924</td>
<td>1440-970 BC</td>
<td>30</td>
</tr>
<tr>
<td>Jeppo, Råbacken 2</td>
<td>Cooking pit</td>
<td></td>
<td></td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>
Ostrobothnian cooking pits have been found in the vicinity of contemporary dwelling sites and burial cairns and in some instances close to trapping-pits, but there are also numerous cooking-pits that lack such connections (Miettinen 1998:113, Okkonen & Äikäs 2006). Cooking-pits are usually visible on the ground as round and relatively shallow conical depressions with a diameter of 1-4 metres. I would say that the diameter of a normal pit is two meters and the depth is about 0.5 metres in the current state. The original bottom of the pit can be found the depth of one metre. During my fieldwork in Laihia and in neighbouring parishes I have noticed that the pits are usually surrounded by low banks of sooty soil and fire-cracked stones, even in cases where the pits appear to have a fill in situ. Sometimes double stratigraphies are recorded, which proves a reuse of the pits (see Miettinen 1998:73, 89). Cooking pits in Laihia have thus been frequently cleaned and reused, which is also indicated by some burnt mounds that have been noticed adjacent to cooking pits.

The usual stratigraphy in a cooking pit consists of a top layer of fire-cracked stones that overlays a bottom layer of charcoal. In Laihia the numbers of cooking-pits at each locality vary from a single pit to an excess of 20 pits (Holmblad 2009b). In coastal Northern Norrland cooking pit fields can comprise 50 pits (Forsberg 1999:259) and in Northern Ostrobothnia there are complexes that contain more than 100 cooking pits (Ylimaunu 1999b:6) On the other hand, the general lack of surrounding banks of fire cracked stones in the north (Okkonen & Äikäs 2006:21) indicates that cooking-pits were reused more frequently in the south.

In addition to cooking-pits, burnt mounds also occur in a Late Bronze Age context in Peltomaa in Laihia. These mounds, that contain sooty sand and fire-cracked stones, were found during the fieldwork of this thesis project. In Ostrobothnia burnt mounds have previously been known only from Middle Neolithic contexts (Okkonen 2003:195). Burnt mounds are otherwise a rare phenomenon in Finnish archaeology. In Bronze Age and Early Iron Age contexts they have figured in relation to Kõkar in the Åland archipelago, where they are clearly connected to seal oil production (Gustavsson 1997:13f). The situation is different in Central Sweden where burnt mounds are very frequent during the Bronze Age. Some contemporary burnt mounds are also known from the Norrlandic coast (Forsberg 1999:268f, 271ff). The slightly unexpected discovery of burnt mounds in Peltomaa suggests that more discoveries will follow in Ostrobothnia and in Western Finland.

The greatest concentration of cooking-pits in Laihia is known in the village of Peltomaa where several Late Bronze Age cooking pits have been excavated and dated (see adjacent table). The eastern Annikkalanmäki site (Annikkalanmäki E) has at least 25 visible cooking pits and some burnt mounds in a 250x50-30 metre large valley bottom, which is largely
covered by a cultural layer with a great density of fire-cracked stone (Miettinen 1998:80ff, Holmblad 2007a:154ff). The Annikkalanmäki site thus indicates a function as a site for specialised large-scale activity when compared to other sites. The dense cluster of cooking-pits in the Peltomaa area will be discussed in detail further down (in chapter 4.6.1).

The Petalax structures that are included in my table of cooking-pits need a comment, because I have reinterpreted them as cooking pits. Miettinen excavated parts of some rounded structures in the 1970s at Tallmossen, in Brännskogen and at Ribäcksbergen in Petalax. Miettinen interpreted them as hut foundations (Miettinen 1982:41ff), which is an interpretation that has remained unchallenged ever since. In the light of current knowledge of Early Metal Period hut foundations and cooking-pits, the Petalax structures seems to fit better in with the latter, they would thus be the first cooking pits that have been excavated in Southern Ostrobothnia. In my view they should be interpreted as large shallow cooking pits. The large sized Late Bronze Age cooking pit that was later excavated in the north-western part of Jätinhaudanmaa in Laihia is an analogy that supports my interpretation (see Miettinen 1998:72f).

3.5.6. Trapping-pits

Trapping pits have been detected at several locations in Ostrobothnia, but the survey situation probably does not cover their actual distribution in a representative manner. Some really large complexes of trapping-pit systems have been recently found by accident (Schultz 2007), which implies that many trapping-pit systems still probably have escaped detection. I also suspect that several ridge areas have been destroyed by sand and gravel extraction before they were properly surveyed.

Only a few trapping-pits have been radiocarbon dated so far in Ostrobothnia and the chronological representativity of one single dated pit per system can also be called into question. It is nonetheless an interesting trend that nearly all dates for trapping-pit systems seem to fall within the time span of the Early Metal Period. A trapping-pit system composed of four pits located by the Early Neolithic site at Timonen in Evijärvi provided a radiocarbon date to the end of the Bronze Age. Another sample from the same system resulted in a Middle Iron Age date (Miettinen 1998:110). The Neolithic dwelling site in Hundbacka in Pedersöre was found to be perforated by later trapping-pit system (Miettinen & Vuorela 1982). Some 30 pits run parallel to a brook in a distance of 800 metres. The pits are arranged in five short lines composed by 4-8 pits per line. One pit from Hundbacka provided a radiocarbon date to 400 BC – 150 AD (2070±100 BP, Hel-2714). Three radiocarbon dates were obtained for a pit situated in a trapping-pit system that was consisted of 11 pits at the Mesolithic dwelling site in Rimpikangas in Isojoki. The upper charcoal sample resulted in an Early Medieval date (920±70BP, Hel-4398), whilst the other samples taken from a charred wooden construction at the bottom of the pit yielded dates to 170 BC – AD 260 (1920±70BP Hel-4399, 2000±60BP Hel-4400). Hans-Peter Schulz has furthermore recently found very large trapping pit systems in the vicinity of the exceptional inland Bronze Age dwelling site in Lestijärvi, this spatial link indicates Early Metal Period use of the Lestijärvi trapping pits (see chapter 4.8).

3.5.7. Storage pits

Structures interpreted as storage pits have been encountered in a number of boulder fields. In North and Central Ostrobothnia they are generally round, two metres in diameter and 0.5
metres deep (Okkonen 2003:103, 131). Simple pits in boulder fields could be of any date following the uplift of the site from sea. Pit structures have nevertheless often been recorded at Early Metal Period maritime hunting stations. Probable Early Metal Period storage pits have been recorded at least at Orrmoan in Korsnäs, at Hudholmen in Malax and at Knappelbackhällorna in Maxmo (Seger 1986a:22f, Kotivuori 1993b:21, chapter 5.1.5). Okkonen defines also a construction type which he terms cairn-like pits. These are pits with so large surrounding stone banks that they resemble cairns. Also these constructions are assumed to be storage structures (Okkonen 2003:103, 129f). Constructions of this type are present at least at Bäckishällorna in Oravais (Andersson 1999:146f, Herrgård & Holmblad 2005:93).

3.5.8. Stray finds and artefact depositions

No actual hoards or confirmed sacrificial finds exist yet from Ostrobothnia. The closest area where such are known is Satakunta, where all date to period V-VI (Salo 1981:230f). There is nevertheless a number of stray finds that most likely are water sacrifices. These finds comprise the Mälar celt from Jungar in Jeppo and the Kirke Såby spearhead from Luopajärvi in Jalasjärvi (see chapter 3.6.1). There are also some stone axes that appear to have been sacrificed, the most notable, very elaborate Mid-Norwegian rhombic axe has been found in Gyttjemynren in Närpes (chapter 3.6.3). All these finds have been discovered in low wet places that were probably open water at the time of deposition. The Jalasjärvi spearhead was deposited in a lake and the others were deposited close to the seashore.

3.5.9. Ritual stones

Cup-marks are rarely discussed in publications that concern the Early Metal Period in Finland. In Finland cup-marked stones are usually dated to the Iron Age AD or later. The cup-marks in Southern Ostrobothnia are mostly situated in obvious Middle Iron Age contexts (see Malax museiförening 1984). In central Sweden and in Southern Scandinavia a large portion of the cup-marks are, on the other hand, dated to the Bronze Age. At least some occurrences of Bronze Age cup-marks are therefore likely to be found in coastal Finland. Some cup-marks have actually been found in close connection to Bronze Age cairns in Lappi in Satakunta (Perrotta 2005:11). A cup-marked rock that has reportedly been found beneath a Bronze Age cairn with an even based arrowhead in Siilinjärvi in Savo, may however be natural (ibid.).

Some cup marks found in Ostrobothnia may in fact be of Bronze Age or of Pre-Roman origin, but their dating is problematic because they are not found in exclusively Early Metal Period contexts. A few notable examples would be the cup marks known from Sandgropbacka in Esse and the cup marks from the Söderby schoolyard in Kronoby. The former example consists of seven definitively man-made cup marks that are unusually situated on three sides of a pillar-shaped stone that measures 0.8x0.25x0.2 metres. The stone stood formerly upright in a cairn at Sandgropbacka at 65 metre elevation. Another pillar-shaped stone is till standing on the cairn, which measures 6.5 meteres in diameter (Norrman 1987:167ff, NBA 990010146). The Sandgropbacka cairn is on a Neolithic shore-level, but it may have remained relatively close to a lake shore for millennia. The Sandgrubbacka cup-marks deviate completely from all other Ostrobothnian cup-marks I know of. Other cupmarks are made into more or less horizontal or slightly sloping surfaces of rocks or boulders (and may represent another idea or way of thinking about of cup-marks?). Cup-marks on vertical stone surfaces
and on (more or less) portable stones are known from Bronze Age contexts in Southern Scandinavia (Hansson 2008:167).

The Söderby site (NBA 288010040) contains three boulders with quite large but shallow cup marks. The largest unusually elongated cup mark in Söderby shows in my view some resemblance to the foot shaped cupmarks that occur in South Scandinavian rock art from the Bronze Age (see for instance Nord 2009). Some large, shallow and elongated possible cupmarks have also been recorded at the Rieskarommiäki site in Nakkila in Satakunta (Salo 1981:229. The Söderby site (at 45 metre elevation) is situated close to the Early Bronze Age shore, but also quite close to the Late Neolithic dwelling structure at Högryggen. The cupmarked boulder that is registered at Hautamäki in Kylänpää in Laihia (NBA 399010097) would also be a highly interesting candidate (Miettinen 1998:120), as the site is closely related to Bronze Age cairns. I think however that the Kylänpää "cupmarks" are natural.

There is also an occurrence of boulders with flat upper surfaces that have been placed to rest on three or more small "legs" of stones. The best example is the "stone table" that is situated on a rock with probable Bronze Age cairns at Korvenkallio in Laihia. Similar structures have been found in close proximity of Bronze Age cairns in Rauma in Satakunta and in various locations along the eastern coast of Sweden (Miettinen 1998:64 , Salo 1981:227f).

3.6. The portable material culture

3.6.1. Metal artefacts and metal crafting

In total eight datable bronze objects of Bronze Age date have been recorded in Southern Ostrobothnia. Only two objects date to the Early Bronze Age, the remaining six specimens date to the Late Bronze Age or to the transition phase to the Iron Age. Mostly, the bronze artefacts of the Bronze Age represent western Scandinavian types. One object has a clear eastern origin; another object has been regarded as product of local manufacture. The bronze objects, as well as the later described shaft hole axes of Scandinavian affinity, are given dates according to the six typological periods of the Nordic Bronze Age. The current South Scandinavian Bronze Age chronology is presented according to Ethelberg (Ethelberg 2000:143).

Early Bronze Age
Period I: 1800/1700 - 1500 BC.
Period II: 1500 - 1300 BC
Period III: 1300 - 1100/1050 BC

Late Bronze Age
Period IV: 1100/1050 - 950/900 BC
Period V: 950/900 - 730/720 BC
Period VI: 730/720 - 530/520 BC

<table>
<thead>
<tr>
<th>Bronze Age bronze objects of confirmed type and date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jalasjärvi Luopajärvi</td>
</tr>
<tr>
<td>Isokyrö Laurola</td>
</tr>
<tr>
<td>Esse, Linjarväsvägen</td>
</tr>
<tr>
<td>Lestijärvi, Anttila</td>
</tr>
</tbody>
</table>
Laihia, Alatalo  Razor, spiral end type. Burial cairn. Per. V
Jeppo, Jungar  Mälar celt, central Swedish type. Sea bed. Per. IV-VI
Laihia, Kylänpää  Mälar celt, local type. Unknown context. Per. V-VI.
Jeppo, Asplandet(?)  Maaninka celt. Burial cairn. Per. IV-VI

Bronze objects of uncertain Bronze Age type or date
Laihia, Alatalo  Razor? Unknown type, Burial cairn, Per. IV-VI?
Isokyrö, Niemenmaanmäki  Bronze plate/razor? Burial cairn, Per. VI?
Isokyrö, Niemenmaanmäki  Bronze plate/razor? Burial cairn, Per. VI?
Pörtom, Storstenrösbäck,  Sword and rings, unknown types. Burial cairn. Per. III-VI?
Isokyrö, Pernula Hautamäki  Celt, unknown type. Unknown context. Bronze Age

Mid-Bronze Age shoreline and BA bronze artefacts (dark squares, uncertain cases light squares) and lithic axes (circles)

The oldest known bronze object from Southern Ostrobothnia is a spear-head (NM 29466), found in the 1990’s in Luopajarvi in Jalasjärvi. In the register of the National Board of Antiquities the object is defined as belonging to the Ullerslev type, a classification which is somewhat doubtful; I would rather count the Luopajarvi find to the Kirke Såby type. The classification does not make any notable difference however in terms of chronology and provenance, as both types belong to Period II and both types are clearly South Scandinavian. The Kirke Såby type is somewhat rarer and its distribution is more centred to Denmark.
(Jacob-Friesen 1967:137ff, Karte 3-4). The spearhead was found close to Sikaniemi in the drained lake bed of the former Lake Luopajärvi, thus it seems to have been deposited in a lake.

The other Early Bronze Age artefact is a Period III bronze sword found in the 1850s in the lands of the Laurola farm in Isokyrö (NM 714). Unfortunately the Laurola sword lacks a properly known find context, but the sword is said to have been found in a cairn. A survey of the lands owned by the Laurola farm at this time could perhaps lead us to the site. The Laurola sword is an ordinary Pan-European *Griffzungenschwert* (Meinander 1954:12, 1977:20), also classified as a short-sword because its length falls within the 45-70 cm span, as accounted by Seger. In total six Bronze Age short-swords have been found in Finland (Seger 1984:26).

A bronze brooch (NM 22813) of the classic caterpillar type with a shallow bow (*mit Raupenbügel*) from Period IV was found with a metal detector by an amateur archaeologist in the 1980’s at Linjärvsbacken in Esse. The brooch was found in a depression in the vicinity of a large cairn. Despite an excavation, the function of the pit remained obscure. The brooch type is relatively frequent in Denmark but some details of the Linjebacka brooch indicate that it is manufactured in the Elbe valley in Germany (Edgren 1986:17f). It can furthermore be added that Linjärvsbacken was a relatively small island still at the end of Period IV.

Also belonging to period IV is a bronze spear-head (NM 17032) from the lake-shore dwelling site at Anttila in Lestijärvi. The spear-head from Lestijärvi is the only bronze artefact found in an obvious dwelling site context in Ostrobothnia. Together with the Jalasjärvi find, which is also a spear head - it also constitutes a rare example of a western bronze object that has been found in an inland setting. The Lestijärvi spearhead represents the rare subtype *Unfazettierte Lanzenspitzen mit waagerecht gerippter Tülle*, with only a few known parallels in Denmark (Siiriäinen 1978:13).

Excavations of two large cairns in the Alatalo cemetery in Laihia have produced a pair of bronze razors. At least one (NM 703) of the two razors belongs to period V (or possibly to period IV), as shown by the spiral end handle. The razor was found during a semi-scientific excavation of a cairn in the 1840s (Aspelin1871:107, Miettinen 1998:55,71). The distribution of this type centres on Denmark and Scania (Baudou 1960: Karte 22). The other razor (NM 1108) was found in an adjacent cairn together with burnt bone during a more scientifically performed excavation in 1869 (Aspelin 1871:108, Miettinen 1998:71). This object is sometimes referred to as a "bronze plate" in the literature, but considering the size and the shape of the object as well as its great resemblance with the razor mentioned above, I am personally convinced that it is indeed a razor. The poor state of preservation of the second razor does not allow a proper dating, but the find context suggests a very likely Late Bronze Age date.

Two Mälar type celts of bronze have been found in Southern Ostrobothnia. One of the Ostrobothnian celts was found in 1979 in a cultivated field in Jungar in Jeppo, Nykarleby (NM 20650). Due to the low altitude of the find spot, 25-22.5 metres above sea level, the celt seems to have been deposited in a shallow bay (Miettinen 1984: 21). The Jungar celt is of Central Swedish type. It has therefore been suggested that the Jungar celt was imported from Central Sweden (Miettinen 1984:19). According to Miettinen only five similar celts have been found in Finland, the remaining four have been discovered in Åland and in the Åboland archipelago (Miettinen 1984:20). The other seven Mälar type celts found in Finland represent atypical local subtypes. One of them is the celt that was found in the village of Kylänpää in
Laihia in the 19th century. Unfortunately the find context for the Kylänpää celt is unknown. The celt was lost and it is only documented through a drawing. The Kylänpää celt is considered to be of local manufacture (Aspelin 1871, Meinander 1950, Miettinen 1984:20). Baudou dates Mälar type celts to Period IV-V, but both Meinander and Salo dates the Finnish finds to Period V-VI (Miettinen 1984:20).

An eastern Maaninka type celt was found in the 1960’s by grave looters in a large cairn in Jeppo, Nykarleby (NM NM 26618:1). An even-based flint arrow-head was found together with the celt (NM 26618:2). The find was reported some 30 years later and some uncertainty remains as to whether the discovery was actually made at Asplandet or at Vargholmen (Miettinen 1994:5). The celt belongs to the Maaninka type of celt. Six Maninka celts have been found in Finland and most of the finds are from the inland area of Finland where the type seems to have evolved on the basis of eastern influences, but a couple of Maaninka celts have also been found in Central Sweden. Maaninka celts are thus regarded to belong to the inland or eastern Bronze Age culture of Finland. Different dates have been set to the Maaninka celts. Miettinen dates the Maaninka celts approximately to Period V and VI (Miettinen 1994:6f), but other scholars have mentioned period IV and even period III (Lavento 2001:90, 122). The Asplandet cairn could well have been built when the shore was at the 31 metre elevation, which according to the new shoreline chronology would establish a maximum possible age at 1100 BC. Miettinen set the earliest possible date for the Asplandet cairn to 900 BC (Miettinen 1994:7).

Further Bronze Age metal objects are probably the pair of bronze plates that were found in a couple of cairns excavated in the 1930s at Niemenmaanmäki in Isokyrö (NM 10679, NM 10851). Meinander assumes that the cairns are of Bronze Age date, but that one of the cairns contained a secondary burial from the Migration Period (Meinander 1954:223). The bronze plates may represent Bronze Age razors. Due to the low elevation of the site, the cairns can not be older than from the very end of the Bronze Age.

A bronze sword and some bronze rings are reported to have been found by grave looters in the 1830’s in a cairn at Storstenröšback in Pörtom, Malax. Information about the find has been regarded as uncertain, as it was documented many decades after the supposed time of discovery (Miettinen 1980:63). The particular notion that the sword was made of bronze is in my mind nonetheless a quite strong corroboration of the accuracy of the report, as it seems unlikely that local inhabitants in late 19th and early 20th century correctly and by chance would have related the Storstenröšback cairns to a time when bronze swords actually were in use. Storstenröšback is currently recognized as a Bronze Age cemetery with several monumental cairns, whereof nearly all exhibit looting marks. The local topography suggests that the site is not older than 1300 BC.

According to Meinander it seems probable that a bronze celt was found at Hautamäki in Isokyrö in the early 19th century. The object was destroyed in the fire of Vaasa in 1852 (Meinander 1950:52). I have not managed to find the location of Hautamäki, but the site is said to be located “close to” Pernula village and about five kilometres from the church of Isokyrö (Aspelin 1871:79). The latter piece of information suggests that the find spot was actually situated in the peripheral lands of Pernula, perhaps close to Jaurinluoma. No cairns are currently registered in this area.

Metal objects that may be of Pre-Roman Iron Age date comprise some bronze and iron artefacts such as finger rings, bracelets, a celt and some spearheads. Most of the finds are from cairn-like structures. There are also a number of heavily corroded pieces of
unidentifiable iron objects of possible Pre-Roman date. Only the best documented cases with the most reliable datings are mentioned in detail here. It is however somewhat problematic that in several cases a date of Early Roman Iron Age can not be ruled out completely. Objects with exclusively Early Roman Iron Age datings are not dealt with here, but they are mentioned in chapter 5.2.

A spearhead (NM 3850:18) from Hölsö, close to the Kyrö River in Ylistaro, is of a long narrow type with a pointed ridge. Salo dated originally the Ylistaro spearhead to the late Pre-Roman Iron Age or to the very beginning of the Early Roman Iron Age. He assumed also that the Hölsö find is of Swedish origin (Salo 1968:89, 131ff). The closest Finnish parallels are found in the late Pre-Roman hoard from Malmsby in Pernå, but the type is more frequently occurring in Gotland. Salo informs later that this type belongs to the end of the Pre-Roman Iron Age (Salo 1984:191).

A looped iron celt has been found near the church of Ylistaro, which indicates a location close to the Kyrö River. The celt belongs according to Salo to the narrow and looped celt type I:1. Salo dated it originally to the Pre-Roman Iron Age and to the beginning of the Early Roman Iron Age (Salo 1968:89, 159ff). Later he informed that the type is a direct iron-made descendant of the Bronze Age Mälar celt. He presents the celt type as an exclusively Pre-Roman type that emerged at 500 BC at the latest. About a dozen of these celts have been found, most of them in Finland and in Estonia (Salo 1984:192).

Two bracelets have been found in a four-sided cairn with burnt bone in a sandstone covered stone-setting at Frönässudden in Övermark. One bracelet made of bronze is a simple undecorated open bracelet with one pointed end and one blunt end (NM 20729:1). It was found together with a badly preserved iron bracelet (NM 20729:12). Miettinen dates the find according to Finnish and East-Baltic parallels to the Pre-Roman Iron Age or to the Early Roman Iron Age (Miettinen 1986:61). Asplund regards the bronze bracelet to have a strange form and he suggests that the bracelet is a fragment of a larger ring, perhaps a necklace that was reused as a bracelet (Asplund 2008:233). The cairn is situated at the 22 metre elevation, which according to Miettinen would set an earliest possible date to AD 1 or to the first century AD (Miettinen 1986:61, 1994:159). If the cairn was built when the shore was close at the 20 metre elevation, it would date to 200 BC according to the new shoreline chronology. The topography shows that the horizontal shore displacement was extremely rapid after this point in time.

A fragmentary bronze finger ring was found in a sandstone covered cairn with a dry wall edge (number 135) at Rimossbacken in Petalax. A burnt layer was detected but no bone fragments were found. The ring may be of a spiral type. The Rimossen grave is situated at the 26 metre altitude and it could according to Miettinen have been constructed in the 6th or the 5th centuries BC at the earliest (Miettinen 1982:37ff, 1994:159). The new shoreline chronology would set the maximum age at 600 BC when the shoreline was at the 24 metre altitude. The site remained close to the shoreline for at least 300 additional years.

According to Salo, two weapon burials from Pajunperkiömäki in Vähäkyrö may date to the Pre-Roman Iron Age (Salo 1968:79). Burial cairn number 10 contained a heavily corroded sword, a spearhead and a flat round iron implement. The sword may be of a celtic type and the round object may be a large shield rivet head of the type that was in use in late Pre-Roman Iron Age. A spearhead from burial cairn number 25 may also derive from the late Pre-Roman Iron Age. Salo does not describe the alleged Pre-Roman objects in further detail. The
rest of the dated burials from Pajunperkiömäki date to the Early Roman Iron Age (ibid.). The small Island of Pajunperkiömäki transformed to a mainland cape during the first century BC.

Few metal crafting finds exist from the Early Metal Period. Meinander reports that mould and crucible fragments of clay have been found in a cultural layer below a cairn at Nikonkallio in Laihia (Meinander 1950:56, 1954:59, Miettinen 1998:79). The fragments derive from a clay mould for casting a pin or some neck-ring like artefact. Three crucible fragments have also been found at the dwelling site at Viirikallio in Laihia (Miettinen 1998:101,114). Nikonkallio dates to the Late Bronze Age and Viirikallio dates to the transition between the Bronze Age and the Iron Age (Miettinen 1998:106f). I have not encountered reports on iron slag from definitive Early Metal Period contexts.

The numbers of recorded metal artefacts is low during the Early Metal Period, but were metal artefacts really that rare in daily life during the Early Metal Period? I find the increasing silence of the lithic technology during the Early Metal Period as quite informative. Lithic scrapers were for instance produced throughout the Early Metal Period and lithic arrowheads were perhaps in use throughout the Bronze Age. But where are the Bronze Age lithic working axes and chisels? Simple functional bronze tools were perhaps not that rare, not at least during the Late Bronze Age. Salo may be right when he assumes that cutting edge tools in western Finland were generally made in bronze during period V at the latest (Salo 1981:284f). This would mean that every farm may have possessed at least a simple bronze axe and perhaps some additional small bronze tools. The complete lack of Pre-Roman bronze tools and the poorly represented lithic technology during the Pre-Roman Iron Age can on the other hand only mean that the iron technology was completely introduced in the beginning of the Pre-Roman Iron Age at the latest.

3.6.2. Ceramic types

The use of pottery has been relatively frequent throughout the Late Neolithic and the Early Metal Period and quite good typologies have been made for the diverse ceramic types. Ceramic finds thus constitute an important tool for the chronological identification of the sites of the Early Metal Period, but also for the understanding of cultural affinities and contacts. The general ceramic type chronology for the Late Neolithic and the Early Metal Period is as follows (According to Maiseman muisti 2001:12). Some disagreement exists on the precise chronology of the types.

<table>
<thead>
<tr>
<th>Ceramic Type</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kiukainen ware</td>
<td>2300 – 1500 BC</td>
</tr>
<tr>
<td>Textile ware (Sarsa-Tomitsa)</td>
<td>1900 – 500 BC</td>
</tr>
<tr>
<td>Paimio ware</td>
<td>1500 – 800 BC</td>
</tr>
<tr>
<td>Morby ware</td>
<td>800 BC – AD 300</td>
</tr>
<tr>
<td>Luukonsaari ware</td>
<td>900 BC – AD 300</td>
</tr>
<tr>
<td>Kjelmøy ware</td>
<td>600 BC – AD 300</td>
</tr>
</tbody>
</table>

The sites where Late Neolithic and Early Metal Period ceramic types have been found in Southern Ostrobothnia are mentioned here according to a simplified and rough chronological division into three periods. The compilation of the classifications published by various authors provides a sometimes quite confusing picture of the ceramic types found at various sites. The confusion and the disagreement seem to be highest concerning the Bronze Age ceramic types. These are perhaps the most difficult types to identify.
Kiu=Kiukainen ware, Pai=Paimio ware, Lus=Lusatian inspired ware, Tex=Textile ware, Asb=Asbestos tempered, Mor=Morby ware, Sär2=Säräisniemi2 ware, Luu=Luukonsaari ware. Question marks have been set in cases where authors have published deviating classifications.

### Late Neolithic ceramic finds

<table>
<thead>
<tr>
<th>Site</th>
<th>Type</th>
<th>Context</th>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lappfjärd, Räväsen</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>49</td>
</tr>
<tr>
<td>Oravais, Färnossen 2</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>46</td>
</tr>
<tr>
<td>Esse, Kvarnhabba II</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>44</td>
</tr>
<tr>
<td>Vörå, Vitmossen 3</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>41</td>
</tr>
<tr>
<td>Pörtom, Langback</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>38</td>
</tr>
<tr>
<td>Pörtom, Rainëåsen</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>38</td>
</tr>
<tr>
<td>Lappfjärd Norrviken</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>38</td>
</tr>
<tr>
<td>Lappfjärd, Kärräkerne</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>38</td>
</tr>
<tr>
<td>Laihia, Kurunkangas</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>37</td>
</tr>
<tr>
<td>Lappfjärd, Langäng</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>36</td>
</tr>
<tr>
<td>Lappfjärd, Risäsen N1</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>35</td>
</tr>
<tr>
<td>Lappfjärd, Bergäsen 1C</td>
<td>Kiu</td>
<td>Dwelling site</td>
<td>35</td>
</tr>
</tbody>
</table>


### Bronze Age ceramic finds

<table>
<thead>
<tr>
<th>Site</th>
<th>Type</th>
<th>Find context</th>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lestijärvi, Anttila</td>
<td>Pai</td>
<td>Dwelling site</td>
<td>142</td>
</tr>
<tr>
<td>Oravais, Finndalen</td>
<td>Lus</td>
<td>Cairn</td>
<td>42</td>
</tr>
<tr>
<td>Vörå, Vitmossen 3</td>
<td>Tex, Pai? Lus?</td>
<td>Dwelling site &amp; cairn</td>
<td>41</td>
</tr>
<tr>
<td>Pörtom Raineåsen</td>
<td>Tex, Pai?</td>
<td>Dwelling site</td>
<td>38</td>
</tr>
<tr>
<td>Alahärmä, Puisaarenkytö</td>
<td>Porous ware</td>
<td>Dwelling site</td>
<td>36</td>
</tr>
<tr>
<td>Laihia Alatalo</td>
<td>Coastal ware</td>
<td>Dwelling site</td>
<td>35</td>
</tr>
<tr>
<td>Laihia Palomäki W</td>
<td>Coastal ware</td>
<td>Dwelling site</td>
<td>35</td>
</tr>
<tr>
<td>Laihia Palomäki E</td>
<td>Coastal ware</td>
<td>Dwelling site</td>
<td>35</td>
</tr>
<tr>
<td>Laihia Annikkalanmäki E</td>
<td>Lus, Coastal</td>
<td>Dwelling site</td>
<td>34</td>
</tr>
<tr>
<td>Kronoby, Borgbacken 2</td>
<td>Asb</td>
<td>Dwelling site</td>
<td>30</td>
</tr>
<tr>
<td>Laihia, Nikonkallio</td>
<td>Pai, Tex? Lus?</td>
<td>Dwelling site &amp; cairn</td>
<td>30</td>
</tr>
<tr>
<td>Laihia Viirikallio 1A</td>
<td>Tex, Lus, Pai?</td>
<td>Dwelling site &amp; cooking-pit</td>
<td>30</td>
</tr>
<tr>
<td>Jeppo, Råbacken 2</td>
<td>Lus?</td>
<td>Cairn</td>
<td>26</td>
</tr>
</tbody>
</table>

Pre-Roman ceramic finds

<table>
<thead>
<tr>
<th>Site</th>
<th>Type</th>
<th>Find context</th>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lappfjärd, Eskola</td>
<td>Mor</td>
<td>Cairn</td>
<td>43</td>
</tr>
<tr>
<td>Laihia Annikkalanmäki E</td>
<td>Mor</td>
<td>Dwelling site</td>
<td>34</td>
</tr>
<tr>
<td>Laihia, Nikkonkallio</td>
<td>Mor?</td>
<td>Cairn/Dwelling site</td>
<td>30</td>
</tr>
<tr>
<td>Laihia Viirikallio 1A</td>
<td>Mor</td>
<td>Dwelling site</td>
<td>30</td>
</tr>
<tr>
<td>Petalax, Tallmossen B</td>
<td>Mor</td>
<td>Cooking pit</td>
<td>28</td>
</tr>
<tr>
<td>Laihia, Kotaneva-kaakko</td>
<td>Mor</td>
<td>Dwelling site</td>
<td>28</td>
</tr>
<tr>
<td>Jeppo, Råbacken 2</td>
<td>Luu, Sär2, Mor?</td>
<td>Cairn</td>
<td>28</td>
</tr>
<tr>
<td>Lappfjärd, Starrängen</td>
<td>Mor</td>
<td>Cairn</td>
<td>27</td>
</tr>
<tr>
<td>Alahärmä, Karkaus</td>
<td>Luu, Sär2, Mor?</td>
<td>Dwelling site</td>
<td>27</td>
</tr>
<tr>
<td>Korsholm, Storhällorna 1</td>
<td>Mor</td>
<td>Cairn</td>
<td>27</td>
</tr>
<tr>
<td>Pörton Pörthäcken</td>
<td>Mor</td>
<td>Cairn</td>
<td>27</td>
</tr>
<tr>
<td>Pörton Velkanebäcken</td>
<td>Mor</td>
<td>Cairn</td>
<td>27</td>
</tr>
<tr>
<td>Purmo, Tornbacken</td>
<td>Sär2?</td>
<td>Dwelling site</td>
<td>27</td>
</tr>
<tr>
<td>Petalax Brännskogen</td>
<td>Mor</td>
<td>Cooking pit (?)</td>
<td>26</td>
</tr>
<tr>
<td>Laihia Välikorpi</td>
<td>Mor</td>
<td>Cooking pit/Dwelling site</td>
<td>26</td>
</tr>
<tr>
<td>Laihia Luhtalanmäki C</td>
<td>Mor</td>
<td>Dwelling site</td>
<td>24</td>
</tr>
<tr>
<td>Korsnäs, Trofastbacken</td>
<td>Mor</td>
<td>Dwelling site</td>
<td>23</td>
</tr>
<tr>
<td>Laihia Kullerinmäki A</td>
<td>Mor</td>
<td>Dwelling site</td>
<td>22</td>
</tr>
<tr>
<td>Vaasa Djupkärrsbacken</td>
<td>Mor</td>
<td>Dwelling site</td>
<td>21</td>
</tr>
</tbody>
</table>


The Kiukainen ware is the characteristic pottery type of the coastal Late Neolithic culture of Finland. The use of the Kiukainen ware appears to have been in use until the end of the Early Bronze Age (Asplund 2008:66, 205). Salo suggests that an Early Bronze Age subtype evolved, and is represented at Raineäsen in Pörton (Salo 1981:311). Kiukainen ware is characterised by crushed temper. The vessels have flat bottoms; the walls are straight or slightly profiled. The decoration is confined to the upper part of the pots and consists of pits, comb impressions, twisted cord impressions and diverse lines (Asplund 2008:205). Kiukainen ware has been found at several coastal dwelling sites in Southern Ostrobothnia (Meinander 1954b, Miettinen 1986b:104ff, 1998:48, Ruonavaara 2005:35,41f, Kotivuori 1988:44ff). Some of the sites are in close proximity of typical Bronze Age cairns, as in the case of Raineäsen in Pörton (Miettinen 1980:84). The youngest Kiukainen ware sites in Southern Ostrobothnia appear to have been taken into use around 1700 according to the shoreline chronology presented in chapter 3.3.1. This is solely based on the assumption that the sites were situated two metres above the sea-level when they were taken into use. The Vitmossen site may however have been established as late as 1500 BC as discussed in chapter 4.2.1, and similar dates can of course not be excluded in the other cases either. It is furthermore not easy to estimate when the Kiukainen ware sites went out of use, especially as some of the sites in Lappfjärd were transformed to lake sites with stable shore-lines.

A general decline of pottery production appears to take place in Finland during the Late Bronze Age and the Early Iron Age. Woodworking tools made of metal would instead have
increased the production of wooden containers (Asplund 2008:205). A simpler type of pottery evolved from the Kiukainen ceramics, known as Paimio ware. Asplund dates the emergence of Paimio ware to the end of the Early Bronze Age, and he states that most of the finds may belong to the Late Bronze Age (ibid.). Salo suggests however that Paimio ware had already emerged at the start of the Bronze Age and that it could have coexisted with the late Kiukainen ware (Salo 1981:311f). The transformation to Paimio ware included a simpler decoration and a striation of the outer surface of the vessels. The vessels are rather small and their shape resembles an ordinary flowerpot with a flat bottom; the walls are straight or slightly s-profiled or inward-turned. The walls of the vessels are relatively thick, and the clay temper consists of coarsely crushed rock. The decoration consists of a simple line of pit-depressions around the neck of the vessel. (Salo 1981:311, Asplund 2008:205f). Paimio ware has been found at some of the Ostrobothnian sites.

Another Bronze Age type of coastal ceramics is the Lusatian inspired pottery that imitates pottery of the Lusatian Culture, which in turn imitates Central European metal dishes. They are small, carefully made vessels of fine-grained and well fired clay. They have a smooth or even a polished surface. A typical feature is the sharp-angled profile with a convex neck. It is found in the coastal parts of Finland and it was common in Scandinavia during the Late Bronze Age (Asplund 2008:208f). Salo dates the Finnish occurrences of this ware to period V and VI, but it may still appear in some Early Roman Iron Age contexts (Salo 1981:317). The type is found at some of the Ostrobothnian sites.

In central and eastern parts of Finland, the previously dominant asbestos ware tradition seems to become completely replaced by new textile impressed pottery tradition or traditions, approximately at the Late Neolithic-Bronze Age transition (Lavento 2001:183). The textile ware is named after the textile impressed outer surface of the vessels. The textile ware consists of several regional subtypes that dominated in central and eastern Finland throughout the entire Bronze Age (Lavento 2001:106f). Some South Ostrobothnian coastal dwelling sites have yielded textile ware together with western or coastal types of pottery (Miettinen 1998:105ff, Lavento 2001:227ff). Raineåsen in Pörtom is apparently the oldest dwelling site. It derives from the transition between the Late Neolithic and the Bronze Age. Vitmossen in Võrä may be at least partly contemporaneous, but it seems to extend further into the Bronze Age. The youngest sites that have yield textile ware are Nikonkallio and Viirikallio in Laihia. Both derive from the Late Bronze Age or the transition to the Early Iron Age (Lavento 2001:100, Miettinen 1998:105ff). Lavento suggests on the basis of his shoreline dates that the uncalibrated datings for Textile ceramics falls between 2900-2600 BP (1100-800 cal BC) in Southern Ostrobothnia (Lavento 2001:100). According to the new calibrated shoreline chronology presented in chapter 3.3.1, the maximum age interval for all of the textile ware sites would be 1750-950 BC. The difference with Lavento´s dating interval depends not only on the new shoreline chronology, but also on my correction of the altitude for the Viirikallio site and on the assumption that the sites were at least two metres above the sea-level when they were taken into use. The only radiocarbon dated site is Viirikallio, but the radiocarbon date provided an unfortunately wide margin of error comprising the time span of 800-150 BC. The shoreline dating suggests that the site was taken into use at 1000 BC at the earliest.

Paimio ware undergoes certain changes approximately at the transition to the Early Iron Age resulting, in the new Morby type of ceramics. The slightly s-profiled Morby ware pots are made of lightly tempered clay, but the temper consists of exceptionally coarse grains. The surface of the ware is striated, and the pots are decorated along their shoulders. The decorative impressions are usually arranged in groups, like the characteristic "cat-paw imprints". Morby ware may also exhibit twisted cord impressions, pits and incisions, as well as impressions
along the top of the rim (Asplund 2008:211). The Morby ware is considered to be the most important archaeological key to the identification of dwelling sites and burial sites related to the coastal culture of the Pre-Roman Iron Age in Finland. Asplund counts up to an excess of 80 sites containing Morby ware or Morby-like ware in Finland (Asplund 2008:210). Several Morby ware sites have been found along the Ostrobothnian since the 1970’s onwards (Miettinen 1994). The northernmost recorded occurrence is at the Tervakangas cemetery in Raase (Edgren 1999:317).

Asbestos tempered pottery occured relatively frequently in Southern Ostrobothnia during the Middle Neolithic (Miettinen 2007). It decreased considerably in occurrence during the Late Neolithic in Southern and Central Ostrobothnia as well as in eastern and central Finland (Lavento 2001:183). During the Bronze Age, asbestos tempered pottery remained in use only in northern Fennoscandia (Lavento 2001:114). The only asbestos tempered ceramic shard I know of from a likely Bronze Age context in Southern Ostrobothnia has been found at the dwelling site at Borgbacken (NM 28404). It is perhaps related to the Säräisniemi 2 types. Two finds of asbestos ware are known from Pre-Roman site contexts in South and Central Ostrobothnia. The dwelling site at Karkaus in Alahärmä and the excavated grave at Råbacken in Jeppo have both yielded asbestos ware of eastern Luukonsaari type and asbestos pottery of probably northern Säräisniemi 2 type (Edgren 1999:316 Kotivuori 1992:120ff). No coastal ware has been found at Karkaus, but the site has not been excavated: all finds derive from field-walking (Kotivuori 1992:123). The asbestos ware from Råbacken derives from a burial monument that relates to the sandstone grave tradition of the Vaasa area (Kotivuori 1992:135).

### 3.6.3. Lithic artefacts and lithic crafting

By the early 2000s almost 190 straight-based arrowheads had been discovered in Finland (Lavento 2001:128). Most of the straight-based arrowheads have been found as stray finds. The arrowheads were made of quartz, quartzite and flint. They vary in shape from long,narrow specimens to short, broad points. In Finland, this arrowhead type is traditionally dated to the Late Neolithic and to the Early Bronze Age (Miettinen 1994:9). Miettinen finds it however possible that the type remained in use for a longer time. She concludes that the Jeppo find suggests that straight-based arrowheads were still used at the same time as the Maaninka celt, which would correspond to the end of the Bronze Age or even to the beginning of the Pre-Roman Iron Age (Miettinen 1994:9). This late date can however be questioned on the basis of the discussion of Maaninka axes and the Asplandet cairn in chapter 3.6.1. Both Miettinen and Lavento have published lists on straight-based arrowheads that have been found in Southern and Central Ostrobothnia (Miettinen 1994:9, Lavento 2001: Appendix 9c). The list is also given here with a rough Late Neolithic-Bronze Age coast-inland subdivision and with some additions of newly discovered specimens. At least 15 straight-based arrowheads are currently known in the area.

| Coastal find, Cat.no. Material Special context |
|---------------------|---------------------|-------------------------------|
| Kronoby, Kvänjälän  NM 9922 quartz From seabed |
| Esse, Kattilakoski   private coll. quartz Dwelling site? |
| Jeppo, Asplandet     NM 26618:1 flint Burial Cairn, Maaninka celt |
| Alahärmä, Heikkilä Tyni NM 7817 quartz |
| Ylistaro             private coll. quartz |
| Lappfjärd, Långängshacken NM 7959:3 quartz Kiukainen dwelling site |
| Lappfjärd, Lillsjö   private coll. quartz Kiukainen dwelling site? |
In Ostrobothnia the recorded finds of even-based arrowheads show a relatively even distribution pattern. The arrowheads are found both along the coast and in the interior in rather similar densities. This even distribution pattern deviates from the distribution patterns of all other artefact types, with the exception of the unusual wooden artefacts.

The artefact type exhibits a vast distribution from Norway to Siberia. The even-based arrowheads are particularly numerous in Northern Fennoscandia. Salo has therefore suggested that the straight-based arrowheads from coastal Satakunta are evidence of contacts between the coastal and the inland populations (Salo 1981:306f). Miettinen is also inclined to link the South Ostrobothnian finds of flat-based arrowheads to the eastern inland culture, which is also strengthened by the Asplandet find together with a Maaninka celt (Miettinen 1994:10). Only two or three arrow-heads can be positively linked to contemporary dwelling sites. The arrowheads derive from Kiukainen culture settlement surfaces in Lappfjärd. The remainder consists of stray finds or derives from uncertain dwelling site contexts.

The lithic shaft-hole axes are a uniting trait around the Baltic Sea and other parts of northern Europe during the Bronze Age but also in previous periods. The oldest common use of shaft-hole axes in Finland is within the Battle-Axe culture of the Middle Neolithic and the tradition continued with altered axe shapes until the Bronze Age. Meinander mentions that 4-5 simple shaft-hole axes have been found in Ostrobothnia (Meinander 1950:42). The type is usually dated to the Late Neolithic, but it may have remained in use during the Early Bronze Age (Salo 1981:286). After the phase of simple shaft-hole axes, more elaborate types occurred during the Late Bronze Age. The Scandinavian Bronze Age types consist of rhombic (Baudou B), neck-bent (Baudou C) and right-angled axes (Baudou A). The first mentioned type dominates in Southern Ostrobothnia. All known specimens are stray finds and it seems probable that at least a majority of them have been sacrificed. An unusually fine rhombic axe of a Mid-Norwegian type has been found in Gyttjemyren in Yttermark, Närpes (NM 12993). The distribution pattern offered by Baudou (Baudou 1960:51, Karte 32) provides tangible evidence of west-east Nordic import, via the Norrlandic coast. In addition to this, some of the other axes may have been imported, but a few specimens with unfinished drilling holes and clearly deviating shapes shows that axes were made locally. Most of the shaft-hole axes have been classified and dated by Baudou (Baudou 1960). Lehto has studied the axes that have been found after 1960, and has also restudied some of the axes mentioned by Baudou (Lehto 2004). One recently discovered axe is added to the list.

### Simple shaft-hole axes (Meinander 1950:213)
- Isojoki SatM 3106
- Isokyrö NM 3134:1
- Vörå NM 2086:311
- Ylistaro NM 2392:91
Bronze Age Lithic shaft-hole axes of Scandinavian types (mainly Baudou 1960)

Jeppo NM 9559. Baudou C1 or intermediate C1/C3 (Lehto 2004:46)
Oravais, Paljak, Private coll. Baudou B1e (?), my classification
Vörä, ÖHM 454, Baudou B2.
Laihia, Kylänpää NM 11499:1, Baudou B2.
Laihia Kylänpää, ÖHM 4700, Baudou B1e.
Laihia Torstilä, Syrjälä field NM 2902:7 Baudou A2c
Laihia Peltomaa, Häjyluhta NM 2191:1 Baudou, A2a (?), local subtype, my classification
Närpes, Ö.Yttermark, Gyyttjemynen, NM 12993 Baudou B1d
Lappfjärd SatM 3726, Baudou C1.
Peräseinäjoki, NM 10097 Baudou A3.

The chronology of the Scandinavian axe types according to Baudou (Baudou 1960:47)
A2a and A2c Per. V and possibly per. VI.
A3 Possibly per. IV-V.
B1e, B1d and B2 Per. V-VI and possibly Early LaTène.
C1 and C3 Per. IV-V and possibly per. VI.

Other lithic shaft-hole axes from the Bronze Age have non-Scandinavian affinities. One pentagonal shaft-hole-axe from Isokyrö corresponds to a central European Lusatian type (Salo 1981:292). The sharp-edged rhombic axes from Pörtom and Lappfjärd represent a type that may be of Eastern-Baltic origin and they date probably to the Early Bronze Age (Lehto 2004:125ff). The shaft-hole-axes with bear head figures found in low-lying fields in Alahärmä and Ylistaro are instead related to the inland or Eastern Bronze Age of Finland. Carpelan dates these animal head shaft-hole-axes to the Early or Mid Bronze Age (Carpelan 1974:54, 82). The elk head axe from Kortesjärvi is dated to the Late Neolithic (Carpelan 1974:72). The bear axes are dated on the basis of the shore displacement chronology and on some typological analogies in Latvia. Both axes comprise pointed oval-shaped shaft-hole axes with bear head figurines in one end. These objects represent the youngest lithic specimens of animal symbolism from the prehistory in Ostrobothnia: lithic animal head symbolism ended in Finland around 1000 BC (Carpelan 1974:83).

Bronze Age lithic shaft-hole axes, non-Scandinavian types
Isokyrö NM 692 Fünfeckig, m. vierseitigen Querschnitt, Lusatian type.
Pörtom, Södra byn, NM 12546. Scharfkantige und rhombische Typ, m. eingeschweiften Seiten. Early BA?
Lappfjärd, NM 4366, Scharfkantige und rhombische Typ, m. eingeschweiften Seiten. Early BA?
Alahärmä, Laksoluhta NM 7990, animal head axe
Ylistaro, Kainasto Tenkku NM 13440, animal head axe

One additional lithic artefact that deserves to be mentioned next to the shaft-hole axes is a peculiar ring-like lithic artefact from Kylänpää in Laihia (NM 11499:2). It has been catalogued together with the fragmentary shaft-hole axe (NM 11499:1) and given the next sub number. Nothing is documented about the find context, but the ring-like artefact seems to be of precisely the same greenish stone material as the axe, thus is seems likely that the objects really are related. Furthermore, the shape and the size of the ring-like artefact make it a likely spindle-whorl. If the spindle is contemporary with the axe it would date to Period V-VI or to the beginning of the Pre-roman period. Since half of the axe is missing, a possible explanation could be however that the ring-like artefact is made of the missing half of the axe, and thus it could be younger.

Grinding stones form a lithic artefact category that emerges during the Late Neolithic-Early Metal Period (Salo 1981:307). One apparent grinding mortar discovered at Paljak in Oravais
may be, due to its proximity to a Kiukainen culture site, of Late Neolithic date (Herrgård & Holmblad 2005:89). More or less cubic shaped grinding pestles emerge during the Bronze Age (Salo 1981:308). One such pestle has been found close to Annikkalanmäki in Laihia (NM 22967), the find context making a Bronze Age date possible. Similar pestles have been found in Pre-Roman contexts. These comprise a couple of specimens that have been found in stone settings together with Morby ware at Pörteback in Pörtom (NM 13551:6) and at Eskola in Lappfärd (NM 12548, Edgren 1999:326f). A grinding mortar was found in the tarand-like sandstone covered stone setting at Riitasaari in Laihia (Meinander 1943:35). Another grinding mortar has been found in Löykne in Malax at a site with several small cairns located on a Pre-Roman elevation (displayed at Brinkens museum in Malax).

As already indicated by the existence of the even based arrowheads, the lithic technology with worked quartz, quartzite and flint continues well into the Early Metal Period and remains relatively strong at least throughout the Bronze Age. At the dwelling site of Viirikallio, roughly dating to the transition between the Bronze and the Iron Age, a large amount of worked quartz was found, and three distinct working places were detected at the site. The finished quartz artefacts consisted of quartz scrapers (Miettinen 1998:113). The amount of worked quartz seems however to be relatively low at the Peltomaa dwelling sites dating to the Late Bronze Age. The Palomäki W site particularly, which according to the cultural layer containing a hearth, a large amount of fire cracked stone, burnt bone, ceramic shards and agricultural macrofossils seems to have formed a quite intensively used site, has yield only a few quarts flakes. The site can studied through a 50 metre long ditch cut. The few flint flakes found in Alatalo may, on the other hand, derive from fire striking. Bronze Age flint has also been found at other sites, as Nikonkallio (Meinander 1944:45). The overall impression is that worked lithic materials decline at the onset of the Iron Age. However, some quartz flakes and flint scrapers are still found at Pre-Roman sites. A scraper made of South Scandinavian Senon flint was found at Råbacken (Miettinen 1998:93, Kotivuori 1992:124).

3.6.4. Wooden and bone artefacts

Though perhaps the majority of the Early Metal Period material culture consisted of wooden and bone artefacts, nowadays only few specimens of these kinds are found, and then only due to special preservation conditions as burning or waterlogging. Fragments of at least one burnt bone artefact have been recorded in the Late Bronze Age cairn at Nikonkallio in Laihia (Meinander 1944:45). A number of wooden artefacts have been recorded that certainly or probably date to the Early Metal Period. Proper radiocarbon dates for the objects are unfortunately still quite rare.

A wooden spoon of pine (NM 2678:567) found in the 1870s during ditching work in Lestijärvi has recently been radiocarbon dated to 770-400 BC (2455±60 BP, Ua-18767) or, to the transition between the Bronze Age and the Iron Age (Immonen 2002:33). The groove and dotted line decorated spoon probably derives from the Niskaperä area at the outflow of Lake Lestijärvi. The closest parallels consist of contemporary bone spoons in Kjelmøy in Northern Norway. Both the shape and the decoration elements are similar. Immonen states that the Lestijärvi spoon represents the oldest example of a wooden spoon found in Finland that lacks an animal head figure at the end of the handle (Immonen 2002:41f), making an interesting wooden parallel with the Bronze Age vanishing of the ancient tradition of lithic animal head figures. The Lestijärvi spoon suggests North Scandinavian contacts.
A tip fragment of a wooden ski (NM 12058:1) found at Toijanniemi in Lapua is probably of Bronze Age date. According to a geological study, the ski was deposited on the seabed in shallow sea water. Currently the find spot is located at the 31 metre elevation (Itkonen 1949:32f, Hyypä 1950:33). The site emerged from sea around 1300 BC. Another fragmentary wooden ski (NM 12114) from Ilomäki rapids in Sulkava in Alavus may, on typological parallels, be dated to the Early Iron Age (Itkonen 1949:31f).

A sledge runner fragment found in Evijärvi (ÖHM 433) belongs to a type with a central crest along the mid axis of the runner. This type is radiocarbon dated to the Late Neolithic-Pre Roman Iron Age. Salo suggests that the sledge type is linked to the inland or eastern Bronze Age culture (Luho 1949:10, Salo 1981:328, Edgren 1998:68). There are also a number of undated sledge runners and skis from Southern Ostrobothnia that may derive from the Early Metal Period: some sledge runners of the Morsjö type and some skis of the Bothnic type; but they could also be considerably younger (Huurre 1983:293ff, Luho 1949:10f).

A wooden dugout canoe has been found in Särkijärvi in Evijärvi. The canoe, which was unfortunately destroyed, measured four metres in length and 0.6 metres in width. Pollen analysis suggests that the canoe dates to the Early Bronze Age or to the Late Neolithic-Bronze Age transition (Meinander 1950:33, 211, Miettinen 1983:125).

### 3.7. Summary

In this chapter I provide a descriptive account on the Early Metal Period source material that is available for archaeological research in Southern Ostrobothnia. I also provide an account of the chronology and the dates that fix the source material in time. The chapter contains also some evaluating remarks and some interpretations that may be useful for the following chapters.

In simplified terms, the most specific coastal Bronze Age elements can be said to consist of large round cairns, western types of bronze artefacts and Paimio ware ceramics. The inland Bronze Age is signified by textile ware and of eastern types of bronze artefacts. The coastal Pre-Roman Iron Age is marked by quadrangular sandstone-covered stone-settings and Morby ware. The inland is dominated by Säräisniemi 2 ware types, especially by Luukonsaari ware.

The history of the Early Metal Period field research started with some cairn excavations in the late 19th century and a large wave of excavations of cairn-like features took place between the 1910s and 1950s. Only Bronze Age cairns could be roughly dated, and the existence of Pre-Roman burials was hardly acknowledged at this time. A new wave of excavations took place from the 1970s to the 1990s. This time not only cairn-like features were excavated, but also settlement surfaces and visible dwelling constructions were studied, and pollen analyses were conducted, which resulted in several sites being identified as Pre-Roman.

A new shoreline chronology is presented for the research area. The chronology is based on a new map of isostatic baselines and on curves that are based on recalibrated lake basin isolation dates. The most important land-uplift related processes and ecological succession processes of uplift coastal areas are also described.

Palaeoclimatological research shows that there was a gradual cooling from the Middle Neolithic until the Late Bronze Age when the most evident cooling, in a long-term
perspective, took place. Short term fluctuations took place in the Pre-Roman Iron Age. A study on past salinity in the Baltic Sea shows that the time of 1700 BC-AD 200 was the phase with the lowest recorded salinity in the Baltic. The turning point towards increasing salinity was at 1100 BC. These changes may have affected the availability of maritime resources.

About 20 palaeoecological pollen diagrams have been published from Southern Ostrobothnia prior to this thesis project. The earliest signs of agriculture have been set to the late Pre-Roman Iron Age. It is however mentioned that older cereal pollen has been recorded in this thesis project. Few osteological analyses have been published, though some work has been published on seal bones and some burial materials.

Open settlement sites form an important site category of the Early Metal Period. Another type of habitation site is that site that is marked by visible dwelling constructions. These can be divided into large and small dwelling constructions; the former is probably generally older than the latter. Other structures consist of cairns and other cairn-like structures, such as stone-settings and probable clearance cairns. Long-cairns probably date to the end of the Late Neolithic and large round cairns generally date to the Bronze Age; Ship-settings are a grave type that dates to the Late Bronze Age. Stone settings (particularly quadrangular stone-settings) and small cairns date often to the Pre-Roman Iron Age, and a special trait of this time is a covering of red sandstone slabs. Some cairns are furthermore likely to be clearance cairns, interestingly they often appear at Pre-Roman cairn altitudes. Cooking pits form a construction type that appears to date to the Late Bronze Age and the Pre-Roman Iron Age. Few trapping-pits have been dated, but most dates are Early Metal Period. Storage pits and possible storage cairns have been constructed at maritime hunting stations. No real hoards have been recorded in the research area but there are some stray finds that apparently constitute sacrificial objects that have been deposited in wetlands and in bodies of water. There are furthermore some possible Early Metal Period ritual stones. Some cup-mark sites are mentioned as well a site with a "stone table".

The portable material culture of the Early Metal Period consists of Bronze Age bronze artefacts, of both western and eastern affinity. The possible Pre-Roman metal artefacts consist of some simple rings and bracelets that have been found in graves, but also an iron celt and some other objects. The main ceramic types that relate to the Early Metal period are Kiukainen ware, Peimio ware, Lustian inspired ware, Morby ware and Luukonsari ware. Lithic objects are used throughout the Early Metal Period, but their frequency drops considerably, at the latest during the Pre-Roman Period. The artefacts of organic materials are very rare: a wooden spoon, some sledge-runners and some skis probably date from the Early Metal Period.
4. The structuration of coastal Bronze Age communities

4.1. Introduction

In this chapter an attempt is made to understand some of the essential mechanisms that contributed to the structuration of the Bronze Age communities in the coastal area of Southern Ostrobothnia during the Bronze Age. The order of the topics discussed in this chapter is largely inspired by the hermeneutical spiral where each subchapter functions to establish a level of pre-understanding that helps to perform the interpretations in the following subchapter. In this way I hope to achieve a logical and a coherent reading of the Bronze Age source material in terms of ancient human behaviour. Each subchapter forms a thematic context which is necessary for the interpretive reading of the source material. I start with the well articulated signs of collective Late Neolithic sealing activity, which also forms an important bridge backwards in time. The sealing activity leads to the issue of sealing teams and to the refinement of sealing products and the role of cooking pits, which in turn leads to a discussion on centrality, which leads to the topic of the organisation of societies and so on. This outline provides a journey that starts with the sealers of the sea, proceeds to the farmers and blubber boilers of the coastal Houses and enters the reindeer hunters on the inland ridges, before the journey makes a loop back to the coastal societies, encounters some trading chief wannabes and finally crosses the sea to the remote centres of the Bronze Age. These are some of the agents whose practices and interactions constituted and structured the Bronze Age communities. Most emphasis is put on the Laihia area, simply because this area shows the largest and the most varied source material, both in quantitative and qualitative terms. The validity of the interpretations becomes hopefully stronger when based on the larger scope of available source material in this area.

4.2. Collective sealing in the Late Neolithic and the Bronze Age

4.2.1. Social and ideological aspects on sealing

Different behavioural and distribution patterns of various seal species made hunting techniques and strategies different and region specific through time. Characteristic elements in traditional sealing in the Baltic Sea consisted of the spatial and temporal specialisation, the multitude of hunting techniques employed, as well as the vital economic role of sealing from prehistory until the 16th century (and sometimes even later). Seals may have been a crucial nutritional resource in early spring which was the most critical part of the year for northern peoples. (Ylimaunu 2000:375). It should however be added that the pelagian sealing was in historical times highly dependent on the agricultural sector of the mixed subsistence economy. Long sealing voyages demanded an expensive investment in food. In years of bad agricultural production, ice-hunting of seals could not be performed in Southern Ostrobothnia. Destroyed harvests could thus not be replaced by increased sealing efforts in the spring, not at least in
historical times (Kvist 1988:26f). The pelagian sealing was in the latter case largely aimed for export markets.

The availability of seals can be relatively easy to predict at any given time, but there are biologically, climatically and environmentally motivated uncertainties involved in seal-hunting. The annual and seasonal variations may be great, in the Baltic especially due to the varying ice conditions. Risk management was therefore vital for a secured sustainability and for the physical survival of the group. Risk management in historically documented sealing communities usually comprised a mixed subsistence economy, storage, mobility, customary law and socioeconomic exchange relations (Ylimaunu 2000:343).

Ylimaunu adds that it was possible to accumulate a surplus in the Baltic Sea in highly productive sealing areas that could be stored for trade and exchange. In such cases social and economic stratification as well as competition was possible. The role of seal products in trade may also have promoted the social status of seal-hunting (Ylimaunu 2000:87). Ylimaunu also puts forward the idea that the whole organization of ancient coastal Baltic communities may have been based on seal-hunting. The social organization of the local community on the isolated Runö Island (Estonian Ruhnu) in the Riga Bay was still in the early 19th century based on an archaic division into three sealing associations, despite the mixed subsistence economy that included agriculture. Membership in a sealing team was compulsory. The Runö sealing associations administered the taxation, the law enforcement as well as the social welfare system for disadvantaged community members (Ylimaunu 2000:377f).

Ylimaunu has noted that historical sealing communities around the Baltic Sea show some common features in terms of sealing related social restrictions and territoriality. In pelagic areas sealing was traditionally relatively free from regulations of customary law. Close to the coast sealing was restricted by ownership and utilization rights, as well as by various seasonal sealing regulations. Efforts to secure sustainable seal stocks were done by regulating the time limits of hunting seasons, and by regulating access to the most important hunting areas (Ylimaunu 2000:344, 348f). Rules could also restrict the number and type of seals to be killed. According to Ylimaunu the rules were usually stricter in societies with a higher dependence on sealing. Along the Ostrobothnian coast each village had their own sealing waters for net catching, where no other sealers were accepted. Such ownership was also attached to special sealing islands or rocks. These sealing sites could be owned privately by a single farm or collectively by a village. Ylimaunu suggests a prehistoric, possibly a Bronze Age origin for the mentioned types of sealing related customary laws and social structures (Ylimaunu 2000: 344ff).

The seal was a mobile resource that was targeted in dangerous environments, and the social mechanisms of sealing were largely related to the high level of risks. Sealing was almost solely conducted by men; only in exceptional cases did women participate. Especially ice-hunting was hard and 40-50 year old men were considered to be too old to endure the voyages that lasted for several weeks (Ylimaunu 2000:378). Historical records tell about many incidents and accidents during sealing voyages. The demand for comradeship and cooperation required personal trust, and strong social bonds were created within sealing teams. Pelagic sealing was thus a quite conflict free task in historical times. There is almost a total lack of court cases concerning sealing related conflicts in the Gulf of Bothnia, despite the huge number of men that participated in the hunting efforts. This is at stark contrast to the numerous court cases that relates to pastoralism or stationary fishing. Informants have confirmed that quarrelling was avoided during the sealing voyages. Sealing teams exhibited generally egalitarian internal practices, as in the equal sharing of revenue amongst the
participants. Membership in a sealing team could also entitle welfare and retirement benefits (Ylimaunu 2000:87, 377).

Westerdahl and Ylimaunu claim that elements from very ancient worldviews survived into modern times in the niche of maritime foraging and logistic mobility at sea. Historically documented sealing and fishing communities appear to have functioned as refuges for ancient traditions of foraging cultures. This includes principles of social organization, animistic world views and hunting magic. Similar traditions have been recorded in various parts of Northern Europe within sealing and fishing contexts (Ylimaunu 2000, Westerdahl 2005:3). Animistic worldviews were reflected particularly in the respect that was shown towards seals. Seals were considered to be highly intelligent and understand human speech. Ylimaunu assumes that seals and sealers were perceived as equal parts of the dynamics of nature, where an equal reciprocity existed between humans and animals. Periodic sealing restrictions that were made statute by customary law can be viewed as peace agreements with the seals and the forces of nature. Ylimaunu assumes that animistic sealing perceptions may have been dominant in the Northern Baltic at least until the early 16th century (Ylimaunu 2000: 344ff, 395ff, 350f). Westerdahl refers instead to a primary antagonism between sea and land when he interprets the human-seal relationship. The transfer of an entity from one world to the other was thought to produce strong magic powers and seals meant danger because of their liminal position as sea-living mammals. Seals possessed strong magic powers especially when they were situated on land. Even dead seals were thought to maintain an active contact with the sea (Westerdahl 2005:9).

Maritime taboo languages have been identified in various parts of Northern Europe and there appears to have been a clear division into sea and land languages. Fishers, sealers and sailors replaced their terrestrial speech and modes of conduct with specifically defined maritime modes of speech and conduct when they went off shore. The Finnish “Ice-Language” consisted of euphemisms for prey, hunting equipment and place-names. The Ice-Language was used during the sealing voyages because the seals were thought to understand normal speech. Disobedience to the rules was punished, for instance by expulsion from the sealing team (Ylimaunu 2000:351f, 385). Ylimaunu views the sealing taboo language as an animistic tradition. Westerdahl views the taboo languages instead as a part of a worldview with a primary antagonism between sea and land (Westerdahl 2005). According to Westerdahl there was a general maritime superstition that was manifested in a taboo system of languages, rituals and ceremonies. Westerdahl interprets the taboos as an attempt to counter danger by distorting the vision and the radius of action of the natural forces at sea. Breaking the rules could mean disaster (Westerdahl 2005:2f).

4.2.1. Sealing bases and stations

At least since the Early Neolithic there are open settlement surfaces in Southern Ostrobothnia that mainly functioned as maritime hunting camps. These sites were usually situated on sandy beaches, and they are marked by subterranean cultural layers. Seal bone became dominant at the Ostrobothnian coastal dwelling sites during the Early Neolithic (Hiekkanen 1990).

A change seems to take place during the Middle Neolithic around 3000 BC. In addition to the above mentioned type of open dwelling surface sites, sites with visible dwelling structures built in stone emerge in rocky terrain at the 60-50 metre elevations along the ancient coast of the north eastern Bothnian Bay. Jari Okkonen proclaims this change to be the oldest manifestation of a “constructed cultural landscape” in Finland (Okkonen 2001). The most
famous type of construction is the so called “Giant’s church” which according to shoreline dates mainly belongs to the period of 3000-2300 BC (Nunez 2004:359). The Giants churches are a specific type of big oval or rectangular henges created by stone banks. They are usually located on hilltops in boulder fields or surged stony moraine. So far some 40 such constructions have been found along the ancient coast between Vaasa and Kemi. The henges are usually 20-40 metre long and 10-30 metre wide. The henges often exhibit double banks arranged in a concentric fashion. The stone banks are normally a few metres wide and up to one metre in height. Most authors link the sites of the Giant’s churches to collective large-scale sealing activities in the ancient archipelago but there is no agreement upon the specific function of the henges. The shape and size of the henges does not normally support the idea of their use as roofed building foundations (Okkonen 2003:132). There is also normally a lack of hearths and building related construction details. The cultural layers are weakly developed and the find material is limited. Some authors have therefore put forward the idea that the henges would be some sort of collective storage facilities that would have been used in connection to seasons of massive sealing activity (ibid.). The henges are often surrounded by other stone constructions as pits and cairn-like structures as well as burnt mounds. In some instances also flat ground settlement surfaces and dwelling depressions from semi-subterranean buildings have been detected in close proximity of the henges. The use of the Giant’s churches seems to end roughly around 2000 BC at the latest (Okkonen 2003:219ff).

During the Late Neolithic and the Early Bronze Age large rectangular dwelling structures appear to be in use along the Ostrobothnian coast. To their physical appearance some of these constructions resemble the big Middle Neolithic henges, because they consist of stone cleared surfaces that are surrounded by banks of stone. Functionally they do not however seem to be directly comparable to the Giants churches, as these constructions were more likely roofed buildings. The considerably narrower and more rectangular shape of this type of structure makes it possible to interpret them as proper dwelling foundations. In Southern Ostrobothnia they are situated from 50 to 38 metre elevations and they probably derive from a chronologically distinct phase, dating to the Late Neolithic and the Early Bronze Age (see tables in chapter 3.5.2.). Similar rectangular structures seem to emerge roughly contemporaneously around almost the entire Bothnian Bay. At Peurasuo in Oulu in Northern Ostrobothnia an excavated structure of this kind contained fire-cracked stone, burnt bone and a quartz flake. The structure is dated to 2050-1850 BC. Another similar structure at Nähinmaa in Liminka is dated to 2200 BC (Okkonen 2003:226f). The most famous Swedish site of this type is located at Fattenborg in Kalix in the province of Norrbotten. The Fattenborg site is radiocarbon dated to 2000-1500 BC (Klang 2007:119).

Characteristic Bronze Age cairns are situated in close proximity to several South Ostrobothnian sites with large rectangular dwelling foundations, which makes this type of site a likely bridge between the Late Neolithic and the Early Metal Period (see table in 3.5.2.). The ceramic types found at Vitmossen and the general proximity to typical Bronze Age burial cairns indicate also that at least parts of these sites were used by groups that were attached to the coastal Bronze Age culture in Finland. The sites in Northern Ostrobothnia and in Swedish Norrbotten were on the other hand more likely used by groups with eastern cultural affinities, probably by asbestos ware using groups. Like the later cooking pit sites, the large rectangular dwelling foundations seem to form a common uniting element for the Bothnian Bay area, which transcends the supposed cultural border of western and eastern oriented coastal groups.

The late Neolithic and Early Bronze Age large rectangular type of dwelling foundations is represented by sites of different magnitude and internal structuration. In order to describe the variability in Southern Ostrobothnia I use a division according to the mutual intra-site relation
of the dwelling foundations. The sites are composed of sites with single foundations, sites with clustered but separated foundations and sites with merged dwelling foundations.

An example of a partly excavated single rectangular dwelling foundation site in Southern Ostrobothnia is situated on Högryggen in Kronoby. The flat inner surface is six metres wide and 18 metres long, which results in an approximate floor area of 110 m². The surrounding banks are 1-2 metres wide and one metre high. Depressions in both short ends indicate entrances to the structure. Test-excavations in 2006 revealed a thin cultural layer with some fire cracked stone and quartz flakes within the floor surface (Skantsi 2008, NBA 288010041). The Högryggen site is at 50 metre altitude, but due to the steep local topography it remained in close shore contact until the beginning of the Bronze Age.

A site that is characterised by clustered but separate rectangular dwelling foundations is situated on a small stony hill at 41 metre altitude at Vitmossen in Vörå. The Vitmossen site was excavated in the 1980s under the supervision of Hannu Kotivuori and Tryggve Gestrin (Kotivuori 1988). Within a 60x60 metre large area there are 13 stone cleared surfaces that are more or less surrounded by stone embankments or stone rows. Several structures are more or less rectangular but other shapes also are represented. At least two of the structures are of the large rectangular type. The total area of the clearances counts up to 600-700 m² as can be roughly assessed from Kotivuori’s map, but (as already mentioned in 3.5.4), some clearances are probably not dwelling foundations. Only one of the foundations has been partly excavated. The cleared space was surrounded by a frame or embankment of stones which apparently has functioned as a wall foundation. The straight long walls were united by rounded gables. The inner measurements were 14x5.5 metres providing a floor area of 77 m². No additional structures of the building were found during the excavation, except for one possible post hole. The finds material consists of pottery, quartz scrapers and fragments of slate implements. The bone material comprises flipper bone from an undetermined seal species. Excavations of one of the two cairn-like constructions situated on the same hill yielded Paimio ware and two quartz scrapers (ibid.). Kotivuori classifies the pottery as Kiukainen ware and Paimio ware (Kotivuori 1988:44f). Lavento classifies the material as Kiukainen ware and textile ware (Lavento 2001:229). Miettinen classifies it instead as Lusatian inspired ware and “striated ware” (Miettinen 1998:106).

Kotivuori assumed that the Vitmossen site was in use when the sea reached the 37.5 – 33.5 metre altitude, and according to the shore displacement chronology he dated the site to 1250-1000 BC (Kotivuori 1988:51). According to my view the Vitmossen site was most probably established when it was situated on the tip of a cape in a sheltered inner archipelago phase. At this stage the site was located next to the narrowest part of a long strait that separated a large island from the mainland. The site would in this scenario have possessed a strategic location especially suitable for net catching of seals. According to my view the most optimal phase for the sealing activity at Vitmossen belongs to a 36-33 metre shoreline interval. The Vitmossen site would thus date to 1500-1300 BC according to the new shore displacement chronology. This shore-line dating appears also to be more in accordance with the general ceramic chronology of the Kiukainen ware (see chapter 3.6.2). Within a 250 metre radius of the dwelling site, 13 cairns are known and in total some 90 cairns are known in the entire Vitmossen area. The numerous cairns of typical Bronze Age type in the area suggest that a sedentary settlement emerged at Vitmossen at some point during the Bronze Age (Kotivuori 1988:37, 49). The former bays and straits of the area transformed into water meadows that may have become favourable for animal husbandry. This is further supported by a pollen analysis that indicates possible grazing activity in the area during the Late Bronze Age (Vuorela 1989:23).
At some sites the large dwelling foundations are merged together so that the long walls are shared jointly by several foundations and their floor areas run in parallel to each other. This type of merged rectangular dwelling foundation sites are known from Bäckishällorna in Oravais and from Dalalandet in Jeppo. A destroyed structure on the top of Borgbacken in Kronobys probably belonged to the same type as well (for the latter see description in Björklund 1991:121ff and Björklund 1997:35f, Bilaga 6-7). All mentioned sites are situated at the 45-38 metre altitudes. The layout of the merged foundation sites appears to represent coherent and symmetrical totalities. My interpretation is that they were planned and constructed during fairly synchronous events. All building spaces must have been in synchronous use at least during some length of time, otherwise the layout of the sites would be meaningless from a rational point of view. Each floor space represents a painstaking investment in stone clearing, which is especially evident at Dalalandet.

The site in the south-eastern part of Bäckishällorna in Oravais contains a structure consisting of three parallel and merged dwelling foundations of equal size at the 40 metre altitude (Andersson 1999, Loeffler 2000). The total extent of the structure is 45x37 metres. The inner measurements of each the three rectangular dwellings is 25x6 metres, which provides a floor area of 150 m² for each dwelling and 450 m² in total. Entrances are situated at the short ends. The merged dwelling structure is surrounded by several cairn-like structures and pits dug into the stony moraine or boulder field. Excavations in the 1990s did not reveal any confirmed construction elements. Dwelling site finds were nevertheless found within the building structure as fire-cracked stone and flakes and implements of quartz, slate and chert. The identified artefacts were scrapers and chisels. The burnt bone material contained flipper bones from a juvenile seal of an undefined species. High phosphate content in the soil inside the excavated dwelling foundation suggests that a large amount of bone or slaughtering residue has decomposed in the structure (ibid.). Unfortunately no reliable radiocarbon dates are at hand. Bäckishällorna was an islet during the Late Neolithic. According to the altitude of the site, it cannot have been established prior to 1800 BC. The narrow strait in the southeast and just below the dwelling site was transformed into a land bridge around 1600 BC. Bäckishällorna was thereafter a locally prominent cape of the mainland until 1400 BC. As in the Dalalandet and Vitmossen cases, also Bäckishällorna was situated on or close to the mainland during the time of use. Bäckishällorna was in the mean time also situated at the pelagic edge of the sea due to its location at an open straight coastline without surrounding islands. Some large burial cairns were built on the cliffs in the western part of Bäckishällorna during the Bronze Age. The steep western slope remained in shore contact throughout the Bronze Age. Despite the cairns, Bäckishällorna does not, due to its topography, seem to have become as suitable for agrarian activity during the Bronze Age as Vitmossen and Dalalandet.

The merged rectangular dwelling foundation site at Dalalandet 3 in Nykarleby is situated on a small stony hill at 38 metre elevation (NBA 166010006). The merged structure measures 28x17 metres in total (according to local amateur archaeologist Nils Jungar). The individual sections consist of four parallel structures cleared in an extremely stony ground (see Herrgård & Holmblad 2005:85). The size of the individual floor areas vary from 14x7 metres down to 4x3 metres, or 98-12 m². The total floor area is according to my estimates approximately 230 m² at Dalalandet. Some of the boulders that are removed to the walls are of considerable dimensions, which give the site an unusually strong sense of monumentality. Consequently the site is locally known as Hednaknapel ("the Pagan Temple"). No investigations have been conducted at this remarkable site. During the sealing-suitable phase, the site was situated on a small mainland cape next to a narrow and shallow bay. The 37-34 metre interval of this phase provides a probable date to 1600-1400 BC. The site is surrounded by wetlands and by several
That sealing camps were established also in very remote locations in the outermost archipelago during the Late Neolithic is shown by the dwelling site at Öjberget in Vaasa. The site is radiocarbon dated to 1940-1680 cal BC (3495±50BP, Hela-726). At this phase Öjberget was a small island some 30 kilometres from the mainland. The site is located in a southward slope, close to the crest of the hill. The sealers sheltered in a depression under the tip of a huge boulder. The find material consists of burnt bone, flakes and chisel-like implements of sandstone (see Herrgård & Holmlad 2005:90f). One cubic metre of fire cracked stone in the shelter shows that the site must have been used at numerous occasions. Unfortunately any possible structures that may have been created in the nearby boulder field have been destroyed by stone extraction in historical times.

Also, small quadrangular sealing huts seem to have been in use during the Late Neolithic (alongside the large rectangular dwellings), but the majority of the sites appear to be from the Early Metal Period (see tables in chapter 3.5.2). One of the oldest possible South Ostrobothnian sites that exhibit small quadrangular hut foundations is situated at 43 metre elevation in a boulder field on the top of Knappelbackhällorna in Maxmo (NBA 479010002). The site consists of 13 apparent hut foundations and some probable storage pits. According to the elevation, the site could be of Late Neolithic date (see Kotivuori 1993). 1950 BC is the oldest possible date for the site, but Knappelbackhällorna remained an island until the Early Bronze Age and due to the unusually steep local topography the site remained in proximity to the shore well into the Late Bronze Age. The Knappelbackhällorna site can thus at least partly be of Bronze Age date. The Knappelbackhällorna site is situated at approximately the same altitude as the Vitmossen site, but the environment must have been completely different. In contrast to the Vitmossen site, but in accordance with later small quadrangular hut foundation sites, Knappelbackhällorna constituted a rocky barren island in the outermost archipelago. As will be discussed later in connection to Hudholmen in Malax, which is a similar site of Pre-Roman date, the sealing station at Knappelbackhällorna may have harboured a sealing team of...
some dozens of sealers (see chapter 5.1.5.). A sealing station of this size may therefore have been shared by an entire coastal settlement district.

A site containing three small hut foundations has been detected at Rintavainio in Alahärmä. The Rintavainio site is situated on a rocky hill top at the 38 metre elevation. A couple of cairns are located in the vicinity. The site can not be older than 1750 BC and the shoreline remained in close proximity to the site until the beginning of the Bronze Age. Worked quartz was collected in a hut foundation during a survey (NM 17457). Rintavainio is registered as a cairn site and the structures are regarded to be small, ring shaped cairns or cairns with pit structures (NBA 4010013). As pointed out by Risla, the hut interpretation is however strongly supported by the construction of the structures (Risla, e-mail 03.07.2009). Muråsen in Sideby is another registered “cairn site” that I consider to be a probable hut site (situated on Iron Age AD shore altitude, NBA 750010018). It is therefore very likely that several hut sites are registered as cairn sites. This is unfortunate, because it makes them "invisible" for archaeological research.

Other sites with small hut foundations of possible Bronze Age date are for instance known from Tölby Brännskogen in Korsholm at 36 metres elevation (NBA 499010005) and from Platsberget in Kvevlax at 28 metres elevation (NBA 1000009693). Further north a large number of a similar kind of structures (but often built in more sandy ground) of possible Bronze Age date are known from Esse (see table in chapter 3.5.2). The listed Esse structures are situated in the 37-25 elevation span, which corresponds to maximum age span of 1400-400 BC. None of these sites have been excavated or studied more closely.

In addition to sites with recorded visible dwelling constructions, also sites with open settlement surfaces can have functioned as bases or as stations for seal hunting activities during the Late Neolithic and the Bronze Age. As no suitable open settlement surface sites have been more extensively excavated, their size and internal structure remains relatively hard to grasp and I find it difficult to make comparisons between them. For this reason I have chosen to limit this account to sites with visible dwelling constructions. There may be a bias in the representativity of the selected source material, but the positive outcome of this selection is that sites with visible dwelling constructions enable direct comparisons of internal site structure and they enable more direct observations of the composition and the size of the sealing groups than open settlement surfaces.

4.2.3. Shifts in sealing practices

There are some quite problematic gaps and problems of representativity in the empirical data that relates to Bronze Age sealing practices in South Ostrobothnia. Despite this, an attempt will be made here to try to outline some of the general trends during the Bronze Age. This can only be achieved with the aid of Neolithic and Early Iron Age data and with the aid of some data from other regions.

The most famous empirical case of Bronze Age sealing in the Northern Baltic is situated in Kökar in the Åland archipelago. Here sealing activities began around 1250 BC to be continued throughout the Late Bronze Age and the Early Iron Age. The sealing station with nine hut foundations at Otterböte was predominantly in use around 1000 BC, according to radiocarbon and thermoluminescence dates. Osteological analyses show that the Grey seal (*Halichoerus grypus*) compose 75% of all identified seal bones in Otterböte, but there is also a smaller amount of Ringed seal (*Pusa hispida*). The island harbours 150 burnt mounds of
fire-cracked stone, which undoubtedly are related to seal blubber extraction. According to the shore-displacement dates for the burnt mounds, the peak in seal oil production would have been in 1000-300 BC, but the radiocarbon dates suggest a time span that extends until AD 500 (Gustavsson 1997, Nunez et al. 1997)

The find material at Otterböte shows a strong central European connection. The huge amount of pottery found at the site seems to be produced within the Lusatian culture in current Poland. Gustavsson interprets the Otterböte site as a winter camp where sealers from the Lusatian culture spent some months annually and where they performed late autumn and early spring sealing activities (Gustavsson 1997:122ff). Even if this site can be interpreted differently in some of its details, the underlying element to the establishment of the Otterböte site seems to be an economic intensification that relied on long-distance communication and perhaps a generally rising demand for seal blubber.

It has been suggested that a general intensification took place in sealing and blubber production during the Bronze Age (Ylimaunu et al. 1999:150ff). An increased occurrence of grey seal bones at the coastal dwelling sites in the Northern Baltic is linked to new hunting methods or ways to utilise the species. The grey seal is a pelagic species that needs to be caught either on drifting ice or on islands with a pelagic location. Grey seal hunting would furthermore require an advanced cooperation by an experienced team of members. The specialisation in grey seal hunting and the occurrence of sealing sites in very remote locations would point towards increased efforts to reach a large-scale blubber production during the Bronze Age; this would also be supported by the emergence of numerous cooking-pit sites in the Bay of Bothnia (ibid).

A possible source for change may thus be a new role for sealing products within the sphere of the political economy, in exchange relations and within long-distance networks. According to Tapio Seger seal oil surplus production would have affected the socio-political structure of the Bronze Age in western Finland (Seger 1982:39f). A suggested general specialisation on grey seal hunting cannot be proven in Southern Ostrobothnia during the Bronze Age, and (with the exception for Otterböte) hardly anywhere else in the Northern Baltic either (Ukkonen 2002:199). Ylimaunu et al. seems thus to have overemphasised the role of the grey seal in the Northern Baltic during the Bronze Age. This does not, however, to my mind, decrease the validity of the general interpretation that intensification may have taken place in sealing and blubber production during the Bronze Age. The specialisation in grey seal hunting at Otterböte should perhaps rather be seen as just one adjustment to a larger process of intensification where North Baltic sealing became linked to the long-distance networks and to the political economies of the Bronze Age. I view particularly sealing and refining of sealing products as the most plausible and potential sources for possible rises in the political economy during the Early Metal Period in coastal Ostrobothnia.

There are other things that are indicative of changes that are related to sealing practices in Southern Ostrobothnia. The disappearance of the large rectangular dwellings in the inner archipelago, the continued and perhaps increased emphasis on pelagic sealing stations with small quadrangular hut structures, as well as the Mid-Bronze Age emergence of activity sites marked by cooking pits (and some burnt mounds) are some of the elements that indicate changes in sealing and in the refining of sealing products. The cooking-pits indicate a change in seal product refinement if we accept that coastal cooking-pits were largely intended for seal oil production. In the following parts of this subchapter only directly sealing-related practices are discussed. The Bronze Age cooking-pits and burnt mounds are discussed in chapters 4.5 and 4.6.1.
The harp seal (\textit{Phoca groenlandica}) and the ringed seal (\textit{Pusa hispida}) occur frequently both as stray finds in geological contexts and in the archaeological refuse-fauna in coastal parts of Finland. The ringed seal and the harp seal occur furthermore in both datasets in roughly equal numbers. Ukkonen concludes that the ringed seal was very common in the northern Baltic where it was present at least from 9500 BP. The harp seal emerged in the Northern Baltic around 5900 BP at the latest, and during its peak occurrence at 5000 BP it may even have been the dominant seal species of the Northern Baltic. The harp seal was common even in the northernmost parts of the Bothnian Bay. It occurred in the northern Baltic at least until about 2800 BP, but it still probably remained present for one thousand years before it went extinct in the Baltic (Ukkonen 2002:198ff). The latter date is strongly supported by the discovery of a harp seal scull in a coastal burial cairn in Kempele in Northern Ostrobothnia. The cairn is archeologically dated to the Early Roman Iron Age (Ukkonen 2002:198, Okkonen 2003:234). The grey seal (\textit{Halichoerus grypus}) was instead very rare in the Northern Baltic in Prehistoric times. This is shown by the rarity of grey seal bones both in stray finds from geological contexts as well as in the refuse fauna from archaeological contexts (Ukkonen 2002:199).

In Southern Ostrobothnia 15 subfossil stray finds of seal skeletons have been recorded from geological contexts. Eight represent ringed seals, six are harp seals and only one specimen belongs to grey seal (Ukkonen 2002: table 1). Four of the ringed seal skeletons have been radiocarbon dated, whereof all fall into the Ancylus Mesolithic. Also three of the remaining seal skeletal finds belong to the Ancylus stage according to isotope results. Only one ringed seal find from Ylistaro seems to date to a Post-Ancylus stage (Ukkonen 2002: table 2, 194). Three of the harp seal skeletons have been radiocarbon dated, whereof the famous Närpes specimen is Early Neolithic, the remainder are Bronze Age. The harp seals from geological contexts in Roparnäs in Vaasa and from Sundby in Jakobstad date to 1410-1010 BC (2995+/-70 BP, Hela-438) and 1130-810 BC (2800+/-65 BP, Hela-437) respectively (Ukkonen 2002:192). The remaining harp seal stray finds from Pjelax in Närpes and from Ruto in Laihia
are furthermore assumed to be of subboreal date (Ukkonen 2002:table 2). If we look to purely archaeological contexts, we can note that harp seal dominate over the ringed seal in the bone material at the Late Neolithic site at Rävåsen in Lappfjärd, where a radiocarbon date to 3020-2030 BC (4030±180, Hela-4310) most probably relates to the context of Harp seal bones (Ukkonen 2002:198). Harp seal was the only exactly determined seal species at the Late Neolithic site at Etukämppä in Eurajoki. The Etukämppä site is dated to 2400-2000 BC (Lehtonen 2009:172ff). Furthermore; harp seal bones were found at the site of the large Late Neolithic sealing net find in Pori in Satakunta. It is therefore plausible that harp seal played an important role in Bronze Age sealing in Southern Ostrobothnia; this interpretation can unfortunately not be confirmed due to the lack of osteologically analysed seal bones. The seasonal behaviours of the ringed seal and the harp seal may provide some further ideas to the sealing practices that were maintained at sealing stations in different environments.

In the Late Neolithic, coastal sites exhibit large visible dwelling constructions in boulder fields and stony grounds. The common trait for these large constructions is that they seem to indicate large-scale collective seal hunting close to the mainland in relatively sheltered archipelagos. The utilisation of these sites obviously stretches into the Early Bronze Age, as is clearly shown by the Vitmossen site in Vörå. The use of large rectangular dwelling constructions built in boulder fields and stony grounds seem to vanish at some point during the Early Bronze Age.

Many Late Neolithic-Early Bronze Age sites with large rectangular dwelling foundations appear to exhibit such large total areas of synchronously roofed dwelling space that it seems probable that entire families were present at these sites. This should also have been relatively easy and safe to achieve because the sites were situated close to the mainland or on the actual mainland itself. If the latter notions are correct, we would not be dealing with mere hunting stations and practices of logistic mobility. We are more likely dealing with residential sites. I find it difficult to judge conclusively whether the sites should be interpreted according to a residential mobility practice or according to a practice of residential sedentarism (for concept definitions see chapter 2.3). Intuitively I find it difficult however to believe that several families would have maintained a collective sedentary life at a site like Bäckishällorna, at least not during the island phase. I find it therefore more likely that the collective sealing practices at these sites were accompanied by a habitation practice of collective residential mobility. This would mean that large groups of families inhabited the sites only seasonally. It can furthermore not be excluded that some of the sites transformed into farm sites at a later stage.

Sealing stations situated in the inner archipelago seems to have been particularly well suited for net-catching of seals. One historically recorded sealing method is net-catching of ringed seals, which was preferably conducted in the late autumn in more sheltered parts of the archipelago (Edlund 2000:61, 69). During the winter the ringed seal live in areas of land-fast ice, The pups are born in lairs in March-April. The ringed seal is solitary and it remains fairly stationary, but it is difficult to catch with harpoons or spears. In other seasons of the year the species lives not only in open waters, but also near the coast in shallow bays and even up in the rivers (Ukkonen 2002:190). Because of the Iron Age disappearance of the Baltic harp seal, no historical or ethnographic sources exist for how this species was exploited in the Baltic. Net-catching of migrating flocks of harp seal could theoretically have been undertaken in strategically situated bays or straits that could easily be cut off by long chains of nets. Net catching of ringed seals (and possibly also of harp seals) in the autumn would have been optimal for blubber production because it is the season when the seals contain the largest amount of fat. Large-scale Late Neolithic net catching is proven by the net find from
Lähdepuro in Pori, Satakunta (NM 12715, 12915). More than 800 bark floats were found together with net fragments of bast fibre. The find is dated to 2650-1950 BC (3850±110 BP, I-3234), when the site was situated at approximately 10 metre depth in the sea. Bones from harp seals were found at the same spot. The net lacked weights, which is taken as a further support of its use for sealing. Obviously a large number of big nets had become intermixed and been catastrophically lost at the site. Nets measuring up to hundreds of metres length sunk at Lähdepuro (Ylimauu et al. 1999:139). This clearly proves that net sealing must have taken place as a large-scale collective work task and that it was aided by an expensive technology.

The general impression is that pelagic areas became increasingly used for sealing during the Early Metal Period. This is marked by the Early Bronze Age disappearance of the sites marked by large dwelling constructions in the inner archipelago, and the relatively numerous occurrence of Pre-Roman sites that are marked by small quadrangular hut foundations. The common theme for the latter sites appears to be their localisation to the most extreme pelagic islands in the sea. Excavations and confirmed dates are unfortunately lacking for the time prior to the Pre-Roman Iron Age. The altitude and the topography of several sites nevertheless indicate quite clearly that this type of sites were in use in Southern Ostrobothnia well prior to the Pre-Roman Iron Age. At Otterböte in the Åland archipelago a similar site has been confirmed as a Mid-Bronze Age pelagian sealing station (Gustavsson 1997). In Southern Ostrobothnia the dominance of seal bone in Pre-Roman quadrangular hut foundations shows clearly that they were mainly used in connection to sealing activities (see chapter 5.1.5).

The pelagic hut sites were most certainly used by specialised sealing teams only during certain seasons of the year. We are thus dealing with hunting stations and habitation practices of logistic mobility (for concept definition see chapter 2.3.2). The residential unit of the (Late) Bronze Age was not the collective sealing camp (as suggested in the Late Neolithic cases with large rectangular dwelling structures), but more likely the single farm or the agrarian hamlet (see chapter 4.6.3). Late Bronze Age sealing was therefore probably conducted according to a logistic mobility practice with specialised hunting stations in the outermost archipelago. Even if this type of sealing appears to have existed already in the late Neolithic, its role seems to become more accentuated over time. The sealing teams consisted most likely of men that were assembled from several coastal farms and that conducted sealing according to logistic mobility practices (see also chapter 5.1.5). The disappearance of the large rectangular dwelling structures could thus at least partly depend on the rise of the agricultural farm as the main residential unit of settlement. This change may have increased the spatial, social and even the ideological distance between sealing practices and residential habitation practices. These two types of practices would now increasingly have become separated into different fields of social interaction.

A tempting interpretation when considering the geographic location, the construction of the pelagic huts and their lack of harbours would be that they were mainly utilised for early spring sealing on the sea ice. One historically important pelagian sealing practice was the hunting of Grey seals (*Halichoerus grypus*) that was performed with harpoons in pelagic areas on sea-ice during the early spring. But as shown by Ukkonen (Ukkonen 2002:199), this species was probably very rare in the Northern Baltic during the Bronze Age (with some rare exceptions). Stations aimed for large scale pelagic sealing would, in the absence of grey seals, mainly point towards ice hunting of the harp seal, due to its gregarious and pelagic behaviour. From the Early Neolithic there is good evidence of pelagic harp seal hunting with harpoons of bone. A skeleton of a Harp seal (*Pagophilus groenlandica*) with a harpoon between the ribs was discovered in Närpes in 1935 (NM 10087, Ukkonen 2002). The skeleton is radiocarbon dated to 4940-4550 cal BC (5890±70 BP, Hela-441). The killing must have been conducted in
early spring when the seal was so meagre that it sunk to the sea bed, which was situated at 40 metre depth at the time. The hunting probably took place on ice about 20 kilometres from the mainland. Another bone harpoon found in the current sea bed outside Kristinestad is dated to 3100-2660 BC (4290±70 BP, Hela-94). The harp seal is pelagic, gregarious and highly migratory. During the winter it is dependent on pack ice. The pups are born in February-March among hummocks of ice on floating ice sheets (Ukkonen 2002:190). Because this strategy would point towards the early spring season, it would not be the most optimal solution for blubber production, but perhaps rather for the purpose of obtaining meat and skins.

It is furthermore possible that pelagic sealing is archaeologically overrepresented in the number of recorded sealing stations. Bronze Age sealing activities performed closer to the sedentary farms in the inner archipelago did perhaps generally not require an establishment of sealing stations, at least not as often as the remote sealing activities did. It is also possible that when such stations were established, they did perhaps not require so robust hut structures as the pelagian sites, because sealing in the inner archipelago took place in more sheltered locations and during a warmer season. There would also have been an easier access to firewood when compared to the outermost archipelago. One site that may belong to this category is the open settlement surface at Viirikallio in Laihia that dates roughly to the Bronze Age-Iron Age transition (Miettinen 1998:87ff). The numerous cooking-pits at Viirikallio suggests that blubber processing could have taken place at this type of sites, where firewood was plenty and where adjacent straights and bays easily could be cut off by sealing nets in the autumn.

Amongst the discussed sealing sites it is thus possible to make a rough division into sheltered sites in the inner archipelago and into more exposed sites in the pelagic areas. The former could hypothetically be autumn camps for net catching, mainly intended to obtain blubber from ringed seals and possibly also from harp seals. The latter could be mainly springtime stations for ice-hunting that were largely aimed to obtain meat and skins from harp seals. The reality may however have been considerably more complicated. Seals comprised, for instance, only one of the available maritime resources and sealing stations were probably not solely used for sealing. As will be shown in chapter 5.1.5., the Pre-Roman sites indicate that fishing and fowling activities also took place at the hut sites in the outer archipelago. Another problem is that bones from ringed seals dominate in the analysed cases (with one exception) even if harp seals should have been the most logical alternative, as discussed above (see chapter 5.1.5.). It must be reminded that there are still very few cases of analysed Bronze Age refuse fauna that can provide some light on the maritime resource utilisation in the region and species specific seal bone determinations lack completely. The Bronze Age farm sites in Jäthinhaudanmaa in Laihia contained bones of pike-perch, common whitefish and perch (Stavrum & Storå 2008b), but these fish species may have been acquired closer to the coast or even in lakes.

Long-term changes that are indicated in the maritime resource utilisation from the Late Neolithic to the Early Iron Age can theoretically also relate to natural changes in the sea. The salinity decline and the process of cooling that started in the Mid Neolithic would have continued until the Mid and Late Bronze Age (see chapter 3.4.1). This process would logically have increased the annual ice cover of the sea, which could have made spring time ice-hunting more challenging. Lower salinity would also have contributed to poorer biological production in the sea and perhaps to a decrease in the number of marine species. The formerly large cod population of the Gulf of Bothnia as well as the large-sized Baltic herring would have disappeared due to the lower salinity (Ylimaunu et al. 1999:149). These changes would
naturally also have affected the seal populations. A gradual drop in the seal stock is therefore plausible. It seems possible to assume that the above mentioned trends in maritime ice conditions and productivity started to reverse at some point roughly during the Late Bronze Age, due to the new trend of gradual salinity increase and due to the end of long-term climatic cooling.

An increase in salinity would have increased the productivity of the sea, which would have been favourable for the seals. The change was likely to be good for the seals, but how it affected sealing is more difficult to estimate. The frequent short-term climatic fluctuations during the Pre-Roman Iron Age (see chapter 3.4.1) probably caused fluctuations in the annual ice cover; this fluctuation could possibly distort any attempts to relate trends in the archaeological material with the trend of increasing salinity.

4.3. The spatiality of coastal settlements and mortuary monuments

Bronze Age cairns can be encountered in very different constellations and at very different topographical locations, sometimes as single cairns on top of rocks, sometimes as dense cemeteries in sandy slopes. But how should these differences be understood? Our understanding of these differences in location and composition is vital for our ability to read the cultural landscape of the Bronze Age. In this chapter an attempt is made to conceptualise some of the important qualities that appear to be present in the spatial orientation and distribution patterns of coastal Bronze Age settlements and burial cairns. An attempt is also made to conceptualise some of the temporal qualities and time-scales that can be linked to the spatiality of the cultural landscape of the Bronze Age.

4.3.1. Settlement orientation and cairn localisation practices

The Bronze Age is clearly manifested in the current landscape due to the hundreds of burial cairns of a particular Bronze Age character that have been built along the Ostrobothnian coast. Here I will not discuss why or how the Bronze Age round cairn tradition emerged. This issue is instead addressed later in the context of external contacts and long-distance networks (see chapter 4.10.3). Here I will rather try to provide some insights in how cairn distribution patterns could be spatially conceptualised and how they might reveal alternative ecological orientations of coastal sedentary settlements, and how cairns could be localised according to various practices. A heuristic understanding of these issues is important for our ability to decode settlement structures from the spatial distributions of cairns.

The spatial cairn distribution pattern for the Bronze Age and its relation to the contemporary sedentary settlement seems initially to be highly varied and difficult to comprehend, especially when compared to the relatively straightforward and well known Middle Iron Age cemetery and settlement distribution pattern. In South Western Finland a direct relationship between Bronze Age cairns and settlements has turned out to be difficult to confirm. Graves are furthermore said to reflect religious beliefs, ideology and social strategies rather than the actual society and settlement (Asplund 2008:30). There are large apparent deviations between different coastal parts of Finland. Salo has established direct links between farm sites and cairns at several locations in the Kokemäenjoki estuary area and he estimates that as many as 95% of the cairns in central Satakunta were built close to the farms (Salo 1981:128, 341).
If we can decode some of the practices behind cairn localisation in Southern Ostrobothnia, we would be able to understand their spatial relationships to settlements and important resource areas or vice versa. My personal general impression is that at least some parts of Southern Ostrobothnia largely had the same cairn localisation practices that can be discerned in central Satakunta, on the other hand it also seems evident that many cairns were dispersed from the settlements in Southern Ostrobothnia.

First I will take a look at the overall regional location of the settlement districts. Unto Salo has pointed out that the Bronze Age settlement districts in coastal Satakunta reflect geographically different characters (Salo 1981:331ff and appendix map). In accordance with Salo’s description, the Rauma and the Noormarkku settlement districts demonstrate in my view a location to an outer coastal zone. The settlement districts near the Kokemäki river estuary demonstrate in turn a location to the inner coastal zone, at the innermost parts of large and shallow bays. These differences arguably also reflect some community-level differences in the composition of the subsistence practices.

Regional maps of Early Metal Period and Middle Iron Age cairn distributions in South Ostrobothnia hint at major differences of settlement location on a regional level. Baudou noted that the bulk of the South Ostrobothnian settlement during the Late Bronze Age and the Pre Roman Iron Age was situated in the outer coastal zone. During the Roman Iron Age the centre of gravity of the settlement was located in the inner coastal zone, but also overlapping partly into the river valley zone (Baudou 1991:164,175). The Middle Iron Age settlement appears furthermore to have been structured according to some kind of a regional centralisation process, which created a clearly defined regional central area and a large surrounding periphery (Herrgård & Holmblad 2005:140). The core of the Middle Iron Age settlement was located to the regionally optimal area from an agropastoralist subsistence perspective. The Middle Iron Age settlement districts were located near the estuary of the largest river of Southern Ostrobothnia, the Kyrö River. This area also possessed some of the largest (and shallowest) sheltered bays. This area should therefore have harboured large tracts of natural water meadows, but that area particularly should also have been relatively safe from surprise attacks from overseas.

The Bronze Age settlement districts in Southern Ostrobothnia are more dispersed and they form a relatively even chain of settlement districts along the coast. Regional centralisation can not be discerned, even if the Laihia settlement district appears to be larger and denser than the other settlement districts. A general regional assessment is that the Bronze Age settlement districts do not show concentrations to areas with inner coastal qualities that are comparable to the conditions in the Middle Iron Age settlement districts. The large Bronze Age bay areas at the estuaries of the Kyrö and the Lapua Rivers as well as the river valleys do not show any signs of Bronze Age settlement clusters. These areas are actually quite empty from settlement indications. The Early Metal Period settlement districts in South Ostrobothnia seem instead to have been regionally located according to principles that enabled them an easy access to maritime and especially to pelagic resources (see also chapter 4.6.4).

I will not plunge into an exhaustive quantitative study on the totality of spatial variation among Bronze Age coastal settlements, but instead I will deal with two opposing examples of well articulated coastal settlement orientation that may provide a more qualitative understanding of two radically differing alternatives. I will present the cases heuristically as two opposing alternatives, but the examples should perhaps not be seen as two ideal types of settlement, because this would imply a strict dualism. The two cases are in reality perhaps
merely the end points in a continuum of variation. I name the opposing models as sea orientation and valley orientation.

The spatial pattern of cairns around Storstenrösback in Pörtom functions as a case that exemplifies a Sea oriented settlement. The spatial pattern of cairns in the Rieskaronmäki area in Nakkila functions in turn as a case for a valley oriented settlement (see adjacent maps).

In the Rieskaronmäki area we have a cluster of three closely situated cemeteries with settlement remains from the Late Bronze Age (see chapter 4.6.3 and 4.6.7 for a closer description on these sites). This core area was situated in the innermost part of a diminishing shallow bay surrounded by gently sloping shore zones. The area should have been largely of valley character with water meadows. There is furthermore an outer circle of single cairns or small groups of cairns that are situated on hilltops and on tips of capes. The circle of single cairns obviously delimits and frames the area of valley character that surrounds the settlement core.

The Rieskaronmäki case with the shoreline at 900 BC, settlement sites (triangles) and cairn sites (circles). Base map © National Land Survey of Finland. licence No. 051/MML/10. Potential meadows are marked.
Storstenrösbäck is a cairn cemetery with several monumental cairns of Bronze Age type. The cemetery is situated on the northernmost tip of the Raineäsen ridge, which would have formed a narrow cape during the Bronze Age. As already mentioned in the previous chapter, a bronze sword and some bronze rings are said to have been found at Storstenrösbäck by grave looters in the 19th century. The topography of the ancient cape suggests an earliest date of establishment around 1300 BC. The cape lost its shore contact around 600 BC. The cemetery must have had a very maritime location during the time of establishment, as the cape protruded into the sea in an area with a relatively straight and unsheltered open coastline. Another cairn cemetery is situated at Småstenrösbäck, on the highest point of the Raineäsen ridge. This cemetery is much less monumental in appearance, except its large central cairn (see Miettinen 1980:50f, 60ff). The Småstenrösbäck site was not in shore contact during the Bronze Age. During the Late Bronze Age the site was probably situated on a pathway that ran along the Raineäsen ridge. A pair of settlement surfaces has been registered near Småstenrösbäck. One of the sites (officially named as Raineäsen) has provided a Kiukainen culture find material, but also some textile ware and some coastal Bronze Age ware. There are unfortunately no radiocarbon dates, but the site is generally dated to the transition between the Late Neolithic and the Bronze Age. What I find particularly interesting is the distribution of single cairns or small cairn groups along the coast and on some islands. There is a regular row of single cairns that seems to extend from the Storstenrösbäck cemetery, both to the south and, particularly, to the north. As the single cairns are situated at almost exactly the same altitude and at regular intervals, I view them to be part of a fairly synchronous attempt to mark a large coastal area with cairns. The single cairns are mostly situated on small capes at places where local sedentary settlement is unlikely. As their regular distribution apparently extends from Storstenrösbäck, which functions as their focal point, I assume that all outspread cairns are created by the settlement unit at Storstenrösbäck. We would thus be dealing with a settlement unit that almost exclusively builds its cairns towards the open sea and that possesses a very large sea territory. The Storstenrösbäck cemetery is situated near the only sheltered bay in this entire coastal area, which indicates that the sedentary settlement indeed was situated in the vicinity of Storstenrösbäck.

Except settlement ecological orientation, both given examples inform us also on cairn localisation practices. Despite the different orientations of the settlements and the different spatial scopes or scales of the territories, the cairn localisation patterns in both examples do exhibit some structural similarities, which apparently convey some of the complementary roles of the burial cairns. Both cases exhibit a core area with cairn cemeteries and settlement remains. Both cases also exhibits single cairns or small groups of cairns that are situated on top of heights or promontories. There are large differences in the sizes of the territories and in their orientations, but there is a structural similarity that consists of cores with central (farm) cemeteries and outspread cairns that obviously mark the extent of the most valued territories of the settlement units: the valley in the Rieskaronmäki case and the sea in the case of Storstenrösbäcken.

As the previously mentioned conceptualisations of settlement districts and settlement units are largely based on the cairn distributions (especially in the case where we lack knowledge of the dwelling sites), it is self-evident also that the individual cairns can be divided according to sea and valley orientation, which would resemble Tuovinen’s division of the cairns in the Åboland archipelago into land and sea oriented cairns, see Tuovinen 2002:242). On this particular cairn level I find it however more fruitful to classify the cairns from the perspective
of their spatial relation to the settlement. It is possible to talk about two alternative or complementary cairn localisation strategies, which seems to have been in use throughout the Bronze Age and even later. One category consists of cairns or cairn sites that were situated close to settlements, and the other category consists of cairns that were placed distantly in relation to the settlements.

The Storstenrössbacken case with the shoreline at 900 BC. Cairn sites (circles), dwelling sites (triangles) and cooking-pits (squares). Base map © National Land Survey of Finland. licence No. 051/MML/10. Potential meadows have been marked.

Some cairn sites were situated in such locations that it seems improbable or impossible to imagine a local permanent habitation in their vicinity. A portion of the cairns has undoubtedly been outspread to places that were more or less peripheral to the contemporary sedentary settlement, both at land and at sea. This is a common feature both in Finland and in Scandinavia. In Southern Ostrobothnia, as in other regions, these cairn sites appear usually to consist of single cairns or of small groups of cairns. They were often built in barren maritime environments in exposed areas, often situated on prominent elevated places on ancient islands, at capes or inlets. Sometimes the cairns were situated on ridges in inland locations. (Miettinen 1998:61,66). These places may have functioned as viewpoints, fairways, pathways, hunting stations and borders. A general perception is that this localisation practice would have been most common in the Early Bronze Age and that it diminished gradually in favour of the farm localisation practice (Edgren 1998:119). The dispersed cairns marked perhaps the movement rights and utilisation rights to extensively exploited resources in maritime and
hinterland areas. In Southern Ostrobothnia the cairns outspread towards the maritime environments may even have been used as concession marks to the future needs of the family, when the farm itself was eventually moved down to newly emerged lands. It has also been suggested that big cairns built far from the settlements could have been public monuments that symbolized entire communities (Asplund 2008:256), or that they were linked to special cosmological perceptions or functioned as markers for travellers (Nord 2009:229, 231).

The other category of cairns consists of cairns that were built in close proximity of sedentary settlements. Cairns built close to settlements can be found in lightly sloping moraine grounds close to a clayey plain or valley. They were situated at the farms near sheltered bays or meadows (see chapter 4.6, also Salo 1981:127f, 341f). As already mentioned, this trend is generally thought to have grown in importance during the Bronze Age. Salo suggests however the differences in cairn localisation are more subregional than chronological in Satakunta. Farm cairns would have already been common in central Satakunta at the beginning of the Bronze Age (Salo 1981:127f). These graves appear also to be more densely clustered. The farm cairn localisation practice led to the creation of cemeteries, which emerge during the Late Bronze Age at the latest. I believe that there is a strong connection between territoriality and the distribution patterns of Bronze Age cairns. As Asplund has put it;

"The introduction of farming and intensified trade during the Late Neolithic and the Bronze Age probably promoted the change of attitudes towards land and resources. The former idea of human beings dedicated to land and sea may have begun to change towards an idea of land and sea belonging to people, i.e. land ownership or territorial dominion. The increasing impact of farming may have been most significant, leading to changes in attitudes towards the landscape, as human beings began to shape their environment to a greater degree than before" (Asplund 2008:88).

This sounds as a good societal environment for the establishment of social Houses (maisons) as defined in chapter 2.2.2. The burial cairns, and especially the establishment of cairn cemeteries, can probably be linked to the attempts of the Houses to anchor their eternity in the landscape and to mark their property rights. Particularly the farm cemeteries made ancestors a prominent feature in the daily domestic life. Farm cemeteries can thus be regarded as strong manifestations of House biographies.

Settlement districts could thus be regionally either located into the outer coastal zone, to the inner coastal zone (or to the river valley zone). They contained settlement units that were locally either sea or valley oriented. Each settlement unit was in turn marked by cairns that were either farm-localised (often in cemeteries) or outspread around the territory of the unit (often as single cairns). This is of course a rough generalisation, and it focuses on the end points of continuaums. Another problem to this description is that it does not contain any variables of temporality and change. I however believe that it provides a pre-understanding that can guide the interpretation work on diverse settlement districts, settlement units and individual cairn sites. This can still be complicated because all the above mentioned variables come with a temporal dimension. The Bronze Age settlement units need to be assessed case by case.

It is often stressed that the shore displacement and the gradual settlement relocation have caused chronologically "clean" and short-lived settlement phases. This is generally true and it often makes the archaeological settlement data easier to comprehend in Southern Ostrobothnia. But on the other hand the same processes may over time also contribute to a blurring of the settlement picture at some places. Hypothetically an originally sea oriented settlement pattern may later have become mixed with a valley oriented settlement pattern as the land was raised. Maritime-focused outspread cairns may have become integrated into farm
cemeteries in valley oriented settlements at a later stage. The above mentioned cases were chosen mainly because I believe that they exhibit relatively clear and unmixed pictures.

Another temporal aspect is the longevity of the farms. The farmstead excavations performed at Kalaschabrännan in Malax and at Pörnullbacken in Vörå show clearly that house replacement practices were common during the Middle Iron Age in Southern Ostrobothnia. Kalaschabrännan revealed a pattern of three successive superimposed building phases where exact house location and house orientation was maintained for generations (Liedgren 1991). Pörnullbacken showed a farm site continuity that lasted for about 800 years and the number of more or less superimposed building phases appeared as almost countless (Wennerberg 2002).

But what was the case during the Bronze Age? As especially the Alatalo case seems to show, at least some of the farms seem to have been committed to house replacement practices during the Late Bronze Age. Salo has noted that some farm sites remained in use for a long time in Satakunta during the Bronze Age (Salo 1981:339). The presence of farm cemeteries is a further indication for an emphasis on farm or House longevity and house replacement practices in Ostrobothnia. This practice should have provided farms a continuity that lasted at least for some generations. This is however only one side of the coin, as farms were eventually relocated in a long-term perspective. In the long-term we can discern a relocation of farms which was largely motivated or directed by the land-uplift related processes.

4.3.2. Spatiality and time-scales in uplift coastscapes

The spatiality of the coastal settlements and cairns can be regarded as a quality that is inherently linked to temporality and landscape change. As already indicated in the previous chapter, at least a part of the population in Bronze Age South Ostrobothnia appears to have been committed to house replacement practices and to farm cemetery practices. Both practices should have provided the Bronze Age individuals a sense of stability and continuity. In reality there was also a long-term gradual process of farm relocation and slightly changing monument building practices, which are archaeologically manifested as signs of long-term change and discontinuity. A way to try to understand the different temporalities in coastal Ostrobothnia is to try to link different human, farm and community related biographies to the land-uplift related processes. The spatiality of the cultural landscape of the Bronze Age can according to my view be related to diverse overlapping and parallel time-scales or time-cycles. I will make an attempt to conceptualise three time cycles that I consider relevant for the uplift coastscape in South Ostrobothnia, but first some theoretical notions on temporality, landscape and settlement perceptions are presented that help to present my line of thought.

There is a chronological sedimentation of myths in the landscape and they can, in different ways, be used and changed by the humans. The myths are fixed to different points in the landscape, for instance to monuments. Such sites of memory constitute a media for the history and the moral principals of the society, which are used for the formulation of the identities of the humans and for the structure of the society (Knapp & Ashmore 1999:13f). Landscapes contribute thus to the creation as well as the maintenance of memories, identities and social structures (Tilley 1994:10)

The specific temporalities were different in various human fields, such as domestic life and mortuary practices. The life-cycles of the residential buildings could be formed according to culturally specific ideas on how such biographies should proceed. The building rhythms of residential buildings could also relate to phases in human life-cycles (Gerritsen 2008:158f). House relocation and house replacement practices were grounded in different sets of
temporalities that provided means to create or to deny connections between past, present and future. Relocation practices established discontinuity, emphasised renewal and denounced memory. Moving to a new place was a strong mark of a new phase in life with new identities (Gerritsen 2008:158). House relocation practices could also result in landscape perceptions where people remembered past house locations and where they recognized places where future generations would build their houses (Gerritsen 2008:156). House replacement practices emphasised continuity, durability, memories and site-bound identities as well as lasting social entities. Rebuilding in the same farmyard could be a form of commemoration that also contributed to the biography of the home (Gerritsen 2008:157).

Rönnby suggests that coastal inhabitants have been affected by three general long-term structures called “maritime durees”. These partly overlapping and interdependent durees consist of the exploitation of marine resources, communication over water and the mental presence of the sea (Rönnby 2007). Related to the latter are the twin world perceptions of opposing sea and land that have been noted in maritime societies and especially in societies with mixed subsistence practices where the fisher also was a farmer (Westerdahl 2005:3). The sea and its symbolic components functioned as reference for land related cosmologies. The symbolic components of the sea were the opposites of land and they defined and delimited land (Westerdahl 2005:18). The boat was thus often regarded as a liminal agent. Strong taboos were maintained on board boats. Such taboos surrounding things to name or to take on board usually concerned women, children, agricultural implements or produce, clergymen, land mammals, domestic animals and stone. For instance in 17th century Ostrobothnia stones were called straws (halman, Westerdahl 2005:3). It could furthermore be added that it is generally acknowledged that sea was probably a very important element in the Bronze Age cosmology (Asplund 2008:88).
But what happens in a landscape where the liminal border between the sea and the land is constantly moving for the benefit of the land, where humans can experience the change within their lifetime and where originally shore bound mortuary monuments became distanced from the shoreline within few generations? Some historic-ethnographic sources illustrate how humans interacted in response to the changing coastal landscape. The shore displacement is described in documentary sources at least from the 17th century onwards. Court protocols from the 17th century describe for instance how farmers quarrelled over recently emerged water meadows in Vörä, and that the farmers wanted the court to decide about the ownership of the newly emerged lands (Smeds 1935:24). Another 17th century source that deals with ancient monuments in Southern Ostrobothnia reveals that farmers believed that large (Bronze Age) cairns were ancient sea marks, no matter that the cairns were situated in forests even tens of kilometres from the coast. They even thought that there was an ancient harbour at 100 metre altitude at Bötombergen in Lappfjärd (Edgren 1995:55f). These examples illustrates in my view some of the very essence of the various temporalities that coexisted in relation to the uplift coastscape. The first example shows how shore displacement had instant short-term economic consequences for people, and that it was a potential source for territorial conflicts. The other examples show how shore displacement could affect long-term landscape perceptions and elements of distant memory.

Regardless of whether the latter examples preserved some kind of real memories or if they were purely later inventions, they show that coastal people had an ability to project images of very ancient seascapes on inland topographies. One of the examples shows that cairns could apparently contribute to the remembrance or to the recreation of ancient seascapes. It is also common in Ostrobothnia today that old maritime place names preserve memories of ancient seascapes in inland locations. This would further strengthen the case of coastal people’s ability and willingness to "read" inland topographies as ancient seascapes. Similar long-term landscape perceptions may very well have been present also in Bronze Age South Ostrobothnia.

My impression is that the cairn building activity in Finland was generally stronger in areas with a rapid shore displacement. When comparing the southern coast of Finland to the western coast, the number of cairns is considerably higher along the western coast (see adjacent map). The Turku area especially has been mentioned as an area where coastal cairns are relatively rare (Asplund 2008:82). Interestingly the Turku area has been found to possess unusually long settlement site continuities, from the Late Neolithic to the Pre-Roman Iron Age, apparently partly due to a small level of shore-displacement (see chapter 2.3). Okkonen has furthermore noted that single cairns appear to have been “recreated” with regular altitudinal (and temporal) distances in some specific locations along the Ostrobothnian coast. A new cairn seems to have been built when the previously built cairn became too distanced from the shore-line (Okkonen 2001:27f). Even if this comparison may be simplistic, it appears to strengthen the idea that coastal cairns were territorial markers. The need to negotiate territoriality and to reproduce territorial markers was perhaps not so accentuated in relatively stable landscapes where old cairns could do well as territorial markers for longer times. Coastscapes with rapid shore displacement on the other hand both required and enabled constant renegotiations of territoriality and landscape historicity.

Finally I will make an attempt to conceptualise the temporality in coastal Ostrobothnia by presenting three different overlapping time-cycles. The time cycles are defined as bottom-up stages on the basis of human perception, coastal habitation and on different scales of change. The years indicated in the time spans are only to be understood as illustrations that stand in relation to each other.
Individual time (50 years): Contains individual human biographies, with observed micro changes that were recognized during a human life span. Microchanges took place in the viewshed, the logistic access, and began to affect the ecological and the economical conditions. The economic conditions may have deteriorated or improved and occasionally have lead to conflicts. The individual time scale is archaeologically relatively invisible. It is mostly guided by pragmatic considerations of daily life that can be extracted from the biography of the farm.

Family/Farm time (250 years): Contains the biographies of the farms, including the time span from farm site establishment to farm site desertion. Large local changes take place in the ecological and economical conditions. Settlements may have been forced to relocate due to ecological, economical and logistic factors, but they have perhaps also been motivated to relocate in the context of a culturally recognized tradition, as a "social reproduction of relocation”. The family/farm stage is archeologically visible at each settlement site and it is mostly guided by settlement archaeology at the individual site.

Lineage/Regional time (500 years): Contains the biographies of entire communities and polities. Major, even total, shifts in settlement districts or polities take place. Temporally zoned landscapes are created. An understanding of long-term socio-symbolic meaning of coastal landscapes in Ostrobothnia can be approached through the basic structure of the landscape itself with a living settlement close to the coast and zones consisting of abandoned former settlement areas with visible burial monuments. Altitudinal spatial zones contain remains from distinct temporal phases of material culture and monuments. The past may become negotiated through myths that centre on” fossilised” abandoned zones. The lineage/regional stage is guided by the large regional picture of settlement archaeology coupled with landscape archaeology.

4.4. The Laihia settlement district

In this chapter an attempt is made to characterise one chosen Bronze Age settlement district. Qualities that are discussed relate to its historical development, to its palaeodemography and to some spatial aspects of the habitation practices. This chapter is largely intended to function as a preunderstanding to the following subchapters that focus on one particular settlement unit in Laihia.

Several attempts have been made to define the extent of Bronze Age settlement areas and territoriality on various local and subregional levels on the basis of cairn distribution patterns in the northern Baltic area. Unto Salo has discerned Bronze Age "provinces" in Satakunta which correspond (almost) to settlement districts (Salo 1981) and Evert Baudou has discussed "settlement units” in coastal Ångermanland, which would have been populated by extended families (Baudou 1968). Similar attempts have as far as I can judge not been conducted in South Ostrobothnia (at least not in a systematic fashion) in order to explicitly identify Bronze Age communities or settlement units.
The Mid-Bronze Age shoreline and the distribution of cairn sites (circles) that are labeled as Bronze Age sites by the NBA. Note the largest cairn concentration in the Laihia area.

The map of the regional distribution of coastal cairns that can be regarded to be of Bronze Age date shows a number of subregional clusters. Such clusters are situated in Kälviä, Esse, Jeppo, Vörä, Laihia, Pörtom, Tjöck and Lappfjärd. The clusters can be interpreted as signs for separate Bronze Age settlement districts or communities along the South Ostrobothnian coast. Judging by the number and the density of cairns, it seems apparent that the most prominent Ostrobothnian settlement district was situated in the current Laihia-area. The relative importance of the Laihia settlement district in Bronze Age Ostrobothnia is also underlined by the numerous occurrence of cooking pits in this area and by the relative abundance of Late Bronze Age lithic shaft-hole axes that have been discovered as stray finds (even if survey intensity affects the distribution of the former and land-use affects the distribution of the latter).

When comparing the regional spatial location of the Laihia settlement district with the paleogeography of the coast and with the settlement districts that Unto Salo has described in Satakunta (see Salo 1981:331ff and appendix map), the overall impression is that the Laihia
district had a macrogeographical positioning to the outer coastal zone, more or less throughout the Bronze Age, but especially during the Early Bronze Age. The land-uplift leads over time to an increasing land area in Laihia. The settlement district was in the Late Bronze Age situated in a more sheltered coastal zone that contained several small bays and a relatively large archipelago that surrounded the settlement district. The cairn distribution suggests that the Laihia Bronze Age settlement district comprised an area of 20x5 kilometres. As examples will show in the following chapters, the individual settlement units were not necessarily particularly sea oriented despite the macrogeographical positioning of the settlement district to the outer coastal zone.

4.4.1. The Early Bronze Age in Laihia

The vertical distribution of cairns in Laihia shows that the continuous frequent presence of cairns starts at the 41 metre altitude mark, and the trend continues down below the 20 metre altitude (see adjacent diagram). The cairns around the 40 metre altitude belong to cairn concentrations that are situated just above the 35 metre shoreline (see discussion below). Round coastal cairns were apparently built regularly in Laihia at least from the beginning of the Bronze Age onwards. The registered cairn sites that are situated at higher elevations exhibit a peak at 60-65 metre elevation, which may be comparable to the Middle Neolithic cairn phase that has been observed by Okkonen in North and Central Ostrobothnia (Okkonen 2003:219f). The upper Neolithic cairn zone and the lower Bronze Age cairn zone are separated by a Late Neolithic shore zone with few cairns. The upper cairn peak is still very modest compared with the large amount of cairns in the Bronze Age cairn zone (NBA register, Miettinen 1998:Liite 1A).
There are some indications of a settlement continuity from the Late Neolithic to the Bronze Age in Laihia. In 1991 a largely destroyed settlement surface was partly excavated at Kurunkangas at the 37-40 metre elevation (NBA 399010135), which would correspond to an earliest shore-level date to 1800-1600 BC. The Kurunkangas site is situated near the base of the steep sandy southward slope of the Kurunkangas ridge. The investigations revealed worked quartz and pottery that closely resembles Kiukainen ware. At the very end of the Neolithic, the site was situated at the shore of a strait or a bay. The closest cairns of Bronze Age type are situated about 500 metres from the dwelling site (Miettinen 1998:48). In 2009, the author found an additional settlement surface at Kurunsaari, 700 metres to the west from Kurunkangas and only some 80 metres from the closest cairn. The Kurunsaari settlement site is situated on a hilltop at 40 metre altitude (Kurunsaari 2, NBA 1000015011). The surface of the hilltop appears to be stone cleared and even partly levelled by humans. The Kurunsaari finds (that were noted in disturbances in the ground surface) consist of burnt bone and worked quartz. No excavations have been conducted at the site.

If we study the cairn distribution pattern of the Kurunkangas-Kurunsaari area in relation to the 35 metre elevation (which corresponds to a shoreline at 1600-1500 BC) we can observe that there is a marked cairn concentration close to Kurunsaari, on an isthmus between two coastal lagoons (see adjacent map). The Kurunsaari settlement site would have been located close to a small bay at the outlet of the Sahanluoma spring. The rest of the cairns are spread more evenly (often as single cairns) around the shores of the adjacent coastal lagoons. The cairns that are situated in the vicinity of Kurunsaari and Kurunkangas are situated at 42-37 metre elevation. The overall distribution of the cairns is quite scattered and the cairns appear as single monuments and as small groups of monuments, but as already noted, there is a denser cluster of single cairns and small cairn groups to the northwest of Kurunsaari. Most of the cairns are placed on hilltops and on tips of promontories, often on bedrock. Interestingly a relatively large portion of the cairns are long-cairns. The long-cairn (measuring 14x4 metres) that was excavated by Meinander at Annikkalankangas (NBA 399010054) can be included in this same cluster of long-cairns (see Meinander 1944:40f, Miettinen 1998:78f). Even if the Annikkalankangas long-cairn is 1.5 kilometres from the Kurunsaari settlement site, its position appears to have been visible across the western lagoon. This appears actually to have been the case for most of the cairns around the lagoons. Okkonen has dated the coastal long-cairns of Northern and Central Ostrobothnia to the end of the Late Neolithic (or Bronze Age period I, see chapter 3.5.3). The altitudes of the long-cairns around Kurunsaari-Kurunkangas correspond very well to the dates given by Okkonen.

The distribution patterns and the topography of the cairns and the settlement surfaces (one with Kiukainen ware), as well as the frequent existence of long-cairns in the Kurunsaari-Kurunkangas area suggests that we are dealing here with at least one settlement unit from the Late-Neolithic-Bronze Age transition. This area seems thus to create a bridge of settlement district continuity from the Late Neolithic to the Early Bronze Age. The interpretations concerning the settlement in the Kurunkangas-Kurunsaari area are hampered due to the lack of exact dates and the small scale of the investigations. It is thus difficult to establish the exact character of the habitation practices, but a general consideration of the sites in the Kurunkangas-Kurunsaari area suggests practices of residential sedentarism. The observations suggest a settlement pattern where the inner archipelago or coastal settlement sites were originally surrounded by single scattered long-cairns that were situated at topographically prominent locations. The long-cairns had viewsheds over the inner archipelago; some of them appear to have possessed a visual link to the settlement sites. One hilltop long-cairn that measures 16x4 metres has a quite monumental appearance (Kurunsaari 4, NBA 1000015075). Round cairns may have been added slightly later to the surroundings of the long-cairns and
the settlement sites; this chronological interpretation is however largely affected by the general North and Central Ostrobothnian observations made by Okkonen, as there is no evident difference in vertical distribution of cairn types in this particular area. The horizontal distribution of the round cairns is however more clustered to the vicinity of the Kurunsaari settlement site than the more dispersed pattern of the long-cairns. The round cairns around Kurunsaari-Kurunkangas appear singly and in small groups. Also the round cairns are built in topographically prominent locations, but they are not especially large or particularly monumental in their size, as is often thought to be the case with Early Bronze Age cairns.

The shallow coastal lagoons with gently sloping surroundings with fine grained sediments in the Kurunsaari-Kurunkangas area would logically have been covered by productive water meadows at the Late-Neolithic-Bronze Age transition; animal husbandry should at least have been possible. Within this thesis project, a pollen analysis was made from a small bog at Kallioistenmaa. The sample was taken at 38 metre altitude, about 400 metres from the Kurunsaari dwelling site and 200 metres from the closest cairns. No cereal pollen could be detected in this analysis. There are however some possible indications of human disturbance. No radiocarbon dates have been determined for this pollen diagram, but the phase with possible human disturbance is synchronous with a meadow phase that is dominated by Cyperaceae (starrängar in the diagram) and it coincides with an increase of microscopic charcoal particles (Wallin 2009, see adjacent pollen diagram).

If we study the same altitudes (35-40 metres) in other parts of Laihia; somewhat similar cairn concentrations can be seen in the innermost parts of a couple of small bays with outlets of minor rivers or springs (Laihianjoki and Madesjoki rivers). Judging by the elevation and their similar palaeoenvironments, these cairn concentrations can hypothetically be interpreted as settlement units that were contemporary with the Kurunsaari-Kurunkangas settlement unit. Together these settlement units could have formed the original settlement district of the Laihia community at the very beginning of the Bronze Age. Forsberg has noted in Västerbotten that cairns appear to mark the innermost parts of bays in the Late Neolithic and the earliest part of the Bronze Age and that they later became more sea oriented (Forsberg 1999:283).
4.4.2. The Late Bronze Age in Laihia

In the Late Bronze Age at the latest, at least a portion of the settlement in Satakunta consisted of sedentary farms with adjacent cemeteries (Salo 1981:391ff). The farm population in Satakunta was at this point at least partly dependent on cereal cultivation and on animal husbandry for their subsistence. Recent fieldwork in Laihia (which will be discussed in further detail below) indicates that similar habitation and subsistence practices existed at least to some extent in the coastal communities in Southern Ostrobothnia. Elements of agrarian subsistence may have existed already in previous periods, but in the light of currently available data, it is only from the Bronze Age and particularly from the Late Bronze Age onwards that it appears to be fully legitimate to term the basic settlement units as farms. The Late Bronze Age in Laihia is only very shortly presented in this subchapter, because several following subchapters deal exclusively with the Late Bronze Age in this area.

The Laihia settlement district apparently moved to newly emerged grounds at lower elevations over the course of the Bronze Age. The settlement district had apparently a wider geographical span during the Late Bronze Age, and the cairn distribution pattern suggests a rise in the number of settlement units towards the later part of the Bronze Age. As Miettinen has pointed out, the Kurunkangas ridge with a Kiukainen culture site is topographically directly linked to the Late Bronze Age sites that are situated at lower altitudes in the Peltomaa area (Miettinen 1998:48, this same ridge and its extensions also had important logistic qualities that are discussed in chapter 4.6.1 and 4.7). In the Peltomaa area the Late Bronze Age cairn sites form local clusters, often in the shape of narrow and elongated 0.5-1 kilometre long cairn zones, each containing up to several dozen individual cairns and stone settings. A large portion of the cairns are arranged in dense cemeteries. The cairn zones are in turn
separated from each other by approximately one kilometre wide zones with few or no cairns. The cairn zones around Peltomaa can be interpreted as separate settlement units and (as will be demonstrated) these units probably consisted of single agrarian farmsteads and small hamlets that also can be argued to have formed social Houses (*maisons*).

4.4.3. Palaeodemographic considerations

As the previous chapters indicate, burial cairns were not built in a completely arbitrary fashion, but according to some forms of societal or ritual norms or customary standards. It should therefore at least in theory be possible to perform a tentative calculation of the possible population size and the farm number in a Bronze Age settlement district on the basis of the stock of cairns. The destruction of Bronze Age cairns (in terms of total destruction) has apparently been relatively low in Laihia. The Bronze Age cairn zone has been peripherally situated to the historical settlement in the Laihia river valley and the colonisation of the remote areas has taken place relatively late. The number and the location of the destroyed cairns can be quite reliably established from the survey records that have been compiled over several decades by the local amateur archaeologist Esko Luoma (Luoma, unpublished record of ancient sites in Laihia, filed at the NBA). Most of the destruction of Bronze Age cairns seems to relate to gravel extraction in relatively recent times. The most notable case is the nearly total eradication of the (Late Bronze Age) Murhaastonkangas cemetery (Miettinen 1998:74ff).

The Laihia settlement district has about 600 cairns and stone-settings that may be considered to be of Bronze Age date. This is the number of all cairns that are situated on or above the 30 metre altitude (corresponds to 1100 BC) and that were part of the mainland at the 27.5 metre altitude at the latest (corresponds to 900 BC). If we were to go lower, we would enter a zone with a large number of Pre-Roman cairns and stone-settings. High-elevation cairns that were distant to the shoreline at the beginning of the Bronze Age have been omitted (more than 1.5 kilometres from the 35 metre altitude). It is still quite likely that this figure contains a number of Pre-Roman (or later) and some Late Neolithic cairns, but on the other hand we might have lost some Bronze Age cairns that had been built at high elevations in the inland and perhaps some Bronze Age cairns that were built at very low altitudes at the coast at the end of the Bronze Age. It is furthermore not clear that all structures are mortuary monuments. To make a more accurate assessment a large number of cairns would need to be studied individually and there would still be margins of error. So we will for the time being hold on to the number of 600, despite all its source critical problems. These structures belong to 150 sites (with 50 meter as maximum intrasite distance between structures), with an average number of four cairns or stone-settings each. The range in the number of structures at the sites varies from 1 to 50.

One possible way of calculating the ancient population springs out from the combined number of cairns, the length of the time period (in this case 1000 years) and a theoretical mortality rate. The hypothetical annual mortality rate of 40 ‰ has often been applied for estimations of Iron Age populations that have been based on the number of burials (see for instance Katiskoski 1988). It was also applied by Seger on the Bronze Age cairns in Finland, and he reached a total coastal population of 225 persons (for more detailed description see Seger 1984:36). If we would assume that the Bronze Age cairns in Laihia contains only one burial each (600/(0.04x1000)), the resulting number from the calculation would be 15. This number is absurdly low to be an average population number for an entire Bronze Age settlement.
district, even if there were two or even three average burials in each cairn. But as a second calculation will show, the numeric value does perhaps make sense after all.

Another possible way of reaching the ancient population size is by calculating the number of buried generations of people. According to osteological analyses of Bronze Age cairn cremation burials in Satakunta, only two persons appear to have been buried in a cairn per generation in average at each respective farm (Salo 1981:419f). Almost only adults were buried in cairns, and as there appears to be an equal number of buried women and men, Salo suggests that only the couples in charge of the farms were buried in cairns (Salo 1981:420). The number of cairn burials in an area could thus correspond more or less to the number of settled generations. Several source critical issues could be inferred to these figures and interpretations, but this is probably the closest we can get at the moment. Satakunta is a neighbouring province to Southern Ostrobothnia and there are many close similarities between the provinces during the Bronze Age. The numbers obtained in Satakunta can therefore be used at least for experimental purposes for the calculation of palaeodemographical conditions in South Ostrobothnia. An average time span for a generation may be set at 25 years. For the Laihia area we would therefore end up in a calculation of: 600x25. This calculation results in a total number of 15000 Bronze Age “generation years” in the area. This number has to be divided by 1000 (the number of years of the Bronze Age) in order to receive the average number of synchronic couples during one Bronze Age generation. Again we end up with the number of 15. The first calculation resulting in a population number of 15 would make sense if we assume that the number corresponds to the average number of synchronously living cairn burial accepted couples. It can be added that the completely excavated cemetery in Rieskaronmäki contained in average approximately two burials per monument (Salo 1981:91). It does not seem far-fetched to assume that the number of synchronously living cairn burial accepted couples would correspond to the number of independent farms or households.

The above mentioned ways of calculating Bronze Age settlement and population densities can be tested further on a smaller area where we have a better control of the archaeological material. In Jätinhaudanmaa some 50 burial cairns and stone settings were produced over a time span of perhaps 500 years (see chapter 4.6). Using the first formula we reach the following calculation: 50/(0.04x500), which results in the number of 2.5. The second formula (50*25)/500, would also end up in the number of 2.5. The calculations would suggest that 2-3 farms existed synchronously in Jätinhaudanmaa during the Late Bronze Age. The archaeological fieldwork conducted in Jätinhaudanmaa does actually indicate the existence of two or three sedentary dwelling sites in the area (see chapter 4.6.3). The cairn distribution pattern in Jätinhaudanmaa furthermore exhibits three proper cemeteries (see chapter 4.6.2).

The Laihia settlement district would thus hypothetically have had 15 synchronously existing farms in average during the Bronze Age. The size of the Laihia settlement district is roughly 20x5 kilometres, giving it an area of about 100 km². 15 average farms would result in an average area of almost 7 km² for each farm. In Central Europe, Scandinavia and Finland the number of people in a family, household or farmstead during the Bronze Age or Iron Age has been estimated as falling within a range between 3 and 20. The best figure is assumed to lie around a range of 5-10 persons per household (Asplund 2008:318). If each Laihia farm had an average population of 5-10 inhabitants, the total district would have had 75-150 inhabitants and an average Bronze Age population density of 0,75-1,5 individuals/km².

In reality the number of farms was hardly static throughout the Bronze Age. A population increase took most probably place over the course of the Bronze Age, as indicated by the
cairn distribution, dated structures and artefacts as well as the palaeoecological conditions (which seems to have improved due to the shore displacement). The average number of farms could for instance have been as low as 10 during the Early Bronze Age and as high as 20 during the Late Bronze Age. But in which numbers would the Bronze Age farms be archaeologically manifested? The Late Bronze Age settlement in Jäätinhaudanmaa emerged roughly about 1000 BC and it appears to have lasted until the end of the Bronze Age. The settlement appears thus to have remained in place for about 500 years (see chapter 4.6). If 500 years is set as the average time interval of settlement relocation during the Bronze Age, we are able to make a tentative calculation for the number of deserted Bronze Age farm sites in Laihia. If all 10 hypothetical Early Bronze Age farms were relocated once during the Mid-Bronze Age and if all 20 hypothetical Late Bronze Age farms remained in place until the end of the period, we would hypothetically end up with 30 archaeologically materialised farm sites from the Bronze Age. This should be the minimum number, as it is possible that the Jäätinhaudanmaa settlement was more stable and long-standing than other settlement units, as will be discussed in chapter 4.6.7. This calculation is of course highly theoretical and tentative, but at least it can provide some kind of hint of the quantities of farm sites that we may expect to find in the field. It should furthermore be added that this calculation requires that all farms maintained house replacement practices, as house relocation practices would have produced a much higher number of abandoned farm sites.

I am aware that several source critical and methodological objections could be inferred towards the presented calculations, but still I find the calculated numbers to provide relatively coherent and reasonable figures for the population and settlement density in the Laihia settlement district. I think that calculations of this kind provides a healthy "reality check", despite the hypothetical nature of the results. All the presented and used figures should at least be testable in the field.

4.5. The cooking-pit distribution in Laihia

Cooking pits have relatively recently been acknowledged as a type of Pre-historic remains and their number has increased rapidly in parts of the Bothnian Bay area where thorough surveys have been conducted (see for instance Okkonen & Äikäs 2006). This indicates that the survey situation is generally inadequate and uneven in Southern Ostrobothnia. The territory of the parish of Laihia is nevertheless uniquely well surveyed in regard of the cooking pits, especially thanks to the lively activity of local amateur archaeologists that acknowledged the structure type relatively early. The parish of Laihia thus exhibits by far the greatest amount of registered cooking pits in Southern Ostrobothnia, as well as the greatest number of excavated and dated pits (Miettinen 1998:113, see table in chapter 3.5.5). The spatial data and the numbers of the cooking-pits that the following account is based on derive largely from the survey records that have been compiled by the local amateur archaeologist Esko Luoma (Luoma, unpublished record of ancient sites in Laihia, filed at the NBA). A large portion of the recorded cooking pits are not registered by the NBA, but I have checked several sites in the field and I have tested the pits with a soil probe. As far I can judge, the survey records compiled by Luoma seems to be highly accurate. I have previously published an article on the distribution patterns of cooking pits in Laihia (Holmblad 2009b).

In my view cooking pits can be an important means to study the social organisation, because the Laihia case suggests that their distribution patterns enable quite tangible observations of
changes that can be related to the social structure of production. The relevance of my interpretations in this respect is dependent on the presupposition that the currently known distribution pattern of cooking pits is representative for the Early Metal Period in Laihia. The other presupposition is that the cooking pits relate to seal blubber production. Cooking pits could hypothetically have been used for a multitude of tasks, but their relatively distinct spatial and chronological distribution patterns in Laihia may still suggest a relatively limited range of uses in Southern Ostrobothnia.

About 70 cooking pit sites are currently known in Laihia within a total area of 20x8 kilometres. My delimitation of each cooking-pit site is in this case defined by a maximum distance of 100 metres between individual pits, irrespective of other possible structures around or between the pits. The cooking pits are situated within the 42-23 metre interval above the current sea level. Their spatial distribution corresponds roughly with the cairn distribution on Early Metal Period altitudes, in other words, their distribution seems to reflect the extent of the settlement district. The 70 identified sites in Laihia contain in total almost 200 individual cooking pits whereof most have been confirmed either by soil probing or by excavation. The radiocarbon dates for eight pits from diverse sites in Laihia fall within the time frame of 1200-170 BC (see table in chapter 3.5.5). The radiocarbon dated cooking-pits encompass the elevation spectra of 35-26 metres. The radiocarbon dates confirm that there is a general correspondence between the elevation of the cooking pit sites and their age, so that sites on higher elevations are generally older than sites on lower elevations, this does however not mean that all sites were necessarily shore-bound.

The average quantity of cooking pits at the Laihia sites clearly vary in a general correspondence with the elevation of the sites (see adjacent figure). Above the altitude of 30 metres, sites with a higher number of pits dominate, on average there are five pits at each site. All of the largest sites, with at least 10 pits are concentrated within the altitude interval of 38-33 metres. Below the 30 metre elevation there are in contrast many small sites that comprise a low number of pits, in average two pits per site. The small sites with single or dual pits concentrate markedly at the altitude of 28-27 metres.

The sites located at altitudes above 30 metres are furthermore situated geographically within a much narrower area than the sites at lower elevations (see adjacent map). This notion goes
especially for the sites that are located at altitudes that exceed 35 metres, whereof nearly all are concentrated to an area of one square kilometre in the present day village of Peltomaa. This area even appears to be the likely local introduction area, where the cooking pit related practices were originally initiated in Mid-Bronze Age.

In the following discourse I will regard the cooking pit sites above the 30 metre altitude as mainly belonging to the Bronze Age, and the sites situated at lower altitudes as mainly dating to the Pre-Roman Iron Age. I find this demarcation to be reasonably adequate in order to understand a general long-term trend. The variation in the appearance of cooking pit sites thus enables a generalized picture over time. Roughly characterised, there are thus relatively few cooking pit sites during the Bronze Age and the sites are concentrated to a narrow area, but the sites contain a high number of pits. The Bronze Age cooking pits are therefore highly concentrated into a very small portion of the Bronze Age settlement district. During the Pre-Roman Iron Age there are in contrast a great number of sites spread over the entire settlement district, but the sites contain only a few pits.

![Map of cooking pit sites in Laihia](https://example.com/map.png)

The absolute number of cooking pits is slightly less at Pre-Roman altitudes when compared to the Bronze Age elevations, but the vertical distribution of the cooking pits suggests a construction frequency of pits that seems to have remained relatively stable throughout the Early Metal period (see adjacent diagram). The major difference between the late Bronze Age and the Pre Roman Iron Age cooking pit activity is therefore not necessarily in the volume of production, but instead in the spatial and social organisation of the production.

Undisputable evidence for the use of the South Ostrobothnian cooking pits is lacking, but coastal cooking-pits in the Northern Baltic are generally thought to be related to seal blubber
extraction. Usually they lack burnt bone and other find materials. A reasonable explanation to the lack of bones would be that normally only the seal blubber was brought to the cooking pits. The use of the heated stone technology for blubber extraction is known from historical sources. Cooking pits with heated stones were used for blubber production at the White Sea during the 16th century (Okkonen & Äikäs 2006:29). The use of heated stone for blubber production is also confirmed archaeologically at some sites. Soil analyses and excavation observations in Kökar in the Åland archipelago clearly prove the use of heated stone for seal oil production (see chapter 4.2). Analyses of soil samples from cooking pit sites near Swedish Skellefteå and Finnish Oulu points in the same direction (Ylimaunu 1999). The analyses indicated a high fat content in the pits. An interesting link between seal bones and a cooking pit is established at the Varggrottan site (also known as Susiluola) in Lappfjärd. A seal bone that was found within the cave and a cooking pit that was found outside the cave provided synchronous radiocarbon dates to approximately 500 BC. Some quartzite flakes were found in connection to the cooking pit (Schulz et al. 2001:18, 35). During the time at issue the Varggrottan site was already situated at a high altitude and at a considerable distance from the sea. I find it probable that the seal bone is related to activities at the cooking pit.

Ylimaunu assumes that cooking-pits made blubber extraction more efficient. The heat energy of stones could be preserved longer in a pit and the amount of fuel needed could be decreased. It is therefore suggested that the cooking-pits are linked to an intensification of seal oil production (Ylimaunu et al. 1999:53). Ylimaunu et al. suggests that the oil extraction could be managed according to two different strategies. The first strategy would be an oil extraction in late autumn, instantly following the autumn sealing. During this season it would have been easy to dig the pits in the unfrozen ground and to collect the necessary quantities of stone. The
other possible strategy would take place in late spring, after the melting of the ground. In the latter case the catch had to be stored over the winter, which could be done in storage-pits of the kind that is has been recorded in boulder fields on the crests of ancient islands or along ancient shores. The latter strategy was common in historical times in Northern Europe. The extracted seal oil was stored in wooden vessels or skin bags according to historically known sources from North-America and Europe (Ylimaunu 2000:90f).

In my view the cooking pit distribution pattern in the Laihia settlement district was strongly affected by social factors. It has been noted that the cooking pits in coastal North Ostrobothnia are concentrated near the river estuaries. It has therefore been proposed that the locations were chosen due to the importance of pathways to the inland (Okkonen 2003:232). As will be discussed in the next chapter, the Peltomaa-area indeed possessed qualities of a logistic node in Bronze Age Laihia. The large-scale blubber production in Late Bronze Age Laihia appears to have been concentrated to the starting point of a pathway that lead from the coast to the inland. It is furthermore quite likely that the concentrated Late Bronze Age blubber production in Laihia was a collective task of the community that was perhaps administered by a local leader. In the Pre-Roman Iron Age the production appears instead to have been more decentralised and dispersed to the individual settlement units. If the cooking pits were mainly used for seal oil production, their Bronze Age distribution pattern suggests that some of the consumers were inhabitants of the inland area. This notion may help to create a basis in order to understand the appearance of inland material traits in coastal Southern Ostrobothnia in the Bronze Age. This may be illustrated by the inland textile pottery that was found at the cooking-pits at the ceramically mixed settlement site at Viirikallio in Laihia that dates roughly to the Bronze Age-Iron Age transition.

4.6. Peltomaa; expressions of Bronze Age centrality

I find it motivated to begin with a clarification of the spatial relations of the placenames that are used in this subchapter. Peltomaa is the name of a valley with a small village in the parish of Laihia. Jätinhaudanmaa is the name of a subarea in Peltomaa, on the northern side of the Peltomaa valley. Annikkalanmäki is the name of a subarea on the southern side of the Peltomaa valley. Both subareas contain a number of individual sites. I have named the important sites in the northern subarea as Jätinhaudanmäki NW, Alatalo, Palomäki W, Palomäki N and Palomäki E. For the southern subarea I have named the important sites as Annikkalanmäki W and Annikkalanmäki E. I have performed my own site subdivision and provided each site an individual name, because the site definitions in the register of the NBA do not enable a spatial subdivision that is detailed enough to the aims of the account in this subchapter. The fieldwork and the field observations that have been conducted within this thesis project have largely centred on the Peltomaa area.

4.6.1. Heated stone technology and the logistic nodality of Peltomaa

In the 1980’s numerous cooking-pits were found on both sides of the Peltomaa valley in Laihia. Four proper cooking-pits in the Peltomaa area have been dated to the time span of 1200-520 BC (Holmblad 2007a:154f, Miettinen 1998:72f, 80f, 172). The remains of apit-hearth (or the bottom of a destroyed cooking-pit) are dated to 800-50 BC. One proper burnt mound is dated to 810-540 BC and one structure that resembles a flat burnt mound has been
dated to 830-540 BC (see table in chapter 3.5.5). Currently there are in total some 70 recorded cooking-pits in Peltomaa, which are situated both north and south of the valley. Most of the cooking-pit occurrences consist of single pits or small groups of pits, but some clusters are considerably larger. The cooking pits are usually surrounded by banks or spreads of sooty soil with fire-cracked stone that often forms distinct cultural layers of "cooking pit character". Rounded burnt mounds of fire cracked stone have been found at two sites in Peltomaa. The settlement surfaces, which will be described in further detail below, also contain a high density of fire-cracked stone. In addition to the identified cooking pits, settlement surfaces and burnt mounds; I have also noticed fire cracked stones at several additional locations, for instance in the currently cultivated fields of the Peltomaa valley, which may derive from destroyed cooking-pits. By accident I have also discovered some cooking pits that are completely filled and levelled and that were thus more or less invisible to the eye. The impression is that there are traces of heated stone technology almost everywhere in the Peltomaa area.

Small-scale excavations and soil sampling by soil probing has been undertaken at some of the cooking-pits and burnt mounds in Jätinhaudanmaa. One large cooking pit that was excavated in Jätinhaudanmaa NW resulted in a radiocarbon date to 1200-500 BC. Including the surrounding bank, this cooking pit measured 6 metres in diameter. The bank contained a cultural layer consisting of fire cracked stone and reddish brown burnt sand. The pit contained a two metre wide and a 0.7 metre thick round central filling of fire cracked stone, charcoal and soot. The stratigraphy of the pit exhibited traces of several phases of utilisation (Miettinen 1998:73). A cluster of five cooking pits is situated at the Palomäki N site in the eastern part of Jätinhaudanmaa. The site is furthermore marked by a 0.2-0.3 metre thick cultural layer that extends over a 15 metre sized, well demarcated and carefully levelled surface. Small test-pits show that the cultural layer seems to consist of material that is most likely emptied from the cooking pits, and it resembles thus in some sense an extremely flat and wide burnt mound. Charcoal dated to 820-550 BC from this cultural layer relates quite reliably to the cooking pit activity. The careful levelling of the cultural soil into a terrace-like structure may however indicate some other type of secondary utility of the site. One cooking-pit was found next to the largest cairn in the Alatalo cemetery, in instant proximity of the settlement surface at the site. The cooking pit is completely filled and it is surrounded by an extensive but low bank of fire-cracked stone. A charcoal sample (that was obtained with a soil probe from the bottom of the cooking-pit) resulted in a date of 980-800 BC. A piece of charcoal that was obtained from the mid central part of the burnt mound at the nearby Palomäki W site was radiocarbon dated to 820-550 BC. I have also noted some very small structureless cairn-like constructions close to the cooking pits in Jätinhaudanmaa NW and in Palomäki N. These could hypothetically be raw material heaps of stones that were intended to be used in the cooking pits.

The hill of Annikkalanmäki demonstrates the highest number of cooking pits in Laihia. Annikkalanmäki is situated about 500 meters south of Jätinhaudanmaa, just across the Peltomaa valley. Most of the cooking-pits at Annikkalanmäki are clustered at two sites, at 200 metres distance from each other. The western site had according to Esko Luoma’s records 19 pits before it was damaged by forestry (Luoma, unpublished record of ancient sites in Laihia, filed at the NBA). The eastern site contains 26 recorded cooking-pits and some burnt mounds (see adjacent map). So far small-scale investigations have only been undertaken at the eastern site which is situated at 35 metre elevation in a narrow NW-SE orientated, almost canyon-like valley. The 230 meter long and 20-50 metre wide valley bottom is delimited by steeply rising boulder terrain at both sides. The flat valley bottom consists of fine grained sand and silt. In total there are 25 visible pits and one recorded invisible cooking pit. I have also noted three or four burnt mounds at the site. Most of the pits are two metres in diameter and 0.5 metre deep.
Some of the pits are surrounded by large banks or fire-cracked stone (Miettinen 1998:80, Holmblad 2007a:154f). Two pits were excavated by Mirja Miettinen in 1991. Both cooking pits were dated to 820-520 BC. Some test trenches showed that a brownish cultural layer with a plenty of fire-cracked stone covers most of the valley bottom. The find material consisted of sherds of pottery (Miettinen 1998:80). In 2006 some additional small trenches were dug at the site by the author. The cultural layer was found to contain large amounts of fire cracked stone and gravel descending from stones that have disintegrated from heating. Cooking pits have obviously been emptied and reused continually. This was also demonstrated by the stratigraphy of sooty lenses that was revealed in a test pit that was dug into a burnt mound. Also a totally infilled cooking pit was found by accident in a small test-pit, which indicates that the real number of cooking pits may be considerably higher than the number that is known at present (Holmblad 2007a:154f, Holmblad 2007c).

A zone of cooking pit sites surround the core with cairns and settlement sites. Base map © National Land Survey of Finland. licence No. 051/MML/10.

The Bronze Age cooking pit activity at Annikkalanmäki demonstrates a character of large scale production when compared to other sites in Laihia. The radiocarbon dates show that the cooking pit activity took place more than one kilometre from the contemporary shoreline. The partly excavated burnt mound created from cooking pit fill was clearly not built on a fresh shore, which was shown by the thin podsol horizon on the original ground surface below the fill of the mound. The easily dug sandy silt at the site, the availability of fuel and stones, as well as the proximity to an important route of transportation to the inland and the proximity to the settlement in Jätinhaudanmaa may have been regarded as more important localisation factors than proximity to the shoreline. Blubber may also have been easy to transport with sledges along the valleys that lead from the coast to Peltomaa.

About 200 metres to the north-east from the Annikkalanmäki E cooking pit site is the starting point of a “glacial river” that is marked by a long row of sandy ridges (see adjacent maps). With the exception of some minor breaks, the ridge row continues all the way to the village of Koskenkorva at the Kyrö River in the parish of Ilmajoki, about 35 kilometres to the South-East. An 18th century map of the parish of Laihia demonstrates that a road or a path went along the ridge row long before any historical settlement appeared in these parts of the parish.
The ridge row of the glacial river was utilised as a natural route for transportation and communication in early modern times and this was probably the case even much earlier, assumingly already in the Bronze Age.

The Peltomaa-Koskenkorva ridge row thus created the preconditions for a straight and relatively easy passageway from the coast to the middle course of the Kyrö River in the inland, especially when considering the fact that communication through the area would otherwise have been hindered by bogs. The ridge row in question seems to be the longest of its kind in the immediate Vaasa area and it is one of few that have created a straight connection between the Bronze Age coast and the Kyrö River valley. The survey records of Esko Luoma show that there has been a number of cairns along the ridge row. The cairns have obviously been built along the Bronze Age pathway. A major part of the ridge row and its cairns have unfortunately been destroyed by gravel extraction in recent times. Along the ridge-row also a few Late Neolithic dwelling sites have been discovered, sites which may constitute the distant origins of the Late Bronze Age settlement in Peltomaa (see chapter 4.4.1). The ridge row may hence also have carried meanings of mythical and ritual significance.

The cooking pit activity in Peltomaa is spatially and chronologically correlated to the Late Bronze Age settlement in Jätinhaudanmaa. The distribution pattern for the ancient structures in the area shows a clear zonation. There is a core that is marked by cairns and open settlement surfaces, and a surrounding outer activity zone that is marked by cooking pits. The cooking pits, burnt mounds, dwelling sites and burial cairns show an obvious temporal and spatial association, and are thus part of the same socioeconomic context. The settlement unit in Jätinhaudanmaa exhibits thus the greatest density of cooking pits in Laihia and it also seems to be the local initiator or the original organiser for the cooking pit activity of the Laihia settlement district. As will be discussed below, the settlement in Jätinhaudanmaa must
have emerged about 1000-900 BC at the latest. The oldest dated cooking pit is roughly synchronous with this point in time. It seems evident that the cooking-pit activity or at least the large-scale cooking-pit activity in Peltomaa started with the establishment of the local settlement.

4.6.2. Burial rituals and symbolic expressions in Jätinhaudanmaa

The description given here is largely based on my own field observations that were conducted during this thesis project. The 800 metre long Bronze Age cairn and stone setting zone with a WNW-ESE main axis marks the settlement unit of Jätinhaudanmaa (“Land of the Giant’s graves”, see adjacent map). The elongated cairn zone stretches along the southward slope at the northern edge of the currently cultivated Peltomaa valley. The cairn zone can be divided into seven individual cairn sites that contain in total about 50 cairns and stone settings. The cairn sites are situated at 100-150 metre intervals on a series of small hills and capes at the 40-34 metre altitude. Three of the cairn sites can be classified as proper cemeteries, which consist of the Alatalo, Palomäki N and Palomäki E cemeteries, while the remainder of the cairn sites consists of small cairn groups or single cairns. According to the oldest document that mentions Jätinhaudanmaa, the local vicar excavated some of the cairns in 1725. Already at that point several cairns reportedly showed looting marks (Miettinen 1998:68). Unfortunately we lack any further information on these early interferences. Three of the Alatalo cairns were excavated in the 19th century. Two of them yielded bronze razors, of which at least one is dated to period V or 900-700 BC (see chapter 3.6.1).

3d model of the Alatalo cemetery. View from south-west

Almost all proper cairns in Jätinhaudanmaa have been placed microtopographically in locations that make them appear to be larger than their actual size, which has increased their visibility towards the Peltomaa valley. This means that the cairns are built on edges of natural terraces, at cape ends and on hilltops. Also many stone settings have been located according to the same principle, but they are more often built on flat or sloping ground around the
cairns. It is obvious that the cemeteries and cairn groups are carefully arranged according to the microtopography, even if the altitudinal variations are mostly within a modest scale.

Alatalo exhibits by far the largest and most prominent cemetery in Jätinhaudanmaa. The cairns of the Alatalo cemetery are distributed at the 35-38 metre elevation in two dense groups on the respective northern and the southern sides of a country road that cuts through the cemetery. The Alatalo cemetery consists of 10 proper cairns and of 16 more or less cairn-like stone settings, all within an area of one hectare. The biggest, most dominating cairns are situated in the southern half of the cemetery. The monumentality of the site is enhanced by the dominating row of three bordering round cairns, of which the easternmost is the largest cairn in Jätinhaudanmaa. The size of the biggest cairn in Alatalo is currently 14.7x13 metres across, its height reaching two metres (see pre-exca Vation measurements below). The diameter of the other proper round cairns is mostly 8-10 metres and their height is 1-1.5 metres. One elongated cairn measures 11.7x4.7 metres and it is 0.8 metres high. Most of the cairns have some type of central depressions. There are also some stone constructions in the cemetery that are not necessarily graves, but that are perhaps some other kind of ritual constructions. Close to the biggest cairn is for instance a peculiar quadrangular frame of stones that lack an internal stone lining. Some stone constructions in Alatalo may be related to the clearance of settlement surfaces and to the clearance of cultivated plots. The other cairn cemeteries at Palomäki N and Palomäki E are somewhat different from the Alatalo cemetery; they display only one big round cairn each (about 10 metres in diameter), while the rest of the monuments of these cemeteries consist of more or less flat stone settings and of some ship settings. There are also two solitarily situated large cairns to the west of Alatalo (also about 10 metres in diameter).

One cairn was investigated in Alatalo in 1846 by Antero Warelius, who left a written statement and preserved a razor from this excavation (Aspelin 1871:107). The razor dating to period V (900-700 BC) was found close to the central boulder of this cairn. Johan Reinhold Aspelin excavated two additional cairns in 1869; this is regarded as one of the very first scientifically performed excavations in Finland. Aspelin excavated the largest cairn of the cemetery, which he ranked as the highest cairn he had ever seen in Ostrobothnia. Prior to the excavation Aspelin measured the diameter to be 12.6 metres and the height to be three metres. At the centre of this cairn he encountered a one metre high dry walled, rounded tower-like construction (Aspelin 1871:108, 128f figure 52). Similar internal tower constructions are known from large and especially from high cairns in Satakunta, for instance from the largest cairn of the Rieskaronmäki cemetery (with secondary burials from period V), but they are also known from Gotland and from southern and western Sweden (Salo 1981:157ff). The "tower" in the Alatalo cairn rested on a fundament of large boulders. Underneath the fundament a small concentration of burnt bone was found. One bone concentration was also found north and another northeast of the central burial. The cairn had furthermore a marked edge lining of big boulders, which seems to occur in all big cairns in Jätinhaudanmaa (Aspelin 1871:128f). The Rieskaronmäki cairn had received its structure through a complicated series of gradual expansions and secondary burials (Salo 1981:87). This is probably true also for the Alatalo cairn. A special effort appears to have been made to make or to keep the size of this particular cairn larger than other cairns in Jätinhaudanmaa. Perhaps we are dealing with the grave of the original founder or the founders of the Jätinhaudanmaa House.

The smaller cairn excavated by Aspelin was seven metres in diameter and almost two metres high. Also this cairn was delimited by a marked edge line of boulders, but at the centre it exhibited a large central boulder and furthermore it revealed an additional inner concentrically located circle of boulders (Aspelin 1871:127, Miettinen 1998:68ff). The latter structure
implies that the cairn had been extended at some point. Two concentrations of burnt bone were found north and northeast of the central boulder; whereof the former also yielded a heavily corroded bronze razor. Also some leather fragments were found in the bottom layer of the cairn, which were assumed to descend from a shoe (Aspelin 1871:127f, figures 51, 57).

Two of the excavated cairns in Alatalo have thus contained large central boulders. Also some of the unexcavated cairns in Jätinhaudanmaa have visible central boulders. Large central boulders have been noted also in Bronze Age cairns in other parts of Laihia, for instance in an excavated cairn at Nikonkallio (Miettinen 1998:79). Cairns and stone settings with central boulders emerge in Central Sweden during the Late Bronze Age, approximately in time with the rising frequency of proper cemeteries (Damell 2001:33f).

Recorded structures in Jätinhaudanmaa. Cairns (circles), stone-settings (dots), cooking-pits (squares). Settlements sites (shaded areas). Burnt mound (circle with dot). Pollen analysis site in the lower left corner (Base map © National Land Survey of Finland. licence No. 051/MML/10)

In Jätinhaudanmaa three constructions can be classified as ship settings. They were observed during the fieldwork of this thesis project. Two of them are situated in a row in the Palomäki N cemetery (9x3.5 and 9.5x3 metres, oriented in W-E direction, the latter one is damaged) and the third placed on a nearby hill (9x2 metres in N-S orientation) next to a small stone setting. All ship settings exhibit clear edge linings of big stones put in a pattern composing an elongated oval with pointed short ends. All ship settings are stone filled to the upper edge of the frame and the profile of the filling is flat. The resemblance is evident with the ship setting that Meinander excavated in Murhaasto, 1.8 kilometres to the southeast (Meinander 1950:50f). The ship setting at Murhaastonkangas measured 9.5x3.3 meters. It contained three concentrations of burnt bone, stemming from three individuals, whereof two have been regarded as adult males (Miettinen 1998:75). The ship symbolism is a well known phenomenon in the South Scandinavian Bronze Age. Ship settings are also widely distributed around the Baltic and they are particularly common in Gotland and in the south western Baltic.
during the Late Bronze Age. Ship settings are thought to resemble real ships to their size and shape (Bradley 2008:174ff). They are thought to symbolise the importance of travels during the Bronze Age, but also to symbolise the travel to the realm of the dead. There might also be a cosmological connotation that relates to rebirth and to the journey of the sun (see Söderström 2008:201 for further references). Descriptions on cairns and stone settings as "ship formed" is not totally unusual in the literature on the Bronze Age in Finland, but few have been acknowledged as real ship settings. So far only the Murhaastonkangas grave has been acknowledged as a ship setting in Southern Ostrobothnia.

The latter cosmological notions on ship settings are probably relevant for the interpretation of the two razors that have been found in the Alatalo cemetery. Kaul states that razors were ritually charged artefacts in Bronze Age South Scandinavia (Kaul 2005:272). Symbols that are related to cosmological perceptions and sun worship are often depicted on the blades of Late Bronze Age razors, particularly in period V. The ship can be regarded as the most important ritual symbol in the South Scandinavian Bronze Age, and it is often depicted on razors together with sun and horse figures. Even the shapes of the razors are similar to a ship. Razors signified high social status at least during the Early Bronze Age (Kaul 2004:271ff). Except Laihia, three proper razors have been found in Finland, all are from Satakunta, and they all belong to period IV-V. One of them (from Kaunismäki in Kiukainen) has a ship picture on the blade. This razor was found in a cairn that lacked other artefacts. The other razor (from Panelia in Kiukainen) was badly decomposed and it was found in a very large cairn together with a sword from period IV and a piece of fire-knapping flint (Meinander 1954:57f, 217ff). The third razor (from Orjapaasi in Kokemäki) was found in a large cairn together with a pair of tweezers (Salo 1981:211, 268f).

Even if ship iconography is lacking on the blades of the (poorly preserved) razors from Jätinhaudanmaa, I suggest that their local meaning should be interpreted in the light of the strong connection between razors and ship symbols that has been established in South Scandinavia. The razors and the ship settings in Jätinhaudanmaa should therefore be interpreted in relation to each other. Furthermore: in a region where razors and ship-settings appear to be quite rare, their mutual occurrence in the same area indicates a presence of people that possessed exclusive esoteric knowledge and that probably had socially important roles and perhaps special identities that related to long-distance contacts.

The smallest burial constructions in Jätinhaudanmaa consist of low stone settings that are only a couple of metres in diameter. The shape of the flat stone settings varies from round cairn-like constructions to elongated and four-sided shapes. The stone settings are often delimited by well marked stone-linings. The largest flat stone setting is built next to the large cairn in the Palomäki N cemetery. The damaged stone setting measures about 11x5.5 meters. None of the stone settings have been excavated, but the small stone settings have good excavated counterparts in Satakunta, where Salo dates them to the end of the Bronze Age (Salo 1981:201).

A right-angled lithic shaft-hole axe (NM 2191:1) was found in the 19th century in Häjyluhta which is a cultivated field on the northern side of Jätinhaudanmaa. The Peltomaax axe represents a local subtype, in my view mostly resembling Baudou type A2a, which dates to Period V and possibly to Period VI (Baudou 1960:47, 49, Rechtwinklige Steinäxte mit ovalem Querschnitt des Nackenzapfens, mit eingeschwungenem Nackenzapfen und Schneidenteil mit flacher Oberseite). Like other shaft-hole axes, the Häjyluhta axe is a stray find discovered in cultivation activities. The topography suggests that Häjyluhta was a wetland in Late Bronze Age when the object was deposited or sacrificed at the spot. The symbolic meaning of shaft-
hole axes is clearly shown in the axe from Peltomaa. The object is so small that it can be called a miniature object, almost of amulet size. Furthermore it has a blunt edge and the shaft-hole is small and drilled from both sides with a conical drill. A special symbolic meaning has been attached to Bronze Age lithic shaft-hole axes, as they are not thought to have been suitable for wood-chopping or similar activities. The shaft-hole axes are therefore interpreted as weapons or ceremonial objects. Unto Salo has presented the interpretation that the shaft-hole axes are symbols of a weather or thunder deity that originated in southern Neolithic societies (Salo 1997).

4.6.3 The settlement in Jätinhaudanmaa

Miettinen stressed in her synthesis on the Prehistory of Laihia that especially the Peltomaa-area contains a relatively big concentration of cairns that must have been situated in a sheltered inner coastal area. The big cairns and the cultivatable soils of the area were taken as further indications for a sedentary settlement in Peltomaa (Miettinen 1998:111). Field work including small-scale excavations, soil sampling, surveying and mapping of Jätinhaudanmaa was undertaken by the author in 2006-2008, mainly in order to trace that settlement.

The results of my fieldwork in Jätinhaudanmaa show a long lasting and an intensive settlement activity with at least two sedentary farmsteads, one situated at Alatalo and the other 150 metres to the east at Palomäki W. The described cairn zone thus represents a settlement unit which consisted of one or several synchronous farms during the Late Bronze Age. This notion is further strengthened by the dense cluster of burial cairns and cooking pits in the area as well as the results from a local pollen analysis. Observations based on the pollen analysis and a number of macrofossil samples with charred cereal grains and seeds from diverse plant species confirm an agrarian character of the subsistence economy in Jätinhaudanmaa during the Late Bronze Age. This is also supported by the cultivable silty moraine that dominates in the slopes and the valleys in the Jätinhaudnamaa area.

The oldest radiocarbon dated cereal grain from Jätinhaudanmaa (from Palomäki W) is dated to 1000-850 BC. The date is almost identical with the date for the earliest cereal pollen that has been recorded in a nearby bog. The lowest and thus the earliest level for barley pollen is radiocarbon dated to 1050-850 BC (Wallin 2009). The oldest radiocarbon date for a cooking pit in Peltomaa (at Alatalo) is 980-800 BC (excepting a pit date with a very wide margin of error). The totally congruent dates for three independent variables indicate that the local settlement was established at 1000-900 BC. It is possible that a somewhat older phase of settlement has escaped detection, but in that case the settlement and agricultural intensity must have been lower. It is more difficult to establish the ending point of the settlement in Jätinhaudanmaa due to the troublesome fluctuations of the calibration curve towards the end of the Bronze Age. The fluctuation results in long margins of error for the youngest radiocarbon dates. The available dates show that the settlement continued definitely until 700 BC at least, but most probably a few centuries longer. The end point of cereal pollen in the local pollen analysis is roughly estimated to 400 BC (Wallin 2009, see pollen diagram in chapter 4.6.5). The local settlement remained therefore probably in existence for about 500 years. This time frame is also congruent with the lithic axe that has been discovered in the area as a stray find as well as the bronze razor that has been found in a burial cairn. During at least a part of this time span I believe that more than one farm existed in Jätinhaudanmaa. A small hamlet, perhaps consisting of two or three farms may have existed in the area during the Late Bronze Age.
The most important of the dwelling site is located at Alatalo. This site is located on a fine grained moraine cape that points out from a large rocky moraine area. The topographic profile of the cape constitutes a naturally terraced southward slope that merge with the flat clayey Peltomaa valley in its nether part. The cape is currently covered by a spruce dominated forest. The Alatalo dwelling site is completely situated within the area of the cemetery that is marked by more than 20 visible burial cairns and stone settings and at least one recorded cooking-pit.

![Phosphate map of Alatalo](image)

Studies of the surfaces between the cairns in the Alatalo cemetery revealed a spatially quite limited, but intensively utilised settlement surface. The soil chemical mapping (based on probed samples taken according to a grid with 5 metre intervals) over almost the entire Alatalo site produced a clear spatial patterning measured by variables such as phosphate value, magnetic susceptibility and organic content. The soil chemical mapping revealed for instance that the settlement surface appears to extend under several of the cairns, which indicates diverse settlement phases at the site. The soil chemical maps show furthermore that the most intensively used part of the dwelling site was in the south-western part of the

![MS map and clay daub distribution (circles) in Alatalo](image)
cemetery. Here the settlement area is clearly visible as a flat and almost terrace-like stone cleared ground surface. In this part of the site a narrow test trench revealed a 0.3 metre deep strongly coloured cultural layer with large amounts of fire-cracked stone and burnt clay daub. The cultural layer was heavily reddish-brown in colour and it was truncated by dark sooty horizons at different depths. 41 soil samples were taken by the author in this test trench according to the stratigraphical order of the cultural layer. The variation of phosphate values in the cultural layer of this trench was 220-940 Pº. Parts of the cultural layer thus showed rarely seen phosphate contents of extremely high value. The values of the magnetic susceptibility were 110-850 (IS). This proves a high intensity of heating activity at the site. The organic matter content (Loss on Ignition) was 2-11 %, thus showing clearly raised organic content in parts of the cultural layer. Taken together, the results show a very substantial cultural disturbance in the soil, which only can be explained by an intensive or a prolonged human occupation at the site, or both (see Holmblad 2007a, and adjacent maps).

A submerged construction was revealed in the mentioned south-western test trench that consisted of a densely packed, well limited setting of fire-cracked stones. Due to the lack of charcoal, it did however not appear to be a hearth. Cereal grains from the cultural layer in this trench yield dates to 840-540 BC and 770-400 BC. The cairn which had contained the period V razor is situated in immediate contact with the most intensively used part of the settlement surface, only ten metres from the find spot of the dated cereal grains.

The overall distribution pattern for clay daub at the Alatalo site (recorded through the soil chemical probe samples) indicated at least two separate building foundations at the site. The first foundation was in the south-western part of the cemetery (already described above) and the second building foundation was indicated in the central part of the Alatalo cemetery. This pattern was also well matched by the magnetic susceptibility pattern. Also in this second area a flat, stone cleared surface is ocularly visible. A small test trench in this area revealed (except clay daub) some pottery sherds and burnt bone. This spot did however not show such a well defined cultural layer as in the southwestern part of the site; also the phosphate content was much lower and soil samples taken here did not yield any macrofossils either.

The find materials from Alatalo (NM 36011) are typical sedentary dwelling site finds. By far the greatest find category consists of burnt clay daub, of which in excess of 10 kilograms was
found. Burnt clay pieces amounted in great numbers already in the topsoil and the daub pieces continued in high frequency throughout the entire stratigraphy of the cultural layer. The clay fragments show a varying degree of incineration and consistency. They exhibit the entire scale from grey and weakly heated fragile bits to sturdy brick-red and intensively burnt pieces. A great part of the burnt clay fragments show different kinds of plant and wood impressions. The impressions derive from twigs, rounded wood, split wood, log joints and grass or straw. Undoubtedly at least the main portion of the burnt clay must be regarded as daub from burnt house constructions. Several pieces indicate a wattled wall construction.

The remaining find-material consisted of burnt bone, some worked pieces of flint and quartz, a quartz scraper and ceramic sherds. About 60 pottery fragments were identified. The majority of the ceramics are tempered with crushed rock while the rest is sand tempered. A few sherds exhibit small strokes or lines and even some small pits, but ornamentation is otherwise lacking. The rim sherds are straight but some sherds indicate profiled vessels. None of the sherds display textile impressions. The ceramic material from Alatalo is quite badly fragmented which makes exact type identification difficult. The ceramic sherds from Alatalo, as from other sites in Peltomaa, resemble largely the coarse coastal types of pottery that were used in Finland from the Late Neolithic to the Early Iron Age (which corresponds to the Kiukainen, Paimio and Morby wares). I find the Paimio ware as the most likely candidate for a large portion of the pottery. Some pieces have a finer temper and a smoother surface which indicates that they may belong to the Lusatian inspired bowl type ceramics.

About a dozen of lithic artefacts made up of quartz, quartzite and flint were collected. Most comprise quartz splinter and flakes. The only identified tool is a simple scraper in the shape of a retouched quartz flake (NM 36011:5). Two flint flakes represents an exotic raw material. A few collected small red lumps of soil may possibly represent red ochre.

The second open settlement surface of Jätinhausdanmaa was discovered at Palomäki W, which is situated on small separate moraine hill 150 metres to the east from Alatalo. Two burial cairns were known at the site prior to the discovery of the dwelling site. A cultural layer containing a high amount of fire-cracked stone and dwelling site finds was traced along a 50 metre distance in the ditch cut of the country road, just south of the cairns at the site. At the highest point of the road cut, in the western part of the dwelling site, a sooty hearth remain is visible in the ditch profile. A soil sample from the hearth yielded macrofossils and one charred cereal grain was radiocarbon dated to 1000-830 BC. The eastern part of the dwelling site is partly destroyed due to sand extraction in recent times. At the easternmost end of the dwelling site a burnt mound was discovered. The burnt mound is cut by the road and perhaps only half of it remains intact. The remaining part of the mound is eight metres in diameter, and the thickness of its fill at the highest point is 0.8 metres. The fill of the mound consists mainly of fire cracked stones and sooty sand, and a piece of charcoal from the centre dates to 800-540 BC. Except some soil sampling along the ditch cut and the edge of the sand pit, no excavations have been conducted at this site.

The find material that was noticed along the ditch cut at Palomäki W consists of ceramic sherds, burnt bone, a sand stone core, a piece of burnt clay and a few splinters and flakes of quartz. Soil samples for macrofossil analysis were taken along the ditch cut in the western part of the dwelling site. In the eastern part, soil samples were taken along the edge of the gravel pit and also from the ditch edge that cut the burnt mound. Only the soil samples taken in the western part of the dwelling site yielded archaeobotanical material in the form of charred seeds and cereal grains. The samples taken at the gravel pit revealed instead small
lumps of melted and sintered sand, which indicates heating with very high temperatures. This type of lumps has not been discovered anywhere else in the area.

An intensively used activity site was found 150 metres further to the east, on the south-eastern side of the Palomäki N cemetery. This site is marked by a 15 metre long and a 10 metre wide stone cleared terrace-like structure with a levelled surface. A few test pits made into the terrace revealed a 0.3 metre thick, very sooty dark cultural layer that seems to cover the entire terrace. The cultural layer contains a large amount of fire cracked stones. The surface is situated in immediate connection to five cooking pits and the cultural layer seems largely to consist of soil that has been cleaned out from the cooking pits, and thus it resembles a burnt mound in some sense, except that it is extremely wide and flat. The reason for the levelling of the cultural layer is unknown. The few discovered ceramic sherds and the proximity to a cemetery indicates that the site may have functioned as a settlement surface. Theoretically it could even be a fossil field that was fertilised by soil from cooking pits. Charcoal from one of the shovel sticks provided a radiocarbon date to 820-550 BC, which probably relates to the cooking pit activity at the site. Soil samples from the test pits did not yield any notable macrofossil materials.

In 1986 a stone lined terrace was partially excavated by Miettinen in a steep southward slope about 400 metres to the north-west of Alatalo. The construction is a 18x8 metre wide terrace that is stone lined in the nether part of the long side and along the short sides. The terrace is soil-filled up to the upper edge of the stone lining. Under the recently cultivated topsoil, a bottom portion of a pit hearth was found which yielded a radiocarbon date to 800-50 BC. Except for some sooty stains, no other signs of prehistoric activity were found at the site. Some similarities have been pointed out in respect to the house terrace in Rieskaronmäki, but the Jätinhaudanmaa terrace has also been used for potato cultivation in recent times (Miettinen 1998:72ff). A few small test pits made into the terrace in 2006 did not show any visible traces of cultural layers or finds. Soil samples from the site did not show chemical values high enough to prove human occupation at the site. Currently it does not seem likely that any Bronze Age house was built at the site. The terrace is probably a recent cultivation terrace that by chance was built on top of a Bronze Age pit hearth.

According to a statement by a local inhabitant, soot and ceramic sherds were discovered during the construction work of the Peltomaa school building during the early 20th century. The school site is located 200 metres to the west of Alatalo and one large central boulder cairn is situated next to the building (Miettinen 1998:71). Currently nothing of interest can be identified at the site, except for the cairn.

The environmental archaeological analyses prove a mixed economy with a relatively strong agrarian component at the Alatalo and the Palomäki W sites. The fieldwork observations and the analysis results thus confirm Jätinhaudanmaa as a Late Bronze Age farm settlement with adjacent farm cemeteries. The knowledge of Bronze Age farms in Southern Ostrobothnia, as in the rest of Finland is still rather limited. Most of the excavated farm sites in Finland are situated in central Satakunta, which I regard as the most important area of comparison.

The excavations have been of too small scale to reveal knowledge of the particular house size and further constructional elements (except wattle and daub walls) in Jätinhaudanmaa. The Alatalo buildings may have been of the same character as those documented at the synchronous Rieskaronmäki site. Unto Salo excavated here a stone lined terrace with a long-house foundation in the 1960s. The inner measurements of the burnt house construction were 14x5.5 metres. It was supported with posts and the building had at least partly wattle and daub
walls. According to Salo, the building was clearly bipartite with a dwelling section in the western part and a probable byre and barn section in the eastern part. Salo also thought that the nearly rectangular stone frame that surrounded the building would have constituted the actual stone foundation of the walls (Salo 1981:79ff). At Rieskaromäki a second building foundation was excavated. This 4x4 metre wide building was quadrangular and it had wattle and daub walls. The posts of the supporting frame of the house were apparently placed on flat stone slabs, and the only recorded post was a central roof supporting post. Salo interpreted this structure as a residential building with a wind-shed for cattle (Salo 1981:64ff). If both building remains have been interpreted correctly and if they are contemporary it would suggest that people could live in different sized buildings at the same farms. The functionally divided longhouse structure has close, but perhaps not perfectly identical parallels in Southern Scandinavia.

Dwelling remains with post holes and clay daub have been interpreted as long-house constructions also at some other sites in southern Finland. The long-house type is however just one possible shape for buildings constructed in this way. Asplund has questioned most of the long-house interpretations. He considers the Rieskaromäki long-house to be a rare short-term anomaly. Coastal Finland would instead have been dominated by a building tradition with rounded or quadrangular post supported dwellings that lacked byres. The clay daubed buildings would have measured 6-7 metres and they would have been equipped with central hearths. (Asplund 2008:271, 263ff). One representative of this building tradition would thus be the smaller building excavated at Rieskaromäki. Asplund’s interpretation has been criticized by Muurimäki who is of the opinion that many post-hole structures can be parts of longhouses with rounded ends (Asplund 2008:265). I agree that some documented sites could show sections of partly excavated longhouses. The Jätinhaudanmaa settlements can not contribute to this discussion for the time being. The time of the establishment of post-built and wattle and daub walled building constructions in Finland remains obscured, but it was definitely in use during the Bronze Age at the latest. The building technique is perhaps related to the establishment or to the intensification of agriculture, as suggested by the spread of the building technique in Scandinavia.

Forsberg has suggested that the Rieskaromäki long-house would be more or less directly related (in terms of cultural building traditions) to the previously discussed large rectangular dwelling constructions in the northern parts of the Gulf of Bothnia (Forsberg 1999: 275, 281ff). I am however sceptical to this suggested relationship. The general similarities between the excavated Vitmossen structure in Vörå and the Rieskaromäki long-house may be largely superficial and coincidental. The similarities can have come about due to the rectangular shapes of the buildings and due to the necessary stone clearance of dwelling surfaces in stony slopes. Salo may in fact have focused too much on the alleged stone foundation that surrounds a part of the Rieskaromäki long-house when he interpreted the house construction. The establishment of the flat and levelled building terrace must have required considerable stone clearance of the original stony ground. The alleged wall foundation may thus in fact be comparable to a simple clearance cairn. This interpretation would move the mid-axis of the house to the south. The post-hole layout would also become more logical as it would resemble an incompletely documented tree-aisle structure with a denser setting of posts in the byre section.

Exept the Peltomaa sites, few good farm candidates can be found among the excavated sites in Southern Ostrobothnia. One possible site is situated on the eastern side of Borgbacken in Kronoby. This site is only partly excavated, and it was unfortunately largely destroyed before the excavation. Several hearth remains were uncovered in the cultivated part of the settlement.
surface. The find material from the site contains bone from a pig and possibly also from cattle (Deckwirth 2008:26f). The remainder of the find material consists of worked quartz, fragments of stone tools as well as slag and burnt clay (NM 25354). Most of the latter consist of pieces of modern bricks, but I would possibly classify some soft, non-tempered pieces of burnt clay as daub. The pieces show wood or plant imprints. Reports from the late 19th century and the early 20th century shows that several cairns existed just 100-150 metres from the dwelling site on the top of Borgbacken and two round cairns were relatively large. The cairns were later destroyed due to gravel extraction (Björklund 1997:35f, Bilaga 6-7). The single discovered piece of pottery is asbestos tempered. The only radiocarbon date to 1440-970 BC from the Borgbacken site has been made on charcoal from a cooking-pit. During the Early Bronze Age the site of the settlement surface was located on the eastern shore of the large "Borgbacken island". During the late Bronze Age the gentle sandy slope on the eastern side had arisen from sea and had probably transformed into a shore meadow, thus the area may have become suitable for a farm.

4.6.4. Palaeoecological considerations

The Jätinhaudanmaa cairns are situated on the tops and in slopes of small hills and capes in the elevation span of 40-34 metres. The dwelling sites are at the 35 metre altitude. The Peltomaa cooking-pits are situated approximately in the same altitude interval as the cairns. The sites of Late Bronze Age activity in Jätinhaudanmaa have risen from the sea during the time span of 2000-1500 BC. The ground of the elevated areas consists mostly of surged rocky moraine whilst the soil in the slopes and especially in smaller valleys in Jätinhaudanmaa exhibits a great amount of silt. The soil of the large Peltomaa valley is dominated by clay.

All settlements and burials in Jätinhaudanmaa as well as the surrounding cooking-pits in Peltomaa have so far exclusively yielded dates from the Late Bronze Age (which is also the case for the cultivation phase in the pollen analysis), even though the geographical sites of the Late Bronze activities apparently became dry land already during the Late Neolithic. The sites of the Jätinhaudanmaa farms seem to have emerged from the sea some 600 years before the sites were settled.

The Peltomaa valley constituted originally a sea strait that first transformed into a diminishing bay; further on it was transformed into a damp valley. The transition between the moraine cape and the clayey valley is approximately at the 33 metre elevation at Alatalo. No significant water courses lay in the vicinity of Jätinhaudanmaa after the disappearance of the Peltomaa bay (Miettinen 1998:68f, Holmblad 2007a).

A land bridge that united the "Jätinhaudanmaa island" with the mainland was created when the shoreline reached approximately the current 31 metre altitude, which dates the event to 1200 BC. At the same time the flat clayey bottom of the former Peltomaa strait started to emerge from the sea and transform into a flat valley bottom. The landnam took thus place in Jätinhaudanmaa seemingly after the point when the Jätinhaudanmaa Island had become a part of the mainland. This transformation of the Peltomaa strait into a valley started the large-scale creation of water meadows in the Peltomaa area. Already at the starting point of the local settlement, which can be set to 1000-900 BC, the recorded settlement sites were located about seven metres above the sea level and their estimated distance to the sea was in the range of 600-800 metres.
If we put the dates and the environmental archaeological analysis results from Jätinhaudanmaa in relation to the natural history of the area, we find that the settlement emerged in an ecological environment where productive water meadows should have played an important economic role. Jätinhaudanmaa became attractive for settlement apparently only after the point when the local water meadows had grown relatively large. The land bridge that bound Jätinhaudanmaa to the mainland as well as the emergence of large water meadows thus appears to have been the preconditions for the establishment of the settlement in Jätinhaudanmaa. A similar development in this "valley oriented" direction has been noted in the southernmost part of western Finland during the Late Bronze Age. Asplund writes that the settlement sites started to lose their immediate sea contact during the Late Bronze Age. From this time onwards there was usually a zone of light sandy clay between settlement sites and the sea, which now appears to have become a determining factor for the localisation of the settlements in this region (Asplund 2008:185, 174, 178, 345).

The desertion of the settlement in Jätinhaudanmaa took place probably around 500 BC. At this point the Jätinhaudanmaa settlement sites were located about 12 metres above the sea level and their estimated distance to the sea was about 2.5 kilometres. The desertion of Jätinhaudanmaa may be related to the paludification of the meadows in the Peltomaa valley. On the mid-18th century map of the Laihia parish, the Peltomaa valley is described as Annickala neva och rämäckä, består av djup röd måsa kan föga oppodlas (Stierwald 1753), also the cairns are marked on the map as Några jättegrafwar. The valley was at this point an unproductive peat bog that was considered to be unfavourable for human subsistence. This reason has been shown to have ended the Merovingian period settlement at the farm site in Kalaschabrännan in Malax (Engelmark 1991:99f). Naturally also the growing distance to the
sea would have had an increasingly negative impact on the ability to utilise maritime resources.

Margins of uncertainty exist both for the shore displacement chronology and for the altitudes that have been estimated from the maps published by the National Land Survey. The relatively big vertical differences that this reconstruction gives at hand show nevertheless that the Jätinhaudanmaa settlement was not shore-bound during the identified phase of settlement. At least the majority of the cairns would thus not have been built at an open bay of the sea; rather they were situated at a water meadow. It seems evident that the settlement unit of Jätinhaudanmaa emerged in a shore meadow environment where the resources of the water meadow were important for the subsistence economy. The Jätinhaudanmaa settlement thus fits the valley oriented settlement model as exemplified by the Rieskaromäki case in chapter 4.3.1. It is quite well established that the localisation and the longevity of the Middle Iron Age farms in Southern Ostrobothnia were largely determined by the supply of fodder resources, mainly by the availability of productive water or shore meadows (Engelmark 1991, Herrgård & Holmblad 2005:142f, 153). On a local level the Jätinhaudanmaa settlement seems to fit into a similar pattern during the Late Bronze Age, but the regional localisation of the Late Bronze Age settlement districts seem to be generally more sea oriented than the Middle Iron Age settlement districts.

In my view the localisation of the Bronze Age settlement needs to be seen on two spatial levels of scale: that of the settlement district and that of the local settlement units (see discussion in chapter 4.3.1). The localisation of the coastal Bronze Age settlement in Laihia seems to rely on some kind of a geographical compromise between resources that enabled maritime foraging subsistence practices and resources that enabled agrarian subsistence practices. The apparent lack of settlement districts in the river valleys and at the estuaries of the large Kyrö and Lapua rivers in the largest bays of Southern Ostrobothnia indicates that the availability of maritime and perhaps especially pelagic foraging resources steered the macro-localisation of the settlement districts towards the sea on a regional level. On the local level, within the settlement districts, agrarian subsistence preconditions and especially pastoral resources appear to have affected the micro-localisation of the individual farms. The Peltomaa study shows how the settlement was dispersed as individual farms or small hamlets around the available water meadows. This dual strategy of settlement localisation on two levels of spatial scale may have been a means to reach an adequate and a varied resource base in order to maintain a sustainable mixed subsistence economy.

As a contrast, the Middle Iron Age settlements of the Vaasa area display a regional concentration to the agropastorally optimal area, both on the settlement district and on the local settlement unit level. The relatively large analysed bone material from the Middle Iron Age farm site at Pörnnullbacken in Vörå contained about 90% domestic animals, mostly cattle bone (Hårding 2002:215ff). From the Middle Iron Age there is, furthermore, data on farmhouse foundations (with probable byres), agricultural archaeobotanical evidence, fossil fields and clearance cairns (Engelmark 1991, Liedgren 1991, Viklund 2002). The Middle Iron Age settlement pattern thus appears to signal a nearly completely agropastoral society (see also Herrgård & Holmblad 2005:153). It is therefore interesting to notice that the dominant Late Bronze Age settlement districts near the Kokemäki river estuary in central Satakunta seem to have been localised in a fashion that resembles the Vaasa area settlement districts during the Middle Iron Age. The Bronze Age settlement districts in Nakkila, Harjavalta and Kiukainen thus seem to be optimally situated from an agropastoral subsistence perspective. This is underlined further by the emergence of a Bronze Age settlement district upstream the river valley in Kokemäki (Salö 1981), a Middle Iron Age parallel in Southern Ostrobothnia is
the emergence of the Isokyrö settlement district in the valley of the Kyrö River. The settlement districts in central Satakunta differs also qualitatively from the surrounding settlement districts in terms of monumentality and in the display of wealth, which is another (sociopolitical) parallel to the regional centralisation in Middle Iron Age South Ostrobothnia. I will return to this issue in chapter 4.9.2.

4.6.5 Signs of agricultural intensification

The earliest definite pollen evidence for cereal cultivation in Finland is dated to the Late Neolithic. Most of the data derive from South-Western Finland, but early cereal pollen has also been found in central Finland and even in the northern province of Kainuu (Huurre 2003:28ff). Asplund infers however that not even in the agriculturally optimal areas in South West Finland did the agricultural subsistence elements lead to any remarkable changes during the Late Neolithic. It did not affect the formation of the archaeological record to any noteworthy extent (Asplund 2008:67). Huurre claims furthermore that the pollen analyses indicate that cultivation became consolidated in South-Western Finland during the Early Bronze Age. There is also an indication as far north as Ylitornio. When it comes to the Late Bronze Age Huurre concludes that cultivation was now consolidated also in Southern Häme and that cultivation experiments now took place also in other parts of the Lake District of the interior of Finland. Late Bronze Age cultivation indications have also been noted as far north as the Ii River (Huurre 2003:28ff).

In previously conducted pollen analyses in Southern Ostrobothnia, only some minor human interference have been noted. At Vitmossen in Vörå some changes in the herbaceous vegetation have been interpreted as indications of grazing around 750 BC (Vuorela 1989). Possible human caused Bronze Age disturbances have also been reported in pollen analyses from Purmo and from Jurva (Miettinen & Vuorela 1982, Hyvärinen 1987).

The recently performed pollen analysis in Peltomaa in Laihia comprises the first positive palynological proof of Bronze Age cultivation in Southern Ostrobothnia; it is also the earliest pollen evidence for cultivation in the region. A peat core was obtained for pollen analysis from a small bog that is situated at 42 metre elevation in Palonmäki (not to be confused with Palomäki), about 500 metres to the south-west from Alatalo. The absolute chronology of the pollen diagram is established with the aid of the shore-displacement chronology for the basin isolation as well as a series of three radiocarbon dates. The pollen analysis conducted by Jan-Erik Wallin shows that the vegetation was largely dominated by birch forests throughout the entire Bronze Age. Barley type (Hordeum) pollen emerges in the Palonmäki bog at the 0.39 m depth. This level is radiocarbon dated to 1040-840 BC (2795±35 BP, Poz-24495). Precisely in time with the emergence of cereal pollen in the Palonmäki bog, the amount of sedges (Cyperaceae) pollen increase strongly in the pollen diagram. The end of the barley cultivation phase is estimated to 400 BC, which also coincides with a drop in the frequency of sedges. Both the rise and the later fall in the frequencies of sedge and barley pollen are thus synchronous events. The cultivation phase is also marked by a number of other plants that indicate human interference (Wallin 2009). Other events that are synchronous with the cultivation phase consist of a slight increase of charcoal particles and a decrease of Alder (Alnus) pollen. Perhaps this means that alder vegetation was burnt in order to expand the meadows.

After a period of natural vegetation regimes, a later cultivation phase appears surprisingly in the Palonmäki diagram during the Roman Iron Age. The latter cultivation phase is interesting,
but as it appears after the Pre-Roman Iron Age and as there are no recorded structures or finds in the Peltomaa area that could be linked to this cultivation phase; it will not be discussed any further in this context.

Peltomaa is one of the few areas in Finland where Bronze Age cultivation has been doubly proved by a local pollen analysis and by macrofossil material. Pollen analysis is usually too blunt a tool for the assessment of cultivation types and techniques. Macrofossil analyses are generally necessary in order to achieve these goals. Soil samples for macrofossil analysis were taken in Peltomaa at the sites of Alatalo, Palomäki W, Palomäki N and Annikkalanmäki E. Charred seed materials that relate to cultivation were found in samples from the two first mentioned sites. Except cereals also seeds from weeds, meadow plants, trees and berries were found in the macrofossil material.

The Alatalo and Palomäki W macrofossil results correspond well to each other. The combined macrofossil results for the sites do furthermore not conflict with the pollen analysis; instead the macrofossil data match well with the pollen data, both in species composition and in chronology. I therefore consider the macrofossil analysis results to be quite representative of the Late Bronze Age agriculture in Peltomaa.

Barley (Hordeum vulgare) dominates entirely amongst the 59 charred cereal grains or grain fragments yielded from Alatalo and Palomäki W. All exactly determined barley grains belong to the subspecies of hulled barley (Hordeum vulgare var. vulgare). Of other cereal species only one grain of oats (Avena) was found, which can probably be regarded as a sporadic incursion in the barley cultivation. Collected and possibly eaten wild plants are indicated by seeds of Rowan (Sorbus aucuparia) and Raspberry (Rubus idaeus). The three radiocarbon dated cereal grains from the Jätinhaudanmaa dwelling sites are as follows (site, context, species and date):

Palomäki W, hearth remains: Barley (Hordeum vulgare) 2785±30 BP, 1000-830 cal BC (Poz-23351).
Alatalo, cultural layer: Barley (Hordeum vulgare) 2590±40 BP, 840-540 cal BC (Ua-33250)
Alatalo, cultural layer: Oats (Avena) 2455±40 BP, 770-400 cal BC (Ua-34506)
Identified charred seeds of plants that can be regarded as arable weeds consist of Bed-straw (Galium), Hemp-nettle (Galeopsis), Goosefoot (Chenopodium), Black-Bindweed (Fallopia convolvulus) and Vicia (Vicia). Some of the species are annual and spring germinating weeds that thrive in disturbed nitrogen-rich soils. It is possible to link the dominance of hulled barley and the composition of the weed seeds to the existence of manured arable fields.

Around 1100 BC started the most ground-breaking agricultural change in Scandinavia since the very introduction of agriculture. This agrarian kit was based on hay-making for winter feeding, winter-stabling of livestock, manuring of permanent fields and cultivation of hulled barley (Hordeum vulgare var. vulgare). It would still take centuries before the entire kit was introduced everywhere (Pedersen & Widgren 1998:239f, Viklund 2002:14). Winter stabling of livestock, which apparently started to spread at this time, made it easier to manure the fields. The nutrients of the cultivated field stemmed thus originally from the meadows. To its basic principles this form of cultivation remained dominant into modern times (Pedersen & Widgren 1998:239f).

One of the most important changes in this transition was the more specialised cultivation of hulled barley, which especially diminished the role of naked barley, but also of other crops. Hulled barley has a relatively short growing season and it can absorb nutrients relatively quickly. This particular trait may have been of importance especially for cultivation in a northern climate with relatively poor soils and a short growing season. With the aid of manuring hulled barley can therefore yield relatively good returns even in agriculturally marginal areas. Hulled barley has also a lower rate of protein which may have been beneficial for the purpose of beer brewing. Hulled barley is also quite resilient towards parasites and the post-storage germinating rate is relatively high. A negative aspect of hulled barley is that it is more difficult to thresh (Welinder 1998:73,148, Pedersen & Widgren 1998:194).

During the Late Bronze Age a great geographical expansion can be detected in cultivation in Scandinavia. In Norway the cultivation expands to the 700 metre elevation in the southern highlands and also along the entire coast to Finnmark. In Sweden the cultivation seems to expand or increase along the coast at least to the height of Västerbotten. In many areas the first recorded fossil fields emerge at this time. The fields are materialised by clearance cairns and basin shaped cultivated plots, the latter of which have also been detected in Estonia (Myhre 2002, Welinder 1998, Kriiska & Tvauri 2007). Welinder assumes that the expansion of cultivation in central and northern Sweden depended on the agricultural change that included a specialisation on hulled barley. Agriculturally marginal areas with moraine soils were the regions that especially benefited from a specialisation on the cultivation of hulled barley in manured fields (Welinder 1998:194).

As mentioned, pollen analyses indicate that cultivation expanded and intensified also in Finland during the Bronze Age. Macrofossil analyses are unfortunately rare. Hitherto only two sites in Finland have generated macrofossil cereal grains from times corresponding to the Late Neolithic and the Early Bronze Age. These include a Late Neolithic Kiukainen culture dwelling site at Niuskala in Turku and an Early Bronze Age textile ceramic dwelling site at Kitulansuo in Ristiina in the province of Savo. At both sites the identified cereal grains consist of naked barley (Hordeum vulgare var. nudum). At Niuskala the cereal grains have been radiocarbon dated to approximately 1900-1000 BC and at Kitulansuo they have been dated to 1400-1020 BC (Huurre 2003: Lempiäinen 1999:153, Lavento 1998:50). Except Jätinhaudanmäa, the only Late Bronze Age cereal find that I know of from Finland is from Luistari in Eura. The barley grain (NM 24740:421a) was found in a clay vessel, which according to the excavator derived from the context of a large pit hearth (or a cooking-pit?)
that was damaged by a burial in the Late Iron Age (Lehtosalo-Hilander 1999:42). The Luistari barley grain is dated to 830-410 BC (2560±55BP, Hela 208). Also other types of plants could have been cultivated during the Bronze Age, for example turnip, but these types of plants are usually difficult to detect by archaeobotanical means (Häkkinen & Lempiäinen 1996).

The slopes and the small valleys in Jätinhaudanmaa are dominated by fine grained silty soils. The construction of several large cairns and to some extent also the use of cooking pits have swallowed a large amount of the stones that must have been cleared in the vicinity. Many south sloping, silt-dominated and stone free or cleared surfaces in Jätinhaudanmaa have obviously provided suitable grounds for permanent arable fields. A small stone-cleared basin-like surface with a row-like stone feature in the northwestern part of Alatalo exhibited quite noticeably increased levels of organic content (LOI) but only slightly increased phosphate values. A small test pit in this area yielded some domestic waste as tiny ceramic sherds (Holmblad 2008b). More fieldwork is however needed before it can be confirmed that surfaces as this one were utilised as arable fields.

Water sieving of soil samples provided a great number of burnt bone fragments from the Alatalo and Palomäki W sites. Unfortunately the osteological material is extremely fragmented and only a tiny fraction could be identified by species. The determinations of specific species are limited only to some fish vertebra from pike-perch (*Lucioperca lucioperca*), whitefish (*Coregonus lavaretus*) and perch (*Perca fluviatilis*). Belonging to the identified animal groups are bones from a canine animal (*Canidae*) which is either a dog or a wild species, furthermore a tooth fragment from a small cud chewing animal (Ruminant) which probably stems from a sheep or a goat, and finally an horn fragment of a bovid (*Bovidae*) which derives either from cattle or from a sheep/goat (Stavrum & Storå 2008b).

The seeds of plants identified in the Jätinhaudanmaa material that can be regarded as meadow plants are dominated by True Sedge (*Carex di.*). Other meadow plants are Legumes (Fabaceae), Ciguefoil (*Potentilla*), Grasses (Poaceae) and Sedges (Cyperaceae). The recorded seed material is admittedly quite limited, but the relative abundance of Sedge seeds could still relate to hay-making and winter feeding of domestic animals. Sedges (or Carex) are the most frequent fodder plants that have been identified in the macrofossil materials of the Middle Iron Age farms at Kalaschabrännan in Malax and at Pörnullbacken in Vörå, where sedges were obviously harvested on water meadows (Engelmark 1991:94, Viklund 2002:18).

Bones from domestic animals from other Bronze Age contexts in Southern Ostrobothnia consist of an unburnt sheep/goat tooth from a Late Bronze Age cairn in Nikonkallio in Laihia. The cairn probably belongs to the end of the period (Salo 1981:400). The other finds consist of pig and possibly of cattle bones from the settlement surface at Borgbacken in Kronoby where a cooking pit is radiocarbon dated to 1440-970 BC. It is however unclear if and how the bones might relate to the cooking-pit. It is not mentioned whether these bones are burnt or not (Deckwirth 2008:26f).

Vivi Deckwirth has recently made a synthesis on domestic animal bones found in Early Metal Period contexts in Finland. She concludes that few bones of domesticated species have been found at Early Metal Period sites (Deckwirth 2008). Asplund concludes that the osteological materials do not conclusively support the idea that animal husbandry would have played a significant role during the Bronze Age in Finland, but he also infers that such a hypothesis cannot be rejected due to the very small amount of analysed bone materials (Asplund 2008:198f). One problem appears to be that many finds of unburnt bones from domesticated
animals recorded in Early Metal Period contexts often are undated and thus regarded to be unreliable.

The available osteological material from Jätinhaudanmaa is unfortunately small and fragmented, which has hampered exact identifications of species. The combined synchronous picture that is provided by the palynological and archaeobotanical results; with an apparent specialisation on hulled barley, the composition of the weed flora and the relative abundance of sedge seeds and pollen peak of sedges as well as the decrease of alder, all fits nicely with the location, the chronology and the palaeoecological context of the settlement. The combined picture indicates a type of agriculture that was based on a combination of animal husbandry and field cultivation, with a high degree of interdependence between both branches. Animal husbandry can not have been insignificant in Jätinhaudanmäa during the Late Bronze Age. Pastoralism provides simply the best explanation for the local settlement history. If we exclude pastoralism as an important variable, the Jätinhaudanmaa settlement history would become almost incomprehensible.

This indicates that the agrarian change started synchronously at least at some farms in Southern Ostrobothnia and in western Finland as in other parts of Northern Europe. The direction of the change seems to be given, even though the transformation may have lasted for centuries. Hulled barley was definitively the leading crop in Southern Finland and in Southern Ostrobothnia during the Roman Iron Age at the latest (see e.g. Häkkinen & Lempiäinen 1996:146ff, Engelmark 1991:88, Viklund 1997:226f). As already indicated in a chapter 4.3.1 an 4.6.4, I find it likely that the relative role of agropastoral practices varied between the coastal communities and between the individual settlement units during the Bronze Age. Some settlement districts and settlements units were more "sea oriented" while others were more "valley oriented". It is notable that Deckwirth’s study contains very little data from sedentary farm sites in central Satakunta, which in my view was the area that was optimally situated for agropastoral subsistence practices. Therefore I find it very likely that pastoralism had a vital role in the subsistence practices among at least a part of the coastal settlements. When it comes to the osteological finds, the Rieskaronmäki farm in Nakkila actually contained a dominance of burnt bone from cattle and sheep or goat; even if the bone material was small (there were also bones from dog, hare and beaver). In a closely situated cairn more cattle bone was discovered (Salo 1981:400).

In Southern and Central Scandinavia, pastoralism formed the very basis of the Bronze Age subsistence economy. Dairy production particularly is thought to have increased in importance during the Bronze Age, and parts of Skåne and the Östergötland plain became completely deforested due to grazing activities (Pedersen & Widgren 1998:239f, 256). It is also suggested that the reducing size of cattle in the Bronze Age and the Pre-Roman Iron age indicates that breeding strategies were focused on the maximization of the number of cattle rather than the quality of the stock (Roymans 1999:295).

One element in the new type of agriculture was the emergence of byres. Winter-stabling made manuring of cultivated fields easier, but this notion provides only a partial understanding to the emergence of byres. In Scandinavia byres were added as a section to the residential buildings of humans. Apparently this change had strong ideological connotations, which is also valid for the entire Bronze Age pastoral sector in general. Wohnstallhäuser or longhouses with byre sections emerged originally along the North-Sea coast in 1800-1500 BC which led to the creation of a special Hauslandschaft. Protection against institutionalised cattle raiding is mentioned as a major reason behind this innovation. That humans and cattle begun to share the same house is an expression of the high cultural valuation of cattle (Roymans 1999:292).
Kristiansen regards the Scandinavian long-house itself as a symbol of a pastoral ideology (Kristiansen 2004:186).

The man-cattle relationship had an important social and ideological dimension in pastoral societies in North-West Europe and Scandinavia in the Bronze Age. The ideological importance of cattle far exceeded their dietary importance, and cattle played an important role in the social transactions (Roymans 1999:292, Kristiansen 2004:186). The ritual exchange, sacrificical deposition and consumption of cattle were important elements. Cattle meat is thought to have been more prestigious and ceremonially important than cereals (Roymans 1999:297f). Long-distance cattle raids were, we assume, a popular sport of war and it was a highly ritualized social practice as cattle raiding was linked to the mythological perceptions of the “Indo-European cattle raid cycle”. Kristiansen links the large number of flange hilted swords in Northern Europe to the institution of cattle raiding (Kristiansen 2004:186).

No definitive stabling constructions have been observed in Finland during the Bronze Age, but there are some structures that can be taken as indications for Late Bronze Age byres. The longhouse at Rieskaronmäki in Nakkila was bipartite with a division that resembled contemporary Scandinavian longhouses. According to Salo there was a western section that was an obvious dwelling as well as an eastern section that was probably utilised as a stable and a barn. Close by, also a small quadrangular building foundation was noted with an external gable construction with a stone paved floor. Salo has interpreted the latter construction as a wind-shed for cattle (Salo 1981:64ff). The particular reasons for the introduction of byres in this area could have been quite different from the original reasons for byre introduction in the North Sea area, and some scholars have even suggested that byres remained rare in Bronze Age Finland (see chapter 4.6.6). Also in Sweden it appears to be clear that byres were not present in all settlements. It has for instance been pointed out that the longhouses of the late Bronze Age hamlet in Apalle lacked byre sections (Welinder 1998:193). Whatever the case, I still find it likely that some of the strong ideological meanings surrounding cattle were present here as well.

But what could have been the underlying reason for this large-scale change over such a large area? Myhre has attempted to provide an overall explanation for the Late Bronze Age "secondary agrarian revolution" in Scandinavia; The Early Bronze Age clan based society would have been replaced by a society of many smaller family units. Each family would have begun to own their own cattle herd and their own cultivated lands. This shift would have inspired each family to work harder as the returns from their investments to a higher degree started to benefit the individual families (Myhre 2002:114). In some sense this explanation seems to correspond either to an emergence or to a strenghtening of House based societies as the concept has been defined in chapter 2.2.2).

4.6.6. Jätinhaudanmaa as a high-rank House

In this subchapter I will attempt show why I believe that the Jätinhaudanmaa settlement unit can be regarded as a locally high-ranked house that even appears to have possessed a leading position in the Laihia polity at least at some point during the Late Bronze Age. The Jätinhaudanmaa case may therefore be an example on how local polities could become centralised around particular successful Houses. I will also attempt to compare Jätonhaudanmaa with some parallel cases. I will also discuss some of the functions and roles of this alleged high-rank House.
The archaeologically materialised settlement unit of Jätinhaudanmaa forms a spatially well-defined separate entity with a strongly ritualised landscape that manifests a social unit that lasted for a long time. The clustered cairns can be regarded as a strong and a lasting attempt to manifest the eternity of a House; this is further underlined by the confined character of some quite strongly articulated settlement surfaces, which indicates house replacement practices over many generations. As indicated in chapter 2.2.2, high-rank Houses tend to grow larger than other Houses and they could often consist of several coexisting households. A large House was arguably more robust to external disturbances and better equipped to preserve its existence in the long-run, which was a quality that in itself could enhance its status. This is suggested in Jätinhaudanmaa by at least two well articulated settlement surfaces and by three separate cairn cemeteries. There appears also to be a special emphasis to manifest the graves of the original founders of all the constituent sub-units of the House.

I prefer to regard the Jätinhaudanmaa sites as a functional and a social unit where the individual sites should be interpreted together and in relation to each other. In order to make a comparison with the Rieskaronmäki area it is important to note that Unto Salo has presented and interpreted the Rieskaronmäki, Uotinperä I and Uotinperä II sites in Kivialho in Nakkila as separate and isolated units (see Salo 1970:26ff, 1981:64ff), despite the fact that they appear to be spatially and chronologically closely corresponding to each other. The Kivialho sites are at least partly synchronous and they form a cluster of a scale that is comparable to the Jätinhaudanmaa cluster. In my view the Kivialho complex should be analysed as one settlement unit in the same way as I interpret the Jätinhaudanmaa complex. The suggested three-partite division of the Jätinhaudanmaa House has thus possible a parallel case in what I hypothetically will call here as the Kivialho House. There are many apparent similarities between the Jätinhaudanmaa and the Kivialho units. Both seem to have consisted of valley oriented hamlets that are marked by three separate cairn cemeteries. What is even more interesting, the individual sites appear somehow to be ritually and socially corresponding to each other in some structurally similar ways (for details on the Jätinhaudanmaa complex, see the previous subchapters, for detailed descriptions on the sites of the Kivialho complex see Salo 1970:26ff, 1981:64ff).

Both the Jätinhaudanmaa and the Kivialho complexes exhibit one dominant cemetery each that is marked by several large round cairns: Alatalo in the Jätinhaudanmaa case and Rieskaronmäki in the Kivialho case. The dominant cemeteries are furthermore divided in two separate clusters; the Alatalo case according to a north-south division and the Rieskaronmäki case according to a west-east division. Both cemeteries are dominated by one cairn that is larger and considerably higher than any of the other cairns. Furthermore; the dominating central cairns have in both cases contained internal rounded tower constructions. The most well articulated settlement remains have in both the Kivialho and in the Jätinhaudanmaa units been found within the dominant cemeteries. The recorded daub-walled settlement remains have furthermore in both cemeteries been divided according to the division of the cemeteries. The longhouse in Rieskaronmäki was found in the eastern part (with the largest cairn) and the smaller residential building was found in the western part. The settlement remains indicated so far in Alatalo suggests so far one strongly articulated building spot in the southern part of the cemetery (with the largest cairn) and one less articulated building spot close to the northern half of the cemetery.

Except the dominating cemeteries, both the Kivialho unit and the Jätinhaudanmaa unit have two additional cairn cemeteries that have much more modest appearences. The Uotinperä II cemetery in the Kivialho unit corresponds quite closely to the Palomäki E cemetery in the Jätinhaudanmaa unit, but partly also to the Palomäki N cemetery. In all these cases we are
dealing with cemeteries that have only one big round cairn each. The remaining structures consist of small flat stone-settings that are built as appendixes or as satellites around their respective central cairn. In the Jätinhaudanmaa case the Palomäki N cemetery stands out due to its ship settings, and in the Kivialho case the Uotinperä I cemetery stands out due to its lack of any proper cairns and its very small amount of burnt bone. Another difference is that the external circle of peripheral single cairns that surrounds the Kivialho complex is lacking in the Jätinhaudanmaa case. Perhaps the cooking pits that surround the Jätinhaudanmaa settlement could have possessed some similar qualities to the peripheral cairn zone that is present in the Kivialho case. The indicated bipartite division of the central cemeteries/farms and the differing qualities of the additional cemeteries/farms suggests some kind of internal House divisions with subgroups that manifested their existence in slightly alternative ways.

The Jätinhaudanmaa House stands especially out through its qualities of logistic nodality and its large-scale use of heated stone technology. As discussed in chapters 4.4 and 4.6.1, Late Bronze Age cooking pits in Laihia show a strong concentration to Peltomaa, to an area that surrounds the Jätinhaudanmaa House. This was also an area with a logistic nodality, as the starting point of a long ridge-system was located in Peltomaa. The change around 1000 BC with an introduction of cooking pits in Laihia can depend on a technological change in the seal oil production, but it can also imply a changed social organisation of the production, perhaps due to increased efforts to produce a surplus. This can be further strengthened by the apparent centralisation of the production. The centralised blubber production may both have required but also enabled a stronger social control of the production and the produce. The Bronze Age seal oil production may have been a community-level collective activity that was coordinated by the Jätinhaudanmaa House. The centralised cooking-pit production to a House with a logistic nodality may even indicate a presence of some kind of a local redistributive system. Gillespie notes furthermore that House property could consist of exclusive technological knowledge and of rights to craft certain objects (Gillespie 2007:36). The Peltomaa case suggests also that logistic nodality was of great social importance for the development of status differences amongst Houses and that ridges leading from the coast to the inland were obviously important routes of communication during the Late Bronze Age.

The Jätinhaudanmaa cemeteries with razors in the Alatalo cemetery and with ship-settings in the Palomäki N cemetery may indicate a local presence of ritually knowledgeable persons whose identities and worldviews had been affected by long-distance relations. Gillespie has noted House property could include special ritual knowledge, exclusive rights to display certain objects or rights to perform certain types of ceremonies (Gillespie 2007:36). These persons could perhaps have possessed some of the roles that Goldhahn has described as ritually knowledgeable “smiths” (Goldhahn 2009). A radically alternative function for the cooking-pits (but that could fit in with the last passage); would be that they were purely ceremonial or ritual constructions.

This latter type of interpretation is often given to the synchronously appearing cooking pits in Southern Scandinavia, but also to large occurrences fire-cracked stones in this area general: it has been suggested that fire-cracked stone relates to the transformative actions of the ritual “smiths” (Goldhahn:2009:182f). The cooking pits in the latter area are however often arranged in carefully planned rows and formations. They are furthermore often placed in slopes in a way that made the fires visible over large areas or distances (Lönn 2007). This type of "theatrical" placement of cooking-pits does not however seem to fit with the cooking-pits in Peltomaa: here they seem instead to show quite a large variation in topographical and relational placements. If the Late Bronze Age cooking pits in Laihia after all would turn out to be ritual constructions, my interpretation of large-scale blubber production in the area would
become flawed. This would however not change my interpretation on the centrality of the Jätinhaudanmaa settlement unit as the distribution pattern still would be the same. It would only switch the interpretation towards a more ritual and ceremonial role for Jätinhaudanmaa.

An apparent agricultural intensification in Jätinhaudanmaa may also be linked to its suggested position as a high-rank house. This interpretation is naturally hampered due to lack of other analysed units from the Late Bronze Age, so this should only be considered as a hypothetical possibility. In chapter 4.6.5 I argued that agropastoral subsistence practices had a vital role for the settlement in Jätinhaudanmaa. An intensified cultivation of hulled barley and an intensified pastoral sector could be related to attempts to acquire products that could be used for ceremonial feasting. Cattle meat and beer could have been important products for a House that attempted to increase its rank by this kind of means. The new Lusatian inspired bowls during the Late Bronze Age may indicate the appearance of new ritualised drinking habits. It is thus possible that high-rank and rank-striving Houses took the lead in agricultural intensification in Bronze Age coastal Finland.

Finally I will provide short accounts on settlement hierarchies in Scandinavia and in Estonia that seems to contain some similarities to the suggested role of the Jätinhaudanmaa House. Artursson has noted that settlement units consisting of farm clusters, hamlets or villages in central regions of Bronze Age Scandinavia often consisted of one large-sized farm and a number of small- or medium sized farms. These units had close economic and social relations and the large farmsteads were central operators of specialized economic activities (Artursson 2009:242). The size-range of the settlement units, the size of the long-houses and the variation in settlement organisation is closely connected with the availability to important natural resources and to the level of centrality in the long-distance networks (Artursson 2009:239). The chiefly farms that are marked by the largest long-houses lasted often for hundreds of years. These farms were nodes in the long-distance networks and they formed important centres for the production and the distribution of high-status objects. The chiefly farms also display small buildings that were facilities for storage or for specialized activities (Artursson 2009:242f). Valter Lang has noted that relatively small and compact power territories were institutionalised in the central settlement areas in Estonia during the Late Bronze Age. These territories consisted of one dominant and of several collaborating subordinate farms. The dominant farm had the social and economical power in these units. The subordinate farms had some obligations in this system, and a part of their production could be brought to the dominating farm. Also fortified settlements were founded in the Late Bronze Age. The concentration of social power reached quite high levels in these cases. These centres emerged along transport routes as the settlement hierarchy depended on trading and on bronze casting (Asplund 2008:330, 344).

4.7. Logistic ridge system networks

Ridges formed during the Ice-Age create cobwebs that stretch out all over Finland and neighbouring areas. The long ridges that are particularly frequent in the northern part of Southern Ostrobothnia and in Central Ostrobothnia usually run in parallel in straight south-eastern direction from the coast (see adjacent map). Ridges may have been especially beneficial for communication in areas with a high frequency of bogs and particularly for communication during seasons of non-frozen ground. Unto Salo has touched upon the role of ridges as Bronze Age pathways in Satakunta, but my general impression is that Finnish
archaeological authors usually tend to emphasise the role of waterways instead. Finnish historians dealing with Medieval and early modern times in Ostrobothnia have more often stressed the role of ridges as communication routes (for instance Luukko 1950:11f). For several reasons I want to underline the logistic importance of ridges as media for Bronze Age transport and communication in Southern and Central Ostrobothnia. One major reason is that there are few good inland waterways in this region. The flat poorly drained inland landscape is furthermore largely covered by vast bogs. Also the relative lack of topographic landmarks as prominent hills could be a factor that has emphasised the role of the ridges.

Salo has pointed out that Kokemäki River in Satakunta contains several rapids between Harjavalta and Kokemäki which probably decreased the logistic usability of the river. The contacts between the settlement district in Kokemäki and the coast may therefore mainly have been undertaken along the ridge that runs parallel to the river. This is furthermore indicated by the Bronze Age type cairns that have been built along the ridge. The important Huovi road has followed the same ridge at least since medieval times. Inland ridges with cairns of Bronze Age character are known also at other locations in Satakunta. The cairns are supposed to be markers of the pathways (Salo 1981:407).
Miettinen has expressed similar ideas about the large Bronze Age type cairn that is situated on a hilltop at Koppelokallio in Jurva. The solitary cairn has apparently been built about 10 kilometres from the Bronze Age coast at an ancient pathway (Miettinen 1998:66). Logically it should have been the inhabitants of the closest settlement district in Pörtom who built the cairn. There is no well articulated ridge in the area, but the hypothetical pathway from the coastal community may have followed the watershed between the drainage areas of Närpes and Teuva rivers and it may have led to the Kyrö River valley. Some additional registered cairns along this watershed seem to support this interpretation.

In chapter 4.6.1 presented the observation that the Late Bronze Age large-scale blubber production of the Laihia community was concentrated to the starting point of a long ridge row that run from the Bronze Age coast to the inland. Cairns built along this ridge row are probably marks of an important Bronze Age pathway between the coastal community and the inland. At the Kyrö River in the Ilmajoki-Kurikka area the Laihia ridge row met the longer and larger Kyrönkangas-Pohjankangas-Hämeenkangas ridge system that continues far into the south-western part of the lake district of Finland. This ridge system connects in turn with other ridge systems. The Kyrönkangas-Pohjankangas-Hämeenkangas route is historically known as one of the most important roads in Finland. In Medieval times it was actually the main logistic link between Southern Ostrobothnia and southern Finland (Masonen 1999:67).

There are also some indications of cooking pit concentrations at coastal ends of other ridge rows. The poorly studied, but in my view apparent Bronze Age cooking-pit concentration in the Borgbacken area in Kronoby may have been motivated by a logistic nodality that is analogous to the situation in the Peltomaa area in Laihia. Kronoby is the coastal endpoint for a ridge row that extends all the way to Lake Päijänne in Central Finland.

The long ridge rows were most likely important routes for communication throughout the prehistory and later. In the Bronze Age I believe that they were especially important for the communication between the coastal communities in Southern Ostrobothnia and the inland textile ware using groups that lived on the other side of the Suomenselkä watershed. Finds origination from the inland groups have been found at the coast, and objects from the coastal communities have entered the inland (see chapter 4.10.2). Exchange in seal oil, furs and bronze may have been transmitted along the ridges. Even if the contacts may have taken place in winter (as suggested by the Bronze Age sledge runners and skis that have been found in inland parts of Southern Ostrobothnia), it would still probably have been safer and easier to follow the routes of the permanent ridges. Theoretically, transhumance also could have benefited from the ridges, but so far we have no signs of this type of activity. It is more certain that the ridges increased the coastal communities’ access to the hunting grounds in the inland, which will be dealt with in the next subchapter.

4.8. Hunting of cervids

The ridge systems were not only of importance as communication routes, the ridges could also function as important hunting grounds that were easy to access from the coast. When we follow the ridges from the coast to the inland, we often encounter trapping pit systems that run across the ridges. The ridges thus seem to have been utilised as hunting grounds for cervids at some points in Prehistory. So far only a limited number of trapping pits have been dated in
Southern Ostrobothnia and currently most of the dates point towards the Early Iron Age. We thus have quite little direct evidence that definitely ties cervid hunting to the Bronze Age, but the circumstantial evidence nevertheless indicate that it was conducted, and that it even may have been an important large-scale activity. Due to these circumstances, it can not be omitted from this study of the Bronze Age, but deserves to be included as a viable hypothesis.

Several trapping-pit systems have been detected on ridges in Southern and Central Ostrobothnia, but few have been dated. A trapping-pit system composed of four pits located by the Early Neolithic site at Timonen in Evijärvi provided a radiocarbon date to the end of the Bronze Age (1998:110). One of the trapping pits in the Hundbacka trapping pit system provided a Pre-Roman radiocarbon date, but a local pollen analysis indicate a possible Bronze Age human disturbance at the site, that may relate to a Bronze Age use of the trapping pit system (Miettinen & Vuorela 1982). The most interesting sites are however situated in Lestijärvi, where both Bronze Age inland camp sites and some big trapping-pit systems have been detected.

Very few Bronze Age dwelling sites are known from inland areas of Southern and Central Ostrobothnia. The most important and well known site consists of an open settlement surface that is situated at the ancient lake-shore at Anttila in Lestijärvi. The Anttila site is located on a sandy ridge that comprised a cape at a river outlet by the shore of Lake Lestijärvi. The excavations in the 1970s revealed no concrete structures, but the find material includes Paimio type ceramics, a ceramic type characteristic of the coastal area during the Bronze Age (Siiriäinen 1978). Interestingly no inland or northern pottery types were found. The other finds consisted of quartz scrapers and flakes, fragments of slate implements and burnt bone. The Anttila dwelling site remains unique to this day as the northernmost known find spot of the mentioned ceramic type and by its inland location some 50 kilometres from the Bronze Age coast. A unique find in a dwelling site context is the period IV bronze spear-head found in the cultural layer at Anttila. The closest parallels to the rare spearhead type are found in Denmark (chapter 3.6.1).

Some other unexcavated lake-shore dwelling in the vicinity of Anttila exhibit single objects of Bronze Age origin, as an even based arrowhead. The even based lithic arrowheads seem according to their distribution pattern to be largely connected to some type of inland hunting. They can however not be directly connected to cervid hunting. There are also some cairns around Lake Lestijärvi, but none is located in close proximity to the dwelling sites. The Bronze Age date for the cairns remains obscured (Itäpalo & Schulz 2003). The Anttila site and its adjacent trapping-pit systems present anyway a case of utmost importance for our understanding of the inland-directed interests of the coastal population during the Bronze Age.

The reason to the establishment of the Anttila site is probably to be found in the vast trapping pit systems that have been found in the vicinity. According to Itäpalo and Schulz, almost 500 trapping-pits have been found in the adjoining ridge area. The largest trapping-pit complex has been detected at Kasalankangas, which forms an extension of the same ridge as where the Anttila dwelling site is located, about one kilometre to the south-east of Anttila. The trapping-pit complex in Kasalankangas is actually one of the largest found in Finland (Schulz 2007). The size of the trapping-pit system complex in Kasalankangas is so far unique in the region and it resembles the vast trapping-pit complexes known in Lapland (Itäpalo & Schulz 2003, Schulz 2007). The systems at Kasalankangas ridge constitute a complex of almost 400 pits in at least ten rows and some smaller groups of pits within a total area of 170 hectare. The longest lines are 600-300 meters long and generally go in a NW-SE direction along with the
direction of the ridge. The long lines are regularly crossed by shorter lines in their North-Western ends. The number of trapping-pits in Lestijärvi increased further by the discovery of another pit system at Kinnulankangas, which is situated one kilometre further away from the Anttila site, but situated on the same ridge row. At least 70 pits in two major lines have been found at Kinnulankangas.

The proximity to the exceptional Late Bronze Age site at Anttila makes a Bronze Age date very probable for at least a portion of the pit systems in Lestijärvi. The find material links the Anttila site to the settlement of the coastal area. It therefore seems plausible that the Anttila site was annually visited by hunting teams from the coast. Cervid hunting may therefore have been undertaken within a frame of seasonal logistic mobility and thus be analogous to the seasonal sealing voyages to maritime areas. The Anttila site would correspondingly be an inland hunting station that is analogous to the maritime sealing stations. The huge number of trapping pits in Lestijärvi indicates a large-scale activity with numerous participants. The long ridges formed straight, easy routes of communication between the coastal settlement districts and the inland hunting grounds. Trapping-pit systems situated in remote inland areas may therefore have been relatively easy to approach from the coast. When considering the extent of the ridge systems, I would not exclude the possibility that hunting teams from the Ostrobothnian coast could even have utilised some of the large trapping pit systems that are situated behind the Suomenselkä watershed in Central Finland.

The largest Finnish trapping pit systems are situated in Lapland. Series of carefully dated trapping pits indicate that a large-scale use of trapping pits emerged in Lapland during the end of the Neolithic and it continued throughout the Early Metal Period. The trapping pits are linked particularly to forest reindeer hunting (Halinen 2005:84). This dating of a large scale use of trapping pits is interesting when considering the context and the dating of the large trapping pit systems in Lestijärvi in particular, but also in the rest of Southern and Central Ostrobothnia in general.

Schultz and Itäpalo link the trapping-pits particularly to forest reindeer hunting because the lichen growing ridges in the Lestijärvi area were probably important winter pasture grounds for the forest reindeer (Rangifer tarandus fennicus). The forest reindeer assumingly lived in great herds on the lichen growing ridges during the winter months, which should have been the optimal season for the use of the trapping-pits (Itäpalo & Schulz 2003). Trapping of elks can not be ruled out, but I agree that forest reindeer appears to have been the main game. The trapping pits in Lestijärvi are generally relatively small and they seem to have been better suited for forest reindeer trapping (see also Spång 1997:64ff).

It must furthermore be added that some remarkable bronze hoards have been found in Sodankylä and in Inari in Finnish Lapland. The surprisingly rich hoards contain South and Central Scandinavian bronze objects as bracelets, necklaces and swords from the Late Bronze Age (Edgren 1998:135). The findings from Lapland seem to suggest that intensification in forest reindeer hunting relates to increased long-distance networks that extended to and from southern or central Scandinavia. If this is the case in Finnish Lapland, it could also be the case in Southern and Central Ostrobothnia, which may also be indicated by the rare Lestijärvi spearhead.
4.9. The organization of Bronze Age coastal communities

4.9.1. Interacting Houses

In this subchapter I will attempt to define why I find it likely that Houses existed and why they might have emerged and what role they could have had in the coastal communities during the Bronze Age. As mentioned in chapter 2.2.2 the emergence of House societies is generally connected to new space and time related societal values. This process is particularly related to the growing importance of landed property and to values that emphasised durable land utilisation rights and territoriality. This process is furthermore generally manifested by attempts to materialise House continuity and House eternity in the landscape, for instance by references to House ancestors.

As the previous chapters have shown, there was apparently a growing importance of agriculture during the Bronze Age in the coastal communities and there were large-scale sealing efforts of fairly stationary or localised character. These subsistence related practices form economically motivated reasons to assume that there were space-related societal values that were beneficial for the creation of social Houses in the coastal communities during the Bronze Age. The landscape became also strongly ritualised during the Bronze Age, which is indicated by some water sacrifices, but especially by the large number of burial cairns. Monumental cairns can probably be taken as signs for interhouse competition. The culmination of this process is indicated by the emergence of farm cemeteries which formed long-term visual biographies for sedentary settlements. I regard especially the emergence of farm cemeteries with burial cairns to be the strongest manifestations of House eternity. Perhaps also cooking-pits and burnt mounds could possess similar qualities for some Houses. The confined character of relatively strongly articulated settlement surfaces in Jäninhammar suggests practices of house replacement that also can indicate an emphasis on House continuity. Also some of the imported bronze artefacts and lithic stone axes could be interpreted as heirlooms that manifested biographies and alliance relations of Houses. All these elements indicate that there were time related ritual practices and space related social values that were beneficial for the establishment of social Houses in the coastal communities during the Bronze Age.

I therefore suggest that the archaeologically materialised spatial-analytical settlement units formed socioeconomic Houses, which may be regarded as the agents that formed the basis of the social organisation of the coastal communities. As already indicated in chapter 2.2.2 there should always have been at least some rank-differences between the individual Houses in the same community. I also regard differences of rank to be relative. A locally high-ranked House does not necessarily have been regarded as a high-ranked House on a larger societal scale. It can also be assumed that it was often the actions of high-ranked Houses or rank-striving Houses that lead to various local changes. These Houses would have been the agents that often initiated various changes in their respective communities.

I believe that Houses emerged largely due to local circumstances in the coastal communities and that Houses could have been present already during the Late Neolithic, or even earlier (see also Vaneeckhout 2009). It should however be noted that the occurrence of Houses (amongst completely kin-based groups) can have been uneven and patchy in the same society and that the relative frequency and the articulation of Houses can have fluctuated over time (see chapter 2.2.2). My impression is that Houses became more articulated during the Late Bronze Age in Southern Ostrobothnia. Despite the importance of the local circumstances for
House establishment, I believe that there was also a strong connection to networks that extended outside this area. The symbolic and ritual means by which the coastal Houses manifested their existence appears largely to have been inspired by South and Central Scandinavian models and trends. It is therefore probable that the suggested growing strength of the House society in parts of coastal Finland was largely fuelled by contacts to Southern and Central Scandinavia.

Artursson suggests that Bronze Age society in central and southern Scandinavia should be interpreted as a House society. The chiefly farms often display continuities that lasted for hundreds of years. The large long-house is regarded as a symbol for the continuity of chiefly power. The long-house could thus work as a powerful economic, social and political institution that aided the stratification of the society (Artursson 2009:232f, 243). The house symbolism is also present in the mortuary and in the ceremonial practices. From the Late Neolithic onwards long-houses and symbolic copies of long-houses were somehow integrated into burial monuments. House symbolism is also expressed by house-like graves, house-urns, cult-houses and death-houses (Artursson 2009:243). The House society organisation in South Scandinavia would have made it easier for aspiring chiefs and aristocratic families to break away from the old, more egalitarian and kin-based society. By establishing new long-distance networks with other aristocratic Houses, new social structures and ideological systems could be constructed in south and central Scandinavia (ibid.). It is thus probable that the growing articulation of coastal Houses in western Finland is linked to some degree of interhouse rank-competition within the coastal communities. Communication with South and Central Scandinavia was a source for inspiration and even used as a tool to achieve the goals of higher rank.

Suggested structure for House cooperation in foraging activities

Many coastal Houses in Southern Ostobothnia attempted apparently to manifest their sense of eternity and rank through the construction of bigger burial cairns or through the creation of larger cemeteries, but to some extent also through the display of valued bronze artefacts and probably also through some other types of imported elements or special skills (as ritual knowledge or bronze casting). In chapter 2.2.2 it was also indicated that high-rank Houses could consist of several households and that there could be a special dynamics of internal relations within a House. In chapter 4.6.6 I made an attempt to interpret the Jätinhaudanmaa settlement unit as a locally high-ranked House that contained two or three separate households. The settlement sites and the cemeteries in Jätinhaudanmaa show some qualitative differences that indicate partly different ritualised practices and perhaps some varying social
roles for the House constituting households. A similar pattern is suggested at the Kivialho complex in Satakunta.

The study of the Jätinhaudanmaa area suggests furthermore that high-rank houses could have been in a key position in introducing new agrarian subsistence practices. Products from animal husbandry and from cereal cultivation could have been used for important communal feasting that further increased the status of the high-rank houses. The Late Bronze Age introduction of the Lusatian type of bowls can for instance be related to a new type of ceremonialised drinking habits.

4.9.2. Local and regional polities

Groups of closely interacting Houses are thought to have formed autonomous local polities, which generally would have constituted the highest sociopolitical level of community organisation along the western coast of Finland. The archaeologically materialised sub-regional cairn clusters or spatial-analytical settlement districts are therefore regarded as the territories of the suggested local polities. The basic internal functions of the polities would have been the institutionalisation of collective economic projects, reciprocity and risk management amongst neighbouring Houses and settlement proximity would only have been one aspect in the creation of a communal ethos. Polities would have made life safer and more predictable, particularly in times of crisis.

Collective interhouse projects and undertakings are regarded as crucial elements in polity formation. Institutionalised socioeconomic activity conducted by seasonal task forces or work teams as collective sealing teams can have been the most influential element in this process. Collective large-scale sealing seems to have at least Early Neolithic roots in South Ostrobothnia (see chapter 4.2). Sealing-based principles for polity formation may therefore have been established well before the Bronze Age. It is notable that South Ostrobothnian communities appear to have emerged in subregions that enabled an easy access to maritime and especially to pelagian sealing areas. The social structure of the Bronze Age may therefore partly have developed from local traditions that derived from the collective principles of organisation of the sealing teams. The collective risk-filled activity conditioned probably the creation of common principles of organisation, rules and leadership, which were valid at least during the sealing voyages. If this leadership could be extended to the refinement and to the distribution of sealing products, it would have provided a way to institutionalise a more permanent leadership in the local polities. This could thus have been an attractive strategy for some rank-striving coastal Houses.

The appearance of cooking pits in Southern Ostrobthnia in the Mid-Bronze Age can be interpreted as a local adjustment to a wider political economy. This change corresponds in time with a rise in the number of bronze artefacts in Southern Ostrobothnia and in Satakunta. There thus appears to be a Late Bronze Age rise in the political economy. The detailed study of the Laihia area suggests that the local polity had a politically and economically centralised character during the Late Bronze Age. This is shown by the marked concentration of cooking-pits to the Peltomaa area. The cooking-pit activity was concentrated to an area where a long ridge row from the interior met the coast. That the cooking-pit activity is linked to exchange relations and to the political economy is further strengthened by the fact that the activity is concentrated to logistic node that enabled easy communication with inland areas. It is therefore suggested that the cooking pit activity of Late Bronze Age Laihia was a collective
task that was centralised and organised by a high-rank House in Jätinhaudanmaa. As I find it likely that cooking-pits were mainly aimed at the production of seal blubber, the appearance of cooking-pits in the Mid-Bronze Age would indicate an increased surplus production of seal oil and that collective sealing and surplus production of blubber played an important role in the structuration of the coastal polities. High-rank houses appear therefore to have organised a portion of the production and resource utilisation in their respective local polities, at least during the Late Bronze Age.

Some elements in Neolithic and Early Metal Period coastal communities in Southern Ostrobothnia could have resembled the conditions that have been recorded in Northwest Coast Indian and Coastal Inuit forager societies that relied on seasonal large-scale procurement of maritime resources. These societies reached complex levels of social organisation with more or less institutionalised roles of leadership. Local leaders in these societies organised the seasonal exploitation of resources and they managed the risks that were involved in the hunt of migratory species. They organized the hunting crews and the division of labour. They also supplied the equipment for the hunting projects and for the processing of the resources. Local leaders were also the risk-managing guardians of food. They ensured that as much food as possible was consumed or stored by the maintenance of storages facilities. They could also support followers who experienced economic difficulties. The capital investments organised by the local leaders led eventually to a rise in the population density. The presence of local leaders could even affect the settlement pattern when small villages grew around their residences (Johnson & Earle 2000:171,137f, 240).

A similar development of Mid-Bronze Age intensification may have taken place in the hunting of cervids. The exceptional inland hunting site at Anttila in Lestijärvi with Paimio ceramics and a Danish spear-head from period IV indicates that the coastal population had strong interests in the inland area. The exceptionally vast trapping-pit complexes found along the same ridge near the hunting camp, at Kasalankanlas and Kinnulankangas, seem currently to bear the best explanation potential for the economically motivated interests that the coastal population directed to inland areas during the Late Bronze Age.

In chapter 4.6.4 I mentioned that the dominant Late Bronze Age settlement districts in central Satakunta seem to have been localised in a fashion that resembles the Vaasa area settlement districts during the Middle Iron Age. The settlement districts in Central Satakunta appears thus to be optimally situated from an agropastoral subsistence perspective. The settlement districts in Central Satakunta differs also qualitatively from the surrounding settlement districts in terms of monumentality and in the display of wealth, which appears to be some kind of a sociopolitical parallel to the regional centralisation in Middle Iron Age South Ostrobothnia.

Central Satakunta shows the largest cairns and the richest occurrence of bronze objects in Finland. There is thus an obvious spatial correspondence between cairn monumentality and bronze deposition. Central Satakunta refers to the neighbouring local polities that were situated in the innermost parts of the large shallow bays of Kivialho, Nakkila and Panelia and in the river valley in Kokemäki (for more detailed description on this area see Salo 1981). A change takes place in period IV when the majority of the Finnish bronze finds starts to concentrate in this confined area. This would then remain the case throughout the Late Bronze Age. The unusually monumental size of the largest cairns in this area and the considerably larger amount of bronze objects deposited in cairns and in wetlands in this area seem to indicate a heightened competition for rank among the Houses of this area. This change can however not solely be explained by purely local factors, as the bronze concentration in central
Satakunta is matched by a drastically dropping number of bronze objects in the southernmost part of Finland in period IV and the occurrence of bronze artefacts remained comparatively modest in southernmost Finland throughout the remainder of the Late Bronze Age (for bronze artefact distributions see Seger 1984).

Central Satakunta also exhibits some particularly exclusive elements. There are for instance some sacrificial finds of Central-European swords in the area, as an octagonal-hilted sword from Panelia (a village that is known for its 35 metre sized round cairns). A cairn in Harjavalta has furthermore yielded a piece of a gold-foiled object. These are some of the objects that apparently should have been obtained through personal long-distance contacts between persons that had the rank of chiefs. The 40-metre long rectangular long-cairn with dry walled edges and a central stone cist in Viikala in Nakkila appears to have been built at one occasion for one particular person. The monumental long-cairn is in my view clearly symbolising a large long-house of chiefly character (see description in Salo 1981:175f). I also suspect that the alleged Late Neolithic stone cist grave at Uotinmäki in Nakkila (Salo 1970:144) should be reinterpreted as a Bronze Age cult house of Broby-type, as it would hardly be a typical Scandinavian stone cist grave, but it would quite well correspond to a so called Broby-house (see Victor 2002).

The combined picture of the polities in Central Satakunta suggests that this area at least occasionally could reach a level of social complexity that went beyond the local polities. Considering the fact that the most blatant expressions are numerically quite few and temporally dispersed over a large part of the Bronze Age (and not only the Late Bronze Age), there might have been a constantly fluctuating level of sociopolitical complexity in this area. We might be dealing with repeated short-lived regional polity experiments, perhaps as confederations of simple chiefdom complexity with instable and short-lived appearances. One should however note that the largest round cairns have completely escaped excavations and we lack knowledge of their contents.

4.10. External contacts and long-distance networks

4.10.1. Networks in the coastal zone

The contact network that tied together the coastal communities along the western coast of Finland was most likely based on some kind of a peer polity interaction. As the western Bronze Age culture of Finland largely was a continuation of the Late Neolithic Kiukainen culture, it seems apparent that the peer-polity network was established already in the Late Neolithic. The high-rank Houses or rank-striving Houses of the local polities were probably the most influential agents in the organisation and the reproduction of the close interpolity relations. Interpolity alliances would have provided opportunities for peer-polity exchange relations that could include the regular exchange of spouses and of various commodities. One major role of the peer-polity network would have been risk management that provided aid or preventive measures in times of starvation or in times of hostile actions from external groups.

In the previous subchapter I mentioned the maritime forager societies of the Northwest Coast Indians and the Coastal Inuit as a case with some analogous qualities. The local leaders in these societies could direct major interpolity ceremonies. These were essential to the prestige of their polities and to their abilities to form regional exchange networks and alliances.
Interpolity networks with distributions of food spread the risks of failure across many local polities. Also trade could be an important task for a local leader. Political rivalry could furthermore motivate local polity leaders to try to maximise the economic surplus of their polity. The intensification of the economy created strong differentiations in productivity which in turn could lead to rising conditions for warfare (Johnson & Earle 2000:171,137f, 240).

All coastal polities did apparently not remain constantly on an equal level of power and influence. There appears to have been some degree of fluctuating centre-periphery relations between the polities within the coastal zone. The distribution of Bronze artefacts from the Early Bronze Age shows a concentration to the southernmost parts of Finland, to the provinces of Åland, southern Finland Proper and western Uusimaa. The most likely central area candidate of the Early Bronze Age is in my view situated in Southern Finland Proper that shows a relatively high frequency of finds from the Early Bronze Age. There is an obvious shift in the distribution pattern of bronze artefacts in Finland in period IV to the north and particularly to central Satakunta, but there is also a general increase in the amount of bronze artefacts in Southern Ostrobothnia, in Northern Finland and in inland areas of Finland during the Late Bronze Age (Salo 1981:412, Seger 1984).

The concentration of bronze artefacts and the presence of unusually large monumental burial cairns make it possible to interpret the area around the estuary of the Kokemäenjoki river as the socio-political central area of a large part of western Finland, particularly in the Late Bronze Age. The modest but synchronous rise of bronze artefacts in Southern Ostrobothnia makes it possible to view the Ostrobothnian polities as linked to a more or less redistributive centre in Satakunta. Central Satakunta formed in my view a socio-political and a cultural engine in the peer-polity network of coastal Finland, at least during the Late Bronze Age. It formed probably the most important node for the most prestigious overseas contacts of the long-distance networks of coastal Finland. Events taking place in Central Satakunta may therefore also have played a significant role in the more marginal local polities in Southern Ostrobothnia.

4.10.2. Contacts with inland and northern groups

The coastal communities maintained exchange relations with inland textile ware using groups during the Bronze Age, to some extent perhaps also with northern groups that used asbestos tempered pottery. Eastern (and perhaps some northern) material elements are relatively well represented in the coastal communities in Southern Ostrobothnia. There are stray finds with eastern or northern affinities and there are some dwelling sites and even a cairn burial that exhibits a mixed material culture.

The lowest Neolithic coastal site that has yielded asbestos ware is situated at the 47 metre elevation in Lapua (See Miettinen 2007:31). This would indicate a decline in the presence of the Neolithic asbestos ware culture in Southern Ostrobothnia already at the end of the Middle neolithic around 2500 BC, at least in the coastal area. There is no clear evidence of a presence of an asbestos ware using population in the area during the Bronze Age. In southern Ostrobothnia only one piece of asbestos tempered pottery has been found in a Bronze Age context at the dwelling site at Borbbacken in Kronoby. The wooden spoon from Lestijärvi may also be a material sign of contacts to the north, as is suggested by the similarity with spoons from Finnmark (see chapter 3.6.4). The continuous Bronze Age cairn zone extends all the way up to Pyhäjoki. It is therefore possible that coastal (Säräisniemi 2) asbestos ware
using groups lived only north of Pyhäjoki during the Bronze Age (Okkonen 1998). The large maritime dwelling structures from the Late Neolithic and the Early Bronze Age, as well as the cooking pits from the Late Bronze Age and the Pre Roman Iron Age seem however to be a common trait that is shared by asbestos ware using groups in the northernmost Bothnian Bay and the farming coastal population in Southern Ostrobothnia.

The ancient tradition with shaft-hole weapons with animal head figures continues to some extent into the Bronze Age within the eastern or northern cultural sphere. Carpelan has dated two bears head figure axes found in Southern Ostrobothnia to the Bronze Age (see chapter 3.6.3). Both weapons appear to have been sacrificed in shallow bays in Alahärmä and in Ylistaro, close to the estuaries of the largest rivers of Southern Ostrobothnia. The large river estuaries, and especially the large bay leading to the Lappo River estuary, are conspicuously free of Bronze Age cairns. I have previously suggested that coastal communities were not interested in settling in these areas, because the pelagian sea would have been too far away. But is this the complete answer? Hypothetically the largest river estuaries could have been populated by foraging and culturally east or north oriented groups. This can in theory be supported by the Pre-Roman Lappo River estuary site at Karkaus in Alahärmä, which so far has only yield Säräisniemi 2 ware types (and no coastal types). But so far we lack knowledge of similar sites from the Bronze Age and the same goes for the entire South and Central Ostrobothnian inland during the Bronze Age. The only confirmed inland dwelling site appears to be a hunting station that belonged to the coastal population (see chapter 4.8). It could equally well be claimed that the inland all the way to the watershed at Suomenselkä was regarded as the outer territory of the coastal societies and that the culturally east and north oriented groups lived on a more permanent basis only east of Suomenselkä (and north of Pyhäjoki).

As regional types of asbestos tempered ware remained dominant in Northern Finland, the textile ware overtook the previous role of asbestos ware in the Lake District of Finland, roughly at the Late Neolithic-Bronze Age transition. Textile ware remained dominant in central and eastern Finland throughout the Bronze Age (Lavento 2001). Relatively many coastal dwelling sites in Southern Ostrobothnia exhibit textile pottery, but always together with coastal pottery types (Miettinen 1998:105ff). The oldest coastal sites with textile pottery inclusions are Raineåsen in Pörtom and Vitmossen in Vörå. The youngest sites are Nikonkallio and Viirikallio in Laihia. The age difference between the oldest and the youngest sites can be as much as 1000 years (see chapter 3.6.2). The mentioned sites were apparently controlled coastal groups that maintained contacts with inland populations. Perhaps some these sites comprised places where inland people by tradition came to the coast in order to perform transactions with the coastal communities.

The large-scale seal oil production of the Laihia polity seems to have been concentrated to a strategically situated node of communication, at the starting point of a ridge or a pathway that ran from the coast to the inland. The Koskenkorva-Peltomaa ridge led furthermore to the larger Kyrönkangas-Hämeenkangas-Pohjankangas ridge system that formed a route to Kangasala, and the Sarsa area that exhibits one of the largest settlement clusters of the inland textile ware population. The Sarsa complex consists of ten closely situated dwelling sites with a great abundance of finds (Lavento 2001:136). Textile ware has furthermore been found in connection to the cooking pits at Viirikallio. It is therefore plausible that a part of the Ostrobothnian blubber was consumed by inland groups. An inland demand for blubber may be one important reason for the relative abundance of textile ware found in the coastal communities in Southern Ostrobothnia. In chapter 4.7 it was also suggested that coast-inland relations in South Ostrobothnia were mainly communicated along the ridges that lead from
the coast to the inland. The Jätinhaudanmaa case suggests that communication could be of such importance in the Late Bronze Age that it could be decisive for the success of some rank-striving Houses. The eastern bronze inclusions in Southern Ostrobothnia consist of a Maaninka type celt that was found together with an even based arrowhead in a burial cairn at Asplandet in Jeppo. The Maaninka type celt was characteristic for Lake Finland during the Mid Bronze Age according to Lavento (Lavento 2001:90, 122). Coastal burial monuments with grave-goods of eastern and northern affinities in the Late Bronze Age case from Asplandet and in the Pre-Roman case from Råbacken could perhaps indicate cross-marriages with individuals from the inland population. Both sites are located in Jeppo, which interestingly again turns our attention to the area of the Lappo River (see chapters 3.6.1 and 5.1.6).

One of the most prominent sites that reveal contacts between coastal and inland populations is situated at the 30 metre altitude at Viirikallio in Laihia. According to Miettinen the Viirikallio dwelling site was located on a natural even terrace in a stony slope. The area of the site was 200-300 m² (Miettinen 1998:88ff). No traces of building constructions were found, but six cooking-pits formed a dense cluster at the dwelling site. One of the pits was dated to 800-150 cal BC (2350±110, Hel-2683). Another cooking pit situated in the terrain above the dwelling site provided a contemporary date. The find material from Viirikallio consisted of pottery, worked quartz, whetstones, flint flakes and some burnt bone. Of special interest is the well represented lithic technology that was marked by three separate quartz-knapping workspaces. Each workspace contained pounding stones, anvils, raw material stones, quartz flakes, half finished implements and quartz scrapers. The quartz material was abundant and of good quality, but also a crucible was found that indicates bronze casting. The ceramic material was found in some clusters, but most of it was discovered in a probable waste pit (Miettinen 1998:88ff). Three types of ceramics have been identified from Viirikallio; textile pottery, Lusatian inspired ceramics and Morby ware (Miettinen 1998:104ff). The cultural layer at Viirikallio furthermore contained some lumps of large mica flakes. Considering the strongly mica mixed pottery at the site, one may ask whether also pottery was manufactured at the site. Viirikallio was apparently situated at a strait and on a large island. The site may therefore have been optimal for net catching of seals. The large forested island provided fuel for the cooking-pits. The finds from Viirikallio indicates a broader set of activities than one might expect to find at a simple maritime hunting station. Perhaps the dwelling site had the function of a meeting place for inland dwellers and coastal dwellers, as indicated by the mixed pottery assemblage of the site. Below the dwelling site, at 27-24 meter elevation a group of about sixty small cairns and stone settings is situated, whereof some have a distinct Pre-Roman character. The upper dwelling site and the lower cairn complex represents probably two different phases of ecology and settlement; an older maritime camp and a later sedentary settlement (see Miettinen 1998:87f, 111ff).

It has already been indicated that the coastal and the inland societies were probably structurally quite different. The social structure of the sedentary coastal societies may have had the House as the basic social unit, and the superstructure may have been composed by the territorial local polity. The apparently more mobile and family-level inland society (see Lavento 2001) may have had a superstructure of kin-based clans, such an idea has been proposed by Halinen in his discussion on the symbolism of animal head figure weapons (Halinen 200:47). A change that could have taken place in the coastal communities as a consequence of contacts with the inland population would be the logistic importance of ridges and communication routes to the inland. This may have affected the localisation of successful high-rank Houses in the coastal polities. The communication apparently also affected the inland groups. Pollen analyses indicate that the textile ware population did have a phase of
some kind of cultivation experiments, especially during the Late Bronze Age (Lavento 2001:139ff). There is also an occurrence of some Bronze Age burial cairns in the inland that indicates that the textile ware population at least partly adopted the round cairn tradition from the coastal population. Another interpretation would be that the cairns were built by coastal people that extended their regular voyages to inland areas. The animal head figure tradition ends with the Bronze Age; perhaps also this is a change that somehow relates to contacts with the coastal societies.

4.10.3. Trans-Baltic contacts

I have so far not touched much upon the reasons to the original appearance of the Scandinavian influenced coastal Bronze Age society in Finland. I will address this issue here in the context of Trans-Baltic contacts, as the emergence of the South Scandinavian influenced Bronze Age society in Finland both can be seen as a reason to as well as an outcome of the Trans-Baltic contacts that were directed to Southern and Central Scandinavia during the Bronze Age. As pointed out by several authors, there is obvious population continuity from the communities of the Late Neolithic Kiukainen culture to the communities of the coastal Bronze Age in Finland (Salo 1981:424, Edgren 1999:330). But it has also been pointed out that the materialised Scandinavian elements in the coastal Bronze Age are so strong that they obviously would have required at least some degree of immigration from Scandinavia (Salo 1981:428).

The Scandinavian elements are particularly obvious in the symbolic, monumental and ritual repertoire of the coastal communities. But the coastal communities still exhibit some differences towards Southern and Central Scandinavia, for instance in the apparent lack of rock-art and in the fairly conservative commitment to monumental round cairns throughout the Bronze Age. In chapter 4.9.1 I suggested that the coastal Houses largely manifested their existence by symbolic and ritual means that were inspired by South and Central Scandinavian models and trends. Except being a source for inspiration, communication with South and Central Scandinavia could also have been used as a tool to achieve higher rank amongst Houses. Trans-Baltic networks provided for instance desired ritual knowledge and exotic objects. This would help to explain some of the fundamentals of the Scandinavian-oriented Bronze Age society in western Finland. But how did it emerge originally? I will try to provide a hypothetical interpretation that is made from a House society perspective.

The stage that enabled the relatively rapid expansion of the Scandinavian influenced Bronze Age culture was probably already set during the Late Neolithic. The entire coastal area of the Late Neolithic Kiukainen culture formed probably an interlinked chain of small communities that in Renfrew’s terms were interdependent on close peer-polity interaction, which included marriage networks between coastal Houses. Increasing contacts with Scandinavia are furthermore already evident in the Kiukainen culture communities, particularly in South-Western Finland. Kinship ties between coastal Houses in South-Western Finland and Southern and Central Scandinavia may thus have begun to take shape already in the Late Neolithic.

Western bronze artefacts of the Early Bronze Age have been found in the Salo and Perniö areas in Southern Finland Proper in such high numbers that the focus of the distribution in Finland is in this area. The distribution pattern of flint sickles is similar to that of Early Bronze Age metal objects, which suggests a similar dating for the sickles. Most of the bronze and sickle finds are stray finds and many objects were apparently deposited in wetlands,
probably as sacrifices (Asplund 2008:68). An original Late Neolithic Scandinavian immigration may have consisted of spouses that moved to high-rank Houses in this area. These "Scandinavianized" Houses with marriage alliances to Houses in Scandinavia may in turn have been popular spouse-giving Houses in the peer-polity network of the Kiukainen culture. In a few generations the entire coastal population of the Kiukainen culture may have been able to trace some of their lineages to Scandinavia. As mentioned in chapter 2.2.2, Houses tend to be selective and opportunistic in their lineage strategies. In this case coastal Houses may have chosen to manifest symbolically their particular Scandinavian origins and kinship relations while they perhaps suppressed other links and identities. The popularity to play the Scandinavian card may initially have been that it was regarded to be a potentially successful means for the coastal Houses to promote their rank both locally and within the larger peer-polity network. The particular emphasis on Scandinavian ritual and symbolic expressions as bronze artefacts and burial monuments may have been motivated by their strong ability to communicate the Scandinavian lineage origins and Scandinavian kinship relations of the coastal Houses. Kinship ties to Scandinavia may furthermore have become reproduced and re-established by marriages and exchange relations throughout the generations, especially in high-rank Houses. These relations may in turn have fostered later, Scandinavian influenced changes in the coastal communities, whenever it suited the goals and the needs of the involved Houses.

Except the introduction of the Scandinavian influenced burial tradition and the suggested emerging symbolic emphasis on Scandinavian House origins, the beginning of the Bronze Age did perhaps not lead to any major societal changes in Southern Ostrobothnia. This area appears to have had a relatively marginal position in the coastal peer-polity network during the Late Neolithic and the Early Bronze Age. The Early Bronze Age changes may largely have been symbolic and superficial, perhaps solely transmitted by Houses and communities in South-Western Finland, and perhaps by similar groups along the Norrlandic coast. More important social, cultural and economic changes may instead have begun to take place in the Mid-Bronze Age when the communities in Southern Ostrobothnia seem to have become more closely attached to long-distance networks.

Most of the Late Bronze Age long-distance communication of the South Ostrobothnian communities can still have been indirect and were perhaps transmitted through relations with high-rank Houses in Central Satakunta. Most of the Late Bronze Age bronze artefacts in Satakunta derive from Southern Scandinavia. According to Salo there would have been increased direct-communication between Satakunta and southernmost Scandinavia during period IV and V that bypassed Central Sweden (Salo 1981:408f). The Late Bronze Age rise of bronze artefacts in Central Satakunta and in Southern Ostrobothnia is roughly synchronous with the rise of the so called "Håga kingdom" in eastern Central Sweden. There is also a general increase of bronze objects in central Sweden and of Southern or central Norrland (Bohlin 1998:107ff). There are also some finds of eastern pottery types and eastern bronze artefacts in eastern Central Sweden (see Asplund 2008:228ff for a recent discussion on this issue).

The Late Bronze Age Trans-Baltic contacts of Satakunta and Southern Ostrobothnia were not only directed to Scandinavia, but increasingly also to the Eastern and the Southern Baltic Areas. Even if the total number is limited, the relatively frequent presence of central European and especially of Lusatian artefacts seems to be a particular trait for the bronze artefact concentration in Late Bronze Age Central Satakunta, if compared to the distribution of bronze artefacts in other regions and periods in Finland. Salo assumes that Satakunta established direct contacts with the Lusatian area during period V and VI (Salo 1981:410ff). This notion
of Lusatian contacts in Satakunta is of special interest when accounting for the slightly older establishment of sealing at Otterböte by a group with Lusatian contacts. The large amount of rusticated pottery that was found at the site relates to the Lusatian culture in current Poland (see chapter 4.2). It seems possible that sealing in Northern Baltic was increasingly linked to long-distance networks and political economies in Mid Bronze Age. In addition to the occurrence of Lusatian inspired bowl-type ware in Ostrobothnia, also at least one lithic shaft-hole axe found in Southern Ostrobothnia represent a Lusatian type. Also the bronze casting remains that were found under a cairn in Nikonkalli in Laihia may be related to a special tradition that originally expanded from the Lusatian culture in the Late Bronze Age (Uwe Sperling, lecture in Helsinki 30.10.2009). A similar casting workshop has been found under a cairn in Rieskaronmäki in Satakunta.

It appears also to be possible that some local polities and high-rank Houses in Southern Ostrobothnia established their own links of direct communication and marriage alliances to Houses in South and Central Scandinavia in the Mid and Late Bronze Age. There are a few rather unusual bronze objects in this region that may point in this direction (see chapter 3.6.1). Also the burnt mounds and the shipsettings in Jäinhauđanmaa could be interpreted in this way, but these elements are to some extent present also along the Norrlandic coast (Forsberg 1999). Direct contacts across the Gulf of Bothnia are actually not that easy to prove, but at least one elaborate shaft-hole axe of a Mid-Norwegian type may have been imported from the Norrlandic coast to Southern Ostrobothnia. Perhaps also the original idea to the Late Bronze Age cooking-pits should be searched in the context of these west and south oriented contacts. Direct links to the important centres in the south could naturally also have been initiated by travellers that came from Southern and Central Scandinavia. The same could be said about possible travellers from the Lusatian culture.

It is plausible that some kind of causal links exist between all or most of the observed Late Bronze Age changes around the Northern Baltic Area. I will not plunge deeper into these large-scale changes. I think it suffices to conclude by saying these words about the coastal communities in Southern Ostrobothnia: During the Late Bronze Age we may anticipate a population increase, more diversified and intensified subsistence practices, more external contacts and perhaps an increased social complexity in the coastal communities. Changed subsistence practices can apparently be traced in the agrarian economy, in the collective sealing, the seal oil production and perhaps in forest reindeer hunting. Denser external contacts and an increased social complexity can be seen in the increasing amount of cairn cemeteries, bronze objects and lithic shaft-hole axes. The Peltomaa case suggests also a partly centralised community organisation of production that demanded logistic nodality and communication with the inland areas.

4.11 Summary

This chapter attempts to provide an account on how the coastal communities in Southern Ostrobothnia could have been structurated during the Bronze Age. The discussion is based on the theoretical views that have been presented in chapter 2 and on the empirical material that was presented in chapter 3, but also on new empirical material that the author has collected in the field. Most of the discussion deals with the Laihia area, where most fieldwork has been conducted. The organised agents, their practices and their mutual interaction are regarded as the central factors that created and shaped the history of the coastal communities.
I suggest that the spatial-analytical settlement units formed socioeconomic Houses, which may be regarded as the agents that formed the basis of the social organisation of the coastal communities. Communities would thus mainly have consisted of closely interacting Houses. Various working teams formed probably important fora for interhouse interaction. I regard particularly collective sealing as an institutionalised practice that could unite groups of coastal Houses into sociopolitical units as local polities. The spatial-analytical settlement districts are therefore regarded as possible local polities, which formed the highest sociopolitical level of community organisation. It was thus not only settlement proximity, but institutionalised socioeconomic activity that contributed to polity formation. The basic internal functions of the polities would have been the institutionalisation of collective economic projects, reciprocity and risk management amongst neighbouring Houses.

The House society perspective is used to approach the beginning of the western Bronze Age in Finland. It is suggested that marriage and exchange alliances were established between houses in South and Central Scandinavia and high-rank Kiukainen culture houses in South-Western Finland during the Late Neolithic. This led to the adoption of South Scandinavian ritual practices and worldviews amongst the high-rank houses in South Western Finland. The new ritual practices and worldviews spread rapidly during period II in the coastal peer-polity network of the Kiukainen culture, which caused the beginning of the western Bronze Age. The apparently rapid spread may have depended on opportunistic House strategies to manifest South Scandinavian descent and values, perhaps in order to boost exchange relations and to elevate their status positions. The old long-cairn tradition seems to have been replaced by a new round-cairn tradition.

The very beginning of the Bronze Age did perhaps not lead to any major societal changes in Southern Ostrobothnia, except for the introduction of some new mortuary ritual practices. This area seems to have had a relatively peripheral position both within the Kiukainen culture and later within the coastal Bronze Age during the Early Bronze Age. The Kurunkangas area in Laihia is used to illustrate the transition from the Late Neolithic to the Early Bronze Age at a coastal settlement unit that was located between two coastal lagoons. The settlement unit is marked by a pair of settlement surfaces (one with Kiukainen ware) and by a cluster of more or less single cairns (both long-cairns and round cairns). In Laihia the settlement units of this time appears to have been concentrated to the most sheltered areas around coastal lagoons and around bays near the estuaries of small rivers or springs. At least some degree of residential sedentarism can be expected in areas like Kurunkangas, but excavations have so far been of very small scale. It is furthermore argued that residential mobility was probably practiced at coastal sealing sites that are marked by large rectangular dwelling structures, like Bäckishällorna and Vitmossen in Vörå. Logistic mobility with specialised task groups appears instead to have been practiced at pelagic maritime sites with small hut foundations, as Knappelbackhällorna in Maxmo. Foraging subsistence practices of the Late Neolithic and the Early Bronze Age would therefore relate to practices of both residential mobility and logistic mobility. In the Late Bronze Age the sealing sites would only relate to practices of logistic mobility. Sealing was probably undertaken both as late autumn net-catching and as early spring time ice-hunting. Ringed seal and harp seal would have been the main preys.

The most important social cultural and economic changes seems to have been introduced gradually during the Bronze Age, or what I find more likely; quite rapidly at the transition to the Late Bronze Age. During the Late Bronze Age we can anticipate a population increase, a more diversified and intensified subsistence practices, denser external contacts and an increased social complexity and a rise in the political economy. Changes in the subsistence
The microgeographical location of the coastal settlement units or the Houses of the Bronze Age could apparently come in quite different guises, still during the Late Bronze Age. I discuss Rieskaronmäki in Nakkila and Storstenrösbäck in Pörtom as two opposing examples, perhaps as the end points of a continuum of different ecological-topographical orientation. The former would have been a valley oriented unit and the latter would have been a sea oriented unit. This difference reflects possibly the main orientations of the territories and the different subsistence practices of the Houses. Sea oriented houses would have focused on maritime foraging and valley oriented houses on agrarian subsistence practices. Judging by the cairn distribution patterns, the units show considerable differences in territory size. A shared feature is that both had a central (farm) cemetery and both had dispersed cairns that marked their outer territories. Bronze Age cairns could thus be either farm-localised or out-localised to the periphery. The different localisations of the burial cairns probably reflect complementary or alternative practices that were related to territoriality and cosmology. It is also possible that farm cairns signified the individual House and the out-localised cairns the wider kin group or the local community. The farm environment consisted of a taskscape that was signified by practices of agrarian subsistence and of practices of residential sedentarism. The ritual landscape that was marked by cairns manifested House eternity and agrarian values. It is also argued that three temporal scales or cycles can be used to conceptualise change in the uplift coastscape; the short time range of the individual human, the medium range time of the farm and the long-term range of the community.

From the Early Bronze Age to the Late Bronze Age the Laihia settlement district moved downwards to newly merged areas and it expanded in size. The Late Bronze Age settlement units appear mostly to have been oriented towards small valleys, but some were also oriented towards the sea. Tentative calculations based on the amount of possible or confirmed Bronze Age cairns would suggest a hypothetical average number of 15 farms in Laihia during the Bronze Age, but it is probable that that the number was smaller during the Early Bronze Age and larger during the Late Bronze Age. The Late Bronze Age settlement unit in Jäťinhausanmaa is studied more closely where excavations have yield evidence for wattle and daub walled residential buildings. The exact shape of the buildings can unfortunately not yet be determined. The discovered farm sites in this area prove nevertheless a habitation practice of residential sedentarism, which furthermore appears to have been conducted according to a house replacement practice that emphasised site continuity. The farm sites show clear evidence for agrarian subsistence practices. The palaeoenvironment, the macrofossil and pollen data indicates a high degree of dependency on agriculture and there are even indications for an emerging permanent field cultivation of hulled barley. Jäťinhausanmaa was arguably a valley oriented settlement unit with a microlocalisation that especially favoured pastoralism. The settlement emerged at a valley with water meadows in 1000-900 BC and it ended probably around 500 BC, assumingly when the valley was transformed by paludification. Residential sedentarism and agrarian subsistence practices can thus be said to have been important elements amongst the Late Bronze Age valley oriented settlement units.
On the macrogeographical regional level the coastal settlement districts of Southern Ostrobothnia are largely oriented towards the sea. Settlement districts do not appear to have emerged in the river valleys and or in the most deeply indented bays. It is therefore suggested that the coastal communities emerged in subregions that enabled an easy access to pelagian sealing areas, despite the opposing microlocalisation of the individual Houses that largely favoured small valleys and water meadows. This dualistic settlement localisation pattern can have been sort of a compromise that enabled a sustainable mixed subsistence economy.

It is argued that foraging subsistence practices were mainly conducted at various hunting stations. The agents consisted of specialised seasonal task forces that dwelled at the hunting sites according to logistic mobility practices. These sites comprise mainly sealing stations but also inland hunting sites. The environments of the hunting camps contained a taskscape with ritual perceptions that differed from the farm environments. The sealing stations were situated in a landscape with a very short human history that was probably more linked to a landscape of animistic and sea-oriented cosmological perceptions. The sealing stations were probably also related to a male subculture of sealing practices. Ridgeways enabled easy access to hunting grounds in the inland. The Anttila site in Lestijärvi, together with large adjacent trapping-pit systems suggests that large scale hunting of cervids, probably of forest reindeer took place in the (Late) Bronze Age.

Collective large-scale sealing had at least Early Neolithic roots in South Ostrobothnia. It is therefore suggested that sealing-based principles for polity formation were established well before the Bronze Age. The new thing was that the institution of collective sealing (and perhaps that of cervid trapping) was adjusted to new conditions when it became linked to the new long-distance networks of Bronze Age political economies. A special feature of the Bronze Age would also have been an increasing influence of societal values and ideas from the stratified polities of South Scandinavia. In my view this change was not merely a one-way communication where a passive periphery was transformed by an active centre. The change may largely have taken place because there were Houses in the periphery that opportunistically tried to take advantage from the new opportunities that were provided by the Bronze Age long-distance networks. According to this perspective, there would have been a more or less active periphery that joined the network because at least some sections of the peripheral communities benefited from this integration. The peripherally situated communities contributed to the larger Bronze Age network with the means that were to their disposal and they could adjust their traditional structures of production according to the demands of the new network. To some extent this appears to have led to the formation of an interregional labour division where each region contributed with its own specialised economic production.

Elements of local adjustments to a wider political economy may be discerned in the appearance of cooking pits in Southern Ostrobothnia, which seems to have taken place in the Mid Bronze Age. A Late Bronze Age rise in the political economy is also indicated by a general rise in the number of bronze artefacts in Southern Ostrobothnia and in Satakunta. The Late Bronze Age cooking pits in Laihia shows a marked concentration to the Peltomaa area. The Pre-Roman cooking pits are instead more evenly distributed over the territory of the whole settlement district. The Laihia polity may thus have been politically and economically more centralised during the Late Bronze Age. The Late Bronze Age cooking pit activity appears to have been centralised to a logistic node, at the starting point of a ridge that led to the inland. This activity seems furthermore to have been organised by the settlement unit or the social House in Jätinhaudanmaa. Jätinhaudanmaa is thus regarded to have been a Late Bronze Age high-rank House that even could have had the leading position in the Laihia polity.
This unit stands out due to its logistic nodality and its large-scale use of heated stone technology. The Jätinhaudanmaa cairn cemeteries with razors and ship-settings are thought to indicate a local presence of ritually knowledgeable persons whose identities and worldviews had been affected by long-distance relations. An apparent agricultural intensification in Jätinhaudanmaa may also be linked to its suggested position as a high-rank house. Agricultural intensification at some specific Houses may have been motivated by their role as organisers of communal feasting and by their role as nodes in local redistribution networks.

I also find it probable that high-rank and rank-striving Houses were largely responsible for the interpolity alliances that provided opportunities for peer-polity exchange relations. Such relations could include the exchange of spouses and various commodities. These networks may also have contained an element of risk management that provided security in times of starvation and in times of hostile actions from external groups. The obvious concentration of bronzes to Central Satakunta in the Late Bronze Age suggests that this area had a dominant position in the peer-polity network of the western coast of Finland. There were also exchange relations with inland textile ware using groups, and seal oil is mentioned as one likely commodity that was in demand amongst the inland groups. It is suggested that such inland-coast relations in South Ostrobothnia were mainly communicated along the ridges that lead from the coast to the inland.

The role of the high-rank Houses were probably even more accentuated in the establishment of long-distance communication across the Baltic Sea. The logistic ability to transmit commodities from the inland areas of Finland to areas around the southern Baltic Sea appears to have been especially emphasised during the Late Bronze Age. This is indicated by the Late Bronze Age concentration of bronzes to the Kokemäenjoki estuary area (and even to the river valley) and by the spatial positioning of the coastal Jätinhaudanmaa House to the end of a ridge that led to the inland. Coastal high-rank Houses had therefore presumably an intermediary role in the flow of various commodities as bronze, furs, seal oil and seal skins. Theoretically each coastal polity could have maintained their own long-distance trans-Baltic contacts through their own high-rank Houses. I find it however probable that most of the long-distance contacts of the coastal area were transmitted by or through the high-rank houses in central Satakunta. I believe that this area was so dominant that it played an inspiring role and even a redistributive role for the entire western coast of Finland during the Late Bronze Age. This area had apparently more or less regular direct communication with external centres in Central Sweden, in South Scandinavia and in the Lusatian culture area. I even find it possible that there was a rudimentary regional polity in central Satakunta during the Late Bronze Age.
5. The Coastal Communities in the Early Iron Age

5.1. The Early Iron Age communities; issues of change and continuity

This chapter deals shortly with some important aspects on the structuration of the coastal communities in the Pre-Roman Iron Age. The perspective is largely comparative and the focus is on continuities and changes that are viewed in relation to the observed qualities of the coastal communities during the Bronze Age (and partly during the Middle Iron Age). The chapter ends with an account that deals with the beginning of the transformation process that eventually resulted in the communities of the Middle Iron Age.

5.1.1. Patterns of residential sedentarism

The transition to the Early Iron Age is visualised along the Ostrobothnian coast as an obvious increase in the number of sites marked by small cairns and stone settings (see chapter 3.5.3 and 3.5.4). These cemeteries and possible clearance cairn fields indicate a relatively intensive settlement phase in the coastal area. The large amount of small cairns and stone-settings in the coastal area constitute a complex phenomenon that raises many questions and enables many alternative interpretations. The narrow settlement zone follows the entire coast of Finland from the Gulf of Finland in the southeast to the Bothnian Bay in the northwest. A characteristic element of this settlement is the Morby ware that is named by a site in Southern Finland (see chapter 3.6.2).

Open settlement surfaces and burial monuments generally exhibit a close spatial proximity during the Pre-Roman period in Finland; this is considered by Edgren to be especially evident in Southern Ostrobothnia where cultural layers from settlements have been found under a number of excavated cairns (Edgren 1999:317f). Judging by the types of burial monuments and the relation between graves and burials Edgren furthermore concludes that there is a "topographic continuity" from the Late Neolithic to the Early Iron Age in Southern Ostrobothnia, Satakunta and Uusimaa.

The general regional distribution map of registered cairn sites in Southern Ostrobothnia indicates basic settlement district continuity from the Bronze Age to the Pre-Roman Iron Age. The number of cairn sites increase and there is apparently a gradual geographical re-localisation and restructuration (see chapter 3.5.3). The latter changes depend mainly on a movement of the settlement to newly emerged coastal areas. The increasing number of cairn sites at the transition to the Pre-Roman Iron Age can depend on several reasons as a population increase or a restructuration into smaller household units. Another theoretical possibility is that the settlements were moved much more often during the Pre-Roman period, which could result in an increasing number of cairn sites. Particularly if the latter alternative is correct, a large number of structures must be clearance cairns. There would not have been enough time to create dozens of burials at farms that are moved with intervals of only one or a few generations. From a House society perspective it is possible to assume that the biographies of the houses were changed at this time. The manifestation of House eternity seems now to have focused on the creation of large quantities of small cairns. As the mortuary
monuments and clearance cairns are relatively similar, perhaps this distinction was of less symbolic importance.

Edgren writes that the Pre Roman Ostrobothnian dwelling sites were situated closer to the shoreline than the synchronous dwelling sites in Southern Finland (Edgren 1999:317). In the latter area the sites are mentioned to have been located at a distance of several hundred metres or several kilometres from the shoreline, whilst the sites in the former area would have been immediately shore-bound. Edgren mentions the dwelling sites from Korsnäs as examples from Ostrobothnia. Edgren appears to compare the location of the maritime hunting stations in Ostrobothnia with sedentary farmsteads in Southern Finland, which naturally would give the impression of a more maritime location of the settlement in Southern Ostrobothnia (see Holmblad 2008:47). In the case with the Korsnäs dwelling sites we are dealing with seasonal sealing camps that were situated on small islands in the outermost archipelago (see chapter 5.1.3). Edgren might be right so far that pelagic sealing stations that are related to seasonal logistic mobility may be more common in Southern Ostrobothnia. These sites do not however tell us much about the character of the South Ostrobothnian dwelling sites that were related to practices of residential sedentarism.

Kotivuori has argued that the coastal settlement of Southern Ostrobothnia had a very maritime character (Kotivuori 1992). In his article he presents a map that shows how the cairn sites in the Jeppo-area are spread along the edges of the present day bogs, which are claimed to have been open bays and straits in a scattered archipelago at the time of the Pre-Roman settlement. The map could however be easily interpreted in another way. Out of the 22 marked cairn sites from the Early Metal Period, all except two are situated at a bog edge. The cairn sites are thus situated in relatively low topographic locations, positioned in locations that probably correlates with soil type boundaries. The cairn sites are therefore quite probably situated at the transitions between slopes with coarse moraine and plains or valleys with fine grained sediments. Considering the fact that most of the bogs most probably have been water meadows at some point, it could be argued that this type of environment would have been important for Pre-Roman settlement localisation. A large portion of the Jeppo cairn sites may thus represent valley oriented settlements. It can furthermore be noted that one of the sites on Kotivuori’s map is located at a river shore (see also Holmblad 2008:36ff).

There are actually some indications of Pre-Roman settlements around deeply cut bays, at river mouths and possibly also some distance up into the river valleys, thus not only on islands and in the outer coastal area (see discussion below and Herrgård & Holmblad 2005:128ff and Holmblad 2008:36ff). There seems therefore to be a relatively wide range in settlement orientation during the Pre-Roman Period. In my view it is therefore not that evident that the Ostrobothnian sedentary farms would have been generally located in much more maritime environments than their coastal counterparts in Southern Finland. During the Pre-Roman Iron Age we can perhaps discern an increased diversity in the sedentary settlement localisation compared to the Bronze Age. We can discern a geographical and an ecological variation that seems to encompass everything from island settlements to river valley settlements and the cairn field distribution indicates a dispersed settlement pattern. This is possibly corresponded by an increased economic diversification. The settlements would therefore have mainly consisted of single farms and possibly of small hamlets. Asplund informs that Pre-Roman cairns are in South Western Finland often related to permanent settlement sites and cultivated lands (Asplund 2008:302).

To the partially excavated open settlement surfaces that are dated to the Pre-Roman period belongs the settlement surface at Luhtalanmäki in Laihia (Miettinen 1998:92). Settlement
surface indications have also been found at many other sites, usually in burial excavations (see tables in chapter 3.5.3). But should these open settlement surfaces be interpreted as sedentary farm sites or as seasonal hunting stations? The Luhtalanmäki settlement surface is situated in an immediate contact with stone-settings and cairns and the site should have been situated in a sheltered coastal palaeoenvironment. This would indicate that the site constitutes a farm site. Burnt clay was found at Luhtalanmäki that could be clay daub (Miettinen 1998:92, see also discussion in chapter 3.5.1). No concrete traces of house constructions have been found that with certainty can be interpreted as farm remains. It is however reasonable to assume that there is at least some kind of house construction continuity from the Bronze Age. This means that at least a part of the population would have dwelled in some kind of post supported constructions with wattle and daub constructed walls. This debated issue has already been described in chapter 4.6.3.

A farm settlement emerged quite probably on the largest islands during the Pre-Roman Iron Age. Several probable examples on this are known from the Malax, Vörå and Nykarleby areas where cairn fields appear to have emerged on islands (as in the Löykne case mentioned below). These islands measured several kilometres in length and they possessed relatively large and varied resources. A complex of ancient sites that represents a plausible island settlement has been studied in the Muskan area in Jeppo. The complex is marked by at least four cairn sites with a total of some 40 cairns and stone-settings that are situated just above the 25 metre elevation (Kotivuori 1992, Holmblad 2008:36ff). The largest cemetery at Råbacken consists of 23 cairns and stone-settings, of which some can be clearance cairns. At least two cooking-pits are situated nearby. The cemetery exhibits a large central grave shaped as a quadrangular stone-setting. The grave excavation resulted in the discovery of burnt human bone, ceramic shards and a couple of knapping-stones. Settlement indicating finds consisting for instance of a flint scraper was found in the southern part of the site. The radiocarbon dates place the grave in the pre-Roman Iron Age, as I have argued elsewhere, most likely to 500-200 BC (Holmblad 2008:38). The grave should thus have been constructed when it was situated on 3.5-7 metre altitude and at 100-1000 metre distance from the seashore. The greatest areal land growth in the Råbacken area took place during the fifth century BC when the surrounding shores and straits rapidly transformed into wide wetlands. The settlement at Råbacken appears to have emerged on a relatively large island and it may have continued to be settled during the following peninsula-phase. The water meadows of the area should have provided stable preconditions for animal husbandry, which also could have improved preconditions for cultivation, while the coastal location still enabled fishing and sealing activities (Holmblad 2008: 39). It should however be added that the excavation have remained small in the area and that the interpretations given here should be regarded as testable hypotheses.

Western Pörtom in Närpes is an example of an apparent settlement district that was situated on the mainland, around a sheltered bay. More than ten clusters of cairn and stone-setting sites were situated around the innermost part of a shallow bay that cut deep into the mainland (see map published in Miettinen 1986:62, see also the discussion in Baudou 1991:158f). Most of the sites are located slightly above an altitude of 20 meters, which makes a date of the settlement phase to the late Pre-Roman Iron Age probable. If each cluster represents a settlement unit, the units would have been located evenly at 1.5-2 kilometre intervals around the bay or the emerging valley. The shore meadows must at some point have been very extensive in this area, which indicates good preconditions for a agropastoral subsistence practices. The apparent valley orientation of this settlement district shows some resemblance to the Middle Iron Age settlement districts in the Vaasa area. As already pointed out in the previous chapter, the Middle Iron Age settlement seems to have been both regionally and
locally situated at the optimal shore meadow areas. During the Middle Iron Age the availability to productive shore and water meadow resources steered most likely the agropastoral preconditions and the cultivation capacity of the farms, which affected the localisation of the settlements. The productivity of shore meadows would in turn have been affected by land-uplift and paludification, which in turn affected the longevity of the farm sites (see for instance chapter 4.6.4).

Sometimes dwelling site finds derive from sites near river shores. Artefact dates and shoreline dates reveal that some of these sites must have been located at a river mouth or some distance up into a river valley. Such a dwelling site is known in an arable field at Karkaus in Alahärmä, just by the shore of the Lapua River (NBA 4010014). The site emerged from sea at 500 BC at the earliest and the ceramic finds of Säräisniemi 2 ware dates the site roughly to the Pre-Roman Iron Age. Burnt clay from the site can be clay daub; at close inspection I have noticed imprints of wood on some of the burnt clay pieces (NM 17458). The remainder of the find material consists of some worked quartz and a piece of flint. Another site with an apparent river estuary or lower river valley localisation is known from Pörthärmä in Pörterraves. This site is located on a low cape, just besides Närpes River. Here some 40 small cairns and stone settings have been mapped. Under a couple of excavated cairns, some signs of a cultural layer containing Morby ware have appeared (Miettinen 1980:51ff, NBA 605010017). In one of the graves also a grinding stone and a cattle bone was discovered (see next subchapter). Eskola (Korsbäck) in Lappfjärd is yet another site where stone settings have contained Morby ware and a grinding stone (see next subchapter). In Pre Roman times Eskola was in a small river valley some kilometres from the coast. The site was located on an isthmus between two small lakes (NBA 409010037). Metal stray finds of Pre-Roman origin are rare. Therefore it is particularly interesting to note that two iron artefacts have been found at the Kyrö River in Ylistaro (see chapter 3.6.1). The finds comprise a celt found in Hölsö and a spearhead found near the church. Somewhat downstream at Perttilä in Isokyrö a second century AD burial containing burnt bone and a bronze necklace has been found. The Ylistaro stray finds may derive from destroyed burial or cemeteries that have been located by the river. The Ylistaro finds can therefore indicate an emergence of a river valley settlement at the Kyrö River during the Pre-Roman Iron Age.

5.1.2. Agrarian subsistence practices

As mentioned in the previous chapter, pollen analyses show a cultivation expansion during the Late Bronze Age at many locations in Northern Europe. Cultivation indications seems however to be weakened in many areas at the transition to the Pre-Roman Iron Age, perhaps due to a deteriorated climate. In the Umeä area an apparent cultivation gap lasts from about 500 BC until AD 500 (Engelmark 1976). Also in Southern Ostrobothnia cultivation indications are rare at the very beginning of the Iron Age. Serious palynological efforts to find Pre-Roman cultivation indications close to burial cairns at Helaalanneva and at Riitasaari in Laihia have failed, despite relatively good preconditions for agriculture and palynological observations (Vuorela 1997b: Wallin 2009). If a cultivation recession took place in Southern Ostrobothnia it can however not have been at all as serious as the one in the Umeä area. Around 200 BC several pollen analyses indicate relatively wide-spread cereal cultivation in coastal Ostrobothnia. In Edgren´s view the Pre-Roman Period was furthermore a time of consolidation of the agrarian subsistence economy in Southern Finland. He describes a stable and a self-supporting farming society (Edgren 1999). Asplund reports that settlement sites were related to agriculture more than before in Southern Finland and that their location was determined to a greater degree by the demands of a farming economy (Asplund 2008:384).
The amount of pollen evidence for cereal cultivation increase thus in coastal Ostrobothnia during the latter part of the Pre Roman Iron Age. Both barley pollen and weed pollen indicate agriculture. Late Pre Roman cereal cultivation is evident in pollen analyses from Rajaneva in Laihia, Truträsket in Kronoby, Rimal in Solf and Katamossen in Vörä (Wallin & Segerström 1994, Räsänen & Salonen 1998, Glückert et al 1998). Recent results for Kärmesnevanmäki in Laihia indicate also a Pre-Roman cultivation, but the exact date is somewhat unclear (Wallin 2009). The most northern synchronous cultivation indication in Finland is from Keminmaa in the northernmost part of the Bothnian Bay (Huurre 2003:33). At the end of the Pre Roman period, the pollen analyses thus indicate widespread cereal cultivation in the Ostrobothnian coastal area.

There is still very little macrofossil data from Southern Ostrobothnia that can shed light on the Pre-Roman Iron Age. An exception is made by a charred cereal grain of barley (Hordeum) that was found by the author. The date is 380-190 BC (Ua-38388, 2208±32 BP). The single cereal grain was found in a macrofossil sample that was taken in a bank that surrounds a cooking pit in Välikorpi in Laihia (Holmblad 2008). The find from Välikorpi falls precisely into the gap of radiocarbon dated cereal pollen occurrences in Ostrobothnia. The Late Bronze Age phase of cereal pollen in the Peltomaa analysis end about 400 BC at the latest and the next dated cereal pollen occurrences in the region starts about 200 BC. The Välikorpi find supports the idea that cultivation took place continuously from the Bronze Age to the Late Pre-Roman Iron Age in coastal Ostrobothnia. A possible setback in the intensity of Early Pre-Roman cultivation can currently not be disproved and neither can it be confirmed.

Five Pre-Roman dwelling sites have yielded cereal grains in Southern Finland. The results show that barley remained the dominant crop during the Pre-Roman Iron Age, but there is also some occurrences of rye and wheat species. The dwelling site at Hannuniittu in Turku exhibit naked barley and emmer wheat. The dwelling sites at Permortan in Pohja, Rapola in Sääksmäki and Spurila in Paimio exhibit barley of undefined types and a varying incursion of rye and wheat types (Häkkinen & Lempiäinen 1996:146ff). A cairn field in Retulansaari has yielded a barley grain from 390 BC-200 BC (NBA Hattula, Retulansaari röykkikartoitus...
According to Lempiäinen there are confirmed specimens of hulled barley among the Pre-Roman finds (Lempiäinen 1999:153).

During the Middle Iron Age hulled barley is the dominant crop in Ostrobothnia which is evidenced by the macrofossil analyses performed for the dwelling sites at Pörnullbacken in Vörä and Kalaschabrännan in Malax (Engelmark 1991:88, Viklund 1997:226f). With the exception of the Pre-Roman grain from Välkorpi, the oldest dated Iron Age cereal grains from Southern Osterbothnia have been found at Pörnullbacken in Vörä where they occur from about AD 200 onwards (Viklund 2002). Both at Pörnullbacken and at Kalaschabrännan barley dominate as a cereal crop and Chenopodium dominates amongst the weeds (Viklund 2002, Engelmark 1991). This demonstrates a spring sowing of hulled barley in manured, well worked and annually cultivated fields. The analyses also demonstrate that the animal fodder mainly consisted of wetland plants as sedge. The animals were probably kept indoors over the winter and the animal husbandry was dependent on hay making in water meadows. The animals provided also manure that was essential for the cultivation.

Pre Roman cereal cultivation is also indicated by an increasing amount of grinding stones consisting of saddle-shaped mortars and cubic shaped pestles. Grinding stones have been detected in connection to probable Pre-Roman graves in Riitasaari in Laihia, Pörtbäcken in Närpes, Starräng in Kristinestad and Löykne in Malax (Edgren 1999:326, Miettinen 1998:83, Holmblad 2007b:36). The grinding stones seem to have had some type of a ritual significance.

In the Bronze Age chapter analysis results were presented for Jätinhausdnamaa in Laihia, which indicate an agrarian intensification with a dependence on cattle and possible permanent field cultivation during the Late Bronze Age. The macrofossil analyses and other results from Pörnullbacken in Vörä indicate furthermore that this agricultural toolkit was certainly implemented during the Middle Iron Age, at least from the Pörnullbacken farm establishment around AD 200. How agriculture really was undertaken in the intermediary centuries is unfortunately still hard to tell. Nothing seems however to prohibit the possibility that pastoralism and permanent field cultivation remained persisting elements in agriculture from the Late Bronze Age onwards.

A possible existence of intensive cultivation types does not however exclude the possibility of swidden cultivation or other extensive types of cultivation. The number of cairn sites at Pre-Roman shoreline altitudes is extremely high in some Ostrobothnian parishes, especially in Laihia. At some locations, cairn site clusters form large complexes containing hundreds of small cairns and stone settings. A great portion of the constructions resemble clearance cairns rather than grave monuments (Herrgård & Holmblad 2005:130ff). A great number of vast clearance cairn fields emerge in stony terrain in Southern Sweden and South-Eastern Norway especially around the time of the Pre-Roman Iron Age. In eastern and northern Uppland extensive cultivation in clearance cairn fields probably took place alongside more intensive forms in the central cultivation districts of the region during the Early Iron Age (Göthberg 2000:229ff). A similar synchronous cultivation type may have existed in Finland as well. About 1500 cairn like structures have been recorded on the 2x1.5 kilometre wide island of Retulansaari in Tyrväntö in Häme. A Pre-Roman establishment phase has recently been noted in one of the clearance cairn fields in Retulansaari. The clearance cairn field has furthermore been reworked during several subsequent cultivation phases (NBA 1000005471, Hattula Retulansaari röykkiökartotoitus 2005).

One of several proposed interpretations put forward for the clearance cairn fields in Småland is that the cairn fields were used by single farms that relocated once a generation. The small
cultivated plots moved in turn around the farms with a few year intervals. Most of the arable land was in the mean time in fallow and utilised for grazing. The cultivated lands would have been only slightly manured, if manured at all and their nutrients would have originated mostly from burning clearance and from cultural layers of formerly inhabited farm lots (Pedersen & Widgren 1998:241ff, 282ff). A similar interpretation may be applicable also in coastal Ostrobothnia, but with the exception that the farms in that case would have been gradually moved lower in accordance to the shore-displacement, in contrast to the circling pattern in a confined territory as proposed in the Småland case.

One possible analogy can be the mobile “hoe field cultivation” that was conducted in semi-permanent fields (Finland Swedish: kåklandsbruk). This type of cultivation was undertaken until the early 20th century in the Åboland archipelago in South-Western Finland. The forests growing in the most fertile parts in the archipelago were chopped down and burnt. The ground was worked and cleared from stones, but no manure was added to the plot. The farmer grew oats in the field for a number of years until the soil became exhausted from nutrients. Thereafter the land was used for grazing and hay-making whilst the cultivation was moved to a new fertile place (Lindgren 2000:50ff).

It needs furthermore to be added that the clearance cairn interpretation is complicated by the fact that charcoal from a few small cairns at Pre-Roman elevations in Lammasahaanneva (or Allinen B) and Kullerinmäki in Laihia have yielded medieval radiocarbon dates. The first site provided a date to 480±30 BP (Ua-37591) and the latter site provided a date to 840±100 BP (Hel-2438). This can mean that the dated sites were cleared only during the medieval times or alternatively that the sites were reused during medieval times because they had already been cleared in the Pre-Roman Iron Age. The Kullerinmäki site may exemplify the latter phenomenon. Morby ware was found here in the immediate vicinity of the cairn that yielded a charcoal date to medieval times (Miettinen 1998:86).

If I had to choose between cereal cultivation and animal husbandry I would be inclined towards presupposing that the role of the latter would have been more important during the Pre-Roman Iron Age. So far there is however less evidence for animal husbandry than for cereal cultivation. As already mentioned, there are some more or less clear indications of valley oriented settlements during the Pre-Roman Iron Age, around sheltered bays, at river mouths and in river valleys. This indicates that at least a part of the settlement was located in areas that were favourable for an agropastoral subsistence economy, which would have benefited from shore and water meadows. Fodder harvesting should furthermore have improved by the introduction of the iron sickle at this time (see Edgren 1999:326). The above mentioned pollen analyses exhibit grass pollen that may relate to grazing activities.

The analysed pre-roman bone material is unfortunately very limited in Ostrobothnia. Formisto reports that there is one dated cattle bone from Levinluhta in Isokyrö whose uncalibrated date falls in into the Pre-Roman Iron Age, but the calibrated margin of error is as wide as 800 BC-400 AD (2100±210 BP, St 9854, Formisto 1993:42). A cattle jaw has been found in a small cairn at Pörthäcken in Närpes and Morby ware was found beneath the cairn (Edgren 1999:327). Huurre informs surprisingly that Pre-Roman pig bones have been found somewhere in Pörtom (Huurre 2003:57). I remain sceptical to this information because this find is not mentioned elsewhere and Huurre does not mention the name of the site or the context where the alleged pig bones would have been found.
5.1.3. Logistic mobility and foraging subsistence practices

Studies show clearly that foraging practices were still of great importance during the Early Iron Age. The sealing stations are mainly or solely represented by sites marked by small quadrangular hut foundations. As described in the Bronze Age chapter, the small hut foundations were constructed in the boulder fields and stony moraines of the outer archipelago.

Excavations of quadrangular hut foundations in stony terrain at 25-22 metre altitude in the Vaasa area have so far yield mainly Pre-Roman radiocarbon dates and otherwise coherent results. The dominance of seal bone proves that they were mainly used in a sealing context. The excavated sites are represented by Trofastbacken (2300±110 BP) and Ormoan (2222±70 BP) in Korsnäs, Hudholmen (2200±35 BP) in Malax and by Djupkärrsbacken (2110±100 BP) in Vaasa (Seger 1986a, 1986b, Holmblad 2009b).

All mentioned sites were located on small barren islets and islands in the outermost archipelago during their respective time of use (see also discussions in chapters 3.5.2 and 4.2). The number of hut foundations varies from eight to six at Hudholmen and Ormoan respectively and down to two foundations each at Djupkärrsbacken and Trofastbacken. The hut foundations at Ormoan and Hudholmen are arranged in a row–like fashion following the axis of the boulder field. At the latter sites the hut foundations are dug down into boulder fields giving several huts a pit-like appearance. The foundations at Trofastbacken and Djupkärrsbacken have instead floor areas cleared at the surface of the stony moraine and the walls are marked by stone circles (see Seger 1986a). Obviously the hut floors were levelled at the depth where nonsurged gravel first emerged. In the boulder fields this could be found fairly deep down. Most of the sites also exhibit small rounded depressions that are normally interpreted as storage pits. Excavations have revealed central hearths in the floors of all excavated hut foundations. Taken together the find material from the hut foundations consist of Morby type ceramics, burnt bone, iron fragments and some quartz flakes. The ceramic finds link the hut sites to the Pre-Roman coastal settlement districts. Some sites may have been in use over a long time span if the topography is steep.
Small semi-subterranean hut foundations have been found in two boulder fields at Hudholmen in Malax (see Holmblad 2009b). Today Hudholmen constitutes a barren hill characterised by cliffs and surged rocky terrain. Hudholmen was an island when the sea level was at the current 25-14 metre altitude or during 500 BC-AD 500. The camp sites may thus have been taken into use during the Pre-Roman Iron Age, which is also supported by a radiocarbon date. The relatively steep topography of the area and the long term shore closeness may nevertheless have enabled a longer use of the hut sites. One of the hut foundations is located at the centre of the hill whilst the remaining eight are situated in the south-eastern part of Hudholmen.

The eastern site at Hudholmen has eight hut foundations arranged in an irregular row-like fashion along the NW-SE axis of the boulder field. The internal floor space in the huts vary from 4 m² to 17.5 m², most are in average about 16 m². In immediate proximity to the hut foundations also five small depressions interpreted as storage pits are found. The site is at 25-22.5 metre elevation and can have been established a few centuries BC at the earliest. The sealing team that lived at Hudholmen came possibly from the sedentary coastal settlement that is marked by cemeteries in eastern Malax or from the big islands situated in the area.

A small test trench was excavated by the author within one randomly chosen hut foundation of normal size at Hudholmen (Holmblad 2009b). The hut had probably been quadrangular with inner measurements of 4x4 metres. The hut was built in the slope of a natural shore bank in the boulder field. The northern section of the hut was dug into the stone bank so that the northern wall was marked by an artificial slope in the ground. The walls of the southern part of the hut were instead marked by a low artificial stone bank. A lower spot in the bank marked the probable entrance through the southern wall. A levelled gravel floor was discovered under a layer of stone that had slid in from collapsed wall constructions. The roof may have been supported by branches that were covered by animal hides or reed but no traces of such constructions were detected however.

In the centre of the hut floor a rounded 0.7 metre wide and 0.3 metre deep pit hearth was found. The pit was completely filled to the brim by fire-cracked stone, large amounts of burnt bone, some quartz flakes, sooty sand and some charcoal. Almost all finds from the hut foundation came from the hearth. Only a small four-sided sandstone slab was found on the earth floor, which may have been some kind of a working slab. The hearths fill contained only small amounts of charcoal while the fill was saturated by burnt bone fragments. This notion indicates that bone was commonly used as heating fuel on the probably treeless islet. Burnt bone from the hearth was radiocarbon dated to 380-180 BC (2200±35 BP). The hut would at this time have been situated about 30 metres from the shore and a couple of metres above the sea level. Hudholmen was at this point a pelagic island measuring 400x200 metres and the distance to the mainland was about 10 kilometres.

Water sieved soil samples from the excavated northern half of the Hudholmen hearth resulted in almost 3700 bone fragments or 150 grams. The osteological analysis of the bone material showed that seal bones dominate completely, whereof all specifically identified specimens derive from Ringed seal (*Pusa hispida*). Other identified species are hare (*Lepus*), perch (*Perca fluviatilis*) and an unspecified anseriformes (*Anseriformes*). There are also bones from unidentified birds and fish. The assembly of species indicates that Hudholmen was also used to other types of foraging than sealing even though sealing obviously was the predominant activity (Stavrum & Storå 2008b). The anseriformes and the perch may preferably have been foraged during the summer months. Bones from a young seal also point towards the summer
months. The bone material does not however enable any watertight interpretations concerning the time of the season or seasons when Hudholmen was inhabited. (Stavrum & Storå 2008).

The burnt bones analysed from the pelagic hut sites mainly belong to seals. Ringed seal (Pusa hispida), dominates at Hudholmen and Orrmoan whilst Harbour seal (Phoca vitulina) is reportedly the predominant species at Trofastbacken (Seger 1987, Stavrum & Storå 2008). The latter determination is nevertheless put into question by some authors (Ukkonen 2002, Stavrum & Storå 2008b). Bird bones have been found at Hudholmen and Trofastbacken. Hare and fish bone have hitherto only been identified at Hudholmen (Seger 1987, Stavrum & Storå 2008).

Stavrum and Storå concurs furthermore that anatomic parts represented by seal bones shows that only chosen parts of the slaughtered seals were consumed in the huts at Hudholmen. The seal bone material derives almost exclusively from the crania and the flippers. The flippers reportedly contain the best meat for consumption. Amongst the Ringed seal (Pusa hispida), the cranium is also one of the meatiest parts. The anatomical representation of seal parts vary systematically according to the depth in the pit hearth. In the bottom of the pit, fore-flippers dominate but there is a gradual change so that hind-flippers dominate in the top layer of the hearth. The activities in the hut foundation would thus have altered somewhat over time. Also the representation of fish and bird bones in different parts of the hearth indicate that the hearth has been used repeatedly some time rather than during a single event (Stavrum & Storå 2008). A similar dominance of flipper bones is also seen in the Pre-Roman sealing hut sites in Korsnäs. Flipper bones are also present at the Late Neolithic and Early Bronze Age sites at Bäckishällorna in Oravas and Vitmossen in Vörå.

The macrofossil material from the pit hearth in the Hudholmen hut consists mostly of charred seeds from bearberry (Arctostaphylos uva-ursi). Other seeds came from juniper (Juniperus communis) and bog myrtle (Myrica gale). The tasteless bearberry has assumingly not been used as foodstuff. All berries at issue are wild local plants that probably grew on the small barren islet. They may therefore have entered the hearth as tinder. The existence of berries may indicate that the site was in use at least partly during the autumn. The macrofossil and osteological materials suggests that the site would have been in use at least in part during the summer months and preferably during the latter part, but this notion does however not exclude any other seasons of the year.

A site which exhibits similarities with Hudholmen is the Late Iron Age sealing camp at Grundskatan in Skellefteå in Västerbotten. The geographical location, the structure of the huts as well as the osteological and the archaeobotanical results bear great resemblances to the conditions recorded at Hudholmen. Mainly relying on the archaeobotanical results, Broadbent interpreted the late summer and autumn months to be the season of activity at Grundskatan. According to historical sources Ringed Seal were caught by nets along the Norrlandic coast in autumn. Grundskatan would therefore have been established as a camp for a sealing team that carried out net-catching of the Ringed seal (Pusa hispida) in autumn. Lindström and Olofsson put forward another interpretation that was further discussed by Eriksson (Lindström & Olofsson 1990, Eriksson 2005). The main argument of the latter authors is that Broadbent overemphasised the role of the archaeobotanical results and instead they move the emphasis to the geographical factors and the biological behaviour of the Ringed seal. Late summer and autumn would be naturally over-represented in the archaeobotanical material due to the berries produced in these months. The winter months would in turn be underrepresented both at Grundskatan and at Hudholmen.
The location of Grundskatan in the outer archipelago would not be favourable for net-catching of Ringed seal (*Pusa hispida*) during the autumn because the Ringed seal mainly lived in the inner archipelago during the autumn. Narrow straits and bays close to the mainland would have been the optimal sites of net-catching where passages could be effectively cut off. Grundskatan would also have been very exposed to southern winds and storms in autumn due to the location of the site. There are neither safe natural havens nor any man-made docking constructions at the site. Entering the site safely by boat would have been difficult at the stony and unruly waterfront in the autumn (Lindström & Olofsson 1990, Eriksson 2005).

According to Lindström and Olofsson, Grundskatan would instead have been used mainly for ice-hunting of the Ringed seal during the late winter and the early spring months. The otherwise exposed location in the outer archipelago would not be disadvantageous in the latter season. The surrounding sea was covered by ice and there was no need for safe havens. The southward slope would also limit the effects of the northern winds which would constitute a negative issue especially during the winter months. The south-east orientated boulder field would also be an optimal site of human activity in the early spring because it is the first place where the snow melts off. Boulder fields also have relatively thin snow-covers generally and they provide a good drainage capacity for melting water in the spring (Lindström & Olofsson 1990, Eriksson 2005). Hudholman is however older than Grundskatan and Hudholmen could also have been used for harp seal hunting.

Dated trapping pits indicate that also the inland hunting should have played an economic role during the Early Iron Age. Two Ostrobothnian trapping pit systems have provided radiocarbon dates to the Pre-Roman Iron Age. A trapping pit at the Neolithic dwelling site at Hundbacka in Purmo was dated to 100 BC. The dated pit is part of a trapping pit system that runs for 800 metres in parallel with the Saribäcken spring (Miettinen & Vuorela 1982). The nearly 30 trapping pits form five short sequences of 4-8 pits and with a distance of 10-20 metres between the pits. Two types of trapping pits are discerned. One type consists of large, somewhat elongated funnel-shaped pits with a diameter of 4-6 metres and a depth of one metre. The other type consists of smaller and shallower pits with a 2-4 metre diameter. The larger pits can be younger or have been reused at a later occasion. A synchronous date has been achieved for a trapping pit that is situated at the Mesolithic dwelling site at Rimpikangas in Isojoki (NBA 151010011, see chapter 3.5.6). This trapping pit system of 11 pits runs along a natural terrace edge. A charred wooden construction in one of the pits has been radiocarbon dated to the time around the transition to Common Era. The wooden construction can constitute a lock mechanism for the legs of the prey. The Pre-Roman trapping pit systems may have largely been built in order to catch forest reindeer during the winter months as has been described in the Bronze Age chapter. Hunting teams from the coastal settlement districts could relatively easy reach the inland hunting grounds via the ridges that led from the coast to the inland.

### 5.1.4. Social organisation and external networks

All types of exotic imports and prestige objects seem to be lacking during the Pre-Roman time. Even if this partly can depend on an artefact-less burial tradition, some real changes seems to have taken place in the exchange networks and the social structure. It can be noted that the former Late Bronze Age central area in Satakunta appears to exhibit decreasing traces of settlement after the early Pre Roman Iron Age. They were affected by an immense ecological transformation that was caused by the shore displacement, as outlined by Salo (Salo 1981:336f, 347f). Precious water meadows were paludified into bogs and people lost
their touch with the sea. On the other hand, almost synchronously also the South Scandinavian power structures came to an end (Kristiansen 2006:189ff). Perhaps both factors, the altered ecological settings as well as the collapse of the external network could have weakened the position of the high-rank Houses and the polities in Central Satakunta. On the other hand, it is possible that such structures became at least partly masked by egalitarian burial traditions.

We might also suppose that new values and contact networks were related to the new social order. Due to the almost completely artefact-less burial tradition it is however very difficult to say anything about the material culture. A certain trend can though still be discerned if we include entire coastal Finland. The simple ring jewellery and the iron objects as well as some pottery elements and burial rituals indicates weakening contacts with Southern Scandinavia and increasing contacts with the Eastern Baltic during the Early Iron Age, but contacts were still maintained with central Sweden (see for instance Edgren 1998:156ff).

The collective pelagic sealing seems to have been undertaken continuously during the pre-Roman Period. I find it obvious that sealing continued to have an important socially organising power in the Ostrobothnian coastal polities. The eastern station at Hudholmen consisted of eight separate hut foundations. But what does each hut stand for? One possible explanation would be that each hut represents the different independent farms or Houses that participated in the sealing effort. In this case as many as eight farms or Houses would have constituted a “sealing district” with a common sealing team and a common sealing camp. The farms of the hunting team at Hudholmen were probably situated in the Malax- and Laihia areas. This model stresses the possible manifestation of the independent farms or Houses as a desired form of organisation regardless the cost from a space and energy efficiency.

If we instead approach the issue from a rational space and energy optimising perspective we get other views of the sealing team (see also Holmblad 2009b). The calculations presented here are based on the assumption that all huts were in synchronous use at some point, which is admittingly not put in evidence. The total living space in the huts is approximately 90 m² and the living space in the huts varied between 4 and 17.5 m². Five of the hut foundations exhibit an inner average size of 4x4 metres. As the excavated hut foundation, they thus had an average total living space of 16 m². The excavated hut contained a central hearth, which is also highly probable for all same-sized huts. Excluding the hearth space, the available sleeping space in five of the huts would therefore be 12 m² in average. The five big huts may very well have sheltered six men each. Considering that the men may have kept their food, personal belongings, possible sealing dogs and hunting gear inside the huts the number of men may need to be decreased to four men per hut. Four to six men per hut could also correspond to the size of a boat crew. The total living space in the three smaller huts varied from 4 m² to 8 m². It can be put in question whether the smallest huts contained any hearth at all and they could have played another utilitarian role. The three smaller huts may however have sheltered perhaps two or three men in average. The conclusion is that Hudholmen should have sheltered at least about 25 men, but the number of men could have been as many as 40 if all hut space was maximised solely for human sleeping accommodation. The latter assessment comes quite close to the number of 50 men that has been calculated for eight huts in Otterböte (Gustavsson 1997: 129).

The calculations presented above provide somewhat different images of the various possible social organisations behind the sealing efforts. The first calculation would indicate that five to eight farms participated in the sealing effort. The latter calculations indicate instead considerably higher numbers. We do not know the size of the Pre-Roman families or
households, but if the separate farms were inhabited by single nucleus families, it seems unlikely that they have been able to provide more than two men in average to the sealing project. The sealing team at Hudholmen may therefore have represented a sealing district that encompassed 12-20 farms. The calculation gives at hand that Hudholmen may very well have been the common sealing station to the entire settlement district that was located in the Malax and Laihia-area.

The cooking pit distribution pattern in the Laihia settlement district seems to have been affected by social factors (see chapter 4.4 and 4.6.1). There are signs that the oil production was organised in another way from the beginning of the Iron Age. Around 500 BC the cooking pit distribution pattern changed in Laihia. Compared to the Bronze Age the distribution pattern for the Pre-Roman cooking-pit sites can be characterised as an increase in the number of cooking-pit sites and as a spatial dispersal of the cooking-pit sites. The number of cooking-pits per site is smaller compared to the Late Bronze Age. The Pre-Roman cooking-pits are evenly distributed over the entire area of the settlement district, because they are relatively evenly distributed over the entire area of the occurrence of the cairn and stone-setting sites. At the event of the Iron Age, the seal oil production seems to have become decentralised and dispersed to the individual settlement units, into the control of the individual farms and households. The total number of cooking pits is only slightly less at Pre-Roman altitudes when compared to the Bronze Age elevations. The construction frequency of pits seems thus to have remained at a relatively stable rate throughout the Early Metal period. The onset of the Iron Age did perhaps for this reason not bring a radical decrease in the volume of seal oil production. The main difference compared to the late Bronze Age cooking pit activity may have depended on a social and spatial decentralisation of the production.

The Pre-Roman seal oil production of Laihia was furthermore apparently not concentrated any more to a logistic node that led to the inland. This may perhaps indicate a changed or a decreased exchange between the coast and the inland at the transition to the pre-Roman Iron Age. This change may furthermore be illustrated by the decreasing amount of inland ceramic types in some parts of the coast, and which seems to be apparent in the Vaasa area. It may be too early to draw conclusions, but the current picture is that the Pre-Roman Luukonsaari ware that descended the Bronze Age textile ware in the inland has only been found in small amounts at a couple of coastal sites in a more northern area. Asbestos tempered wares of the eastern Luukonsaari type and of the northern Säräisniemi 2 type have been found at Råbacken in Jeppo and at Karkaus in Alahärmä (see chapter 3.6.2).

The changes in burial traditions at the Iron Age transition follow largely a general North European trend that is clearly seen in South and Central Scandinavia already during the Late Bronze Age (Baudou 1991:161). The dominant monumental burial tradition is replaced by a tradition with a much more modest external appearance. The increasing amount of structures per site gives the impression that a greater rate of the population received individual burial markings. It can however not be excluded many cairns at Pre-Roman altitudes are in fact some type of clearance cairns. The nearly total lack of preserved artefacts in burials can be further signs that show that the Pre-Roman burial traditions express an ideal of social egalitarianism. This may stand in some contrast to the variation in outer burial traditions and in the practise of both cremation and inhumation burials. It is possible that this variation depends on internal House subdivisions.
5.2. Towards the middle Iron Age societies

The Early Roman Iron Age (1-200) can be characterised as a transitional period between two essentially different time epochs. A transformation towards a prestige economy started to take place in the late Pre-Roman Iron Age in Uppland, which was inspired by stratified societies to the south. Emergent elites become visible through weapon burials and other rich burials (Göthberg 2000:229ff). According to Asplund south-western Finland became incorporated into European trade networks in the Roman Period. This change included the development of a new socio-political structure (Asplund 2008:305). The new burial traditions have their models in different parts of the Baltic Sea area, in Scandinavia and in the Eastern Baltic (Salo 1968). The changes are not equally visible in Southern Ostrobothnia, but also here we meet tangible elements of novelties that witness of a larger emerging change of society (see Herrgård & Holmblad 2005 and litt. cit. there). Also in Southern Ostrobothnia social hierarchies and long-distance contacts appears to become materialised more clearly. Approximately at this time also the cooking-pits seem to go out of fashion after being used in the region for about one millennium. Perhaps we are dealing with a mere technological change in the oil production process, perhaps with an introduction of iron pots. The apparent end of the use of cooking-pits may however also be linked to more thorough changes in society. One possible option to consider is a possible link to the extinction of the Baltic harp seal.

The burial tradition with stone-settings and small cairns continues to dominate also during the centuries immediately following BC/AD. The Pre-Roman burial tradition with a covering of red sandstone slabs seems to have continued more or less until the 4th century AD. Miettinen dates the excavated sandstone graves at Fäbodbacken in Närpes and at Frönässudden in Övermark to the time around BC/AD. The latter contained a pair of simple bracelets of bronze and iron (Miettinen 1986:61). The sandstone grave at Karjatarhanmäki in Laihia is dated to AD 200-400. A sandstone grave in connection to the migration period cemetery complex in Nissashagen in Malax could be of similar date as the Karjatarhanmäki cairn (Miettinen 1986:64; 1998:115)

It can especially be noted that some Ostrobothnian graves start to exhibit more artefacts than previously, and that exotic artefact types start to show up. To the latter belong especially the few roman imports. A wine ladle produced in Italian Capua in the 2nd century AD has been found in a destroyed grave in Pääkköömäki in Vähäkyrö. A Hadrian (AD 117-138) copper coin has been found by looters in a stone-setting at Helgabacken in Nykarleby. The exact find contexts of the roman imports are unfortunately not adequately documented, but both objects are not presumed to have been deposited in the graves before the Late Roman Iron Age (AD 200-400), even if they may have arrived relatively soon after their manufacture. The roman artefacts lead to questions of the possible arrival of traditions and customs attached to them. Was for instance the wine-ladle used during feasts arranged by a local chief? Was the Helgabacken coin put into the mouth of the deceased as was customary around the Mediterranean? It is nevertheless clear that the mentioned objects are the oldest imports from the Mediterranean world that have been found in the region.

The most extensively excavated South Ostrobothnian cemetery of the Early Roman Iron Age (or even of the entire Iron Age) is situated at Pajunperkiömäki in Vähäkyrö. According to Unto Salo the cemetery was mainly in use in 1-200 AD, possibly also somewhat earlier (Salo 1968). The cemetery consists of a dense cluster of 27 burial monuments in a 100x60 metre area. 17 graves have been excavated. The burial tradition is of local traditional character.
consisting of 4-10 metre wide round or oval stone-settings with a stone fill that lacks earth admixture. A large portion of the stone-settings were built around a central boulder. The burial monuments seem mainly to belong to single individuals that have been buried both as cremations and as inhumations. Even if it has been pointed out that there are no particularly exotic or precious artefacts in the cemetery, the Pajunperkönmäki cemetery is notable for its unusually large amount of grave goods. Especially the amount of weaponry is notable with swords, spearheads and shield bosses. In Finland is this weaponry combination is otherwise present only in the northern part of Finland Proper during the Early Roman Iron Age (Salo 1984). The models for this weaponry are situated in central Europe and in Southern Scandinavia, though the original inspiration source may be the Roman army. Synchronous weaponry burials in other parts of Finland contain instead the combination of a spear and a celt, which Salo considers to be a more archaic tradition that is paralleled in the Eastern Baltic. The weapon burials in Pajunperkönmäki can probably be interpreted as the oldest Iron Age manifestation of a European warrior ideology in Ostrobothnia.

To the changes in burial customs seems also to belong a slightly increasing amount of earth infill in some of the burial monuments. We also encounter the first confirmed Iron Age inhumation burials, which however seems to depend more on preservation and documentation circumstances than on a real change during the Early Roman Iron Age. The most deviating grave type has been documented in the Latjineliden cemetery in Vörä. Several graves can be characterised as stone-settings with a soil fill and stone lined edges. The Latjineliden graves contain collective burials of both inhumations and cremations. The oldest dated burial is from AD 200 and the remainder belongs to AD 200-400. The Latjineliden graves are mainly compared to graves in the Eastern Baltic, a comparison that seems relevant also in other contemporary burial monuments in Southern Ostrobothnia. Eastern Baltic contacts are also shown by the necklace found in a burial at Ala-Perttilä in Isokyrö that dates to the 2nd century (Meinander 1950).

The general North European change with new burial traditions and more grave goods are most clearly manifested in the parts of Southern Ostrobothnia that became the central settlement districts during polities of the Middle Iron age. This could however depend merely on a higher excavation and research density in this area. But it raises the question to which extent there was already emerging social elite and to what extent the central districts had started to take shape. Comparisons with the preceding period is difficult due to the artefact-less Pre-roman burial tradition

During the early Roman Iron Age an overall regional settlement concentration has been noted to inner coastal zones and particularly to the main river valley zones in South-western Finland (Edgren 1993). Large areas in the archipelago and the outer coastal zone seems to become more or less depopulated One explanation is that an agricultural intensification led to the flourishing of certain mainland areas (Asplund 2008:13). Clusters of cemeteries and farmsteads emerge particularly in river valleys, at river estuaries and in the deepest parts of the largest sheltered bays. This process seems to become particularly accentuated in Southern Ostrobothnia during the Late Roman Iron Age, and perhaps especially in the 4th century AD. The relatively light but still apparent concentration of more richly furnished burials, weaponry and exotic artefacts in the Vaasa area during the Early Roman period seems thus to be followed by a settlement concentration in the same area during the late Roman period, leading to an apparent population decrease in the surrounding coastal areas, as if the social change started before the aggregation took place and somehow guided the direction of the aggregation.
The finds from the Early Roman Iron Age witness firstly that a portion of the coastal population embraced the generally increasing trend of putting goods into the graves. The finds may secondly indicate that the long-distance networks and exchange relations increased. In the mean time it is possible that the social hierarchies become strengthened or that they at least become increasingly materially manifested. The changes that can be discerned during the Early Roman Iron Age seems however to pave the way for the much stronger materially mediated social manifestations and settlement aggregation of the Middle Iron Age society.

5.3. Summary

This chapter attempts to provide some insights into the structuration of the Pre-Roman coastal communities. The approach is largely based on the identification of various continuities and changes that can be discerned in comparison to the Bronze Age communities. My impression is that the most important Pre-Roman societal changes would have taken place quite early at the transition to the Pre-Roman Iron Age. Changes within the Pre-Roman Iron Age appear to be more difficult to identify at least with the current state of research. The beginning of the Pre-Roman Iron Age meant apparently a relatively rapid transition to an iron using technology and to new mortuary ritual practises and symbolic expressions of the Houses. The Pre-Roman Iron Age may have been expansive in terms of demography and even in landscape utilisation, but the symbolic and ritual expressions of the Houses seems to become more discretely communicated.

The most striking change is related to the size and the amount of cairn-like structures. The Pre-roman period appears to be especially marked by a large number of cairn fields, that may consist of both clearance cairns and of small mortuary monuments. Pre Roman burial traditions are clearly more modest in their monumental appearance than their Bronze Age predecessors. House property and eternity appears thus to have become manifested mainly through the creation of extensive cairn field complexes (instead of the creation of large cairns), and ideologically it may even have become a matter of secondary importance whether the individual structures were clearance cairns or mortuary monuments. This should have resulted in (or been caused by) quite different perceptions of House biographies and ancestors when compared to the Bronze Age. The often four-sided graves that are covered by sandstone slabs stands out as particular Pre-Roman constructions among the mortuary monuments in the Vaasa-area. It is suggested that these graves signify the founders of the Houses or the farm sites. The large amount of cairn-fields suggests also that the population density should have been relatively high during the Pre-Roman Iron Age. Theoretically the rising number of cairn-fields could also relate to house relocation practices that would have caused very frequent movements of farms and of extensively cultivated lands.

On the macrogeographical regional level the coastal settlement districts of Southern Ostrobothnia seem to be largely continuous from the Late Bronze Age. The settlement districts were still largely oriented towards the sea, which means that they moved gradually in accordance with the shore displacement. The variation amongst the individual settlement units seems however to exhibit an increased ecological variation that extends from islands to lower parts of river valleys. Some units (or Houses) were apparently situated on large islands; some at the river estuaries or even in the river valleys, but most were still situated along the coast, both in the outer and in the inner coastal zone. This suggested dispersal of the settlement to
more various ecological zones could indicate a greater variation in subsistence practices. The localisation of several settlement units to more or less valley oriented locations suggests that pastoralism probably played an important role for the subsistence amongst at least a portion of the settlement units.

The foraging subsistence practices were still very important during the Pre-Roman period. Practices of logistic mobility and sealing in the outermost archipelago remained common or were even strengthened in the Pre-Roman Iron Age. Several dated sites with small hut foundations in boulder fields or stony places show the importance of this practice. Also cooking-pits remained in use throughout the Pre-Roman Period. Settlement districts may have corresponded to collective sealing districts, and this function may have been one of the basic qualities of the local coastal polities. Working teams and especially those related to institutionalised collective sealing would still have been a major forum for interhouse collaboration. Some dated trapping-pit systems indicates a use during the Pre-Roman Iron Age.

Palynological research does not conclusively show if there was continuous cereal cultivation from the Bronze Age and throughout the Pre-Roman Iron Age, even if this undoubtedly appears to be the most plausible scenario. Cereal cultivation becomes a well established fact through several pollen analyses in the final part of the Pre-Roman Iron Age, which might indicate that there was a general intensification or expansion of cereal cultivation in the coastal communities at this point in time. The large and numerous cairn fields may reflect some kind of an extensive cultivation technique that could have been especially common during the Pre-Roman Iron Age. The subsistence economy remained therefore most likely of a mixed character throughout the Pre-Roman Iron Age.

It appears to be difficult to discern any qualitative rank differences between the Houses in the Pre-Roman period. Successful houses can inspire other houses to mimic their economic or social practices. This process is suggested in the Jätinhaudanmaa case, where the other settlement units or Houses in Laihia seem to take over the previously almost monopolised activity from the Jätinhaudanmaa unit approximately at the transition to the Pre-Roman Iron Age. The change in the cooking-pit distribution in Laihia suggests that the centralised production ended in the local community and that the individual Houses started to produce seal oil on more equal terms. The spatial dispersal of cooking-pits in the Laihia polity suggests that the production became based on more egalitarian organisational principles than during the Late Bronze Age. The general impression is that the Pre-Roman period communities would have been at least superficially more egalitarian, which is particularly suggested by the seemingly relatively equal burial practices.

The coastal peer-polity network that had emerged in the Late Neolithic (at the latest) was still actively reproduced throughout the Pre-Roman Iron Age. This is suggested by the general similarities in coastal mortuary practices (despite some regional variation) and by the coastal Morby ware. All interpretations that concerns external long-distance networks are hampered by the nearly complete lack of grave goods and water deposits during the Pre-Roman Iron Age. Judging by the few recorded metal artefacts (that are confirmed as Pre-Roman), there still appears to be some general changes. The first impression is that the Pre-Roman long-distance contacts are more discretely communicated, which can mean that they decreased in importance during the Pre-Roman Iron Age. The total lack of exotic items and also the dispersed pattern for blubber production in Laihia can indicate weakened long-distance networks and exchange relations. The lack of clear links to logistic nodality suggests that seal oil production in Laihia is not (at least not obviously) linked to any external exchange.
relations. Relations to northern or inland populations are still displayed in the Jeppo-Alahärmä area in the north. The (possibly indirect) long-distance contacts appear also to have become more oriented towards Estonia than Southern or Central Scandinavia during the Pre-Roman Iron Age. During the Early Roman Iron Age a transition starts that seem to be the starting point for the hierarchical and regionally centralised Middle Iron Age polities in the Vaasa area.
6. Concluding discussion: *durées, conjunctures and the resilience of the coastal communities*

Here I will provide a concluding thematic discussion that highlights my attempts to understand some archaeologically identifiable large scale and more or less long-term changes and continuities within the coastal communities. I will use the concepts originally provided by Braudel as a historiographical tool to guide my description of various changes or various scales of change in the Early Metal Period. I will also attempt to show how these concepts can be linked to the issue of the management of change and to the level of resilience in the coastal communities. The concepts provided by Braudel as well as the concept of resilience are described in chapter 2.1.

It should be possible to relate the generally relatively stable subsistence economy to the *longue durée* and the cycles of the comparatively instable political economy to different *conjunctures*, to put the words of Johnson & Earle in somewhat different terms (see chapter 2.2.3). Cooking-pits can be regarded as an economically motivated example where Braudel’s temporal concepts can be applied to Ostrobothnian source materials. The physical creation and the use of a single cooking pit can be regarded as an example of an *événement*. The creation of numerous cooking pits in a spatially concentrated pattern during the Late Bronze Age in Laihia (see chapter 4.5) may be interpreted as signifying a *conjuncture* within the political economy, when an economic surplus production can have been aimed at in a planned collective fashion. Another *conjuncture* seems to become materialised in the Pre-Roman Period when few cooking pits were created at a large number of different sites in a spatially dispersed pattern (chapter 5.1.6). This can signify a period when cooking pits were created according to a more individualistic and decentralised organisation of production. The political-economical decision to focus on seal blubber as an important or even a main product of surplus production can in both instances be seen in relation to a general *longue durée* of maritime subsistence economy in the coastal area.

The mixed subsistence economy with foraging and agropastoral practices can be related to the dualistic habitation practices of residential sedentarism and logistic mobility. This also indicates a dualism or perhaps rather pluralism in taskscapes where different subgroups performed various types of activities during different parts of the year. This indicates a *longue durée* of different taskscapes. The labour divisions and the work in different taskscapes probably fostered different subgroup identities and even mythologies that could be more or less age and gender related. The pelagic sealing huts may for instance relate to a male taskscape where archaic animistic perceptions could have been reproduced.

As the majority of the Ostrobothnian settlement appears to have remained in coastal proximity throughout most of the prehistory, which was maintained through a gradual succession of settlement relocation, this can be termed as a *longue durée*, but there are related changes over time that can be termed as *conjunctures*. There can be *conjunctures* of valley and sea orientation as well as ecological zone preferences. The coastal settlement districts in Southern Ostrobothnia appear to have been dispersed mostly along the outer coastal zone during the Bronze Age, but it relocated and became concentrated to the inner coastal zone (even to the river valley zone) during the Middle Iron Age. The Pre-Roman and even most of the Roman Iron Age may instead have formed some kind of an intermediary transitional phase, when settlement districts still largely stayed in the outer coastal zone, but when some settlement units started to relocate and perhaps “experiment” with new types of ecological environments.
The attraction to the outer coastal area by the Bronze Age population and to the inner coastal area by the Middle Iron Age population could point to a transition from a large-scale utilisation of maritime resources towards a large-scale utilisation of agro pastoral resources. The transition was apparently preceded by a long period of mixed subsistence practices. As maritime resources and contact to sea are available also in the innermost coastal area, I am inclined to believe it was especially the availability of outer sealing areas and that affected the earlier settlement pattern. Hypothetically also the extermination of the Baltic Harp seal (or other sealing related forced changes) could have played a role in this transition.

There may also have been *conjunctures* of house replacement practices and house relocation practices. The Middle Iron Age farm sites provides clear evidence for house replacement practices were houses were replaced on the same farmyard for generations, the same appears to be valid for the Late Bronze Age farm sites in Jätinhaudanmaa. There are also several probable farm sites that exhibit much weaker settlement traces, especially from the Early Iron Age. Theoretically the weak articulation of these settlement (in terms of cultural layers and/or finds density) sites could indicate house relocation practices and that these sites contain only one short settlement phase. House (and cultivation) relocation practices may also be indicated by the large number of cairn fields on Pre-Roman elevations. More fieldwork is required to solve this issue.

If we accept the existence of the House as a persistent institution and the House society as a *longue durée* of the coastal communities, the general *conjunctures* of the Houses could consist of periods of increasing or decreasing materialised articulation of House existence. This may in turn be related to increasing or decreasing competition or rank differentiation between different Houses. The source material studied in this thesis gives at hand that the Late Bronze Age was a *conjunction* of more clear articulation and perhaps of differentiation between the coastal Houses. This differentiation can be regarded as connected to a general *conjunction* of a rise in the political economy that in turn was linked to a rise in exchange and long-distance networks. This aspect seems to be highlighted by the logistic nodality of the Jätinhaudanmaa House. During this period external contacts as well as new ritual, technological and perhaps organisational practices may have become particularly beneficial for rank-striving Houses in Southern Ostrobothnia and in Satakunta.

I also regard the existence of some kind of polities as a *longue durée* of the coastal communities. Polities were important for long-term survival, especially as they provided buffering tools for risk-management and they enabled larger and more varied forms of economic utilisation, especially of maritime resources. The *conjunctures* in relation to polities could in turn relate to various reorganisations of the polities. *Conjunctures* may deal with the very creation and the vanishing of different polities, but also if they became centralised or decentralised, if they were local or regional in their geographical extent and so on. It seems probable that the South Ostrobothnian coastal polities remained local in their scope throughout the Late Neolithic and the Early Metal Period and that they were largely based on the organisation of collective sealing-districts. It is furthermore possible that they mostly remained fairly decentralised throughout the Early Metal Period. An exception would be the Laihia polity during the Late Bronze Age. At this point in time the Laihia polity seems to exhibit a more centralised and perhaps more a specialised character. The same seems to be valid for the Late Bronze Age polities in central Satakunta where the changes appear to have been stronger. The late Bronze Age appears to have been a time when long-distance exchange networks gained in importance.
Another *longue durée* is the persistent construction of some kind of cairn-like mortuary monuments of stone along the coast. Monuments of stone would mainly have been symbolic manifestations of the property and the eternity of the coastal Houses. The territoriality may initially largely have concerned large maritime resource areas, but later contracted to concern smaller agricultural resource areas. This may be reflected in the apparent overlapping *conjunctures* of farm cairns and that of outspread cairns. The cairns also provided something fixed in a landscape and a society that was on a gradual move that was directed by land-uplift related processes.

The varying dominant trends in the construction of the most characteristic mortuary monument types relate instead to *conjunctures* of shorter duration, but they have still lasted for centuries. Long-cairns appear to have been built in the Late Neolithic, large round cairns are characteristic of the Bronze Age and sandstone covered quadrangular stone-settings mark the Early Iron Age. In the Middle Iron Age large round cairns have a renaissance. This is of course merely the roughly characterized trend that focuses on the leading types of monuments. Also here a House perspective can be applied to the emergence and to the spreading of new burial traditions. Even if burial monuments may have had numerous meanings and purposes, for instance as territorial markers, I especially want to emphasise the ability of burial monuments to symbolically manifest perceived origins that for the time being were considered important for the identity and the biography creation of the coastal Houses. I thus believe that the particular monumental variations or *conjunctures* largely depend on focus shifts in trends of dominant origin perceptions and other identity creating elements.

In the discussion on societal resilience, it has been pointed out that stabilising forces consist of buffering practices, adaptive governance, learning and self-organisation. Adaptive governance includes organisational and institutional flexibility as well as social capital that includes trust and social networks. Experience for dealing with change is furthermore provided by social memory (Redman & Kinzig 2003:4, Trosper 2003, Folke 2005:259, 261f). Stabilising forces promote productivity, fixed capital and social memory. Destabilising forces provide diversity, flexibility and opportunities for change in the communities (Redman 2005:72, Folke 2006:253). Long time perspectives enables the study of slow processes that are the keys to ultimate resilience of communities and it enables the identification of the practices that reduced risk and contributed to long-term resilience (Redman 2005:70). One example is the case with the Northwest Coast Indians. These communities persisted for two millennia prior to contact with old world people, despite variable cycles and unpredictable behaviour of the ecosystems. According to Trosper it was the historically documented potlatch system of the native groups that offered resilience. This system included certain property rights, environmental ethics, rules of earning and holding titles, public accountability and a reciprocal exchange system (Trosper 2002, 2003).

The South Ostrobothnian *longue durées* that I have described above can be regarded as highly resilient structures that could last for millennia, but they were periodically renegotiated and they became reproduced according to slightly different practices that can be termed as *conjunctures* that could last for some centuries or even longer. The mentioned *longue durées* of the coastal communities would naturally have remained long lasting because there were long-lasting communities that reproduced the durées. This relationship can logically also be regarded to work in the opposite direction, that the communities remained long lasting precisely because they were largely based on the reproduction of successful long-term structures. The long-term continuity of some social, economic and cultural practices indicates at least to some degree the successfulness of the chosen practices in terms of resilience. The *longue durées* were thus factors that provided long-term resilience to the coastal societies.
The *conjunctures* tell on the other hand how communities managed change. The periodic *conjunctures* can therefore be regarded as important expressions of flexibility or means to preserve the resilience maintaining qualities of the durées when societal conditions changed. Many of the mentioned *longue durées* and the *conjunctures* may thus be regarded as mechanisms that promoted the long-term reproduction of the communities. The ongoing landscape change may however be an example of a *durée* that posed challenges to societal resilience in coastal Ostrobothnia.

One last important *longue durée* remains to be described. The coastal communities of southern Ostrobothnia belonged from the Late Neolithic until the Iron Age to a a sociocultural province that encompassed almost the entire coastal zone of Finland. The material manifestations of this area are traditionally known as the Kiukainen culture, the western Bronze Age culture and the coastal Morby ware using culture of the Pre Roman Iron Age. A *longue durée* of a peer polity network with close kinship, exchange and marriage networks and somewhat similar environmental conditions probably held this area more or less together for millennia. Social anthropological examples suggest that even some kind of confederations of allied polities may have existed at times. It is hard to escape the impression that some kind of common "ethnic" identity constructions should have existed in this area, constructions that may have been reproduced and renegotiated in opposition to inland populations and to populations overseas.

The *conjunctures* in this "ethnic" province perspective perhaps relate to periods of altered perceptions of origins and worldviews and to periods of changed relations to groups outside the zone of the coastal culture. This type of *conjunctures* can perhaps be reflected in the mentioned *conjunctures* of mortuary monuments, external contacts and in other material expressions of symbolic and ritual character. The *conjunctures* appear also to become more or less reflected in the pottery styles. The South Scandinavian bronze technology and burial rituals were introduced in coastal Finland during the Bronze Age. Apparently also a new agrarian technology and perhaps a building type and were some additional introduced phenomena of the Bronze Age. The Scandinavian oriented worldview may thereafter have turned into a more Eastern Baltic oriented worldview in the Pre-Roman Iron Age, which also could have affected peoples perceptions of their positioning in the world. This is however an issue that leads beyond the scope of this thesis.
Summary

This work attempts to seek new insights in understanding the archeological phenomena traditionally labelled as the western Bronze Age and the coastal Pre-Roman cultures of Finland (1500 BC-AD 1), by studying the phenomena from a socioeconomic interaction and practice oriented community perspective. The basic line of thought is that it was the everyday life of the local agents and their interactions that constituted the local communities. Communities are therefore seen as built from the bottom up by the interaction of various human agents on a local scale. Problems that are addressed concern the interrelationship between the subsistence practices, habitation practices and the social organisation of the coastal communities. Another issue is the types of social groupings that were essential for the structuration of the coastal communities as well as their interplay and relation to external networks. I also address the issue on the various spatial and temporal scales that can be considered as essential for the structuration of the coastal communities, and furthermore how the coastal communities managed change over time. The geographical scope of this thesis is limited to the former province of Vaasa (Vaasan lääni/Vasa län) in western Finland, with a special emphasis on the coastal southern part of Ostrobothnia.

In chapter two I present some theoretical and methodological ideas and concepts that can guide my study on the Early Metal Period communities in the research area. The chapter relates to the basic aims and research questions outlined in chapter 1, and to my pre-understanding of the empirical material that is described in chapter 3. The organised agents, their practices and their mutual interaction are regarded as the central factors that created and shaped the history of the communities. Various localised practice-defined social subgroups would have formed important community constituting agents on various scales of social organisation. Methodologically a broad perspective with a comparative, diachronic and a multi-proxy approach is needed in the study of the structuration of communities. The constitution of the communities is largely approached through different themes related to landscape and settlement archaeology. Contextual analyses of the combinations of various subsistence and habitation practices form the basis for the identification of different community constituting subgroups of agents. The House (maison) is presented as a possible basic agent in the social organisation of communities. A House society perspective is regarded to provide an interesting approach to understand some of the social dynamics that was caused by the relations and the interactions within and between different settlement units. The local polity is presented as the highest level of social organisation of the communities. The polities were financed by the resources of the political economy that were extracted from the subsistence economy. A community can furthermore not be understood without considering the networks that integrated the community into the contemporary world. The intercommunity interaction could consist of peer-polity interaction between neighbouring polities and of long-distance interaction with spatially or culturally distant polities. An important issue is the identification of the agents that were involved in this communication, as well as their motives the consequences of their actions.

In chapter three I provide a descriptive account on the Early Metal Period source material that is available for archaeological research in Southern Ostrobothnia. This material consists of analysis results that relates to palaeoecology, environmental archaeology and archaeology. Also the chronology of the material is presented as well as land-uplift related processes and the history of archaeological research. Also a new shoreline chronology is presented for the
research area. The archaeological sites contain structures as open settlement surfaces, visible dwelling constructions, cairn-like structures, and clearance cairns and stone clearances, cooking pits, trapping-pits, storage pits as well as possible sacrificial deposits and some ritual stones. The artefact material consists of various bronze objects, iron objects, ceramic types, lithic objects and some artefacts of organic materials.

Chapter four attempts to provide an account on how the coastal communities in Southern Ostrobothnia could have been structurated during the Bronze Age. It is suggested that the spatial-analytical settlement units formed social Houses and that the communities mainly consisted of closely interacting Houses. Particularly collective sealing is regarded as an institutionalised practice that united groups of coastal Houses into local polities. The polities would have institutionalised collective economic projects, reciprocity and risk management amongst neighbouring Houses. It is suggested that the beginning of the western Bronze Age in Finland begun with the adoption of new values and ritual practices through marriage and exchange alliances between houses in South and Central Scandinavia and houses in the Kiuksainen culture. Opportunistic Houses would have embraced the new values because they could boost exchange relations and elevate the rank of the Houses. The very beginning of the Bronze Age did however perhaps not lead to any major societal changes in the relatively peripheral region of Southern Ostrobothnia, except for the mortuary ritual practises that were materialised in round burial cairns. The Kurunkangas area in Laihia is used to illustrate the transition from the Late Neolithic to the Early Bronze Age at an alleged coastal South Ostrobotnian House. In the outer coastal area of Laihia the more or less sedentary settlement units of this time appears to have been concentrated to the most sheltered areas around small coastal lagoons and around bays near the estuaries of small rivers. It is furthermore argued that residential mobility was probably practiced at Late Neolithic-Early Bronze coastal sealing sites that are marked by large rectangular dwelling structures as at Vitmossen in Vörå. Logistic mobility with specialised task groups appears instead to have been practiced at pelagic maritime sites with small hut foundations. Foraging subsistence practices of the Late Neolithic and the Early Bronze Age would therefore relate to practices of both residential mobility and logistic mobility. In the Late Bronze Age the sealing sites would only relate to practices of logistic mobility.

The most important social cultural and economic changes seem to have been introduced gradually during the Bronze Age, or more likely quite rapidly at the transition to the Late Bronze Age. Elements of the Late Bronze Age seems to include a population increase, a more diversified and intensified subsistence practices, denser external contacts and an increased social complexity and a rise in the political economy. Changes in the subsistence economy can be discerned in the agrarian economy, in the collective sealing, the blubber production and perhaps in the forest reindeer hunting. The increase in social complexity, the political economy and the external contacts can be discerned in the increasing frequency of cairn cemeteries, imported bronze objects, local bronze casting and symbolic shaft-hole axes, but also in the centralised organisation of production and the quest for logistic nodality. Subsistence intensification and diversification may both have caused and have been caused by a rise in the political economy. I assume that local high-rank Houses or rank-striving Houses were the agents that largely initiated these changes in their respective polities. The change may largely have taken place because there were Houses in the periphery that opportunistically tried to take advantage from the new opportunities that were provided by the Bronze Age long-distance networks. The peripherally situated communities contributed to the larger Bronze Age network with the means that were to their disposal and they could adjust their traditional structures of production according to the demands of the new network. Elements of local adjustments to a wider political economy may be discerned in the
appearance of cooking pits in Southern Ostrobothnia, which seems to have taken place in the Mid Bronze Age. A Late Bronze Age rise in the political economy is also indicated by a general rise in the number of bronze artefacts in Southern Ostrobothnia and in Satakunta. The concentration of bronzes to Central Satakunta in the Late Bronze Age suggests that this area had a dominant position in the peer-polity network of the western coast of Finland. The role of the high-rank Houses was probably accentuated in the establishment of long-distance communication across the Baltic Sea. Most of the long-distance contacts of the coastal area could have been transmitted through the high-rank houses in central Satakunta. This area communicated with external centres in Central Sweden, in South Scandinavia and in the Lusatian culture area.

The Late Bronze Age cooking pits in Laihia shows a marked concentration to the Peltomaa area. The Late Bronze Age cooking pit activity appears to have been centralised to a logistic node, at the starting point of a ridge that led to the inland. The Late Bronze Age farm sites in Jätinhaudanmaa show clear evidence for agrarian subsistence practices. Jätinhaudanmaa was arguably a valley oriented settlement unit with a microlocalisation that especially favoured pastoralism. The settlement emerged at a valley with water meadows in 1000-900 BC and it ended probably around 500 BC, assumingly when the valley was transformed by paludification. It is suggested that the coastal communities emerged in subregions that enabled an easy access to pelagian sealing areas, despite the microlocalisation of the individual Houses that largely favoured small valleys and water meadows. This dualistic settlement localisation pattern can have enabled a sustainable mixed subsistence economy. Jätinhaudanmaa is regarded to have been a Late Bronze Age high-rank House that even could have had the leading position in the Laihia polity. This unit stands out due to its logistic nodality and its large-scale use of heated stone technology. The Jätinhaudanmaa cairn cemeteries with razors and ship-settings are thought to indicate a local presence of ritually knowledgeable persons whose identities and worldviews had been affected by long-distance relations. An apparent agricultural intensification in Jätinhaudanmaa may also be linked to its suggested position as a high-rank house. Agricultural intensification at some specific Houses may have been motivated by their role as organisers of communal feasting and by their role as nodes in local redistribution networks.

In chapter five I attempt to provide some insights into the structuration of the Pre-Roman coastal communities. The beginning of the Pre-Roman Iron Age meant apparently a relatively rapid transition to an iron using technology and to new mortuary ritual practises and symbolic expressions of the Houses. The Pre-Roman period appears to be especially marked by a large number of cairn fields, that may consist of both clearance cairns and of small mortuary monuments. House property and eternity appears thus to have become manifested mainly through the creation of extensive cairn field complexes, and ideologically it may even have become a matter of secondary importance whether the individual structures were clearance cairns or mortuary monuments. This may relate to new perceptions of House biographies and ancestors. The often four-sided graves that are covered by sandstone slabs stands out as a particular Pre-Roman construction element amongst mortuary monuments in the Vaasa-area. These graves may signify the House founders. On the macrogeographical regional level the coastal settlement districts of Southern Ostrobothnia seem to be largely continuous from the Late Bronze Age. The variation amongst the individual settlement units seem however to exhibit an increased ecological variation. The foraging subsistence practices were still very important during the Pre-Roman period. Practices of logistic mobility and sealing in the outermost archipelago remained common or were even strengthened in the Pre-Roman Iron Age. Also cooking-pits remained in use throughout the Pre-Roman Period. Continuous cereal throughout the Pre-Roman Iron Age appears to be the most plausible scenario. The large and
numerous cairn fields may reflect some kind of an extensive cultivation technique that could have been especially common during the Pre-Roman Iron Age. The change in the cooking-pit distribution in Laihia suggests that the centralised production ended in the local community and that the individual Houses started to produce seal oil on more equal terms. The general impression is that the Pre-Roman period communities would have been at least superficially more egalitarian, which is particularly suggested by the seemingly relatively equal burial practices. The coastal peer-polity network that had emerged in the Late Neolithic was still actively reproduced throughout the Pre-Roman Iron Age. The impression is that the Pre-Roman long-distance contacts are more discretely communicated, which can mean that they decreased in importance during the Pre-Roman Iron Age. The total lack of exotic items and also the dispersed pattern for blubber production in Laihia can indicate weakened long-distance networks and exchange relations. The long-distance contacts appear also to have become more oriented towards Estonia than Southern or Central Scandinavia during the Pre-Roman Iron Age. During the Early Roman Iron Age a transition starts that seem to be the starting point for the hierarchical and regionally centralised Middle Iron Age polities in the Vaasa area.

In chapter six a concluding thematic discussion is performed that highlights my attempts to understand some archaeologically identifiable large scale and more or less long-term changes and continuities within the coastal communities in terms of various longue durées and conjunctures. The communities are thought to have remained long lasting because they were largely based on the reproduction of successful resilience providing long-term structures or longue durées that could last for millennia. Such structures could have been the mixed subsistence economy with a strong maritime element, coastal proximity of the settlement, House society, local polities, construction of cairn-like mortuary monuments and the coastal peer polity network. The longue durées were periodically renegotiated which shows how communities managed change over time. The conjunctures express societal flexibility or attempts to preserve the resilience maintaining qualities of the longue durées when societal conditions changed. Such conjunctures of the mentioned longue durées, could be the cycles of the political economy, alternating valley or sea orientation of the settlements or house succession practices, changed material articulation of Houses as well as changing competition or rank differentiation between different Houses. Also changing qualities in exchange and long-distance networks and various reorganisations of the polities could be interpreted as such conjunctures, but also changing trends in mortuary monument construction that can relate to shifts in worldviews.
References


Hyypää, Esa 1950. Lapuan ja Pattijoen muinaissuksien geologinen ikäys. Suomen museo LVII.


192


Stierwald, Carl Friedrich 1753. Beskrifning öfver Laihela sockn.

Söderström Ulrika 2008. Dödsfält och livssätt : skeppssättningar och hussymbolik på den yngre bronsålderns gravfält i Sydskandinavien. University of Kalmar, School of Human Sciences


Ukonen, Pirkko. Reindeer.


**Abbreviations**

NBA: National Board of Antiquities. NBA followed by a serial number refers to the register of ancient monuments (Online: http://kulttuuriymparisto.nba.fi

NM: National Museum of Finland.

ÖHM: Museum of Ostrobothnia

HäM: Museum of Häme