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Humanizing of north Ostrobotnian landscapes during the 4th and 3rd millennia BC

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This paper deals with social and cultural developments in North Ostrobotnia during the 4th and 3rd millennia BC. It links a series of features, both previously known and newly observed, that have been hitherto studied and considered separately. Here they are regarded not only as being contemporaneous and related to each other, but also as an integral part of a trend of increasing social complexity that took place in North Ostrobotnia in the 4th and 3rd millennia BC (cal). The effect of these developments to North Ostrobotnian landscapes is also discussed.

Keywords: asbestos pottery, cairns, maritime hunters, megastructures, semi-subterranean house clusters, social complexity

Environmental and cultural setting

Although Finland lies between the 60th and 70th parallels (Fig. 1), the maritime influence of 3500 km of coastline makes its climate milder than what would be expected from such latitudes. Ostrobotnia falls within the taiga or boreal coniferous zone. The taiga holds adequate though seasonally distributed resources, but in coastal Ostrobotnia productivity would be even higher due to the maritime resources. Local environments have changed considerably through the past 10000 years, and a powerful force shaping Ostrobotnian landscape has been the isostatic rebound. Right after deglaciation, around 8000–7500 cal BC, the local shore regression reached rates of 10 m/century. Although the uplift rate has been slowing down since then, Ostrobotnia still rises at the impressive rate of 80–90 cm per century. In coastal areas the uplift causes the displacement of the shoreline with a substantial increase of dry land surface and, moreover, the never-ending environmental sequences of seabottom-skerry-island-peninsula-hill or sea-bay-lake-bog; in other words, the gradual and continuous transformation of coastal environments to inland ones. These processes have been particularly dramatic in Ostrobotnia due to the extremely flat terrain.

Figure 1. Finland with North Ostrobothnia and the other administrative districts mentioned in Table 1 and neighbouring countries of Norway (N), Russia (R), Sweden (S).

There is a clear association of prehistoric dwelling sites and finds with the shifting shoreline; and even today urban centres on the Ostrobotnian coast must cope with the problems of increasingly shallow harbours. Needless to say, the development of settlement and culture has been greatly influenced by these and other environmental factors. We include below a summary of Ostrobotnia's cultural development during the last 10000 years, where five cultural phases are seen as part of local time-transgressive episodes within 1200 km long Finland. The scheme may not be exhaustive. but it is brief and adequate enough for the present paper. For a more thorough description of Finnish Prehistory see Edgren (1992) or Huurre (1995).

1. Pioneer phase (8000–6500 cal BC). A period of environmental instability when survival strategies are continuously modified in tact with profound dynamic environmental changes: final deglaciation, spreading and changing fauna and flora, powerful land uplift, rapid shore regression, isolation of the major lake systems, major tilting-induced hydrological changes.
2. Adaptation phase (6500–3500 cal BC). Environmental conditions become more stable and favourable (slower uplift and shore regression, influx of salt and resource-rich marine conditions in the coast, Hypsithermal climates) allowing more stable settlement patterns and eventually the adoption of pottery by 5000 cal BC.
3. Specialization phase (3500–2000 cal BC). The adaptive process continues, leading to regional specialization and differentiation throughout the country. In North Ostrobotnia this is manifested by signs of increased social complexity.
4. Declining phase (2000 cal BC–AD 100). An apparent decline in social complexity ensues around 2000 cal BC. Metallurgy is introduced and, despite experimentation with farming in some parts of the country, subsistence continues to be based primarily on hunting and fishing.
5. Transformation phase (AD 100–1800). Major, apparently irreversible, changes in lifeways take place as a consequence of the spread of agrarian economy, leading to the destruction of local wildlife habitats and game and the adoption of farming, herding and/or "fur-trade" economies by local hunter-gatherers.

Admittedly, this ignores some aspects of Finnish Prehistory and makes no reference to the conventional artefact-based and "imported"[1] cultural stages, but then again that is precisely what we are trying to avoid. On the other hand, it provides a general view of the major processes, both environmental and cultural, that took place in the last 10000 years. The scheme could be labelled as environmental-deterministic, but it is hard to overlook the role of the environment in the study area.

North Ostrobotnia 4000–2000 cal BC

Around the time that farmers were erecting megalithic tombs in southern Scandinavia, a series interesting developments seem to take place among the maritime hunters of North Ostrobotnia. The 4th millennium marks the beginning of a process of regional differentiation and specialization that in North Ostrobotnia is characterized by:

1. Abundance of exotic materials, some from hundreds of kilometres away.
2. New wares characterized by large asbestos-tempered vessels (some over 100 litres).
3. Clusters of semisubterranean houses in village-like arrangement often at rivermouth sites.
4. Erection of cairns, most likely connected with burial practices.
5. Large stone enclosures (megastructures) commonly known as *jättekyrkor* or *jätinkirkot*.

A great deal of the artefact material and sites mentioned below comes from recent research at both old and newly discovered sites by the Ii river and North Ostrobotnia in general.

Exotic goods

Among the exotic goods we find Norwegian red slate, Baltic amber, Russian flint and, possibly, copper from the Onega or Ural regions (Fig. 2). The flint material is of the kind commonly referred to as "Russian" by Finnish archaeologists, and certain flint artefacts found at Yli-II are unmistakably of Russian type. However, there are no real grounds to give a Russian source to all the flints found in Finland merely on the basis of their looks. In point of fact, some of the "Russian" flint found in Finland seems undistinguishable to the naked eye from that called by Latvian archaeologists "Polish" flint. Furthermore, preliminary analyses conducted by Prof. A. Costopoulos (personal communication) at McGill suggest that the provenience of the flints found in Finland may be more complex than generally assumed.

The most illuminating finds are the ambers. Well over 200 whole or fragmentary amber pieces have been retrieved from the sites at Yli-Ii, some 50 km north of

Oulu. About one hundred of these can be identified as distinct artefact forms: over 50 V-perforated buttons and over 40 perforated pendants. The ultimate source of these objects can be placed in East Baltic area on typological grounds. An interesting feature is that the great majority of Yli-Ii ambers were found at various points within the cultural layers of dwelling sites, not in the form of prestige grave goods as most amber finds from the rest of Finland. Many pendants are broken at the perforation, suggesting that they may have fallen and became lost. The general impression given from by Yli-Ii finds is that, despite its exotic nature, amber was fairly common in the district 5000 years ago.

This society was no stranger to amber despite the long distance to its source. Amber does not seem to be a precious rare material meant for a few privileged persons to own, display and take to their graves. Its abundance and mode of occurrence at Yli-Ii does not point to restricted possession by an elite, but rather that amber was available to most, if not all, society members. Obviously this was due to a local surplus of the rare material, but what was the reason? One possibility is the advantageous location at the mouth of the Ii river, which in terms of trade and connections would have been ideal for linking sea routes operating along the Botnian coast with other water routes to Russia and the White Sea (Fig. 2). However, since the Ii river was not the only one connecting the Ostrobotnian coast with the White Sea and Northwest Russia we may expect that similar situations may have developed at the mouths of other major North Ostrobotnian rivers as well.

Based on all this, one could picture the 4th–3rd millennium Yli-Iians and, possibly, peoples living at the mouths of other major North Ostrobotnian rivers as the successful keepers of a rewarding long-distance trade. This would have made flint and amber more common in Ostrobotnia district and led to the rich deposition observed at the Yli-Ii sites. There is still the question of which local goods were being exchanged for amber and other exotic goods. Furs? Feathers? Dry fish? Seal train oil? Slaves? No one really knows at this point.

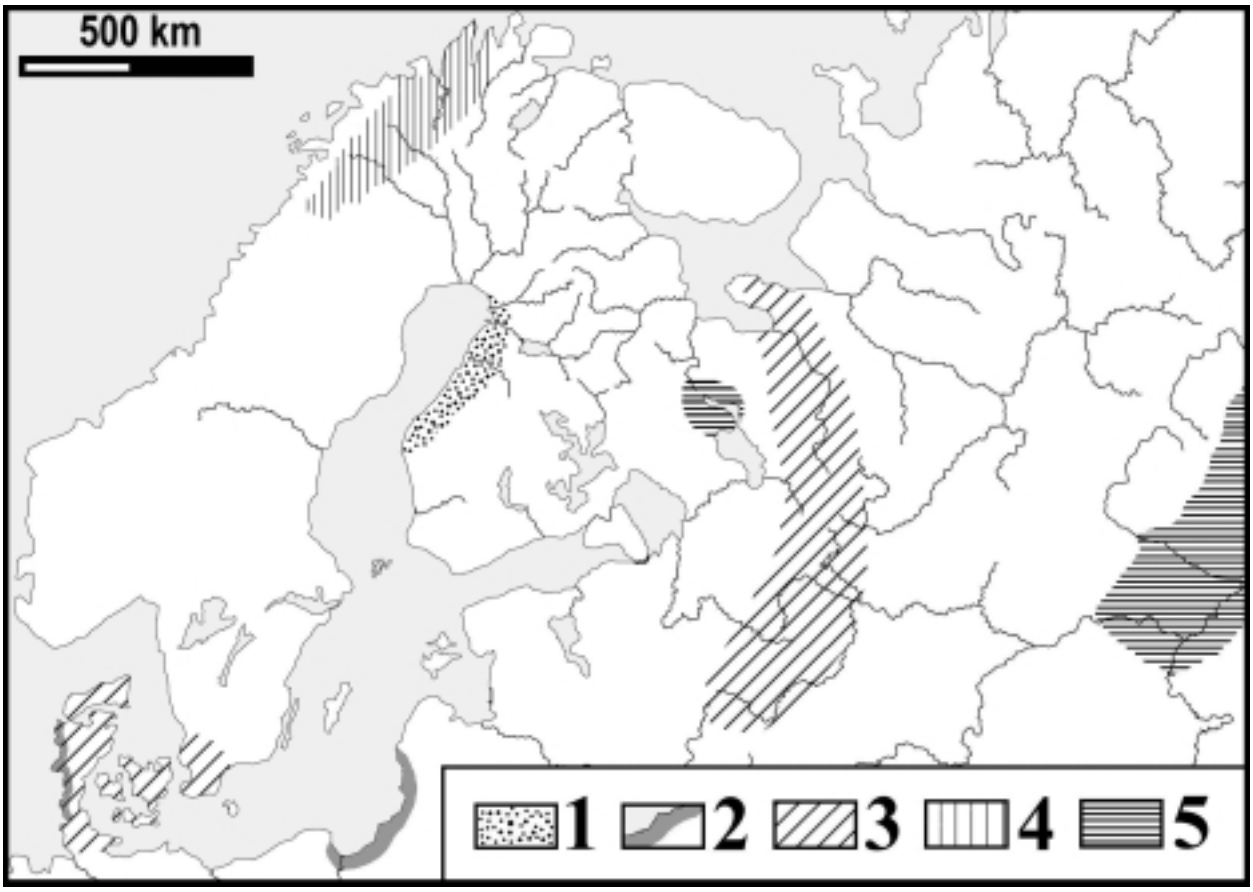

Figure 2. Ostrobotnia and exotic good sources: (1) Study area; (2) Danish and East Baltic amber; (3) Russian and Scandinavian flint; (4) North Norwegian red slate; (5) Onega and Ural native copper deposits. After Huurre 1995.

Asbestos wares

Pottery in the form of Comb ware vessels spread into Mesolithic Finland during the second half of the 6th millennium BC. The function of pottery among taiga foragers is uncertain, but it is generally thought that Finnish pots were primarily used for storage of solid goods. As argument it has been pointed out that the large pots were not readily portable, and that early Comb ware were not used for cooking because they lack food residues and signs of direct contact with fire. On the other hand, cooking with heated stones would exclude contact with fire and, moreover, none of these claims has been scientifically or experimentally tested (Pälsi 1939; Meinander 1961, 1984; Carpelan 1979, 1999; Edgren 1982, 1984; Salo 1989; Núñez 1990).

Asbestos temper occurs sporadically in early Comb ware vessels by the mid-5th millennium BC, but it is not until the 4th millennium that there is a systematic use of the fibrous mineral in what it is commonly known as Kierikki ware. The technique was further refined to culminate during the 3rd millennium BC in Pöljä type vessels, which were richer in asbestos and thin-walled (Carpelan 1979; Siiriäinen 1984; Edgren 1992; Pesonen 1996).

The primary reason for using asbestos was probably its strength-imparting properties, but a possible by-product may have been its insulating effect. This certainly would have been advantageous in cooking with hot stones. However, it is not clear whether asbestos temper would have made vessels significantly better heat holders than those without it. Furthermore, the walls of Pöljä type vessels are much thinner than in non-asbestos pottery, which would tend to have the opposite effect. Nevertheless, there are two features that could be related to heat-holding ability of asbestos-tempered wares and their suitability for cooking with hot stones. One is the fact that organic (food?) residues are fairly common on asbestos wares though quite rare in regular comb ware vessels (Edgren 1982; Meinander 1984). The other is that heaps of fire-cracked stones seem to become common in Ostrobotnia around the time that Pölja asbestos ware makes its debut (Forss 1996; Okkonen 1998; Carpelan 1999; Núñez & Okkonen 1999; Norberg 1999). On the other hand, fire-cracked stones need not be related to pottery: they are certainly abundant in aceramic Norrland (e.g. Lundberg 1997). It must be stressed that these ideas and arguments are rather speculative in the lack of adequate research on the physical properties of Finnish wares.

As was the case with trade, pottery can be related to settlement stability. Ethnographic data show a clear correlation between the utilization of pottery and sedentism (e.g. Murdock 1967; Nunez 1990). Therefore, the adoption of pottery by hunter-gatherers may

Table 1. Some statistics on the semisubterranean houses in mainland Finland recorded by the end of 2000: Number of semisubterranean house sites and of semisubterranean houses (SSH), and their mean occurrence per site and per 1000 square kilometres in the various administrative districts. The grouping of districts (Fig.1) has been slightly modified from the data compiled by Pesonen (2002).

Districts	Sites (n)	SSH (n)	SSH/site	Land area (km^2)	SSH/1000 km^2
Inland Lappland	44	64	1	85,754	0.7
Coastal Lappland	65	1002	15	7,249	138.2
N Ostrobotnia	155	1376	9	40,577	33.9
S Ostrobotnia	25	210	8	21,132	9.9
Kainuu	0	0	0	21,567	0
C Finland	45	73	2	16,582	4.4
N Carelia	34	140	4	17,782	7.9
N Savolax	27	70	3	16,510	4.2
S Savolax	142	312	2	14,436	21.6
Tammerfors	5	5	1	12,272	0.4
Tavastia	12	24	2	10,337	2.3
Satakunta	3	11	4	8,289	1.3
SW Finland	5	22	4	11,181	2.0
Uusimaa/Nyland	5	11	2	9,113	1.2
SE Finland	42	115	3	10,780	10.7
Total	609	3473	6	303,002	11.4

be seen as a consequence of stable environmental conditions that allowed efficient adaptation and thus a certain degree of settlement permanency. The manufacture of the large pots (>25 l) under Finnish climate would have demanded considerable amount of planning, time and labour: collection of firewood and raw materials[2], manufacture and decoration of vessels, their slow drying[3], and finally their baking. Furthermore, all these activities require relatively long spells of mild weather, which are not that common in Finland. Thus, pottery manufacture would suggest stays of at least a few weeks at the same site in summers. Moreover, in the case of Finnish Comb ware, the heavy and relatively fragile[4] large pots are not very suitable for transport. It is more likely that they were used at their manufacturing site. Why invest so much work and effort unless sites and pots were meant to be used for a long period of time? The manufacture of these labour-expensive, non-portable vessels makes no sense unless people lived at the same site year-round or returned regularly to the site and used them (Edgren 1982; Núñez 1990).

Semisubterranean houses

As exotic goods and pottery, semisubterranean houses point to a certain degree of stability in settlement patterns. Since considerable labour goes into their construction, semisubterranean houses were most probably intended for a relatively long utilisation period. Another important feature of semisubterranean houses is their sturdiness, which allows the initially invested labour to be recuperated through long-life potential. However, it is likely that the potentially long use was often truncated by the need of periodically moving after regressing shore. Since semisubterranean dwellings are particularly suitable for winter living, the Ostrobotnian ones are most probably associated with wintering sites[5]. On the other hand, the presence of pottery would suggest at least some time spent at the site during the warmer months as well. For an overview of Finland's prehistoric semisubterranean houses see Ranta (2002).

The first isolated finds of semisubterranean houses in Finland were reported in the 1950s, but an explosion of finds in the 1990s have shown them to be common throughout the country (Table 1). Their initial spread appears to be connected to that of Typical Comb ware in the late 5th millennium BC. Early forms are usually circular with 5–8 m in diameter but later forms tend to be more elongate and larger, some reaching over 20 m. At Yli-Ii sites from the 3rd millennium BC, rows of 4–5 interconnected semisubterranean houses adding up to over 50 m in length have been observed. Indeed the most interesting feature of North Ostrobotnian semisubterranean houses is that they occur in village-like clusters and/or rows (Fig. 3). Dozens of such sites containing altogether several hundreds of

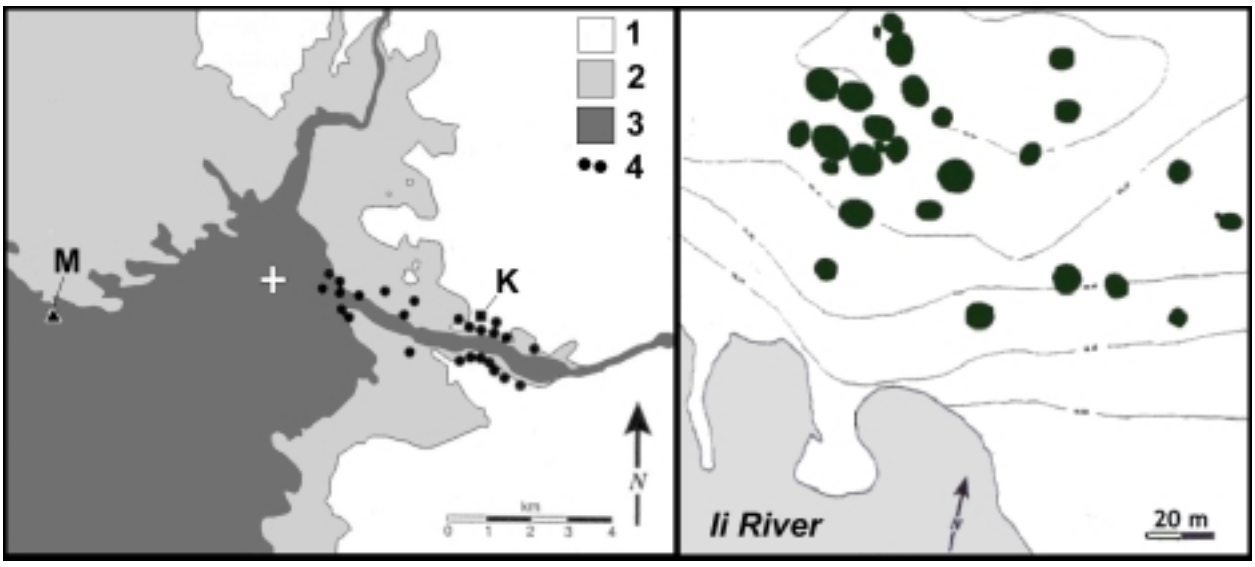

Figure 3. Semisubterranean houses sites along the Ii river: (1) Dry land by c.4000 cal BC. (2) Area that emerged from the sea during 4000–2500 cal BC. (3) Sea around 2500 cal BC. (4) Sites with semisubterranean houses that were known in 1995 (many more have been recorded since). (M) Megastructure site. (K) The site of Kuuselankangas, shown in more detail to the right. The white cross represents the location of the Yli-Ii church today. (Koivunen & Núñez 1995; Núñez & Okkonen 1999).

semisubterranean houses have been discovered in North Ostrobotnia in the last ten years or so. The best-known ones, those from the Ii river, were situated at the rivermouth during occupation and are found at short intervals along the river (Fig.3). Apparently sites were periodically moved downriver every 20–40 years as the river mouth was shifted by isostatic uplift (Koivunen & Núñez 1995; Koivunen 1996, 2002; Koivunen & Makkonen 1998; Núñez & Uino 1998; Núñez & Okkonen 1999; Vaara 2000; Ikäheimo 2002; Kankaanpää 2002; Leskinen 2002; Pesonen 2002).

Cairns

Up until recently most North Ostrobotnian cairns were considered to be atypical Metal Age forms resulting from influences of traditions from South Ostrobotnia and other districts further south[6] (Meinander 1954; Kivikoski 1964, 1967; Edgren 1992; Huurre 1995), but recent research indicates that a group of North Ostrobotnian cairns may be actually older (Okkonen 1998, 2003; Núñez & Okkonen 1999). Traditionally the cairns have interpreted as burials, although alternative interpretations, such as they being boundary or navigation marks, have also been advanced. In recent years Finnish archaeologists have increasingly seen cairns as part of the cultural landscape and have thus been able to obtain some information about prehistoric land-use, social units and territorial boundaries (e.g. Seger 1982; Okkonen 1998, 2003; Tuovinen 2002).

A total of 823 cairns from 281 sites of various periods were analysed in detail in a selected segment of 160×140 kilometres that spans 200 km of the present North Ostrobotnian coastline. Over half of them are circular in shape (58%) and the rest are oval, elongated or rectangular. Sizes vary from over 15 m in diameter

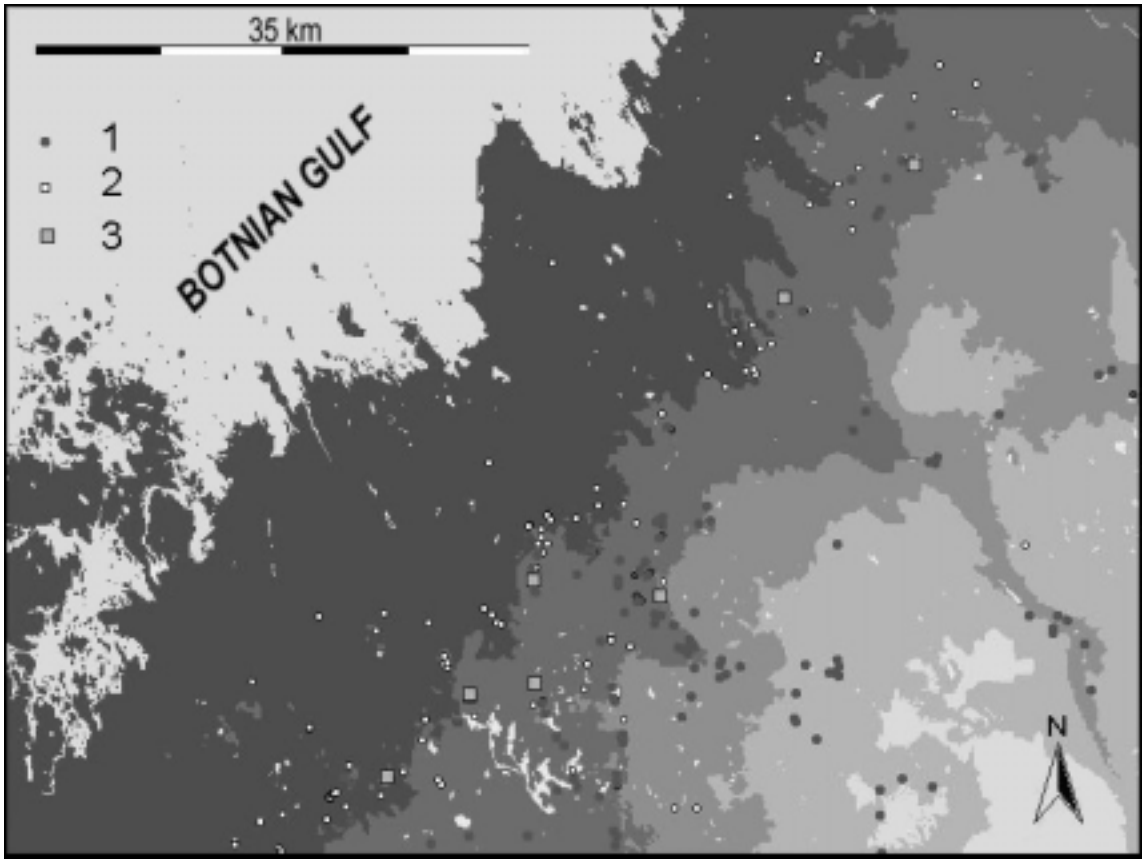

Figure 4. Monuments in a southern portion of North Ostrobotnia: (1) Subneolithic dwelling sites; (2) One or more cairns; (3) Megastructure sites. The different grey tones represent altitude zones defined by 50 m contour lines. The strings of dwelling sites stretching towards the shore mark the path of rivers. There are distinct zones of cairns stretching more or less parallel to the shore at different altitudes: The earliest ones occur over 100 m a.s.l. and are associated with 6500–4000 cal bc shores. There is a group falling within 45–60 m a.s.l. related mainly to megastructures and 3500–2500 cal bc shores, though some of the lower cairns in this zone may later. The cairns below 45 m a.s.l. are datable to the Metal Ages (Núñez & Okkonen 1999; Okkonen 2003).

to less than 5 m. Their typological aspects seem to be distributed according to their position above the present sea level. Since they often lack grave goods and bone does not preserve unless cremated, sometimes there is little or no real evidence that a cairn contained a burial[7] and they are thus very difficult to date. For example, of 70 cairns that have been excavated in the study area, only the 15 belonging to the lowest-lying and youngest sites (1st–6th century AD) have yielded datable finds. Consequently, the great majority of cairns have to be dated by shoreline chronology, typology and/or their association with other datable features (Siiriäinen 1978; Okkonen 1998, 2003).

It may be important to know the date when a cairn or burial was originally made, but there is more to cairns than that. Cairns may also be seen as built environment, an attempt to "humanize" the landscape. They were built by and for a community of living people and were used and maintained by them. These simple structures may have played an important role in the interaction of communities, families and/or clans. A cairn may have had a variety of functions depending on time and who interacted with it. It could have been a grave for some people for some time, but after decades/centuries it could become an ancestral place with ceremonial aspects or, perhaps, a landmark meant to define a boundary and/or signal territorial rights. In other words, the meaning of the structure could have varied both in time and in social space. Cairns were meant as part of the present and future cultural landscape when they were built, and have since been so, even to this day.

The most prominent characteristics of cairn structures are their consistency and visibility. Whether holding burials or not, they were "in use" and they were meant to be "in use" for a long time to come. If we think of a cairn as something that has served as a boundary mark or a meeting place, it would be difficult to tell when it was in use, or when it was abandoned by local societies. It is impossible to determine when a structure was in active use marking a territorial boundary or serving as fixed point in the terrain. We could succeed in estimating when a structure was built, but it is difficult to prove/disprove whether or not it was subsequently in use and for how long. We can only say that it may have had various meanings and purposes since its construction. For example, during field survey Okkonen learned that local elk hunters use cairn sites today as meeting places before and after their hunting sessions. They are places that everybody knows of and that are easy to find.

It is tempting to think that the cairn sites in the study area initially marked important resource areas by the shore. Each group using the region may have marked their territory with cairns: one can claim rights to the land where one's ancestors are buried. In the case of Ostrobotnia, rapid uplift and dramatic shoreline displacement forced people find new places for their territory by new marking burials. Some indications of this can be seen from the spatial patterning of the cairns in the southern part of the study area (Fig. 4).

Cairns were initially erected close to shore because they were part of the land-use behaviour of their builders. If cairns indeed served as boundary indicators, territorial symbols or navigation marks, then the ideal place for them was in the vicinity of seashore. Here their visibility would have been highest and the possibility of being noticed by people moving on foot or watercraft along the shore much more likely. But how great the distance from shore had to become for a cairn to cease serving as an active landmark manifesting territorial claims of the local society? This probably was very much linked to local topography. Possibly the cairns may have retained their boundary-marking function for some time but, as they became increasingly distant and less noticeable from the shore, new cairns were eventually built closer to shore to replace them (Fig. 4). Based on GIS analyses, it was concluded that the distance from shore to territorially active cairns was not more than 2 km (Okkonen 2003).

Megastructures

Much of what has been said about cairns applies to the megastructures as well. They are known in the local folklore as "giants' churches" (*jättekyrkor/jätinkirkot*) and can be described as large oval/rectangular enclosures formed by stone embankments up to 1.5 m high. They vary in shape and size, but most follow a general pattern (Fig. 5–6). Many have two or more openings and some contain double "walls". A total of 37 sites with 40 megastructures are known and they are restricted to that portion of Ostrobotnia where major rivers flow in E–W or SE–NW direction (Fig. 7). The North Ostrobotnian megastructures were generally erected on low stony ridges close to shore and are often associated with cairns, dwellings and accumulations fire-cracked stones (Fig. 8–9). Limited excavations within the enclosures have yielded a few lithic artefacts and a few Pöljä asbestos ware shards, but no cultural layer has ever been detected within the enclosures. Evidently their interior was not used for habitation purposes (Europaeus 1913, 1999; Forss 1981, 1991, 1993, 1995; Edgren 1984, 1992; Koivunen &

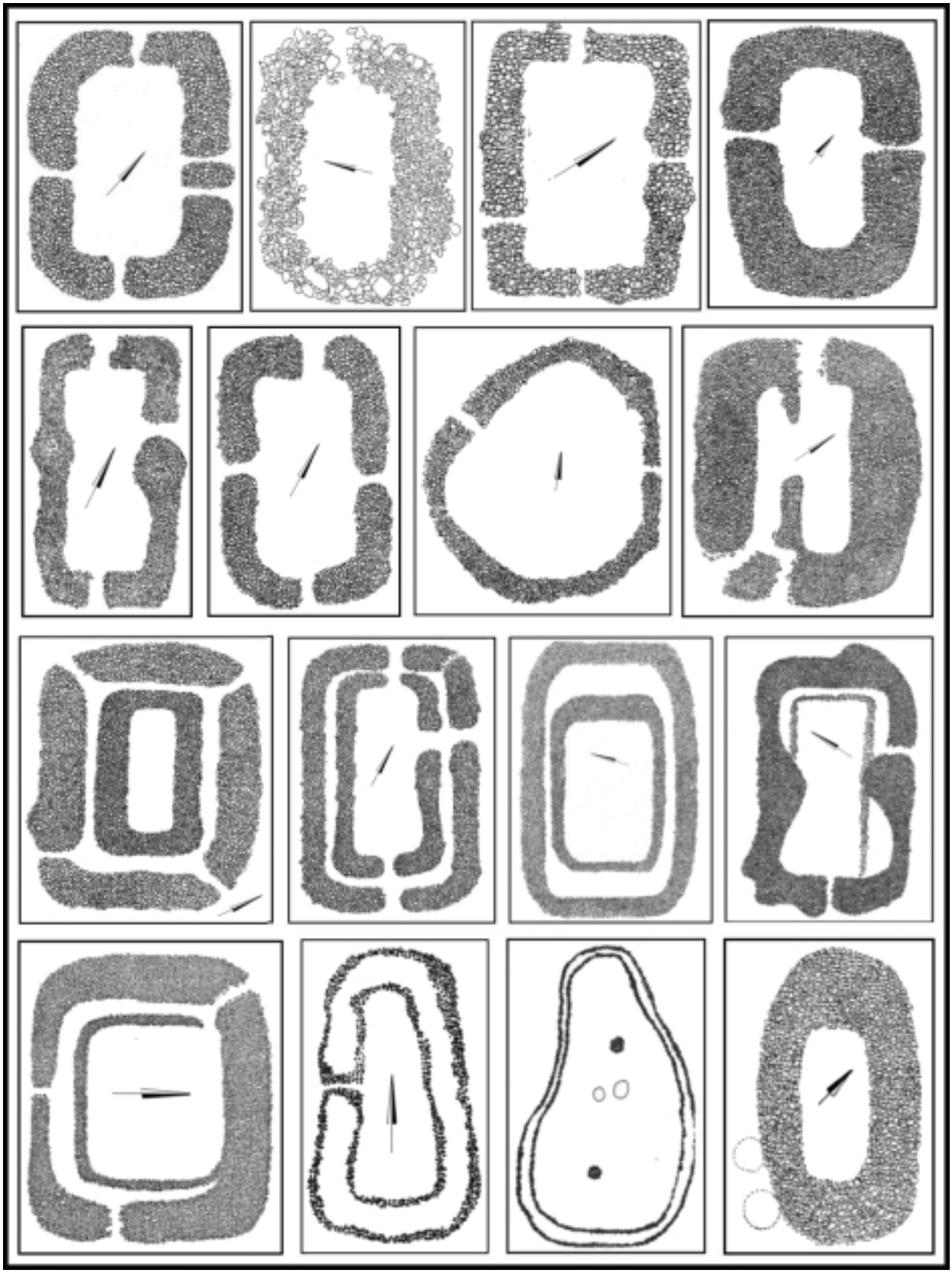

Figure 5. Configuration of some Ostrobotnian megastructures (from various sources, in Forss 1995).

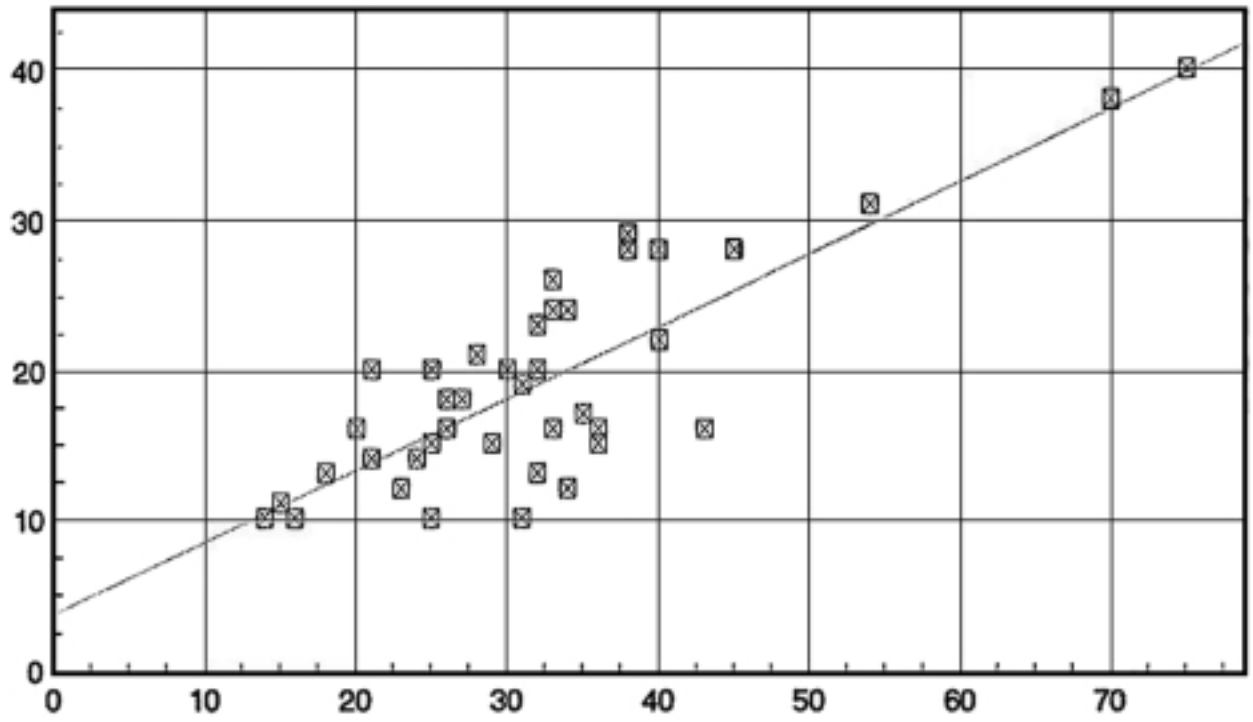

Fig. 6. Length and breadth of the Ostrobotnian megastructures in metres.

Okkonen 1992; Okkonen & Ikäheimo 1993; Núñez & Okkonen 1999; Okkonen 2003).

The date of the megastructures can be placed within 3500–2000 cal BC. The Pöljä ware shards found in some megastructures sites date to the 3rd millennium BC. Furthermore, Forss (1995) has shown that most North Ostrobotnian megastructures are associated with the same coastline and can thus be dated on this basis. If North Ostrobotnian megastructure sites are palaeogeographically reconstructed to the period when they were optimally situated for maritime exploitation – when they were on island/peninsulas or simply close to shore – then it would appear that most of them would have been built and used within 3500–2000 cal BC (Fig. 10). This shoreline-based estimate is supported by two radiocarbon dates within 3360–2890 cal BC from a fire-cracked stone heap at the megastructure site of Kettukangas and from similar OSL dates from the Kastelli site (Forss 1998; Núñez & Okkonen 1999; Okkonen 2003).

Both cairns and megastructures, particularly their joint occurrence, also reflect settlement stability. The fact that a megastructure and satellite cairns were built at a site strongly suggests its repeated, if not necessarily continuous, use. But why would foragers build such labour-expensive structures? For example, about 1000 tons of stones are estimated to have gone into the Kastelli megastructure. The nature and function of the megastructures remains elusive to this day. There are nearly as many interpretations as researchers: natural formations, fortifications, dwellings/wind-shelters,

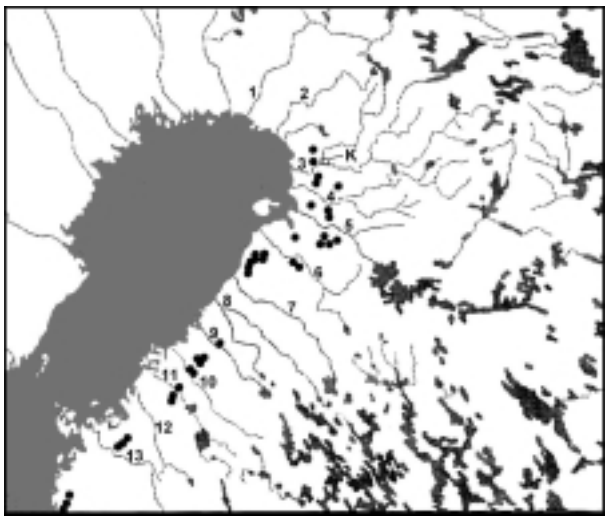

Figure 7. Megastructure sites and the main Ostrobotnian rivers: Kemijoki (1), Simojoki (2), Iijoki (3), Kiminkkijoki (4), Oulujoki (5), Siikajoki (6), Pyhäjoki (7), Kalajoki (8), Lestijoki (9), Perhonjoki (10), Ähtävänjoki (11), Lapuanjoki (12) and Kyröjoki (13). The location of the Kuuselankangas and Kierikki sites is marked with a “K”.

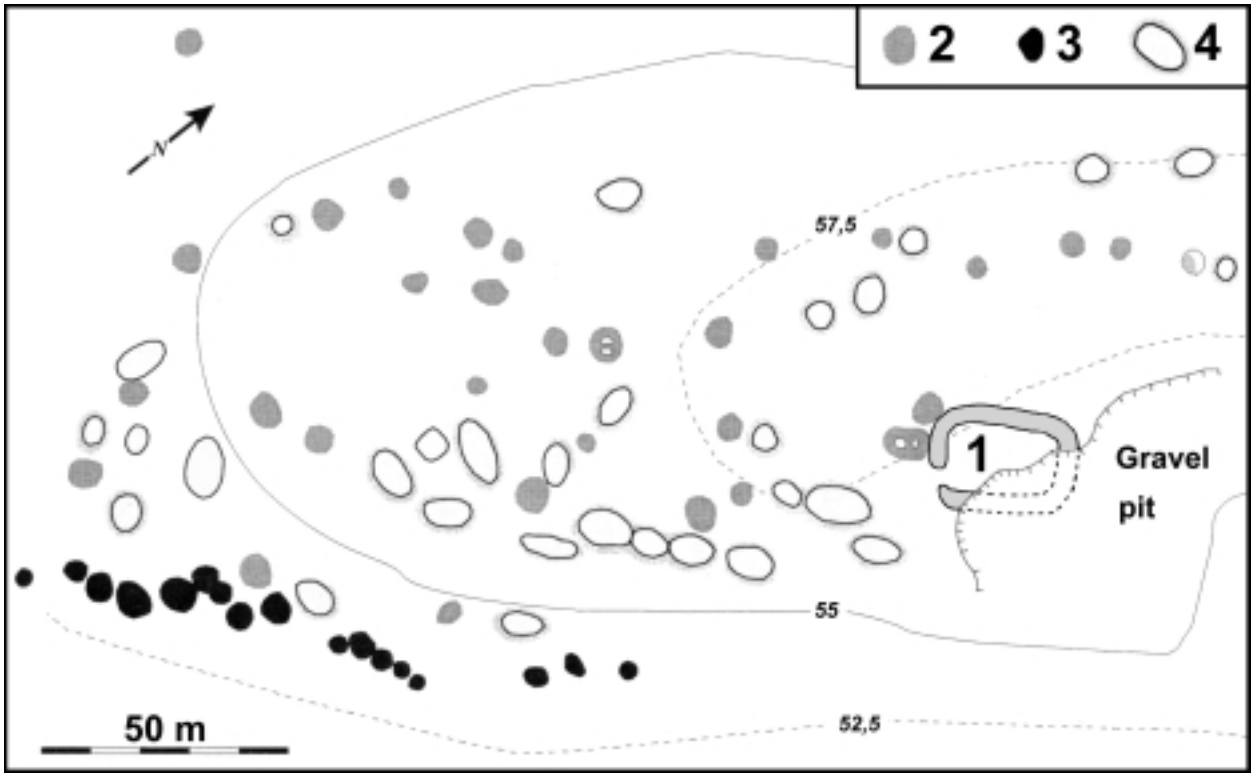

Figure 8. The megatructure complex at Kettukangas, in Raahe: (1) Megastructure, partially destroyed by quarrying; (2) Cairns; (3) Heaps of fire-cracked stones; (4) Semisubterranean houses (Okkonen 1998, 2003).

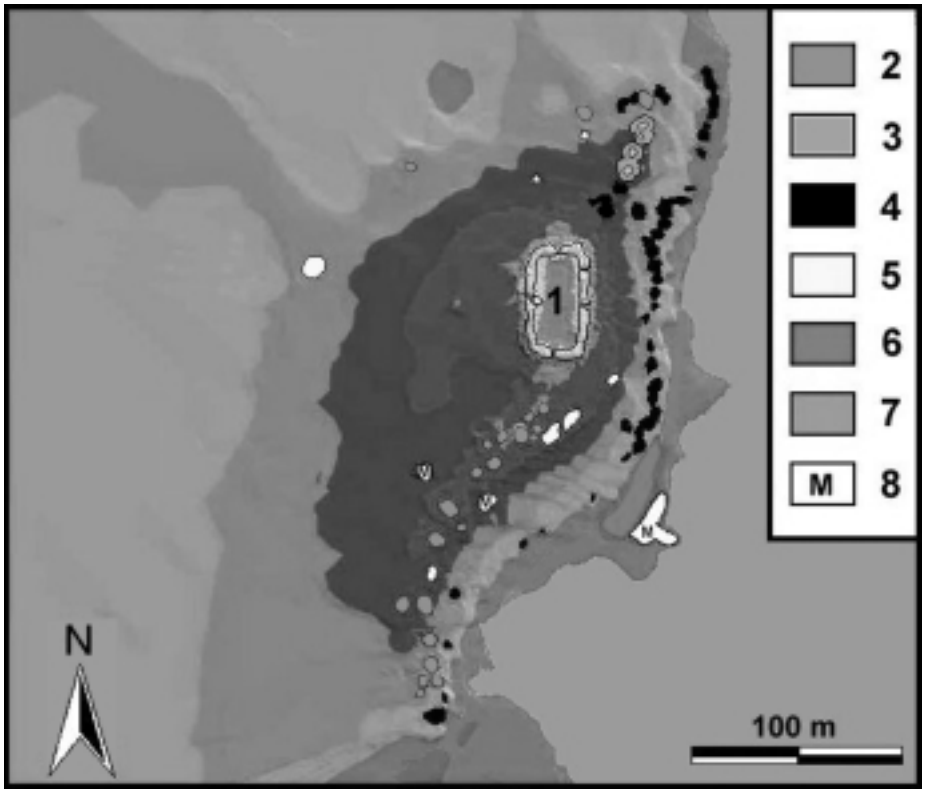

Figure 9. The megastructure complex of Kastelli in Raahe: (1) Megastructure. (2) Cairns of regular shape, probably burials. (3) Cairns structures that were disturbed by excavation over 80 years ago and are difficult to interpret because they now contain both burnt and unburnt stones. (4) Heaps of fire-cracked stones and soot. (5) Semisubterranean houses. (6) Habitation layer. (7) Area covered by sea (shore at c.50 m a.s.l.) around 2300 cal bc. (8) Modern features. The different colors zones in the terrain fall between contour lines at 1-m intervals. (Okkonen 2003).

structures connected with hunting/herding activities, storage devices, ritual/meeting places (e.g. Ganander 1789; Calamnius 1868; Snellman 1887; Appelgren 1891; Europaeus 1913, 1999; Ailio 1923, 1999; Tallgren 1918, 1931; Kivikoski 1964; Korteniemi 1991; Forss 1995; Koivunen 1997; Núñez & Okkonen 1999).

The most plausible of these explanations are the last two. We are tempted to see megastructure enclosures as definers and delimiters of special areas or spaces reserved for certain purposes and activities. It is possible that the stones now forming the enclosures served once as base of a series of vertical posts. They need not have been tightly set if their function was merely to define special spaces and enhance the visibility of the megastructure from the distance. The defined spaces themselves could have been multifunctional: meetings, feasts, religious rites, etc. But regardless of their actual function, the occurrence of nearly 40 megastructure sites over a 400-km long coast strip suggests a certain degree of social organization and a definite plan and purpose in their creation.

The selection of places for constructing megastructures was probably dependant on a variety of factors. Availability of stones would have played only a minor role, since stony drumlins and block fields are common throughout the region. Among the criteria may have been proximity to resources, the site's historical/mythological significance, accessibility, visibility from sea/land, proximity to important routes, etc. The known megastructure sites were indeed close to at least one very important route, the seacoast. People moving along the coast, on skis, sledge or watercraft, may have used megastructure sites to orientate themselves. This does not mean that they served as the beacons and navigation signs of today, but more as landmarks signalling relative position in a route, very much like medieval pilgrimage itineraries or the strip roadmaps from the early days of motor touring. Not very different from how we give/follow road directions today: "Go past three lights, the fourth is a major intersection with a gas station. Turn right at the light. If you come to a large church you've gone too far."

Another implication of three dozens of megastructure sites distributed along the Ostrobotnian coast is that they may represent a series of competing peers; in other words a series of related but independent communities competing for resources, influence and status. This may be the reason for the varying megastructure sizes (Fig. 6), the double

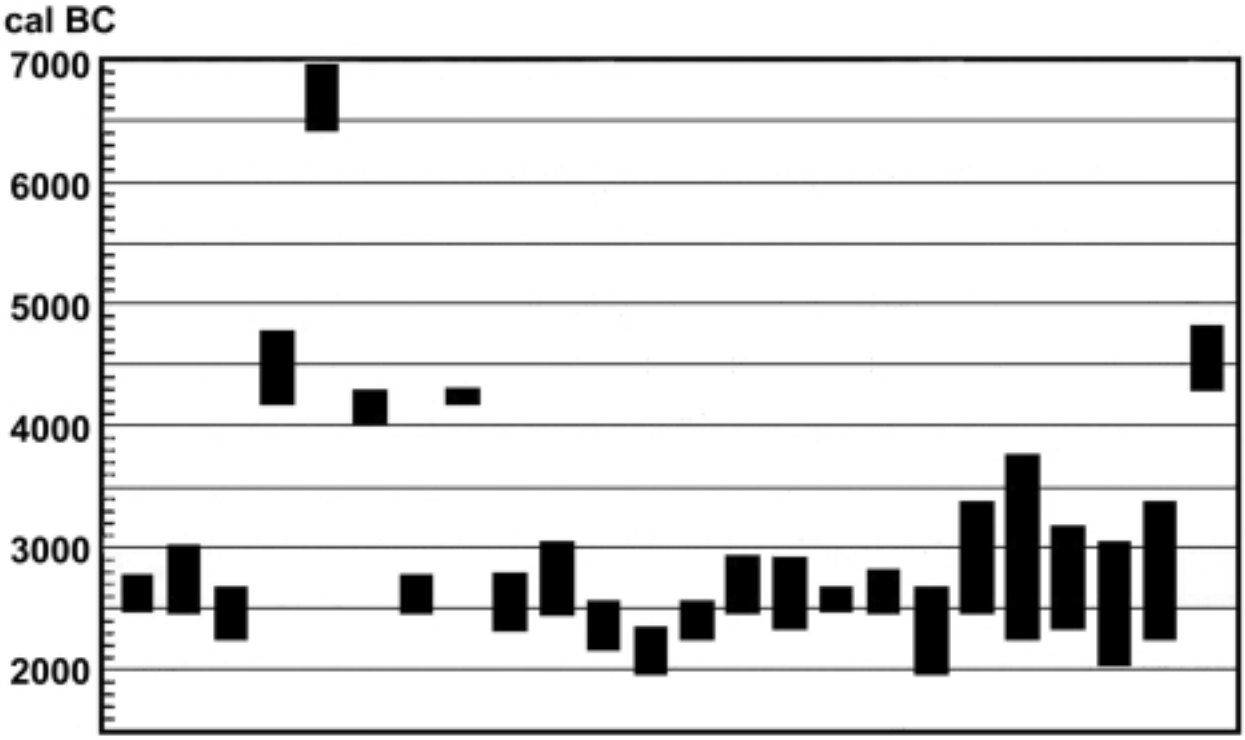

Figure 10. Dating of North Ostrobotnian megastructures on the basis of their optimal maritime location; i.e. when they lay on peninsulas or islands close to mainland (Forss 1995; Núñez & Okkonen 1999).

walls in some (Fig. 5) and the occurrence more than one megastructures at one site. Additional support for this interpretation is found in the convex curve obtained when megastructure sites are submitted to a rank-size analysis, which a standard measure of hierarchy used by geographers (Fig. 11). Furthermore, the common association of megastructure with cairns, fire-cracked stones and dwellings remains points to places where people lived and died, i.e., dwelling sites, which increases the probability of megastructures serving as some sort of assemblage/ceremonial places.

North Ostrobotnia in the 2nd millennium BC

As we have seen, beginning some time in the 4th fourth millennium cal BC, North Ostrobotnia underwent a vigorous development reflected by a wealth of exotic goods and new kinds of structural remains such as clusters of semisubterranean houses, cairns, megastructures and fire-cracked stone heaps. However, many of these forceful cultural manifestations that appear in the 4th millennium BC seem to die out around the end of the 3rd. By 1800 cal BC the megastructures had fallen out of use and new ones were not being built. There are no megastructures below 50 m a.s.l. Semisubterranean houses no longer occur in clusters. Though they continue to be built, they are found isolated and seldom in groups larger than two (e.g. Alakärppä et al. 1998; Núñez & Okkonen 1999; Alakärppä & Ojanlatva 2000; Ikäheimo 2002; Ojanlatva & Alakärppä 2002). Summing up, the impression of stability and prosperity given by the North Ostrobotnian archaeological material from the 4th and 3rd millennia BC is no longer observable. On the other hand, the cairn tradition continues, suggesting together with the solitary semisubterranean houses a degree of settlement continuity.

What could have caused the decline of the seemingly healthy and prosperous North Ostrobotnian society? Climatic change? Something internal related to the society? Over-exploitation of resources? Epidemics affecting game/humans? We have sought answers for the rise and fall of complexity in the local combination of rapid uplift and the extremely flat topography of the territory that emerged from the sea during the period in question. It would seem that during about 3800–2400 cal BC there would have been an unusually broad zone of strand flats and shallow coast. Could these spe-

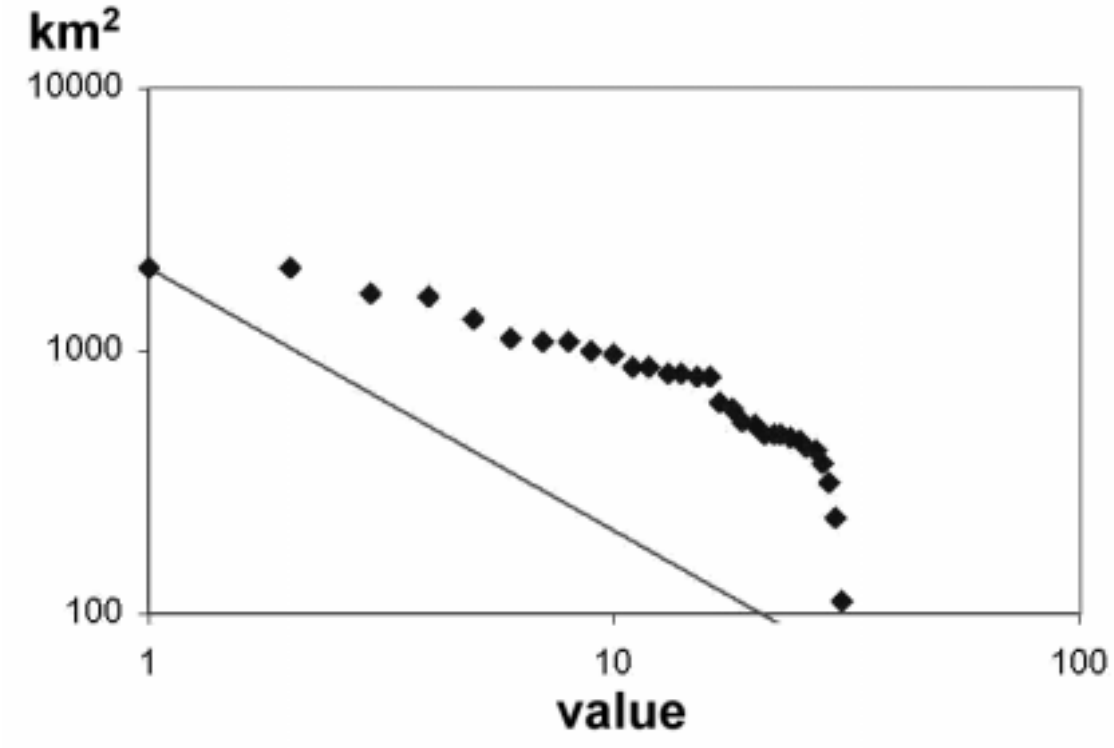

Figure 11. Rank-size diagram of Ostrobotnian megastructures. The strongly convex shape of the curve indicates regional independency for each site (Okkonen 2003:176–182).

cial, generally resource-rich environments have been responsible for a considerable increase and then decrease of the available food resources? The resulting surplus would have supported trade and stimulate increasing social complexity as long as the conditions responsible for them lasted (Núñez & Okkonen 1999).

Concluding remarks

We have stressed, perhaps to the point of redundancy, the stability of settlement patterns in North Ostrobotnia during 4000–2000 cal BC. This stems from reasoning that each of the mentioned features – pottery, exotic goods, house clusters, cairns, megastructures – are often associated with of settlement stability. Although none of these features has much weight by itself, the fact that they all occur together in North Ostrobotnia at the same time makes a strong case for settlement stability. Moreover, a certain degree of stability in settlement patterns and social complexity are almost necessary to generate the cairns and, particularly, the megastructures in the region.

As we see it, a coincidence of especially favourable environmental and cultural conditions may have caused North Ostrobotnian maritime hunters to seize the opportunity to fully exploit the abundant resources available at the time. This would have led to surpluses capable of generating the complexity necessary for supporting trade and the peer competition responsible for the observed structural remains. After some centuries, however, the surplus that fed social complexity and its structural manifestations began to dwindle, returning eventually to the levels preceding 4000 cal BC. The complexity of North Ostrobotnian society declined as well. Trade decreased, life in villages was not longer feasible, and megastructures were no longer built. North Ostrobotnia did preserve some of the traditions acquired during the "golden days", as the survival of cairn building suggests, and it is likely that megastructure sites retained certain significance for subsequent generations, as they still did in historical times.

Regardless of what their ultimate cause and function may have been, the appearance of exotic goods, semisubterranean house clusters, cairns and megastructures in North Ostrobotnia by 3000 cal BC can be seen as a sign of fairly stable, possibly permanent, settlement patterns and increased social complexity. Beginning in the late 4th and particularly during the 3rd millennium BC, North Ostrobotnian society felt the need of building cairns and megastructures in a deliberate attempt to permanently transform – humanize – their landscape. The meaning and message these structures portrayed then may not be clear to us now, but the fact that megastructure sites were definitely landmarks readily visible from the sea and shore suggests that they were meant to signal something. Some time towards the end of the 3rd millennium, however, the surplus that fuelled Ostrobotnian society dwindled and isostatic uplift gradually shifted megastructure sites into woodlands several kilometres from the coast. But even in their new inland locations they continued to serve as stopping and gathering places, as used by elk hunters today.

Notes

[1] This refers to the practice of applying such terms as "Roman" and "Merovingian" to periods of Finnish prehistory despite the fact that these peoples were never in Finland, nor did they have any influence on local life.

[2] The Ancylus clays generally used in making Finnish pots have to be dug out deep below the Litorina clays or collected dozens of kilometers from the 6th, let alone 4th and 3rd millennium shores.

[3] Although smaller pots may be successfully fired without previous drying, it is likely that large pots (>25 l) would crack if fired wet. Moreover, the very large pots (>50 l) may have required drying episodes before their completion.

[4] Fragility does not necessarily apply asbestos tempered vessels, but the large size of some (over 100 l) suggest nevertheless that they were not meant to be transported.

[5] This is also suggested by bone and wood material from the Yli-Ii sites

[6] Europaeus (1913, 1999:207) linked some cairns with the megastructure nearby, placing both in the late stone age: "Om jätekyrkan … är från stenåldern, skulle man tro att största delen av dessa forlämningar [rösen] är samtida".

[7] The distribution of stones at the base of some suggests that there was a body placed within.

English language revision by Malcolm Hicks.

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