

## Research Article

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# Communities Beyond Society: Divergence of Local Prehistories on the Bothnian Arc, Northern Europe

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**Abstract:** This article presents a comparison of material records of two nearby regions on the coast of the Bothnian Bay. The timeframe is 5300–2000 BCE. The focus is on regional differences, which indicate a schizmogogenesis of communal identities. The study calls for a reorientation of research concerning Fennoscandian prehistory. More attention should be paid to localized prehistories. It is argued that when prehistoric society is used as a fundamental group category, especially in the context of forager communities, the modern concept of state society distorts the underlying framework. Focusing on the regional level by constructing local prehistoric narratives limits the anachronistic effect and allows the proliferation of local communal identities. Such local prehistories, when collated and compared, offer a pathway to understanding prehistoric stateless societies, which are misrepresented by simplistic material cultural zones and the inherent homogeneity ingrained within the concept of society. In this paper, the analysis is focused on practices representing local traditions. Two divergent themes that arise from the local prehistoric narratives are the Late Mesolithic use of local stone materials and regional changes in Neolithic dwelling forms.

**Keywords:** prehistory, forager, communal identity, schizmogogenesis, community of practice, Bothnian Bay

## 1 Introduction

In this study, we will focus on identifying local traditions within a culturally associated archaeological record. The analysis begins by determining two comparative yet local geographies and continues with collated interpretations of the archaeological records of the two regions, which can then be compared to find local traits. A recent study by Austvoll (2020) uses similar methodology in studying associated processes in two local contexts in Southwest Norway. In this study, the objective of the method is reversed by narrowing in on the differences instead of associations. The differences inform us about local communal identities, which are understood here in terms of schizmogogenesis.

The study takes place on the Bothnian Arc, the coastal strip of the Bothnian Bay. The two compared regional prehistories are delimited as the large bays surrounding the Kemijoki River and Oulujoki River estuaries. The two datasets used in the comparison were formed through an original archival study of 1,250 archaeological sites registered within the regions. The temporal range is from c. 5300 to 2000 BCE, or the Late Mesolithic to the Late Neolithic. This study uses the Swedish chronology (see Table 1; e.g., Larsson, 2014; Welinder, 2009), which is based on the wider European chronology relating to the expanding influence of agricultural practices. In contrast, the Finnish chronology is based on Russian chronology, which

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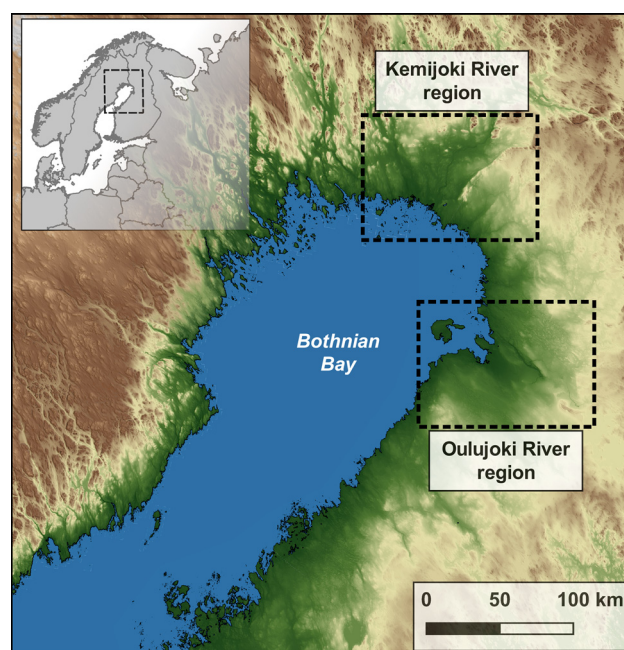
**Table 1:** The two archaeological chronologies of the region

Date range	Swedish	Finnish
5300–4000 BCE	Late Mesolithic	Early Neolithic
4000–3200 BCE	Early Neolithic	Middle Neolithic
3200–2400 BCE	Middle Neolithic	Late Neolithic (Middle Neolithic)
2400–1700 BCE	Late Neolithic	Final Neolithic (Late Neolithic)

defines the beginning of the Neolithic based on the emergence of pottery. Accordingly, archaeological literature places the beginning of the Neolithic in Finland some 1,300 years earlier than in Sweden. Even though the study area is mainly in Finland, the western chronology is arguably a more fitting representation of local archaeology due to the vast differences between the material records of the 5th and 4th millennia BCE. In Finnish chronology, the same timespan would be Early to Late or Final Neolithic (Table 1; see e.g., Haggrén, Halinen, Lavento, Raninen, & Wessman, 2015; Nordqvist, 2018, p. 51).

The region's Neolithic (c. 4000–1700 BCE) has been the focus of much research during the past two decades (see e.g., Costopoulos, Vaneekhout, Okkonen, Hulse, PaberzYTE, & Wren, 2012; Núñez & Franzén, 2011; Núñez & Okkonen, 2005; Núñez, 2009; Okkonen, 2003, 2014; Tallavaara & Pesonen, 2020; Vaneekhout, 2008, 2009, 2010; Vaneekhout, Okkonen, & Costopoulos, 2012). Nevertheless, new ways of advanced terrain modelling have expanded the access to the Neolithic record in just the last five years, even exposing several newly observed surprises (see Pesonen, 2017; Tallavaara & Pesonen, 2020). The reigning interpretation is that throughout the timespan, the coastal region was populated by forager communities, which were by-and-large associated through similar materiality, such as overall dwelling forms, ceramics, stone tools, and subsistence practices.

The Bothnian Arc is the 500 km coastal strip surrounding the semi-saline Bothnian Bay, at the northern end of the Baltic Sea (see Figure 1). The sea opens to the southwest, joining the rest of the Baltic through the larger Bothnian Gulf. Roughly 10,500 years ago (Lindén, 2006), due to the warming of Ice Age climate, the last of the North European glaciers retreated to the southwestern parts of the bay, leaving in their wake



**Figure 1:** The coastal Bothnian Arc enclosing the bay and the two study regions. Elevation maps produced by National Land Survey of Finland and Lantmäteriet.

seabed compressed by the heavy weight of the glacier's former mass. The release of the weight allowed the seabed to begin striving for equilibrium by uplift action. The underwater land formations molded by the friction and fluvial movements underneath the ice sheet began gradually rising from the sea (see e.g., Ekman, 2009; Lindén, 2006; Lundqvist, 2004; Lunkka, Johansson, Saarnisto, & Sallasmaa, 2004; Poutanen & Steffen, 2014). The changing coast of the Bothnian Arc has been continuously occupied by humans, who left behind assemblages of archaeological remnants and traces.

Since the region's postglacial land uplift has remained consistently stronger than sea-level rise (e.g., Poutanen & Steffen, 2014), the coastal archaeological record has become arranged into elevation zones representing different eras (see e.g., Hakonen, 2017; Okkonen, 2003). While the majority of the archaeological sites in the region remain unexcavated, this arrangement allows the minimum of *terminus post quem* dating for all sites, when they first emerged from the sea. This makes the region uniquely suited for the study of long-term developments (see also Tallavaara & Pesonen, 2020).

The aim here is to assess the level of variation between the two local prehistories, which are commonly understood as part of the same archaeological culture and prehistoric society. We will be taking advantage of recent leaps in digital archaeology, including lidar and digitized archives, which allow us to efficiently draw the two separate datasets, reconstruct past landscapes, and identify the most comparative archaeological indicators.

## 2 Taking Local Prehistoric Traditions Seriously

This section details how the analysis was constructed. I begin with the reason for why this analysis is needed. What is the reasoning behind an attempt to strip away inherited assumptions and reconstructing local prehistories from the ground-up?

### 2.1 How Nationalistic and Colonial Foundations Distort Prehistoric Archaeological Groups

As elsewhere in Europe, the region's prehistory has been constructed on nationalistic foundations (see e.g., Brück & Nilsson Stutz, 2016; Díaz-Andreu & Champion, 1996, and discussion). In the late nineteenth century Finland, archaeologists began to form the local narrative of prehistory in the context of the emerging Finnish national identity, when its framers were looking for a shared "glorious past" (Salminen, 2012). At the beginning, as the evidence was scarce and unfamiliar, a narrative began emerging, in which archaeological material was collated to fit the most logical and convenient regional delimiter: the nation state (see e.g., Aspelin, 1877).

Furthermore, the early archaeology of Finland was grounded on the idea of 'a Finnish migration from their assumed original home in the east to the west and an assumed arrival in a practically empty country during the first centuries AD, when the land was inhabited only by groups of culturally backward Sámi nomads' (Salminen, 2012). Thus, in addition to nationalism, the ideals of colonialism influenced archaeology even in a country like Finland, which did not have its own overseas colonies (see also Lehtola, 2015; Ojala, 2020). As evidence of cultural activity in the distant past accumulated, the simplistic eastern homeland hypothesis was abandoned, and Finnish national identity was projected farther into prehistory.

As local differences began emerging, mainly in ceramic typologies (see e.g., Nordqvist & Mökkönen, 2015), regional nuances were added to the overall narrative. This began with dichotomies, such as the Battle Axe Culture in relation to the rest of Neolithic Finland, and the division of Finland's Bronze Age to western and eastern branches. In the last fifty years, regional archaeological groups have multiplied (compare Huurre, 1979 with Haggrén et al., 2015; see also Ramqvist, 2007). Nevertheless, there has never been a unified methodology used in drawing such group divisions.

The theoretical formation of local archaeological groups has evolved from the large-scale, even continental, to more focused regional scale. Yet, there have been few serious attempts to allow prehistoric groups the chance to possess unique local identities. Instead, the tendency has been to project local evidence to account for a practically homogenous prehistoric society. This concept of society is rapidly shrinking as new evidence sheds more light on local traditions.

## 2.2 Accessing Local Traditions and Identities

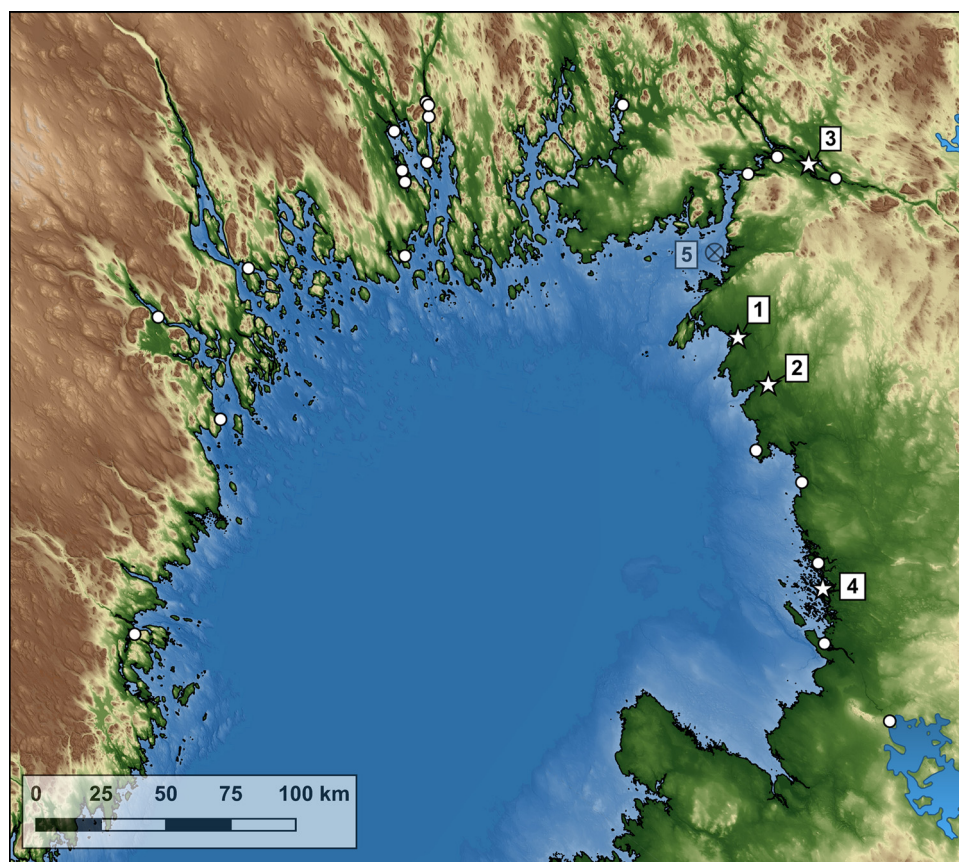
The term prehistoric society, or – perhaps even more confusingly – local society, is often used rather haphazardly as an abstract group. The group signifies amalgamations of various typologies, distributions of similar remains, and geographical limiters. Such abstractions may consist of assortments of strictly local practices and identities, which can be misunderstood as representing a wider homogenous society (e.g., Forsberg, 1999; Haughton, 2018; Kolb & Snead, 1997). Damm (2012a, 2012b, 2014), following Hallgren (2008); see also (Sassaman & Rudolphi, 2001), has proposed charting prehistoric activities in Northern Fennoscandia through *communities of practice*, a concept adapted from educational theory (see Lave & Wenger, 1991; Wenger, 1998). These assemblages of shared action could reveal more authentic regional identities in which multiple shared practices indicate a level of association. The significance of such analysis would rest in allowing neighboring groups to differ and not be categorized from the onset into the same cultural or societal abstraction (see also Furholt, 2020; Kohring, 2011). Similar perspective allowed archaeologist Kim von Hackwitz to populate the Middle-Neolithic Lake Hjälmaren region with an array of local communal identities instead of the previous model of two juxtaposing material cultures (von Hackwitz, 2009, 2012).

The perspective employed in the current study borrows elements from Damm's proposal. The focus here is on finding differences instead of similarities between two regions that have previously been categorized under the same cultural or societal grouping. This way, we may begin to assess how different these presumed related local groups are. The analysis is founded on the concept of schizogenesis, first suggested by anthropologist Gregory Bateson (1935), meaning the divergence of identities, usually of communities in geographic proximity (also Wengrow & Graeber, 2018). Thus, we are exploring communities of practice in reverse, with disassociation instead of association as the thread. While Damm's (2014) proposal is novel in deconstructing geographic groups and focusing on connections of practice (see also Furholt, 2020), the method used here maintains geographical groups as the basis for the comparative analysis. This is because the question we ask here focuses on local, i.e., geographic, difference. Communities of practice approach applied with a schizogenic perspective might be too unwieldy for analysis. Damm's proposal may become vastly more applicable in the near future, with a new open access database, containing georeferenced records of prehistoric artefacts in Finland, set to launch in 2021–2022 (see Moilanen, Vesakoski, Norvik, Saipio, & Pesonen, 2020).

The process of the current study began by defining the geographical limits of the two study regions and carving out local archaeological site records from the two national databases. To achieve comparability, certain preconditions were set. The two records had to have as much temporally coinciding materiality as possible. This is why it was deemed necessary for the datasets to be coastal. Inland sites frequently contain multiple nearly indistinguishable occupation layers from different millennia (see e.g., Okkonen, 2012). Instead, the strong postglacial land uplift of the chosen region has sequenced the coastal record into distinctive elevation zones: the higher up, the older. Also, there had to be a geographical basis for the limits of both regions. The two regions that were chosen are the large 60 km wide bays that formed around the Oulujoki River and Kemijoki River estuaries (Figures 1, 2, 8 and 9), which both contain some comparable sites from the Late Mesolithic and an abundance of materiality from the Early to Late Neolithic.

Original field documentations were used as primary source material. In total, summaries of 1,250 sites were collated from all the available raw data, i.e., survey and excavation reports, artefact lists, as well as supplemental analyses published in journals. This dataset was used in identifying significant themes and





**Figure 2:** Bothnian Bay in 4800 BCE (based on Hakonen, 2017 and Poutanen & Steffen, 2014), with verified Late Mesolithic archaeological sites as white dots. Sites represented in Table 2 are marked as numbered stars. The faded site number 5 is the later Neolithic site of Sirkonkangas 1. Elevation maps produced by National Land Survey of Finland and Lantmäteriet.

the sites that relate to them. The data collation was made possible by the open access archaeological database of Finnish Heritage Agency, available at <https://www.kyppi.fi>, which contains the majority of survey and excavation reports and artefact lists, in addition to the national site registry. Open access to National Land Survey of Finland's (NLSF) mapping data, including elevation models and lidar, available at <https://tiedostopalvelu.maanmittauslaitos.fi/tp/kartta>, made the GIS-study of ancient environs of each pertinent site possible. The northern Kemijoki River region extends some 10 km beyond the Swedish border, so the study includes 100 sites from the database maintained by the Swedish National Heritage Board, available at <https://app.raa.se/open/fornsok>. Swedish Landmäteriet's elevation model, converted from 50 to 10 m resolution, offered a comparative geographical terrain map.

Subsequently, two regional site registries were compiled, categorized by the likelihood of their temporal connection to different shoreline phases, with approximately 500-year intervals. The sites were not assumed to have had been established near the shore by default. Instead, additional temporal evidence was required to assert a definite link. Single radiocarbon dates were categorized as providing provisional temporal connection, while multiple coinciding dates provided definite connections. Also, some typologies, such as established ceramic typologies (e.g., Nordqvist & Mökkönen, 2016; Torvinen, 2000), were assessed to provide provisional temporal connections. The following sections include only a miniscule number, less than 10%, of the complete set of analyzed sites. Yet, these sites are arguably the most insightful ones when focusing on the variation of practices, and they could not have been chosen without a thorough analysis of the complete record.

What needs to be acknowledged is that we should not simply study whether we can find differences in the two datasets. With such a premise, the results are invariably positive from the outset, since archaeo-

**Table 2:** Percentage of slate in stone discards from four roughly contemporaneous sites. Sample size indicates the range of accessed data from registered artefact assemblages. Timeframe is my approximation based on available radiocarbon dates

Site	% of slate flakes by weight	Sample size %	Timeframe
Tainiari [1]	84	96	4900–4300 BCE
Veskankangas [2]	36	62	5300–4700 BCE
Jokkavaara [3]	32	78	5700–4000 BCE
Vepsänkangas [4]	7	91	5300–4800 BCE

logical sites are never exact duplicates. Rather, the question is, are the differences conclusive enough so that it can be argued that regional archaeological records need to be increasingly scrutinized with more systematic and focused methodology to identify local traditions. The answer to this question is bound to be subjective.

The differences in the two regions' prehistories during 5300–2000 BCE reveal more or less subtle local expressions. These are undoubtedly not the only ones to be discovered. I am sure that with increased scrutiny, a wider array of local differences would come to light. Nevertheless, the analysis conducted in this study is sufficient for stating that while the two regions share the underlying material culture, i.e., pottery-styles, stone tool forms, and building traditions, similar practices were conducted with significant local variation. In any case, let us first study the most apparent local differences and we shall discuss the implications afterwards in more detail.

### 3 Stone Age Experiments and Specialization with a Local Resource

In the context of this study, the most significant Late Mesolithic activity site in the coastal Kemijoki region is Tainiari (Figure 2, no. 1) and its extension Tainilanrotko, which are separated only by a small ravine. Combined, the site encompasses a  $450 \times 50$  m area along the edge of the Simojoki River. The most prominent excavated features of the site are 40 probable inhumation graves, with an untold number left undisturbed (see Hakonen & Hakamäki, 2019). Tainiari is the only known large Stone Age mortuary site in Northern Fennoscandia. While there may be other similar sites to uncover, we have no comparative data within the two study regions, so we have to leave the mortuary aspect aside.

Instead, what is more pertinent here is the composition of the stone discard assemblage; more specifically, flakes produced by knapping (Figure 3). In four large excavations performed at Tainiari, a total of 25,544 pieces of stone flakes weighing 220.3 kg were collected (see Wallenius, 1990, 1991, 1992a; Wallenius-Saksanen, 1985). Out of these, only 21.4% (or 16% by weight) was quartz (see Table 2), which is usually the mainstay of prehistoric production in Northern Fennoscandia (e.g., Rankama, Manninen, Hertell, & Tallaavaara, 2006). The rest was local slate known in Finnish archaeology as *strahlstein*-slate. In geological terms, it has been characterized as mafic tuffite (see Kotivuori, 1996a, 1996b; also known as greenstone, slate, and mafic volcanic rock). Mafic tuffite was used at Tainiari for varying purposes, for example as scrapers, which throughout prehistory were usually made from quartz. Found at Tainiari are seven mafic tuffite 'hafted scrapers' (Figure 4), which may represent a strictly local tool type (Purhonen, Hamari, & Ranta, 2001, pp. 302–303). Only three others are known (Kotivuori, 1996a, p. 62), all from an activity site along the Kemijoki River 63 km north of Tainiari. While during the Neolithic, mafic tuffite implements were produced mainly by grinding, these Late Mesolithic hafted scrapers were knapped, contributing some of the debitage found at the site.

It is uncommon in the Bothnian Arc's prehistory for activity or dwelling sites to contain a debitage composed primarily of other stone material than quartz. This trait is shared throughout a much larger region of Finland and Northeastern Sweden (see e.g., Huurre, 1979, p. 43; Edgren, 1984, p. 23, 40; Mökkönen & Nordqvist, 2016; also Olofsson, 2015, pp. 121–127). The more common composition, in the Bothnian



**Figure 3:** Composite image of mafic tuffite (top) and quartz discards (bottom) excavated from Tainiari in 2018 (see Hakonen, 2019).

Arc specifically, is over 80% quartz, with the rest usually being slate or quartzite, and flint in lesser quantity. It remains unclear how widespread mafic tuffite was as a raw material, both as a fixed geological source and transportable ingots or preforms.

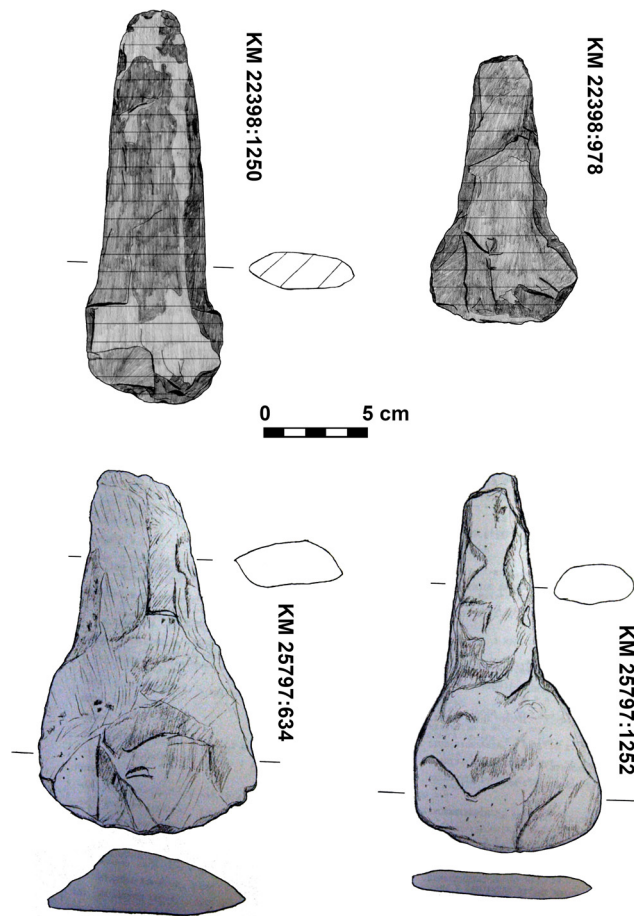
Two other sites that have been radiocarbon dated to the overlapping period, Veskankangas (Figure 2, no. 2; see e.g., Wallenius, 1992b) on the coast just outside the Kemijoki River region and Jokkavaara (Figure 2, no. 3; see Karjalainen, 1992; Torvinen, 1999) upstream from the study area, also indicate similar use of mafic tuffite. For example, the stone discards collected in five out of the six excavations of Veskankangas, a site whose radiocarbon dates point to 5300–4700 BCE (see Junno, Uusitalo, & Oinonen, 2015), consisted of 30,027 flakes weighing 149.3 kg. Out of these flakes, 70.6%, or 64.3% by weight were quartz, and the rest were categorized as slate (Wallenius, 1992b), which is one of mafic tuffite's metonyms in the region. Jokkavaara, according to radiocarbon dates, has a wider temporal range, from 5700–4000 BCE (see Torvinen, 1983, 2000), and stone discards from 1980–1982 and 1990 excavations consist of 67.5% quartz by weight, with the rest being slate (Torvinen, 1983; Tusa, 1991).

In contrast, in the Oulujoki River region, mafic tuffite was used only sporadically. In large excavations, their ratio compared with the rest of the debitage is low. For example, the Vepsänkangas activity site (Figure 2, no. 4), which dates to 5300–4800 calBC (Junno et al., 2015), was excavated in 1997 and 1998. In these excavations, the percentage of possible mafic tuffite flakes was no more than 6.6% by quantity, or 7.1% by weight, out of all stone flake discards, which amounted to 3,183 flakes, or 15.4 kg (Koivisto, 1998, 1999).

The mafic tuffite of the region most likely originates from the bedrock deposits of Tervola along the Kemijoki River. At least three locations where the material could have been quarried with little effort have been discovered there (Kotivuori, 1996a, 1996b). All three are part of the same geological formation. While the known quarry sites were underwater during Late Mesolithic when mafic tuffite was the favored local material for stone tools, it seems probable that the contemporary quarries were located on higher elevations within the same geological bedrock formation (Kelloniemi, 2020).

During the Neolithic, mafic tuffite became the go-to material for the production of Bothnic tools, i.e., various forms of large elongated implements, usually with one end sharpened into a blade by grinding and





**Figure 4:** Mafic tuffite hafted scrapers from Tainiaro. Excerpts from the artefact lists of the 1984 and 1990 excavations (see Wallenius, 1991; Wallenius-Saksanen, 1985).

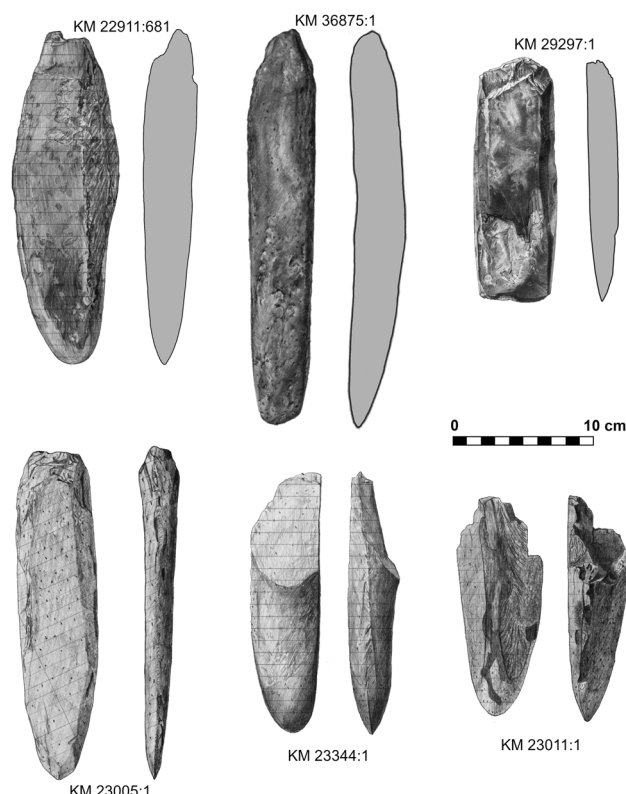
polishing (Figure 5; see e.g., Huurre, 1979, pp. 47–51; Kotivuori, 1996a, pp. 70–71, 74–75). According to the collated database, in the Kemijoki record these tools have been found from at least 5300 to 2200 BCE. They are most common at sites provisionally dated from 3500 to 2500 BCE. In the southern Oulujoki River region, they seem to appear in the record only until 2950 BCE. These discrepancies in the use of mafic tuffite clearly suggest that the stone material in question represents a local resource for the northern Kemijoki River region, one that the communities of the southern Oulujoki River region had limited access to.

In Neolithic sites, mafic tuffite flakes are occasionally found, but not in significant quantities compared to quartz. A notable exception is a partly excavated dwelling depression in Sirkonkangas 1 (Figure 2, no. 5; see Kotivuori, 2001). The site with its 22 depressions emerged from the sea between 3500 and 3400 BCE. Within the excavated parts of the dwelling, 70% of the 2,381 flakes were mafic tuffite and the rest were quartz. The former were generally larger, so their ratio by weight was 86% out of 14.5 kg. Accompanying the debitage were reportedly 20 Bothnic tool preforms (Kotivuori, 2001). The rest of the find assemblage, sporadically collected throughout the site, consisted mostly of quartz flakes (see e.g., KM 25560).

This suggests that specialized tool production took place at least in the excavated dwelling of Sirkonkangas. Even in such a rare Neolithic place where mafic tuffite flakes have been found in abundance, the material was no longer used similarly to quartz. Instead, it was reserved predominantly for the manufacture of large tools. These tools spread widely, to the Arctic Coast and to the Gulf of Finland. It remains to be seen whether any Neolithic Bothnic tool production sites are found outside the coastal Kemijoki River region.

The use of mafic tuffite can be understood in terms of – instead of community as a group – a community of practice. Based on the available evidence, the practice of using mafic tuffite to replace quartz was first





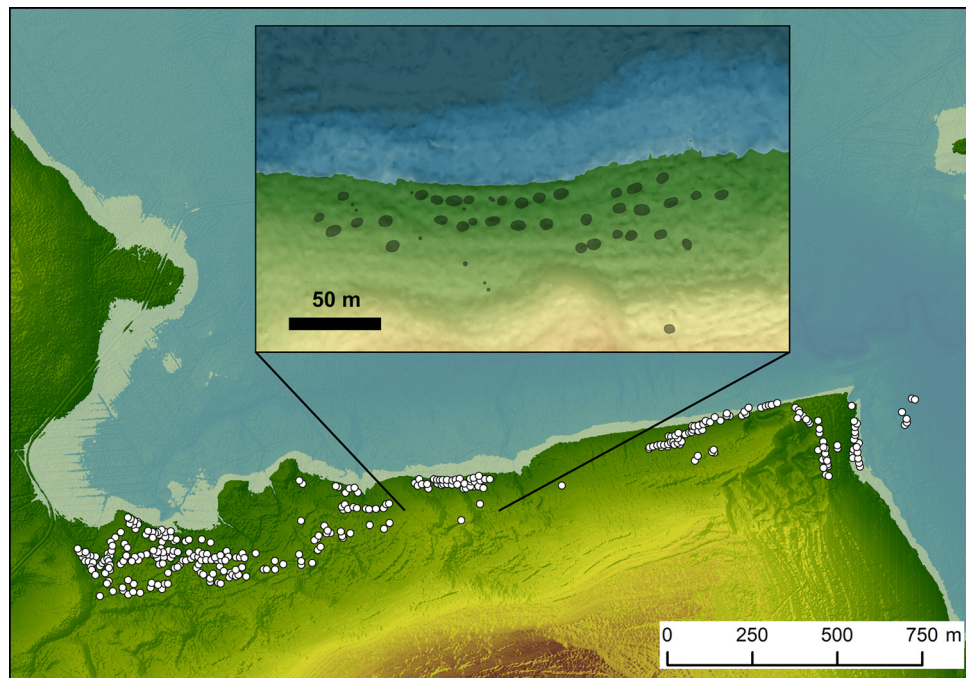
**Figure 5:** Late Mesolithic and Neolithic Bothnic tools and fragments. Excerpts from artefact lists of the Finnish Heritage Agency.

undertaken somewhere in the Kemijoki River region, possibly at Tainiara, which exhibits the most prolific use of the material. The practice extended to nearby surrounding regions, but not to the southern Oulujoki River region, indicating that this particular community of practice was maintained locally. A more exclusive practice is represented by the contemporary hafted scraper (Figure 3). Whether the occurrence of hafted scrapers in two separate places in the Kemijoki River region indicates communicated practice or dispersal of the products of a short-lived local experiment is arguable. What remains is that the two practices represent early divergences in material traditions between the two study regions.

## 4 Semi-Subterranean Housing and Neolithic Villages

Our next focus is on subsequent dwelling-related practices. In the early fourth millennium BCE, semi-subterranean dwellings, marked currently by depressions on the ground, began to appear on the Northeast Arc (e.g., Costopoulos et al., 2012; Mökkönen, 2011; Núñez & Okkonen, 2005; Vaneeckhout, 2009). The two largest dwelling sites, Törmävaara NW (Figure 6) and Siirtola, contain 230 and 260 dwelling depressions each. Both sites are in the coastal Kemijoki River region (Figure 7). The number of contemporaneous dwellings in such large sites remains unclear, as there is bound to be temporal overlap.

Nevertheless, in the Oulujoki River region (Figure 8), there are ten sites with more than 20 dwelling depressions and in the coastal Kemijoki River region the number of such sites is 17, reflecting the more abundant use of dwelling depressions in the northern region. The regional databases that I collated contain 1,411 semi-subterranean dwellings in the north and 608 in the south. The depressions are either round or elongated, with most being less than 8 m long, and at minimum around 4 m in diameter. I have designated more than 10 m long depressions as large ones. These are always elongated, the largest ones being over 20 m long.

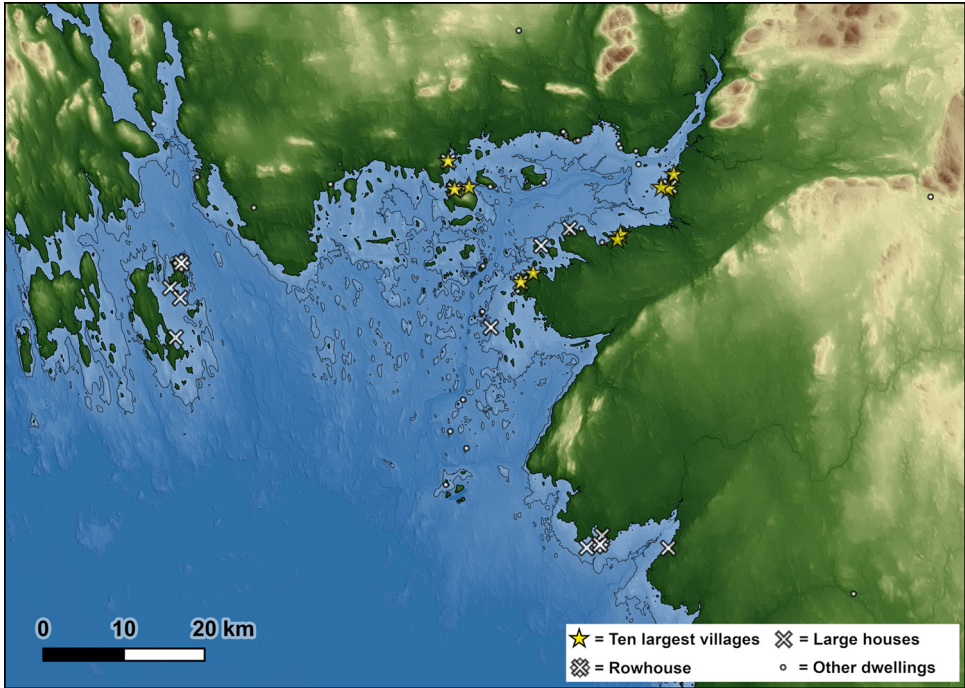


**Figure 6:** Dwelling depressions of Törmävaara on the 2950 BCE shoreline. The dark blue shading represents the mean sea-level, with the lighter shading indicating the extreme extent of the annual high-water level of +2 m. Zoomed frame shows the eastern end of Törmävaara NW with 35 dwellings and smaller pits in a cluster. Elevation map and lidar produced by National Land Survey of Finland.

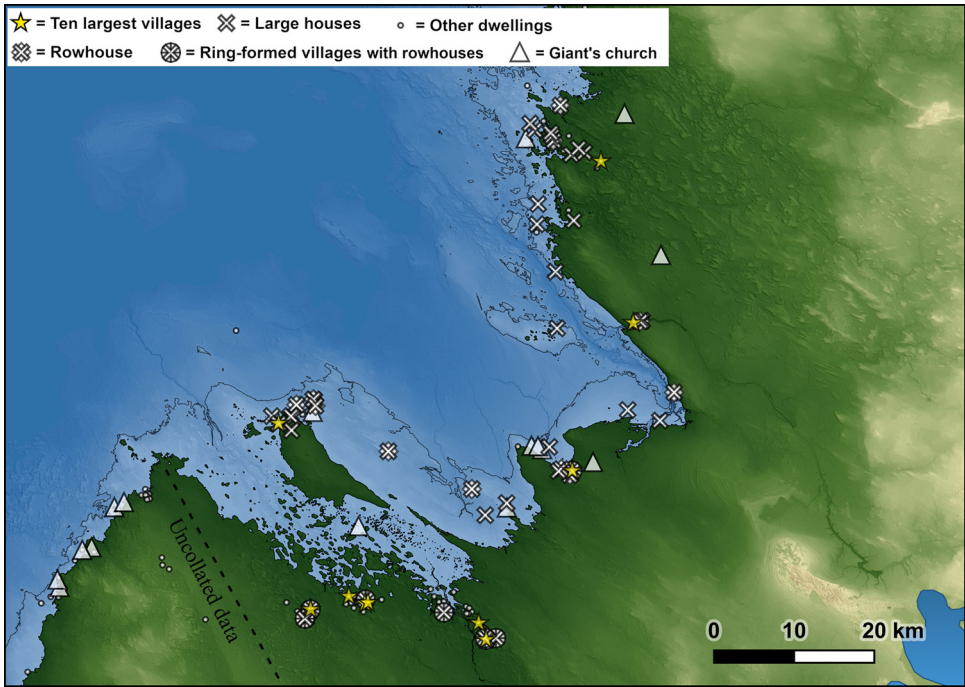
Considering all the relevant data (see Table 3), the largest village sites seem to have been established mainly during 3500–3000 BCE. In Table 3, the ‘Emerging during’ column shows, first, when the higher elevations of the largest village sites could have first been occupied and, second, underlined, when the whole site had emerged. The evaluations use NLSF’s lidar data with a previously tested shoreline displacement chronology (see Hakonen, 2017). The comparison of when the largest village sites emerged and could have been occupied, considering annual sea-level fluctuation, suggests that these large village sites formed earlier in the south than in the north.

Shoreline dating is more pertinent for some sites than for others (see e.g., Hakonen, 2017). Pyhäkoski 1, while emerging earlier than any other village site in the two regions, has maintained a stable proximity to the adjacent river, and its location would have been convenient even today. With this in mind, its early date seems anomalous in comparison with the other sites. As such, it was probably not used in its coastal phase, but later in its inland riverine phase.

That leaves us with the twice recurring date of 3900 BCE as the earliest possible completion date for a village site. Both sites are in the south (Figure 8). None of the 133 dwelling depressions in the main cluster of Rekikylä (Figure 9) have yet been radiocarbon dated, so the site’s emergence is the only narrowing evidence we have for its age. The establishment of the first dwellings may have begun during the late 5th millennium BCE. Based on the current shoreline displacement model, the shoreline adjacent to the dwelling area began to rapidly recede just after 3900 BCE. This rapidness is due to the shallowness of the slope from the site to the current river 250 m away. The location of Rekikylä does not really make a lot of sense after 3700 BCE, when the shoreline had receded over 150 m. Still, at least some sequences may be younger than that. The establishment date of Marjokangas 1, while being another possible early village site, also remains unverified. The site would have been on an island at least from 3900 BCE until merging with the mainland around 3700 BCE. The last of the large villages in the southern region, Tiperonkangas, probably dates after 3200 BCE, when the whole site had emerged. In contrast, the use of the large sites continues in the north until after 2600 BCE.

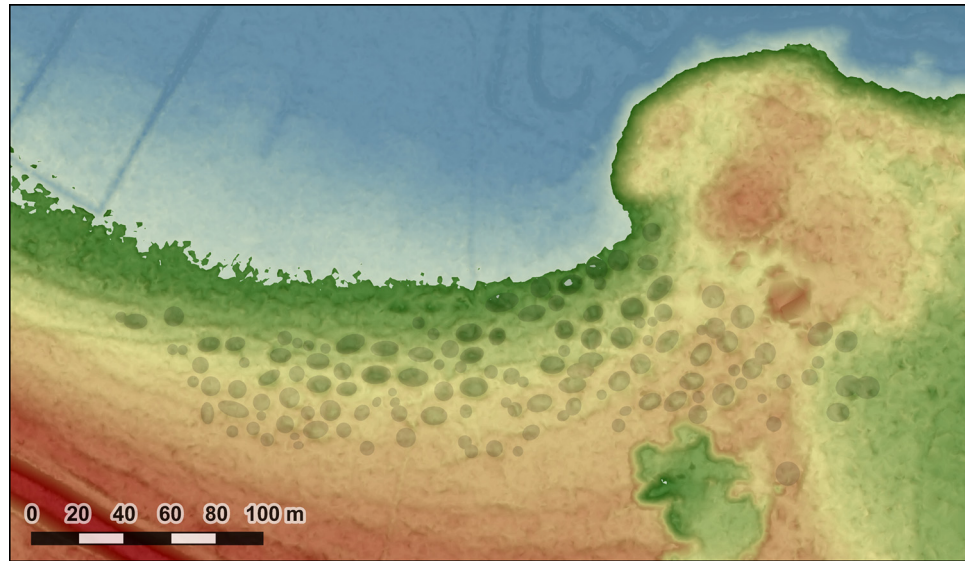


**Figure 7:** Dwelling forms on the Kemijoki River region. Largest villages are represented in Table 3. False-colored coastline represents 3200 BCE and the outer traced coastline represents 2000 BCE. Elevation maps produced by National Land Survey of Finland and Lantmäteriet.



**Figure 8:** Dwelling forms on the Oulujoki River region. Largest villages are represented in Table 3. False-colored coastline represents 3200 BCE and the outer traced coastline represents 2000 BCE. Elevation maps produced by National Land Survey of Finland and Lantmäteriet.





**Figure 9:** Dwelling depressions of Rekikylä (133 depicted out of 141) in relation to the mean shoreline of 3900 BCE at its maximum annual water level (+2 m from the mean). Lidar data produced by National Land Survey of Finland.

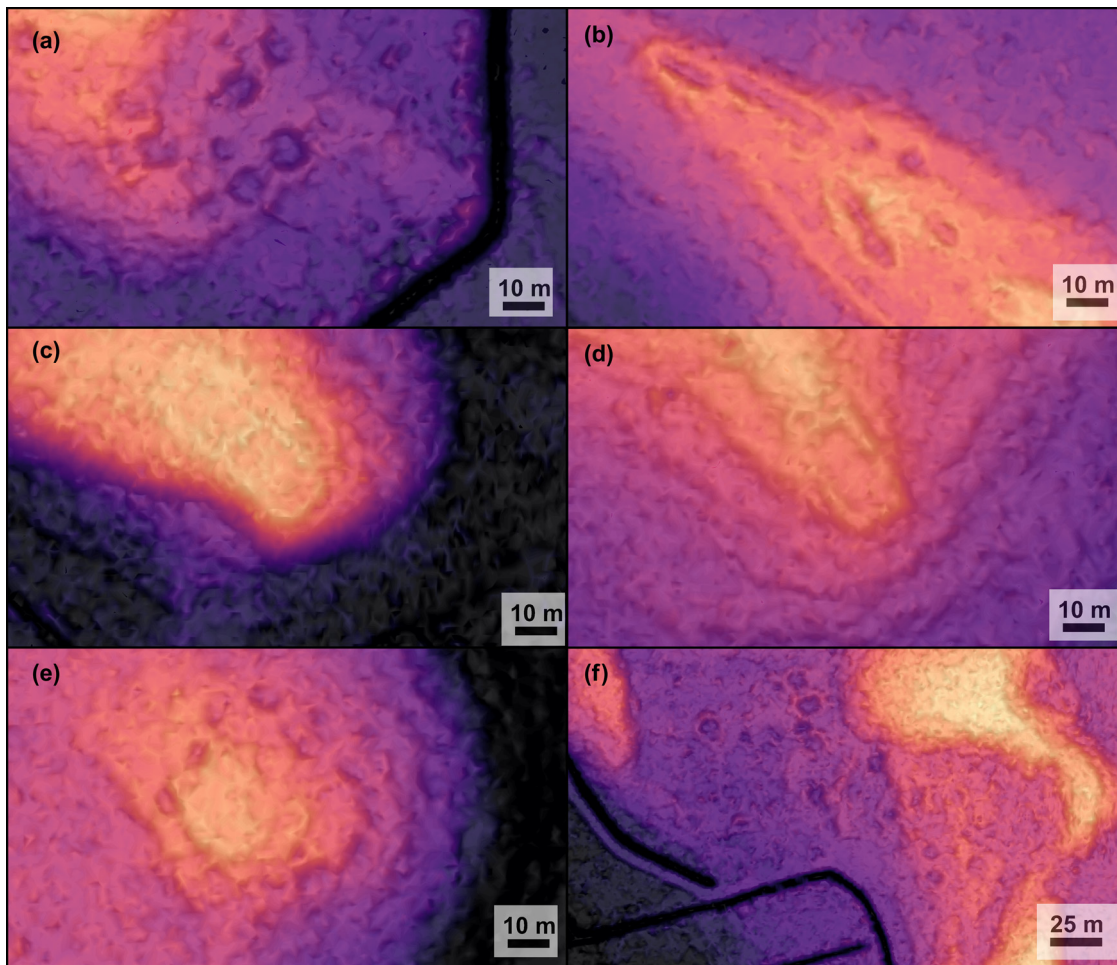
**Table 3:** The ten largest village sites in the two regions, with the number of dwelling depressions and accompanying chronological data. The underlined dates in the final column show the *terminus post quem* after which all depressions at the site had emerged

Largest village sites	Depressions	Radiocarbon dates	Cal distribution	Emerged during
<b>Kemijoki River region</b>				
Kolopetäjä itä	28	—	—	3850–3650 BCE
Mikonaho 1	30	—	—	3900–3450 BCE
Sirkonkangas 2	65	—	—	3800–3450 BCE
Rantala (Sirkonkangas)	38	—	—	3800–3450 BCE
Mikonaho 3	27	—	—	3650–3400 BCE
Laajamaa 2	30	—	—	3550–3150 BCE
Törmävaara NW <sup>a</sup>	230	1	3950–3500 calBC	3600–2950 BCE
Siirtola	260	2	3300–2650 calBC	3250–2900 BCE
Kankaanjänkä	60	1	2600–2150 calBC	3500–2700 BCE
Törmävaara NE <sup>a</sup>	97	7	3800–3100 calBC	3500–2600 BCE
<b>Oulujoki River region</b>				
Pyhäkoski 1	33	—	—	4300–4150 BCE
Rekikylä	133	—	—	4200–3900 BCE
Marjokangas 1	26	—	—	4100–3900 BCE
Riitasuo	33	—	—	4000–3750 BCE
Kopperosaari 1 & 2 <sup>a</sup>	29	—	—	3800–3650 BCE
Reissulansuo 1	25	—	—	3750–3650 BCE
Viitalankangas 3	31	—	—	4000–3600 BCE
Lampinkangas 1	29	—	—	3850–3550 BCE
Iso Sarvikangas 1 & 2 <sup>a</sup>	43	—	—	3550–3450 BCE
Tiperonkangas	25	—	—	3400–3200 BCE

<sup>a</sup> Unofficial aggregates of connected sites (see Appendix 1).

Sometime after 3400 BCE, dwellings began growing in size in the south, where there are at least 39 either multiroom dwellings that are connected by short corridors (Figure 10a; see e.g., Schulz, 2001), or over





**Figure 10:** Lidar elevation and slope maps of Neolithic building forms. (a) Three-room rowhouse and single depressions at Härmänhalmemaa. (b) Large dwelling depressions at Niilonräme 3. (c) Giant's church at Linnakangas. (d) Giant's church at Mustosenkangas. (e) Ring-formed village at Kivimaankangas 1. (f) Neolithic dwelling depressions indicating the remnants of a possible village at Iso Sarvikangas 1. Lidar produced by National Land Survey of Finland.

12 m long dwelling depressions (see Figure 10b). The largest single-room dwelling, located at Korkiakangas 1–2, is  $20 \times 10$  m in size. Meanwhile, in the north, only twelve such constructions have been found, the largest ones less than 15 m long. During the same period, large stone enclosures, called giant's churches in accordance with local folklore, were built along the eastern coast of the Bothnian Gulf (Figure 10c and d; Okkonen, 2014). Out of a total of 42 verified remnants, nine reside in the Oulujoki River region. None have been found in the northern Kemijoki River region, marking another major difference between the two regions.

Additionally, archaeologist Petro Pesonen has recently surveyed several Neolithic villages on the ancient Siikajoki River estuary, on the far side of the southern study region. Here, according to lidar data, at least eight sites seem to contain dwellings that were constructed in a ring formation (e.g., Figure 10e). These sites have a strong resemblance to fortified villages. Previously, a similar possibly fortified site, interpreted as an elevated pile settlement, has been found just north of the Oulujoki River region (see Koivunen, 2002). The sites of Kivimaankangas 1 and Turusensaari are the two largest ring-formed villages, with 18 and 16 dwelling depressions seemingly surrounding a courtyard. Only recently discovered, these sites remain mostly unexcavated, but if the dwellings within the sites ultimately turn out to be contemporaneous (see Pesonen, 2017; Tallavaara & Pesonen, 2020), they may represent another local tradition.

Thus, as we examine the abundant materiality of the Neolithic, local traits emerge even on the surface. Based on the previous comparison, it seems that the two regions differed at least in five respects. First, there

is the larger extent and number of dwelling depressions on the largest village sites in the north, and second, the apparent regional asynchrony in their use. Yet, these are only the less transparent differences. The third is the reorganization of housing from multiple small houses to larger houses which is evident in the south, yet only sporadic in the north (see also Mökkönen, 2011). The fourth difference concerns a similar turn to large buildings with stone foundations (see e.g., Okkonen, 2014), possibly related to the threat of violence or even warfare (Sipilä & Lahelma, 2007), of which there is no evidence in the north. And finally, the fifth difference is the establishment of ring-formed villages (Pesonen, 2017), which may represent a strictly local tradition.

Apparent local variation is more discernable between the two regions during the Neolithic between 4000 and 2000 BCE than prior to it. The likeliest explanation for this is not necessarily that local differences were more prominent during this era, but that the differences have remained more perceptible. Semi-subterranean and even stone-walled structures were favored during this period. The corresponding archaeological record with its high visibility of remains on the surface has produced an abundance of materiality. Because of this, structures which populated the coast during the timespan offer more insight even before scratching the surface than in any other archaeological period.

## 5 Relative Prehistories and Schizmogenesis – A Point of Access to Local Communities?

The analysis collated some 3,300 years of diverged regional prehistory. In the Late Mesolithic of the 5th millennium BCE, we saw how the stone materials used for producing tools differed in the two regions. While quartz remained the predominant raw material in the coastal Oulujoki River region, its use oddly declined in the northern Kemijoki River region. Efforts to elevate a local material, designated here as mafic tuffite, as a substitute for making blades and points were apparently carried out in the north. These experiments seem to have later fizzled out as quartz was yet again adopted as the main material for tools intended for cutting. But the local mafic tuffite resource remained in use at least until the Late Neolithic in the form of Bothnic tools, for which the stone material was particularly suited (see e.g., Eranti, 2014; Kelloniemi, 2020; Luho, 1948; Núñez, 1998).

Analyzing Neolithic manifestations of building traditions, i.e., the large villages, large semi-subterranean dwellings, row houses, giant's churches, and ring-formed villages (see Figure 10), indicates further schizmogenesis of the two local prehistories. The tradition of establishing villages with semi-subterranean dwellings may have begun in the southern region around 3900 BCE, while in the north it seems to date after 3600 BCE, leaving a gap of several centuries. A similar phase in the Iijoki River region, between the two study areas, has been dated to c. 3700 BCE (Mökkönen, 2011; Vaneeckhout, 2009). While the tradition was maintained relatively unchanged in the north until sometime after 2500 BCE, in the south several developments took place. There, aggregated villages were apparently no longer favored after 3200 BCE. Instead, they were replaced by larger buildings and what may be interpreted as fortifications. Their use may have continued until the semi-subterranean dwelling tradition began to wane out during the Late Neolithic.

Why the later stages of this divergence took place could be partly explained by outside influence. The Corded Ware Culture (see e.g., Beckerman, 2015; Nordqvist & Häkälä, 2014; von Hackwitz, 2009) spread to the eastern coast of the Bothnian Gulf around 2900–2800 BCE (Mökkönen, 2011; Nordqvist 2016, 2018; Pesonen, Larsson, & Holmqvist, 2019). The connection with giant's churches and Corded Ware expansion has been noted in many instances, with interpretations leaning toward some form of cultural conflict (see e.g., Mökkönen, 2011; Sipilä & Lahelma, 2007). While this is a possible scenario (although cf. von Hackwitz, 2012), the chronology of events remains unclear.

Most importantly, the chronology of fortified sites is mostly based on shoreline displacement dating, which is notoriously unreliable when used carelessly (Hakonen, 2017). It is worth wondering whether such fortified sites were mainly established near the coastal shore, where they would have been easily found, or whether they were hidden from outsiders some distance inland. If they were not established on the coast,

their actual use may have occurred sometime after 2900 BCE. With no clarity on the subject, the question whether the Neolithic fortifications were a reaction against CWC expansion or an earlier development cannot yet be answered with any certainty. The few dated sites suggest the former (see Okkonen, 2014), but then again, the fortification of dwellings, as implied by the ring-formed villages, may have had been a local development many centuries prior to CWC expansion.

In any case, outside influence is not a sufficient answer in explaining the material divergence. Reacting to external factors, even globally changing circumstances, is always derivative of local decision-making. There is yet no evidence that the spread of the Corded Ware Culture prompted the construction of fortifications elsewhere in the Baltic Rim. Accordingly, should the giant's churches be accepted as Neolithic fortifications, they represent a strictly regional community of practice, as well as manifesting local decision-making, whether those decisions were reactive or active.

As for the differentiation of the two study regions, we have already seen that material divergences had taken place a full two millennia prior to any influence from the Corded Ware Culture. It would seem that the two regions, and in all likelihood those surrounding other river valleys in the Bothnian Arc, were engaged in the formation of their own unique and local communal identities. The process seems to have promoted certain material experiments, some of which consolidated into long-lived communities of practice. It seems plausible that the majority of short-lived experiments would not have left conspicuous material traces for us to identify.

Yet, we have evidence of at least two experiments from the Late Mesolithic Kemijoki River region: the primary use of mafic tuffite, temporarily replacing quartz, and also the unique object type of hafted scraper, with only ten objects found to date. Neither of the two examples were adopted into long-term use, which brings into question the practicability of the two experiments. It remains to be seen how many ring-formed villages actually populate the coast, and whether they also represent short-lived experiments. Such experiments could have been used to actively differentiate communities from their neighbors by inventing exclusive and schizmogonic communities of practice for creating and maintaining relational communal identities (see e.g., Wengrow & Graeber, 2018).

Such local identities have been obscured by the early insistence of Fennoscandian archaeology to study prehistory not as a multivalent conglomeration of unique and largely independent communities, taking part in both shared and exclusive practices (cf. Damm, 2014, whose approach focuses on the former), but implicitly as a homogeneous society reflecting modern nation states. While conceptualized regional groups have multiplied during the last century and a half of archaeological research, with new groups emerging periodically, more work remains in reorienting the perspective from the national to the local level. From the local level, with enough relative data, we could eventually verify whether there emerge any overlying regional organizations which should be understood as societies, or whether the projection of such into prehistoric forager context is by default anachronistic.

## 6 Conclusion

A comparison between two coastal archaeological datasets, 60 km apart, indicates that during the more than 3,000 year timespan of the study, differences between the local forager communities proliferate despite the largely shared material culture. The result that local traditions and expressions of identity are discernable is encouraging as for the applicability of the methodology and calls for more attention to the study of schizmogogenesis within the so-called prehistoric societies. The region's national prehistories have mostly been composed by typological associations and similarities, providing us with the vast material cultures, which arguably act in confusing prehistoric societies with state societies. Correcting this skewed perspective requires more emphasis on local traditions. Studying "society-as-a-whole" tends to either diminish local traits as anomalies or promote them by projecting them onto other contexts. Instead, localized prehistories should be collated from the ground-up, by studying the original archive records site-by-site without defaulting to general models. By comparing local prehistories, and their relationship with

different communities of practice, we may begin to archaeologically understand stateless forager societies, which elude us due to their sheer unfamiliarity.

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## Appendix 1 The registry codes of archaeological sites mentioned by name (database at <https://www.kyppi.fi>)

Site name	Registry code (FHA)
Härmänhalmemaa	1000031634
Iso Sarvikangas 1	1000014499
Iso Sarvikangas 2	1000014500
Jokkavaara	699010340
Kankaanjänkä	845010098
Kivimaankangas 1	1000027396
Kolopetäjä itä	1000023855
Kopperosaari 1	1000027375
Kopperosaari 2	1000027376
Korkiakangas 1–2	436010012
Laajamaa 2	845010073
Lampinkangas 1	1000027342
Linnakangas	425010013
Marjokangas 1	1000027334
Mikonaho 1	845010085
Mikonaho 3	1000011853
Mustosenkangas	425010003
Nilonräme 3	1000031647
Pyhäkoski 1	494010073
Rantala (Sirkonkangas)	845010074
Reissulansuo 1	1000027374
Rekikylä	973010051
Riitasuo	1000027395
Siirtola	845010094
Sirkonkangas 1	845010102
Sirkonkangas 2	845010122
Tainiari	751010040
Tainilanrotko	751010051
Tiperonkangas	708010069
Törmävaara NE	845010030
Törmävaara NE	845010040
Törmävaara NE	845010041
Törmävaara NE	845010042
Törmävaara NE	845010047
Törmävaara NW	845010048
Törmävaara NW	845010049
Törmävaara NW	845010050
Turusensaari	1000027397
Vepsänkangas	973010046
Veskankangas	1000000035
Viitalankangas 3	1000027386