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SOMNIUM PRO TEMPLO – ON THE DATE AND LOCATION OF THE FIRST ECCLESIASTIC BUILDING ON THE HAILUOTO ISLAND

Abstract

The date and location of the earliest chapel on the Hailuoto Island is examined by reviewing the archaeological and geological data gathered in late 1980s, on which the original hypothesis about the existence of the early 14th century AD ecclesiastic building at the site of the 'Old Church' stood on. As old wood and marine reservoir effects were unrecognised back then, the calibrated radiocarbon dates gave systematically older date estimates. The coin evidence suggests a mid-15th century AD *terminus post quem*, while the preserved wooden statuettes of saints date to the late 15th century AD. As the data regarding local land-uplift rate is today more reliable than in 1980s and precise information on elevation gathered with airborne LiDAR can be analysed using the GIS, a new reconstruction regarding the environment around the 'Old Church' is also presented. Finally, reasons for further archaeological research on Hailuoto are sketched in brief.

Keywords: artefacts, chronology, environmental reconstruction, Hailuoto, land-uplift, radiocarbon dating

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INTRODUCTION

'Thus, on the basis of studies mentioned above, it may be concluded that the birth of the Hailuoto parish and the historical phases of its churches have been researched in the best possible way.'

(Wigren 2008: 105)

The previous quote taken from a quite recent book mirrors the achievements of a multidisciplinary research project launched in spring 1985 thanks to funding provided by the Academy of Finland. This project was led by the history department of Oulu University and it focused on Hailuoto, a 195 square-kilometre island located some 20 kilometres west of the city of Oulu in the Bay of Bothnia (Fig. 1) with the aim to shine a light on its medieval past. The original concept included specialised studies of Hailuoto's geology, palynology, archaeology, linguistics, topono-

mastics, folklore and blood type genomics, but the latter two lines of investigation were soon terminated due inconclusive evidence (Julku 1988a: 7). Nevertheless, geology, palynology and archaeology in particular had plenty of new information to offer, especially regarding the presumably roughly coeval introduction of agriculture and Christianity to the island. The contribution of archaeology was weighted towards the process of Christianisation and its most apparent material manifestations: the search for the earliest ecclesiastic building and the burials possibly associated with it.

The island of Hailuoto offered a seemingly evident way of archaeological inquiry regarding this matter, because its 'Old Church', presumably inaugurated in 1620, had burned down on 2 August 1968 and the 'New Church' completed in 1972 was built c 100 metres north-east of it. A couple of years before the devastation, the

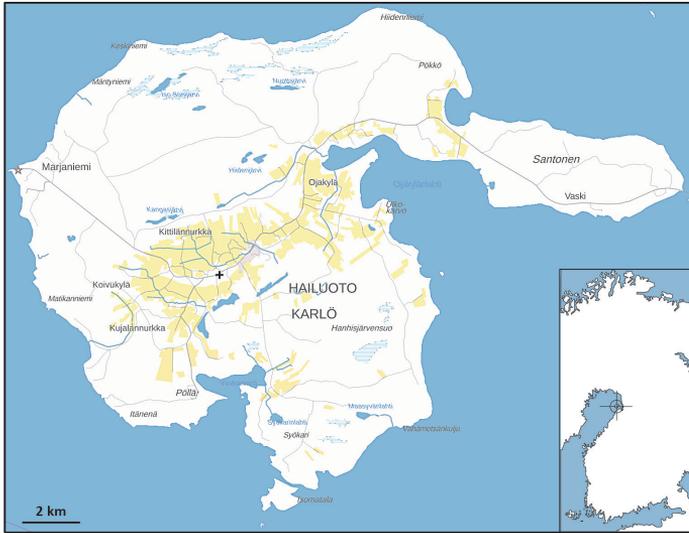


Fig. 1. Location map of the Hailuoto Island with the site of the 'Old Church' marked with a square cross. Illustration: J. Ikäheimo; base map: National Land Survey of Finland (Creative Commons Attribution 4.0 International License).

Old Church had been painstakingly documented by Lars Pettersson as its structures were being renovated (Pettersson 1971). During his work Pettersson noticed that some of the building materials used in the construction had been recycled from a previous structure. Especially the wooden boards preserving fragmentary motives painted with tar and closely resembling the ones found in 15th century churches of Nousiainen and Maaria in south-west Finland convinced him that a church preceding the one from 1620 had also been located on the site (Pettersson 1971: 8–9, 50–1). For this reason, it was quite natural to conduct the archaeological excavations that lasted from 1985 to 1987 within the foundations of the 'Old Church' (Fig. 2).

While the excavations yielded a significant amount of evidence on the 'Old Church', some remains belonging to wooden structures differed markedly in their appearance from the remains of the 'Old Church' or were found in such position that they were interpreted as possible traces of a medieval ecclesiastic building. The same also held true for some of the burials discovered in the excavations. For this reason, a set of radiocarbon dating samples was taken from the preserved wooden structures as well as from bones of the deceased buried inside the church. The dating results met the expectations of the researchers and they were interpreted to support both Pettersson's view about the existence of an earlier ecclesiastic building at the site and to date

the construction at the earliest to the early 14th century AD.

The topographic environment to which this ecclesiastic building was presumably built around AD 1300 was reconstructed by projecting the estimates regarding the rate of post-glacial land-

uplift in the area onto the contour lines of a base map and using the results of palynological analyses to make an educated guess about the past vegetation. The results of these various lines of investigation were crystallized into an illustration (Fig. 3) that was first published in the monograph summarising the results of the project (Julku & Satokangas 1988: 85 Fig. 23; see also Hicks 1992: 86 Fig. 11). The picture shows an ordinary dwelling turned into a chapel occupying the end of a long, slightly curving sandy cape with five sand dunes located just west of the building. The special status of the dwelling is indicated with the cross at its ridge and the presence of four burials on its southern side.

The idea behind the reconstruction pertains to the famous passage by Pehr Niclas Mathesius (1711–72), a Finnish priest and politician, who in his 1734 dissertation on the geography of Ostrobothnia informs us about the clerical past of Hailuoto as follows: 'A:o 1610 templum exstructum est, quod hodie conspicimus. Hoc antiquam fieret, domus pro templo usurpabatur' ('In AD 1610 a church, that is seen even today, was built. Before this, a house was used as a church'; Mathesius 2008[1734]: III.VI). This would imply that the earliest ecclesiastic building on Hailuoto was an ordinary house that had been turned into a sanctuary. While the illustration perfectly summarises the state of knowledge regarding both the building and the environment in late 1980, the research regarding most of the

disciplines contributing to it has since advanced much that both the background data and the reconstruction itself are no longer credible.

Thus, the main intention of this article is to show that while there might have well been an ecclesiastic building on Hailuoto during the early 14th century, as there is credible yet unverified evidence on agriculture starting from the early 13th century, this building was highly unlikely to be located at the same place where the two later churches once stood. Moreover, it will be shown that the reconstruction of the local topography may also be flawed. While the contradictory evidence will be discussed next in detail by specific topic, it is worth pointing out here that generally speaking the problems are related to the interpretation of radiocarbon dates as well as to datable archaeological material such as coin finds and wooden saint statuettes rescued from the fire of 1968. Moreover, the parameters used in topographic reconstruction have changed due to better understanding and the improved measuring of local post-glacial land-uplift rate and

the availability of significantly improved topographic data thanks to recent advances in remote sensing technology.

ADJUSTING RADIOCARBON DATES

Altogether 18 samples from the 1985–87 excavations in Hailuoto have been radiocarbon dated. Five of these dates were made from bone collagen extracted from samples pertaining to inhumation burials, nine from timber or wood thought to belong to structural remains related to the ‘Old Church’ or its medieval predecessor, while the remaining four were also samples of wood, but identified as remains of a coffin. The basic information about the samples with the respective radiocarbon dates has been gathered in the following table (Table 1).

As the samples were dated already in 1987 and 1991 when the use of the AMS-method was not yet an option in Finland, especially the quantity of human bone needed to extract a sufficient quantity of carbon was considerable. Another



Fig. 2. The area of the ‘Old Church’ of Hailuoto in 1987 with several timber-framed burial chambers and other substructures exposed during the last season of the excavations Photo: S.H. Kokko / University of Oulu, Laboratory of Archaeology, slide 14692, 29.5.1987.

Lab-index	BP	±	δ ¹³ C	Material	Type	Weight (g)	Context
Hel-2380	720	120	-26.8	wood	timber	168.4	pre-'Old Church'
Hel-2381	410	90	-28.0	wood	timber	169.0	timber-framed burial space
Hel-2382	280	80	-28.3	wood	timber	323.0	timber-framed burial space 4, north wall, upmost timber
Hel-2383	260	110	-25.8	wood	plank	35.0	grave 12, casket bottom plank
Hel-2384	280	100	-26.5	wood	plank	33.6	grave 99, casket bottom plank
Hel-2385	290	80	-24.1	wood	plank	226.0	timber-framed burial space 3, burial 126, casket, west-end
Hel-2386	310	80	-23.6	wood	plank	54.5	unknow, textile with bronze decorations attached to it
Hel-2387	370	80	-27.7	wood	timber	14.0	timber-framed burial space 4, north wall, lower-most timber
Hel-2476	320	80	-28.3	wood	stake	33.4	grave 203, stuck through deceased's heart
Hel-2477	300	80	-27.3	wood	timber	68.8	timber-framed burial space 1, timber 32
Hel-2478	510	80	-26.2	wood	timber	130.5	from sand layer underneath structures above
Hel-2480	540	80	-20.0	bone	cranium	270.8	grave 182
Hel-2481	550	80	-19.6	bone	tibia	82.4	grave 203
Hel-2989	240	80	-20.2	bone	cranium	226.0	grave 232
Hel-2990	150	100	-19.3	bone	cranium	281.3	grave 244 ¹
Hel-2991	370	100	-19.2	bone	cranium	116.0	grave 110
Hel-2992	710	100	-26.0	wood	charcoal	2.3	cellar structure underneath the 'Old Church'
Hel-2993	270	90	-26.8	wood	wood	>15.1	from the cellar underneath the 'Old Church' ²

Table 1. Basic information on the radiocarbon dates of the Hailuoto excavations 1985–87. Notes: ¹ A sample of 20.3 grams was later on appended with 261 grams of additional material; ² A sample of 5.1 grams was later on appended with more than 10 grams of additional material.

observation related to the development of radiocarbon dating as a research method is the high standard deviation of the results with 1σ values ranging from 80 to 110 radiocarbon years. As a consequence, the calibrated dates of these results yield probability distributions covering several centuries if not half a millennium. In the earliest publications discussing these results, this defect was overcome by reporting calibrated dating results with a standard deviation of 1σ thus resulting in seemingly compact and eye-pleasing dates, but at the same time significantly reducing the probability of the results when compared to ones reported at 2σ.

In the original publication, the calibrated radiocarbon dating results were interpreted to support at the very least early 15th if not late 14th century activity at the site (Paavola 1988: 31). However, two effects – the old wood effect and the reservoir effect – may have biased these dates to a lesser or greater extent. While the old wood effect was first ignored (Paavola 1988: 20–2), but then integrated into later interpreta-

tions (Paavola 1998: 140), the reservoir effect was largely unknown by the time the monograph reporting the results of the Hailuoto research project and its follow-up publications (in particular Paavola 1998: 136) were put out.

The impact of the old wood effect on the radiocarbon dating results of samples pertaining to wooden structures is quite difficult to estimate, because there is not much data publicly available on the age of timbers used for construction in medieval Finland. However, from what can be deduced from the few reports of dendrochronological analyses carried out with samples from the medieval castle of Olavinlinna and the medieval church of Lempäälä (Zetterberg 1988; 1990), a maximum offset of 200 years can be put forward as a credible estimate (Ikäheimo 2017: 114–6). It is to be remembered, however, that while all charcoal dates are affected by the old wood effect to some extent, the need for applying the maximum offset is relatively rare, as the chronological distance between the age of the timber and its application for construction is

usually measured in decades rather than in centuries.

In this context, it is useful to focus on three radiocarbon dates on wood and charcoal (Hel-2380, Hel-2478 and Hel-2992) that likely precede the church inaugurated in 1620 and do not belong to any of the structures located beneath its floor (Paavola 1988: 20–2; 1991: 15). Their calibrated ages are presented in the following table (Table 2). Two principal observations emerge when reviewing these results. First, when calibrated to a probability range of 1σ and without taking the old wood effect into account, the data is fairly easy to interpret to support at least late or even early 14th century activity. By broadening the view to 2σ , it is still evident that all these samples pertain to a structure preceding the ‘Old Church’. It is also tempting to use the virtually identical probability distributions of samples Hel-2380 and Hel-2992 that have a synchronous *terminus ante quem* calAD 1428 as an argument for a second or a third quarter of the 15th century AD as a date for this structure.

The results of bone collagen dates from graves 182 and 203 (Hel-2480 and Hel-2481) have also been used as evidence to back up the argument on human activity predating mid-15th century at the site (Paavola 1998: 136). This conclusion has been drawn based on results reported at a confidence level of 1σ and without performing

reservoir effect correction. While customarily making the results of radiocarbon dated samples to appear to be older than they actually are (Taylor 2014: 150–5), the scale of the marine reservoir effect is a topic which is somewhat difficult to deal with in the context of the northern Baltic Sea and particularly in the Bay of Bothnia due to lack of quantitatively reliable area-specific reference data. None the less, the issue is examined here using the best data available rather than dismissing it altogether (cf. Núñez 2011: 277 Table 1, 282; Kuusela et al. 2016: 186 Table 1, 191).

At present, the data used for calculating the correction needed to compensate the reservoir effect pertains mainly to the southern Baltic Sea area (see Lougheed et al. 2015) and is likely to yield somewhat overestimated results due to differences in the sea basins. The Bothnian Bay basin is not only relatively shallow, but also fed by several big rivers increasing the freshwater component in it. The values used here for the calculation of the corrections have been adapted from Taavitsainen et al. (2015) and are the following: for the full terrestrial diet ($\delta^{13}\text{C}_{\text{min}}$) -20.9 ‰, for the full marine diet ($\delta^{13}\text{C}_{\text{max}}$) -14.8 ‰ and for the full reservoir effect (ΔR) 262 ± 100 years. The ΔR -value could be reduced to 189 ± 53 years, based on the two samples from the nearby (< 300 km) Kvarken area, but their impact on the results was briefly experimented with and

Lab-index	BP	\pm	1σ (calAD)	P	2σ (calAD)	P	Median
Hel-2380	720	120	1190–1329	0.728	1042–1106	0.076	calAD 1241
			1340–1396	0.272	1117–1428	0.924	
Hel-2478	510	80	1310–1360	0.346	1286–1521	0.953	calAD 1411
			1387–1455	0.654	1576–1584	0.007	
					1590–1623	0.040	
Hel-2992	710	100	1218–1324	0.704	1050–1083	0.026	calAD 1284
			1346–1393	0.296	1126–1135	0.006	
					1151–1428	0.967	

Table 2. Calibrated results of the oldest wood/charcoal samples. All results were calibrated using an online version of the CALIB 7.1 -calibration software (Stuiver et al. 2018) with an IntCal13 radiocarbon age calibration curve (Reimer et al. 2013).

Lab-index	BP	±	δ ¹³ C	% _{Mar}	2σ (calAD)	P	Median	Context
Hel-2480	540	80	-20.0	14.8	1320–1354	0.046	calAD 1478	grave 182
					1389–1644	0.954		
Hel-2481	550	80	-19.6	21.3	1334–1337	0.002	calAD 1510	grave 203
					1395–1661	0.998		
Hel-2989	240	80	-20.2	11.5	1528–1554	0.018	calAD 1779	grave 232
					1632–1950*	0.982		
Hel-2990	150	100	-19.3	26.2	modern	-	-	grave 244
Hel-2991	370	100	-19.2	7.9	1520–1603	0.111	calAD 1751	grave 110
					1610–1950*	0.889		

*Table 3. Reservoir corrected bone collagen dates for the Hailuoto burials. All results were calibrated using an online version of the CALIB 7.1 -calibration software (Stuiver et al. 2018) with IntCal13 and MARINE13 radiocarbon age calibration curves (Reimer et al. 2013) with Delta R set as 262 and uncertainty in Delta R as 100 (see Taavitsainen et al. 2015). * – Date extending beyond 1950.*

deemed insignificant. The factual marine reservoir effect corrections were carried out using the CALIB 7.1 -online calibration software (Stuiver et al. 2018) using its built-in ‘mixed Marine & NH Atmosphere’ -curve. The amount of marine reservoir correction needed (%_{Mar}) was determined separately for each sample and is given together with results calibrated to a 2σ confidence level in the following table (Table 3). The immediate observation emerging from the reservoir corrected calibrated radiocarbon dates is that graves 182 and 203, which previously had a considerable potential of being 14th century features, date now in all likelihood to the 15th century at the earliest with the medians extending at least to its latter half.

MONETARY AND STATUARY EVIDENCE

Minted monetary items were found in abundance during the 1985–87 excavations. The resulting assemblage contains 413 finds ranging from one-sided Swedish silver bracteates of the early 15th century to pennies minted by the Republic of Finland in the early 20th century (Herva et al. 2012: 296 Table 2). The silver bracteates, 23 in total, were minted either in Stockholm or in Västerås, while only five of them have been identified as types (mostly Malmer 1980 Kr H Y II -variants) that were in production before mid-15th century. As the circulation time for

silver bracteates was probably longer than later coin types and is currently estimated as 40 years (Jonsson 2005: 17 Table 1), they may well bear witness to late rather than to early 15th century activity. In her take on the coin finds, the director of the Hailuoto excavations Kirsti Paavola estimates the 1430s as the first possible date for the construction of the chapel (Paavola 1988: 28).

Another aspect to bear in mind when reviewing monetary evidence is the total absence of 14th century coins from the assemblage. Had the chapel been in use by then, one could reasonably assume that this would be reflected in the find material. It is hardly thinkable that the inhabitants of Hailuoto would have been completely unfamiliar with monetary instruments, as they are abundantly present at Valmarinniemi, the 14th century cemetery of medieval Kemi parish located some 90 kilometres north of Hailuoto. It must be pointed out, however, that the community using the Valmarinniemi cemetery might have been more open to new influences as the estuary of the Kemi River was an important hub of commerce distributing local and inland resources of various origin to seafaring traders from abroad (Kuusela et al. 2016).

The dating of fourteen wooden saint statuettes rescued from the fire of 1968 corroborates the coin dates, thus placing the earliest signs of worship at the site to the late 15th century. While Armas Luukko (1954: 262) was the first scholar

to observe that these statuettes predate the 1620 church and thus very likely bore witness to the existence of an earlier ecclesiastic building at the site. However, he did not develop the argument any further. Instead, due to lack of supporting archaeological evidence and historical sources, he wove an alternative explanation around them as items temporarily transported from the mainland to the safe haven offered by the somewhat remote island location (Luukko 1954: 283–4, see also Paavola 1987: 130).

A little over a decade later Carl A. Nordman (1964) scrutinized these statuettes by applying stylistic method (Räsänen 2009: 30) to carry out comparative art historical analyses in order to date them and other similar objects preserved in Finnish churches. Nordman concluded that the main body of statuettes in Hailuoto was formed of 11 smallish saint figures apparently pertaining to a reredos, an ornamental altar-piece, manufactured in central Sweden between 1460 and 1480, while the remaining three statuettes extended the chronological span of the assemblage approximately from 1450 to 1510 (Nordman 1964: 612–5, 639). Of these, the most important one is the statue depicting St. Laurentius, which is thought to have been the centrepiece of the vanished reredos and thereby also likely to be the patron saint of the islanders (Paavola 1988: 31).

Kyösti Julku (1988b: 181) has later pointed out that if the statuettes were brought to the island for the sake of temporarily sheltering them, why were not they returned to their place of origin after the threat to their integrity had passed. For this reason, it is more likely that the wooden statuettes of the saints were likely commissioned for this building, although it is uncertain whether their acquisition actually coincided with its construction. Still, Julku (1988b: 183, 187) boldly dates the first chapel of Hailuoto to the late 14th or early 15th century based mainly on the results of then recent excavations.

IMPROVED DATA ON TOPOGRAPHY AND LAND-UPLIFT

As indicated earlier, the ancient topography of Hailuoto and its evolution through the centuries due to still ongoing land-uplift in the area was reconstructed using the base map published in

1981 (Hicks 1988: 35–7). The map contains information on absolute elevations in the form of 2.5 m contour lines, and the elevation data is based on precision levelling carried out by 1960 resulting in the N60 height reference system. By estimating the land-uplift value in the Hailuoto area as 9 mm per annum, the 10-metre contour line was determined to correspond roughly with the year AD 850, while the 7.5-metres line corresponds with AD 1150 and 5-metre line with AD 1420. Any shoreline position of other datum, such as the year AD 1300 that was regarded by Hicks as the most likely date for the construction of the chapel, had to be manually interpolated from these base maps using respective contour lines.

Advances in airborne LiDAR-scanning technology that yields elevation data of unprecedented quantity and quality has recently revolutionised reconstruction methods of past landscapes, in particular when paired with the analytical capacity of geographic information systems (GIS). The LiDAR- elevation data for the Hailuoto area was acquired by the National Land Survey of Finland in 2014 and contains 0.5 points per square meter thus resulting in an elevation model using 2x2 meter grid. The absolute height values in the model are based on the N2000 height reference system (Oksanen 2017: 10; see also Kakkuri 2012: 128–31) and the model has been made available to the public through a download portal.¹ This data has been utilised here to reconstruct the ancient topography of Hailuoto together with up to date parameters regarding the local land-uplift rate to be described in a moment. Before this, it is necessary to point out that due to the use of different height reference systems, approximately 40 centimetres (Poutanen 2006: 11) are to be added to the values presented by Hicks in 1988 to make them comparable with the present contribution.

In the past, the rate of absolute land-uplift in the Hailuoto area as well as in the territory of Finland in general has traditionally been measured with sea-level gauges (i.e. mareographs, see Vermeer et al. 1988: 5–10), of which the one nearest to Hailuoto is located in Oulu where it was established in 1922. The Nordic Geodetic Commission (NKG) Working Group of Geoid and Height Systems has recently put out an alternative take on post-glacial land uplift in Scan-

dinavia based on the application of precision satellite positioning devices. This offers an independent way to establish the current rate of land-uplift. The resulting product, an improved post-glacial land uplift model over the Nordic-Baltic region, is referred to as NKG2016LU (Olsson 2017) and has been used here to determine the current land-uplift rate in the immediate area of Hailuoto.

Based on NKG2016LU, the land-uplift rate of Hailuoto can be approximated as 8.64 millimetres per year. However, when the position of the shoreline in the past is reconstructed, the partially compensating effect of the eustatic sea-level rise must also be included into calculation. This has been lately estimated for the Baltic Sea as 1.4 ± 0.04 millimetres per year (Rosentau et al. 2012) and when subtracted from the previous figure, the resulting annual uplift rate of the Hailuoto area at present is 7.20–7.28 millimetres.

To calculate the elevation of the sea level at a certain moment of time, one inserts these values into a formula $y=vt-0.5dt^2$ where v stands for the rate of the land-uplift at present, t for the time expressed as centuries and d for the deceleration constant of land uplift (Okkonen 2003: 85 citing Okko 1967: 17). The following reconstructions have been carried out with 7.24 mm/y as the present rate of land-uplift with the deceleration constant set to 1.5% (see Okkonen 2003: 85), in other words to 0.013, to derive elevation values for various dates and vice versa. Unsurprisingly, the results differ quite a bit from the ones published by Hicks (1988) as indicated by the following table (Table 4). At an elevation of 5 m a.s.l. the difference in time is 82 years and it increases to 126 years at 10 m a.s.l. On the other hand, when

Study	Elevation	Date
Hicks 1988	5 m a.s.l.	AD 1420
cf.	5 m a.s.l.	AD 1338
	4.36 m a.s.l.	AD 1420
Hicks 1988	10 m a.s.l.	AD 850
cf.	10 m a.s.l.	AD 724
	8.95 m a.s.l.	AD 850

Table 4. A comparison of reconstructed dates and elevations with Hicks (1988).

re-calculating the past sea level positions for the dates AD 1420 and AD 850 Hicks associated the elevations of 5 m a.s.l. and 10 m a.s.l., the difference increases from 0.64 meters to 1.05 meters.

The natural starting point for the reconstruction is, of course, the elevation of the ground at the site of the former church, which can be assigned an average height of 7.75 m a.s.l. Thus, the area became dry land just a few years before AD 1000, supposing that the level of the ground surface has stayed approximately the same in spite of accumulative and erosive action caused by wind, rain, waves and ice. As the most important place for social gatherings, the church was very likely built at a safe vertical distance from the sea level to reduce the potential threat posed by wave action and ice. If modern recommendations for builders in the Oulu region (Parjanne & Huokuna 2014: 49 Table 8) are used as a reference, in spite of probably being somewhat exaggerative in this context, the average sea level would have been approximately 2.5 meters below the foundations of the building as they were being laid. In absolute terms this would mean the first decade of the 14th century as the earliest possible date of construction. While this coincides perfectly with the earlier ideas concerning the chronology of the site, radiocarbon dates and other archaeological evidence reviewed above does not lend much support to this interpretation.

Another aspect of great interest is the reconstruction of the paleo-environment around the chapel. As indicated previously, Hicks used various means of geological enquiry to create reconstruction, which shows an ordinary log house turned into a chapel at the end of a narrow cape (Fig. 3). But environmental constraints are of utmost importance when pinpointing the location of a medieval chapel due to the aforementioned accumulative and erosive action caused by wind, rain, waves and ice. Just as post-glacial rebound (see Korhonen 2017), they have been and are currently shaping the terrain of Hailuoto, and the island preserves innumerable fossilized traces of these great forces that, for example, take the form of diverse dune formations and drift sand fields (Alestalo 1979: 111–9).

Because wave action is strongly dependent on prevailing winds and the island of Hailuoto is not a vast or sufficiently high landmass to have an effect on the rainfall intensity, wind

and ice have been the principal forces shaping its topography. The prevailing sea wind blows steadily from the south-west, while storm winds hit the island usually from the north or north-east (Paulaharju 1962). While the wind can be characterised both as a force of deflation and accumulation, sea ice that is also moved by the wind is principally a destructive force causing not only ice erosion but also direct damage (Leppäranta 2012). Under certain conditions that include prevailing unilateral strong winds, the rise of the sea level, certain ice thickness and a flat terrain, an ice sheet can ride up over a hundred meters onto the land (Leppäranta 2012: 5–8). Events like this have been recorded in recent years at Hailuoto (Leppäranta 2012: 8–10, esp. Fig. 9) and in spite of extreme weather fluctuations introduced by global warming, there is no reason to assume that this would not have been the case also in the more distant past.

The practical implication of this reasoning concerning the ice run-up is that the reconstruction proposed by Hicks is not without problems. At present, the site of the ‘Old Church’ is protected from its south side by a sandy ridge formation consisting of fossilized dunes and reaching elevations at some points over 12.5 m a.s.l.. While this formation would have acted as a natural levee, we have at present no evidence regarding its date and development history. If it was not present in a significant form already by around AD 1300, when the corresponding sea-level was at the height of 5.30 m a.s.l., the site might have been exposed to winds from the south-west. Back then (Fig. 4) a vast bay would have opened south of the chapel and although the building would have been partially protected by an esker-like cape located further in south, the location could have nevertheless been somewhat hazardous.

When the environment is reconstructed to correspond with the date of construction suggested by archaeological evidence, that is AD

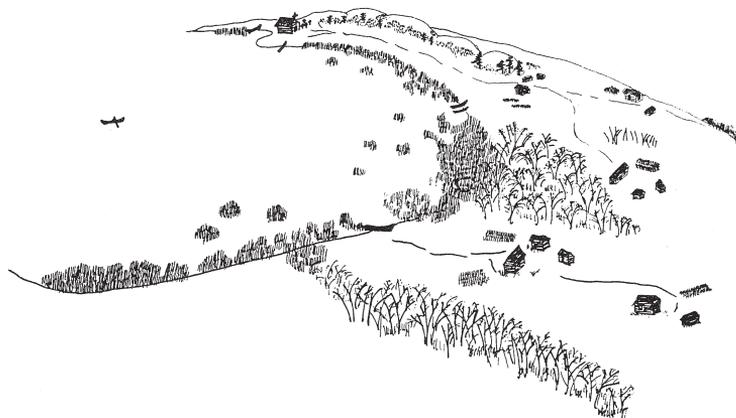


Fig. 3. ‘An imaginary take on the view that could be seen from Kitilännurkka towards south-east in AD 1300’. After Julku & Satokangas 1988: 85 Fig. 23.

1430 with a respective sea-level height of 4.28 m a.s.l. (Fig. 4), the choice for the location of the chapel becomes more understandable. The chapel then stood at a relatively safe vertical distance from the shore, while the presence of a sandy ridge formation in south may have provided further shelter. None the less, it must be pointed out that with new data on elevation and land-uplift, the immediate environment of the chapel would have looked very different from Hicks’ reconstruction, which Paavola (1988: 30–1) therefore had doubted already in late 1980s.

CONCLUSIONS

As the various threads of evidence are woven together, the resulting fabric suggests strongly that the remains found underneath the church built around 1620 do not belong at all to the first ecclesiastic building on Hailuoto, but to its first proper chapel dating, at the earliest, to the two decades before the mid-15th century. Thus, rephrasing the ideas of Mathesius, the remains discovered beneath the ‘Old Church’ represent the *templum* rather than the *domus* (cf., e.g., Paavola 1988). This implies that the site of the *domus*, a building of a more mundane character that already served in the medieval period as a place for religious gatherings, should be sought elsewhere in Hailuoto. Moreover, the reconstruction of the locational environment put forward by Hicks is quite problematic in the light

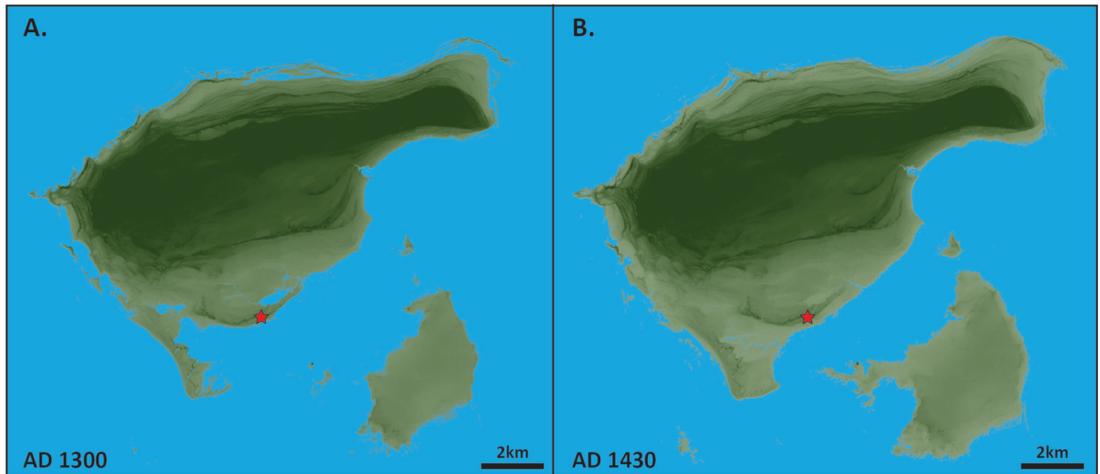


Fig. 4. The topography of the Hailuoto Island in AD 1300 and AD 1430 with the site of the 'Old Church' indicated with a star. Illustration: J. Ikäheimo; elevation data: National Land Survey of Finland (Creative Commons Attribution 4.0 International License).

of updated data on the local land-uplift rate and the exposure of this area to the elements. The arguments backing these interpretations can be summarised here as follows:

- Old wood and marine reservoir effects were unrecognised when the radiocarbon dates from the site were first calibrated, thus yielding systematically older date estimates.
- The coin evidence from the site gives a mid- 15th century *terminus post quem*.
- Wooden statuettes of saints rescued from the fire of 1968 date to the late 15th century.
- The data and the methods available for the reconstruction of local land-uplift rate have significantly improved in the past three decades yielding systematically different results from the ones calculated back in 1980s.
- More detailed data on elevation gathered by airborne LiDAR and analysed with the GIS yields an environmental reconstruction contradicting the one presented previously.
- The exposure to the wind and ice and the related fluctuations of the sea level could have made the location at the end of a narrow cape highly risky for constructing a building with such an important social function, especially a chapel.

The possible acceptance of these ideas naturally raises a question about the date and the location of the earliest settlement on the Hailuoto Island. At present the earliest evidence of a human presence is not archaeological but palynological. The papers reporting this evidence (Reynaud & Hjelmroos 1976; Hicks 1988; 1992) are likely characterised by the same problems related to the radiocarbon dates and land-uplift rates that have been discussed here and should be therefore also re-evaluated in the future. Still, it suffices to point out here that the earliest evidence of agriculture shows up in the pollen samples at Hailuoto around AD 1050 (Reynaud & Hjelmroos 1976; Hicks 1988; 1992), while Julku (1988b: 187) states that agriculture-based settlement in Hailuoto become permanent around AD 1200. This statement probably overestimates the importance of agriculture, as its status at the time may have well been subsidiary to other means of support. In any case, the introduction of agriculture was in all likelihood preceded by a period when the island was utilised as a temporary or permanent base by sealers and fishermen. Unlike agriculture these livelihoods are not dependent on the presence of cultivable soils such as loams that were exposed by land-uplift in the Hailuoto area only during the 14th and 15th century (Hicks 1988: 39–42). Therefore, the earliest settlement

with its mundane structures possibly used for worship might have been located elsewhere than in the vicinity of later churches.

This brings us back to square one. The principal reason why the archaeological excavations of the multidisciplinary research project in 1980s were carried out at the site of the ‘Old Church’ was that no evidence of dwellings belonging to the first phase of habitation had been discovered, and back then there was no first-hand knowledge of what they should look like. The recent discovery of a 14th century multi-house dwelling site at Pirttitörmä on the Illinsaari Island located by the estuary of the River Ii approximately 50 kilometres north-east of Hailuoto (see Hakamäki & Ikäheimo 2015) has shown that such remains – a low mound of rocks produced by a collapsed stove and the shallow remains of an adjacent storage pit – represent a substantial challenge for archaeological surveying. Now that we have this basic information regarding their appearance, it is only a question of time before the first dwelling-site dating to the 14th century will be found on Hailuoto.

The necessity to find this soon will be drastically increased in the not so very distant future. For the past 50 years, travel to the island has been by car ferry, but in August 2017 the government of Finland made a decision to set aside funds for the construction of bridges and embankment roads that will connect the island to the mainland by 2021. This will inevitably increase the number of visitors to the island and increase the demand for lots for houses and summer cottages as well as other types of land use. For this reason, it would make very much sense to end the hiatus that has practically lasted for three decades and bring the island of Hailuoto, and the location of its earliest building used for ecclesiastic purposes, once more to the focus of archaeological enquiry.

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NOTES

¹ See <https://tiedostopalvelu.maanmittauslaitos.fi/tp/kartta?lang=en>.

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