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# Wrecked trade – a medieval ship in the Gulf of Finland

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## ABSTRACT

This paper examines the wreck of a medieval trade ship and its cargo, with an emphasis on pottery, and discusses its dating and cultural context in the exchange networks of the Middle Ages. The so-called Egelskär wreck was discovered in 1996 in the Finnish Archipelago Sea. The main body of the cargo consisted of near-stoneware objects originating from the villages of Bengerode and Fredelsloh in Germany. The rest of the preserved items included whetstones, bronze tripod cooking pots, a barrel of iron bars and a bronze church bell. The wreck itself also provides evidence of early maritime connections. The Egelskär find is a typical medieval trade ship, which makes it a unique find. Its voyage started from the German Baltic coast and its probable destination was Tallinn. The ship perished in the middle of its journey in the final decades of the 13th century. It testifies to the long-distance trade networks, which were extended from northern Germany towards the eastern markets, and which bore the cultural markers of the Hanseatic towns.

## KEYWORDS

maritime archaeology, shipwreck, Middle Ages, stoneware, trade.

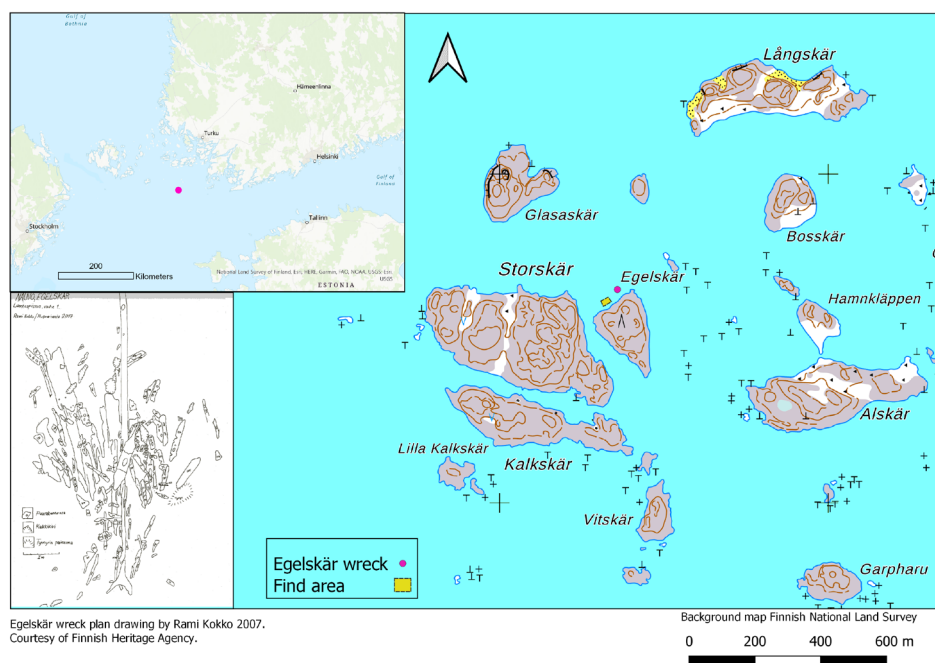
## Introduction

Egelskär is an islet in a group of similar small islands in the municipality of Parainen, in the Finnish Archipelago Sea. The islands form a protective cove, which provides a good natural harbour. In 1996, two divers discovered a church bell on Egelskär's north-western side, at a depth of ca 10 m. After examining the sight, they saw a concentration of pottery jugs around it and lifted two for inspection at the Maritime Museum of Finland (Wessman 2006). These were analysed as early stoneware originating from Bengerode in Lower Saxony and dated to the first decades of the 14th century (Tikkanen 2001, 3; Alvik & Haggrén 2003, 18). In a later survey, wreck parts were discovered about 20 m north-east from the find area in an underwater valley at a depth of ca 8–13 m (Fig. 1). These two locations were connected early on and it was interpreted that the ship had capsized, spilling some of its cargo before

reaching its resting place (Wessman 2007b, 143). The site was excavated by the Maritime Archaeological Unit of the National Board of Antiquities during nearly ten years in 2001–2010. Sadly, many details of the archaeological documentation were accidentally lost due to a broken laptop. Furthermore, the end of the archaeological excavations coincided with the closure of the Maritime Archaeological Unit due to an organizational reform in the National Board of Antiquities (renamed the Finnish Heritage Agency, hereinafter FHA). During this process, the personnel of the unit were reassigned, and no time was allocated for finishing reports or incomplete documentation. For these reasons, the archaeological documentation of the Egelskär site is incomplete and difficult to reconstruct. However, some reports and information exist. This paper is based on these and on my own research, having worked on the excavation in 2007–2010.

### THE WRECK

The preserved part of the ship's bottom was clinker-built and the building material was oak. Only a very small section had remained, ca 8 m × 5 m from the bow of the wreck (Fig. 1). There was a large, 2.7 m long and 30 cm wide, mast-step loose on top of the keel. About eight metres of the keel had survived, while the stern, bow and middle section of the ship had completely disappeared (Wessman 2007b, 144). The ship had sunk in an upright position. What was left was roughly the bottom part of the ship, from the front section of the midship towards the bow. Some finds with sooty surfaces suggest that there could have been a fire on board, but there is



**FIG. 1.** The Egelskär wreck located in the Finnish outer archipelago. Below left is the plan of the wreck in the early stages of the excavation (map by Riikka Tevali).

very little additional evidence for such a hypothesis, except perhaps the fact that the entire aft section of the ship was missing. The aft or midship sections might have been where the ship's hearth was located, and a fire could have got loose from a box hearth. However, the remaining timbers in the bow section did not show any evidence of burning.

In this article, I concentrate on the interpretation of the most numerous find category on the site, the stoneware pottery, and discuss its provenance and dating. A summary of the wreck and other items in the cargo are also presented to give a context and support for the interpretation of the site. The pottery provides a chance to discuss an important medieval trade item, for which scarce written sources exist. Pottery is a typical find in archaeological settlements and burial sites from prehistory to the Middle Ages everywhere. Its analysis provides information on the dating of archaeological contexts, trade and contacts, fashion, and subsistence strategies, which makes it an extremely useful archaeological find material. Due to its composition, pottery sherds also survive well in archaeological records and usually it is relatively easy to recognize imported pottery in medieval sites.

#### STONEWARE

Early stoneware was produced and developed in the area around Cologne and Raeren in the Rhineland in Germany, from where the craft spread to the region of Lower Saxony around 1250. The early stages of production were marked by competition between stoneware producers in these regions (Gaimster 1997; König 2007, 359). In both regions, pottery was very soon distributed through long-distance trade to commercial centres along the southern Baltic coast and to the northern Baltic area, which had no strong pottery tradition of its own and where merchants were migrating to establish trade links.

Stoneware production is generally divided into three separate wares, namely proto-/early, near- and real stoneware, where firing gradually reaches higher temperatures, resulting in different stages of fusing together of clay particles (for discussion on the difficulties of defining stoneware, see Stephan 1988; Heege 1995, 21–22; Gaimster 1997). A fully fused ceramic body is called stoneware or real stoneware. A near-stoneware body is slightly porous, with visible coarseness and some small stone/quartz inclusions. Proto-stoneware is fired at low temperatures and may be very coarse, with sandy fabrics and inclusions. These wares do not occur chronologically, but rather overlap by several decades. In general terms, the first early or proto-stoneware occurred around 1200, with the development of near-stoneware in the first half of the 13th century and fully fused stoneware from the middle of the 13th century to around 1300 (Heege 1995; Gaimster 1997, 34; Schäfer 1997; Russow 2006, 41–42).

The pottery cargo in the Egelskär wreck has been described by the general term 'stoneware' (Alvik & Haggrén 2003; Tevali 2010). Certainly, the nature of the pottery assemblage needs to be redefined to describe it in more detail. The cargo includes various stoneware groups, which provide a further basis for the dating of the site.

The main part of the cargo consists of vessels where the ceramic body is not yet fully fused and thus cannot be labelled as real stoneware but near-stoneware, which originated from the villages of Bengerode and Fredelsloh in Germany.

#### STONEWARE PRODUCTION IN BENERODE AND FREDELSLOH

The village of Bengerode was one of the first in Lower Saxony where high-fired pottery was produced during the 12th–15th centuries. By the middle of the 13th century, pottery production had also begun in the neighbouring village of Fredelsloh (König 2007, 367; König & Alper 2007; Lönne 2007). These villages shared the same clay sources and potentially also potters, which makes it hard to distinguish between their products, and in many cases it is not even relevant.

Fredelsloh and Bengerode are situated along small brook-sized waterways Dieße and Bölle, respectively. The latter is a tributary of the River Leine and the former flows northward towards Einbeck. Today, Bengerode is an archaeological site ca 1.5 km from the village of Fredelsloh, which still exists. The Bengerode medieval settlement was built around 1150 directly on rich tertiary clay deposits, and possibly pottery production and trade were purposefully established by the counts of Dassel (Stephan & Tönsmeier 2010, 163). The pottery production flourished during 1200–1350, but Bengerode was abandoned in the middle of the 15th century, possibly due to regional warfare, although the reasons behind the abandonment are not clear (Grote 1976, 251; Krabath 1999; König & Alper 2007, 393–394; Stephan & Tönsmeier 2010, 131–132). However, during their time of operation, the potters provided pottery for regional markets in Einbeck, Hannoversch Münden, Höxter and Hameln, but from the second half of the 13th century also to long-distance networks, for example, towards the northern Baltic and western Scandinavia (König & Alper 2007, 394; Stephan & Tönsmeier 2010; Demuth 2019, 123, 126–127).

Both potteries were surveyed archaeologically in the 1960s and 1970s and a relative typology was established for the products (Janssen 1966; Grote 1976; Stephan 1978, 1981, 1982, 1983). Excavations were conducted in Bengerode and Fredelsloh in 1997, 1998, 2000 and 2003 (Krabath 1997, 1999, 2007; König 2007; Lönne 2007). However, the general chronology published by Hans-Georg Stephan in the 1980s is still valid today and no new information has been published based on the latest excavations due to the lack of datable contexts. The existing chronology of fabrics and forms is based on excavated wasters and their contexts in rubbish pits that were supplied by potteries and kilns. The chronology is also formed by comparisons with other well-dated complexes in contemporary settlements – for example, the earliest date for the Fredelsloh potteries in the middle of the 13th century is based on comparisons with well-dated find contexts in Nienover (Krabath 2007, 375).

After his field survey of the site in 1976, Klaus Grote described the fabrics of the early stoneware to vary in colour from light to dark grey, and they can be brick red or multi-coloured (e.g., brick red with a grey core), while the surface colour of the vessels shows a spectrum from light to dark grey, reddish brown to dark brown and brick red. The surface is typically covered by uneven brown clay slip, where

sometimes large areas are left bare (Grote 1976, 253–254). The early Bengeroode near-stoneware is thin-walled, has a dense matrix and often a shiny surface due to the body sintering at relatively low temperatures. The adhesion of the sintered engobe is often very poor. Special distinguishing features are the often numerous black iron flecks and the decoration, popular in the 13th century, made with ridges and simple, finely divided roller stamp patterns, mostly consisting of simple lines or notches (Stephan 2012, 23).

All these fabrics, surface colours and decorations appear in the Egelskär assemblage, although it is sometimes difficult to distinguish if some of the colouring is due to long immersion in the sea.

### The Egelskär pottery assemblage

NEAR-STONEWARE FROM BENERODE-FREDELSLOH

There are a total of 634 pieces or sherds in the Egelskär ceramic assemblage, of which 43 are intact or can be reconstructed (see Table 1). The original number of vessels was higher, as at some point between 1998–2000 a substantial number of intact jugs were stolen from the site (Alvik 2002; Fast 2002). The assemblage consists of only a few forms, namely larger and smaller jugs, tankards, and quatrefoil-rimmed beakers (Fig. 2). Large serving jugs is the only category in which not a single jug has remained intact. This is likely due to their size and the thin walls of the ceramic body. It was possible to designate 448 vessels or sherds to a form. The rest of the sherds were too small for accurate interpretation, considering the homogeneous

TABLE 1. The number of various pottery forms in the Egelskär wreck

Type/form	Sherds	Intact/reconstructed jugs
Bengeroode-Fredelsloh near-stoneware/drinking jugs	190	22
Bengeroode-Fredelsloh near-stoneware/tankards	100	8
Bengeroode-Fredelsloh near-stoneware/ quatrefoil-rimmed beakers	38	6
Bengeroode-Fredelsloh near-stoneware/serving jugs	120	7 (reconstructed)
Bengeroode-Fredelsloh near-stoneware/undesignated	143	
All Bengeroode-Fredelsloh near-stoneware	591	43
Siegburg proto-/early stoneware	30	
Siegburg near-stoneware	10	
Earthenware with dark grey engobe	3	
All Siegburg stoneware and earthenware	43	
Whole assemblage	634	43



**FIG. 2.** A selection of near-stoneware from Bengeroode-Fredelsloh in the Egelskär wreck. The forms include drinking and serving jugs, tall tankards and beakers (photo by Riikka Tevali).

nature of the assemblage. Another way of looking at the assemblage is the number of rim sherds, which was 97 (not including the intact vessels), and the number of bottom sherds (121). It seems that the number of pottery vessels in the ship can be placed between 150–200. A straightforward conclusion is that the sheer number of vessels means that they were cargo and not pottery used by the crew.

The fabrics within this group are near-stoneware, based on the porosity of the fabrics, with the occasional inclusion of  $\text{ca } <1$  mm quartz granules. Still, there is considerable variability within the group. Most fabrics are consistently light grey in colour with mottled reddish-brown slip. Some jugs have a grey mottled inner surface, which tints towards green. Some have a shiny surface, resulting from the ash inside the kiln. However, the group includes jugs with grey fabrics and tile red or orange surfaces without surface treatment. Also, grey fabrics with purple to almost violet-coloured surfaces appear. A few sherds have a light brown fabric with a dark matte black surface. Often the colouring on the vessels is not even, but one vessel can have different surface colours. The various fabrics describe the alternating and unstable atmospheres in the kilns and the fact that consistency had not yet been achieved in the practice of firing. Some vessels were introduced to reducing and some to oxidizing atmospheres. It is not certain whether the various colours were desired and intended during the firing process, but in the early stages of stoneware production the conditions in one kiln and one firing were not uniform. The colours and firing also depended on the placement of the vessel inside the kiln, i.e., its distance from the heat source. However, the length of time that the sherds and vessels have spent in the sea has affected them as well and changed the colouring. This is visible, for example, in a jug base, which has broken into two pieces. One has been covered by sand and the other exposed to elements that have turned one sherd pure orange and left the other with visible traces of algae and some remnants of the slip. Another possible option for the different colouration on these sherds is that the larger sherd has been in a fire, resulting in a black soot-like coating on the fabric, as was suggested above (see Fig. 3).





FIG. 3. Orange-coloured near-stoneware tankard sherds. Long immersion in the sea has treated the surfaces differently. The larger sherd might also have been in a fire (SMM 142009: 340 and 342010: 257; photo by Riikka Tevali).

On some sherds, the slip has been poured unevenly or it has worn off. Most of the jugs and tankards have been decorated with rouletting. These are often made with a distinctive numerical roulette, which consists of vertical or slanting small lines in a row encircling the vessel. Other types of rouletting also appear, such as raised belts with notches, lines, or waves. Approximately 1 cm under the rim there is a sharp edge around the jugs, where the handle's upper side is attached, forming the characteristic thorn-rim. All the vessel bodies are covered with grooves, which can be accentuated or are deeper. Most bases have a characteristic wavy footrim, which is achieved by pinching extra clay in the bottom between the thumb and forefinger. This type of bottom appears in all the vessels, except the beakers, where the base is often straight and plain, or in a few cases with a very narrow pedestal. The handles are ca 0.8–1.5 cm wide strips of clay, depending on the size of the jug, where the edges of the long sides have been turned towards the top of the handle to form a groove in the middle. Sometimes this is accentuated by drawing the groove with a sharp tool.

In Table 1, the assemblage of near-stoneware has been divided into four groups according to their size and form. The first group is the most numerous and consists of smaller jugs or drinking jugs. This group also contains the most intact jugs, 22 in number, which are of similar size, varying between 16 cm and 18.5 cm in height and having a capacity of 560 mL, 650 mL, or 720 mL.

The second group consists of tankards of varying sizes. There are eight intact or reconstructed whole/almost whole vessels. Excluding one tankard-shaped vessel,



which is considerably smaller, ca 17 cm high, they are typically between 25 cm and 27.5 cm in height. I have not been able to measure their volume, since all the larger tankards are in at least two pieces, but it is at least one litre.

The intact beakers are 11–12 cm tall. The two that I have been able to measure are 640 mL and 700 mL in volume. They are a uniform group with a flat base, globular body, and characteristic rim in quatrefoil shape. The decoration consists of a single numerical roulette strip encircling the shoulder, and the body is covered with grooves. However, there is also one beaker with a second roulette strip running on the protruding quatrefoil rim and it has a wavy footrim. This group is the most uniform in surface treatment, as they are all covered with even reddish-brown slip.

The largest jugs, for serving or storage, have not survived intact. There are several large sherds, rims, shoulders, as well as bases and body sherds, which belong to the same jugs, judging by the fabric. Indicative of their purpose of being on display are their decorative features, which seem to be more numerous than on the smaller jugs. It seems that the larger jug and tankard forms are decorated with several applied strips, wavy patterns, and roulettes, while the smaller drinking jugs and beakers have only one or two rouletting strips. The rim shape in this group corresponds to that of the drinking jugs, with a thorn-rim, except for one, which is straight-rimmed.

#### DATE

Jugs of grey Lower Saxon near-stoneware with reddish brown slip and similar forms have been dated in Mecklenburg-Vorpommern to ca 1270/80 (Schäfer 1997, 306–307). According to Schäfer, their most characteristic feature is a thickened rim with a sharp edge, which can also be observed on numerous jugs from Egelskär. In the next phase of Mecklenburg-Vorpommern ceramic chronologies, ca 1280/90–1320, these rims are different and are mainly straight (Schäfer 1997, 317). There is also one such straight rim in the Egelskär assemblage, as well as some tankard forms, where the thorn-rim is not accentuated, but has become a wavy line or a much lower ridge. Taking into consideration the well-dated examples from Mecklenburg-Vorpommern, it seems that the Egelskär near-stoneware includes vessels from groups dated to ca 1270 and ca 1280/90. The bias in the assemblage is in the ca 20–30 cm high drinking jugs with thorn-rims, but the existence of later forms, such as a straight-rimmed large jug and quatrefoil-rimmed beakers, might shift the date towards the last two decades of the 13th century. Stephan has also discussed the Egelskär near-stoneware and places it to ca 1270 (Stephan 2012, 24). His chronology of the Bengerode ceramics is based on excavated town sites in Lower Saxony and on wasters discovered by Grote in the 1970s, verified by the oldest similar finds from Höxter and Nienover, which date from the 1270s onwards (Stephan 2012, 23). The composition of the cargo concentrates only on a few forms, which also indicates an earlier rather than a later date, as already in the first decades of the 14th century several new forms appear on the market.

#### SIEGBURG PROTO-STONEWARE

The Egelskär assemblage includes sherds of stoneware that seem to slightly predate the main assemblage (Fig. 4). The second largest group is the Siegburg proto-/early stoneware, which appears after 1270, based on the rim shape (Russow 2006, 46; Russow, personal communication 8.10.2021). The group consists of 30 sherds of brown unglazed coarse fabrics. The surface on both inside and outside is covered with dark brown/grey slip tempered with coarse sand, and the fabric is light grey in colour. The sherds are not fully fused, so even though the sherds are quite thin (only ca 3 mm thick on the body), the fabric is porous. Some of the sherds are quite large, such as one with roughly a quarter of the body, a neck and a rim with a handle which belong together. Also, bottom sherds have been found, and these already show the beginnings of the characteristic footrim surrounding the base, although the shape of the footrim is irregular and uneven.

Similar proto-stoneware has been found in several excavations in Estonia (e.g., Pärnu, Haapsalu, Lihula according to Russow 2006), as well as in the 13th–early 14th century layers in Viljandi (Haak & Russow 2013, 71–72). It shows that long-distance trade brought the new stoneware vessels to the northernmost reaches of the Baltic Sea almost as soon as they began to spread from their production areas.

#### SIEGBURG NEAR-STONEWARE

Additionally, the wreck assemblage contains ten small sherds of light grey near-stoneware. They have a porous tempered fabric with brown speckles and thick,



**FIG. 4.** Sherds of two proto-/early stoneware jugs originating from Siegburg (photo by Riikka Tevali).

shiny milky brown slip on the outside of the vessel (Fig. 5). The body sherds have grey slip on the inside. A single thin rim sherd also shows remnants of the brown slip on the inside of the rim. The edge of the rim is slightly thicker than the rest of the sherd, and it is straight. The base sherd has remnants of the characteristic thumbled footrim. In some cases, this slip has bubbles, which are evidence of water still trapped in the clay when the vessel was put into the kiln. There are only one rim, one base and eight body sherds, which probably originate from Siegburg as well.

This ware provides an interesting contrast to the previous early Siegburg ware, depicting a transitional phase in the stoneware production from proto- or early wares towards near-stoneware and stoneware. The sherds of proto- and near-stoneware from Siegburg were all discovered among the structural parts of the wreck, rather than in the cargo area, where the Lower Saxon near-stoneware was located. I would, therefore, suggest that these wares were not part of the ship's cargo but rather sherds of vessels which were broken in the ship during earlier voyages. Considering the small number and size of the worn near-stoneware sherds, it seems plausible that they remained from the ship's previous voyages, but then it is impossible to say whether they represent cargo or the crew's pottery. It is interesting that the bottom part of the ship should include two kinds of the Siegburg stoneware from different development phases. The presence of the wares in a single ship find suggests a rapid development of stoneware, with overlapping phases and a great variability in the pottery production, but also that they were widely available and affordable even to ships' crews. Thirdly, they also testify to the fact that the ship was in use for a long time, possibly over a decade.



FIG. 5. (a) – sherds of Siegburg near-stoneware, (b) – earthenware with black engobe (photo by Riikka Tevali).

## EARTHENWARE

This group consists of only three very small body sherds of light grey/brown and low-fired porous sherds, which have black slip on the outside tempered with stone inclusions (Fig. 5). The largest sherd has wavy patterns on the outside and the inside is speckled with black slip. They are difficult to interpret but could be sherds of cooking pots used in the ship at some point. However, they might also originate from jugs.

## Other finds

### METALWARE

A distinctive find group in the Egelskär wreck is metalware, although the ceramic assemblage is the most numerous (Fig. 6). The metalware consists of the remains of copper alloy tripod cooking pots and a church bell in the Romanesque style. The bell is 63.5 cm high, and its diameter is 51 cm (Alvik & Haggrén 2003, 21). The clapper is missing. On top of the bell is a crown formed of four metal loops, one of which is broken off. There are no decorations or markings on the bell, save for casting seams, two of which encircle the bell's wide rim and the other two the crown. A comparison with Swedish medieval Romanesque church bells catalogued by Mats Åmark reveals that the size of the Egelskär bell corresponds to the smallest church bells, when in general Catholic churches operated with three bells of different sizes (Åmark 1960, 299–302). The form corresponds to bells manufactured in the 13th century, namely it is higher than it is wide, and the underside of the lower edge is straight (Åmark 1960, 18). Bells were cast, for example, in Germany, Denmark and Sweden in the 13th century. Medieval casters were travelling craftsmen originating from the area of Germany and are generally thought to have travelled to where bells were needed rather than the bells travelling themselves (Salminen 1999, 9).

Two copper alloy tripod cooking pots were found from the wreck site in the initial excavations. A nearly intact one was discovered in the middle of the wooden timbers in the bow section and lifted in 2002. It is 21 cm high and has a narrow opening with a rim diameter of 15 cm. Its largest diameter is 19 cm, it has two vertical handles and three narrow feet, one of which is formed as a paw typical of medieval cooking pots (Alvik & Haggrén 2003, 21–22). Another similar pot was discovered in 2006, but only the rim part had survived. Two sharp triangular vertical handles are attached to the rim and the shoulder directly beneath the neck. It is similar in size to the intact one, with a rim diameter of 14 cm. It was assumed that these two cooking pots were used by the crew, as they were discovered in the wreck itself rather than in the cargo area, but in the last excavation season eight copper alloy tripod pot legs and several wall fragments were excavated. Five legs have paw-shaped feet and three have spiked ends, although in two legs the end is worn and broken, so their original shape is not known. As the intact pot shows, medieval tripod cooking pots could have different legs, either one spiky with two paws or vice versa. The legs are of different sizes. Five of the legs are ca 6–7 cm high, with a paw of ca 1 cm in



diameter, and three are substantially more robust, ca 9–10 cm high and 2–3 cm in paw diameter, suggesting that there was one very large cooking pot and two small ones, smaller than the two examples which had preserved. In some medieval pots, the legs had different lengths, of which one longer leg was anchored to the burning wood inside the hearth, holding the pot steady (Russow, personal communication 4.01.2022). These finds raise the number of bronze cooking pots in the Egelskär ship to five. Furthermore, two wall fragments of potential bronze cooking pots were spotted in the find area in the initial survey in 1998 (Enholm 1999, 19), but these were no longer found in the excavations. It is uncertain whether the crew would have used five (or more) cooking pots to cook food in the ship. However, in the recently discovered Kadriorg wreck in Tallinn, which is dated to ca 1320–1330, up to seven bronze cooking pots were discovered in the kitchen corner in the aft of the ship (Roio et al. 2017, 20–22), suggesting that many cooking pots might indeed have been used. The division of space in medieval ships is an interesting research



**FIG. 6.** Finds from the Egelskär wreck site: (a) – a bronze tripod cooking pot SMM92002: 29 (photo by FHA), (b) – a bronze church bell SMM112003: 11 (photo by FHA), (c) – a wooden barrel filled with iron bars (photo by Riikka Tevali).

question to which there are not yet sufficient answers (for cogs, see Vlierman 2021, I: 107, 147). It sounds plausible that the crew ate and slept near the hearth, which was the only source of warmth in the ship. We do not know anything about the potential divisions in the hold of the Egelskär ship but probably the crew would not have stacked bulky cooking pots in the same space with the hearth if they were trade items. However, as remnants of the bronze cooking pots have been found in both the find area and the wreck area, they might have been stored in two different places in the ship, indicating that some were trade items and others were used by the crew, although this is a conjecture.

Regarding the origin of the church bell and the cooking pots, it is possible that both were made in the same manufacturing centre, somewhere in northern Germany, or Poland. Most casters made both large and smaller objects, including church bells and pots and pans. In the 13th century, bells likely cast in northern Germany were typically undecorated, so it is difficult to date them or trace their origin (Drescher 1986, 394; Salminen 1999, 5, 17). According to Drescher, metal pots and pans made for export more often had a maker's mark from the 14th century onwards, while metal pots without markings were meant for domestic consumption (Drescher 1982, 157). The Egelskär metal pot is unmarked.

#### STONE MATERIAL

Two hundred thirty-two pieces of preformed whetstones have been excavated in the cargo area and partly from the wreck. They are grey quartz slate, which appear in roughly three different sizes (see Fig. 7). The largest ones are up to one metre in length, while the majority are ca 50–70 cm long and the smallest ca 20 cm long. They have a rectangular cross-section and are 3.5–6 cm thick (Alvik & Haggren 2003, 22). The whetstones were discovered lying in heaps around the underwater cliff in the find area, suggesting that they had been tied in bundles. The Eidsborg quarry in Norway was confirmed as the origin of the stones (Wessman, personal communication 27.10.2021). The trade in whetstones from Eidsborg began in the Iron Age and gradually grew to dominate the markets, which is visible in archaeological sites around the North Sea (Myrvoll 1986; Nymoen 2009, 167–170). The trade from Eidsborg was organized through the town of Skien on the Norwegian eastern coast and the Skagerrak Strait, opposite northern Denmark on the northern route through the Sound. At the same time, iron was also an important export from this town. A few shipwrecks with whetstone cargoes have been recently documented in more detail (Nymoen 2009).

Several pieces and lumps of flint and chalk were discovered in the wreck on top of the timbers (Fig. 7). According to the visual analysis conducted in the laboratory of the Finnish Museum of Natural History, the chalk originated from Denmark (Uutela 2006). However, a geochemical analysis would be needed to confirm the origin. Chalk and flint might have reached the ship as part of the ballast, even though both stones had uses in construction or in tools (e.g., De Clercq et al. 2017, 716).





**FIG. 7.** (a) – a black and smooth grindstone, (b) – two lumps of white chalk-stone, (c) – whetstones in three different sizes (photo by Riikka Tevali).

Flintstones typically appear in Danish chalk ridges, from which they get into ballasts (Brandl et.al. 2018).

An interesting piece discovered in the wreck is a smooth black round stone, which has not been further analysed. It is approximately 30 cm in diameter, with a flat bottom. The shape and smoothness of the round stone suggests that it was used as a quern stone in the ship.

#### BARREL

Next to the wreck, on its port side near the bow section, a large concretion was discovered in 2005, attached to the bedrock. It was hammered off and X-rayed after the fieldwork season in 2006 (Wessman 2007a). After inspection, it was discovered to be a well-preserved wooden barrel. The thick crust covering the barrel revealed on the X-ray to be an anchor chain. Individual chain-links had not survived, but they were visible in the X-ray image as shadows inside the concretion. The barrel contained small iron bars. Additionally, a heap of entangled materials was located at the other end. The heap consisted of rolls of tin and fabric, which was identified as fleece (Vajanto 2013). The fleece originated from double-coated sheep, which typically live around Scandinavia. The tin was possibly rolled into the fleece, or it was there to keep water out of the barrel.

Recently, a discussion has been raised on various forms of Iron Age and medieval iron trade in Scandinavia, for example, in Norway (Loftsgarden 2019). This trade in raw materials operated by means of iron bars, which were hammered into shapes and mostly traded from inland to the coasts, though recent research has found evidence for long-distance trade in raw materials and products from the Norwegian inland, such as whetstones and iron (Loftsgarden 2019, 76). Iron bars were also used as currency in Scandinavia for commercial purposes (Peets 2003, 155–157).

## The Egelskär ship find in context

### WHERE WAS THE SHIP FROM?

It is relevant for the discussion on the provenance of the Egelskär ship that during the 13th century and indeed long into the 14th century, circumnavigation of the Jutland peninsula – the Sound – was dangerous for contemporary sailing ships. The shallow and narrow passages, underwater rocks, shoals, currents and tides were difficult to handle for ships that relied on one square sail and had a limited ability to maneuver. The Eidsborg whetstones and stoneware jugs were typical long-distance export items, which were shipped from their production centres to the trade towns along the Baltic coast. The Lower Saxon stoneware was widely distributed throughout northern Germany already in the middle of the 13th century and has been abundantly found in the archaeological layers of the trading towns along the Baltic coast. Even though we do not know the exact origin of the church bell or the bronze cooking pots, it is probable that they were manufactured in one of the many metal production centres around the German area.

Some indication of the ship's departure point could also be gleaned from the lumps of flint and chalk, which might have originated from the shores of Denmark. Limestone ridges are present in large areas of Denmark, for example, in Zeeland or in northern Jutland on the shores of the Skagerrak and Kattegat. There is scant evidence of what medieval trade ships used as ballast, but along with the weight of the merchandise, ballast stones were gathered from departure points (De Clercq et al. 2017, 712–13; Brandl et al. 2018). Chalk was also an important commodity for construction and was quarried for trade. However, Egelskär chalks and flintstones are unprocessed, small-sized (ca <1 kg, mostly pebbles) and there were only a few dozen of such finds, not sufficient to signal trade goods. They were probably collected near the harbour where the ship set sail. Judging from their small size, it cannot be excluded either that they remained in the ship from earlier voyages.

It is most likely that the cargo along with the ballast was taken on board on the Baltic side of the Sound, but it is not possible to pinpoint a single harbour. The departure point seems to be a vague concept, as is typical for medieval cargo ships which unloaded and loaded cargo and received assignments from multiple harbours. In general, various trading centres on the Baltic side of the Sound, from Lübeck to Stralsund, are likely. The Egelskär wreck has also been discussed by Daniel Zwick in his doctoral thesis, where he suggests Rostock as the ship's departure point and Tallinn as its destination (Zwick 2017, 93–94). He argues that since Hanseatic merchants were responsible for the distribution of German stoneware to the north, Rostock would be a likely departure point, as the town's archaeological pottery assemblage is dominated by Lower Saxon and Siegburg stoneware between 1270 and 1330. While this is the case for other trading towns along the southern Baltic coast as well, Zwick continues that Rostock also maintained direct trade with Tønsberg and Oslo in Norway as opposed to Lübeck, which conducted its Norwegian trade through Bergen (Gaimster 1997, 65, 75, cited in Zwick 2017; Zwick 2017, 93).

Hence, Rostock had direct connections to the regions which produced the types of pottery and whetstones found in the cargo of the Egelskär wreck.

### THE SHIP

As the cargo seems to be largely traced to the German Baltic coast, what about the ship itself? Would it be possible to determine where it was built? A more definite answer would include tracing the origin of the ship's timbers with the help of dendrochronology, but the Egelskär timbers have not been analysed. The recent discussion on the many 13th century shipwrecks with cog-like features, which have been researched on the Baltic side of the Sound and in Denmark towards Schleswig, provides some basis for determining the type of the Egelskär ship (summarized, for example, by Crumlin-Pedersen 2000; Bill 2009), while the monumental work by Vlierman summarizes the research on Netherlandish cogs (Vlierman 2021, I: 63–71, II: 47–50, 811–820). The Egelskär wreck shares some features with them. What little remains of the wreck's structure resembles a cog-type ship. The characteristic features include oak as building wood, marks of sintel clamps, moss caulking and a keel plank. The sintels are iron clamps, which were used to secure a wooden lath on top of moss caulking in the seams of the ship's bottom and side strakes. In the Egelskär wreck they are visible on the outside of the bottom strakes and seem to have been used sparingly and very far apart, even if it is hard to judge from the extreme wear of the oakwood. The preserved bottom boards are joined in clinker-style. The shape of the sintels seems to correspond to Vlierman's type D1 or D2, which are dated to ca 1250–1300, further supporting the dating provided by the cargo (Vlierman 1996).



FIG. 8. The Egelskär wreck's mast step in conservation (photo by FHA, MA200728: 14).

At least one feature in the wreck points towards a larger ship: the long and narrow structural part, which functions as both keelson and mast-step (see Fig. 8). According to a recent study of cog-like shipwrecks, this kind of longitudinal construction is found only in large ships, which are 18–20 m long, ca 7–8 m at their widest, and have a height of ca 3.5–4.5 m in the middle of the ship (Vlierman 2021, II: 756, table 1). However, the Egelskär structure is different from the longitudinal keelsons in cog-ships, which widen at the mast-step section and have a rectangular space for the mast. The Egelskär mast-step is a ca 20 cm thick, 120 cm long and 30 cm wide rectangular block of oakwood, with ca 70 cm long ends towards the bow and aft, which are extremely worn and tapered. On top of the rectangular block, there is a recess in the middle, ca 60 cm long and ca 10 cm thick, running the width of the entire block. In its middle is an oval-shaped hole (ca 20 cm × 15 cm). It does not resemble any mast-steps in the currently known Dutch, Danish or Swedish cog-type shipwrecks that I am aware of. Its shape suggests that it would have needed strong additional structure(s) to provide lateral support for the mast, maybe a beam on top of the mast-step section making the mast's supports slightly different from those typical of cog-like ships (three or more riders on both sides). The hole for the mast at the bottom of the recess is also oval-shaped and not rectangular as in cog-type ships. It goes through the timber, which is not the case in cog-type ships, which only have a smaller hole to allow water to flow away from the mast base. The mast has been locked in place by driving long pegs longitudinally through the top of the mast-step and it has sat on top of at least six large floor timbers.

The relevance of reconstructing strict medieval shipbuilding traditions has been questioned. The development of shipbuilding around the Baltic Sea is connected with the growth of urbanism and trade, where frequent connections ensured that builders had access to different kinds of ships. Rather than adhering to specific building traditions, shipbuilders were in the process of developing shipbuilding practices (Crumlin-Pedersen 2000; Englert 2003; Weski 2003; Hocker & Daly 2006; Zwick 2017, 34). It seems that the Egelskär ship was built combining knowledge of at least two building methods, one of which originated from around the Sound, where early cog-type ships were constructed. Further analysis is needed to clarify the issues around the Egelskär wreck's building tradition, but its research would add to our knowledge on medieval ship types.

#### TRADE

The Egelskär wreck confirms the established trade connection between the regions of the Rhine and Lower Saxon pottery production area and the northern Baltic, which we already know from historical and archaeological sources (Stephan 1996; Mäll & Russow 2000, 121–122; Pihlman 2005, 4–5; Russow 2006; Möller 2008; Demuth 2019; Tevali 2019). The pottery cargo dates to a point in time when great changes were taking place in pottery production in Germany, and the towns which would become members of the Hanse began to extend their trade to the northern coast of the Baltic Sea. The assemblage consists of drinking and serving jugs in

various shapes and sizes. It has been suggested that these types of serving jugs concurred with the export of German beer, which was a high-end product (Stephan 2012, 24; Demuth 2019, 124). Stoneware jugs were preferred for serving German beer, which represented a new fashion for the people in the northern Baltic. The stoneware can be taken as an indication of the value that drinking beer had for medieval (German) society.

In the middle of the 13th century, Rhenish and Lower Saxon stoneware products were still a novelty around the northern Baltic, but by the end of the century they were already abundant in Estonia. They have been found in monastic and urban contexts, where they are connected with early urban developments (e.g., Russow 2006, 147, 205; Haak & Rannamäe 2014, 143–144). The largest late 13th-century proto-stoneware assemblage was found in Tallinn (Russow 2019, 24–26, table 1), which had a significant German population. The rapidity with which the new pottery spread to the north is an indication of the large number of trade ships which visited Tallinn during those decades and the needs of the new growing populace. However, we do not know very much of the distribution channels in which merchandise moved from their manufacturing centres. The only item that attracts attention among the cargo as exceptional is the church bell. It would be interesting to know where it was made and what its destination was. What kinds of problems arose in the community when it did not appear? It can perhaps be taken as an indication of the building of a new society, which meant bringing familiar cultural practices to new abodes. In the last decades of the 13th century, Tallinn was still under Danish rule, but merchants from the Low German speaking areas south of the Baltic Sea were rapidly taking over the lucrative eastern markets of abundant raw materials. As they colonized new shores, the markers of their own cultural spheres such as beer and stoneware jugs, including familiar architecture such as churches, were essential (Gaimster 2014). However, the analysis of the Egelskär wreck is not finished. The items in the cargo along with the wreck's location in the Finnish outer archipelago east of the island of Jurmo, mentioned in the itinerary in Valdemar Sejr's tax book (for example, Westerdahl 1990), give grounds to the straightforward assumption that the ship was on its way towards Tallinn. Still, by the end of the 13th century, the Swedish settlement movement to the Finnish coasts and archipelago had at this point been ongoing for almost a century (Heinonen 2020), and Turku was rapidly developing into the first urban centre in Finland, with the bishop's seat in Koroinen since 1229. Without going into details here, the dynamics of medieval trade to Finland are yet to be clarified. Whether the Egelskär ship had any part in it cannot be ascertained at this point, but it remains a possibility.

## Conclusions

The aim of this article was to present the cargo of a medieval ship, which was wrecked in the Finnish outer archipelago. In particular, the various stoneware objects from Lower Saxony and Siegburg in Germany were discussed to form a date and to put



them into historical context. The pottery includes jugs and sherds dated from ca 1270 until ca 1290, providing a timeframe into which the other items in the cargo fit. The ship's structure and building tradition remain to be clarified to shed light on medieval maritime networks, but an initial study has revealed features of the building tradition of cog-type ships typical of the cultural sphere related to Hanseatic merchants. Departing from the southern Baltic coast, the ship was meant to reach a trading town specialized in long-distance trade on the northern Baltic coast, probably Tallinn.

The Egelskär ship is a unique find as it is a rare example of a foundered medieval trade ship that has been archaeologically excavated. Most medieval ship finds are situated in or near historical harbours and are likely to have been deliberately abandoned. The surviving cargo included items which were needed for building societies on new shores: whetstones for honing agricultural and warfare objects alike, pottery for drinking beer, and a bell for a new church to tend spiritual needs as well. We do not know what is missing from the cargo, but there would probably have been salt and other organic materials. A common denominator of the cargo objects is that they originate from the sphere of trade networks that would develop into the Hanseatic organization, demonstrating that some of these networks were already in place by the end of the 13th century.

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## *Põhjaläinud laadung – keskaegne laev Soome lahes*

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### RESÜMEE

Egelskär on Paraise omavalitsuse Soome lahe saarestiku äärealal paiknev saareke, mille põhjaranna lähedal uuris Soome Muinsuskaitseamet aastatel 2001–2010 keskaegset laevavrakki. Laeva lastiks olid Lõuna-Alam-Saksimaal Bengerode ja Fredelsloh külades toodetud varakivikeraamilised kannud, samuti teised Põhja-Saksa ning Øresundi piirkonnist pärit esemed.

Bengerode küla oli üks esimesi asulaid Alam-Saksimaal, kus 12.–15. sajandil valmistati kõrgkuumuskeraamikat. 13. sajandi keskpaigas algas tootmine ka naabruses asuvas Fredelsloh's. Külad kasutasid samast savivõtukohast pärit toorainet ning ilmselt tegutsesid ühed ja samad pottsepad korraga mõlemas asulas, mistõttu on tooteil keeruline vahet teha. Materjalilt on sealne varakivikeraamika helehalli kuni tumehalli murdepinnaga, kuid selle kõrval esineb ka tellisepunast või kirjut (telliskivipunane murre ühes halli tuumaga), samas, kui nõude pealispinna värvus varieerub heledast tumehallini, punakaspruunist tumepruuni ning tellisepunaseni. Pealispinda katab tavaliselt ebaühtlane pruun angoob, ent vahel on suur osa nõu väliskülje pealispinnast töötluseta. Varane Bengerode kivikeraamika on õhukeseseinaline, kompaktse savikoostisega ning tänu savimassi suhteliselt madalal temperatuuril paakumisele sageli ka läikiva pealispinnaga. Pinda kattev paakunud angoob on tihti madalakvaliteediline. Sealse keraamika eritunnused on arvukalt esinevad mustad rauatäpikesed ning 13. sajandi kontekstis populaarne mõigastest ja lihtsast rulltempelornamendist või näpuvajutustest koosnev dekoor.

Egelskäri vraki keraamikakogum sisaldab 634 eset või esemekatket, millest 43 on purunemata või peaaegu tervelt säilinud eksemplarid (vt Tabel 1). Algselt oli keraamikalist siiski suurem, sest 2000. aastal varastati vrakilt teadmata kogus puutumatult säilinud nõusid. Tüpoloogiliselt koosneb Bengerode-Fredelsloh varakivikeraamika vaid mõnest nõuvormist ehk joogi- ja valamisanumaist, õllekannudest ning neliksiirulise suudmeavaga peekritest. Suuruselt järgmise savinõude rühma moodustab Siegburgi proto-/varakivikeraamika, mis antud leiukontekstis on servaprofili alusel dateeritud 1270. aasta järgsesse perioodi. See rühm koosneb kolmekümnest pruuni pealispinna töötluseta robustse murdega materjalist. Lisaks sisaldab vraki laadung veel kümmet väikest helehalli murdega varakivikeraamika kildu, mis arvatavasti pärinevad samuti Siegburgis valmistatud tooteist. Kõige väiksema rühma moodustavad aga kolm madala põletusega helehallist või pruuni murde ja välisküljel musta angoobiga savinõust pärit väikest nõukatket. Ajaliselt näib Egelskäri kivikeraamika kollektsioon jäävat umbes 1270. ja 1280.–1290. aastate vahele.

Lisaks eeltoodule sisaldas Egelskäri vraki last veel 232 luisutoorikut, raudkangidega tunni ning kirikukella. Viis laevalt leitud pronksgraapenit võisid kuuluda kauba sekka, kuid ei saa välistada ka nende kasutamist pardal ühes Siegburgi varakivikeraamikaga. Samuti leiti tasase pinnaga käi ja mõned pigem ballasti sekka kuulunud tulekivi- ja kriidikamakad. Võib eeldada, et ülejäänud laevalaadung koosnes orgaanikast, nagu näiteks Põhja-Saksa ja Läänemere põhjaosa vahel tüüpilise eksportartiklina transporditud sool.

Laevavraki säilinud detailide põhjal esindas alus klinkerplangutusega koge tüüpi laeva. Egelskäri vraki tüübi määramisel olid tunnuslikud elemendid tamme kasutamine ehituspuiduna, sintelite jäljed, samblaga tihendamine ning kiilupuu; laeva põhjast oli säilinud vaid väike vööriosa fragment. Plangutuse vaheliste pragude tihendamisel kasutatud raudklambrid ehk sintelid olid vrakil nähtavad aluse põhjas välisküljel ning tõenäoliselt kasutatud vaid väheses mahus. Sintelite kuju vastab Vlierman'i tüpoloogias D1 või D2 kujule, mis on dateeritud u 1250.–1300. aastasse, andes sellega kaudselt lisakinnitust laadungi abil tehtud vraki vanusemäärangule. Teisalt on vrakil vähemalt üks tunnus, mis erineb teistest koge tüüpi laevadest: nimelt pole sealsele mastikannale senini ühtegi paralleeli leitud.

Kokkuvõttes on Egelskäri laev haruldane leid, sest rannaalalt kaugemal asuvaid keskaegseid uppunud kaubalaevu on arheoloogiliselt vähe uuritud. Suurem osa laevaleide on ajaloolistest sadamatest või nende naabrusest ning on teadlikult hüljatud. Erandlik on ka erakordselt hästi säilinud kivikeraamika laadung, mis kaudselt osutab keskaegses toidukultuuris tähtsat rolli omanud õllele. Ühtlasi viitavad keraamikaleiud regiooni linnastumisarenguile ja koge tüüpi laevadele, mida kasutati linnadevahelises kaugkaubanduses.