

Early Medieval Nordic Boatbuilding Technology

Reflections on How to Investigate Negotiation Processes
in Past Communities of Practice

BY MORTEN RAVN

Abstract

This article investigates 11th–13th-century Nordic boatbuilding communities. Using two social science theories, Situated Learning and Communities of Practice, the interplay between the participants within the communities is examined. Case studies of two 11th-century ship finds – Fotevik 1 and Skuldelev 3 – are conducted and a selection of written evidence from the Middle Ages, especially the skaldic poetry is scrutinized. The different ways in which an individual participates in a community of practice are based on status, knowledge and skills. The acquisition and loss of status, knowledge and skills is part of an ongoing negotiation process – often expressed in a sense of otherness or agreement among the participants. I propose that the specialized boatbuilding or boat-handling related terms used in the skaldic stanzas can be interpreted as maritime communities constructing agreement among the individuals that understand the terms used, and otherness to the individuals not versed in this detailed vocabulary. Furthermore, I argue that the building of the Fotevik 1 ship can be interpreted as a product of a boatbuilding community where the work conducted was dominated by strictly following agreed guidelines, methods and techniques, whereas the building of the Skuldelev 3 ship was conducted by a boatbuilding community with a higher degree of individual participation – individual choices of the methods and techniques applied – by the boatbuilders building the ship.

Introduction

In an earlier study, I have investigated the fundamental processes that constitute a craft tradition (Ravn 2015). In this article,

I will explore, in greater depth, one of the key elements in these processes, namely, the negotiation between medieval Nordic

boatbuilders while performing their trade – both internally among peers and externally between individuals belonging to other communities of practice. In these negotiation processes the craftspeople expressed craft knowledge and adherence to specific craft communities.

Two recently published volumes, *Medieval Childhood* (Hadley & Hemer 2014) and *Archaeology and Apprenticeship* (Wendrich 2012a), investigate medieval aspects of learning and socialization. In both books the interactions and the craft community structures are examined based on material cultural remains, and especially in the latter book it is highlighted that since all transfer of knowledge implies change, we are able to “observe the processes and relations involved” (Wendrich 2012b, 2) in the material cultural remains. However interesting material cultural remains might be, they still cannot elucidate the immaterial aspects of past societies without the use of theoretical and methodological tools often provided by our fellow human and cultural-historical sciences, such as social anthropologists, historians and philosophers. In this article, the social science theories Situated Learning (Lave & Wenger 1991) and Communities of Practice (Wenger 1998) will be utilized as thinking tools, to reflect on aspects of social organization within the Nordic craft communities involved in the building of boats and ships in the early part of the Middle Ages (11th–13th centuries).

Communities of practice

In the context of the present article, a community of practice is understood as a specific practice that is shared by the people involved. The practices and other associated actions are defined and delimited by social and resource-related structures, which are specific for the practice community in question. This under-

standing of the term is based on the two interrelated social science theories mentioned above, Situated Learning and Communities of Practice.

The individuals within a community of practice participate in different way. This participation is based on status, knowledge and skills, and the acquisition and loss of status, knowledge and skills are part of an ongoing negotiation process within the community of practice (Wenger 1998, 164 ff.). Based on the written evidence, the early medieval Nordic boatbuilding communities also had differentiated positions such as a stem-smith: a term used for skilled craftsmen with a leading role in the boatbuilding. Besides the stem-smith, craftspeople involved in felling and moving trees, dressing and hewing the trees into ship components and riveting and nailing the components together are mentioned (Snorri Sturluson [1967], 111). This indicates a hierarchical organization with different levels of status, responsibilities and abilities. It is, however, important to stress that when investigating social aspects – such as apprentice-tutor relations – of 11th–13th-century Nordic boatbuilding communities, we must not jump to the conclusion that this social relation is based on the highly-structured craft guild systems – with limited and regulated apprenticeships – which were emerging at the same time in the rest of medieval Europe. The 11th–13th-century Nordic boatbuilding communities might have had a more informal, long-standing and family-based social learning organization (Wendrich 2012b, 11).

What follows is a more detailed investigation of the negotiation processes among the individuals in a community of practice and especially the role the sense of otherness and agreement plays in these processes.

The negotiation process – otherness and agreement

Otherness is expressed by emphasizing differences – sometimes real, other times based on stereotypes or prejudice. In the above-mentioned ongoing negotiation process within a community of practice otherness is an important component in the creation of both the community identity and the individual members' identity within the community (Wendrich 2012b, 16). However, when investigating the role that otherness plays in creating identity, it is essential also to focus on agreement. Using both concepts, as negations, a dialectic understanding of identity making is possible. In the following, the skaldic stanzas are examined with the purpose of elucidating expressions of craft knowledge by the use of specialized terms. Use of detailed and specialized terms is a way of expressing belonging to a specific community of practice and therefore a part of the negotiation process.

Investigating craft knowledge using skaldic stanzas

As suggested by Harald Høgseth, the negotiation process embedded in medieval Nordic boatbuilding can be investigated in detail by analysing the communities use of “specialized terms for timber qualities, features of tools, and specific designs” (Høgseth 2012, 61). In my opinion, this is an interesting and promising approach with the potential to afford new insights into the subject. It is very difficult, however, to analyse these aspects when studying early medieval Nordic boatbuilding communities, since there is very little written evidence concerning these features. The transfer of craft knowledge was not based on writing but on the verbal and bodily display of knowledge in the learning processes.

However, by scrutinizing the 11th–12th-century skaldic stanzas, it is possible to extract and thereby elucidate some of these aspects of craft knowledge. The stanzas mention which wood species were utilized for building a specific ship or ship component. Pine, *fura* and *þella*, maple, *blyn*, ash, *askr* and lime, *lind*, are mentioned, but especially oak, *eik* and *eikikjǫlr* (a keel made of oak), are used in relation to well-made ships. The size of the mast, *vandlangt* meaning long-masted, is also used to define a ship with a special status (Jesch 2001, 132 ff.). A large ship can also be shown using the term *borðmikill*, meaning a ship with high sides (freeboard) (Jesch 2001, 140). The dimensions of the planking are also noted; a ship with broad planks is described as a ship with *borðviðr breiðr* (Jesch 2001, 140) and the surface treatment and decoration of the hulls are mentioned in several cases: *kolsvartir* (meaning coal-black), *rauðr* (meaning red), *blár* and *blo* (meaning blue) and *blakkr* (meaning dark). Other times, it is just mentioned that the ships are painted but not in which colours (Jesch 2001, 144). Furthermore, we see the phrase *flaust fagrúin*, meaning “beautifully-prepared ships” (Jesch 2001, 134) but less prominent ships are also described, viz. *hlegiskip*, meaning a “ridicule-ship, a wretched craft” (Jesch 2001, 135).

In summary, the use of raw materials and ship details was consciously noticed by the society of the time, and these features were used to express either the abundance or absence of status and power. Hence, the craftsmanship of the boatbuilders of the 11th–12th centuries and the end-products they fashioned were discussed, and both praised and criticized. Beside the possibilities for investigating ideals in medieval Nordic boatbuilding, the skaldic stanzas also make it possible to conduct detailed analyses of the use of terms for specific boatbuilding features, and determine the degree of craft knowledge of the authors of the stanzas.

Most of the stanzas use terms for ship components which were probably commonly known terms: *kjǫlr* means keel, the strakes of the hull are called *súð*, most likely referring to “the oldest method of joining planks by lashing them together” (Jesch 2001, 139) and timbers in general are called *viðir* (Jesch 2001, 144). In 11th- and 12th-century Scandinavia, however, it was most common to either rivet the planking together using iron rivets and roves, or nail the planking together using small treenails and wedges (Ravn 2016, 30), but apparently the use of the term *súð* continued. The individual planks in a strake are called *borð* (Jesch 2001, 140).

In some stanzas, the use of terms becomes very detailed: *feldr*, meaning scarfed, and *skor*, meaning the process of applying the method of joining the individual planks of the strakes together (Fig. 1). Also detailed is the use of the term *naglðr* to describe the above-mentioned methods of riveting or nailing the planking together (Jesch 2001, 140). Few examples of descriptions of ship components inside the hull can be found. Nevertheless, some of these examples are of great interest when investigating medieval Nordic boatbuilding technology. It seems likely that floor timbers were called *rengr*, and in one example, the making of a floor timber is described in a way indicating that the floor timber was made of a naturally-curved piece of wood already grown in the approximate desired shape, making it possible for the boatbuilder to use the natural shape of the timber when crafting the ship component (Jesch 2001, 151). Evidence of the use of naturally-curved wood for making floor timbers and other inboard curved ship components is also found in the archaeological record (Crumlin-Pedersen & Olsen 2002, 97 ff.). In these cases, it is evident that the authors of these stanzas had detailed knowledge of boatbuilding, and maybe either once had been, or still were, part of a community of practice building boats and ships.

The stems of the vessels are often described in great detail in the skaldic stanzas, and it is evident from these detailed descriptions and archaeological finds of stem posts and other stem components that a great deal of effort and craftsmanship was invested in the dressing and carving of this significant ship-part (Schetelig 1917, 290 ff.; Jesch 2001, 144 ff.; Crumlin-Pedersen & Olsen 2002, 201 & 273). Hence, it comes as no surprise that the term stem-smith was used when describing a skilled artisan with a leading role in boatbuilding.

Thwarts, beams used as seats for the rowers, called *þoptur* in the stanzas, and deck-planks, called *þiljur*, appear in a few stanzas. However, descriptions of oars and rudders along with sails and rigging occur much more

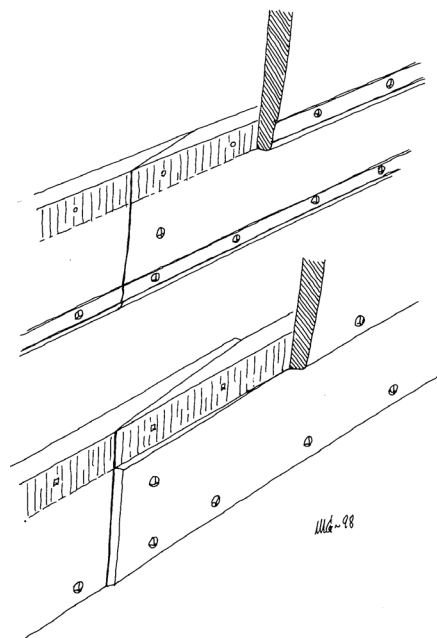


Fig. 1. Scarf types used for joining planks together. Top: The scarf type primarily used in and before the 11th century. Bottom: The scarf type primarily used in and after the 12th century. Drawing by Morten Gøthche, Viking Ship Museum in Roskilde.

frequently and they are also described in much greater detail (Jesch 2001, 151 ff.). An oar is called *ár*, *ór* or *ræði*, and judging from both the written and the archaeological evidence some oars were decorated with paint and carvings. The oars are defined in great detail: the blade is called *blað*, and the grip of the oar is called a *blumr* (Jesch 2001, 154). Some oars are labelled *ferkleyf poll*, meaning rectangular pine, thus describing both morphology and raw material. The art of rowing is praised in the stanzas, sometimes detailed by mentioning that the oars should be pulled straight out of the water and that the flight of the oars of a crew rowing in rhythm looks like the wings of an eagle (Jesch 2001, 155). Also words describing the rowlocks and oarports of a vessel and the grommet used for attaching an oar to a rowlock are often used. With regard to the grommet, called *hamla*, the word was also used to describe the oarsman's seat on the thwart in the ship, often in connection with the crewing of a ship in a military context (Jesch 2001, 156). Furthermore, the importance of a well-functioning rudder is acknowledged in the skaldic stanzas, and both archaeological and iconographical sources reveal that the components of the steering arrangement, such as the rudder and tiller, were sometimes decorated with carvings and paint (Jesch 2001, 159). Clearly, the making of the rudder and tiller was a task for highly skilled craftspeople, and a lot of work was applied to the making of these ship components. Alongside rowing, maritime technology of the early part of the Middle Ages also utilized the power of the wind for propulsion, by means of a mast, square-sail and rigging. The skaldic stanzas contain a wide range of occasionally very detailed descriptions of the mast and yard as well as the sail and the running and standing rigging (Jesch 2001, 160 ff.).

Evidently, these detailed descriptions of features related to boat-handling are likely to have been made by sailors or artisans

(boatbuilders, sail- or rope-makers) with a profound knowledge of their different trades. In fact, it seems likely that the more detailed the descriptions of features of the ship components are, mainly as regards function, the more likely it is that the observations were conducted by members somehow related to a community of practice involved in the building, rigging or using of a boat or ship.

Expressions of otherness and agreement

Otherness and agreement take place internally within the community of practice, and externally between the individuals in the community of practice and those outside of it. The internal expressions of otherness and agreement are most evident in the negotiation processes. Agreement is constructed among the individuals who understand and can perform the actions to be followed according to the rules, norms and work practices of the community, whereas otherness is constructed between the individuals who do not know, or cannot comply with these rules, norms and work practices, and those who can. Agreement is also constructed among individuals who can understand and identify a problem and subsequently adjust actions to meet and solve the task faced, whereas otherness is constructed between the individuals who are not able to do so, and those who can.

The detailed and specialized descriptions above related to boatbuilding and boat-handling can be interpreted as maritime communities of practice expressing belonging together internally. Hence, agreement is constructed among the individuals who understand the terms used, and otherness is constructed between the individuals who do not understand the terms and the individuals who do.

The external expressions of otherness and agreement are also negotiated. This negotiation

process may take place when members of a community meet persons outside the community or when a former member of a community return and start negotiating with the community members and structures anew. The story below of the stem-smith Torberg Skavhogg is an example of the latter; Torberg Skavhogg, a former member of the community building a longship, attempts to regain his former status within the community, in this case successfully.

The negotiation process – reification and participation

To analyse the negotiation process within the Nordic boatbuilding communities of the early part of the Middle Ages two other concepts, coined by Etienne Wenger, can be used as thinking tools: reification and participation. It is the dialectic interactions between the two that form the negotiation process. Using these concepts allows for an interpretation of details and features on boat- and ship finds, and written evidence as expressions of learning processes in craft communities in the past.

In this article reification is understood as a process that reduces the complexity of all the amassed knowledge behind an action and aids a newcomer in a community of practice to stay focused on learning the practical side of the craft. The actions, skills, rules and know-how are accepted without asking questions about their validity. This is important in a learning situation. Starting from scratch to learn all this accumulated knowledge every time a newcomer encounters a community would make it impossible to stay focused on the goal of the learning process, viz. to learn the practical side of the craft. Not everything can, or should, be discussed in the context of a learning process (Wenger 1998, 58). However, reification can also lead to otherness – a feeling of not belonging to the community. Too little

inclusion of newcomers in a community of practice might inhibit the development of the methods and techniques applied or even push away or exclude newcomers, and without newcomers, the transfer of knowledge and know-how from one generation to the next will end (Wenger 1998, 57 ff.; Østergaard 2009).

The negation of reification is participation. Participation may have many different expressions, both motorically and verbally, and also include emotions and thoughts. Participation is understood as a process that allows the members in a community of practices to participate in the negotiation of meaning and actions performed and thereby deviating from the normal practice – often leading to changes in the methods and techniques applied. Admittedly, immaterial aspects, such as emotions and thoughts, in Nordic boatbuilding communities of the 11th–13th centuries are very difficult to investigate since almost nothing about emotions and thoughts with regard to boatbuilding can be found in the source material. However, in the Icelandic saga *Heimskringla*, written around 1235 by Snorri Sturluson (Sandvik 1967, 10), we find a description of the building of a huge longship:

And when they were planking the ship, Torberg had a needful errand to go home to his place and he was there a very long time. And when he came back the ship was fully timbered, and straightway in the evening the king and Torberg with him went to see how the work was done, and every man said that never had been seen so great or so fine a longship. The king then went back to the town, but early the next morning the king and Torberg came back to the ship; the wrights had already come, but they all stood there not at work. The king asked why they bore themselves in this manner. They answered that the ship

was shamefully cut about and some man must have gone from stem to stern and have struck one deep notch after another down the one side of the planking. The king went to it and saw that this was true, and he straightway said and swore that the man who had damaged the ship from envy should die if the king could get him, "And he who can tell me of it, shall have great reward from me". Then said Torberg, "I will tell you, O king, who has done this deed." "I might look to thee as much as to any man", said the king, "to be lucky enough and tell me." "I will tell thee, O king", he said, "who has done it – I have done it." Then answered the king, "Then shalt thou make it just as good as before and thy life shall be at stake for it". Torberg then went and chipped the planks, so that all the notches were smoothed and made even with the rest. Then said the king – and all the others too – that the ship was much finer looking after Torberg had made this alteration. The king then bade him do so on the other side and offered him great thanks therefor. Torberg was then the head wright of the ship till it was finished (Snorri Sturluson [1967], 111).

Even though this text is probably exaggerated, it still express emotions and thoughts related to boatbuilding, and stresses that performing a craft, such as boatbuilding, was of great importance for medieval Nordic society. Status and respect could also be gained at the building site or workshop, and not only on the battlefield. It is evident that the participants took great pride in their trade – the stem-smith Torberg Skavhogg even so much so that he was willing to risk his life to show his king (Olav Trygvason) his great boatbuilding skills.

Case studies: The Fotevik 1 and Skuldelev 3 ship finds

A promising archaeologically based methodological approach for investigating both the practical mental and motoric skills and the community-rooted rules, norms and actions, is to focus on details in design and styles (Wendrich 2012c, 258 f.). In the following, I will conduct two case studies aimed at elucidating technological details and subsequently use these discoveries as stepping-stones for the study of how reification and participation, and otherness and agreement are expressed in the negotiation processes of medieval Nordic boatbuilding.

The Fotevik 1 ship find, excavated in 1982 in south-west Scania, Sweden, is dated by C-14 and dendrochronological analyses as having been built in the second half of the 11th century. With its 10.3 m length and a beam, measured amidships, of 2.4 m, the vessel is interpreted as a large boat or a small ship, mainly used for transporting personnel.

The vessel was propelled by 12–14 oars and most likely also by setting a sail. Fotevik 1 is one of five similar long and narrow vessels – although of different sizes – that were scuttled and reused as part of a barrier established in the waters of Foteviken. The barrier was most likely intended as a defensive measure against an enemy fleet, and it might be linked to the early 12th-century Battle of Fotevik, where the forces of the Danish king Niels (*c.* 1065–1134) and his son Magnus (*c.* 1106–1134) fought against the forces of Erik Emune (*ca.* 1090 – 1137). Seen in this historical context, the Fotevik ships are interpreted as primarily built for military purposes, transporting armed crews (Crumlin-Pedersen 1984, 50 ff.; Ravn 2016, 155).

Fotevik 1 is an example of a vessel with a high degree of sameness in the technological approach building the vessel (Crumlin-Pedersen 1984, 28 ff.; Rosborn 2004, 198).

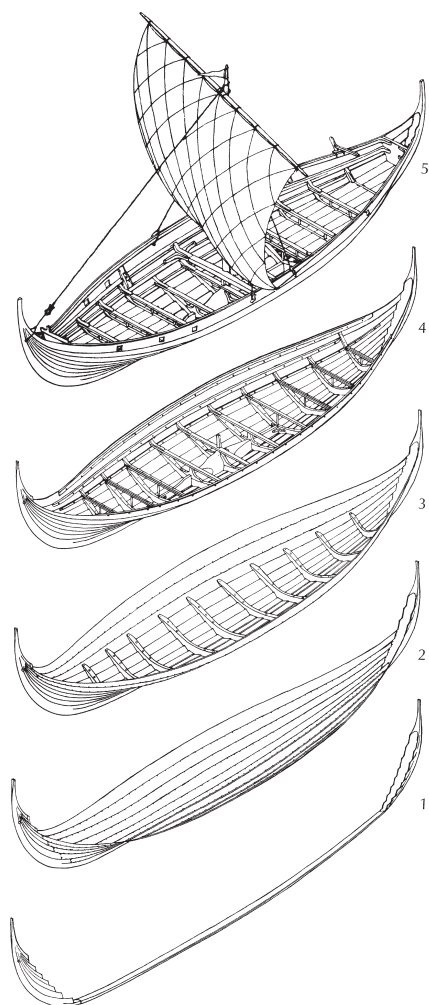


Fig. 2. Building sequence following the shell-based construction method. Drawing after O. Crumlin-Pedersen and O. Olsen, eds., *The Skuldelev Ships I. Topography, Archaeology, History, Conservation and Display* (Roskilde 2002), fig. 47, 235.

Is it a shell-based construction and markings on the keel indicate an attempt to establish an approximate placing of some of the frame stations early in the building sequence (Fig. 2). In terms of procurement of wood raw materials, oak trees were felled and after branches and twigs were lopped off, the



Fig. 3. Cleaving of an oak log to provide timbers for the production of radially-oriented planks. Photos by Werner Karrasch, Viking Ship Museum in Roskilde.

crooked timbers were dressed to the desired shape, tested, and finally fitted in the ship. Before this process, the tree trunks were cleft and later hewed into radially-oriented planks or components providing longitudinal strength in the vessel (Fig. 3).

Apparently, only one type of moulding was used on the ship components; still visible were two V-shaped cuts with a distance between the cuts of 20 mm (Fig. 4), and all the floor timbers and knees were made with a trapezoid cross-section. As for the use of fasteners, rivets and roves were used between the planking of the strakes, whereas both rivets and roves and spikes were used between the keel and the planking of the garboard strake. Finally, treenails and wedges were used as fasteners between planks and frame

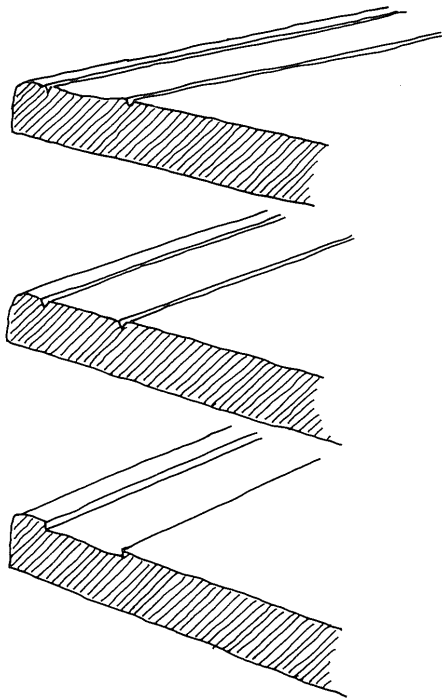


Fig. 4. Moulding types as used in medieval Nordic boatbuilding. Top and middle: types primarily used during and before the 12th century. Bottom: The type primarily used during the 13th century. Mouldings are decorative profiles cut on the edge of planks or other ship components and are a typical feature in medieval Nordic boatbuilding technology. Drawing by Morten Gøthche, Viking Ship Museum in Roskilde.

components (Crumlin-Pedersen 1984, 28 ff.). Only one small variation with regard to the technological approach is to be found in the use of moss dipped in tar as caulking material when placing a repair patch in the vessel (Crumlin-Pedersen 1984, 34). Otherwise, only twisted animal hair treated with tar was used for sealing the land and scarfs of the ship. It is, however, a commonly seen feature that repairs stick out from the applied raw materials, methods and techniques of the building phase (Crumlin-Pedersen & Olsen 2002, 180 f., 271 f. & 296).

Within the community of practice building Fotevik 1, reification seems to have played an important and dominant role. Following the established and agreed guidelines, methods and techniques seems to have been of paramount importance among the craftspeople building this ship.

While reification seemingly played a major role in the building of Fotevik 1, individual participation apparently had a more important role in the building of another 11th-century Scandinavian ship, Skuldelev 3 (Fig. 5). This ship, excavated and salvaged from Roskilde Fjord in Denmark in 1962 and dated using dendro analysis as having been built around the middle of the 11th century, is 14 m long and 3.3 m wide amidships.

The ship relied mainly on wind for propulsion using a sail, but a few oar ports, in the fore part of the ship, show that some manoeuvres were conducted with the support of oars. The ship is interpreted as a small cargo-ship, crewed by 5–8 persons and with a cargo capacity of 4.6 tons. Just like Fotevik 1, Skuldelev 3 was scuttled and reused – along with four other ships – as part of a sea barrier. In the case of Skuldelev 3, the established defensive measures that the barrier represents are interpreted as a way to control sea transport in and out of late Viking Age and early medieval Roskilde (Crumlin-Pedersen & Olsen 2002, 240 ff. & 331 ff.; Ravn 2016, 154 ff.)

Skuldelev 3 is also built with a technological approach clearly linked to the medieval Nordic boatbuilding technology. However, evidence of deviations from the commonly chosen methods and techniques are documented. In 11th-century boatbuilding, the joining of the strake's planks was done using short scarfs that terminate smoothly (Fig. 1). This is also the most commonly used scarf solution used on Skuldelev 3, but in two cases, the scarfs are either long and terminate with a lip, or short and terminating with a lip, both of which



Fig. 5. The five ship finds from Skuldelev, Denmark as displayed in the Viking Ship Hall at the Viking Ship Museum in Roskilde, Denmark. Skuldelev 3 is seen in the top left corner of the photograph. The Skuldelev ships are key finds for investigating boatbuilding as conducted in medieval northern Europe. The Viking Ship Museum has built full-scale reconstructions of all the Skuldelev ships, and it is the insights gained from these experimental archaeological projects that in many cases have inspired researchers to propose new hypotheses about medieval Nordic boatbuilding technology. Photo by Werner Karrasch, Viking Ship Museum in Roskilde.

are uncommon features of 11th-century boatbuilding (Crumlin-Pedersen & Olsen 2002, 204 f.). Later, in the 12th century and subsequently, it gradually became more common to use the long scarfs with a lip when joining the planks of the strakes (Englert 2015, 264 ff.). Since the long scarfs with lips used on Skuldelev 3 are not linked to repairs only, these solutions can be interpreted as expressions of boatbuilders deviating from the normal practice and thereby participating in the negotiation of meaning and actions leading to changes in the methods and techniques applied. Another deviation observed on Skuldelev 3 is the use of tangential cleaving

when crafting three of the oak planks in the ship (Fig. 6) (Crumlin-Pedersen & Olsen 2002, 203 f.). In 11th-century southern Scandinavia, oak planks were normally crafted using radial cleaving and this method is also the most commonly used technique in producing the planks for Skuldelev 3 (Fig. 3). The reason for changing the crafting method when making the three deviating oak planks might be that procurement of an oak trunk with a suitably large diameter had proved difficult. When using tangential cleaving, the diameter of the tree trunk does not have to be as large as when cleaving radially. However, while we cannot determine the reason for



Fig. 6. Cleaving of an ash log to provide timbers for the production of tangentially-oriented planks. The outlines of the planks are marked in black on the log. Photos by Werner Karrasch, Viking Ship Museum in Roskilde.

the change in the cleaving technique used, it demonstrates a decision made by the people involved in the construction of the ship and thereby constitutes evidence of participation. The building of Skuldelev 3 was clearly based on guidelines, methods and techniques, but these were assessed and modified to a great extent in order to meet the tasks at hand in the best way possible.

However, when investigating the level of reification and participation involved in the building of Fotevik 1 and Skuldelev 3, it is important to stress that neither a high level of reification nor a high level of participation is to be interpreted as poor or good quality

craftsmanship. The level of reification and participation only says something about the way the work was organized.

Concluding remarks

Ole Crumlin-Pedersen has summarized the defining features for the uniquely Nordic way – termed the Nordic Clinker Tradition or Nordic Boatbuilding Tradition (Crumlin-Pedersen 2004; Bill 2009) – of building boats and ships in the first millennium and at the beginning of the second millennium AD as, “A double-ended hull with a slightly curved continuous keel-stem line and a gently curved sheer line as seen from the side and from above. A central keel with almost identical curved stems fore and aft, lapstrake planking with little or no difference in the character from keel to sheer strake. Floor timbers evenly spaced over the greater part of the length of the vessel, symmetrical on the two sides, in early vessels primarily fastened at the upper ends, later over most of the length of their frames, except at the keel; thwarts or beams (*biti*) at all frame stations, except in small boats” (Crumlin-Pedersen 2004, 47).

However, it is one thing to analyse structural characteristics as seen in boats and ships over a long time span and large spatial setting, and quite another to analyse the day-to-day practices at a boatbuilding site in a particular location and at a particular time. Using the same concepts for such different investigations might limit the output or even lead to the wrong conclusion that boatbuilders all over the North were building boats and ships in a similar way from the beginning of the first millennium AD and well into the second millennium AD. As shown by several scholars, changes did occur (Crumlin-Pedersen 2004, 37 ff.; Bill 2009, 429 ff.), and as already stated by Ole Crumlin-Pedersen the boatbuilding of the past must

therefore “always be studied in the light of the interaction between tradition and innovation” (Crumlin-Pedersen 2004, 50). Furthermore, the two case studies presented above clearly show that not even boatbuilding performed at almost the same time was performed in the same way at the Nordic boatbuilding sites. It might not be a surprising result that boatbuilders conducted their trade somewhat differently, but it is important to be able to empirically back this assumption, and it is likewise important to start exploring ways in which the written evidence can be used to shed new light on craft knowledge in past communities of practice.

When investigating the social organization behind the actual, practical boatbuilding activities, as performed by past craftspeople, we need to analyse the interactions between the individuals and the structures of the boatbuilding communities and put aside the discussion about determining their belonging to a specific tradition. Since the written evidence for boatbuilding in the 11th–13th centuries in Southern Scandinavia is very limited, both investigations – the actual, practical boatbuilding activities and the determination of their association with a specific tradition – have a starting point in the characteristic features of the boat and ship finds. For example, the high degree of homogeneity shown above with regard to the use of methods and techniques when building the Fotevik 1 ship may be seen as evidence of a boatbuilding community predominantly using well-known and well-functioning technical guidelines and rules-of-thumb; hence a boatbuilding community where reification dominated the organization of the work. This conservative nature within a community building boats and ships might not come as a surprise. The main goal for a boatbuilder is to build a safe and functional boat or ship; hence there is good reason to stick to a thoroughly tested and functional

design.¹ Work dominated by a high degree of reification affects how the structures of the community define and delimit the practices and how the people involved interact with each other.

However, it is also important to stress that a constant striving for the optimization of a boat or ship for its intended purpose and function along with the limits imposed by the availability of raw materials and craft know-how among the craftspeople involved also played important parts in medieval Nordic boatbuilding (Jensen 2018, 33 f.). This is exemplified above in the case studies of the Skuldelev 3 ship find. Here participation seems to dominate the organization of the work.

With regard to the different forms of participation by the craftspeople involved in the building of the two ships presented in the case studies, it is relevant to stress that Fotevik 1 is interpreted as a small warship and Skuldelev 3 as a small cargo ship. Hence, the crafting of the Fotevik 1, and the other Fotevik ships too, might have been conducted by a boatbuilding community with relations to a military organisation, explaining the strict following of agreed guideline, methods and techniques. The building of Skuldelev 3 might have been performed by craftspeople with a “civil” organization, explaining the higher degree of individual choices in the applied methods and techniques.

Some communities and individuals were, or had to be, very dynamic and innovative; others would, or had to, stick to a known design and method of production for generations. It is important, however, to stress that among past and still active communities of practice there is no consensus about considering change or conservatism as something positive or negative (Wendrich 2012b, 16). Hence, when studying the communities of practice of the past we must be careful not to impose today’s focus on innovation as something to

strive for, and likewise not assume that all past craft communities were conservative by nature.

Finally, when discussing the level of reification and participation involved in the negotiation processes between boatbuilding communities conducting their trade almost 1000 years ago, it is necessary to remain conscious of the fact that the investigated people and societies of the past may not have considered the same features or actions as expressions of otherness and agreement, as researchers of today do (Godal 2006, 183). As Harald Høgseth has already concluded, “Sometimes it is just the skilled expert who can recognize, on the one hand, the relationship and, on the other, the individual character, the personality among them” (Høgseth 2012, 75). Since the skilled experts in the communities building Fotevik 1 and Skuldelev 3 or other Viking Age and medieval boats and ships cannot be interviewed about their opinion of how to view otherness and agreement with regard to building a boat or ship, we are left with only a little, and very fragmented, source material to scrutinize in the attempt to understand the mind-set of the past craftspeople. However, even though it is very difficult – sometimes even impossible – to find suitable source material to study the negotiation processes involved among medieval craftspeople conducting their trade, the above examples of Torberg Skavhogg, the skaldic stanzas and the two case studies of two 11th-century ship finds show that medieval craftspeople also communicated their knowledge, skills and adherence to specific communities. Furthermore, the cases presented in this article have shown the potential of applying the two interrelated social science theories, Situated Learning and Communities of Practice, as thinking tools for studying social organization and social processes in which past communities conducted their trades.

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Notes

- 1 These issues were discussed with the archaeologist Fred. M. Hocker and boatbuilder Pat Tanner during the International Symposium on Boat and Ship Archaeology 14 in Gdańsk, Poland, in 2015.

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Morten Ravn, Viking Ship Museum in Roskilde, Vindeboder 12, 4000 Roskilde, Denmark, mr@vikingeskibsmuseet.dk.