Eldar Heide & Terje Planke:

Viking ships with angular stems – did the Old Norse term *beit* refer to early sailing ships?

Summary: This article discusses a certain type of ship known from Scandinavian Viking Age and Merovingian Period iconography: The type with vertical stem and stern meeting the keel at a right angle, sometimes with an extension filling the space under a sloping forefoot and a similar extension at the rear end of the keel. This design seems to be connected to the earliest sailing ships and it has been suggested that the extensions were invented to meet the increased need for lateral resistance when sailing. We give additional arguments for this view and suggest that this design was a transitional stage between rowing ships with steering oars in both ends and specialized sailing ships with more sophisticated designs for sideways resistance: The extensions are the steering oars' anti-leeway properties 'built into the hull'. We also suggest that this type of ship was in Old Norse referred to as *beit*, which is a term that seems to date from the Early Viking Age. In Modern Norwegian, *lobeit* 'windward *beit*' refers to a ship's ability to avoid leeway and is probably related to the verb *beita* 'to sail upwind', which seems to derive from a comparison of the keel with a cutting tool. This would fit well with the discussed ship type and its extensions.

1. Introduction

The sailing ship is what made the Scandinavian expansion during the Viking Age possible. However, our knowledge of how the sailing ship evolved in Scandinavia, where the first ships built for using sails probably appear in iconography in the 7th or 8th century, is quite limited. Even more limited is our knowledge of the terminology connected to this development. The reason for this is partly that written sources and archaeological material pertaining to this are scarce, partly that this scarcity makes them difficult to understand and interpret. Attempting to overcome this problem requires you to approach the field with as broad and versatile a competence as possible, i.e. the *Wörter und Sachen* approach.[1] This is what we will attempt in the present article. We will attempt to combine contemporary archaeological finds and iconography with etymology and information from High Medieval written sources, guided by our practical experience from rowing and sailing Viking ship replicas and their descendants in the living Norwegian tradition. We will assume that both the terminology and the technical development have an internal logic that may be uncovered if we look upon the material from the perspective of a sailor. The discussion will necessarily be very detailed, because the cliff we aim to ascend is so challenging that we will need every tiny grip that can be found.

2. The transition from rowing ships to sailing ships in Scandinavia

As far as we know, the Scandinavians only had rowing ships during the Migration Period, even though they must have known sails from the Romans.[2] The designs of such rowing vessels are known from the Nydam ship from Schleswig, c. 320 AD,[3] the oldest pictorial stones from Gotland,[4] the pictorial stone from Häggeby in Uppland,[5] and the 7th century

[1] E.g. Falk, *Seewesen*.
[2] Thier, 'Sails in the north.
[3] Engelhardt, *Nydam mosefund*, Rieck & Crumlin-Pedersen, *Både fra*, 103 ff., Rieck, *Jernalderkrigernes*, Gøthche, *Rekonstruktion*, and 'Die Rumpfform'.
[4] Lindqvist, *Gotlands Bildsteine* no. 7, 11, 562; Nylén & Lamm, *Bildstenar*, 22-23, 29, 35.
[5] Nylén & Lamm, *Bildstenar*, 155.

Kvalsund ship from Western Norway.[6] All these ships have stems and sterns that are sloping and curved, sometimes backwards-curved (Figure 2); see Figure 1 and Figure 2.

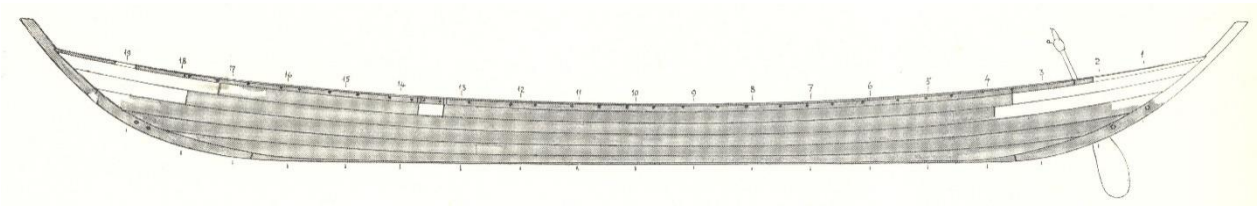

Figure 1. The Nydam ship. (Åkerlund, *Nydamskeppen*, 51), c. 320 AD.

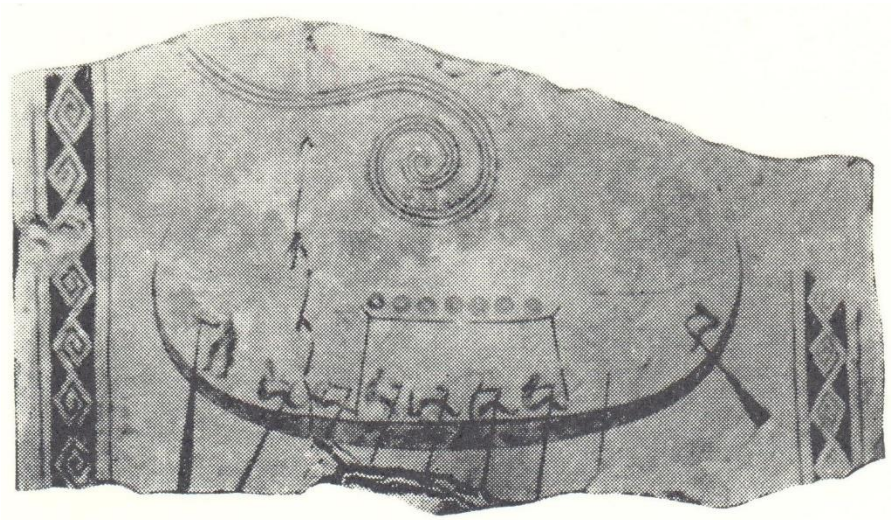

Figure 2. Pictorial stone from Stenkyrka (46), Gotland. (Åkerlund, *Nydamskeppen*, 137). Migration Period or Early Merovingian Period.

But on the earliest Scandinavian depictions of sailing ships, which are dated to the Merovingian Period, most ships have angular stem and stern, with vertical prows meeting the keel at a near right angle.[7] Examples of this are shown in Figure 3 and Figure 4:

[6] Shetelig & Johannessen, *Kvalsundfundet*.
[7] Lindqvist, *Gotlands Bildsteine*, no. 310, 389, 469, 492, 41, 43, 54 – 62, cf. 49, 50; Nylén & Lamm, *Bildstenar*, 42 ff., Varenius, *Det nordiska*, 63 ff. All from Gotland.

Figure 3. Pictorial stone from Stenkyrka (IV), Gotland (Lindqvist, *Gotlands Bildsteine*, no. 498). Merovingian Period.

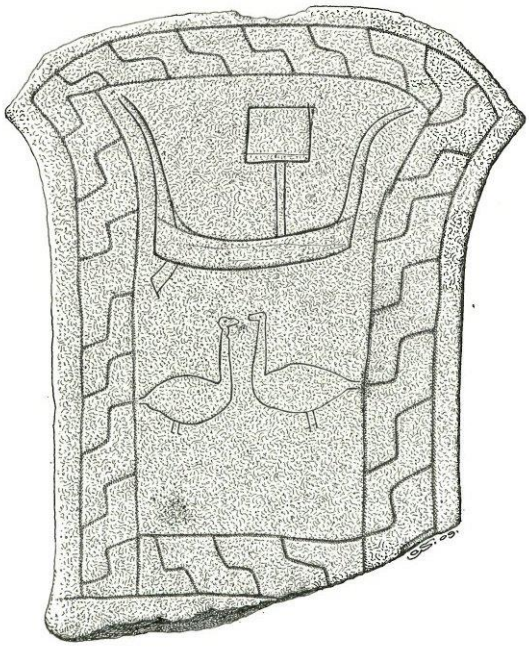

Figure 4. Pictorial stone from När Rikvide, Gotland (Lindqvist, *Gotlands Bildsteine*, no. 466). Merovingian Period.

Crumlin Pedersen[8] has suggested that this change in the hull profile was caused by 'the need for increased lateral resistance of the hull when going under sail. In the first phases this could have been accomplished by building out a 'skeg' at each end to fill the triangle, as illustrated on a graffito from Oseberg' – which is shown in Figure 5:

[8] Crumlin Pedersen, *Viking-Age ships*, 174-75.

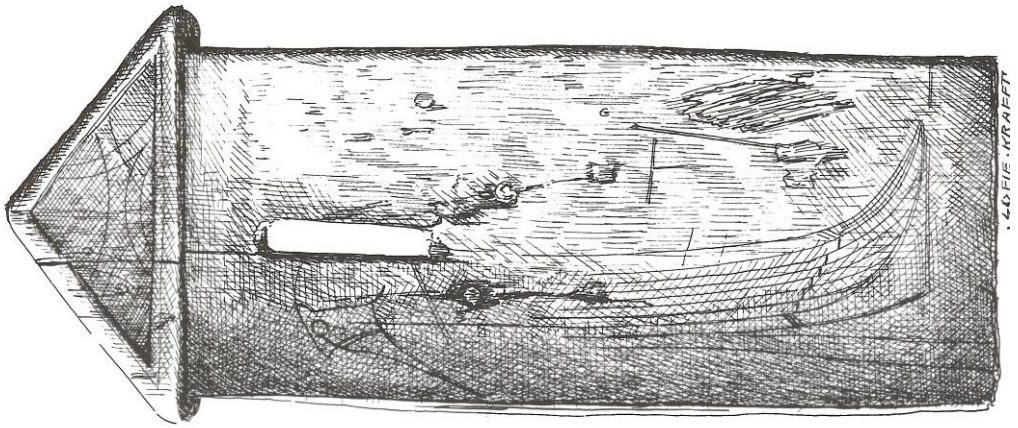

Figure 5. Graffito from the Oseberg find (Christensen et al. *Osebergdronningens*, 106). Early 9th century.

There is every reason to believe that the angular ship type really existed, even if only iconographic examples have been found. The depiction in Figure 5 is very detailed, and there are many depictions like it, not only from the Merovingian Period but also from the Early Viking Age. Depictions of this type are found on several of the Gotlandic picture stones,[9] as in Figure 3, Figure 4, Figure 5 and Figure 6); on quite a number of coins from Hedeby, c. 800 AD (Haithabu / Heiðabýr),[10] on a graffito from the early 9th century Oseberg find,[11] and on a graffito from Skomrak, Southern Norway, 9th century.[12] – Ellmers[13] and Gardiner[14] have claimed that the ships on the coins from Hedeby are early cogs. We, however, support Crumlin Pedersen's rejection of this.[15] Hedeby was a Scandinavian town and therefore it is logical to group these ships with the unquestionably Scandinavian depictions, which undoubtedly show something other than cogs. In addition, we find it difficult to see a clear resemblance between the ships in question and cogs, since the stems on a cog are clearly inclined; that is, they run in a straight line, but not perpendicular to the horizontal keel.

3. Our suggestions

3.1. Additional arguments for the function of the keel extensions

Independently of Crumlin Pedersen, we have arrived at the same idea, and the first aim of this article is to broaden the basis for this suggestion. Reduced leeway obviously became necessary when ships became equipped with sails, and extensions like the one in Figure 5 would undoubtedly contribute to that. This interpretation is supported by the fact that Lindqvist[16] and Åkerlund[17] explained the design as an adaption to upwind sailing, even though they did not notice its association to the earliest sails. Furthermore, similar designs have been developed with the aim of reducing leeway on at several types of sailing vessels from later times, independently of the early Scandinavian design. On the Dutch and German North Sea coast, where an ordinary keel is inconvenient because boats often have to rest on the exposed seabed at low tide, several traditional boat types have a 'skeg' for this purpose, a

[9] Lindqvist, *Gotlands Bildsteine*, no. 128, 132, 328, 428.
[10] Ellmers, 'The Cog', 36, cf. Crumlin-Pedersen, *Viking-Age ships*,174-75.
[11] Christensen, et al., *Osebergdronningens*, 140.
[12] Gjessing, 'Vest-Agder', 60. Cf. Felbo, *Skibsbilleder*, no. 265, Blindheim, *Graffiti*, 44.
[13] Ellmers *Frühmittelalterliche*; 'The Cog', 32 ff.
[14] Gardiner, *Cogs*, 36.
[15] Crumlin Pedersen *Viking-Age ships*, 174-75.
[16] Lindqvist *Gotlands Bildsteine*, vol I, 68 f.
[17] Åkerlund 'Áss och', 49.

gripe, in addition to leeboards.[18] On the Oselvar boat from the area around Bergen, Western Norway, models intended for regatta sailing were modified in the same way in the 1990s, because the rules forbade the use of deeper keels, until new rules put an end to this development.[19] On the Sogn boat, also from Western Norway, the *lot*, which is a transition piece between the keel proper and the stem, can be made deeper than the keel, in order to reduce leeway.[20] The same is known from the Sunnmøre boat, further up the coast; the corresponding part of the false keel was made deeper to achieve this.[21] An indication of the connection between lateral resistance and *lot* and stem designs can also be inferred from the traditional boats from the Norwegian coast further north. Of these, the Nordland boat has the most angular stems (which in the lower parts is quite similar to Figure 4), and also the shallowest keel. On the Nordmøre boat, on the other hand, the stems have the greatest rake of all traditional Norwegian boats, which gives this type of boat the shortest keel of all (in the lower parts they are very similar to the Nydam ship in Figure 1), and also the deepest keel.[22]

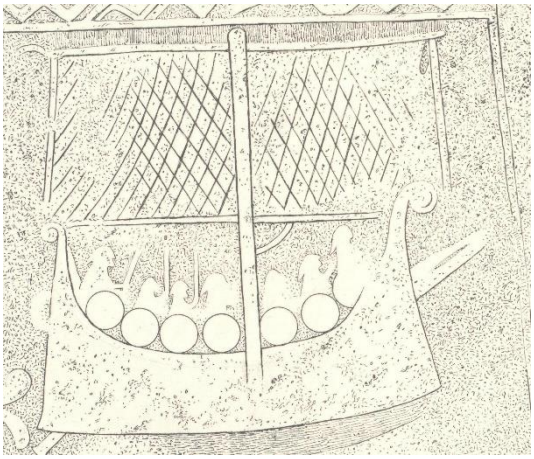

Figure 6. Pictorial stone from Hunninge in Klinte, Gotland. (Lindqvist, *Gotlands Bildsteine*, no. 428. 'Klinte Hunninge I'). C. 750 –900. (On the dating of Gotland stones, see § 3.)

3.2. Keel extensions developed from steering oars in both ends?

We suggest that the extension(s) filling the triangle(s) under the stem(s) developed from steering oars placed both fore and aft on the boat, which is a solution known from Migration Period or Merovingian Period vessels, as in Figure 2.[23] The Nydam ship, which is the best-preserved rowing ship, has no keel, just a flat bottom plank. Accordingly,-steering oars in both ends would be an advantage on this type of ship, not only for steering, but also for reduced leeway when rowing in side winds. In this respect, steering oars both fore and aft can be compared to the retractable keels of later times. If we keep this in mind, designs of the type in Figure 5 is the logical next step: When going under sail, the speed and force increase, making the solution with a front steering oar unstable; at the same time, the demand for lateral stability of all kinds is increased. The answer may have been to fix and increase the hull's lateral resistance by 'building the steering oars into the hull' (the stem / *lot*). The stem design

[18] Oosting & Vlierman, *De Zeehond*, 17, 98; Menzel, *Smakken*, 46-47, *Die Tjalk*, 80; Vermeer et al., *De Boeier*, 2, 18, 21, 439, 454; Szymanski, *Der Ever*, 80. Thanks to Anton Englert for references.
[19] Økland, *Oselvar*, 287-89
[20] Planke, *Tradisjonsanalyse*, 168-72, 184-86, 189, 197-98, 201.
[21] Personal communication from Håvard Haraldson Hatløy, Sunnmøre Museum, 2 November 2018.
[22] See Eldjarn & Godal, *Nordlandsbåten*, vol. 2 and 3; Færøyvik, *Vestlandsbåtar*, 137 ff. and Klepp, *Nordlandsbåter*.
[23] Other examples: Lindqvist, *Gotlands Bildsteine*, no. 7, 11, 562; Nylén & Lamm, *Bildstenar*, 29; all from Gotland.

depicted in detail in Figure 5 may thus be a transitional stage between steering oars at both ends and a more sophisticated solution. This fits with the fact that the design in question is only known from the Merovingian Period and the Early Viking Age, i.e. from early sailing times – although the same solution on a smaller scale is found on some boats from modern times, as we have seen.

3.3. Ships with angular stems – Old Norse *beit*?

In 2014, Heide argued[24] that the ships with angular stems were the type known as *beit* (neuter) in Old (West) Norse manuscripts. Here, we will elaborate on this idea. There are three arguments in favour of our suggestion:

3.3.1.

The ships with angular stems seem to be a response to the need for increased lateral resistance, and the word *beit* refers to exactly this property in Western Norwegian maritime language: The noun *lobeit*, literally 'windward *beit*', refers to a boat's ability to 'keep to leeward', i.e. to maintain lateral resistance.[25] Moreover, this ability is partly dependent on the design of the *lot* 'transition piece between keel and stem',[26] which is made deeper if reduced leeway is desired (although this has to be balanced against the disadvantages: increased drag, more difficult steering, and more heel, leading to more water coming in over the gunwale). This is similar to what we observe on the Merovingian and Early Viking Age ship type in question.[27]

Thus, *beit* in *lobeit* comes close to the striking characteristic of the angular ships. The connection between this word and Old Norse *beit* 'a type of ship' is supported by the fact that these words both are grammatically neuter gender (as is *lobit*, the Sunnmøre variant of *lobeit*, see below), whereas *beit* in other meanings is grammatically feminine[28] – in Old Norse as well as in Modern Icelandic and Modern Norwegian.[29] It makes better sense to try to explain the ship type designation *beit* from this neuter rather than from *beit*-words that have a different gender.

3.3.2.

Etymology points in the same direction. *Lobeit* must be related to *beita*, which was the Old Norse verb for 'sailing upwind, beating' (and which is the root of this meaning of the English verb *beat*). This verb formally is causative to *bíta*, 'bite' (and is often used in the meaning 'to

[24] Heide, 'The early'.
[25] Godal & Eldjarn, *System*, 149 (*Norsk Ordbok*, vol. VII, has the form *lobeit**e,*** but this must be an error as the source is Godal / Eldjarn, who have the form *lobeit*.), Planke, *Tradisjonsanalyse*, 168-72, 184-86, 189, 197-98, 201.
[26] Planke, 2001: 170, 184-85, and personal communication from Jon Bojer Godal, who is Norway's grand old man on vernacular boats, 6 October 2010, and Håvard Haraldson Hatløy, Sunnmøre Museum, 2 November 2018. Note that *lobeit* refers to the (abstract) ability to maintain lateral resistance, not the transition piece that can be manipulated to influence this ability. There is no indication that *beit* could refer to a part of a ship. Thus, *beit* as a term for a ship type can hardly be a poetic metonym, a *pars pro toto*, where a part is taken for the whole (e.g. *brandr*, 'a prominent piece of the prow', used as a synonym for 'a ship', see Jesch, *Ships and men*, 147).
[27] Other important factors are the angles between the lowest strakes and the keel and *lot*, the cross profile of the front part of the lowest strake (Norwegian *innløpet*), and the width of the hull above the lowest strakes. We hope to address this issue in relation to the evolution of Nordic boat types in a later study.
[28] *Beit* f. 'pasturage', 'grazing', 'a plate of metal mounted on the brim of a drinking vessel', Heggstad et al., *ordbok*, 65.
[29] Finnur Jónsson, *Lexicon poeticum*, 40; Fritzner, *Ordbog* vol. I, 122, Sigfús Blöndal, *orðsifjabók*, 67, *Norsk Ordbok* vol. I, 499.

cut' in Old Norse[30]), and it thus literally means 'to cause to bite'. The verb *bíta* itself also refers to upwind sailing in two Old Norse passages.[31] The idea behind this has, to our knowledge, not been much discussed. According to *Norsk ordbok*,[32] this meaning of *bíta* / *beita* derives from the meaning 'to pressure, to force, to crowd xxxtrenge-seg-innpåxxx'. However, this meaning seems to be attested only in Modern Norwegian, and then only in the verb *beita*. The verb *bíta* is nowhere known in this meaning. Sayers put forward an explanation that take into account both verb forms: 'Beating to windward or tacking […] is a nautical manoeuvre which causes the ship to 'bite' into a headwind. The ensuing zigzag pattern created by changing tacks might be likened to a succession of chunky bites taken out of the wind.'[33] This explanation is also problematic, in our opinion. Firstly, it is difficult to see what the teeth of the ship would be in this metaphor. Secondly, this explanation does not link up with the decisive feature of a good tacker, which is its ability not to drift sideways. If we say that a good tacker 'bites into a headwind', it is as if the boat avoids leeway with the help of teeth anchored in the headwind. But this does not make sense, because a 'grip' in the headwind would only sweep the boat sideways and backwards. To avoid this, the boat needs a foothold in some other medium with which it is in contact.

What stops a good tacker from being swept sideways (and allows it to convert the wind's counter force to a forward movement), is the keel. We will suggest that the idea behind *beita* 'to tack' is the same as behind the (Old Norse) adjective *beit*(*t*)*r* 'sharp, cutting'.[34] The verb *beita* seems to compare the keel of a ship to the edge of a knife or axe working on wood: A dull one just slides off, whereas a sharp one enters the wood where it is aimed, and can then only be moved sideways with strong force. In this sense, the ideal ship for upwind sailing, or its keel, is also *beit*(*t*)*r*. It thus makes good sense if the ships with angular stems, which were 'sharper' in this way than other ships at the time, earned the designation *beit*, 'the sharp one'. If so, this *beit* is the same word as Norwegian dialect *beit* 'sharpness', which is also neuter.[35]

This interpretation is supported by the fact that the above-mentioned 'skeg' on some North Sea boat types is referred to in Dutch as *loefbijter*, literally 'windward biter', alongside the corresponding *loefhouder*, literally 'windward holder',[36] and that the Norwegian *lobeit* on Sunnøre is known as *lobit*, which shows an even clearer connection to the verb *bíta* (Old norse form) than does *lobeit*.

Sverdrup,[37] too, derives *beit* 'a type of ship' from the verb *beita* on the basis of the resemblance of the terms, and so do Bjorvand & Lindeman,[38] although they understand the

[30] Fritzner, *Ordbog*, vol. I, 141-42.
[31] *Landnámabók*, 38-39, *Vatnsdœla saga*, 45
[32] *Norsk ordbok* 1, 502.
[33] Sayers, 'Some English', 264.
[34] http://onpweb.nfi.sc.ku.dk/wordlist_d.html, Heggstad et al., *ordbok*, 66, 72.
[35] *Norsk Ordbok*, vol. I, 499. This *beit* 'sharpness' is probably ultimately the same word as *beit* in *lobeit*, although it is considered a different word, ibid, cf. that 'sharpness' also is one meaning of *bit* (in Old Norse, as well as in Modern Norwegian. http://onpweb.nfi.sc.ku.dk/webart/b/bi/8497art.htm, *Norsk ordbok* 1, 629), found in the Sunnmøre variant *lobit*. In the Sunnmøre dialect, *bit* in *lobit* is pronounced with a vowel between /i/ and /e/, which shows that it really derives from the Old Norse short *i*, not the long *í* (personal communication Håvard Haraldson Hatløy, 2 November 2018.
[36] Thanks to Gerbrand Moeyes for information on this. Kweekschool voor de zeevaart, *Onderdeelen*, 6, 36; Oosting & Vlierman, *De Zeehond*, 17, 98; Lunenburg & Haentjens, *Ronde*, 46; Vermeer, et al., *De Boeier*, 2, 18, 21, 439, 454; Szymanski, *Der Ever*, 80; in German *Luvklotz*, 'leeward block / lump'; Menzel, *Die Tjalk*, 46-47, *Smakken*, 80.
[37] Sverdrup, 'Har Norden faat', 56.
[38] Bjorvand and Lindeman, *arveord*, 165-66.

verb *beita* as originally meaning 'to row against the wind'. De Vries[39] and later Ásgeir Blöndal Magnússon,[40] following de Vries, seem to misunderstand Sverdrup because they say that *beit*, if it derives from the verb *beita*, is a 'late formation'. But Sverdrup's point is that *beit* is a Scandinavian formation rather than inherited from Proto-Germanic, which still allows for it to have formed in conjunction with the earliest upwind sailing vessels of the Merovingian Period or Early Viking Age.

De Vries[41] explains *beit* 'a type of ship' as literally meaning 'half a split log', originally referring to a log boat, from the verb *beita* in a meaning 'to split', which is believe to be the essential or original meaning of this etymological root. This etymology is improbable for two reasons. Firstly, dugouts are not made from split logs. In a dugout, it is crucial to ensure that the freeboard and the stems are as high as possible; therefore, more than half the tree-trunk is used and it thus makes little sense to split it.[42] Secondly, *beita* does not mean 'to split', nor do related words in Germanic, as far as we can see. It may well be correct that the Indo-European root **bhey-d-* means 'to split (long objects lengthwise)'[43] (that question is beyond our competence), but this meaning is not found in the Old Norse words *bíta, beita, bit, beit, beit*(*t*)*r, beiti, biti, bitill* or their cognates and relatives in other Old Germanic languages, although this seems to be universally believed.

To *bíta* is 'to bite', 'to cut into', secondarily: 'to graze'. To *beita* is 'to make bite', secondarily: 'to make graze', 'to make chase (of hunting dogs)', 'to handle a (cutting) instrument', 'to bait a fish hook', and 'to hitch up the horse' – which makes the horse bite the *bitill* 'bit of a bridle'. A *bit* is 'a bite', 'biting', 'pasture', and 'sharpness'. A *beit*(*i*) is 'pasturage', 'grazing', or 'a plate of metal mounted on the brim, e. g. of a drinking horn'; i.e. 'something bitten (or intended to be bitten)'. The same is the case with the noun *beita*, 'a pasturage', 'a bait'. *Beit*(*t*)*r* is 'sharp', really: 'with the ability to bite'. A *biti* is 'a bit, a mouthful', 'a piece' (< 'something bitten off'), 'a cross-beam in a house or a ship', and 'a canine tooth'.[44] Some etymologists seem to take *biti* in the meaning 'cross-beam' as proof that the root in question had the meaning 'to split' in Germanic – assuming that cross-beams were made from split logs.[45] However, it is no defining characteristic of cross-beams to be made of split logs, and in houses, they certainly are made from unsplit logs. The meaning 'cross-beam' seems easier to derive from the meaning 'canine tooth', because cross-beams, both in houses and on ships, would usually go through the wall/side of the ship and protrude on the outside, allowing for it to be secured with a wedge on the outside.[46] The meanings of all these words seem to derive from the semantic complex around biting and teeth, which does not involve splitting (lengthwise, of long objects), but rather cutting long objects across, or cutting into something. The same seems to apply to the cognates in the other Old Germanic languages.[47]

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[39] De vries, *etymologisches*, 30.
[40] Ásgeir Blöndal Magnússon, *orðsifjabók*, 48.
[41] De Vries, *etymologisches*, 30.
[42] Korhonen, *båttermer*.
[43] For example Bjorvand & Lindeman, 166; Pokorny, *Indogermanisches* I, 116-17.
[44] https://onp.ku.dk/, Heggstad et al., *ordbok*, 66, 72; Fritzner, *Ordbog*, vol. I, 122, 141-42.
[45] For example Bjorvand & Lindeman, *Våre arveord*, 166; de Vries, *Etymologisches*, 30.
[46] Christie, *Middelalderen*, 26; Christensen, *Boat finds*, 53-54,73, 77, 80, 223-24.
[47] Gothic *beitan*, Old English / Old Saxon *bītan*, Old Frisian *bīta*, Old High German *bīzzan* (= Old Norse *bíta*); Old English *bǣtan*, Old Saxon *bētian*, Old High German *beizen* (= the Old Norse verb *beita*); Old English *gebǣte*, Middle High German *gebeize* (= Old Norse *beiti*); Old English *bita*, Middle Low German *bete*, Old High German *bizzo* (= Old Norse *biti*). De Vries, *Etymologisches*, 30-31, 38; Karg-Gasterstädt & Frings, *Althochdeutsches* I, 859, 1158, 1164; Bosworth & Toller, *An Anglo-Saxon* I, 67, 105, 291; Holthausen, *Altsächsisches*, xxxx, Schiller & Lübben, *Mittelniederdeutsches* I, 296; Köbler, *Gotisches*, 85-86.

3.3.3.

There is reason to believe that *beit* 'a type of ship' is an early term in Old Norse, and this would fit with the early dating of the angular ships.[48] First a few words about the sources for Viking Age Scandinavian terminology: Some Viking Age runic inscriptions mention maritime aspects, but these are few and short.[49] Most of the Scandinavian literature that we believe to date from the Viking Age is handed down to us in 13th and 14th century manuscripts, most of them are Icelandic, a few are Norwegian. (The oldest manuscript fragments in Old Norse are from the end of the 12th century.) These manuscripts contain vast amounts of prose texts, some of which pose as historical accounts from the Viking Age. But regarding maritime technology and many other aspects, it is quite clear that these prose texts reflect the time of their composition, i.e. the High Middle Ages, rather than the Viking Age.[50] However, the prose contains skaldic poems, which most scholars believe were orally transmitted from the Viking Age (the oldest from the 9th century) until their recording in the High Middle Ages.[51] There are many reasons for making this assumption and we can only mention a few here: First, the metre of the poems is so complex and rigid, with many types of rhyme, that it provided a multitude of supports for the memory, which makes it possible that poems have been carried in relatively unchanged forms. Second, the assumption of antiquity is confirmed in many ways. For example, they often present a picture different from that of the prose in which they are transmitted, among other things regarding maritime aspects. Thus, the high medieval prose praises fleets for consisting of big, high ships, whereas the accompanying skaldic poems from the Viking Age praise them for consisting of many, swift ships.[52] This discrepancy actually fits with what we should expect: The high medieval contemporary sagas depict an arms race in the 12th and 13th centuries, with ships that seem to morph into 'floating castles', and such vessels would have been useless for Viking Age beach landings, which required light and shallow – i.e. small and numerous – ships. This is one of many indications that the bulk of the skaldic poetry attributed to the Viking Age really does date from that period. The maritime aspects of the skaldic poetry and the runic inscriptions from the Viking Age have been studied by Malmros and Jesch,[53] both of which are excellent works. – Much of the Eddic poetry, handed down to us in the same kind of manuscripts as the skaldic poetry (Icelandic, 13th and 14th century), is also widely believed to date from the Viking Age. The arguments for this are different, however, and the assumption is much more uncertain. The eddic metre is so loose that it does not provide much support for the memory. But the scholars of the 12th and 13th centuries apparently understood the poems as handed down from ancient times, and the content of the poems have no reference to Christianity, which indicates that they predate the conversion, i.e. the year 1000 AD in Iceland.[54] There is no existing study of the Eddic poems as a source of maritime information, but in terms of linguistic forms and overall comprehension it is easier to access than the skaldic poetry. Viking Age poetry can provide invaluable information about Viking Age terminology and other aspects of the Viking Age, but because of the source problems, it must be used with care and ought to be supplemented by information from other sources; and conclusions will always be uncertain.

[48] Heide, 'The Early'.
[49] See Jesch, *Ships and men*.
[50] E.g. Malmros, 'Leding'.
[51] E.g. Kuhn, *Das Dróttkvætt*, Myrvoll, *Kronologi*.
[52] Malmros, 'Leding'.
[53] Malmros 'Leding' and Jesch *Ships and men*.
[54] Meulengracht Sørensen, 'Om eddadigtenes'; Haukur Þorgeirsson, 'The Dating'.

Beit is mentioned as a term for a (type of) ship at least nine times in the Eddic and skaldic poetry.[55] All the examples listed by Finnur Jónsson are early – 12th century or earlier. (In several of the cases, end rhymes and internal rhymes reveal that the term *beit* really belongs in the poem.) And, more important, *beit* never occurs in Old Norse prose. Given the magnitude of the prose corpus, this indicates that *beit* was not used as a term for a ship type in everyday language during the High Middle Ages, only in the poetic language. This is an indication of ancientness because old words could survive as poetic words long after they went out of use in daily speech. Another example of this is *kjóll*. It is also an Old Norse term for a (type of) ship, it does not refer to Scandinavian ships in prose,[56] but is common in Eddic and skaldic poetry[57] – and we happen to know that it is very old. The Old English form of it, *cēol*, is mentioned by Gildas in the 6th century, referring to the ships that brought the first Saxons to England.[58] Clearly, at this early time, the term was not confined to poetry. The term *beit* seems to be analogous: Because it only occurs in poetry, there is reason to believe that its original, actual referent probably was a very early ship type. This dating of the term fits the angular ship type, which is known only from the Early Viking Age and Merovingian Period.

Achieving absolute certainty as to whether *beit* really did refer to the ships with angular stems is not possible. But we have to remember that certainty is generally unattainable in matters like these. The best we do is to take into account all of the available information and then reach for the explanation that is more probable than the alternatives. We believe that what we propose here meets this requirement.

4. Arrow-shaped ships – a different type

A number of rune stones feature a ship type reminiscent of the one discussed here, from Östergötland and Scania on the Swedish mainland, and northern Jutland.[59] There are seven examples,[60] two of which are shown in Figure 7 and Figure 8:

[55] According to Finnur Jónsson, *Lexicon*, 40, cf. Jesch, *Ships and Men*, 135

[56] About *kjóll*, see Heide, 2014: 118-22. The term is mentioned twice in Old Norse prose, but refers both times to English ships (Falk, 1912: 88). Thus, it seems that the term survived in the everyday language of the High Middle Ages as a designation for some English ship type (which is logical because the term *cēol*, later *kēle*, was very common in English, see Thier, 2002: 38 ff.) – but not a Scandinavian one. Thier (ibid) believes that *kjóll* became associated with the English cognate relatively late.

[57] Finnur Jónsson, *Lexicon*, 337.

[58] Williams, *Gildae*, ch. 23.
Gildas' spelling is *cyulae*, with a Latin plural. Both Old English *cēol* and Old Norse *kjóll* correspond to a hypothetical **keulaz* in Proto-Germanic (nominative singular). This is not the same word (not even the same root) as Old Norse kjǫlr ' the principal structural part of a ship', despite the superficial orthographic similarities and despite the fact that the two words have merged in English. We will discuss the etymology of *kjóll* / *cēol* in a separate article.

[59] Varenius, *Det nordiska*, 89 ff. and Rosborn, *Den skånska*, 126 ff.

[60] See Varenius, *Det nordiska*, 89-93.

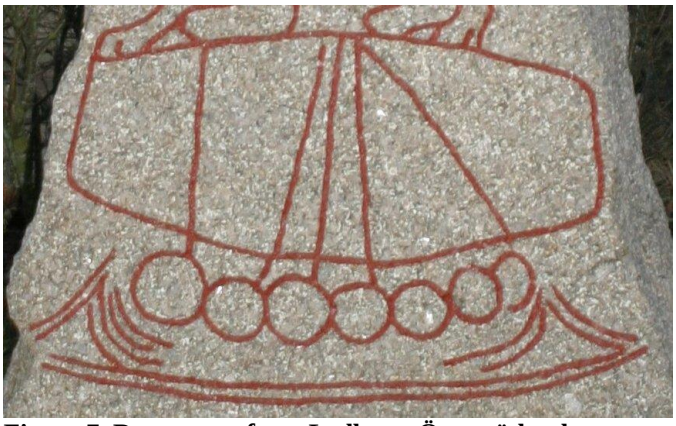

Figure 7. Rune stone from Ledberg, Östergötland (Wikipedia). 11th century.

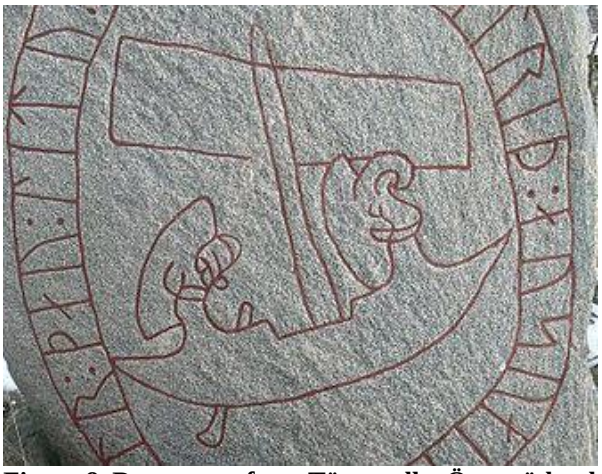

Figure 8. Rune stone from Törnevalla, Östergötland (Wikipedia). 11th century.

If there is a connection between this type of ship and the one discussed above, this counts against the proposal we make here. But there seems to be no connection. The ship type discussed as *beit* above belongs to the Merovingian Period and Early Viking Age; the depictions dated with certainty are early 9th century or earlier (references above). The examples from the Gotland stones are more uncertain, but they, too, are early: 9th century or between 750 and 900 in the most recent work.[61] The depictions of arrow-shaped ships, on the other hand, belong to the Late Viking Age, mostly the 11th century.[62] Accordingly, the ship-type discussed above (which we identy as *beit*) and the arrow-shaped ships are separated by more than a century, there seems to be no continuity between them, and the evidence for them is found in different regions. In addition, the pronounced arrow-shape, which all examples of the later type have, makes them distinctly different from the ships with angular stems discussed above. Admittedly, on some of the angular-stemmed ships, the stem and stern tilt slightly inwards, but the difference between them and the ships depicted in Figure 7 and Figure 8 type is nevertheless striking.

The arrow-shaped ship type is difficult to comprehend in many ways, partly because the depictions seem unrealistic. How are we to understand the bows and the sails? We hope to return to these problems in a later article. For the time being, we simply wish to make clear that the arrow-shaped ships should not be seen in connection with the Merovingian and Early Viking Age ships with angular stems.

5. The relationship between *beit* and Old Norse *bátr*, Old English *bāt*

Up to this point, we have omitted, in order to give an easy to follow presentation, the question of the relationship between Old Norse *beit,* Old Norse *bátr* 'a boat', and Old English *bāt* (> *boat*) 'a boat'. However, because some consider these words to be reflections of the same original word, we need to discuss this relationship.

Beit and *bāt* correspond formally, as *ei* is the normal Old Norse cognate of Old English *ā* from Proto-Germanic *ai*. But *beit* and *bāt* do not mean the same. All the 9 Old Norse occurrences of *beit* refer to warships,[63] whereas *bāt* seems to have a meaning quite close the

[61] Imer, 'Gotlandske', 104, cf. 106 and Imer, 'The Viking Period'. Halla Broa IV, Klinte Hunninge III, Bro Eriks I; cf. Kastholm, *De gotlandske*, and 'De gotlandske'.
[62] Varenius, *Det nordiska*, 99-100, Felbo, *Skibsbilleder*, no. 81, 145, 146, 200, 274, 279, 291.
[63] Heide, 'The Early', 137-42.

modern word 'boat'.[64] Thier[65] defines *bāt* as ''boat', also 'logboat', in poetry any watercraft'. *Bāt* and *bátr* do mean approximately the same, but they are not cognates. Among others Falk,[66] de Vries[67] and Bjorvand & Lindeman[68] therefore argue that Old Norse *bátr* is borrowed from Old English *bāt*. This may be so, although it would be surprising (but in no way excluded~~xxxutelukka~~) if the Scandinavians would borrow a central term for 'craft' at a time when they were leading the maritime development – as pointed out by Sverdrup.[69]

Bjorvand & Lindeman[70] argue that *bāt* / *bátr* derive from the verb that we find in Old Norse as *beita*, and that it originally referred to a craft that was good at beating. However, if the term originated in English, as Bjorvand & Lindeman argue, this etymology requires, in order to be plausible, some support for the assumption that the English *bāt* distinguished itself from other boat types by being specialised for beating. However, of this there is no indication, and the fact that a *bāt* could also be a dugout, clearly counts against it.

Nielsen,[71] too, argues that *bátr* is a loan from Old English, and he argues that *beit* is the indigenous Scandinavian form of the same word. This *bāt* / *bátr* / *beit* he derives from 'Germanic **baita*-, Indo-European **bhoido*- to the root **bheid*- 'to split'', and suggests that the original *bāt* / *bátr* / *beit* was ''a cut off, split or hollowed out trunk' or 'a ship assembled from split wood'' (xxx~~'afhugget, kløvet el. udhulet træstamme' el. 'skib sammensat af spaltet træ'~~). As we have seen, however, the root that *beit* belongs to does not have the meaning 'to split' in Germanic, and this excludes the latter explanation. Nor does the root in question in Germanic have the meaning 'hollow out'. It does, however, have the meaning 'to cut off across'~~xxxkappe av~~, so the meaning 'a cut off trunk' cannot be rejected altogether. It does seem a bit odd, though, to give a dugout the designation 'cut off [trunk]', as all logs will have to be cut off to be used in boat building.

The question of the relation between *bāt*, *bátr* and *beit* seems unsolvable. *Bátr* may be a loan from Old English, but this does not bring us closer to an understanding of the relationship between *bāt* / *bátr* and *beit*. If we are right that the (Scandinavian) term *beit* referred to the ship type with angular stems, it is conceivable that the apparent (linguistic) cognate *bāt* referred to the same ship type in England at the same time, and only later assumed the more generic meaning 'a boat'. However, we have no indication that the ship type with angular stems existed in England.

Fortunately, however, this unsolvable question makes no difference to the argument that we put forward in the present article, especially as *beit* probably is an earlier word in Old Norse than *bátr*. As we have seen, the word *beit* seems to belong to the earliest layers of the Old Norse language. *Bátr*, on the other hand, has the first probable attestation in a skaldic poem dated to around 990.[72] Thus, we find it justified to discuss the term *beit* in its own right, and its possible designating the Scandinavian ship type with angular stems.

6. Concluding remarks

[64] Bosworth & Toller, 'An Angl-Saxon', 69.
[65] *Altenglische*, 128.
[66] 'Seewesen', 4, 86.
[67] *etymologisches*, 28.
[68] *arveord*, 165-66.
[69] 'Har Norden faat'.
[70] *arveord*, 165-66.
[71] *Dansk etymologisk*, 58. Translated by the present author.
[72] Finnur Jónsson, *Den norsk-islanske* B I, 134.

This study is an example of how it may be possible to increase our understanding of early maritime history by making use of all the available material and interpret it in light of practical experience with boats of the same tradition. As we have shown, it appears possible to throw light on the ship type *beit* through a combined analysis of archaeological finds, contemporary iconography, etymology, information from High Medieval Old Norse manuscripts, and practical sailing experience. Based on how the term is used in the manuscripts, *beit* seems to belong to the earliest phases of the Old Norse linguistic period, which coincides with the period when the characteristic ships with angular stem and stern were used. Several scholars have, independently of one another, linked this ship type to early upwind sailing and the need for increased sideways resistance, because the extensions under stem and stern would increase sideways resistance in a primitive, easy-to-implement way. This fits very well with the term *beit*, which seems to be related to the verb *beita* 'to beat', really: 'to make [something] bite', which again seems to derive from the idea that the keel of a good up-wind sailing ship 'slices' through the water instead of being pushed sideways. This matches the characteristic of the ships with angular stem and stern well. In addition, we know from several Northern European boat types that sideways resistance has been increased with modifications similar to those on the ships with angular stems, and that these modifications have been semantically linked with the verb 'to bite'. In Dutch, the 'skeg' itself is called a *loefbijter*, 'windward biter', and in Norwegian tradition, a direct descendant of the Viking ship tradition, a vessel's ability to avoid leeway is referred to with the linguistically close relatives *lo**bit*** and *lo**beit*** (*lo = loef*).

We believe that the approach we have employed here, represents a large untapped potential, and we hope that both the results of the study and the approach will find approval.

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