Sailing Directions of the North Atlantic Viking Age (from about the year 860 to 1400)

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As long as man has ventured to go to sea, sailing directions have existed. Man's survival depended upon knowing the best fishing and hunting places and how to find these were secrets, told only to family or friends.

Later, sailing directions covered areas in the world where trade or new settlements had begun and, as early as 500 years B.C., some of these sailing directions were written down. They covered the Mediterranean Sea and part of western Europe and they were called PERIPLUS[1] meaning 'sailing around'. They contained almost the same information as sailing directions today, namely: harbours, anchorages, currents, possibilities for fresh water, provisions and other supplies.

In our northern cultures of the viking age, we also had sailing directions. They are remarkable as they covered not only the coasts of Scandinavia and western Europe from North Cape and far into the Mediterranean Sea, but also the whole North Atlantic as far west as Newfoundland. They even give us proof that the Norsemen discovered America half a millennium before Columbus. In fact, Columbus never saw America, whereas the Norsemen even settled there for some time.

The Viking age coastwise navigation is admirable but understandable. The navigator followed the coast from point to point. The appearance of the land and the fairways were known from earlier voyages, heard from other navigators or a pilot was hired. The only navigation instrument known to have been used is the lead and line. Navigating always in sight of land, it is not important to know the courses to steer, but to cross the North Atlantic without sailing directions and a means of setting and maintaining a course would be impossible. It is remarkable that we have seven North Atlantic sailing directions from the viking age (Fig. 1) preserved in the Icelandic sagas.

The Icelandic sagas[2] contain much interesting information on daily life in Iceland, Greenland and the other North Atlantic islands. Mostly we can read about the settlements in the new lands, family relations, religion, fights, deeds, misdeeds and laws kept and broken. Such historical legends have a tendency to change with the passage of time. When told and retold, deeds become greater, misdeeds become more cruel and so on. Not so with the sailing directions in the sagas. Here we can feel confident that they have changed very little – if at all. They are so well formulated that some of them could be used today.

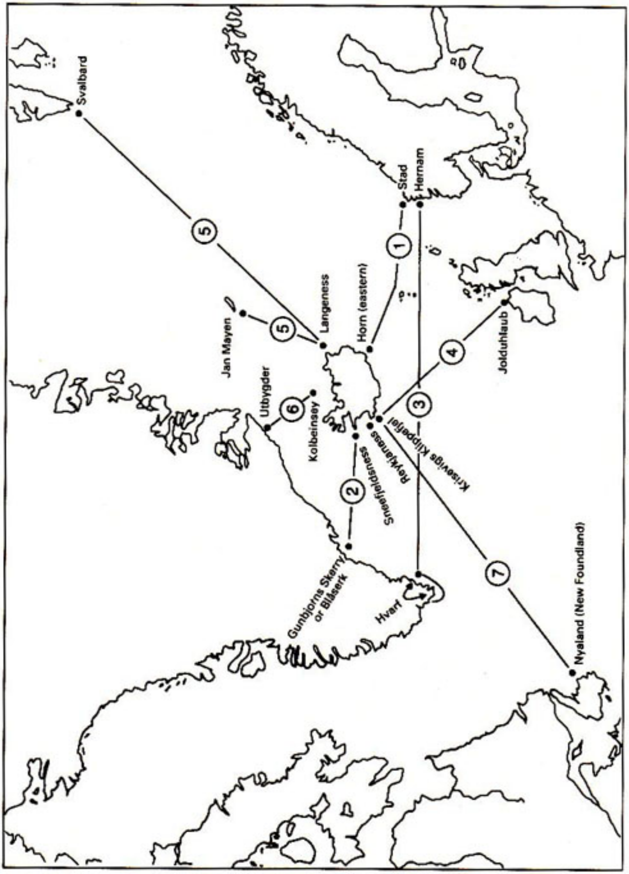
Svalbard
Stad
Hernam
1
5
Langeness
Horn (eastern)
Jan Mayen
5
4
Jolduhlaub
Utbygder
6
Kolbeinsey
3
Reykjaness
Snaefjeldsness
Krisevigs Klippefjel
2
Gunbjorns Skerry
or Blåserk
Hvarf
7
Nyaland (New Foundland)

Fig. 1.

In the eighth century, the Norsemen settled in the Shetlands, the Orkneys[3] and later in the Hebrides. The Faroes were discovered and settled in the ninth century, but little is written down about the navigation between Scandinavia and these islands. Most of the islands in the North Atlantic were discovered by coincidence, and the routes to get there were told only to family or friends, until they became so common that anyone could use them.

Before the Norsemen began exploring the North Atlantic, there must have existed sailing directions of a kind which made it possible for some Irish monks to seek freedom for meditation in Iceland about a hundred years before the Norsemen settled there. These holy men are said to have been guided by the migrating birds flying north in the spring and returning in the fall.[4]

Iceland was discovered by the Norsemen between 860 and 870. The first mentioned discoverer was a man called Naddod[5] who, on a voyage between Norway and the Faroes, was storm-driven to the west where he found some land unknown to him. He went ashore and climbed a hill from where he looked for smoke or other signs of inhabitation, but he saw nothing and decided to leave the place. When he sailed away, snow fell on the land, and he named it 'Snowland'.

A year or two later a man named Gardar Svarvarsson sailed out to find the land, and he took his mother with him. She was a seeress, and she seems to have guided him successfully. They found the land and sailed around it and, after having discovered that it was an island, they stayed there for some time and gave it the name 'Gardarholm'.

A third man, a viking called Floki Vilgerdson,[6] blessed three ravens and sailed to find the island. The ravens were to guide him to the land. The first one flew up and came back immediately. Some time later a second one was sent aloft, it circled, but came back. When the third one was sent up, it flew off in the direction of the prow and there Vilgerdson found Iceland. He was later nicknamed Raven-Floki. He experienced much drift ice around the island, so he gave it the name we still use – 'Iceland'.

The news about Iceland was indeed welcome for some Norsemen. Many were unsatisfied with the rulers of Norway. Others had committed crimes and had to start a new life abroad. The first man known to have emigrated to Iceland was Ingolf Arnarson who settled where Reykjavik is now situated. Many families followed him, and soon after the Irish monks had to withdraw. In the tenth century the Norsemen spread further west to Greenland and eventually to America. The various routes in the North Atlantic became well known. They were probably at first passed on from man to man by word of mouth but, in the early fourteenth century, the principal sailing directions for the North Atlantic became so well known that they were written down in the Icelandic sagas. They are in the original Norse language, and they have survived in a great collection, now in Reykjavik[7] but translated and published in many books and articles.

In order to describe these wonders, and to analyse them, the author decided to study the earliest (to his knowledge) translations of the sagas – the three volumes of *Grønlands Historiske Mindesmærker* (the history of Greenland's memorials), which were published between 1838 and 1848. They consist of about 2564 pages, and are so well arranged that the Norse language appears on the left

page and the Danish translation on the right. Anyone can compare the two versions to the best of his ability.

When analysing what these old writings tell us about how to navigate across the North Atlantic it should be kept in mind that the writers probably never navigated themselves. The writers of the fourteenth century were mostly monks or clerks, and naturally we can only expect that they wrote what they understood. From the sources it appears that the nineteenth century translator also had some small problems in judging what was important for a good sailing direction. In one of them, the course is not mentioned in the translation, although it is mentioned in the original language.[8]

A sailing direction should contain at least four ingredients, namely: (1) the name and place of departure; (2) the name and place of destination; (3) the course from (1) to (2); and (4) the expected sailing time. We find almost all of these, and in one of the sailing directions, we even find the distance to islands passed en route. It is interesting to note that most places of departure and destination are easily recognized promontories. Without these sailing directions, the steady trade across the North Atlantic for more than 400 years would hardly have been possible. They are based on the experiences from many voyages. However, in the North Atlantic sailing directions, nothing is mentioned regarding how to return to Scandinavia. It was probably common sense that you just steered the course opposite to the one you steered when outward-bound.

The compass directions are quite crude – mostly north, east, south and west – but southwest[9] is mentioned. Looking at the chart, however, it appears that the practice of the viking-age navigator on his west-east voyages, was most often to follow the same latitude from departure to destination, a navigation practice which today is called latitude sailing. The grid of latitude and longitude was, however, not known in the viking age. The west/east navigation was probably based on astronomical observations, so we may call the practice 'equal altitude sailing', meaning that the navigator would follow a track (effectively a parallel of latitude) in which the altitude of any chosen celestial body, when passing the meridian, would be the same during the whole voyage. Latitude sailing with some modification was practised far into the twentieth century by navigators in smaller vessels, not having invested in the chronometer which was necessary to calculate the longitude.

The division of the horizon in the viking age had some interesting indications that it related to the north/south direction of the west coasts of Jutland and Norway. North, east, south and west were as we know them today, but the directions between these can be translated as follows: northeast was called landnorth, southeast was landsouth, meaning towards land; southwest was outsouth, and northwest was outnorth, meaning towards the sea. Further divisions could be expressed such as 'between landsouth and east', meaning east-southeast. This gives 16 directions but, after analysing an archaeological find from southern Greenland, it seems likely that the 32-point division was known.[10,11,12]

The sailing time is expressed in 'dægra sigling' meaning days sailing, or in 'dægra haf' meaning days at sea. Dægra has been translated as 'døgn', a Scandinavian word for 24 hours. It seems likely that this is right, as the distances compared to the sailing time come out reasonably, but scholars are still discussing

these units. G. J. Marcus writes[13] that, according to *Rimblega*, an astronomical and geodetic treatise compiled in Iceland in the late thirteenth century, in a day there were two dægra and in a dægr there were 12 h. But in point of fact, dægra sigling sometimes covered 12, and sometimes twenty-four hours. G. J. Marcus concludes that the controversies surrounding dægr and dægr-sigling are unlikely ever to be satisfactorily resolved.

In the sagas, we find a total of seven sailing directions, which practically cover the whole North Atlantic between Scandinavia and North America. They are in this paper given numbers from (1)–(7), referring to the areas they cover and their approximate chronology. They are from the parts of the Icelandic sagas called *Landnamabok and Hauksbok*[14] which, according to experts in the University of Copenhagen, were written between A.D. 1302 and 1310 approximately. There are small differences in the wordings of the two sagas. In analysing the various sailing directions, the *Landnamabok* will be referred to as 'L' and the *Hauksbok* as 'H'.

The author of *Landnamabok*, 'L' was originally Are Frode, but his work was continued by Styrmer, Sturla Thordsøn and Marcus Thordsøn. In their introduction we find these five sailing directions:

(1) Wise men say that from Stad in Norway there are 7 days sailing west for Horn on the east coast of Iceland; (2) but from Sneefjeldsnes where the distance is shortest to Greenland there are across the ocean 4 days sailing towards west. (3) It is also said that when going from Bergen to Hvarf in Greenland one should sail 12 miles south of Iceland. (4) From Reykjanesset in southern Iceland there are 5 days ocean sailing for Jolduhlaub in Ireland towards south; (5) but from Langenes in northern Iceland there are 4 days sailing north to Svalbard in the bay of the ocean.

The author of *Hauksbok*, 'H' was Hauk Erlandsøn. It is based on studies of the *Landnamabok*. Hauk Erlandsøn was often in Norway for long periods of time, and so he had many crossings of the North Atlantic, which may have given him some experience in navigation. In *Hauksbok* we find these six sailing directions: (1) Wise men say that from Norway, from Stad, there are 7 days sailing for Horn on the east coast of Iceland; (2) but from Sneefjeldsnes 4 days sailing for Hvarf in Greenland. (3) From Hernam in Norway one should steer due west for Hvarf in Greenland, and then one will pass north of Hetland (the Shetlands) so that one can just see the island in clear weather, but south of the Faroes in a distance so that one may only see half of the mountain above the sea, but so far south of Iceland that birds from there and whales may be seen. (4) From Reikjanes on the south coast of Iceland there are 3 days ocean (sailing) for Joldulaup in Ireland towards south; (5) but from Langenes on the north coast of Iceland there are 4 days ocean (sailing) for Svalbard towards north in the bay of the ocean (6) but one day sailing is there for Greenland's Udbygder (meaning small settlements) from Kolbeinsey towards north.

Hernam in Norway is a small island northwest of Bergen and 'Hvarf' means turning-point. It could be either Cape Farewell or the point near the east coast of Greenland, where land is sighted, and where one should turn more southerly to go around Cape Farewell.

It will appear from the chart how precise most of the sailing directions are,

only a few being confusing. In such cases, some of the directions may have been misunderstood by the writers.

Navigation is, has always been, and will always be, two questions alternating with one another: (1) Where am I? and (2) What course shall I steer to reach my destination with safety? The more often and the more exactly these two questions can be answered, the safer and better the navigation.

The first words in both *Landnamabok* and *Hauksbok* are 'Sva segja vitrir menn'. In English, this means that 'Wise men with knowledge in the ocean navigation – say'. This could be an underlining of the fact that these sailing directions are based on wise men's experience: we can trust them; the chronology is clear. Number (1) tells us how to navigate from Norway to Iceland, probably used by the first settlers of Iceland. Number (2) tells us how to reach Greenland, a route followed after Eric the Red started the settlements in Greenland. Number (3) was used when the steady trade between Norway and Greenland began. Number (4) shows evidence that trade between Iceland and Ireland had begun and number (5) that hunting in the very northern areas had taken place. Number (6) is only mentioned in the *Hauksbok* and gives evidence of voyages between Kolbeinsey and some small settlements on the east coast of Greenland, but the sailing time 'one day' seems to be exaggerated.

From a navigator's point of view, an analysis of and a comparison between the *Landnamabok* and the *Hauksbok* versions is made as follows:

Starting with number (1), only 'L' mentions the course west, and it was not translated. This course is very crude as it will take the ship a good distance south of Iceland, unless it had been practice to take a fresh departure when passing the Faroes and from there steer more northerly. There is evidence that the departure from Norway was often from a position closer to Trondheim.[15] In Ivar Bårdsøn's *Grønlands Beskrivelse* it is also mentioned to depart 'north of Stad'. This would make the course much better. The sailing time is realistic. The distance is 550 nautical miles, and with 7 days sailing, the average speed would have been 3·2 knots.

Number (2) has an interesting piece of information, that the course is laid 'where the distance from Iceland to Greenland is shortest', and is 'towards west'. This tells us that the sailing direction must be based on the experiences of many voyages, which have been compared. There is a slightly shorter route on, say, west-northwest, but here, as in the other sailing directions, it seems to have been practice to follow the parallel of latitude, and we should not forget that this route was followed by Eric the Red, when he fled from Iceland after having been outlawed. He steered west for Gunbjorn's Skerry, reported to lie due west of Sneefjeldsnes,[16] which is now thought to have been a landmark near Angmassalik. This route became later known as 'Eriksstefna', meaning the direction of Erik's route. The distance is 400 nautical miles, giving 4·2 knots with 4 days sailing. This is reasonable. In 'H' we read 4 days sailing for Hvarf in Greenland, but no course is mentioned. Could this indicate that Hvarf (turning-point) was a position where the Greenland coast was observed, and where one should turn more southerly to follow the coast?

Number (3) sailing direction is so clearly described in 'H' that it could be

used today. It indicates that the navigation between Norway and Greenland was carried out, sailing direct from Hernam to Hvarf. The course is due west, and en route are mentioned the distances which the navigator should keep from Hetland, the Faroes and from Iceland; thus, he could check that he was on the right course. The southern island of the Faroes should be only half way above the sea. The viking-age navigator knew that the surface of the ocean was a curve. In 'L' no course is mentioned, but one should sail 12 miles south of Iceland. Whichever definition of a mile is referred to it is difficult to see how 12 miles off Iceland could be observed. Could this be an indication of how far off we may see birds and whales? The direct course between Hernam and Hvarf takes the ship about 150 nautical miles south of Iceland.

This long voyage between Scandinavia and Greenland brings up the question of how the navigator was able to shape his course due west without some sort of compass.[10,11,12] Until the middle of this century nothing was known about directional references of the viking age, but in 1948 the Danish archaeologist and historian, Mr C. L. Vebæk was excavating a Benedictine convent near the Uunartoq fjord in southern Greenland. He discovered that the convent had been built on top of an earlier building which had been covered by an earthslide, and in these low layers, he found some artefacts. One of these has now been identified as a Sun compass, and many experiments with copies of it on board replica viking ships in the North Atlantic have proved that it works well. The Sun compass was dated to about the year 1000.

Number (4) sailing direction tells us that one should steer south to go from Reykjanes in Iceland to Jolduhlaub in northern Ireland. This course is too crude, and it is likely that some information has been omitted such as 'a little to the east' or 'steer south until the latitude of the destination then due east'. We will probably never know. The distance is 550 nautical miles. In 'L' we can read 5 days sailing giving 4·6 knots, but in 'H' only 3, giving 7·6 knots. 'L' seems more reasonable.

Number (5) sailing direction comes out with a quite difficult question. Was Svalbard known to the viking-age sailor or could it have been confused with the island Jan Mayen? Four days sailing to Svalbard would imply a speed of more than 200 miles a day. Jan Mayen seems more likely.

Number (6) sailing direction, which is only mentioned in 'H' tells about one day sailing from Kolbeinsey to some Udbygder (small settlements) in Greenland. This must be exaggerating the speed of any ship in the viking age to run 300 miles in a day. Kolbeinsey is a small island north of Iceland. It was earlier known as a good hunting place for seals and birds, and for collecting eggs.

In volume III of *Grønlands Historiske Mindesmærker*, p. 215, there is an interesting sailing direction, number (7). It tells us that there has been a direct route from Iceland to Newfoundland, namely: 'Men with knowledge say that one should steer southwest to Nyaland from Krisevigs Klippefjeld'. Nyaland is according to *Antiquit. Americ.*[17] identified as being Newfoundland, and Krisevigs Klippefjeld is situated near Reykjanes. In the same volume Nyaland is mentioned on p. 12 as having been discovered in 1285 by Adelbrand and Thorvald, and in 1289 King Erik sent Rolf to look for the Nyaland. These notes should probably be taken with

caution, as Nyeland, being 'new land', could be confused with any newly-found places. On the other hand, the direction 'southwest' is consistent with it being Newfoundland.

With this number seven sailing direction, the entire North Atlantic is covered from Scandinavia to North America. The Norsemen also made voyages from their Greenland settlements to Newfoundland and the mainland coast of what is now Canadian territory. These are documented in *Grønlands Historiske Mindesmærker*,[14] but they are essentially coastal passages and are not discussed further in this paper.

The question has been raised as to whether the viking-age navigator had any chart. The answer is NO. Looking at the information in the sailing directions, we may assume that he had no need for it. The sailing directions gave him all the information he needed. Modern navigation in the North Atlantic demands the use of many instruments, charts, sailing directions and weather information, and still the navigator may have difficulties. No doubt, the viking-age navigator also experienced many problems on his voyages. He only had his memory and his experience to guide him.

The only school of navigation in the viking age was what could be learned by observing the navigators work on board and the 'talk' in the dwellings during the winter evenings. Here, the experiences from former voyages were discussed, and here the youngsters would have had their first lessons, listening to what the elder men discussed. How was the course compared to earlier voyages? How had the weather been? Had storms been experienced and how had the ship been managed?

The greatest danger for the viking-age navigator was the weather. The severe storms sweeping across the North Atlantic are dangers to shipping today, but they must have been terrible for the viking-age sailors in their relatively small and open ships. 'Heaving to' was probably never practised by the viking-age seamen. When a storm came up, they had to run before the weather with the consequence that they could be taken far away from their intended course. Many may have been lost, and many lost their way, when they were said to have become 'hafvilla'. Fog, snow and rain also made the navigator become 'hafvilla', when no celestial body could be observed. Life must have been awful in the open ships of the viking age.

Unfortunately, the sagas are silent as to how viking age navigation was practised. We can, however, find interesting information on how they estimated directions. We read that, when the celestial bodies were visible, the navigator could 'deila ættir', that is, he could find directions. This means that he could use the celestial bodies for finding his course. In three articles in this *Journal*[10,11,12] this question has been discussed. In the author's view, the best answer we have is that a Sun compass could have been used, based on Mr C. L. Vebæk's find from Uunartoq in southern Greenland.

Planning a voyage across the North Atlantic would have called for much activity. The ship would have to be made sea-worthy, the sail would have to be mended, all ropes would have to be overhauled, and one particular man's job was of great importance. He was the navigator. Experiences of other navigators

would have been discussed during the period when the skipper was awaiting a fair wind, and eventually the ship could put to sea. The course was shaped by observation of the Sun, probably by means of a Sun compass. When the ship was steady on course, the man at the steering oar might have been told to keep her steady by observing the pennant, the shadow of the mast, some clouds ahead or the like. At intervals, the navigator would check the course and, if the course had not been correctly kept, he would compensate. This was common practice until the 18th century, when the magnetic compass became so advanced that one could steer by it.

There is evidence that the navigator had some instrument with which he could observe whether he was on his correct east/west course – in other words, following the parallel of latitude of the destination. The instrument was in *History of the Faroes* mentioned as a 'Solskuggefjøl'[18] meaning a Sun shadow board; a circular board with a gnomon in the centre and floating in a bowl of water. Before sailing, the length of the Sun's shadow from the gnomon at noon would be marked, and when steering east or west on the following days the shadow would have the same length at noon. If the shadow was observed shorter, the ship was south of the intended course line, and if it was observed longer, she was north of it, and the navigator could compensate. It is not known whether the navigator was able to compensate for the alterations in the Sun's declination, but this is negligible at midsummer.

The Norsemen called the North Star 'Leitharstjærna', which means the leading star, and it was used for guiding the Norsemen in dark nights, although in the summertime in the North Atlantic there is too much light to observe stars. However, in spring and fall, it may have been used as a guidance for keeping the course at night. To determine the latitude, as it is nowadays understood, this star would have been of doubtful use in the viking age, as its position was about 4° away from the celestial pole. The navigator could, however, have observed a rough latitude by measuring the altitude of the North star around the same time evening and morning, and comparing whether the star was higher or lower than earlier observations. Unfortunately we have no information on instruments (other than the solskuggefjøl) for measuring altitudes in the viking age.

It has been with a feeling of great honour, borne out of respect for the viking-age navigator, that the author has written this paper. I have crossed the North Atlantic more than 75 times both in sailing ships and in steam- and motorships, but I recall very few crossings with tolerable weather. The only record we have about loss of ships in the viking age is from the first settlements of Greenland, when Eric the Red left Iceland with 25 ships. Only 14 ships reached Greenland. Later voyages may have taken a similar toll.[19] The desire for new land must have been great – in many cases it was a 'run for dear life', after having been found guilty of manslaughter or other crimes. The vikings have created a great history. We must admire them for their courage, enthusiasm and abilities.

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KEY WORDS

1. History. 2. Sailing directions.