

THE SCANDINAVIAN IMPACT ON IRISH SEAFARING TECHNOLOGY

by

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Abstract

In the Middle Ages mariners from both Ireland and Scandinavia sailed the North Atlantic, but in different types of ships and for very different reasons. The Irish sailors appear to have favoured skin-covered ships called curraghs as the means by which they sought out remote islands on which to establish monastic retreats. The Norsemen, however, travelled the northern seas in clinker-built wooden vessels seeking plunder, land and trade. When at the end of the eighth century the Vikings invaded Ireland, these two distinct seafaring traditions came into contact with one another. This thesis is an analysis of the impact that the arrival of Scandinavian seafaring technology had upon that of the indigenous Irish.

Although this issue has been largely neglected by scholars, the little that has been done has tended to promote the conclusion that Viking seafaring technology displaced the vigorous but inferior curragh technology of the Irish. This thesis argues that rather than replacing the Irish tradition, the Scandinavians supplemented it. While ultimately unsuccessful in their bid for political sovereignty in Erin, the Norsemen established a series of port-cities along Ireland's coast, cities which became important links in the chain of Viking trading centres in Europe. Overseas commerce of this magnitude was new to the Irish who were then largely a pastoral and parochial people. Moreover, their shipbuilding and seafaring heritage had not developed in response to the range of military, political and economic needs that encouraged the high sea ventures of the Vikings. Instead, Irish seafaring was almost exclusively the concern of a select sector of Irish society: the anchorite monks. Admittedly, the seafaring technology of these churchmen was sufficient to allow for journeys to as distant a place as Iceland. In addition, their skills as mariners and religious devotion inspired a rich body of literature from

which much of what is currently known about early Irish shipbuilding and navigation is derived. Nevertheless, the seafaring heritage of the Irish was simply not capable of dealing with the volume or variety of traffic which accompanied the Viking invasions. When the naval technologies of medieval Ireland and Scandinavia are viewed within the context of the functions they served in their respective societies, their relative merits can be more accurately judged. From this perspective, the arrival of Viking ships in Ireland can be seen as not so much a challenge to the indigenous seafaring tradition, as an addition to it.

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## Introduction

Scholarly interest in the Scandinavian invasions of Ireland has increased considerably over the last twenty-five years, due in large part to the excavations of Viking-age Dublin which began in 1962.<sup>1</sup> Nevertheless, there has not yet been a thorough investigation of the impact the Norsemen had upon Irish shipbuilding and seafaring. This is somewhat surprising, especially in view of the prominent position which seafaring occupies in the history of both Scandinavia and Ireland. The importance of the Norsemen's skills as shipwrights and seamen to their success as warriors and merchants is difficult to overstate. Moreover, archaeological work carried out over the last one hundred years has provided a rich supplement to the information about ships and sailing found in the Old Norse literature. For the Irish, the high-sea voyages of the anchorite monks are among the greatest accomplishments of early Christian Ireland. Unfortunately, however, archaeologists have not as yet unearthed any significant material concerning the naval technology of those Irish mariners. Still, seafaring is an activity which is mentioned regularly in the literature of medieval Ireland, appearing frequently in Irish hagiography and being central to a genre of early Irish literature known as Immrama or voyage tales. Thus, in spite of the absence of archaeological material, historians and literary critics have been moved to conclude that Ireland in the "Age of the Saints"--the period from the coming of Christianity to the Viking Age--spawned a seafaring tradition remarkable for both its

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1. Breandán Ó Ríordáin, "Excavations at High Street and Winetavern Street, Dublin," Medieval Archaeology, Vol. 15 (1971), pp. 73-85. The Dublin Institute for Advanced Studies published in the same year excavations began along High Street (1962) the proceedings of a congress held in 1959, during which various aspects of the Viking influence upon Irish life were dealt with: Proceedings of the International Congress of Celtic Studies (Dublin: Dublin Institute for Advanced Studies, 1962).



vitality and its achievements.

Perhaps the most notable product of this conclusion was the Brendan Project carried out in the nineteen seventies.<sup>2</sup> Under the leadership of author and self-styled explorer Timothy Severin, a thirty-six foot skin-covered vessel or curragh, as they are known in Ireland, was built and then sailed from south-western Ireland to Newfoundland over two consecutive summers. The purpose of this journey was to see whether Irish monks could have sailed to North America in ships with hulls formed from stitched hides. The implications of this experiment are clear: if the Irish did indeed reach the New World, then they would have preceeded the Norsemen in this achievement by several centuries, just as they certainly did in the settlement of Iceland. In fact, the suggestion that it was the Irish and not the Vikings who were the true pioneers of ocean navigation in northern Europe was made in the nineteen fifties in a series of articles by the maritime historian G. J. Marcus.<sup>3</sup> Clearly, the impression that the Celtic people were the authors of a distinguished seafaring and shipbuilding heritage is one which has received a great deal of credence.

In light of this, the invasion of Ireland by Scandinavians in clinker-built, wooden ships at the end of the eighth century raises an important issue: what effect, if any, did the introduction of Viking shipbuilding and seafaring technology have upon that of the indigenous Irish?

What little attention has been given to this problem to date has generally led to the conclusion that the Norsemen's arrival brought a swift and sudden end to the high-sea ventures of the Irish. In the words of the

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2. Tim Severin, *The Brendan Voyage* (London: Hutchinson, 1978).

3. G. J. Marcus, "Irish Pioneers in Ocean Navigation of the Middle Ages," *Irish Ecclesiastical Record*, Vol. 76 (1951), pp. 469-79 and 853-63; "Factors in Early Celtic Navigation," *Etudes Celtiques*, Vol. 6 (1952-54), pp. 312-27.

distinguished biologist-cum-maritime ethnographer and historian James Hornell, the Vikings "drove the curragh off the high seas."<sup>4</sup> At the same time, the Norsemen, as the sources clearly indicate, established a series of coastal strongholds in Ireland. From these bases, out of which arose modern Dublin, Waterford, Wexford, Limerick and Cork, the Scandinavians linked Hibernia with the rest of Europe along an elaborate system of trade routes. The net result of this activity was the development of a dynamic urban-commercial sector in Ireland which hitherto had not existed. Hence, with the Vikings plying the seas around Ireland from the end of the eighth century on, Irish seafaring and its technology appears to have been effectively destroyed.

This, at least, is the impression which the current scholarship has generated. However, on careful examination the situation appears somewhat different. The essential weakness of this scenario rests with two basic assumptions. First, there is the impression that the Irish used nothing but skin-covered vessels. Accordingly, it is thought that the innate superiority of Norse wooden-hulled ships brought about the displacement of the indigenous Celtic technology. Second, and more significant, a generally exaggerated impression of the vitality of the Irish tradition has arisen. The frequency with which ships, particularly curraghs, and seafaring are mentioned in early Irish literature has created the impression that in the "Age of the Saints" the Irish participated in a wide range of maritime activities. Consequently, on considering the impact of the arrival of the Vikings, scholars have been led to conclude that a rich indigenous shipbuilding and seafaring tradition was stifled by an aggressive and essentially superior technology. It is the argument of this thesis that neither assumption is valid. Clearly the curragh

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4. James Hornell, Water Transport: Origins and Early Evolution (Cambridge: Cambridge University Press, 1946), p. 142.

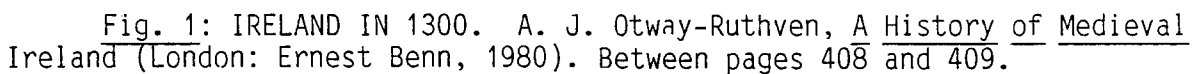
was a vessel of considerable popularity among the Celts. However, the widespread use of this type of vessel should not be seen as a reflection of the technological inferiority of the Irish shipbuilding tradition. In fact, there is good reason to believe that the Irish built and used wooden ships prior to the Viking Age. Yet whether superior or inferior, the real difference between the Irish and Scandinavian seafaring technologies was in the function which each performed in its respective society. By emphasizing the different purposes which these two naval traditions served, it is possible to judge more fairly their respective qualities and thereby understand more fully the impact of the Scandinavian invasions.

The arrival of the Vikings in Ireland brought a pagan culture with an inclination towards commerce and colonization into contact with a pastoral and parochial Christian society. Admittedly, Scandinavian and Irish society were in some respects similar. Both, for instance, had similar decentralized political structures. Also, Scandinavia, like Ireland, had an economy which was primarily based upon agriculture. However, whereas in the eighth and ninth centuries Norse society became restless under the allure of increasing economic activity, demographic pressure and a centralizing political current,<sup>5</sup> Irish society remained relatively stable and insular. In response to the forces of expansion and political change in Scandinavia, the Vikings used their shipbuilding technology as the means to procure land, wealth and political power. In contrast, the only demands being made on Irish naval technology came from a select group of religious men seeking refuge from secular society. Still,

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5. The cause of the Viking Age remains a contentious issue among scholars. The theory attributing the start of the Norse invasions of Europe to a marked increase in population was first put forward by Johannes Steenstrup in his four volume *Normannerne* (Copenhagen, 1876-82) and is still given credence today; see F. Donald Logan, *The Vikings in History* (London: Hutchinson, 1983), pp. 25-26. For a recent argument against the demographic thesis and favouring the economic and technological factors see: Peter Sawyer, "The Causes of the Viking Age," *The Vikings*, R. T. Farrell ed., (London: Phillimore, 1982), pp.1-7. For a good concise review of the various possible factors see: Johannes Brøndsted, *The Vikings* (Harmondsworth: Penguin, 1980), pp. 24-27.

this reclusive impulse was sufficient to inspire some remarkable feats of seamanship, not to mention a considerable corpus of literature. But viewed in terms of the regularity of these high sea endeavours and the number of people involved in them, the Irish seafaring heritage did not and could not offer a significant challenge to its Norse equivalent. When the Vikings settled in Hibernia they introduced not only a distinct shipbuilding tradition to the country, but also an entirely new socio-economic sector. This sector, consisting of the urban-commercial centres established along Ireland's coast, required a type and volume of shipping which had not previously been needed. Thus, Norse mariners served a demand which they themselves had created. It was not necessary to replace the indigenous technology with their own. Indeed, rather than displacing the sea-going curragh technology of Ireland, the Scandinavians appear instead to have simply overlaid it, much as they did with the Irish economy.



## The Vikings in Ireland

For approximately three centuries Scandinavians significantly influenced the political and economic development of Ireland. The beginning of this era is marked in the Annals of Ulster (begun c. 900 A.D.)<sup>1</sup> wherein it is reported that in the year 793 A.D. there was "devastation of all the islands of Britain by the Gentiles."<sup>2</sup> The Norsemen's initial encounters with the Irish, as was typically the case with the Vikings in western Europe, were in the form of piratical raids. Indeed, after 793 the AU report raids by the "Gentiles" on almost a yearly basis--with an apparent hiatus between 812 and 820--which in 831 A.D. become notably intense. In that year the AU record:

The first plundering of Ard-Mach by Gentiles, thrice in one month. Plundering of Mucsnamh, and of Lughmadh, and of Ui-Meith, and of Druim-mic-U-Blae, and of other churches. The plundering of Damliag, and of the territory of Cianachta with its churches, by the Gentiles. Capture of Ailill, son of Cogú, by the Gentiles. Tuathal, son of Feradhach, was carried off by Gentiles, and the shrine of Adamnan, from Domnach-Maghen. Plundering of Rath-Luraigh and Connere, by the Gentiles. (3)

The intensification of Viking activity on the Irish coast is further indicated by the citation for 836 in which it is said that there was "a fleet of three score ships of the Norsemen upon the Boyne [and] another fleet of three score ships on the Abhainn-Liphe [river Liffy]."<sup>4</sup> Moreover, in that same year the raiders penetrated inland to Lough Erne<sup>5</sup> and by 838 are reported to have been on Lough Neagh.<sup>6</sup> The increase in Norse activity, penetration along the major

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1. Kathleen Hughes, Early Christian Ireland: Introduction to the Sources (London: Hodder and Stoughton, 1972), p. 107.

2. Annals of Ulster, William M. Hennessy trans. and ed., Vol. 1 (Dublin: Alexander Thom, 1887), p. 275. Hereafter referred to as AU.

3. AU, p. 331. Ard-Mach is Armagh; Mucsnamh is Muckno in Co. Monaghan; Lughmadh is in Co. Louth; Ui-Meith is in Co. Monaghan; Cianachta is in Co. Derry; Domnach-Maghen is in Co. Monaghan; Rath-Luriagh is Londonderry.

4. Ibid., p. 339.

5. Ibid.

6. Ibid., p. 343. See note 3 on p. 342.

rivers and, in 840, the establishment of fortifications at Linn-Duachaill (modern Dundalk) and Dublin<sup>7</sup> are widely considered to indicate the beginning of Scandinavian settlement in Ireland, though not the end of Norse raiding. Viking activity in Ireland, unlike that in many of the other regions of Europe, was complicated by the fact that it involved two contending Scandinavian parties: the Norwegians and the Danes.

The fact that the AU refer to the invaders of this early period as simply "Gentiles" or "Foreigners" makes it difficult to establish whether these raids were conducted by Norwegians--later distinguished in the AU as "White Gentiles"--or Danes--called "Black Gentiles"<sup>8</sup>--or both. Nevertheless, given that the north-western parts of the British Isles were settled by Norwegians,<sup>9</sup> and in view of the fact that several of the primary sources unanimously announce the arrival of an invading fleet of Danes in 851 A.D.,<sup>10</sup> it seems likely that in the early period of Viking involvement in Ireland the Norwegians were the dominant, if not the sole, participants. Moreover, the twelfth century saga-annal<sup>11</sup> Cogadh Gaedhel re Gallaibh (The Wars of the Irish with the Foreigners) reports that at the end of the 830's the Norwegian chieftain Turgeis "assumed the sovereignty of the foreigners of Erin [Ireland]"<sup>12</sup> which serves to support both the possibility that the Norwegians were the prime participants in the early invasions and the notion, implied by the AU, that the Vikings were becoming involved in Hibernia on a more permanent basis within about forty years of the first raids. While the arrival of Turgeis and his take over of the historic capital of the Irish church at Armagh is not specifically

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7. Ibid., p. 345.

8. Ibid., p. 361.

9. H. R. Loyn, The Vikings in Britain (London: Batsford, 1977), pp. 47-51.

10. AU, p. 361; Cogadh Gaedhel re Gallaibh, trans. and ed. James H. Todd (Wiesbaden: Kraus Reprint, 1965), p. 19; Fragmentary Annals of Ireland, trans. and ed. Joan N. Radner (Dublin: Dublin Institute for Advanced Studies, 1978), pp. 89-91.

11. Hughes, Early Christian Ireland, pp. 288-289.

12. Gogadh Gaedhel re Gallaibh, p. 9. Hereafter referred to as CGG.

described in the AU as it is in CGG,<sup>13</sup> his notoriety was sufficient to merit the mention of his capture and execution in the AU for 844.<sup>14</sup>

The general impression provided by the primary written sources is that the Scandinavians, led by the Norwegians, had begun to establish a permanent presence in Ireland by circa 840 A.D. The picture presented by these works after 840 is one of continued settlement accompanied by warfare between both the Scandinavians and the Irish and the Norwegians and the Danes.<sup>15</sup> After about 881 A.D.<sup>16</sup> the level of conflict appears to have subsided somewhat until 902, in which year the AU report "the expulsion of Gentiles from Ireland, i.e. from the fortress of Ath-cliath [Dublin]," where we are told "they left a great number of their ships, and escaped half-dead, after having been wounded and broken."<sup>17</sup> However, by 914 the Norsemen returned again in force,<sup>18</sup> and though they experienced some initial success in Leinster and Munster, their suzerainty in Ireland was mostly confined to coastal cities and their respective hinterlands with Dublin serving as the centre of Norse activity there. Generally speaking, the tenth century was one of declining Norse power in Ireland, with the kings of Dublin distracted by a desire to solidify their connections with the Scandinavian kingdom of York<sup>19</sup> in the early and middle part of the century. However, these wishes were ultimately thwarted and Norse

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13. Ibid.

14. AU, p. 351.

15. See especially: AU entries for 851 and 876; CGG, p. 19 and 27; Fragmentary Annals, pp. 89-95 and p. 101.

16. There is disagreement among the secondary sources as to the appropriate starting date for what the CGG refers to as a period of "some rest to the men of Erin for a period of forty years" (p. 27). The date provided here is taken from: A. J. Otway-Ruthven, A History of Medieval Ireland (London: Ernest Benn, 1980), p. 25. In F. D. Logan's The Vikings in History, p. 45, this period is given as beginning in the 870's. The date chosen here appears to fit the accounts of activity in the annals better.

17. AU, p. 417.

18. Fragmentary Annals, p. 181 (Hereafter FA); AU, p. 433; CGG, p. 27 (The year given in CGG is 916 A.D.).

19. Loyn, The Vikings, p. 105.



prospects for dominion over Ireland steadily declined in conjunction with the rise of the Dál Cais kings of north Munster, until in 1014 they reached their nadir at the Battle of Clontarf.<sup>20</sup>

Ireland at the time of the first Viking raids was a country which was, as the historian D. A. Binchy put it, "tribal, rural, hierachical and familiar."<sup>21</sup> Irish politics were dominated by tribal kings and regional over-kings, whose status relative to the other members of society was determined by a legally governed honour-price. This honour-price was established by the number of celi or clients they governed and it provided a measure of legal authority. Nevertheless, while the legal power associated with the honour-price of the kings insured their sovereignty, "the king's public business was, indeed, very limited,"<sup>22</sup> confined largely to the performance of a military function. The same applies to the over-king whose control over the petty kingdoms under them was confined to commanding any host levied for war with another region of the country.<sup>23</sup> The rest of the societal spectrum was made up of nobility, including clerics, lawyers and poets (filid), several grades of commoners (boaire), and a large number of slaves.<sup>24</sup> Within this hierarchy, however, there was a remarkable degree of social mobility, especially among the wealthier commoners and lesser nobility.<sup>25</sup> Furthermore, the rules of succession governing Irish kingship were notably flexible,<sup>26</sup> a fact which served both to encourage mobility at the peak of the social hierarchy and, as a consequence, to lessen the political stability of the country. This lack of stability at

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20. Ibid., p. 114. The actual significance of the Battle of Clontarf is the subject of some debate. See: Jean I. Young, "A Note on the Norse Occupation of Ireland," History, Vol:XXXV, (Feb.-June, 1950), pp. 11-33.

21. Daniel A. Binchy, "The Passing of the Old Order," The Impact of the Scandinavian Invasions on the Celtic-speaking Peoples c. 800-1100 A.D., Brian Ó Cuív ed. (Baile Átha Cliath: Institiúid Ard-Léinn Bhaile Átha Cliath, 1975), p. 121.

22. Otway-Ruthven, A History, p. 7.

23. Ibid., p. 8.

24. Donncha Ó Corráin, Ireland before the Normans (Dublin: Gill and Macmillan, 1972), p. 45.

25. Ibid., p. 42.

26. Otway-Ruthven, A History, p. 7.

the highest level of Irish society was particularly significant, in that it endowed Ireland with a political structure so protean that it confounded invaders for centuries, beginning with the Norsemen.

As was the case throughout western Europe in the Early Middle Ages, the economy of Ireland was almost exclusively based on agriculture, the responsibility for which lay largely in the care of the lower echelons of society. Here the emphasis was on cereal production, primarily oats and barley,<sup>27</sup> and stock raising, particularly cattle which were used mostly for milk production and served as a denomination of value and a measurement of personal wealth.<sup>28</sup> Early Christian Ireland, however, did not foster a wealthy society. Trade and commerce were greatly restricted in this pastoral and parochial culture. The exchange of goods and services in Ireland prior to the Viking Age was largely determined by the reciprocal obligations inherent in the social structure. Because in Ireland the social structure was established on a tribal basis, the extent of exchange was confined, by and large, to the tribal community. As historian Charles Doherty notes: "In a subsistence economy gain for its own sake [i.e. mercantile endeavour] was restricted by the rules of society since such activity could spell danger for the whole community."<sup>29</sup> Nevertheless, a certain amount of inter-regional and international trade did occur in pre-Viking-age Ireland based largely upon the monastic centres which dotted the country. In fact, the historian Liam de Paor has noted that the monastic markets comply with the traditional definition of a medieval town in two important respects: first in that they employed inhabitants in work which

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27. Ó Corrain, Ireland, p. 52. The cereals produced are given in order of importance as oats, barley, wheat and rye.

28. Otway-Ruthven, A History, p. 5 note 19: "A cumal denotes a female slave, and it is the highest unit of value. Six sets normally equals one cumal and a set is usually calculated at one heifer or half a milch cow."

29. Charles Doherty, "Exchange and Trade in Early Medieval Ireland," Journal of the Royal Society of Antiquaries of Ireland, Vol. 110, 1980, p. 68.

was separate and distinct from subsistence agriculture, and second in that they provided precinct sanctuary.<sup>30</sup> As support for his claim that Ireland's religious centres were fairly substantial settlements, de Paor offers the following description of Kildare taken from the Irish monk Cogitosus' seventh century Vita Brigidae:

What eloquence could sufficiently extol the beauty of this church and the innumerable wonders of what we may call its city? For "city" is the proper word to use, since [Kildare] earns the title because of the multitudes who lived there; it is a great metropolitan city. Within its outskirts, whose limits were laid out by St. Brigid, no man need fear any mortal adversary or any gathering of enemies; it is the safest refuge among all the enclosed towns of the Irish. The wealth and treasure of kings are in safe keeping there, and the city is known to have reached the highest peak of good order. And who could number the varieties of people who gather there in the countless throngs from all provinces? Some come [to Kildare] for the abundance of its feast; others, in ill-health, come for a cure; others come simply to watch the crowds go by; others come with great offerings to take part in the celebrations of the feast of St. Brigid, who fell asleep on the First of February and, laying aside the burden of her flesh, followed the lamb of God into the heavenly mansions. (31)

Although de Paor acknowledges that Cogitosus' description of Kildare "may possibly imitate a text which deals with some place outside of Ireland,"<sup>32</sup> it is, nonetheless, reasonable to assume that Hibernia was not completely devoid of all aspects of urban culture when the Norsemen arrived. The frequency with which Viking raids upon the monasteries and churches of Erin appear in the annals strongly suggests that these centres offered the raiders a lucrative source of income.

Be that as it may, de Paor is quick to point out that "it was not from these early centres that true towns developed. It is the later Scandinavian foundations, Dublin, Waterford, Limerick, Wexford, which survive to the present day."<sup>33</sup> Beginning, as the annals indicate, as fortress-bases for coastal raids

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30. Liam de Paor, "The Viking Towns of Ireland," Proceedings of the Seventh Viking Congress, Bo Almqvist and David Green eds. (Dublin: Royal Irish Academy, 1976), p. 29.

31. Ibid.

32. Ibid.

33. Ibid., p. 30.

and incursions into surrounding territories, these coastal forts soon developed into entrepôts for Norse settlers and therefore the bases of Scandinavian attempts to establish territorial dominion in Ireland. Led by such notable men as the Norwegian Turgeis (838),<sup>34</sup> the Dane Imhar or Ivarr (851), his rival-cum-ally the Norwegian Olafr,<sup>35</sup> and Ivarr's descendants Ragnall (c. 914), Sitriuc (919), Gothrin (921) and Sitriuc's son, Olaf Cuaran (King of Dublin 952-982) who was the main figure in Norse efforts to unite York and Dublin in a joint kingdom,<sup>36</sup> the Scandinavians struggled in vain to assert their authority over the Irish. Admittedly, they did win victories in their many wars with the indigenous kings, but the constantly fluctuating system of alliances among the Irish, along with the presence of two contending Scandinavian parties, continually foiled Norse attempts to establish dominion. Here the lack of continuity inherent in the Irish rules of royal succession undoubtedly acted as a force of further instability in the politics of Viking-age Ireland. The lament found in the FA (compiled in the eleventh century) under the year 859 that "it is a pity for the Irish that they do not rise together against the Norwegians,"<sup>37</sup> is both evidence of the anarchy which plagued Irish politics and, with the names altered, is equally applicable to the Scandinavians. Ultimately, however, the political chaos of Ireland served the Irish best. Viking settlers, caught up in the ever-changing political currents, tended to be assimilated and Norse sovereignty was confined to the coastal settlements, though these towns, while maintaining much of their Scandinavian identity, also had to accept the overlordship of the local Irish kings.

Notwithstanding the occasional setback, Norse domination of the coastal towns became a significant factor in Irish life during the ninth, tenth and

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34. The dates given here are for the arrival of these men in Ireland.

35. For the relationship between Ivarr and Olafr see: Alfred P. Smyth, Scandinavian Kings in the British Isles 850-880 (Oxford: Oxford University Press, 1977), pp. 127-42.

36. Loyn, The Vikings, p. 105.

37. FA, pp. 105-07.

eleventh centuries. In fact, the steady growth of these port settlements throughout the Viking period stands in marked contrast to the rather uneven success which other Scandinavian projects in Ireland enjoyed. This is understandable in light of the fact that Dublin, Waterford, Wexford, Limerick and Cork, while the bases for Viking activity inland, were also oriented towards the sea and geared towards international trade. Prior to the arrival of the Norsemen, there appears to have been a certain amount of overseas trade in Hibernia mostly based on the Church's need for wine to be used in the mass, and other religious items.<sup>38</sup> Not surprisingly then, this pre-Viking-age international trade was focused upon the religious centres of Erin. With the establishment of coastal settlements by the Norse, however, Ireland became linked with the rest of Europe along the more varied and substantial Viking trade routes. Moreover, by virtue of location, the Norse settlements in Ireland, led by Dublin, appear to have been among the most successful in the Viking Age. The foundation of this success seems to have been the slave trade which served to draw substantial quantities of precious metals to these Norse towns.<sup>39</sup> Evidence for this prosperity comes from several sources. For example, in the account of the capture of Limerick in 968 by the Dál Cais given in CGG, there is a catalogue of the exotic booty which the Irish took from the place:

They [the Dál Cais] carried off their jewels and their best property, and their saddles beautiful and foreign; their gold and their silver; their beautifully woven cloth of all colours and of all kinds; their satins and silken cloth, pleasing and variegated, both scarlet and green, and all sorts of cloth in like manner. (40)

The lucrative nature of the Norse towns of Ireland is also apparent in the Old Norse sagas, for there the reader often finds Ireland mentioned in the

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38. Doherty, "Exchange and Trade," pp. 77-79.

39. Ibid., p. 81; and: Paor, "Viking Towns," p. 33.

40. CGG, p. 79.

context of a trading voyage or some noteworthy merchant. Moreover, archaeological activity in Ireland has also added to this impression. For example, the number of Norse silver hoards and related finds in Erin is exceptionally high: 104 hoards and 150 single-finds of objects of precious metal, as compared to 31 and 14 respectively in Scotland and a total of only 122 finds in Norway.<sup>41</sup> In addition, excavations in Dublin have turned up large amounts of Viking-age material, all of which suggests a thriving Norse commercial centre. However, perhaps the most compelling evidence of this commercial prosperity lies in the fact that in around 995 A.D., the Norse in Dublin established their own mint and thereby introduced the production of money to Ireland.<sup>42</sup>

Given the considerable wealth and prosperity of the Norse coastal towns in Ireland, it is clear that Viking activity had a significant impact on Irish society. Evidence taken from the primary written material strongly suggests that the wars between the Scandinavians and the Irish promoted a strengthening of the power of the over-king in Irish politics, of which the rise of the Dal Cais kings, particularly Brian Boru, is the most obvious example. In the face of the Scandinavian threat there appears to have been an effort amongst the Irish tribes from the end of the ninth and beginning of the tenth centuries to unite in a common defense.<sup>43</sup> Although these efforts were slow in showing results, the general effect was that the power of the over-king was increased. In this way, the Viking invasions encouraged, if only to a small degree and for a brief period, a more centralized political structure in Ireland. At any rate,

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41. J. A. Graham-Campbell, "The Viking-age silver hoards of Ireland," *Proceedings of the Seventh Viking Congress*, Bo Almqvist and David Greene (Dublin: Royal Irish Academy, 1976), p. 54.

42. Michael Dolley, *Viking Coins of the Danelaw and Dublin* (London: Trustees of the British Museum, 1965), pp. 10-11 and 26-31. In his paper on "Exchange and Trade in Early Medieval Ireland," Charles Doherty makes the point that between the fifth and tenth centuries in northern Europe "the increase in the minting of small coinage again [went] hand in hand with the increase of local market activity. Annual markets and fairs, some of which dealt in particular goods, also increased." Pp. 69-70.

43. Otway-Ruthven, *A History*, p. 28.

by the time the Normans invaded Ireland in 1171 A.D.,<sup>44</sup> one thing was clear: the control of Dublin was central to the exercise of sovereignty in Erin.<sup>45</sup>

Yet, in examining the effects of the Norse invasions of Ireland it ought not to be forgotten that the key to the success of the Scandinavians, both as traders and warriors, was their preeminent skill as seamen and shipwrights. The question which therefore arises is what effect, if any, the introduction of Norse seafaring and shipbuilding had upon the naval technology of Ireland, a technology which, after all, had firmly rooted itself in the lives and legends of the Irish well before the arrival of the Vikings.

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44. *Ibid.*, pp. 41-42.

45. Paor, "Viking Towns," p. 36.

Shipbuilding and Seafaring in Early Christian Ireland

Wilt Thou steer my frail black bark  
 O'er the dark broad ocean's foam?  
 Wilt Thou come, Lord, to my boat,  
 Where afloat, my will would roam?  
 Thine the mighty: Thine the small:  
 Thine to mark men fall, like rain;  
 God! wilt Thou grant aid to me  
 Who came o'er th' upheaving main?

(From the Book of Leinster)<sup>1</sup>

This poem entitled "The Heavenly Pilot" and attributed to Cormac, King-Bishop of Cashel (837-903 A.D.), is an apt lyrical manifestation of the Irish seafaring tradition. In its reference to a "frail black bark", it evokes an image of the nimble skin-covered curragh which is often associated with early Irish seafaring, while in its supplication to God for navigational aid it summons up the many passages in the Immrama where seamen leave the piloting to the Almighty, and allow their vessel to travel "wherever is shall please God to bring it."<sup>2</sup> Yet, the poem, as a poem, also embodies well the allegorical element which is thoroughly infused in the more prosaic Immrama. Indeed, while ocean voyages figure prominently in early medieval Irish literature, any attempt to assess the vitality of Celtic seafaring on the basis of this literature must be tempered by an appreciation of the allegorical potential of such journeys. In other words, the frequency with which seafaring is used as a leitmotif in Irish literature is no indication of the importance of ships and sailing in the daily affairs of early Christian Erin.<sup>3</sup> Nonetheless, since much

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1. Kathleen Hoagland ed., 1000 Years of Irish Poetry (New York: Devin-Adair, 1953), p. 22. This poem translated by George Sigerson.

2. H. P. A. Oskamp, The Voyage of Mael Duin: A Study in Early Irish Voyage Literature (Groningen: Wolters-Noordhoff, 1970), p. 109.

3. Kathleen Hughes, "The Changing Theory and Practice of Irish Pilgrimage,"



of what is known about the technology of Irish seafaring and shipbuilding comes from the Immrama, they remain an invaluable source to the historian.

Among the Immrama the ninth century Navigatio Sancti Brendani Abbatis is arguably the most well known.<sup>4</sup> In this work of hagiography celebrating the life St. Brendan (c. 489-583 A.D.) the element of allegory is understandably intense. In fact, in much of the narrative there is a distinct "suspension of reality."<sup>5</sup> Nevertheless, The Voyage of Saint Brendan offers singularly important insight into the technology of Celtic seafaring:

Saint Brendan and those with him got iron tools and constructed a light boat ribbed with wood and with a wooden frame, as is usual in those parts. They covered it with ox-hides tanned with the bark of oak and smeared all the joints of the hides on the outside with fat. They carried into the boat hides for the making of two other boats, supplies for forty days, fat for preparing hides to cover the boat and other things needed for human life. They also placed a mast in the middle of the boat and a sail and other requirements for steering a boat. (6)

From this description it is readily apparent that the boat which St. Brendan and his company built was a curragh. Interestingly enough, the part of Ireland where St. Brendan is said to have built and launched his ship, the Dingle Peninsula in County Kerry, is also where some of the finest twentieth century curraghs have been built.<sup>7</sup> Unfortunately, the actual size of St. Brendan's curragh is unspecified. However, by the size of the crew which accompanied him --seventeen men--it is clear that the curragh must have been greater than any

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The Journal of Ecclesiastical History, Vol. 11 (October, 1960), p. 148.

4. See Carl Selmer, "The Venacular Translations of the Navigatio Sancti Brendani: A Bibliographical Study," Medieval Studies, Vol. XVIII (1956), pp. 145-57.

5. John O'Meara trans. The Voyage of Saint Brendan: Journey to the Promised Land (Atlantic Highlands: Humanities Press, 1976), p. xvii.

6. Ibid., p. 8.

7. James Hornell. "The Curraghs of Ireland, Part III," Mariner's Mirror, Vol. XXIV, No. 1 (Jan. 1938), p. 29. Hornell writes: "In the Dingle peninsula and in the Blasket Islands the curraghs that go fishing from the many little harbours in this district are the largest, the most elegant, the most beautifully proportioned and the most carefully made of all the surviving types. Every part harmonizes: they ride the water more lightly than the sea-fowl yet are strong enough to battle successfully with the wild Atlantic gales that torment this coast in winter."

example recorded in the twentieth century.<sup>8</sup> James Hornell, who in the nineteen thirties undertook a very thorough investigation of the curragh tradition in Ireland, has suggested that a single ox-hide could on average cover an area of six feet by four feet.<sup>9</sup> Thus, he argues that the curragh mentioned in The Voyage of the Three Sons of Ua Corra, and said to hold nine men, was probably a three-hide curragh.<sup>10</sup> On the basis of this assessment, then, St. Brendan's vessel was of a size requiring six hides.<sup>11</sup> Beyond the description of the building of the curragh, The Voyage of Saint Brendan provides little further technological information concerning the construction or navigation of the hide-covered ship. Indeed, the work is replete with examples of navigation-by-faith. In fact, the primary method of navigation on this voyage in search of "the Promised Land of the Saints"<sup>12</sup> is established early on in the narrative when St. Brendan incites his men not to fear: "God is our helper, sailor and helmsman, and he guides us. Ship all the oars and the rudder. Just leave the sail spread and God will do as he wishes with his servants and their ship."<sup>13</sup> Still, from this passage, and from another wherein the Saint orders his men to "take down the mast"<sup>14</sup> it appears that the mast and rudder of Brendan's vessel were not fixed, a quality also found in the early Norse shipbuilding tradition. However, aside from the knowledge that the mast could be raised and lowered, nothing can be ascertained for certain concerning the rigging. Judging from the frequency with which Brendan and his crew seem to be at the mercy of a favourable wind,<sup>15</sup> and given the technology current in northern Europe

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8. Hornell, Water Transport, p. 140.

9. Ibid., p. 139.

10. Ibid.

11. In the Immrama the size of curraghs is often denoted by the number of hides. The largest curragh mentioned is one of forty hides described in the Voyage of Teigue, Son of Cian. However, Hornell considers this to be a storyteller's exaggeration: Hornell, Water Transport, p. 138.

12. O'Meara, The Voyage, p. 7.

13. Ibid., p. 10.

14. Ibid., p. 51.

15. Ibid., p. 143.

during the Early Middle ages, a single square sail, with all its inherent limitations for traveling into the wind, would appear to be the probable arrangement. When it was necessary to travel upwind or when becalmed, the vessel would have to be rowed. As with the rigging, the precise arrangement of the oars is unknown, though the fact that the curragh was equipped with them is readily apparent from the text. Regarding the easily-removed rudder, European fashion suggests that the curragh was manoeuvred by means of a side-mounted steering oar.

Aside from the technological information contained in the Navigatio, the ethnographical work of James Hornell and, more recently, the ambitious reconstruction efforts of Timothy Severin offer further insight into early curragh construction and navigation. From Hornell's research at least one significant fact about curragh construction has come to light. From ancient times up to the present century the English and the Welsh have used a kind of skin-covered boat called a coracle. The coracle as it is known today is a small one or two man vessel which is paddled rather than rowed and used almost exclusively for travel on inland waters.<sup>16</sup> By examining the methods employed in this century in the building of both coracles and curraghs, Hornell discovered that the main difference between these two types of vessels rests in the construction of their frames:

In British coracles the framework is put together mouth up, the bottom being the part first laid down. In Irish curraghs this procedure is reversed; the gunwale is formed first, the bottom and the sides being put in position later, a procedure which results in the building of the curragh bottom upwards. (17)

This difference in procedure also applies to the Boyne curragh which in size and shape is quite similar to the coracle.<sup>18</sup> Hornell argues that this difference

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16. See James Hornell, "British Coracles," Mariner's Mirror, Vol. XXII, No. 1 (Jan., 1936), pp. 5-41 and No. 3 (July, 1936), pp. 261-304.

17. James Hornell, "The Curraghs of Ireland, Part II," Mariner's Mirror, Vol., XXIII, No. 2 (Apr., 1937), p. 148.

18. Ibid.

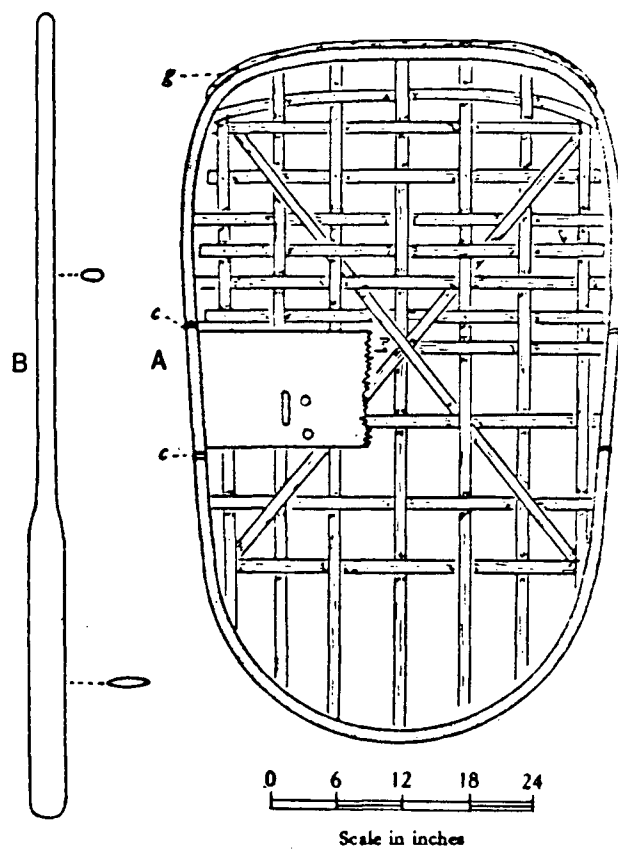


Fig. 2: A TOWY CORACLE. James Hornell, "British Coracles," Mariner's Mirror, Vol. XXII, No. 1 (Jan., 1936), p. 31.

in method was necessitated "by the need to build vessels of length greater than that of the river coracle and more suitable for use at sea, for fishing and for coastal transport."<sup>19</sup> Thus,

as a direct consequence of this need, considerable increase in longitudinal rigidity was required; this was achieved by borrowing the stout wooden gunwale frame characteristic of plank-built boats and by the insertion of thwarts. This radical change in design would lead in turn to an inversion of the procedure normally followed in the building of coracles. Once the flat wooden gunwale frame was introduced or adopted, experiment would soon show that it is much easier to arch the withy ribs over it than to pin them and the stringers to the ground and then to bend their ends upward for insertion one by one into holes in the underside of the gunwale frame. (20)

All in all, it would appear that curragh construction in Ireland developed in a way which would allow for the design of skin-covered vessels of considerable sophistication, a suggestion which is in harmony with the variety and size of hide-covered boats described in the ancient Irish corpus. But Hornell's discussion of the living tradition also underlines what is perhaps the single greatest obstacle to a more complete understanding of the early sea-going curragh: the total absence of archaeological data. Without such information, appreciation of the construction methods and materials used by early Irish shipwrights will remain severely limited.

Starting in 1973, Timothy Severin, with the enthusiastic assistance of various experts and institutions, designed and built a curragh based on the description in the Navigatio and on the examples provided by what remains of the curragh-building tradition in County Kerry. The length (36 ft.) and beam (8 ft.) chosen were determined by an estimate of the size of ship needed to carry the number of men said to have travelled with the Saint on his voyage, though Severin chose to use a crew of only five.<sup>21</sup> The techniques employed in the construction of the framework were closely modelled upon the example

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19. Ibid.

20. Ibid., pp. 148-9.

21. Timothy Severin, "Preliminary Report on the Brendan Project," Sources and Techniques in Boat Archaeology, Sean McGrail ed. (BAR Supplementary Series 29, 1977), p. 260.

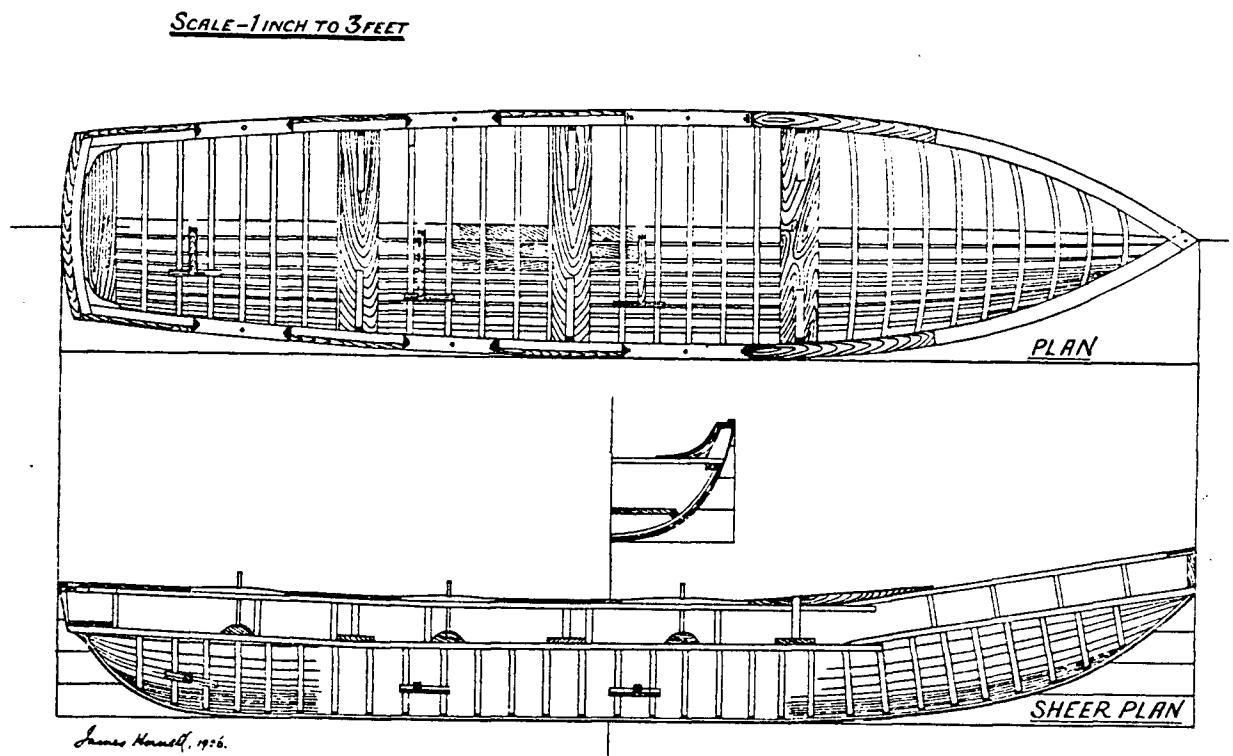


Fig. 3: THE SKELETON OF A KILKEE CURRAGH FROM CO. CLARE. James Hornell, "The Curraghs of Ireland, Part III," Mariner's Mirror, Vol. XXIV, No. 1 (Jan., 1938), p. 27.

provided by the only full-time curraghmaker in Ireland at that time. The materials used for the skeleton--oak for the gunwales and ash for the ribs and stringers--though not specified in the Navigatio were nevertheless readily available to the early medieval shipwright.<sup>22</sup> The gunwales were constructed first in accordance with the living tradition, though using modern framing techniques and the help of professional shipwrights.<sup>23</sup> Once secured, the gunwales were bridged by a close-knit wicker-like network of ribs and stringers. This framework was held together and fastened to the frames with leather thongs treated with alum--a process known to the Romans--and joined end to end in such a way that the thongs binding the ribs and stringers together were in fact a series of long thongs running latitudinally from one side to the other.<sup>24</sup> Such was the strength of the resulting skeleton that the naked hull could support the weight of twelve people.<sup>25</sup> When completed the entire wooden framework was coated in wool grease for additional protection. The wool-greased leather skin which covered this skeleton was made up of forty-two hides of about 4 mm. thickness tanned in an oak-bark solution, as dictated by the Navigatio,<sup>26</sup> and stitched together with hand-rolled thread consisting of sixteen cords. Although the size of the hides is not given, Severin does specify that they came from young oxen, which along with the way the hides were cut (also unspecified) perhaps explains the discrepancy between the number used by Severin and the assessment made by Hornell.<sup>27</sup> The Brendan, as the ship was called, was fitted with four oars of "the traditional type...still in use...

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22. F. Kelly, "The Old Irish Tree-List," Celtica, Vol. XI (1976), pp. 109-10.

23. Severin, "Preliminary Report," p. 262.

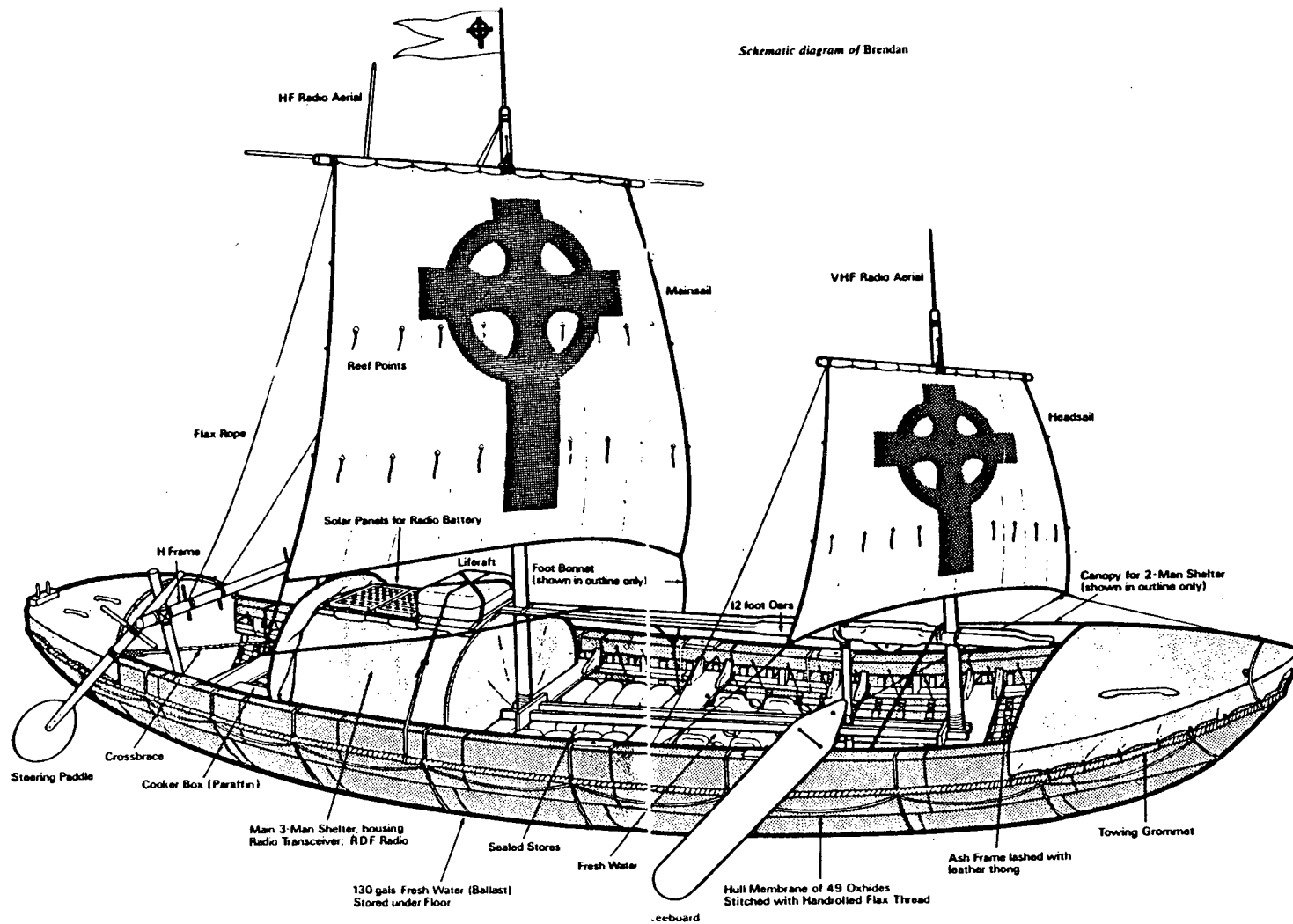
24. Ibid.

25. Ibid.

26. As part of the project the British Leather Manufacturer's Research Association conducted laboratory experiments on leather treated in oak-bark tanning solution and found the oak-bark superior as a treatment for boat building purposes to modern rival solutions. Ibid., p. 260.

27. Hornell would have been able to estimate the amount of material needed to cover the hull of a curragh of a given size based on his observations of the living tradition, which has now replaced the leather of medieval times with tarred canvas.

Fig. 4: THE BRENDAN. Tim Severin, The Brendan Voyage (London: Hutchinson, 1978), pp. 282-3.





[which] pivot upon a wooden bull and single thole pin,"<sup>28</sup> and a steering oar attached with a leather strop. Her rigging, however, was not in accordance with the original since she was fitted with two masts rather than one; all references to the rigging of St. Brendan's vessel in the Navigatio speak of sail and mast in the singular.<sup>29</sup> Leeboards were also used to prevent lateral slippage. Still, even with the addition of a foremast and square foresail, windward performance was described by Severin as nil. Apparently even with the leeboards, the rather shallow draft of the vessel (approx. 1 ft.) allowed enough lateral slippage to reduce the Brendan's capacity to point into the wind from 60-70 degrees to 90 degrees.<sup>30</sup> This fact, in conjunction with her rather slow cruising speed of 2-3 knots meant that the voyage from Brandon Creek in County Kerry to Peckford Island, Newfoundland took two summer's sailing with the Brendan being stored overwinter in Reykjavik.<sup>31</sup> Notwithstanding the rather disappointing sailing performance of the Brendan, however, her leather hull proved remarkably sea-

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28. Severin, "Preliminary Report," p. 262.

29. Severin's reason for rigging the Brendan with two masts and two sails is as historically unjustified as it is unhelpful to anyone wishing to follow up on his research: "It seemed to me that such a long, slim boat must have carried two masts, but in all my research I had never seen a picture of an early medieval boat equipped with more than one. They all had a single mast, even the Viking ships. Then one day I was in the cellar stacks of the London library. I was not working on the Brendan project at all, but on quite another subject, and by chance I happened to walk through a section of the library that was misshelved, having been put in back to front. Casually I pulled it out to turn it the right way around, and my eye fell upon the title. It was in German, long and scholarly, and roughly translated as A Record of Ship Illustrations from Earliest Times to the Middle Ages. My curiosity was aroused, and I flipped the book open. From the page where it fell open, one illustration jumped up at me. I caught my breath. It was a drawing of a two-masted ship! And it was undoubtedly medieval. Hastily I turned to the index to see where the original illustration was to be found. To my astonishment I read that the picture was copied from a privately owned medieval bestiary, an illustrated collection of animal descriptions. What was incredible was that the twin-masted boat came from the letter B under the Latin word Balena for whale. The picture was of St. Brendan's ship stranded on the whale's back!" Severin, The Brendan Voyage p. 25. Severin's vague reference to the book's title is made even more troublesome by the fact that he does not have a bibliography in his book.

30. Severin, "Preliminary Report," p. 264.

31. The Brendan left Ireland on May 17th, 1976, and reached Reykjavik on July 17th, 1976. There poor weather forced the voyage to be put off until the following summer. The Brendan sailed from Reykjavik on May 7th, 1977, and arrived in Newfoundland on the 26th of June that same year.

worthy.<sup>32</sup>

While the Brendan Project serves as quite a convincing testament to the ocean going capacity of a skin-covered hull, it obviously cannot be used as proof that Irish seafarers journeyed to North America in the early Middle Ages. A fanciful interpretation of the mysterious travels of St. Brendan is no substitute for archaeological evidence like that which indicates an eleventh century Norse presence at L'Anse aux Meadows, Newfoundland. However, in addition to the admittedly suspect achievements attributed to the curragh in the Immrama, these ships are described in a fairly wide range of other early works as open sea vessels of considerable versatility.<sup>33</sup> Even so, it would be wrong to assume that the curragh was the only type of ship used by the Irish. In the eighth century work Adomnan's Life of Columba and in the vernacular Irish version of St. Brendan's Life, Bethada Brenainn Clúana Ferta, there is direct reference to wooden ships being built by Irishmen prior to the arrival of the Vikings.<sup>34</sup> Moreover, Julius Ceasar discovered during his conquest of

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32. Severin, "Preliminary Report," p. 264.

33. Pliny the Elder, writing in the first century A.D. mentions Britons using skin-covered boats for a six-day sail to an island called Mictis: Pliny, Natural History - The Loeb Classical Library, H. Rackham trans. (London: Heinemann, 1961), IV, xvi, 104, pp. 198-99. See also: Book VII, lvi, 206, pp. 644-45. Sidonius Appollinaris, writing in the latter part of the fifth century A.D. speaks of the Saxon pirates as "cleaving the blue sea in a stitched boat." Sidonius, Poems and Letters - The Loeb Classical Library, W. B. Anderson trans. (London: Heinemann, 1965), VII, pp. 150-51. Even The Anglo-Saxon Chronicle mentions a curragh made of "two and a half hides," which carried three Scots (Irishmen) to King Alfred from Ireland: Dorothy Whitelock ed., The Anglo-Saxon Chronicle (New Brunswick: Rutgers University Press, 1961), p. 53. Curraghs are mentioned as well in Adomnan's Life of Columba, A. O. and M. O. Anderson trans. and eds. (London: Thomas Nelson, 1961), pages: 247, 265, 311, 437, and in the eleventh century work: The Tripartite Life of Patrick, Whitley Stokes trans. and ed. (London: Eyre and Spottiswoode, 1887), pp. 222-23. In addition see The Voyage of Mael Duin which is a well known Immram: H. P. A. Oskamp, The Voyage of Mael Duin, pp. 104-107.

34. Adomnan's Life, p. 453; Lives of Irish Saints (Bethada Náem nÉrenn) Charles Plummer trans. and ed. (Oxford: Clarendon Press, 1968), Vol. II, pp. 62-63. There is another Irish edition of St. Brendan's Life in the Book of Lismore. See: W. Stokes, Lives of the Saints from the Book of Lismore (Oxford: 1890). Plummer is critical of this edition: Lives of Irish Saints, Vol. I, introduction, pp. xviii-xix.

Gaul in 56 B.C. that the Celtic people had developed a wooden-hulled ship-building tradition of some sophistication:

...the ships of the Gauls...were built and equipped in the following fashion. Their keels were considerably more flat than those of our own ships, that they might more easily weather shoals and ebb-tide. Their prows were very lofty, and their sterns were similarly adapted to meet the force of waves and storms. The ships were made entirely of oak, to endure the violence and buffeting. The cross-beams were beams a foot thick, fastened with iron nails as thick as a thumb. The anchors were attached by iron chains instead of cables. Skins and pieces of leather finely finished were used instead of sails, either because the natives had no supply of flax and no knowledge of its use, or more probably, because they thought that the mighty ocean-storms and hurricanes could not be ridden out, nor the mighty burden of their ships conveniently controlled, by means of sails. (35)

Although there is no archaeological evidence that ships of this sort were used in Ireland, in 1962 a Celtic vessel dating to the second century A.D. and fitting this description quite closely was excavated from the Thames at Blackfriars in England.<sup>36</sup> The ship measured 16.8 m. by 2.1 m., was built of oak and was propelled by sail. The ship's hull was carvel built (meaning that the planks of the hull--strakes--were joined side to side rather than overlapping, as in the clinker style) and fastened to the ribs with clenched nails. The Blackfriars ship, as it is called, also had no keel. Instead, the bottom of the vessel was flat and consisted of two large strakes which tapered towards the stem and stern posts.<sup>37</sup> Since the Blackfriars ship was constructed in a manner which is notably different from both the Scandinavian and the Mediterranean traditions, it is thought to be indicative of a third European tradition belonging to Celtic Europe.<sup>38</sup> Of the vessels excavated to date which belong to the Celtic tradition, only the Blackfriars ship, and perhaps the

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35. Julius Caesar, The Gallic War - The Loeb Classical Library, H. Edwards trans. (London: Heinemann, 1970), III, 13, pp. 154-55.

36. Peter R. V. Marsden, A Ship of the Roman Period, from Blackfriars, in the City of London (London: Guildhall Museum Publications, 1967), p. 34.

37. Ibid., pp. 11-17.

38. Ibid., pp. 34-35. See also: Peter Marsden, "Celtic Ships of Europe," Sources and Techniques in Boat Archaeology, Sean McGrail ed. (BAR Supplementary Series 29, 1977), pp. 281-88.

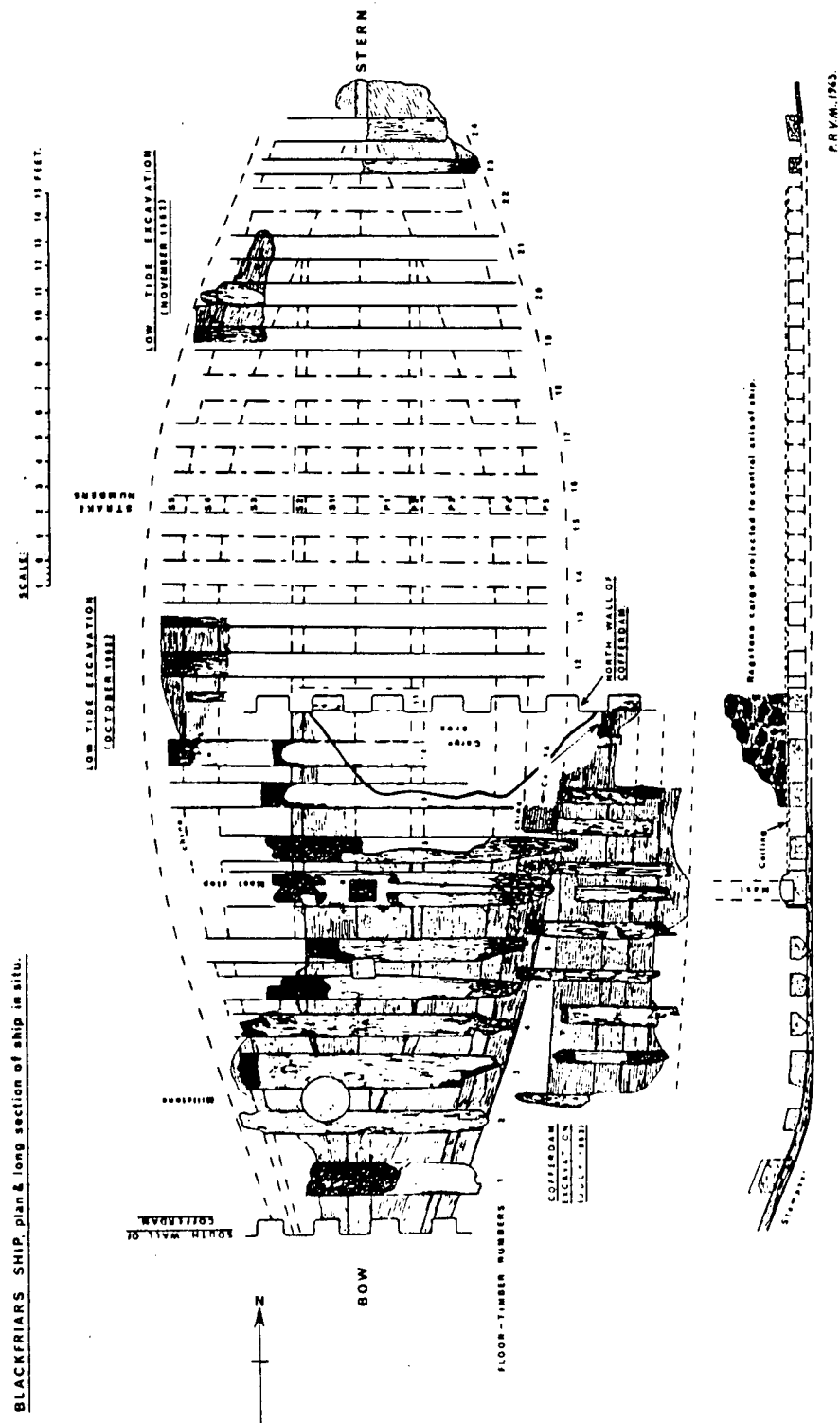


Fig. 5: THE BLACKFRIARS SHIP IN SITU. Peter R. V. Marsden, A Ship of the Roman Period, from Blackfriars, in the City of London (London: Guildhall Museum Publications, 1967), p. 10.

boat found in Bruges, Belgium at the end of the last century,<sup>39</sup> can be viewed as being able to navigate the open sea.

Yet whether the Irish mariners sailed in currachs or in wooden ships there still remains the question: did the Irish precede the Vikings as pioneers of north Atlantic navigation? Irish anchorites did, in fact, travel to and settle on the islands of the north Atlantic. The early ninth century scholar Dicuil wrote in his Liber De Mensura Orbis Terrae of unspecified islands to the north of Britain (perhaps the Faeroes?) "which can be reached from the northern islands of Britain in a direct voyage of two days and nights with sails filled continuously with a favourable wind," knowledge of which he said he received from "a devout priest."<sup>40</sup> In the same passage, Dicuil also mentions:

another set of small islands, nearly all separated by narrow stretches of water; in these for nearly a hundred years hermits sailing from... Ireland, have lived. But just as they were always deserted from the beginning of the world, so now because of the Northman pirates they are emptied of anchorites, and filled with countless sheep and very many diverse kinds of sea-birds. [perhaps the Hebrides and Orkneys?] (41)

Of most interest in this section of the De Mensura, however, is Dicuil's discussion of Thule, thought by many to be Iceland. Here he combines his knowledge of Pliny with his own personal conversations with "clerics who had lived on the island."<sup>42</sup> Dicuil reports that he spoke with these men some thirty years prior to writing the De Mensura. Thus, it would appear that Irish anchorites had voyaged to Iceland by 795 A.D. at the latest,<sup>43</sup> some sixty-

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39. Peter Marsden, "A boat of the Roman period found at Bruges, Belgium, in 1899, and related types," The International Journal of Nautical Archaeology and Underwater Exploration, Vol. 5, No. 1 (1976), pp. 23-55.

40. Dicuil, Liber De Mensura Orbis Terrae, J. J. Tierney trans. and ed. (Dublin: Dublin Institute for Advanced Studies, 1967), p. 75.

41. Ibid., p. 77.

42. Ibid., p. 75.

43. The De Mensura was written in 825 making 795 the date of Dicuil's conversations with the clerics from Thule. Clearly, it is highly probable that Irish monks first arrived on the island before 795, though how long it is impossible to say. See Tierney's introduction to the De Mensura, p. 17.

five years prior to the arrival of the first Scandinavians. Hence, the Old Norse Landnamabok (compiled c. 1214-84) reports that when the first Norsemen arrived in Iceland they found the island already inhabited by Irish priests whom they called Papar.<sup>44</sup>

The presence of Irish monks on the islands of the North Atlantic, especially Iceland, raises another question: how did the early Irish monastics navigate their vessels over the open ocean? The maritime historian G. J. Marcus has suggested that aside from the observations of bird migrations, the key to the success of the Irish anchorite sailors might have rested in a rudimentary knowledge of astronomy.<sup>45</sup> Though this assertion is impossible to prove in light of the available evidence, such knowledge was extant among early medieval Irish scholars. During this period Ireland had established a considerable reputation in Europe as a seat of learning. In fact, at the end of the sixth century scholarly monastics constituted one of Ireland's most noteworthy exports to the Continent.<sup>46</sup> Dicuil, who himself prospered in Frankland under Charlemagne's rule, was just such an emigrant scholar and, more to the point, published a book on the subject of astronomy: the Computus or Liber De Astronomia.<sup>47</sup> Furthermore, in Adomnan's Life of Columba a certain Lugne is identified by his profession as a guberneta or pilot.<sup>48</sup> As provocative as all this is, however, it still does not offer any insight into how the Irish curragh sailors may have used such knowledge to solve the practical problems of high-sea navigation.

The exceptional navigational feats that can be safely attributed to the

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44. The Book of Settlements--Landnamabok, Herman Palsson and Paul Edwards trans. (Winnipeg: The University of Manitoba Press, 1972), p. 15.

45. Marcus, "Irish Pioneers," pp. 858-63. Marcus even suggests that the Norsemen may have learned their navigational skills from the Irish.

46. See Tierney's introduction to the De Mensura, p. 11. For a general discussion of the early Irish tradition of scholarship see Kuno Meyer, Learning in Ireland in the Fifth Century and the Transmission of Letters (Dublin: Hodges, Figgis & Co., 1913).

47. Tierney's introduction, De Mensura, p. 12.

48. Adomnan's Life, pp. 436-37.

early Irish sailors, like the voyages to Iceland, were, for the most part, the work of religious recluses. In other words, in most cases the technology required only had to be sufficient for a one-way voyage, and not for the kind of regular transit necessitated by commerce. All in all, the Irish seafaring tradition would appear to be as much a literary as a historic phenomenon since almost everything that is known about it comes from literature designed to inspire as well as inform. Thus, the voyages and vessels of early medieval Ireland are perhaps best viewed as remarkable achievements of distinctly limited proportions.

## III

Shipbuilding and Seafaring in Viking-age Scandinavia

Just as seafaring was a leitmotif in the literature of early Christian Ireland, so too was it a predominant theme in Nordic culture. Indeed, for the Norsemen the ship was a profoundly sacred thing: a fact manifested by the preeminent image of the ship among the Bronze-age rock-pictures of Scandinavia<sup>1</sup> and by the many Norse ship-burials, votive and funerary, of the pre-Viking and Viking periods. As the scholars Peter Foote and David Wilson put it, for the Vikings the ship was "a symbol of power and a companion in death."<sup>2</sup> Most significantly, though, it was the Scandinavians' exceptional skill as mariners and shipwrights which allowed them to rise to a position of such importance in the political and economic life of early medieval Europe. In this respect, therefore, the Viking Age was truly the age of the Viking ship. That the association between the Norsemen and their ships was not lost upon the early Irish is apparent in the well-known Irish poem Is Acher In Gáith In-Nocht:

Bitter and wild is the wind to-night  
tossing the tresses of the sea to white.  
On such a night as this I feel at ease:  
fierce Northmen only course the quiet seas. (3)

Whether it was as "fierce" raiders coming to plunder the wealth of the Irish monasteries, or as the traders who established the vibrant urban centres along Ireland's coast, the ship was the key to the success of the Vikings in Erin, as in the rest of Europe.

Fortunately, unlike the Irish seafaring tradition, the Norse heritage is

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1. Herbert Kuhn, The Rock Pictures of Europe, Alan Brodrick trans. (London: Sidgwick and Jackson, 1966), pp. 168-206.

2. P. G. Foote and D. M. Wilson, The Viking Achievement (London: Sidgwick and Jackson, 1970), p. 232.

3. James Carney trans. Medieval Irish Lyrics (Dublin: Dolmen, 1967), pp. 22-23.



well represented in archaeological as well as documentary sources. Regarding the latter, it should be noted that much of the information comes from the Old Norse sagas which post-date the Viking era they chronicle. In light of this, the insight they offer--much of which has only indirect bearing on the technology of Norse shipbuilding and seafaring by indicating the type and size of vessels used--has to be viewed with some reservation. Nor can the sagas be seen as unaffected by the poetic allegory so prevalent in the Immrama.<sup>4</sup> Still, the distinct matter-of-fact quality which is apparent in the narrative of many of the sagas certainly maintains a greater ring of authenticity than the Irish hagiography and voyage tales. Be that as it may, by far the most important contribution to the subject of Viking naval technology has been made by archaeological finds. When read within the context of such information, the documentary sources can also be more critically analyzed and hence referred to with greater confidence. In addition, knowledge of Viking-age ships is also augmented by pictorial representations, such as those found on the island of Gotland.<sup>5</sup>

The archaeological record of Scandinavian ships dating from 800 to 1300 A.D. consists of some twenty-four finds.<sup>6</sup> From this relatively rich array of finds it has been possible to assemble a considerable amount of data concerning both the development and the variations in Nordic ship designs. Probably the greatest amount of information taken from a single site has come from the Skuldelev ships found in Roskilde Fjord in Denmark during the nineteen sixties.

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4. See: Rudolf Simek, Die Schiffsnamen, Schiffsbezeichnungen und Schiffskenningar im Altnordischen (Wien: Verlag Karl M. Halosar, 1982).

5. Basil Greenhill, Archaeology of the Boat (London: Adam and Charles Black, 1976), pp. 199-201; P. H. Sawyer, The Age of the Vikings (London: Edward Arnold, 1971), pages 67, 75 and 78.

6. Ole Crumlin-Pedersen, "Viking shipbuilding and seamanship," Proceedings of the Eighth Viking Congress (Odense: Odense University Press, 1981), p. 277. For a more complete survey of medieval ship finds see: Detlev Ellmers, Frühmittelalterlich Handelsschiffahrt in Mittel- und Nordeuropa (Neumünster: Karl Wachholtz Verlag, 1972).

Here five vessels all dating to around 1000 A.D. were discovered, apparently deliberately sunk in a defensive attempt to block Peberrenden Channel.<sup>7</sup> The vessels range in type from a small 12 m. by 2.5 m. (fishing?) boat to a grand (minimum) 28 m. by 4.5 m. longship and include two fine trading vessels (Skuldelev I, 16.3 m. by 4.6 m. and Skuldelev III, 13.5 m. by 3.2 m.) and a medium-sized warship (Skuldelev V, 18 m. by 2.6 m.). The degree of preservation of each of these ships varied dramatically. Still, in each case the remains shed a substantial amount of new light upon the construction methods employed in the building of the different vessels, particularly Skuldelev I, the large cargo ship or knarr. Yet, while this recent find has made a very great contribution to the scholarly study of Viking ships, the Norwegian finds of Gokstad and Oseberg, excavated around the turn of the last century, are much better known. Both vessels date to the ninth century, and since both were burial ships entombed in clay, rather than wrecks, they are surprisingly well preserved. The Oseberg find is by far the most elaborate of the Viking ships excavated to date, distinguished by her richly carved stem and stern posts. However, she cannot be thought of as indicative of the sort of craft which served the military and commercial needs of the Norsemen. Given her ornate exterior, her very low freeboard and the rich array of artifacts found buried with her, it would appear that she was the pleasure craft of some Norse aristocrat. The Gokstad ship, on the other hand, is much more a multi-purpose Viking ship, with a deeper keel, a higher freeboard and a more work-a-day exterior. Because the Gokstad ship is the more functional of these two early finds, she was for a long time viewed as an example of the kind of ship used by the Vikings for

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7. Originally it was thought that there were six ships, until Skuldelev IV turned out to be part of Skuldelev II. See: O. Olsen and O. Crumlin-Pedersen, "The Skuldelev Ships," Acta Archaeologica, Vol. XXXVIII (1967), pp. 73-171.

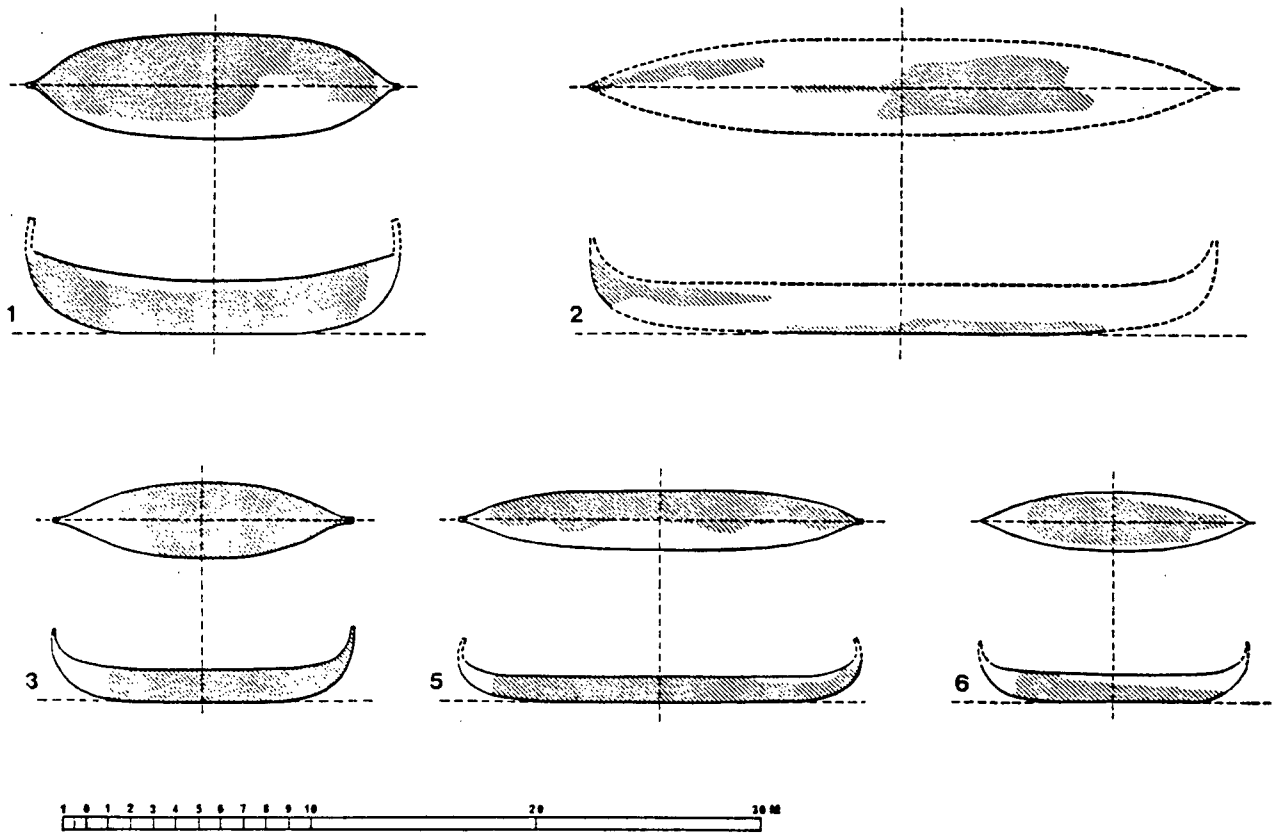


Fig. 6a: OUTLINES OF THE SKULDELEV SHIPS (SHADED AREAS INDICATE SURVIVING REMAINS). P. H. Sawyer, The Age of the Vikings (Edward Arnold, 1971), p. 84.

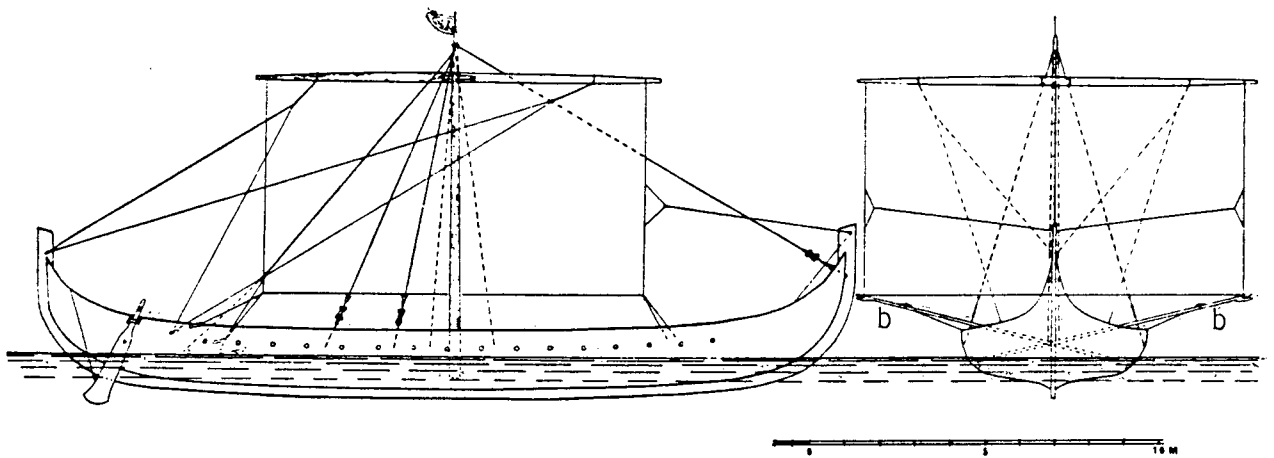


Fig. 6b: HARALD ÅKERLUND'S PROPOSED RECONSTRUCTION OF THE GOKSTAD SHIP'S RIGGING. P. H. Sawyer, The Age of the Vikings (Edward Arnold, 1971), p. 73. (Note the beitiáss marked with a "b")

raiding, transport and exploration.<sup>8</sup> With the discovery and close examination of other subsequent finds, however, this view of the Gokstad ship has been revised and she is now considered to be more a coastal than an open-sea craft, perhaps serving to transport Norse nobility over short distances.<sup>9</sup> Nevertheless, because of the close study which her remarkable state of preservation and early exhumation has inspired, and also because her dimensions put her half-way between what is now known to be the military and the commercial-transport type of Viking-age vessel,<sup>10</sup> she is an appropriate model of Viking shipbuilding technology.<sup>11</sup>

From bow to stern the Gokstad ship is 23.3 m. long. Her width amidship is 5.25 m. and the distance from her gunwale to the bottom of her keel (again amidships) is 1.95 m. When afloat, it is estimated that she drew 85 cm., and when fully loaded, her approximate weight would total 20.2 metric tons. Essentially, the Gokstad ship may be broken down into five major constituent sections: a keel, a stem and stern piece, ribs--of which there are nineteen--and planking, consisting of sixteen strakes a side. The wood used for all these components was oak.<sup>12</sup>

The sagas say little concerning the way in which Viking ships were built. Fortunately, however, one's understanding of just what the process might have involved can be substantially furthered through an examination of the techniques used in clinker construction today. Indeed, viewed in the light of

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8. Alan Binns, "The ships of the Vikings, were they 'Viking ships'?" Proceedings of the Eighth Viking Congress (Odense: Odense University Press, 1981), p. 287.

9. The suggestion that the Gokstad ship may also be a special vessel built for the aristocracy has been made by Ole Crumlin-Pedersen. This proposal is based upon the size of the keel and the method used to fix the ribs to the strakes below the water line. "Viking shipbuilding," p. 284.

10. Binns, "The ships of the Vikings," p. 289.

11. All technical statistics for the Gokstad ship given here are taken from A. W. Brøgger and H. Shetelig, The Viking Ships, Their Ancestry and Evolution, Katherine John trans. (Oslo: Dreyers Forlag, 1951).

12. Next to oak, ash and pine were the most widely used woods in the building of Viking ships. Beech, alder, birch, lime and willow were also

the rich archaeological context available to historians, the clinker-built tradition, which is still very much alive in Scandinavia, is quite a valuable source of information.<sup>13</sup> According to this tradition it seems fair to assume that for the Viking shipwright the first step would have been the placing of the keel, the largest single piece of wood on the longship which, in effect, served as the vessel's backbone. This is particularly true of the Gokstad ship, the keel of which is the main source of longitudinal strength. For the more recently discovered Skuldelev ships, however, the upper strakes appear to provide the most structural support.<sup>14</sup> The keel of the Gokstad ship was fashioned from a single length of oak, and was so designed as to take on a subtle arch, not unlike that of an unstrung bow.<sup>15</sup> It is tallest at the stern (42 cm.) shortest in the middle (37 cm.), and taller again at the bow (40 cm.). Moreover, the keel was cut so that it assumes something of a wedge shape, the thinner edge facing the underside of the hull and measuring 10 cm., while the bottom is 3 cm. wider. Attached to the thinner edge was a flange to which the first strake was fastened.

For the Norse shipwright the next stage in the construction would have been the addition of the stem and stern pieces to the keel. On both ends two sections of oak were used; one piece, a short transitional section, protracts the keel with a very slight curve while the second piece curves roughly 60 degrees, and extends the stem and stern upwards an indeterminate length, indeterminate because unfortunately these extreme sections of the ship did not

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used for small components and fittings. Greenhill, Archaeology of the Boat, p. 236.

13. Olaf Hasslöf, "Wrecks, Archives and Living Tradition-Topical Problems in Marine-Historical Research," Mariner's Mirror, Vol. 49 (August, 1963), p. 166.

14. Crumlin-Pedersen, "Viking shipbuilding," p. 282.

15. According to what is known about ship design and hydrodynamics, this subtle arch makes the Gokstad ship more receptive to being brought about on the open sea, as well as causing the broadest part of the hull, which has the greatest draught, to sit higher in the water than the rest of the boat, hence furthering the ship's total load capacity and making her easier to get on and off the beach. Brøgger and Shetelig, The Viking Ships, p. 113.

survive the exhumation. The process used to join these pieces together is known as scarfing. This involves cutting the edges of the pieces to be joined at complementary angles so that they correspond with one another exactly. These joints are then "riveted with sturdy nails, two rows to each joint and four treenails (wooden pegs) in the upper butt."<sup>16</sup>

The third stage of the construction would have involved the formation of the hull (húfr), and it is the particular method employed in this phase which gives the vessel's overall design type its name: clinker-built. On the Gokstad ship, the clinker-built hull consists of sixteen strakes a side with each strake being composed of several long planks scarfed together. These joints have been made at various points along each strake so as to avoid having any one joint directly above another and, furthermore, were always cut so that they pointed aft so as to shed water and ice while the ship was underway.<sup>17</sup> On the Gokstad ship the first nine strakes--those under the waterline--on either side of the keel, were different from the rest. First, these strakes were cut thinner (2.6 cm.) than the remaining seven (4.6 cm.) and with the exception of the ninth, were attached to the ribs with spruce root withies, rather than by rivets or treenails. The use of withies to secure the ribs against the hull was made possible by protruding cleats carved in the appropriate spots along the inside of the planks. The withies would then be laced through holes in the cleats and through corresponding holes in the ribs, and thus fastened. The ninth strake was attached to the ribs with treenails, while the remaining seven were riveted to the ribs. The ribs, however, did not hold the hull together, but

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16. *Ibid.*, p. 114. The angle of the scarfing on Viking ships is less than what is acceptable today. Moreover, modern techniques use stronger interlocking scarf joints. However, as sea trials of Viking ship replicas have shown, these seemingly weak joints provided the Gokstad ship with a highly advantageous elasticity. Greenhill, *Archaeology of the Boat*, p. 234-35.

17. Brøgger and Shetelig, *The Viking Ships*, p. 116.

rather, merely served to reinforce it. The strakes, then, were attached to the keel-flange, to the specially cut rabbets on the stem and stern posts and to each other, by iron nails driven from the outside, and riveted over iron clench plates on the inside of the strakes at intervals 18.5 cm. apart. Since each strake overlapped the one below it, the planking was carefully tapered so that the bottom part of the strake, which was to be riveted, was thinner than the top part which, in turn, would serve as the base for another strake. To ensure a watertight seal where the strakes overlapped, the Vikings devised a special animal hair caulking (sið-praðr) which was dipped in tar and then placed between the strakes before they were riveted together. Once the entire ship was finished the hull would have been completely tarred, making the straking even more leak-resistant.

The last major phase in the construction of the Gokstad ship would have been the insertion of the ribs. There are nineteen ribs in the Gokstad ship, each spaced approximately one metre away from the next. Each rib was cut from a piece of oak the natural bend of which corresponded with the particular shape of the hull. Interestingly, the ribs were not fastened to the keel, a deliberate aspect of the ship's design which contributed to the structure's pliancy. Spanning across the top of each rib was a cross-beam, flat on top and skillfully arched along the bottom so as to provide additional transverse support to the hull. At the bow and stern the ribs take on something of a V-shape and were designed to serve as fore and aft bulkheads. In addition, the stern rib was also utilized as a support base for the side-rudder.

Two final elements of the ship's construction which merit some attention are the mast assembly and the side-rudder. The mast assembly is a massive two-levelled affair designed both to withstand the enormous pressures exerted on the mast while the ship was under sail, and, at the same time, allow for the mast to be removed when not in use. The first, or lower level, of this assembly

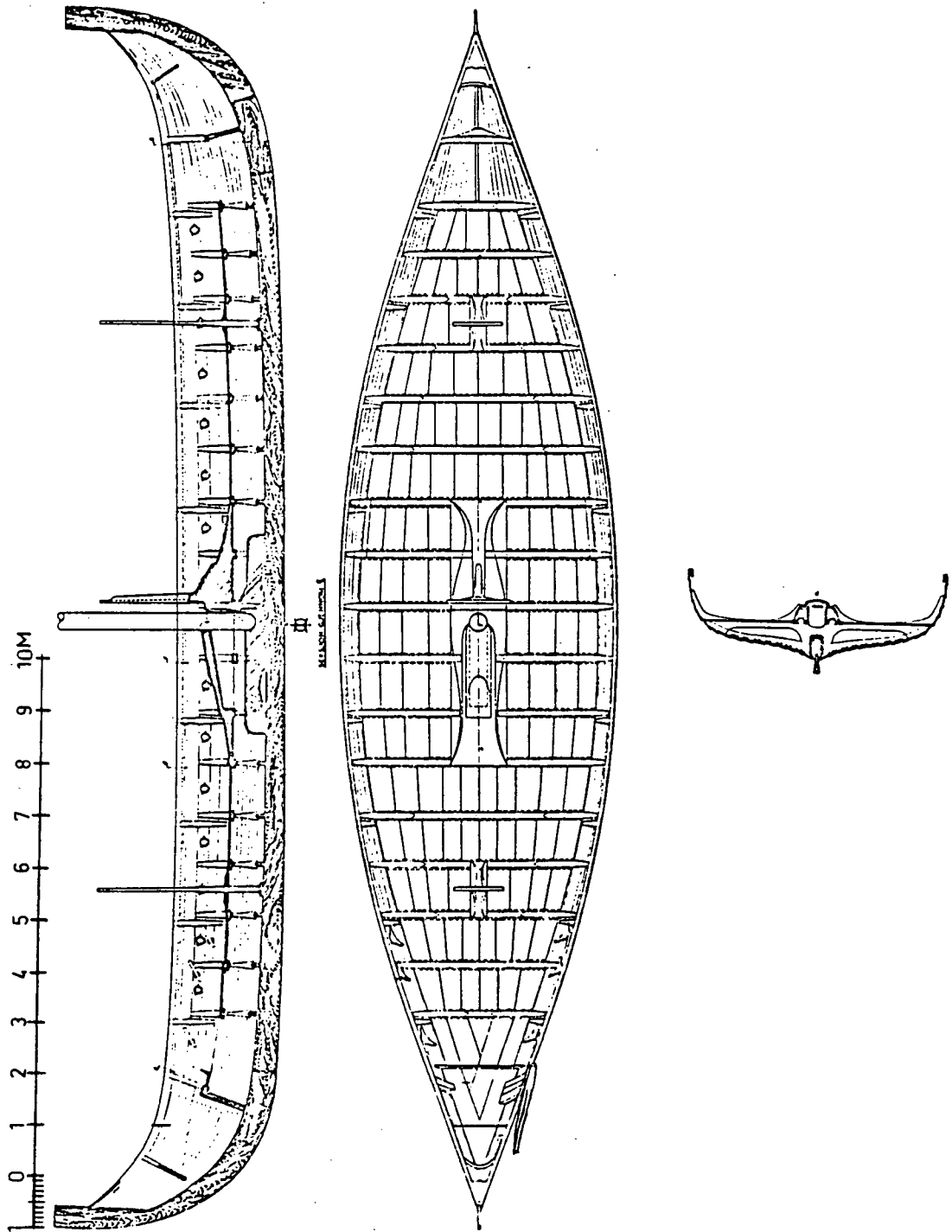


Fig. 7: THE GOKSTAD SHIP. Sibylla Haasum, *Vikingatidens Segling Och Navigation* (Stockholm: Institute of Archaeology at the University of Stockholm, 1974), pp. 29-30.



is known as the crone or keelson. It is a block of oak 3.75 m. long, 40 cm. tall, and 60 cm. wide, lying across and clenched to, the four middle ribs of the ship. The crone was further secured in place by solid oak knees nailed to each side of the structure. Cut into the crone was a socket (stallr), wherein the foot of the mast would have rested when raised. In front of the socket, and rising straight up to the cross-beam of the tenth rib (counting from the bow) was a thick supporting arm which was a natural appendage of the piece of oak chosen for the crone. Directly above the crone, and spanning five cross-beams was the second, or upper level of the mast assembly, known as the mast partner. The mast partner--also called the mast fish due to its shape--was fashioned from an even larger block of oak than the crone and was designed to support the mast once it had been firmly seated in the stallr. To facilitate the raising and lowering of the mast, a slot was cut from the aft of the partner to about midway along its length. Once the mast had been raised, a plug would have been placed in this slot and so the mast would have been held securely in place where it would have been strengthened further by shrouds.

Turning finally to the side-rudder of the Gokstad ship, one finds a design which, in spite of its primitive appearance, is in fact remarkably sophisticated.<sup>18</sup> The extreme aft rib of the vessel served as the support base for the rudder, which was attached to the starboard side of the hull.<sup>19</sup> The inboard area around this rib was reinforced with strategically located pieces of oak. On the outside of the hull, directly adjacent to this rib, two specially designed blocks of oak were mounted to provide the fulcrum for the side-rudder. The lower piece--called the "wart"--was rounded at the protruding

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18. See: Ole Crumlin-Pedersen, "Two Danish Side Rudders," Mariner's Mirror, Vol. 52 (August, 1966), p. 251.

19. The nautical term starboard actually originates from the Old Norse word "styri" meaning rudder. Hence the right-hand side of the ship was the rudder side or stjorn-boroi side.

end, while the other block was placed above, firmly attached to the two uppermost strakes. The function of the former was simply to hold the rudder out from the hull, while the role of the latter was to keep the neck of the side-rudder (stýrishnakki) in one position. The rudder was fastened to the hull with withies laced through these blocks of oak and so devised that the withies could be easily adjusted, allowing for the raising and lowering of the side-rudder as the situation demanded.<sup>20</sup> The helmsman controlled the rudder, which is 3.3 m. long and 42 cm. wide at its broadest, by way of a tiller (hjalmonvölr) 40 cm. long.

Unfortunately, the excavation of the Gokstad ship turned up no trace of the sail which she would have carried; a deficiency common to all of the Viking ships excavated to date, with the possible exception of the Oseberg ship. In this instance, a section of woolen cloth has generated much interest and although a case exists for considering it to be part of a tent,<sup>21</sup> a recent review of the evidence suggests that it may well be a piece of sail cloth.<sup>22</sup> However, beyond suggesting that the Norsemen used wool (wadmal) for sail cloth, the fragment from the Oseberg find tells us very little. From the remnant of the pine mast found with the Gokstad vessel, it has been estimated that its original height was between 11.5 m. and 12.5 m. and that therefore the Gokstad ship might have carried a sail of some 90 square metres.<sup>23</sup> Also found with the ship were two 8 m. long spars which apparently were used in conjunction with two special socketed blocks which served as their bases.<sup>24</sup> These spars are known as beitiáss, from the Old Norse verb beita, to tack or sail into the wind,<sup>25</sup>

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20. As when beaching ("sigla til brots") or when travelling over shoals.

21. Brøgger and Shetelig, The Viking Ships, p. 132.

22. Crumlin-Pedersen, "Viking Shipbuilding," pp. 282-283.

23. Sawyer, The Age of the Vikings, p. 72.

24. Ibid., p. 74.

25. The nautical term "to beat" is derived from this Old Norse root.

and the noun áss, meaning spar. As suggested by this etymology, these spars were used when the ship was sailing into the wind and served to pull the luff of the sail forward.<sup>26</sup> In the absence of an actual sail and rigging from among the various finds discovered in Scandinavia, the main source of information about the Viking sail comes from depictions, primarily the eighth century Gotland stones, and from the much later Bayeux Tapestry. Based upon this, admittedly sparse, evidence and various mathematical formulations, it is estimated that Viking ships could reach speeds of approximately twelve knots sailing downwind, though a cruising speed of about four knots is perhaps more indicative of the regular sailing performance of these vessels.<sup>27</sup>

Whatever the design of her sail and rigging, the Gokstad ship was also designed to be rowed. Accordingly, she was built with sixteen oar ports on each side, arranged along the third strake from the top and provided with pivoting hatches to keep seawater out when the oars were not in use. Yet, as the discovery of the Skuldelev cargo vessels has shown, only ships designed for military purposes were provided with a complete complement of oars. On the knarr oars were simply used to manoeuvre while in harbour and so oar ports were only provided at the stern and bow of such ships. Another significant difference was the design of the ribs and crossbeams. On the cargo ships the cleat and withy system was replaced by treenails so that the hull was stiffer and stronger.<sup>28</sup> Hull strength, a desired quality in cargo carrying vessels, was also augmented by arranging the ribs more closely together and by adding more cross supports.<sup>29</sup> Another feature unique to the knarr was the fixed mast arrange-

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26. See figure 6b.

27. Richard W. Unger, The Ship and the Medieval Economy 600-1600 (Montreal: McGill-Queen's, 1980), p. 88. For the question of the performance of the Gokstad ship see: Sibylla Haasum, Vikingatidens Segling Och Navigation (Stockholm: Institute of Archaeology at the University of Stockholm, 1974); and: Binns, "The ships of the Vikings."

28. This design characteristic is also apparent on the Askekarr ship found in Sweden: Unger, The Ship, p. 82 and 91.

29. Ibid., p. 91. See figure 8.

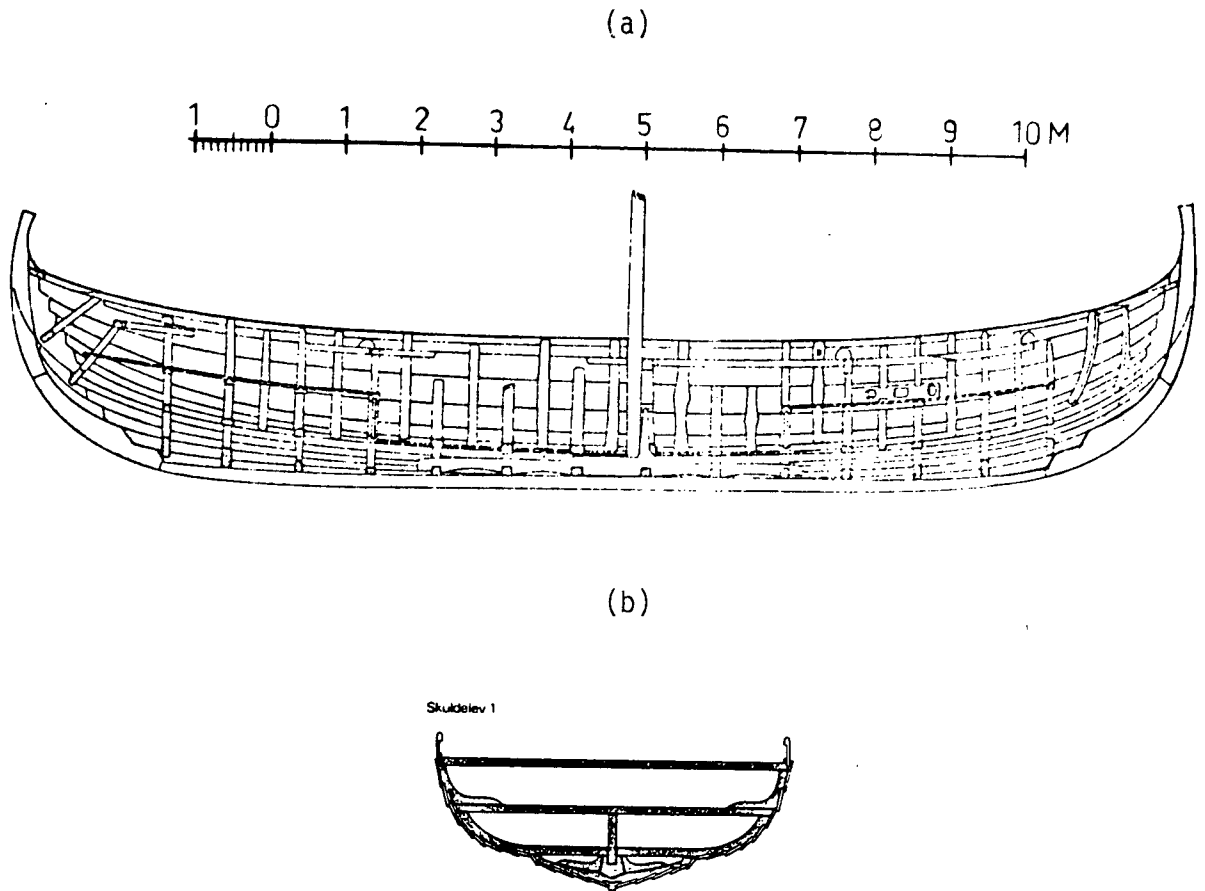


Fig. 8:(a) SKULDELEV I. Sibylla Haasum, Vikingatidens Segling Och Navigation (Stockholm: Institute of Archaeology at the University of Stockholm, 1974), p. 34.

(b) SKULDELEV I (MIDSHIP SECTION). James Graham-Campbell, The Viking World (New York: Ticknor & Fields, 1980), p. 47.

ment. Since the knarr lacked the oars needed for open-sea navigation, it was wholly dependent on its sail for propulsion and so in this respect, the cargo vessel was the true sailing ship of the Viking Age. Indeed, with its cargo carrying function, the beamy knarr would enjoy a stability on the open sea which the Viking warship, especially the longship with its high length-to-beam ratio, lacked.

This technical data which archaeologists have brought to light over the last one hundred years provides a vivid picture of the quality and variety of Viking shipbuilding. By examining the various techniques employed in the construction of the Gokstad ship it becomes readily apparent that early Norse shipwrights had a highly refined understanding of the way in which a vessel responds to the pressures of the sea and the sail. The elasticity inherent in the design of the Gokstad ship very likely enhanced her performance at sea since "the wooden schooners of the turn of the century were reported to improve the speed under sail, as they grew older and their fastenings loosened."<sup>30</sup> Moreover, it is only with this pliancy that a vessel light enough to be drawn up on the beach could have survived the often violent seas of the north Atlantic. The design variations implemented by the Scandinavians are indicative of both their need for ships to perform a variety of tasks, military colonial and commercial, and their desire to perform them more efficiently. Thus, while there is still much to learn about the ships of the Vikings, there is enough information at present to appreciate the quality of the technology which allowed the Norsemen to dominate the seas of northern Europe for some three centuries.

Archaeology has also served to affirm the saga accounts of Viking-age voyages across the north Atlantic, and though the exact location of the land

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30. Ole Crumlin-Pedersen, "Viking Seamanship Questioned," Mariner's Mirror, Vol. 61 (May, 1975), p. 129.

called Vinland remains a mystery, the excavations at L'Anse aux Meadows, Newfoundland, have firmly established a Norse presence in North America. The sagas, however, also report numerous regular voyages between Iceland, Scandinavia and the British Isles and in navigational terms this regular transit represents an achievement which is, in many respects, every bit as remarkable as the more glamorous voyages of discovery. Admittedly, there is a number of ill-fated sea journeys described in the sagas. Nonetheless, the confidence and regularity with which these trips over the open sea are discussed and undertaken in the Old Norse corpus, along with the archaeological evidence of the vitality of Viking trade and commerce, certainly leaves the impression that the Norsemen had mastered the problems inherent in steering a ship across long stretches of the Atlantic. Still, the question remains as to exactly how they were able to do this.

Concerning Norse navigational technology, the sagas are, at best, ambiguous, while the archaeologists have yet to discover anything which can be conclusively proven to have been a navigational aid. In the latter case, the problem is compounded by the lack of any clear notion of what to look for. In spite of this though, there has been a great deal written on the subject.<sup>31</sup>

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31. See: Paul Adam, "Problemes de Navigation dans L'Atlantique Nord," Les Vikings et Leur Civilisation (Paris: Mouton, 1976), pp. 49-60; Alan Binns, "The navigation of the Viking ships round the British Isles in Old English and Old Norse sources," The Fifth Viking Congress (Torshavn : Føroya Landsstyri, 1968), pp. 103-117; and also his "Sun Navigation in the Viking Age, and the Canterbury Portable Sundail," Acta Archaeologica, Vol. 42 (1971), pp. 23-34; Fritz Brandt, "On the Navigation of the Vikings," The World of the Vikings: An exhibition mounted by the Statens Historiska Museum in co-operation with the National Maritime Museum, Greenwich, London (London: The National Maritime Museum, 1973), pp. 14-18; Haasum, Vikingatidens; G. J. Marcus, "The Navigation of the Norsemen," Mariner's Mirror, Vol. 39 (1953), pp. 121-131; Thorkild Ramskou, "La Navigation Primitive des Vikings," Les Vikings et Leur Civilisation (Paris: Mouton, 1976), pp. 41-48; Uwe Schnall, Navigation der Wikinger (Hamburg: Gerhard Stalling Verlag, 1975); Carl V. Sølver, "The Discovery of an Early Bearing Dial," The Journal of the Institute of Navigation (1953), pp. 294-96; also his "'Leidarsteinn,' the Compass of the Vikings," Viking Club Old Lore Series of the Old Norse Earldom of Orkney Shetlands, Vol. 75 (1946), pp. 293-321; E. G. R. Taylor, The Haven-Finding Art (London: Hollis and Carter, 1956); and her "The Navigator in Antiquity," The Journal of the Institute of Navigation (1947), pp. 103-108; Taylor, May, Motzo and Lethbridge, "A Norse Bearing Dial?" The

The passage in Flateyjarbok where Bjarni Herjolfsson divides the horizon, "deila aettir",<sup>32</sup> along with the thirteenth century Konungs Skuggsjá, wherein there is an account of what a merchant seaman needs to know about "the lights of the sky and the movements of the ocean,"<sup>33</sup> have provoked considerable speculation about the Vikings' knowledge of navigational techniques based on the regimens of the stars. Debate has also centered around the mention made in Olafs saga helga (St. Olaf's Saga) of a sólarsteinn,<sup>34</sup> a stone apparently used to find the sun in overcast skies. Unfortunately, these references are far from conclusive and, if anything, have raised more questions than they have answered. Furthermore, whatever conclusion might be drawn from them, must be tempered by the fact that these written sources all post-date the period they describe. Thus, at present all that can be claimed with any certainty is that the Norsemen probably used some knowledge of the regimens of the stars to guide them on voyages which took them out of sight of land.

In contrast to the Irish heritage, the Norse seafaring tradition appears both more sophisticated and more versatile. The Vikings used ships of different sizes to perform different tasks, ships which were generally superior in design to all of their northern European contemporaries. With this superiority, it seems the Scandinavians were better able to exploit whatever navigational skills they might have had and, through accumulated experience, to extend and improve further their technological lead. Moreover, their need to travel was based on a variety of motives (ranging from greed to political and economic necessity)

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Journal of the Institute of Navigation (1954), pp. 78-84; H. Winter, "Who Invented the Compass?" Mariner's Mirror, Vol. XXIII (Jan., 1937), pp. 95-102.

32. The Flatey Book and Recently Discovered Manuscripts Concerning America as Early as the Tenth Century (London: Norrœna Society, 1908), p. 23.

33. The King's Mirror, L. M. Larson, trans. (New York: Twayne, 1917), p. 86. (See chapters V-VII).

34. P. G. Foote, "Icelandic sólarsteinn and the Medieval Background," A. R. V., Vol. 12 (1956), pp. 26-40. See also: "Magical Stones of the Sun," Time (July 14th, 1967), p. 57; and Gwyn Jones, A History of the Vikings (Toronto: Oxford University Press, 1968), p. 193.

wider than those which inspired the seafaring accomplishments of early medieval Ireland. Hence, the tradition which they developed had to serve a broader range of needs, and a significantly larger number of people.



Viking Ships and Irish Curraghs

When the Scandinavians first arrived in Ireland at the end of the eighth century, they came there in vessels which were both larger and more versatile than the curraghs used by the indigenous population. Moreover, the effectiveness of these Norse ships, and the men who sailed them, in performing their designated tasks must have been only too apparent to the victims of this onslaught. Indeed, within fifty years the Viking raiders had become settlers with an established presence at various points along the Irish coast. From their strongholds at Dublin, Waterford, Wexford, Limerick and Cork, the Scandinavians could rest secure and spread their influence slowly inland, knowing that their main source of supply and reinforcement, the sea, was well under their dominion. For three centuries the Norsemen retained almost exclusive control of the sea surrounding Ireland. In their attempts to establish an inland kingdom, however, they fared rather less well. In this sense, the military resources and skills of the Irish kings seem to have been more attuned to resisting the Norsemen on land than on the sea. Even with their logistical and numerical advantage, the Irish with their curragh technology do not appear to have been capable of meeting and defeating the challenge posed by the invasion fleets of the Vikings.

For modern scholars this situation has largely been viewed as a case of a superior technology displacing an inferior one. G. J. Marcus, who may be fairly called the champion of early Celtic seafaring, readily concedes that "the close of the eighth century saw the beginning of the Viking invasions, and the eclipse of the native Celtic shipping."<sup>1</sup> James Hornell, in his survey of

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1. Marcus, "Factors in Early Celtic Navigation," p. 325. Elsewhere he writes: "The sailing-curragh seems to have been in common use among the Gaels of Ireland and Dál Riada (Western Scotland) until the Scandinavian invasions of

the history of the Irish curragh is more explicit:

Although curraghs figure prominently in many old accounts of Ireland until and including the Age of the Saints, records subsequent to the seventh century have scarcely any contemporary references to their use. The appearance of the Norsemen and Danes on the eastern seaboard of Ireland in the eighth and ninth centuries and their seizure of all sea trade, entailed a complete revolution in the design of Irish oversea craft. Thenceforward the planked ship of wood drove the curragh off the high seas and the curragh survived only on the wild western and north-western coasts for fishing and local coastal trade, and for traffic on some of the inland waters. [italics mine] (2)

Nevertheless, Hornell, like Marcus, does not explain in any detail the nature of this technological hegemony. It would appear that the extent of the Norse involvement in Ireland, as reflected in the archaeological and written sources, is in itself enough to inspire such a conclusion.

In fact, however, the evidence available to document this conclusion is notably diffuse. Moreover, the documentation supporting the existence of what Marcus calls the "curragh era"<sup>3</sup> is rather sketchy and problematical. The question which therefore arises is whether the arrival of the Vikings brought an end to a grand era of Irish open-sea ventures in curraghs, replacing it with a superior technology, or whether the Norsemen merely occupied a space not filled by the indigenous technology and socio-economic structure.

Perhaps the best proof of the impact of Scandinavian shipbuilding and seafaring on the Celtic tradition is the extensive list of Old Norse loan words which refer to shipping.<sup>4</sup> Indeed, "very few of the Irish words for ships, parts of a ship and seafaring are of Celtic origin."<sup>5</sup> Notable among these few are the words curach (curragh), ethar, meaning ferry boat, and ram, meaning oar. From Latin come the Irish terms liburn and long taken from liburna and navis longa,

the eighth and ninth centuries, when it was largely superseded by the planked ship of timber." Marcus, "Irish Pioneers," p. 474.

2. Hornell, Water Transport, p. 142.

3. Marcus, "Factors in Early Celtic Navigation," p. 320.

4. See appendix one.

5. Alexander Bugge, "Norse Loan Words in Irish," Miscellany presented to Kuno Meyer (Halle: Max Niemeyer, 1912), p. 291.

meaning a light vessel and a longship, respectively.<sup>6</sup> Aside from these, though, almost the entire Irish vocabulary of nautical terms is derived from Old Norse. Norse loan words also appear in the Irish vocabulary regarding houses--a testament to the Norsemen's influence on the urban development of Ireland--and, even more pertinent to the present discussion, commerce and trade.<sup>7</sup>

Undoubtedly, this etymological evidence demonstrates the important role the Norsemen played in the development of Irish seafaring. However, it does not provide specific proof that the curragh technology was displaced by the clinker-built, wooden-hulled Norse design. In fact, as Hornell states, the curragh survived in the North and West of Ireland "...for fishing and local coastal trade, and for traffic on some of the inland waters."<sup>8</sup> Admittedly, the most intense areas of Norse involvement in Ireland were the South and East, which perhaps suggests that the survival of the curragh in the West, and its disappearance in the East, is a reflection of the extent of the Viking activity in those areas. Yet such a conclusion does not take fully into consideration the fact that the Scandinavians were very well established in Limerick and were active along Ireland's northern coastline. Nor does it properly allow that in the roughly nine hundred years since the end of the Viking Age, Ireland's political and economic development has been heavily concentrated on her eastern seaboard. The centuries of cultural and commercial domination by the English may well have had as great, if not a greater, influence upon the disappearance of the curragh tradition on the east coast. Indeed, one need only remember that while the nautical vocabulary of Old Irish is dominated by Norse loan-words, the nautical vocabulary used on Ireland's eastern shores today is English! In short, Hornell's statement that the curragh tradition in Ireland remains only

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6. Ibid., p. 292.

7. See appendix two.

8. Hornell, Water Transport, p. 142.

in the Northwest and West, though accurate, is a twentieth century observation the explanation for which might well have little to do with the Norse invasions.

Hornell's comments also raise another important issue. Implicit in his statement that the appearance of Scandinavian wooden vessels "drove the curragh off the high seas,"<sup>9</sup> is the assumption that the arrival of the Vikings rung the death knell for the large sea-going curragh in Ireland. This is apparent in his contrast of the vessels described in the Immrama with those he discovered still in use in the twentieth century. None of the boats he chronicles in his thorough ethnographical study of Irish curraghs could carry even the more modest complement of men reported to have sailed with St. Brendan on his legendary voyage.<sup>10</sup> The largest curragh Hornell observed in Ireland was an 8 m. four-thwart, three-man vessel from Dingle.<sup>11</sup> Nevertheless, in the Pepysian Library of Magdalene College, Cambridge, there is a highly provocative drawing made by a Capt. Thomas Phillips around 1680 of a "Portable vessel of Wicker, ordinarily used by the Wild Irish."<sup>12</sup> The ship in this drawing displays distinct characteristics of the curragh in hull construction, though in shape and design it is markedly different. The vessel has a prominent stem post, a keel and a fixed rudder, none of which appear on the twentieth century curragh. The lower part of the illustration also shows the hull of the ship under construction, which contrary to the method Hornell saw in use, is being formed with the gunwales up. Hornell interprets the vessel in the drawing as a "wooden-framed wicker vessel...a hybrid craft; something between a deep-sided curragh and a small plank-built sailing ship of the period."<sup>13</sup> However, owing

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9. Ibid.

10. Although the Navigatio reports that St. Brendan took a crew of seventeen, in the Irish version of St. Brendan's life (Betha Brenainn Clúana Ferta) there were three curraghs used instead of one, and twenty men to each boat. Lives of Irish Saints, Vol. II, p. 52.

11. Hornell, Water Transport, p. 148.

12. Hornell, "The Curraghs of Ireland Part III," pp. 35-37.

13. Ibid., p. 36.

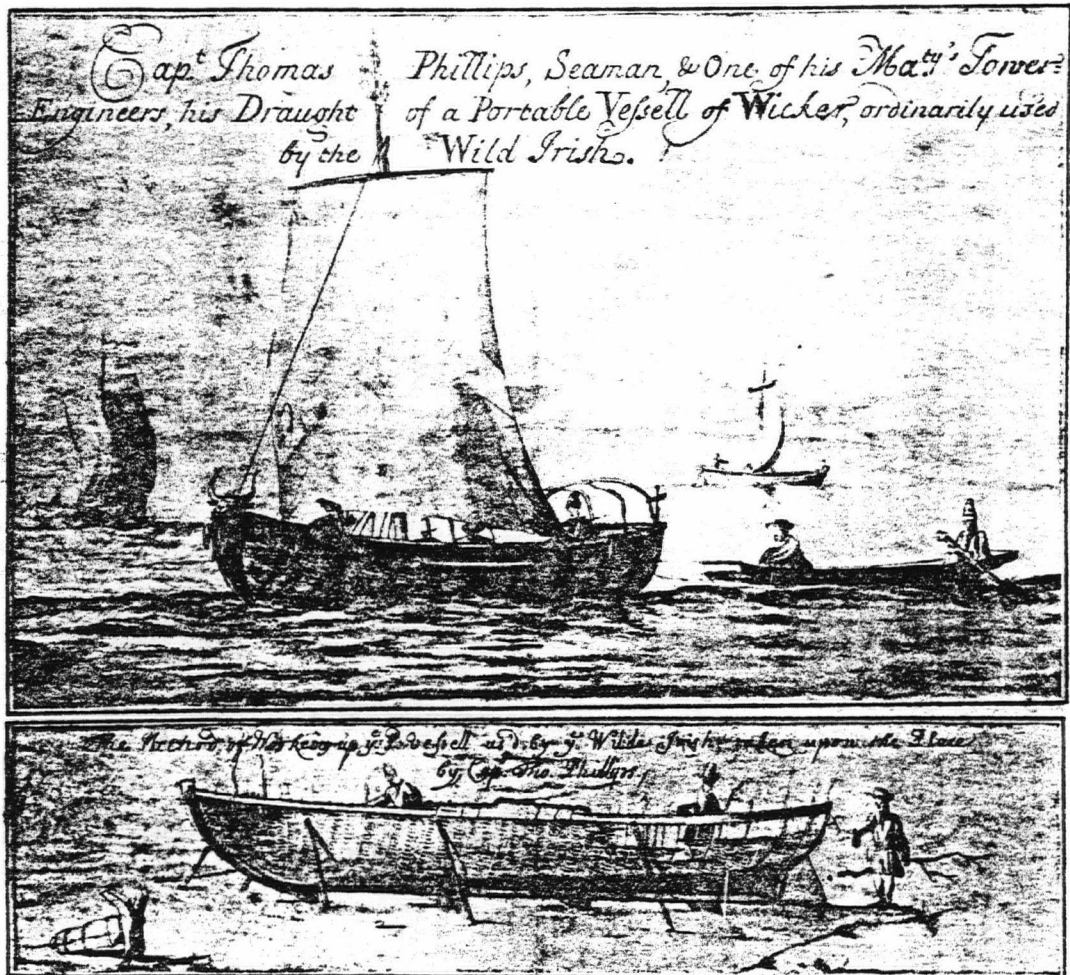


Fig. 9: CAPT. THOMAS PHILLIPS' DRAWING OF A "PORTABLE VESSEL OF WICKER, ORDINARILY USED BY THE WILD IRISH". John de Courcy Ireland, Ireland's Sea Fisheries: A History (Dublin: Glendale Press, 1981), p. 37.

to the absence of "any corroborative evidence that such a design ever existed,"<sup>14</sup> and the presence of the fixed rudder, Hornell concludes that the picture does not have much bearing on the curragh tradition.<sup>15</sup>

In spite of this rather hasty dismissal, the possible existence of such a vessel does suggest that Irish curragh technology might well have remained applicable to the construction of larger vessels long after the invasion of the Norsemen. What is most striking about Capt. Phillip's drawing is that it shows a craft which appears to have the strength and draught necessary to carry the sort of crew and cargo described in the Navigatio. In truth, the description of the building of the curragh in the Navigatio is not so complete as to rule out a hide-covered vessel with a more prominent wooden keel, minus, of course, the seventeenth century fixed rudder. At any rate, it seems entirely possible that the curragh might have retained a high-sea function, however, limited, for several centuries after the end of the Viking era.

Although the curragh is clearly the prominent type of ship associated with the early Irish seafaring tradition, it is interesting to note that wooden ships also appear to have been in use in Ireland before the arrival of the Norsemen. In the early eighth century work Adomnan's Life of Columba<sup>16</sup> there is mention made of "timbers of pine and oak for a long ship."<sup>17</sup> This reference has significant implications, for it seems to suggest that the Irish were constructing ships out of the same materials used by the Vikings almost one hundred years before the first Scandinavian raiders arrived in Ireland. Unfortunately, there is no indication in the text as to how the wood was used. It might have been employed in a heavy carvel design, like that of the

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14. Ibid.

15. Ibid., pp. 36-37. For a slightly less sceptical opinion see: Marcus, "Factors in Early Celtic Navigation," pp. 326-27.

16. Kathleen Hughes reports that while Adomnan's Life exists in a manuscript dating to c. 713, it was written before 704: Hughes, Early Christian Ireland, p. 224.

17. Adomnan's Life, pp. 452-53.

Blackfriars ship, or in a clinker-built fashion,<sup>18</sup> or in an early version of the design illustrated by Capt. Phillips where timbers are used to strengthen the wicker-work hull. An even more provocative reference to a wooden ship can be found in the Irish version of the Life of St. Brendan (Bethada Brenainn Clúana Ferta). Although this work is extant in manuscripts written at the end of the Middle Ages,<sup>19</sup> it offers an interesting comparison between the hide-covered curragh and the wooden-hulled ship. According to this account of St. Brendan's life, the Saint went on two voyages, the first in a curragh, which was unsuccessful, and the second in a wooden ship. After returning from his first journey Brendan went to see his foster-mother Ita:

...and asked her what he should do with reference to his voyage. Ita gave him welcome as she would have bidden welcome to Christ and His apostles, and said to him: 'Ah, dearly beloved son, why didst thou go on thy journey without taking counsel with me? For the country which thou art seeking from God, ye will never find on these dead soft skins, for it is holy consecrated land, and no blood of man was ever shed in it, but let timber boats be made by thee. Belike thou wilt find that land on this wise.' Thereupon Brendan went into the region of Connaught, and an excellent large boat was made by him, and he embarked with his company and people; and they took various herbs and seeds to store the boat withal, and wrights and smiths who had prayed Brendan to let them go with him. (20)

Here it is clear from the context that the ship had a wooden hull, although the actual design remains a mystery. Moreover, rather than building several ships, as Ita suggests, Brendan built one large vessel. In this one ship Brendan fits "his company and people," which would seem to imply that the sixty men of the three curraghs used in the first voyage were all together in a vessel the size of which must have been comparable to the larger Viking ships.<sup>21</sup>

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18. Marsden, "Celtic Ships of Europe," p. 282.

19. Bethada Brenainn Clúana Ferta is a sixteenth century compilation. Nevertheless, there is good reason to believe that the second voyage of St. Brendan is derived from pre-Viking-age sources. See the essay in H. P. A. Oskamp's The Voyage of Mael Duin, pp. 20-38.

20. Lives of Irish Saints, Vol. II, pp. 62-63.

21. In the Life of St. Brendan found in the Book of Lismore, of which Plummer is critical, the first voyage is said to involve three curraghs and

These two references raise a whole series of technical questions. The implications arising from the possibility that the Irish used wooden ships as well as currachs certainly give cause for a reassessment of the Celtic seafaring tradition and the so-called "curragh era". If, for example, such wooden ships did exist, it is certainly possible that they were used by the monks who Dicuil reports sailed to and settled on the islands of the North Atlantic. Furthermore, when one reads in AU of a "marine battle" in 719 A.D.<sup>22</sup> between warring Irish factions, the possibility that wooden ships were employed by one or both sides should not be overlooked. This is not to say that the curragh was a ship design of only minor importance and limited usefulness, for to do so would be to ignore the weight of evidence showing it to have been a vessel of both versatility and widespread popularity among the Irish. Rather, the point here is that the impact of the Norsemen on Irish shipbuilding technology cannot be viewed as a case of wooden-hulled ships driving an inferior, though accomplished, skin-boat tradition from the high seas. Indeed, such a notion is clearly insufficient in both its premise and its conclusion, the former because the sources suggest that the Vikings would have encountered a seafaring tradition in Erin consisting of more than skin-boats alone, and the latter because there is reason to believe that the curragh was not relegated to the role of merely providing small personal transportation in coastal and inland waters after the arrival of the Norsemen.

An alternate and more satisfactory interpretation of the Scandinavian influence on the Irish seafaring heritage can be arrived at by placing these two technological traditions squarely within the context of the functions they

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thirty men in each, while in the description of the second voyage it explicitly states that sixty men sailed in the one wooden ship. Although it is beyond the scope of this paper to solve this discrepancy, the current scholarship appears to accept the figure for the second voyage without debate, hence the reading of "company and people" as sixty. See Plummer's introductory notes in Lives of Irish Saints, Vol. I, xxi, and; Oskamp's essay in The Voyage of Mael Duin, pp. 20-38.

22. AU, pp. 170-171.



served. Prior to the Viking Age the Irish appear to have participated in only a small amount of overseas trade, the bulk of which seems to have been concerned with the import of wine from France.<sup>23</sup> Whether this trade was carried mostly by Gaulish or Irish ships it is difficult to say conclusively. In Adomnan's Life of Columba there is mention of Gaulish sailors arriving from Gaul and bringing news of the destruction of an Italian city in a volcanic eruption.<sup>24</sup> Elsewhere there is mention of Irish merchants in Nantes.<sup>25</sup> Still, the available evidence portrays Ireland before the Vikings as a largely rural and tribal society and so it is safe to assume that the indigenous demand for a shipbuilding technology to facilitate trade was minimal. This same political and economic parochialism also limited the military demands for shipping. However, a call for good ships and navigational skills to transport men and supplies across the North Atlantic did arise in Ireland from among the anchorite monastic community, and it was here that the Irish seafaring tradition acquired its fame. In view of this, it is certainly not surprising that the bulk of information concerning the Irish seafaring heritage comes from saints' lives and allegorical voyage tales. Yet while these monastic voyages inspired a considerable corpus of literature, the extent of the technological development in shipbuilding they produced was restricted by their limited patronage and aims. The trips which the Irish monks made to the islands of the North Atlantic were feats worthy of admiration. But the demands which these sporadic and mostly one-way voyages, undertaken by a very select group of men, made on the Celtic shipbuilding tradition could not have been that great. In seeking a particular destination with no immediate thought of returning within a prescribed time, the Irish sailors generally required a less thorough

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23. Doherty, "Exchange and Trade," pp. 76-79.

24. Adomnan's Life, pp. 262-263.

25. Doherty, "Exchange and Trade," p. 7.

knowledge of navigation and ships of less durability, performance and reliability than their Norse counterparts. The Irish who ventured out into the north Atlantic were, after all, mostly religious men by vocation and not sailors. Admittedly, this desire to remove themselves from secular society was sufficient to promote the discovery of and passage to new lands, but it was not enough to generate an exemplary seafaring and shipbuilding technology.

The Vikings, on the other hand, needed their ships to provide them with wealth, political security and transport for colonists. As pagans only slowly drawn to Christianity over a period of three centuries, the Scandinavian sailors were not encumbered by the ascetic inclinations of the Irish seafarers. The Norsemen's interest in ships, an interest spawned and encouraged by their culture, was directed by a strong desire for power, success, land and worldly goods. On the basis of these motivations, the Norsemen developed a seafaring technology and a sailing ability which served them well for several centuries. The settlements they established throughout Europe and in the North Atlantic were intended for the preservation and not the avoidance of their economy and society. Accordingly, the ships which they built to conquer other lands and to supply their settlers and trade with their neighbours were meant to endure years of service and to minimize the risks which accompany regular passage over the open ocean. In addition, they developed variations in the basic design of their vessels to serve better the different functions which their colonies, wars and trade required. At the same time, the experience the Vikings accumulated in performing these various seaborne tasks improved their skills as navigators. In both shipbuilding and navigation, the competition inherent in warfare and commerce acted as a catalyst for further improvement, a catalyst which was not present among the most ambitious sailors of early Christian Ireland: the anchorites. The Christian asceticism of the Irish mariners, though perhaps conducive to a godly existence, did not facilitate

technological development in the way war, trade and colonization did for the Scandinavians.

That the Norse seafaring tradition enjoyed a greater vitality than its Irish counterpart is not a matter of serious debate. Yet to describe it as superior is perhaps to beg a rather moot academic point. Although it was less dynamic, the Irish tradition appears to have served the particular needs of the best Irish navigators quite admirably. When the Vikings arrived they brought with them their own distinct economic and military requirements and their own shipbuilding technology to fill these needs. This technology, like its owners, was eventually assimilated into Irish life and in this way the Norsemen did not so much eclipse the Irish seafaring tradition as supplement it.

### Conclusion

In his well-known Topographia Hibernica (written between 1185-1188 A.D.) Giraldus Cambrensis devoted several sections to the Scandinavian invasions of Ireland. Following his description of the death of the Norwegian Turgeis and the expulsion of the Norsemen (c. 902 A.D.) he writes:

...others came again from Norway and the northern islands. They seemed to be the remnants of the previous people, and knew the country to be very good, either by some deep-seated belief or because they had heard so from their fathers. They came not in a warlike fleet, but in the guise of peace on the pretext of commerce. Immediately they occupied the sea-ports and eventually with the consent of the chiefs of the land built several cities there.

For the Irish through their vice of innate laziness of which we have spoken, did not bother to sail the seas or have much truck with commerce; and so with common consent of the whole kingdom they thought it useful indeed that a people who would bring to them the products of other regions and which they did not have themselves, should be admitted into certain parts of the kingdom (1)

Admittedly, Giraldus' interpretation of events is somewhat at odds with what is known about the Norse invasions from other sources. For instance, his reference to the "common consent of the whole people" seems doubtful given the political structure of early medieval Ireland. Nevertheless, the excerpt is certainly an apt and concise summary of the function which the invading Scandinavians served in Ireland. More to the point, though, Giraldus' comments are a striking early testament of the rather narrow base of the Irish seafaring tradition. Despite the fact that Giraldus was writing several centuries after the events he chronicles, his assertion that the Celts of Hibernia "did not bother to sail the seas or have truck with commerce," fits in very well with the impression that a careful examination of the evidence provides.

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1. Gerald of Wales, The History and Topography of Ireland, John O'Meara trans. (Harmondsworth: Penguin, 1982), p. 122.

As the work of Dicuil and others indicates, the Irish undoubtedly did bother to sail from time to time. Moreover, when they chose to do so the results were often highly admirable, as in their settlement of Iceland. But the men who carried out these voyages, who developed the Irish seafaring technology and made the most demands upon it were a small and select group. Even given the need to repopulate their remote religious settlements the number of voyages the Irish anchorites embarked upon in the course of any given year must have been very small. In view of the possibility that Giraldus was familiar with these voyages or at least with some of Ireland's ecclesiastical voyage literature, the fact that he was not sufficiently impressed even to register an exception to his statement about the disinclination of the Irish to set sail is particularly noteworthy. Although the Irish monks extended the Celtic seafaring tradition to remarkable ends, the fact remains that in their interest in open ocean sailing they were exceptions among their countrymen.

The apparent readiness with which Giraldus associates sailing with commerce also underlines another important point, namely that trade was one of the strongest incentives for seafaring and shipbuilding in the Middle Ages. Whether, as Giraldus argues, the lack of commerce in Ireland was due to an innate laziness or whether it was merely a reflection of the nature of early medieval Irish society, it nonetheless seems certain that there was very little overseas trade in Erin before the arrival of the Scandinavians. Thus, when the Norsemen established their coastal settlements in Ireland and began to move goods to and from Europe, they did not force the indigenous merchant service out of business as they did for a time in Friesland.<sup>2</sup> Nor, it should be noted, did the Norse domination of Ireland's coastal waters inspire the

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2. Dirk Jellema, "Frisian Trade in the Dark Ages," Speculum, Vol. XXX, (Jan., 1955), p. 34.

sort of technological response in Ireland that it did in England.<sup>3</sup> The Scandinavians found in Ireland a country which had yet to develop an urban-commercial sector, and in their remarkable success in promoting trade there they bestowed upon Ireland a lasting endowment. Thus, an eleventh century Irish poet attributed to the Norsemen the "gift of habitation and commerce."<sup>4</sup> Even after the Vikings had ceased to be a political threat in Irish life they continued to dominate the commercial life of the island. In fact, there is evidence to suggest that even in the seventeenth century many of the merchants of Dublin were descendants of the Vikings.<sup>5</sup> As for the importance of this endowment to Ireland's economy, William of Malmesbury, writing in the first half of the twelfth century, described the effects and implications of an embargo England's Henry I had imposed on trade with King Murcard's Erin:

...Murcard, for some unknown cause, acted, for a short time, rather superciliously towards the English; but soon after on the suspension of navigation and of foreign trade, his insolence subsided. For of what value could Ireland be if deprived of the merchandize of England? From poverty, or rather from the ignorance of the cultivators, the soil, unproductive of every good, engenders, without the cities, a rustic, filthy swarm of natives. (6)

Although Norse shipbuilding and seafaring attained a prominent stature in the economic life of medieval Ireland, this was not achieved at the expense of the indigenous Celtic technology. Admittedly, the Vikings' activity in the North Atlantic made the high-sea voyages of the Irish anchorites very difficult and took from them their places of refuge. Still, the main point here is that

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3. Whitelock, *The Anglo-Saxon Chronicle*, p. 57: "896...Then King Alfred had 'long ships' built to oppose the Danish warships. They were almost twice as long as the others. Some had 60 oars, some more. They were both swifter and steadier and higher than the others. They were built neither on the Frisian nor the Danish pattern, but as it seemed to him himself that they could be most useful."

4. *The Book of Rights*, John O'Donovan trans. (Dublin: The Celtic Society, 1847), p. 231.

5. Bugge, "Norse Loan Words," p. 300. Mr. Bugge quotes a work by Duald Mac Firbis entitled: *On the Fomorians and Norsemen*, ed. A. Bugge, p. 11.

6. William of Malmesbury, *Chronicle of the Kings of England*, J. A. Giles trans. (London: Henry G. Bohn, 1847), p. 443.

the Irish technology was entirely sufficient--including the possible use of wooden ships--for the needs of these religious mariners. Consequently, the Scandinavian tradition would not have had any appreciable influence on it. Aside from these voyages the Irish apparently did very little open-ocean sailing. Hence, in establishing important urban-commercial centres in Hibernia and thereby generating a demand for overseas trade, the Scandinavians supplemented the shipbuilding and seafaring technology of the Irish.

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Appendix One: Norse Loan Words in Irish - Seafaring

- Mod. Ir. *accaire* "an anchor" (O'R), from ON *akkeri*.
- Mod. Ir. *accarsaid* "a port, harbour, road for ships" (O'R), from ON *akkerissút* or *akkerissæti* "anchoring ground" (Craigie). The word is, according to Professor Marstrander, still in use, at least in Kerry, where *-said* has been replaced by the genuine *-suidhe*.
- M. Ir. *actuaím* (Battle of Mag Léna), from ON *aktaumr* "brace" (Kuno Meyer in ZCP VII).
- M. Ir. *allsad* "clewing up or slackening a sail, suspending", from the synonymous ON *halsa* (Contrib.).
- Gael. *amall* "oar grummet", from ON *hamlu* (Craigie).
- M. Ir. *bát* "boat" ('The Irish Abridgement of the Expugnatio Hiberniæ', ed. W. Stokes [English Historical Review 1905], § 24), Gael. *bát(a)* "boat", Manx. *bautey* "a boat". From ON *bátr*.
- M. Ir. *bord* I. "edge, rim (of a vessel)". II. "board, table" (Togal Troi, Cellachán). From ON *borð* I. "plank, side of a ship", II. "table".
- M. Ir. *birling* "a birling, galley", from ON *byrðingr* "a transport-vessel, merchant ship" (Contrib.).
- M. Ir. *carb* (O'R, O'C, Cellachán) "a ship", Gael. *cairb* "a ship" (M & D), Cymr. *yscrapph*, from ON *karfi* "a kind of ship, warship". (It is the same word as the Greek *καράβος*, med. Lat. *carabus*, Russ. *korabl*, Finn. *karras*, Lappish *garbe*, *garbas*; the word has probably come to eastern Europe from the Scandinavian countries.)
- M. Ir. *ciúil* "ship" from ON *kjóll* (Marstrander ZCP VII 400).
- M. Ir. *cnap-long* "a studded ship", vide *cnap* Contrib. Cf. ON *knapp-tjald*.
- M. Ir. *cnarr* "a ship" (O'R, O'C, plur. *cnairr* Cellachán); from ON *knorr* (gen. *knarrar*) f., "a ship" (in later times mostly a merchant ship, but in earlier times also a war-ship).
- Gael. *dorgh*, gen. *duirgh*, m. "A hand-line for fishing" (*linum piscatorium*), Hebrides; *dorgach* m. "act or business of fishing with hand-lines"; *droga* m. "a hand fishing line" (A. MacDonald, 'Gaelic Vocabulary' 51); Mod. Ir. *dro* "a line" (O'R), *drogha* "a fisher's line" (O'R)<sup>1</sup>, *dorga* "a fishing net" (O'R), Manx. *darrag* "a fishing line made of black hair moods". From ON *dorg* f., N. Dial. *dorg* f. "a hand fishing line, drown after the boat while rowing".
- M. Ir. *eibill* (Battle of Mag Léna; pronounced *evill*), from ON *hefill* (Kuno Meyer, ZCP VII).

Alexander Bugge, "Norse Loan Words in Irish," Miscellany presented to Kuno Meyer (Halle: Max Niemeyer, 1912), pp. 292-95.

M. Ir. *laideng* n. pl. *laidengu* (Togal Troi), *laoidheang* (*Lochlann na laoidheang*; go *Lochluinn laoidheang dhuinn*, Cellachán § 44, 45 N. 1. *A uu Lachluinn na laoidheang* "O descendant of Lochlann of the ships!", Skene, Celtic Scotland III 418), "ships, fleet", *luoidheang* or *laidheang* "a ship or bark" (O'C). From ON *leiðangr* which signifies "naval forces" (as opposed to land forces).

M. Ir. *lipting* (Togal Troi), *lifting* (B. Mag Léna), from ON *lypting* "summa puppis".

Mod. Ir. and Gael. *lunn*, Manx. *lonney* "timbers laid under boats in order to launch them, to move more easily" (O'R, A. Macdonald, M'B, J. Kelly), from ON *hlunnr*, which means the same (Fær. *lunnur*).

Gael. *lunn* "the handle of an oar", from ON *hlummr* "oar-handle"?

*Piscarcurla*, gen. pl. (*co dínud na Piscarcurla* Cath Ruis na Ríg, cf. Kelt. Beitr. I 221 ff.), i. e. "fishermen", from ON *fiskikarl*.<sup>2)</sup>

Gael., Manx. *plod* "a flead", from ON *floti*.

Gael. *rac* the ring keeping the yard to the mast, the "traveller", from GN *rakki* (M'B).

Mod. Ir. *ronga* "a joining spar" (the word is, according to Marstrander, still in use on the Blasquets), Gael. *rong* "a joining spar, boat-rib", from the synonymous ON *rong*

<sup>1)</sup> The word is, according to Professor Marstrander, common in spoken Irish, in Munster pronounced *dorá*, in Connought *drá*.

<sup>2)</sup> "ON *karl* also appears in the placename *Dún na Trapcharla* near Limerick (*co ro loisce Luimneach agus Dún na Trapcharla*, FM a° 1062). *Trapcharla* may render ON *torf-karl*, peat-cutter" (Marstrander).

(N. Dial. *rong*), from which is also borrowed Old French *varangue* and Spanish *varenga* (Diez <sup>3</sup> II 449).

M. Ir. *rosuult* "walrus" (Book of Leinster), from the synonymous ON *hrosshrálr* (Kelt. Beitr. I 271 f.).

Mod. Ir. *ríim* "an area or space, house room, also room in a ship", from ON *ríim*.

Mod. Ir. *scib* "a ship" (O'R), from ON *skip*.

Mod. Ir. *scud* "a ship" (O'Cl, O'R), Gael. *sgoth* (prob. ó) "a boat, a Norway skiff" (M'B), from ON *skúta*, f., "a small ship".

M. Ir. *sess* (Windish) (*sess ethair* "bench of a boat" Cormac 154), *seas* (O'R) "bench of a boat, plank of the convenience of passage between a ship and the land; a bench made on a hayrick by cutting off a part of the hay". Cf. ON *sess* "seat, bench of a boat".

- Gael. *squít* "the footboard in a boat" (M'B), "a board on the bottom of an open boat, for and aft, on which the passengers place their feet" (M & D). From ON *skutr*, m., "the stern of a ship"; N. Dial. *skút*, *skòt*, m., has exactly the same meaning as the Gaelic word (Aasen). Cf. *skutpilja*.
- Gael. *stadh* (better *stagh*) "a stay, a certain rope in a ship's rigging" (M'B), from the synonymous ON *stag*, or from Engl. *stay*.
- Gael. *staing*, *sting* "mast of a vessel", from ON *stǫng*, f. (gen. *stangar*) "a pole". In Manx. *stang* means "a pole on which offenders were made to ride, a wooden horse, a whipping post" (Kelly). Ir. *stang* "a perch" (O'R) is probably also a loan from ON *stǫng*.
- Ir. *staplan* "noise of the sea" (O'R), Gael. *staplaich* "loud noise, noise of the sea", cf. ON *stǫpla* "splush, spurt, spatter"; *stórum stǫplar nú yfir* "the water dashes into the ship" (Flóamanna saga c. 28); N. Dial. *stopla* "to be agitated" (about the sea). The Irish word must have been formed from an ON *stǫplun* or *staplan*, if the second *a* of *staplan* is short.
- Ir. *stiur* "a helm, rudder" (O'R), Gael. *stiùir* "a rudder, a rule, a tail, a cock's tail" (M & D), *stiùir* "direct steer" (M & D), from ON *stýri*, n., "a helm, rudder", and *stýra* "to steer, direct".
- M. Ir. *stiurasman* (Three Fragm. 115), *stiurusmand* (Togal Troi), *na stiurasmaird* ('Irish Glosses' p. 138) "helms-man, steers-man". From Old Danish *\*stýrismaðr*, the ON form of the word being *stýrimaðr*. In 'Three Fragm.' the word is used of the helmsman of a Danish ship that came to attack the Norwegians.
- Gael. *sùdh*, m., "the seam betwixt the planks of a ship, or boat" (A. Macdonald), from ON *súð* I. "the seam between planks", II. "a ship". Fær. *súð*, f., has exactly the same meaning as the Gaelic word.
- Mod. Ir. *tabh* "the ocean" (O'R), from the synonymous ON *haf*.
- The *t* in such words as *tabh* does not, according to Professor Marstrander, originate from the article, but from the Norse *h*; as the aspiration of *t*, *s* before the accent were pronounced as *h*, the *h* in loan words was in Gaelic and Irish occasionally replaced by *t*, *s*.
- Mod. Ir. *tábh* "a kind of fishing net" (O'R), Gael. *tàbh* "a spoon net, fishing-net" (M & D), from ON *háfr* "a dip-net, drag-net".
- M. Ir. *tile* (Togal Troi, Cellachán) "plank, bottom-board (of a boat)", from ON *pili*, n., "bottom-board".
- M. Ir. *topta* (Cellachán) "thwart, row-bench"; from ON *þopta* f., "row-bench".
- Ir. *uicing*, *uiginghe* "a fleet, navy" (O'R), from ON *víking*, f., "a Viking-expedition" (?).



Appendix Two: Norse Loan Words in Irish - Commerce

Gael. *biorsamaid*, f., "a Roman balance for weighing small quantities, a steelyard" (M & D). From ON *bismari*. The word is still used in the Orkneys (*pismire*) and Shetland (*bismer*). — The word is of oriental origin (Russ. *bezman*, from Turk. *batman*? [cf. Falk & Torp. I 56]).

Mod. Ir. *mangaire* "a dealer, a peddler" (the word belongs, according to Professor Marstrander, to the spoken language). From ON *mangari*.

Ir. *margad* "a market" (Togal Troi), *margadh* "a market, bargain" (O'R), from ON *markaðr* (= *marknaðr*, *kaupstefna*)?

M. Ir. *marc* (Chron. Scot. A. D. 1027), Mod. Ir. *marg* "mark in money", from ON *mrk*, f. (gen. *markar*).

Ir. *maois*, f., "a pack or bag, a kind of basket" (O'R), *maois éisg* "a maise, five hundred fish", *maoisceog*, f., "a little pack or bag" (O'R). Gael. *maois*, f., "a large basket or hamper; a certain number of fish, five hundred herrings; a quantity of sea weed collected and bound together, and floated to any desired place" (cf. Cymr. *mwys*, f., "hamper, five scores of herrings"). From ON *meiss*, m., "basket" (esp. "to carry on the back"); *meisasild* i. e. "herring sold in baskets of a fixed size".

M. Ir. *pinginn*, Mod. Ir. *pinginn* "a penny" (O'R), from ON *penningr*.

M. Ir. *stab* (Cormac), Mod. Ir. *stabh* "a drinking cup, an iron vessel chained to a well by the side of a road" (O'R), *stabh* "a vessel" (O'C), Gael. *stòp*, m., "a wooden vessel used in carrying water, a measure for liquors" (M & D). Dem.

*stòpan*, s. m., "a little flagon, a small measure of liquors" (M & D). From ON *staup*, n., "a drinking cup", N. Dial. *staup* "a metal cup or goblet". (Engl. *stoop* is the same word.)<sup>4</sup>