

THE USE OF THE SCANDINAVIAN PLACE-NAME ELEMENTS -*SÆTR* AND -*ÆRGI* IN SKYE AND THE OUTER HEBRIDES: A SITE AND SITUATION STUDY

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INTRODUCTION

The violence of Viking raids is well documented in contemporary chronicles and annals. What is absent, on the whole, from the historical record is the settlement of people who spoke Old Norse (ON) in the British Isles. The distribution of Norse place-names seems to show a widespread Scandinavian settlement in parts of northern Scotland, the Northern Isles, and the Hebrides.¹ Scandinavian settlement in the Outer Hebrides has been confirmed by the archaeological excavation of settlements at Barvas² and Bostadh³ on the Isle of Lewis, Udal on North Uist,⁴ and Drimore,⁵ Bornish,⁶ and Cille Pheadar⁷ on South Uist.

The Scandinavian settlement in the Hebrides was substantial and durable enough to allow the coining of the term *innsi gall* ('Isles of the Foreigners') in the Irish annals. This settlement also seems to have developed into some form of regional polity,⁸ as seen by the appearance at different times of *toiseach* ('chieftain'),⁹ *Ladgmáinn* ('lawman'),¹⁰ and *ri* ('king') of the *Innsi Gall*.¹¹ The development of a social hierarchy may also be reflected by the use of place-names, with primary settlements surrounded by subordinate farming units.¹² The different elements within the farm would have their own individual names such as *þveit*-clearing and *sætr*-shieling.¹³ Farm-name generics such as *bær*/*býr* ('farm'), *staðir*

1 Oftadal 2009; Fraser 1974, 19.

2 Armit 1996.

3 Neighbour and Burgess 1997.

4 Crawford and Switsur 1977.

5 MacLaren 1974.

6 Sharples 2005.

7 Parker Pearson et al. 2004.

8 Sharples and Smith 2009, 109; Clancy 2008, 26; Woolf 2007, 298-300.

9 *Annals of the Four Masters*, 851 [=853]. Woolf suggests this may be a later interpolation. See Woolf 2007, 299-300.

10 *Ladgmáinn* in *Annals of the Four Masters*, 960 [=962], and *Lagmannaibh na n-Innsedb* in *Ibid.*, 972 [=974].

11 *Annals of Ulster*, 988 [=989].

12 Olson 1983, 33-34; Brink 1999, 425.

13 Crawford 1995, 8; Øye 2004, 96; 2005, 361; 2009, 102.

(‘place/farm’), *bólstaðr* (‘farm’), as well as *sætr* (‘shieling’), are found in many areas of Scandinavian settlement, although variation in the distribution pattern of each element exists.¹⁴ The fact that the same generics were being used to coin farm names in Scandinavia and abroad seems to suggest that overseas settlement included the importation and implementation of a farming economy from Scandinavia, rather than just a takeover of pre-existing settlements.¹⁵

This ‘farming economy’ was centred on the available arable land, as well as how less fertile land, around this primary area, was used to supplement the resource base and facilitate its intensive, but sustainable, exploitation.¹⁶ Within this system, the farm and shieling were integral and indivisible parts of what Ditlev Mahler referred to as a ‘decentralised farming economy’.¹⁷ The area within the farm boundary was called – in ON – the *innan garðs* (‘within the fence/infield’) of arable, meadows, and enclosed pastures, and the *utan garðs* (‘outside the fence’) of outfield grazing and shielings.¹⁸ This systematic use of shielings, or *sætr*, has a long history in Norway, and involves the movement of livestock some distance from the home farm between late spring and autumn.¹⁹ The shieling system kept cattle away from the cereal crop and hay meadows in the *innan garðs*, and increased the potential grazing land available.²⁰ The cattle returned to the home farm in autumn and brought nutrients with them from the surrounding area, in the form of manure, to fertilise the infields.²¹

There is regional variation in the terminology used to denote a shieling in Norway.²² However, other than the use of *sel* in Iceland, *sætr* seems to have been the only ON shieling name exported to areas of Scandinavian colonisation. On the basis of onomastic and archaeological evidence, possible shieling sites have been suggested in many areas of Scandinavian settlement around the Atlantic Ocean, including the

14 Sandnes 2006, 241; Kruse 2007, 10.

15 Mahler 1995, 487.

16 Ibid., 488.

17 Ibid., 487.

18 Øye 2003, 10; 2004, 96.

19 Magnus 1986; Bjørge 1986; Prescott 1999, 219.

20 Adderley and Simpson 2005, 714; Segertröm and Emanuelsson 2002, 181.

21 Pedersen 1999, 50; Zimmermann 1999, 315.

22 Beito 1949, 11-237; Reinton 1969, 24.

British Isles,²³ the Faroe Islands,²⁴ Iceland,²⁵ and Greenland.²⁶ The question I wish to examine is: why did ON speakers adopt a Gaelic term, *ærgi*, to denote a shieling when they had brought with them a corresponding ON term in *sætr*?

LOCATION OF THE STUDY

The Outer Hebrides, also called the Western Isles and the Long Island, are located in the far north-west of the British Isles and consist of a 210 km-long archipelago, stretching from Lewis in the north to Mingulay and Berneray in the south (Figure 1). The Minch separates the Outer Hebrides from the mainland, spanning 38 km at its narrowest. The Little Minch divides the islands of the Outer Hebrides from Skye, situated closer to the mainland, along with the Small Isles to the south (Canna, Rhum, Muck, and Eigg).

GEOLOGY

The Outer Hebrides are geologically uniform, formed from metasedimentary rock, principally Lewisian gneiss. This uniformity is broken by a small outcropping of Torridon sandstone found around Stornoway on Lewis, and intrusive felsic igneous rock, mainly granites, forming the bedrock of Harris and the southern portion of Lewis. In comparison, Skye and the Small Isles are formed from extrusive mafic lavas, mainly basalt, with bands of sedimentary rock along the north-eastern and southern coast of Skye and granite in central Skye and western Rhum.

TOPOGRAPHY AND DRIFT GEOLOGY

Quaternary glaciation eroded the gneiss of northern Lewis into an extensive erosion platform, which, on deglaciation, was covered by hummocky moraine to a depth of up to 6 m.²⁷ The gentle slopes and thick layer of till on Lewis restrict drainage and promote peat growth, leading to extensive blanket peat deposits.²⁸

23 Pearsall 1961; Whyte 1985; Fellows-Jensen 1980.

24 Dahl 1970; Mahler 1991; 1995; 2007.

25 Hitzler 1979; Hastrup 1989; Sveinbjarnadóttir 1991.

26 Albrethsen and Keller 1986.

27 Hall 1995, 5; Boyd and Boyd 1990, 67.

28 Hudson et al. 1982, 19; Boyd and Boyd 1990, 67.

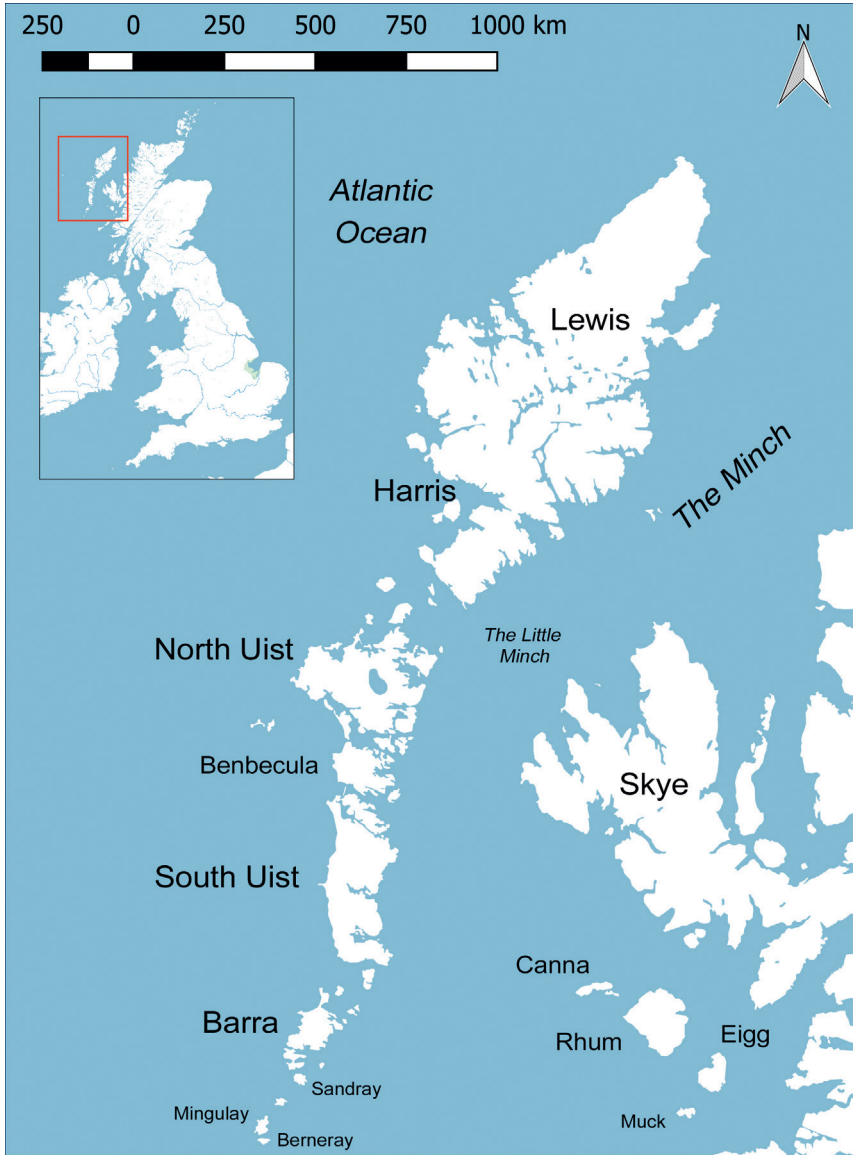


Figure 1: The Outer Hebrides, Isle of Skye, and the Small Isles.

The Uists, also formed from gneiss, are similarly low-lying, mainly below 100 m above sea level (ASL). South Uist, and to a lesser extent North Uist, have a tripartite division in drift geology.²⁹ This consists of an eastern, more mountainous coast covered by peat, a band of calcareous sand – called machair – running down the west coast, and an intermediate zone between the two, where peat has become mixed with windblown calcareous sand from the machair, known as the ‘blacklands’.³⁰ The term machair, after the Gaelic for ‘fertile plain’, is a local term for calcareous soil now predominantly used as dune pasture, but formerly utilised for arable cultivation.³¹ Being relatively productive, the machair was the core area for Neolithic and Viking Age settlement on the Uists.³² Brayshay reported a similar situation on Barra, with the same three main types of soil association found on South Uist.³³

Glaciation on the granites of south-western Lewis, Harris, and parts of Barra created a knock and lochan landscape.³⁴ Weathering and erosion of the granite formed a shallow acidic colluvium of little agricultural potential, but with some pockets of more fertile soils from fluvio-glacial deposition.³⁵

Quaternary glaciation on Skye, in comparison, led to the formation of glacial troughs. Its soils are relatively infertile, though more fertile soils developed on thicker glacial deposits or along fluvio-glacial gravels in valleys and bays.³⁶ Where drainage was poor, peat formation was initiated, but where drainage was better, brown forest soils and humus-iron podzols formed. As a result of the cool climate, brown forest soils are oligotrophic rather than eutrophic; these are slightly acid, with medium to low base cation saturation and are considered moderately fertile.³⁷

CLIMATE

The warmest average temperature of 12.9°C occurs in July and August, whilst the temperature in the coldest months of January and February

29 Brayshay et al. 2000, 361.

30 Owen et al. 1996, 128.

31 Gilbertson et al. 1996, 72, 119.

32 Owen et al. 1996, 128; Armit 1996, 164; Parker Pearson 2012, 12.

33 Brayshay 1992, 99-103.

34 Peacock 1984; Gordon 1993.

35 Boyd and Boyd 1990, 70; Peacock 1984; Gordon 1993.

36 Armit 1996, 24.

37 Fitzpatrick 1964, 48; Brayshay 1992, 102-3.

reaches an average of 4.1°C, with only a 0.7°C difference in the average annual maximum temperature between Stornoway in the north of the Long Island and Barra in the south. Skye has similar temperatures to Stornoway, although the higher mountains give a greater temperature range. Overall, the Outer Hebrides have one of the lowest temperature ranges in Britain, at 8.8°C.³⁸

Wind is one of the defining characteristics of the climate, with a mean winter speed of 10 m/s, and 5 m/s in summer.³⁹ The wind brings rain, and the annual rainfall varies from around 1000 mm in parts of Lewis, 1193.5 mm on South Uist, to 2400 mm on the high ground of Harris, whilst the higher mountains of Skye can receive over 3000 mm of rain per year.⁴⁰

DISTRIBUTION OF SHIELING NAMES

There are eighty-four Viking shieling names in total: fifty-four *sætr* and thirty *ærgi* names in the study area. Overall, *sætr* and *ærgi* have a complementary distribution (Figure 2). Whereas *sætr* names are found exclusively on Lewis and predominate in northern Skye, *ærgi* names are concentrated in North and South Uist. There are only three locations where both *sætr* and *ærgi* names can be found together: the southern coast of Harris, the north-west coast of North Uist, and a single topographical *ærgi* name, Cnoc an Tiongalairidh (NB1937), which is found among the *sætr* names on north-west Lewis.⁴¹

The distribution of *sætr* names is as follows: thirty-one on Lewis,⁴²

38 Angus 1991, 30.

39 Gloyne 1968; Hudson et al. 1982.

40 Met Office 2016.

41 Cox 2002, 220.

42 Where possible, all shieling name spellings follow the first-edition OS maps (1:10,560). Barashader (NB450417), Borghaster (NB211412), Caiashader (NB553607), Carashader (NB100329), Cearsiadair (NB341201), Cnoc Eirdshader (NB203425), Cnoc Ghuirshadair (NB510329), Cnoc Iorshader (NB094368), Corriseadair (NB321194), Cuidhsiadar (NB546582), Earshader (NB164339), Eorshader (NB386181), Eorshader (NB163370), Gearraidh Eileaster (NB224380), Geidhshader (NB114314), Giurshadir (NB415345), Grimashadar (NB407257), Thámarshader (NB391255), Hashader Mòr (NB393249), Horshader (NB242431), Laimishader (NB183424), Linsiadar (NB210319), Seisiadar (NB553341), Sgeir Cuidshader (NB270497), Siadar (NB387542), Siader (NB194388), Sulaisiadar (NB536351), Tigh Thaisader (NB459397), Tom Shader (NB333497), Ungashader (NB125297).

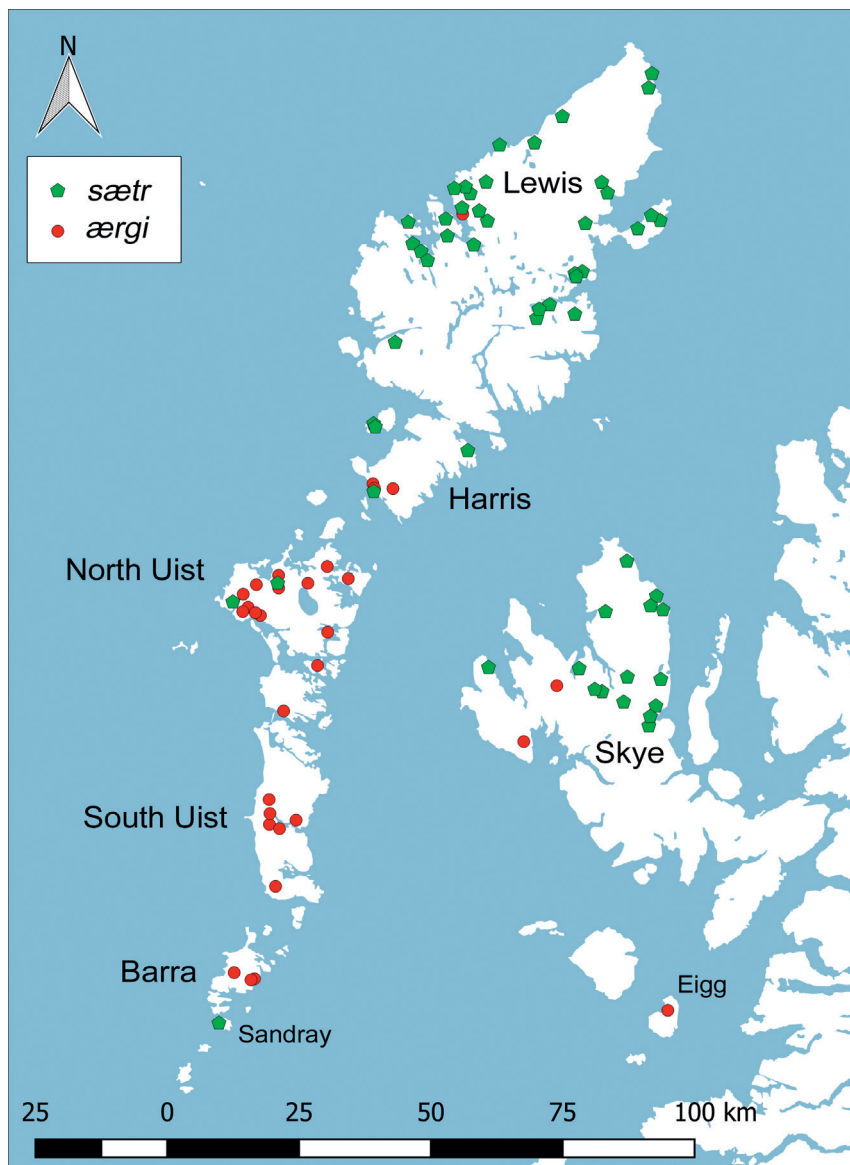


Figure 2: The distribution of the ON *sætr* and *ærgi* shieling names.

fifteen on Skye,⁴³ three on Harris,⁴⁴ two each on Taransay⁴⁵ and North Uist,⁴⁶ and a single site on the western most tip of Sandray.⁴⁷ The distribution of *ærgi* names, by contrast, is represented by only a single instance on Lewis,⁴⁸ three on Harris,⁴⁹ two on Skye,⁵⁰ twelve on North Uist,⁵¹ six on South Uist,⁵² three on Barra,⁵³ and one each on Benbecula,⁵⁴ Grimsay,⁵⁵ and Eigg.⁵⁶

The *sætr* names have a predominantly coastal distribution, on average 802 m inland, it is only on Skye that *sætr* names are found in more inland locations, with an average distance of 1206 m from the sea. This may be due to the more varied mountainous conditions, creating pockets of pasture land to be exploited, although no *sætr* names have survived in the higher Cuillin range or any part of southern Skye.

Despite their coastal location, the majority of *sætr* names are protected from the prevailing south-westerly wind by being either located on the east coast or sheltered in bays or by other islands. These locations would be protected from the strongest wind and waves and are therefore less likely to be at risk from destructive gales or spray on vegetation, while at the same time benefiting from the ameliorating effect of the sea, especially in winter.⁵⁷

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- 43 Annishader (NG437509), Armishader (NG501501), Ben Roishader (NG391484), Culeshader (NG473416), Dun Gershader (NG489451), Ellishader (NG499654), Flashader NG348531), Herishader (NG513629), Marishader NG490638), Sheader (NG407632), Sheader (NG184544), Sheader (NG452723), Shullishadder (NG477434), Uigshader (NG378490), Uigshader (NG429464).
- 44 Kyles Sheader (NF996883), Drinisiader (NG173945), and Loch Uiseadair (NB055152).
- 45 Sheader (NB004007) and Vatasater (NB007001).
- 46 Loch Brinishader (NF720699) and Loch Eisiadair (NF806728).
- 47 Sheader (NL631919).
- 48 Cnoc an Tiongalairidh (NB1937).
- 49 Greanary (NF995898), Reisary (NG031886), Loch Ìosal Vassary (NF997889).
- 50 Heisary Burn (NG307502), Soarary (NG239404).
- 51 Bogarh Aulasary (NF809720), Buile Risary (NF766729), Corary (NF740713), Dusary Mill (NF765670), Honary (NF900752), Horisary (NF761677), Loch Aulasary (NF937728), Loch Sandary (NF810743), Loch Sandary (NF737681), Loch Vausary (NF747690), Maari (NF861724), Obisary (NF891631).
- 52 Altsary (NF805287), Ben Corary (NF756282), Loch Hoxary (NF756303), Loch Vaccasary (NF758329), Trossary (NF757167), Unasary (NF772274).
- 53 Ersary (NL704996), Gunnary (NF671011), Skallary (NL 697994).
- 54 Gunisary (NF798492).
- 55 Loch Hornary (NF868571).
- 56 Corrairigh (NM476883).
- 57 Weaver et al. 1996, 148; Brayshay et al. 2000, 361.

The distribution of *ærgi* names on North and South Uist is predominantly coastal, though they are on average 1493 m inland; on average, this is 691 m further inland than *sætr* names. The location on the relatively flat western coast of the Uists is more open to south-westerly winds.⁵⁸ At a distance of over 1 km inland, salt spray will be reduced, improving grazing quality of the land, whilst still being close enough to still receive blown sand, which can mix with the peat to form the moderately fertile blackland soils.⁵⁹ These soils run north to south, between the fertile machair of the western coast and the infertile peats of the east coast; the majority of *ærgi* names are located along this central band of soil in the Uists.

There are only two possible *ærgi* names on Skye: Heisary Burn (NG307502) and Soarary (NG239404). The former now only relates to a topographical feature, whilst the latter is the highest *ærgi* name in the study area, at 200 m ASL, with a specific element which may refer to a shieling for sheep (ON *sauðr* (m.)).⁶⁰ Soarary may well be atypical, not only being located at a higher altitude, but specifically referring to sheep, whereas *ærgi* by its definition relates to cattle. This may represent a location where sheep milking, in particular, was practised, as in Iceland and the Faroe Islands.⁶¹

It must be remembered that we may only be looking at a fraction of the original number of shieling names. More marginal sites may have been abandoned and forgotten, or the generic element may have been replaced over time.⁶² The language shift to Gaelic, which occurred after the Viking Age, made it more likely that the generic element *sætr* would be replaced through a lack of comprehension. The formation of epexegetic 'ex-nomine units', such as Airigh Shader (NB315177) and Airigh Horshader (NB242431) on Lewis – which effectively mean 'the shieling [Gaelic *àirigh*] of the shieling [ON *sætr*]' – highlight how the element *sætr* had lost its lexical meaning to the inhabitants once Gaelic gained dominance.⁶³

At the same time, *ærgi* as a cognate of the Gaelic *àirigh*, is more likely to have been translated back into Gaelic. Simplex *ærgi* name

58 Brayshay et al. 2000, 361.

59 Parker Pearson and Smith 2012, 3, 7.

60 MacBain 1922, 173; Forbes 1923, 77.

61 Bergsåker 1978, 87-94; Thorsteinsson 2008, 83.

62 Cox 2002, 123.

63 Cox 1988-89, 3.

survive in England,⁶⁴ Shetland,⁶⁵ Orkney,⁶⁶ and the Faroe Islands.⁶⁷ This contrasts to a complete absence of simplex *ærgi* names in the Outer Hebrides and throughout Scotland as a whole. It is therefore likely that some *ærgi*, especially simplex names, were adopted by Gaelic speakers who understood the meaning of the name and either converted it to a simplex Gaelic *àirigh* name, or gave it a Gaelic-specific element. Either way, they rendered the ON name *ærgi* unrecognisable.

DEFINITIONS

The term *sætr* (n.) refers to ‘sit’ or ‘seat’, and is a cognate of the Norse place-name element *setr* (n.).⁶⁸ The two terms refer to pastoral activity; both initially had the meaning of a shieling, and are now virtually indistinguishable from each other in the British Isles.⁶⁹ The suggestion has been made that, during an early initial expansion of farming in Norway, *setr* was originally used to denote a shieling.⁷⁰ Many of these later developed into permanent farms, which necessitated the need to differentiate them from shielings proper, leading to the use of *sætr*.⁷¹ In the rest of this chapter, I will refer to *sætr* with the specific meaning of a summer pasture, as both generics originally had the meaning of a shieling and are now difficult to separate.⁷²

The headword *erg* (n.) is used by Cleasby and Vigfusson for *ærgi*, and its meaning is provided as: a Gaelic word, ‘answering to the Scot. *shiel* or *shieling*’.⁷³ Fellows-Jensen has argued that this use of the headword is due to mistranslation into Danish of an Icelandic version of *Orkneyinga saga*.⁷⁴ The definition of *ærgi* is vague and similar to *sætr*, whilst not providing any clues as to why *ærgi* was adopted. *Ærgi* is believed to have been adopted from the Scottish-Gaelic *àirigh* (f.). Edward Dwelly and Alexander MacBain agree the definitions of the Gaelic *àirigh* to be either ‘a summer residence for herdsman and cattle’ or a ‘hill pasture’.⁷⁵

64 Fellows-Jensen 1977-78, 20.

65 Jacobsen 1936, 177; Stewart 1987, 26.

66 Marwick 1952, 227; Grant 2003, 169.

67 Jakobsen 1936, 208; Matras 1956, 52-53.

68 Nicolaisen 2001, 118.

69 Crawford 1987, 102-3; Nicolaisen 2001, 118.

70 Fellows-Jensen 1984, 161.

71 Ibid.; Crawford 1987, 108; Nicolaisen 2001, 118.

72 Cleasby and Vigfusson 1874, 525, 619.

73 Ibid., 133.

74 Fellows-Jensen 1980, 68; 2002, 9.

75 Dwelly 1973, 20; MacBain 1911, 10.

The definition of the Gaelic *àirigh* is too similar to that of ON *sætr* to fully explain its adoption, unless *ærgi* just replaced the *sætr* as the term for a shieling.⁷⁶ The use of both elements in Cumbria would suggest that this was not the case.⁷⁷ However, MacBain links the Gaelic term with the early Irish *áirge/áirghe*, (pl. *-righe* and *-rgheadha*) as ‘a place where cows are’, ‘a dairy’, or ‘a herd of cattle’.⁷⁸ Likewise, Patrick Dinneen gives the meaning of Irish *áirge* (f.) to be: ‘herd of cattle’, ‘pasture’, ‘herdsman’s hut’, or ‘milk herd’.⁷⁹ The definition of Irish *áirge* would seem to have more of an emphasis on dairying, as opposed to the Scottish Gaelic *àirigh*, which stresses the summer pasture; it is this that I would suggest to be important.

POSSIBLE REASONS FOR THE DISTRIBUTION

Richard Cox found *àirigh* to be one of only six Gaelic loanwords from ON in western Lewis; there are ninety ON loanwords in the local Gaelic by comparison.⁸⁰ The place-name evidence in the Outer Hebrides during the Viking Age is overwhelmingly ON.⁸¹ The only exceptions seemingly consist of some of the major island names, such as Skye (*Scia* in Andomnàn), Lewis, and the Uists.⁸² Why was *àirigh* adopted when incoming ON-speaking settlers brought with them a lexicon of place-names, which they coined for newly-founded settlement and with which they renamed many existing ones?

Do surviving *ærgi* names in the Outer Hebrides represent pre-Viking Age Gaelic settlements taken over by incoming Scandinavian settlers? Richard Cox has argued that Gaelic was spoken in Lewis prior to the arrival of Scandinavian settlers and that some Gaelic place-names are pre-Norse.⁸³ The exact linguistic situation at the start of the Viking Age is unknown, as documentary sources are non-existent for the Outer Hebrides at this time. Bannerman suggests that, in the sixth century AD, the northern limit of Gaelic Dál Riata could be found at Coll and

76 Kruse 2007.

77 Fellows-Jensen 1983, 43.

78 MacBain 1911, 10.

79 Dinneen 1970, 24.

80 Cox 1991, 486.

81 Henderson 1910, 185; MacBain 1922, 70; Watson 1926, 38-39; Small 1968, 5; Fraser 1974, 19; 1978, 4, 19-20; Fellows-Jensen 1984, 152-53; Stahl 1999, 365; Kruse 2004, 104; 2005, 158; Jennings and Kruse 2005, 251; Gammeltoft 2006, 65.

82 Kruse 2005, 141-42; Gammeltoft 2007, 487.

83 Cox 1991, 488; 2002, 118.

Tiree, and Ardnamurchan on the mainland.⁸⁴ The inferences were that people north of this line were likely to be Pictish, and therefore possibly speakers of P-Celtic or a Brythonic dialect, compared to the Q-Celtic speakers of Dál Riata.⁸⁵ If the inhabitants were Pictish, it is unlikely for *ærgi* names to represent pre-Viking *àirigh* sites.

The argument for Gaelic being widely spoken in the Outer Hebrides during the pre-Viking period is rejected by Kruse, who points out that there is a lack of Gaelic terms incorporated into ON ex-nomine units.⁸⁶ Ian Fraser's study of place-names on Lewis noted that Norse names were more coastal, whilst Gaelic names had a more inland distribution, and concluded the Gaelic names on Lewis are, on the whole, post-Norse and relatively late.⁸⁷ Whatever the pre-Viking linguistic situation was, Nicolaisen has suggested that the Western Isles were a 'nameless landscape' in the eyes of the incoming Scandinavian settlers, making it unlikely for *ærgi* names to have simply been the product of Viking appropriation of pre-existing Gaelic farming units.⁸⁸

Eric Cregeen suggested that Gaelic *earry* place-names, found in the Isle of Man, were the result of early Norse settlers being outnumbered by native Gaelic-speaking women. As the women would have worked at the shieling, they would have named the workplace by giving it a Gaelic name.⁸⁹ The gender division of work in Old Norse society would seem to give credence to this suggestion, with dairy work being a female role.⁹⁰ However, as Gillian Fellows-Jensen has pointed out, although this is a reasonable suggestion, it does not explain the export of the name to areas that had few or no Gaelic-speakers, such as the Northern Isles and Cumbria.⁹¹

It is unusual, then, to find *ærgi* (n.), a Gaelic loanword used to describe a minor settlement such as a shieling, during the period of Scandinavian dominance over the Outer Hebrides. Thomason and Kaufman define borrowing as 'the incorporation of foreign features into a group's native language by speakers of that language: the native

84 Bannerman 1974, 28.

85 Foster, 1996, 19; Kruse 2005, 149.

86 See Kruse 2004, 160-62; Jennings and Kruse 2005, 30.

87 Fraser 1978, 15, 19.

88 Nicolaisen 1979-80, 110. See also Fraser 1978, 19.

89 Cregeen, cited in Megaw 1978, 339.

90 Jochens 1995, 122; Myrdal 2008, 64, 70.

91 Fellows-Jensen 1983, 43.



Figure 3: The distribution of linguistic groupings in northern Britain, mid-seventh century (after McNeill and MacQueen 2000).

language is maintained but changed by the addition of the incorporated features'.⁹² Britta Schultz Thulin noted forty Gaelic nouns in ON,⁹³ but 160 ON nouns in Irish,⁹⁴ a similar dominance of ON loans as Richard Cox had found in western Lewis. Such uneven borrowing might be a result of the unequal status of the respective languages.⁹⁵

Odlin suggests that 'larger numbers, greater prestige and more political power' are a major influence on the direction of lexical borrowing.⁹⁶ In this situation, the ON *sætr* should have been used to describe a shieling, as no reason existed to adopt *ærgi* from the subordinate Gaelic. One possible explanation is that the loanword was needed to designate new things or concepts that ON-speakers encountered in the colonies.⁹⁷ Alternatively, both terms were used, but each was retained with a specialised meaning.⁹⁸ Either way, this suggests a specialised use of both *sætr* and *ærgi* in the Hebrides. This may be related to the physical characteristics of the settlement, or, as Gillian Fellows-Jensen put it: 'there must have been Something characteristic about the location or the function of the *ærgi* in the Scottish colonies that led Viking settlers there to refer to it by the Gaelic term rather than by a Scandinavian word such as *sætr* or *sel*'.⁹⁹

THEORETICAL CONSIDERATIONS

The basic premise of my study of settlement location is that human decision-making is rational at the time a settlement is founded. This means that the site chosen will be the optimum position within that locality for a particular type of settlement, according to a set of criteria upheld by those founding it.¹⁰⁰ The needs of an individual would influence the set of criteria used, and may be split into those elements needed for survival, such as water, food, and shelter, but also taking into account any cultural, social, or personal aspects.¹⁰¹ This means

92 Thomason and Kaufman 1991, 37.

93 Schulte-Thulin 1992, 65-79.

94 Schulte-Thulin 1996, 83.

95 Weinreich 1968, 59; Antilla 1989, 155; Odlin 1989, 13; Thomason and Kaufman 1991, 44; Thomason 2001, 66; Myers-Scotton 2002, 31.

96 Odlin 1989, 13.

97 Weinreich 1968, 54, 56; Antilla 1989, 155.

98 Weinreich 1968, 55.

99 Fellows-Jensen 1985, 73-74.

100 Wood 1978, 258.

101 Nunn 2009, 316; Gold 1980, 21.

that a site may be optimal in one society or culture's view, but not in another, depending on the criteria used and priority given to individual criteria. Particular cultures may have considered a specific location or environment to be marginal, depending on their preferences and needs, or, as Brian Roberts suggests: 'Settlement forms and patterns are a product of interactions between the natural environment and all aspects of society. Ultimately forms and patterns are a product of choices made by individuals and societies'.¹⁰²

A site will therefore harbour clues on the criteria used for its selection; the choice of one site over another should highlight favourable locational factors for that particular settlement.¹⁰³ By conducting a study of the locational factors of a generic element, the motivation and needs of those who initially founded such settlements may be discernible. As both generic elements are concerned with cattle farming, it is possible that a common characteristic exists for the location chosen for each place-name element, which made it more suitable for a type of cattle farming.

METHOD

I have conducted a survey of shieling names in the Outer Hebrides and Skye, using the first edition Ordnance Survey (OS) maps (1:10,560). Although the information on the maps was collected several hundred years after the Viking settlers first arrived, it represents the first comprehensive survey of place-names that has a uniform coverage and scale.

Once the survey was completed, I used modern OS maps to complete a topographical survey of the characteristic features found at each site, and the British Geological Survey for the geology data.¹⁰⁴ Data on soil, modern vegetation, and supplementary information on the geology was gathered from soil maps by Scotland's Soils.¹⁰⁵ This information was then collated and compared to highlight any differences in settlement location.

102 Gratten 1998, 16; Edwards and Whittington 1998, 61; Roberts 1982, 3.

103 Amedeo and Golledge 1975, 291.

104 British Geological Survey 2016.

105 Scotland's Soils 2016.

RESULTS

ALTITUDE

Increasing altitude has several effects on climate, including increase in wind speed, increased cloud cover, precipitation, lower temperatures, and a longer winter, which shortens the growing season.¹⁰⁶ Nagy and Grabherr report a drop of three species for every 200 m of elevation (1°C drop in temperature), and, as a consequence, the range of food plants available for livestock would also decrease.¹⁰⁷

	- <i>ærgi</i> names	- <i>sætr</i> names
Below 50 m	69%	60%
Below 100m	92%	86%

Figure 4: Altitude of Viking shieling names.

The majority of both *sætr* and *ærgi* names are found below 100 m ASL (Figure 4). The difference in height is so marginal that there would be virtually no discrepancy in temperature as a result of altitude.

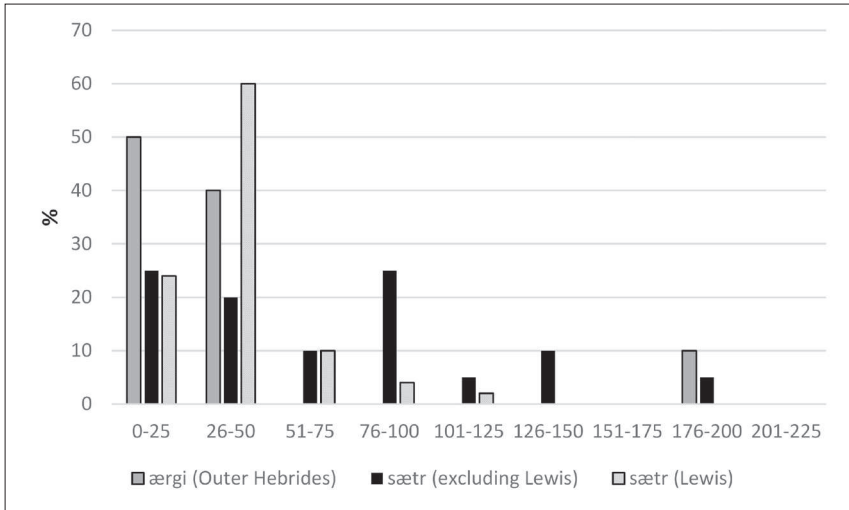


Figure 5: The altitude of *sætr* and *ærgi* names.

106 Nagy and Grabherr 2009; Larcher et al. 2010

107 Nagy and Grabherr 2009

The Use of the Scandinavian Place-Name Elements -Sætr and -Ærgi

Altitudinally, there is no real difference between *sætr* and *ærgi* names; 94% of *ærgi* names are below 150 m ASL, whilst 98% of *sætr* names are as well; even on the more mountainous Skye, 87% of *sætr* names are below 150 m ASL. When comparing Lewis and the Uists, both composed of gneiss, 97% of *sætr* names on Lewis and 100% of the *ærgi* names on the Uists are below 100 m ASL. Altitude is therefore not a deciding factor in the choice to use *sætr* and *ærgi* place-name elements in the Outer Hebrides.

ASPECT

The aspect of a settlement governs the amount of direct light a site gets, and the time of day it receives direct light, if at all. This has an effect on air and soil temperature, which can affect growth rates and soil water availability during parts of the year, due to the difference in potential evapotranspiration rates.

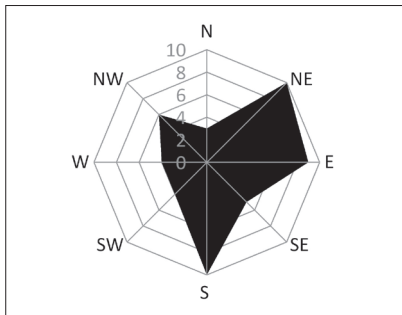


Figure 6: Aspect of *sætr* sites.

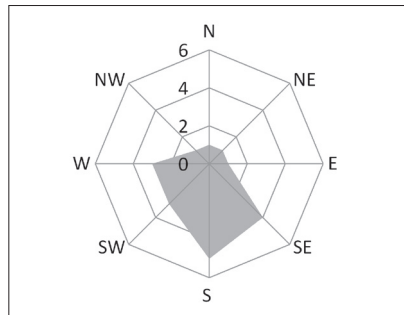


Figure 7: Aspect of *ærgi* sites.

There is a marked difference in aspect between the two generics. Although *sætr* names share a preference with *ærgi* names for a southern aspect, *sætr* also exhibit an east to north-easterly aspect. In the Northern Hemisphere, a southern aspect will receive higher concentrations of direct sunlight over a longer period than other aspects, promoting a longer growing season. The temperature in spring will rise faster on a southern slope, allowing vegetation to grow at an earlier date. However, higher temperatures may lead to water stress in summer when precipitation decreases.

A north-easterly aspect in a temperate Northern Hemisphere climate will have a lower surface temperature and wetter environment, which has been found to have a higher herbage mass.¹⁰⁸ This, in turn, may affect soil nitrogen transformation, with higher nitrogen found on northern-facing slopes, which is a key preference in fodder selection in beef cattle.¹⁰⁹

DRIFT GEOLOGY

With reference to the soil types in Figure 8, with 57% of *ærgi* names being found on or near peaty soils on the Uists, it would seem they were situated on poorer soils than *sætr* names, with 52%. This is misleading, as the majority of *ærgi* names are situated on the transition from machair to peat soil in the blacklands, where the addition of wind-blown calcareous sand improves the peat, leading to the growth of mesotrophic grassland for grazing.¹¹⁰

More *sætr* names are found near alluvial soils (6% compared to 3%), which is unusual, as alluvial soils are today considered fertile. This may be due to the low level of rainfall on the Uists, restricting the size of rivers and their ability to form flood plains. Skye and the southern half of Lewis, however, get higher rainfall and consequently have larger streams and some rivers. Although alluvial soils are today used for arable, these would provide rich tall herb communities for hay making before modern drainage.¹¹¹

Brown forest soils are considered one of the more fertile soils in Scotland and are more commonly found close to *ærgi* names (20%) compared to *sætr* names (14%).¹¹² Also, 20% of *ærgi* names and 11% of *sætr* names are close to humus-iron podzols, which, although naturally acidic and nutrient deficient, are able to be improved.¹¹³ In total, 43% of *ærgi* names are found on soil types that are considered fertile or improvable, although these types of soils only account for 32% of those found at *sætr* sites.

108 Sigua et al. 2011, 67; Nadal-Romero et al. 2014, 1713.

109 Hishi et al. 2014, 343; Plymale et al. 1987; Berry et al. 2002, 448.

110 Dodgshon 1988, 140; Parker Pearson 2012, 14.

111 Emanuelsson and Segerström 1998, 80; Hughes and Huntely 1988, 94.

112 James Hutton Institute 2016.

113 Ibid.

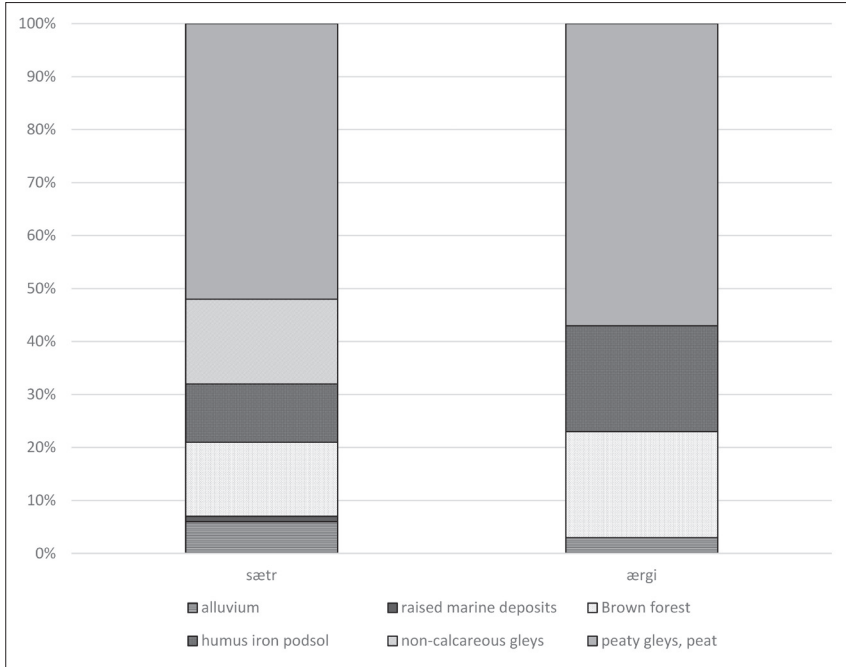


Figure 8: Soil types found at *sætr* and *ærgi* names.

Non-calcareous gleyed soils account for 16% of those found at *sætr* sites; these soils are restricted to grazing land, are poorly drained, and require careful management if they are not to be damaged by livestock. The 52% of *sætr* names close to the various types of peaty soil are likely only to be used as rough grazing, as the limited area of calcareous machair on Lewis and Skye do not allow large areas of mixed soil to be formed, which does happen on the blacklands of the Uists.

When comparing the *ærgi* names on the Uists to the *sætr* names on Lewis, soil fertility seems to have been a deciding factor for the use of shieling names. Even when looking at *ærgi* names outside of the Uists, over 50% are on soils that are considered good to moderately fertile, compared to between 32% and 35% of *sætr* names. This would lead to better quality pasture at *ærgi* sites, and would suggest soil fertility had some influence on the generic used to name a shieling location.

DISCUSSION

The complimentary distribution pattern of *sætr* and *ærgi* names on Skye and the Outer Hebrides is unlikely to be accounted for by using a chronology of generic elements as proposed by Marwick and Nicolaisen.¹¹⁴ The colonisation of the Uists, in this scenario, must have been later than that of Lewis and Skye, after *sætr* was replaced by *ærgi*. This would mean that *airigh* must either have been encountered during the colonisation of the Uists, or else brought back from travels further south. As suggested earlier, later Scandinavian settlement in Cumbria (c. AD 902), for which both *sætr* and *ærgi* were still active as place-name elements,¹¹⁵ would suggest that a simple chronology of settlement names, with *sætr* being replaced by *ærgi*, was not the case.

Alan Macniven has raised the possibility that the complimentary distribution of *sætr* and *ærgi* might be connected to the MacSorley Lordship of the Isles in the twelfth century.¹¹⁶ Certainly, Lewis and Skye were part of the Kingdom of Man in AD 1156, whereas the Uists, Small Isles, Mull, Islay, Jura, and Arran belonged to Somerled's dominion (Figure 9). Under the Gaelic MacSorleys, it is possible that the use of the place-name element *airigh* may have been spread or led to the preferential retention of *ærgi* names as a cognate to the Gaelic *airigh*. The distribution of *ærgi* names along the Sutherland coast and in Caithness, as well as aforementioned Cumbria, would suggest that this is not the only reason for the distribution pattern.

An alternative suggestion may be that a higher population on the more environmentally favourable Uists made any indigenous language more resilient. Some or all of the *ærgi* names on the Uists may represent pre-existing *airigh* names that were appropriated by incoming Scandinavians. If this was the case, it may have been here that the word was first adopted. There is, however, no evidence to prove that the Uists were Gaelic-speaking. Even if they were, Alan Macniven's study of the place-names of Islay, an island closer to the Dál Riata heartland and known to be Gaelic-speaking prior to the Viking Age, would seem to show extensive Scandinavian settlement, including the formation of *sætr* names (which are absent from South Uist).¹¹⁷

114 Marwick 1952, 227-51; Nicolaisen 2001, 87-94.

115 Fellows-Jensen 1985, 74; Oram 2000, 248.

116 Macniven 2006, 190-92.

117 *Ibid.*, 192-93



Figure 9: Area controlled by the MacSorley dynasty (after McNeill and MacQueen 2000).

A possibility therefore exists for the distribution pattern to reflect environmental constraints imposed on the farming economy during the Viking Age. The lower precipitation across much of Lewis is negated by the undulating topography, which, combined with the drift geology and low evapotranspiration, leads to waterlogging of the soil and extensive blanket peat formation. Like Skye, with its high level of precipitation, the soil moisture content is likely to be high, resulting in anaerobic soil conditions that promote the formation of peat. This, in turn, limited the extent of pasture and would therefore affect how Viking Age farmers used the land.

The waterlogging of the soil in Lewis and Skye leads to the formation of peat, peaty gleys, and podzols. In turn, these lead to vegetation dominated by acid heather heath and bog. Hardy beef cattle and calves are able to exhibit weight gain regardless of vegetation and climate.¹¹⁸ Dairy cattle have a higher demand for nutrient rich fodder.¹¹⁹ This is to cover the extra energy requirement of producing milk.¹²⁰ Beef cattle select vegetation not just purely for energy intake, but for nitrogen content.¹²¹ The north east to east aspect of *sætr* names further encourages a higher nitrogen content of the soil.¹²²

The *ærgi* names of the Outer Hebrides, principally the Uists, are located at low levels, on south-facing slopes, and on soil that is locally fertile. The peaty soils of the Blacklands of the Uists, rather than promoting heather moor (as on Lewis), forms mesotrophic grassland due to the input of calcareous material from the machair.¹²³ The *sætr* names of Lewis and Skye are also low-lying, but are found on north-facing slopes and on less fertile soils. Bone assemblages from known Viking Age settlements seem to corroborate the environmental constraints on farming practices.

At Bornais in South Uist, fusion data showed that 20% of cattle died in the first year, and another 40% in the second year, with only a third of cattle surviving beyond their fourth year. When dental records were used for dating, over 50% of cattle were dead by their first year, a quarter

118 Berry et al. 2002, 451.

119 Sæther et al. 2006; Fraser et al. 2009, 368.

120 Hofstetter et al. 2011, 717.

121 Berry et al. 2002, 450.

122 Plymale et al. 1987.

123 Pankhurst and Mullin 1991; Kent et al. 1996; Weaver et al. 1996; Angus 1997; Brayshay et al. 2000.

having died within a month of being born. This has been suggested as evidence of a dairy strategy for cattle.¹²⁴ The bone assemblages on South Uist show an increase in the keeping of cattle compared to sheep from the pre-Viking Age. Whilst sheep were kept for one to two years and slaughtered after one shear, cattle show evidence from neonatal bones of a probable dairy economy. Mulville has suggested that:

1. Sheep were rarely brought to the settlement (except as culled animals) and may have been kept on the blacklands and/or the heather moor to the east of the island.
2. Cattle were kept close to the settlement to assist calving and establish milk, before neonatal animals were killed, and the cattle later removed to surrounding areas.¹²⁵

What cannot be shown is whether male cattle predominate in neonatal assemblages, or whether male cattle and dry cows were treated differently to the milk herd, either being taken away earlier or even kept away from settlements in the machair.

The Scandinavian settlement at Bostadh on Lewis has few cattle dying young (7-10 months), which has been seen as evidence of meat production by Thoms, as cattle was kept over winter until they were at their prime for meat production.¹²⁶ Neonatal deaths account for only 7% of the total assemblage in Phase 1, which decreases with time throughout the phases until they represent less than 1% in Phase 4 (the Norse phase). Unlike on South Uist, these cattle do not show evidence of high neonatal deaths, and neonatal remains decrease in the assemblage over time. Thoms concluded that this does not suggest that a dairy economy was being practiced at Bostadh.¹²⁷ Improved husbandry practices are suggested by age-of-death evidence from the Norse period.¹²⁸ A lack of evidence does not rule out a dairy economy, as taphonomic losses may have been heavy due to the acidic conditions. The fact that cattle seem to have been kept until they were at their prime for meat production, however, suggest that a different livestock management system was in use on Lewis during the Viking Age.¹²⁹

124 Mulville 2005, 165.

125 Ibid., 167.

126 Thoms 2003, 221

127 Ibid., 221

128 Ibid.

129 Ibid., 221, 223

CONCLUSION

The distribution of *sætr* and *ærgi* names in the Outer Hebrides and Skye show a complimentary distribution. Rather than being a result of linguistic change, this distribution may have developed as a human response to environmental constraints. Altitudinally, there was no real difference in the location of each place-name element, as both were found mainly below 100 m ASL. The *ærgi* names of the Outer Hebrides are found on locally fertile soil, which allowed the growth of mesotrophic grassland, prime grazing land. The *sætr* names of Lewis and Skye, by contrast, are located on soils that are less fertile, but produce vegetation with a higher nitrogen content, which is better suited to beef production. The bone assemblages from Bostadh on Lewis and Bornais in South Uist, although not shieling sites, seem to show different farming strategies, with Bostadh concentrating more on beef production, whereas a dairy strategy was followed at Bornais. This would match Cleasby and Vigfusson's definition of *sætr* as a general pasture, whilst *ærgi*, as a dairy, seems to have the Irish definition *áirge*.¹³⁰

It is possible that Scandinavian settlers encountered intensive dairy farms, *áirge*, either in the Scottish Isles or in Ireland. Their own corresponding term, *sætr*, may have had a much more general connotation of summer farm, which encompassed summer grazing for all types of cattle, including milk cows. Scandinavian settlers adopted *áirge* as a term for an intensive summer milking place, and the differentiation of grazing land to suit different pastoral regimes points to an overall intensification of farming during the Viking Age.

BIBLIOGRAPHY

PRIMARY SOURCES

Annála Ríoghachta Éireann. Annals of the Kingdom of Ireland by the Four Masters, O'Donovan J (ed and trans), 1848-51, 7 vols, Dublin: Royal Irish Academy.

Annals of Ulster, Mac Airt S and Mac Niocail G (eds and trans), 1983, Dublin: Dublin Institute for Advanced Studies.

130 Cleasby and Vigfusson 1874, 525, 619.

SECONDARY SOURCES

- Adderley, W P and I A Simpson 2005, 'Early-Norse Home-Field Productivity in the Faroe Islands', *Human Ecology* 33:5, 711-36.
- Albrethsen, S E and C Keller 1986, 'The Use of *Sæter* in Norse Medieval Greenland', *Arctic Anthropology* 23:1-2, 91-107.
- Amedeo, D and R G Golledge 1975, *An Introduction to Scientific Reasoning in Geography*. New York: Wiley.
- Angus, I S 1991, 'Climate and Vegetation of the Outer Hebrides', in R J Pankhurst and J M Mullin (eds), *Flora of the Outer Hebrides*, London: Natural History Museum, 28-31.
- Angus, S 1997, *The Outer Hebrides: The Shaping of the Islands*. Cambridge: White Horse Press.
- Antilla, R 1989, *Historical and Comparative Linguistics*, 2nd edn, Philadelphia: John Benjamins.
- Armit, I 1996, *The Archaeology of Skye and the Western Isles*, Edinburgh: Edinburgh University Press.
- Bannerman, J W M 1974, *Studies in the History of Dalriada*, Edinburgh: Scottish Academic Press.
- Beito, O 1949, *Norske Sæternamn*. Oslo: Aschehoug.
- Bergsåker, J 1978, 'The Keeping and Milking of Sheep in the Old Subsistence Economy of Scandinavia, Iceland and Northern Europe', in J. Baldwin (ed), *Scandinavian Settlement: An Ongoing Tradition?*, Edinburgh: Scottish Society for Northern Studies, 85-96.
- Berry, R, P L Jewell, F Sutter, P J Edwards, and M Kreuzer 2002, 'Selection, Intake and Excretion of Nutrients by Scottish Highland Suckler Beef Cows and Calves, and Brown Swiss Dairy Cows in Contrasting Alpine Grazing Systems', *Journal of Agricultural Science* 139, 437-53.
- Björge, T 1986, 'Mountain Archaeology: Preliminary Results from Nyset-Steggje', *Norwegian Archaeological Review* 19:2, 122-27.
- Boyd, J M and I L Boyd 1990, *The Hebrides: A Natural History*, London: Collins.
- Brayshay, B A 1992, 'Pollen Analysis and the Vegetational History of Barra and South Uist in the Outer Hebrides', unpublished PhD thesis, University of Sheffield.
- Brayshay B A, D Gilbertson, M Kent, K J Edwards, P Wathern, and R E Weaver 2000. 'Surface Pollen-Vegetation Relationships on the Atlantic Seaboard: South Uist, Scotland', *Journal of Biogeography* 27:2, 359-78.
- Brink, S 1999, 'Social Order in the Early Scandinavian Landscape', in C Fabech and J Ringtved (eds), *Settlement and Landscape: Proceedings of a Conference in Århus, Denmark, May 4-7 1998*, Aarhus: Aarhus University Press, 423-39.

- British Geological Survey 2016, www.bgs.ac.uk/data/mapviewers/home.html, accessed 20 January 2016.
- Clancy, T C 2008, 'The Gall-Ghàidheil and Galloway', *Journal of Scottish Name Studies* 2, 19-50.
- Cleasby, R and G Vigfusson 1874, *An Icelandic-English Dictionary*, Oxford: Oxford University Press.
- Cox, R A V 1988-89, 'Questioning the Value and Validity of the Term "Hybrid" in Hebridean Place-Name Study', *Nomina* 12, 1-10.
- Cox, R A V 1991, 'Norse-Gaelic Contact in the West of Lewis: The Place-Name Evidence' in P S Ureland and G Broderick (eds), *Language Contact in the British Isles: Proceedings of the Eighth International Symposium on Language Contact in Europe, Douglas, Isle of Man, 1988*. Berlin: De Gruyter, 479-93.
- Cox, R A V 2002, *The Gaelic Place-Names of Carloway, Isle of Lewis: Their Structure and Significance*, Dublin: Dublin Institute for Advanced Studies.
- Crawford, B E 1987, *Scandinavian Scotland*, London: Leicester University Press.
- Crawford, B E (ed) 1995, *Scandinavian Settlement in Northern Britain*, London: Leicester University Press.
- Crawford, I and R Switsur 1977, 'Sandscaping and C14: The Udal, North Uist', *Antiquity* 51, 124-36.
- Dahl, S 1970, 'The Norse Settlement of the Faroe Islands', *Medieval Archaeology* 14, 60-73.
- Dinneen, P 1970, *An Irish-English Dictionary*, Dublin: Irish Texts Society.
- Dodgshon, R A 1988, 'The Ecological Basis of Highland Peasant Farming: 1500-1800 A.D.' In H H Birks, H J B Birks, P E Kaland, and D Moe (eds), *The Cultural Landscape: Past, Present and Future*, Cambridge: Cambridge University Press, 139-52.
- Dwelly, E 1973. *The Illustrated Gaelic Dictionary*. Edinburgh: Birlinn.
- Edwards, K J and G Whittington 1998, 'Disturbance and Regeneration Phases in Pollen Diagrams and their Relevance to Concepts of Marginality', in C M Mills and G Coles (eds), *Life on the Edge: Human Settlement and Marginality*, Oxford: Oxbow, 61-66.
- Emanuelsson, M and U Segerström 1998, 'Forest Grazing and Outland Exploitation during the Middle Ages in Dalarna, Central Sweden: A Study Based on Pollen Analysis', in H Andersson, L Ersgard, and E Svensson (eds), *Outland Use in Preindustrial Europe*, Lund: Institute of Archaeology, 80-94.
- Fellows-Jensen, G 1977-78, 'A Gaelic-Scandinavian Loan-Word in English Place-Names (*erg*)', *Journal of the English Place-Name Society* 10, 18-25.
- Fellows-Jensen, G 1980, 'Common Gaelic *Áirge*, Old Scandinavian *Ærgi* or *Erg*', *Nomina* 4, 67-74.

The Use of the Scandinavian Place-Name Elements -Sætr and -Ærgi

- Fellows-Jensen, G 1983, 'Scandinavian Settlement in the Isle of Man and North West England: The Place Name Evidence', In C Fell, P Foote, J Graham Campbell, and R Thomson (eds), *The Viking Age in the Isle of Man: Select Papers from the Ninth Viking Congress, Isle of Man, 4-14 July 1981*. London: Viking Society for Northern Research, 37-52.
- Fellows-Jensen, G 1984, 'Viking Settlement in the Northern and Western Isles', in A Fenton and H Pálsson (eds), *The Northern and Western Isles in the Viking World*, Edinburgh: John Donald, 148-68.
- Fellows-Jensen, G 1985, 'Scandinavian Settlement in Cumbria and Dumfriesshire: The Place-Name evidence', in J R Baldwin and I D Whyte (eds), *The Scandinavians in Cumbria*, Edinburgh: Scottish Society for Northern Studies, 65-82.
- Fitzpatrick, E A 1964, 'The Soils of Scotland', in J H Burnett (ed), *The Vegetation of Scotland*, Edinburgh: Oliver & Boyd, 36-63.
- Forbes, A R 1923, *Place-names of Skye and Adjacent Islands*, Paisley: Gardner.
- Foster, S 1996, *Picts, Gaels and Scots: Early Historic Scotland*, London: Batsford.
- Fraser, I A 1974, 'The Place Names of Lewis: The Norse Evidence', *Northern Studies* 4, 11-21.
- Fraser, I A 1978, 'Norse and Gaelic Coastal Terminology in the Western Isles', *Northern Studies* 11, 3-16.
- Fraser, I A 1984, 'Some Further Thoughts on Scandinavian Place-Names in Lewis', *Northern Studies* 21, 34-41.
- Fraser M D, V J Theobald, D R Davies, and J M Moorby 2009, 'Impact of Diet Selected by Cattle and Sheep Grazing Heathland Communities on Nutrient Supply and Faecal Micro-Flora Activity', *Agriculture, Ecosystems and Environment* 129, 367-77.
- Gammeltoft, P 2006, 'Scandinavian Influence on Hebridean Island Names', in P Gammeltoft and B Jørgensen (eds), *Names through the Looking-Glass: Festschrift in Honour of Gillian Fellows-Jensen, July 5th 2006*. Copenhagen: Reitzel, 53-84.
- Gammeltoft, P 2007, 'Scandinavian Naming-Systems in the Hebrides: A Way of Understanding How the Scandinavians were in Contact with Gaels and Picts?' in B Ballin Smith, S Taylor, and G Williams (eds), *West over Sea: Studies in Scandinavian Sea-Borne Expansion and Settlement before 1300*, Leiden: BRILL, 479-97.
- Gilbertson, D, J Grattan, and J Schwenninger 1996, 'A Stratigraphic Survey of the Holocene Coastal Dune and Machair Sequences', in D Gilbertson, M Kent, and J Grattan (eds), *The Outer Hebrides: The Last 14,000 Years*, Sheffield: Sheffield Academic Press, 72-101.
- Gloyne, R W 1968, 'The Structure of Wind and its Relevance to Forestry', *Forestry* 41 (sup.), 7-19.

- Gold, J R 1980, *An Introduction to Behavioural Geography*. Oxford: Oxford University Press.
- Grant, A E 2003, 'Scandinavian Place-Names in Northern Britain as Evidence for Language Contact and Interaction', unpublished PhD thesis, University of Glasgow.
- Gratten, J 1998, 'The Response of Marginal Societies and Ecosystems in Britain to Icelandic Volcanic Eruptions', in C M Mills and G Coles (eds), *Life on the Edge: Human Settlement and Marginality*, Oxford: Oxbow, 13-30.
- Gordon, J E 1993, 'North-West Coast of Lewis'. In J E Gordon and D G Sutherland (eds), *Quaternary of Scotland*. London: Chapman and Hall, 414-421.
- Hall, A M 1995, 'Was All of Lewis Glaciated in the Late Devensian?', *Quaternary Newsletter* 76, 1-7.
- Hastrup, K 1989. 'Saeters in Iceland, 900-1600', *Acta Borealia* 6:1, 72-85.
- Henderson, G 1910, *The Norse Influence on Celtic Scotland*. Glasgow: James MacLehose.
- Hishi, T, R Urakawa, N Tashiro, Y Maeda, and H Shibata 2014, 'Seasonality of Factors Controlling N Mineralization Rates among Slope Positions and Aspects in Cool-Temperate Deciduous Natural Forests and Larch Plantations', *Biology and Fertility of Soils* 50, 343-56.
- Hitzler, E 1979, *Sel: Untersuchungen zur Geschichte des Isländischen Sennwesens Seit der Landnahmezeit*, Oslo: Universitetsforlaget.
- Hofstetter, P, M Steiger Burgos, R Petermann, A Mürger, J W Blum, P Thomet, H Menzi, S Kohler, and P Kunz 2011, 'Does Body Size of Dairy Cows, at Constant Ratio of Maintenance to Production Requirements, Affect Productivity in a Pasture-Based Production System?', *Journal of Animal Physiology and Animal Nutrition* 95:6, 717-29.
- Hudson, G, W Towers, J S Bibby, and D J Henderson 1982, *Soil and Land Capability for Agriculture: Outer Hebrides*, Aberdeen: Macaulay Land Use Research Institute.
- Hughes, J and B Huntely 1988, 'Upland Hay Meadows in Britain', in H H Birks, H J B Birks, P E Kaland, and D Moe (eds), *The Cultural Landscape: Past, Present and Future*, Cambridge: Cambridge University Press, 91-110.
- Jakobsen, J 1936, *The Place-Names of Shetland*, London: Nutt.
- James Hutton Institute 2016, 'Soils – Introduction', www.hutton.ac.uk/learning/exploringscotland/soils, accessed 20 January 2016.
- Jennings, A and A Kruse 2005, 'An Ethnic Enigma – Norse, Pict and Gael in the Western Isles', in A Mortensen and S V Arge (eds), *Viking and Norse in the North Atlantic: Selected Papers from the Proceedings of the Fourteenth Viking Congress, Tórshavn, 19-30 July 2001*. Tórshavn: Føroya Fróðskaparfelag, 284-96.

The Use of the Scandinavian Place-Name Elements -Sætr and -Ærgi

- Jockens, J 1995, *Women in Old Norse Society*, Ithaca: Cornell University Press.
- Kent, M, R Weaver, D Gilbertson, P Wathern, and B Brayshay 1996, The Present-Day Machair Vegetation of the Southern Outer Hebrides, in D Gilbertson, M Kent, and J Grattan (eds), *The Outer Hebrides: The Last 14,000 Years*, Sheffield: Sheffield Academic Press, 133-145.
- Kruse, A 2004, 'Norse Topographical Settlement Names on the Western Littoral of Scotland', in J Adams and K Holman (eds), *Scandinavia and Europe 800-1350: Contact, Conflict and Coexistence*, Turnhout: Brepols, 97-107.
- Kruse, A 2005, 'Explorers, Raiders and Settlers: The Norse Impact upon Hebridean Place-Names', in P Gammeltoft, C Hough, and D Waugh (eds), *Cultural Contacts in the North Atlantic Region: The Evidence of Names*. Lerwick: NORNA, SPNS, and SNSBI, 141-56
- Kruse, A 2007, 'Fashion, Limitation and Nostalgia: Scandinavian Place-Names Abroad', in *Images and Imaginations: Perspectives on Britain and Scandinavia*, A Kruse and P Graves (eds), Edinburgh: Lockharton, 3-33.
- Larcher, W, C Kainmüller, and J Wagner 2010, Survival Types of High Mountain Plants under Extreme Temperatures, *Flora* 205, 3-18.
- MacBain, A 1911, *An Etymological Dictionary of the Gaelic Language*, Stirling: Eneas Mackay.
- MacBain, A 1922, *Place-Names of the Highlands and Islands of Scotland*, Stirling: Eneas Mackay.
- MacLaren, A 1974. 'A Norse House on Drimore Machair, South Uist', *Glasgow Archaeological Journal* 3, 9-18.
- Macniven, A 2006, 'The Norse in Islay: A Settlement Historical Case-Study for Medieval Scandinavian Activity in Western Maritime Scotland', unpublished PhD thesis, University of Edinburgh.
- Magnus, B J 1986, 'Iron Age Exploitation of High Mountain Resources in Sogn', *Norwegian Archaeological Review* 19:1, 44-50.
- Mahler, D 1991, 'Argisbrekka: New Evidence of Shielings in the Faroe Islands', *Acta Archaeologica* 61, 60-72.
- Mahler, D 1995, 'Shielings and their Role in the Viking-Age Economy', in C E Batey, J Jesch, and C D Morris (eds), *The Viking Age in Caithness, Orkney and the North Atlantic*, Edinburgh: Edinburgh University Press, 487-505.
- Mahler, D 2007, *Sæteren ved Argisbrekka. Økonomiske Forandringer på Færøerne i Vikingetid og Tidlig Middelalder*, Tórshavn: Fróðskaparsetur.
- Marwick, H 1952, *Orkney Farm-Names*, Kirkwall: W R Mackintosh.
- Matras, C 1956, 'Gammelfærosk Ærgi, n., og Dermed Beslaegtede Ord', *Namn och Bygd* 14, 51-67.
- McNeill P G B and H L MacQueen 2000, *An Atlas of Scottish History to 1707*, Edinburgh: The Scottish Medievalists.
- Megaw, E 1978, 'The Manx "Eary" and its Significance', in P Davey (ed), *Man and Environment in the Isle of Man*, Oxford: BAR, 327-46.

- Met Office 2016, www.metoffice.gov.uk, accessed 20 January 2016.
- Mulville, J 2005, 'The Machair – 2: Mammals', in N M Sharples (ed), *A Norse Farmstead in the Outer Hebrides: Excavations at Mound 3, Bornais, South Uist*, Oxford: Oxbow, 165-169.
- Myrdal, J 2008. 'Women and Cows: Ownership and Work in Medieval Sweden', *Ethologia Scandinavica*, 38, 61-80.
- Myers-Scotton, C 2002, *Contact linguistics: Bilingual Encounters and Grammatical Outcomes*, Oxford: Oxford University Press.
- Nadal-Romero, E, K Petrlc, E Verachtert, E Bochet, and J Poesen 2014, 'Effects of Slope Angle and Aspect on Plant Cover and Species Richness in a Humid Mediterranean Badland', *Earth Surface Processes and Landforms* 39:13, 1705-16.
- Nagy, L and G Grabherr 2009, *The Biology of Alpine Habitats*, Oxford: Oxford University Press.
- Neighbour, T and C Burgess 1997, 'Traigh Bostadh (Uig Parish)', in R Turner (ed), *Discovery and Excavation in Scotland 1996*, Edinburgh: Council for Scottish Archaeology, 113-14.
- Nicolaisen, W F H 1979-80, 'Early Scandinavian Naming in the Western and Northern Isles', *Northern Scotland* 3:2, 105-22.
- Nicolaisen, W F H 2001, *Scottish Place-Names: Their Study and Significance*, Edinburgh: John Donald.
- Nunn, P 2009, 'Geographical Influences on Settlement-Location Choices by Initial Colonizers: A Case Study of the Fiji Islands', *Geographical Research* 47:3, 306-19.
- Odlin, T 1989, *Language Transfer: Cross-Linguistic Influence in Language Learning*. Cambridge: Cambridge University Press.
- Oftadal, M 2009, *The Village Names of Lewis*, Laxay: Islands Book Trust.
- Olson, D 1983, 'Norse Settlement in the Hebrides: An Interdisciplinary Study', unpublished Cand.Philol. thesis, University of Oslo.
- Oram, R D 2000, *The Lordship of Galloway*, Edinburgh: John Donald.
- Owen, N, M Kent, and P Dale 1996, 'The Machair Vegetation of the Outer Hebrides: A Review', in D Gilbertson, M Kent, and J Grattan (eds), *The Outer Hebrides: The Last 14,000 Years*, Sheffield: Sheffield Academic Press, 123-31.
- Pankhurst, R J and J M Mullin (eds) 1991, *The Flora of the Outer Hebrides*, London: Natural History Museum.
- Parker Pearson, M 2012, 'The Machair Survey', in M Parker Pearson (ed), *From Machair to Mountains: Archaeological Survey and Excavation in South Uist*, Oxford: Oxbow, 12-73.
- Parker Pearson, M and H Smith 2012, 'Introduction', in M Parker Pearson (ed), *From Machair to Mountains: Archaeological Survey and Excavation in South Uist*, Oxford: Oxbow, 1-11.

- Parker Pearson, M, H Smith, J Mulville, and M Brennand 2004, 'Cille Pheadair: The Life and Times of a Norse-Period Farmstead c. 1000-1300', in J Hines, A Lane, and M Redknap (eds), *Land, Sea and Home*, Leeds: Society for Medieval Archaeology, 235-54.
- Peacock, J D 1984, *Quaternary Geology of the Outer Hebrides*. Norwich: HMSO.
- Pearsall, W H 1961, 'Place-names as Clues to the Pursuit of Ecological History', *Namn och Bygd* 49, 72-89.
- Pedersen, E A 1999, 'Transformations to Sedentary Farming in Eastern Norway: AD 100 or 1000 BC?', in C Fabech and J Ringtved (eds), *Settlement and Landscape: Proceedings of a conference in Århus, Denmark, May 4-7 1998*, Aarhus: Aarhus University Press, 45-52.
- Plymale, A X, R E J Boemer, and T J Logan 1987, 'Relative Nitrogen Mineralization and Rimication in Soils of Two Contrasting Hardwood Forests: Effects of Site Microclimate and Initial Soil Chemistry', *Forest Ecology and Management* 21, 21-36.
- Prescott, C 1999, 'Long-Term Patterns of Non-Agrarian Exploitation in Southern Norwegian Highlands', in C Fabech and J Ringtved (eds), *Settlement and Landscape: Proceedings of a conference in Århus, Denmark, May 4-7 1998*, Aarhus: Aarhus University Press, 213-23.
- Reinton, L 1969, *Til Seters: Norsk Seterbruk og Seterstell*, Oslo: Samlaget.
- Roberts, B K 1982, *Rural Settlement: An Historical Perspective*, Norwich: Geo Books.
- Sandnes, B 2006, 'Toponyms as Settlement Names-Of No Relevance in Settlement History?', in P Gammeltoft and B Jørgensen (eds), *Names through the Looking-Glass: Festschrift in Honour of Gillian Fellows-Jensen, July 5th 2006*. Copenhagen: Reitzel, 230-53.
- Schulte-Thulin, B 1992, 'Notes on the Old and Middle Irish Loanwords in Old Norse', *NOWELE* 39, 53-84.
- Schulte-Thulin, B 1996, 'Old Norse in Ireland', in P Sture Ureland and I Clarkson (eds), *Language Contact across the North Atlantic*, Tübingen: Niemeyer Verlag, 83-113.
- Scotland's Soils 2016, www.soils-scotland.gov.uk/data/scanned-soil-maps, accessed 20 January 2016.
- Segertröm, U and M Emanuelsson 2002, 'Extensive Forest Grazing and Hay-Making on Mires: Vegetation Changes in South-Central Sweden Due to Land Use since Medieval Times', *Vegetation History and Archaeobotany* 11:3, 181-90.
- Sharples, N 2005, *A Norse Farmstead in the Outer Hebrides: Excavations at Mound 3, Bornais, South Uist*, Oxford: Oxbow.

- Sharples, N and R Smith 2009, 'Norse Settlement in the Western Isles', in A Woolf (ed), *Scandinavian Scotland: Twenty Years After*, St Andrews: The Committee for Dark Age Studies, 103-30.
- Sigua, G C, S W Coleman, J Albano, and M Williams 2011, 'Spatial Distribution of Soil Phosphorus and Herbage Mass in Beef Cattle Pastures: Effects of Slope Aspect and Slope Position', *Nutrient Cycling in Agroecosystems* 89, 59-70.
- Small, A 1968, 'The Historical Geography of the Norse Viking Colonization of the Scottish Highlands', *Norwegian Journal of Geography* 22:1, 1-16.
- Stahl, A-B 1999, 'Place-Names of Barra in the Outer Hebrides', unpublished PhD thesis, University of Edinburgh.
- Stahl, A-B 2000, *Norse in the Place-Names of Barra*, *Northern Studies* 35, 95-112.
- Stewart, J 1987, *Shetland Place-Names*, Lerwick: Shetland Library and Museum.
- Sveinbjarnadóttir, G 1991, 'Shielings in Iceland: An Archaeological and Historical Survey', *Acta Archaeologica* 61, 73-96.
- Sæther, N H, K Bøe, and O Vangen 2006, 'Differences in Grazing Behaviour Between a High and a Moderate Yielding Norwegian Dairy Cattle Breed Grazing Semi-Natural Mountain Grasslands', *Acta Agriculturae Scandinavica, Section A - Animal Sciences* 56, 91-98.
- Thomason, S G 2001, *Language Contact: An Introduction*. Edinburgh: Edinburgh University Press.
- Thomason, S G and T Kaufman 1991, *Language Contact, Creolization, and Genetic Linguistics*, Berkeley: University of California Press.
- Thoms, J E 2003, 'Aspects of Economy and Environment of North-West Lewis in the First Millennium AD: The Non-Marine Faunal Evidence from Bostadh and Beirgh Considered within the Framework of North Atlantic Scotland', unpublished PhD thesis, University of Edinburgh.
- Thorsteinsson, A 2008, 'Land Division, Land Rights, and Land Ownership in the Faroe Islands', in M Jones and K R Olwig (eds), *Nordic Landscapes: Region and Belonging on the Northern Edge of Europe*, Minneapolis: University of Minnesota Press, 77-105.
- Watson, W J 1926, *The History of the Celtic Place-Names of Scotland*. Edinburgh: Blackwood.
- Weaver, R, M Kent, D Gilbertson, P Wathem, and B Brayshay 1996, 'The Acidic and Upland Vegetation of the Southern Outer Hebrides', in D Gilbertson, M Kent, and J Grattan (eds), *The Outer Hebrides: The Last 14,000 Years*, Sheffield: Sheffield Academic Press, 147-62.
- Weinreich, U 1968, *Languages in Contact: Findings and Problems*, Berlin: de Gruyter.

- Whyte, I D 1985, 'Shielings and the Upland Pastoral Economy of the Lake District in Medieval and Early Modern Times', in J R Baldwin and I D Whyte (eds), *The Scandinavians in Cumbria*, Edinburgh: Scottish Society for Northern Studies, 103-18.
- Wood, J J 1978, 'Optimal Location in Settlement Space: A Model for Describing Location Strategies', *American Antiquity* 43:2, 258-70.
- Woolf, A 2007, *From Pictland to Alba, 789-1070*, Edinburgh: Edinburgh University Press.
- Zimmermann, W H 1999, 'Why Was Cattle-Stalling Introduced in Prehistory? The Significance of Byre and Stable and of Outwintering', in C Fabech and J Ringtved (eds), *Settlement and Landscape: Proceedings of a conference in Århus, Denmark, May 4-7 1998*, Aarhus: Aarhus University Press, 301-18.
- Øye, I 2003, 'Introduction', in I Holm, S Innselset and I Øye (eds), *'Utmark': The Outfield as Industry and Ideology in the Iron Age and the Middle Ages*. Bergen: University of Bergen, 9-20.
- Øye, I 2004, 'Agricultural Conditions and Rural Societies c. 800-1350', in R Almås (ed), *Norwegian Agricultural History*, Trondheim: Tapir Academic Press, 79-140.
- Øye, I 2005, 'Farming and Farming Systems in Norse societies of the North Atlantic', in A Mortensen and S V Arge (eds), *Viking and Norse in the North Atlantic: Selected Papers from the Proceedings of the Fourteenth Viking Congress, Tórshavn, 19-30 July 2001*. Tórshavn: Føroya Fróðskaparfelag, 359-70.
- Øye, I 2009, 'Settlement Patterns and Field Systems in Medieval Norway', *Landscape History* 30:2, 37-54.