Warriors and women: the sex ratio of Norse migrants to eastern England up to 900 AD

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Various types of evidence have been used in the search for Norse migrants to eastern England in the latter ninth century. Most of the data gives the impression that Norse females were far outnumbered by males. But using burials that are most certainly Norse and that have also been sexed osteologically provides very different results for the ratio of male to female Norse migrants. Indeed, it suggests that female migration may have been as significant as male, and that Norse women were in England from the earliest stages of the migration, including during the campaigning period from 865.

Determining the ratio of Norse women to men in England during the period of early settlement up to 900 AD has always been extremely difficult.[1] There is written evidence attesting the presence of women and children with the Norse army that attacked Wessex and western Mercia in the 890s, but no mention of women and children accompanying the army that campaigned from 865 to 878 and succeeded in conquering a Norse settlement zone in eastern England. There is some archaeological evidence for early Norse female settlement, most obviously oval brooches, but this evidence is minimal. The more difficult to date evidence of place names, personal names, and DNA samples derived from the modern population suggests that Norse women did migrate to England at some stage, but probably in far fewer numbers than Norse men. Following the discovery of Norse female burials at Cumwhitton, Cumbria, and Adwick-le-Street, South Yorkshire, Judith Jesch noted in 2008 that there remain 'great gaps in our knowledge about the extent to which such women accompanied the Viking settlers', and this situation has not markedly

[1] This article deals only with biological sex, rather than gender. 'Norse' is used in the sense of someone likely to be speaking Old Norse, regardless of the region from which they emigrated to England.

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changed.[2] To assist in assessing the likely ratio of males to females in the Norse migration to England, this article presents a small but quantifiable sample of data. It isolates burials that are almost certainly Norse based on strontium and oxygen isotope analysis or obvious Norse burial forms, which have also been sexed osteologically. The results of this sample have significant implications for our understanding of the early Norse settlement period.

As eastern England is the only part of England for which there is contemporary written evidence for Norse settlement, most of the evidence presented in this article will be from the region that later came to be known as the 'Danelaw', although some finds north and south of the settlement areas are included as they are likely to relate to the documented settlements.[3] Norse settlement in north-west England is not recorded in primary written accounts as having occurred prior to 900, and hence that region is excluded from this discussion.[4] The written accounts, found in the *Anglo-Saxon Chronicle*, are all in the twenty-year period 876–96, explaining why this article will be limited to those Norse likely to have been living in eastern England prior to 900. Furthermore, investigating the composition of the Norse groups that initiated settlement in England may provide some clues to their intentions. Unfortunately such a defined chronological focus does raise the issue of dating the archaeological evidence, especially the burials which are the focus of the article. A number of burials are plausibly, though rarely conclusively, dated by historical events, in particular the documented campaigns of the great army. Other Norse burials included are dated primarily by the artefacts included. However artefacts can rarely be accurately dated. For example the main Norse art style current in the latter ninth century, the Borre, continued to be popular beyond 900.[5] It is also possible that

[2] J. Jesch, 'Scandinavian Women's Names in English Place-Names', in O.J. Padel and D.N. Parsons (eds), *A Commodity of Good Names: Essays in Honour of Margaret Gelling* (Donington, 2008), pp. 154–62, at p. 154.

[3] Specifically, burials thought to relate to the movements of the great army, as well as a burial group north of the Tyne which may relate to isolated Norse settlement despite the lack of Norse-influenced place names in the area. For the use of the term 'Danelaw' see K. Holman, 'Defining the Danelaw', in J. Graham-Campbell, R. Hall, J. Jesch and D.N. Parsons (eds), *Vikings and the Danelaw: Select Papers from the Proceedings of the Thirteenth Viking Congress* (Oxford, 2001), pp. 1–11. As 'Danelaw' is an anachronistic term for the period up to 900, 'eastern England' will be used in this article.

[4] However this does not presuppose that Norse communities were not resident in the area prior to 900. In particular, the Norse burial ground at Cumwhitton, Cumbria, which probably included one or more female burials, may have begun in the late ninth century: M. Brennand, 'Finding the Viking Dead', *Current Archaeology* 204 (2006), pp. 623–9, at pp. 623, 626, 628, 629.

[5] I am unaware of any artefacts in the Norse Berdal style, which commenced before the Borre style, from eastern England. However, fragments of a Berdal-style oval brooch were recovered from the burial ground at Cumwhitton: Brennand, 'Finding the Viking Dead', p. 623. For the

artefacts may have been old when buried.[6] Consequently, and despite historical probability, some of the Norse whose burials feature in the following discussion may not have been living in eastern England before 900. Discussed individually below, in all instances the dating of the burials by previous scholars has been accepted.

The only documented Norse immigrants to eastern England before 900 were members of what the primary sources refer to as two 'great armies', one campaigning from 865 to 878, and the other from 892 to 896.[7] The *Anglo-Saxon Chronicle* records four instances of Norse warriors settling following these two campaigning periods. The earlier army won itself homelands by conquering three Anglo-Saxon kingdoms, and the Norse settlement of these kingdoms is recorded in 876, 877, and 879.[8] If the 890s army had also hoped to win itself territory to settle in it was unsuccessful, but in 896 some members of the army settled in the Norse controlled areas of Northumbria and East Anglia.[9] There is no mention of women and children in connection with the earlier campaign, but they were part of the 890s army. During its campaigns women and children are mentioned on four occasions. Minors are mentioned twice, once implying that there were a number of children captured in London by the Anglo-Saxons, and later in the same entry two sons of the Norse leader Hæsten are recorded.[10] Hæsten's wife and other women are also mentioned as having been captured,[11] while later there are two accounts of women associated with the 890s army remaining in East Anglia.[12] As Hæsten arrived in England with an army in 892,[13] it is thought that his wife and sons recorded in 893 must have accompanied him from Francia as he had not been in England long enough to have gained Anglo-Saxon sons.[14] Whether his wife was Norse or Frankish cannot be determined,

approximate dating of the Borre style see D.M. Wilson, 'The Development of Viking Art', in S. Brink with N. Price (eds), *The Viking World* (Abingdon, 2008), pp. 323–38, at p. 327.

6 For the likelihood that some brooches were old when buried see J.F. Kershaw, 'Culture and Gender in the Danelaw: Scandinavian and Anglo-Scandinavian Brooches', *Viking and Medieval Scandinavia* 5 (2009), pp. 295–325, at p. 304.

7 Although in reality made up of a number of smaller units, both of these forces are spoken of as single armies in the primary sources (from early 893 for the latter) and for reasons of simplicity I will do the same. Similarly the first army will be referred to as the 'great army' and the second as the '890s army'. The OE term *micel here* is conventionally translated as 'great army'. For the OE text see *The Anglo-Saxon Chronicle: A Collaborative Edition. Volume 3 MS A*, ed. J. Bately (Cambridge, 1986).

8 *Anglo-Saxon Chronicle* 876, 877, 880: *The Anglo-Saxon Chronicles*, ed. M. Swanton (London, 2000), pp. 74 and 76 (trans.). The 'A' text will be used throughout.

9 ASC 897: *Anglo-Saxon Chronicle*, ed. Swanton, p. 89 (trans.).

10 ASC 894: *Anglo-Saxon Chronicle*, ed. Swanton, pp. 86–7 (trans.).

11 ASC 894: *Anglo-Saxon Chronicle*, ed. Swanton, pp. 86–7 (trans.).

12 ASC 894, 896: *Anglo-Saxon Chronicle*, ed. Swanton, pp. 88–9 (trans.).

13 ASC 893: *Anglo-Saxon Chronicle*, ed. Swanton, p. 84 (trans.).

14 J. Jesch, *Women in the Viking Age* (Woodbridge, 1991), pp. 96–7.

but there are records of Norse warriors in Francia with Norse wives.[15] It is likely that at least some of the other women and children mentioned in connection with the 890s army also arrived with the army. This minimal information from the *Anglo-Saxon Chronicle* indicates that there were some women accompanying male Norse warriors in England, as they did in other parts of the Norse world.[16] It would be expected that some of the women and children were amongst those Norse that settled in East Anglia and Northumbria in 896, but this remains conjecture. In either event, the slender evidence in the written record suggests that any female settlers were greatly outnumbered by males.

Much of the other evidence appears to support this notion. There are fewer Norse female than male names preserved and also fewer Norse female name forms.[17] *Domesday Book* (*c.*1087) recorded the name of twenty-one landowners with Norse female names, sixteen of which were in the areas of documented ninth-century Norse settlement, compared to over four hundred Norse male names. Although women were less likely to be landowners, the disparity remains striking.[18] Other documents of the tenth to fourteenth century also record fewer Norse female than male names.[19] It is a similar result with place names that contain a Norse female personal name.[20]

Some support for the migration of Norse women to eastern England comes in the mitochondrial DNA analysis of modern populations living in what was the Norse settlement area. Mitochondrial (mt) DNA is inherited via the maternal line, and Y-chromosomal DNA via the paternal, so in principle a study of modern types can provide information about female and male migrants respectively.[21] Bryan Sykes considers Germanic/Norse mtDNA to account for about ten per cent of the population of East Anglia and eastern Mercia, and five per cent in

[15] See for example J.L. Nelson, *The Annals of St-Bertin* (Manchester, 1991), *s.a.* 862, p. 99 (trans.). It has been noted that in instances where the wife of a Norse leader was baptised with him she was unlikely to be Frankish: D.M. Hadley, *The Vikings in England: Settlement, Society and Culture* (Manchester, 2006), pp. 82–3.

[16] For a summary of other written evidence of Norse armies being accompanied by women see Jesch, *Women in the Viking Age*, pp. 102–23.

[17] Hadley, *The Vikings in England*, p. 83.

[18] Jesch, *Women in the Viking Age*, pp. 76–7.

[19] Hadley, *The Vikings in England*, p. 83.

[20] Jesch, *Women in the Viking Age*, p. 78. For more detailed discussion see C. Hough, 'Women in English Place-Names', in C. Hough and K.A. Lowe (eds), *'Lastwordsa Betst': Essays in Memory of Christine E. Fell* (Donington, 2002), pp. 41–106, at pp. 65–8, 97–8; Jesch, 'Scandinavian Women's Names in English Place-Names', pp. 154–62.

[21] See for example G. Passarino, G.L. Cavalleri, A.A. Lin, L.L. Cavalli-Sforza, A. Børresen-Dale and P.A. Underhill, 'Different Genetic Components in the Norwegian Population Revealed by the Analysis of mtDNA and Y chromosome polymorphisms', *European Journal of Human Genetics* 10 (2002), pp. 521–9, at p. 521.

Yorkshire.[22] These results are certainly very suggestive of female Norse migration to England, but the Y-chromosome results are fifteen per cent in eastern Mercia and Yorkshire, and twenty per cent in East Anglia, suggesting that there were two or three male Norse migrants for every female.[23] Unfortunately no peer-reviewed scientific publications are available that address the sex-ratio issue from genetic samples, so the figures provided by Sykes are difficult to verify and need to be used with caution.[24]

Traditional lists of Norse burials in eastern England, which include burials sexed by grave-good assemblages, also register significantly more male than female burials.[25] For example, Neil Price proposed seventeen male to three female Norse burials, excluding the burials at Repton and Heath Wood.[26] The mass burial of at least 264 individuals at Repton, Derbyshire, dated to the years of the great army winter camp of 873–4, also suggests significantly more Norse males during the campaigning period, with an osteological examination of the bones determining that eighty-two per cent of them were male.[27] Richard Abels interpreted the presence of women in the mass grave either as evidence of Norse women with the army or 'native camp followers'.[28] However a later report by the excavators suggested that the appearance of the female bones were physically similar to those of Anglo-Saxon rather than Norse populations, which was likely to make them 'English rather than Scandinavian'.[29] This may in turn suggest that many of the women in the mass burial were

[22] It is difficult to distinguish between Norse, Anglo-Saxon and Norman DNA owing to their similar origins, but Sykes considers that the genetic contribution is more likely to have been made by the Norse as it is within the area historically settled by the Norse from the ninth century: B. Sykes, *Blood of the Isles: Exploring the Genetic Roots of our Tribal History* (London, 2006), pp. 282–3.

[23] Sykes, *Blood of the Isles*, pp. 286, and 152–61 for the problems of dating a DNA sequence.

[24] Further possible problems with using genetic evidence based on samples from modern populations will be discussed below.

[25] Recent useful lists of Norse burials in England are found in Hadley, *The Vikings in England*, pp. 239–46; A.Z. Redmond, *Viking Burial in the North of England: A Study of Contact, Interaction and Reaction between Scandinavian Migrants with Resident Groups, and the Effect of Immigration on Aspects of Cultural Continuity*, BAR British Series 429 (Oxford, 2007), pp. 92–118. Hadley stresses the problems with such lists and of distinguishing between Norse and Anglo-Saxon burials.

[26] N. Price, 'Western Europe', in J. Graham-Campbell (ed.), *Cultural Atlas of the Viking World* (Oxford, 1994), pp. 122–47, at p. 135.

[27] M. Biddle and B. Kjølbye-Biddle, 'Repton and the "Great Heathen Army", 873–4', in J. Graham-Campbell, R. Hall, J. Jesch and D.N. Parsons (eds), *Vikings and the Danelaw: Select Papers from the Proceedings of the Thirteenth Viking Congress* (Oxford, 2001), pp. 45–96, at Table 4.1, p. 74.

[28] R. Abels, *Alfred the Great: War, Kingship, and Culture in Anglo-Saxon England* (London, 1988), p. 113.

[29] Biddle and Kjølbye-Biddle, 'Repton and the Great Heathen Army', p. 78. The problem of distinguishing between Anglo-Saxon and Norse skeletons will become apparent below when skeletons from the mass burial subjected to isotope analysis are discussed.

derived from the population of the nunnery at Repton, thus further diminishing the prospect of female Norse migrants.[30] Indeed, carbon dating of the mass burial returned date ranges from the seventh to ninth centuries,[31] so although some of those interred were likely to be members of the great army others may be the skeletons of earlier Anglo-Saxon burials incorporated by the army into the mass burial.[32] Consequently it is uncertain how many of the 264 individuals represented in the burial were Norse.

Such evidence has naturally affected how scholars view the Norse settlement and subsequent acculturation, as have possibly some preconceptions regarding pre-modern women and armies. A recent news report stating that 'experts' were surprised at finding female remains during the excavation of an Iron Age hill fort highlight these preconceptions.[33] Similarly, although occasionally mentioning female Norse settlers and listing some female burials, Angela Redmond consistently refers to the great army and early settlers as 'men'.[34] As it is stated in the *Anglo-Saxon Chronicle* that some Norse women did migrate to England most general scholarly works on the Norse that cover the Norse settlements in England at least mention this.[35] Yet some works remain silent on the probable sex ratio of Norse settlers.[36] Most scholars who have devoted more time to the issue acknowledge that there was possibly little Norse female migration, but often argue in favour of more substantial migration based on evidence which is difficult to date or verify. Jesch has argued that if Norse migration was due only to the two documented great armies then there would have been few if any female migrants, but posits that there were

[30] For evidence that Repton included a nunnery and was commanded by abbesses see Barbara Yorke, *Nunneries and the Anglo-Saxon Royal Houses*, Women, Power and Politics (London, 2003), pp. 20, 55, 165–7.

[31] Biddle and Kjølbye-Biddle, 'Repton and the Great Heathen Army', pp. 78–9.

[32] J. Graham-Campbell, 'The Archaeology of the 'Great Army' (865–79)', in E. Roesdahl and J.P. Schjødt (eds), *Treogtyvende tværfaglige Vikingesymposium* (Aarhus, 2004), pp. 30–46, at p. 42. Earlier Anglo-Saxon skeletons could have come from the proposed mausoleum that was utilized for the mass burial, or from churchyard burials disturbed by the army creating a ditch for its winter camp. Biddle and Kjølbye-Biddle, 'Repton and the Great Heathen Army', pp. 57–60 and 67–74.

[33] BBC News, 'Derbyshire Iron Age Bones were of Pregnant Woman', 19 May 2010, <http://news.bbc.co.uk/2/hi/uk_news/england/derbyshire/8691348.stm>, accessed 20 May 2010.

[34] For example, 'Information would have continued to flow between England and the homelands as men moved backwards and forwards': Redmond, *Viking Burial in the North of England*, p. 64.

[35] For example: E. Roesdahl, *The Vikings*, trans. S.M. Margeson and K. Williams, 2nd edn (London, 1998), p. 248; E. Christiansen, *The Norsemen in the Viking Age* (Oxford, 2002), p. 232; M. Arnold, *The Vikings: Culture and Conquest* (London, 2006), p. 95. Alfred Smyth suggested that 'women and children from the Scandinavian homelands were joining the invading armies' from the time of the initial Norse settlements. He presented no evidence to substantiate the claim but it is likely to have been based on the written evidence: A.P. Smyth, *Scandinavian Kings in the British Isles 850–880* (Oxford, 1977), p. 252.

[36] For example, J.D. Richards, *Viking Age England*, rev. edn (Stroud, 2004); C. Downham, *Viking Kings of Britain and Ireland: The Dynasty of Ívarr to A.D. 1014* (Edinburgh, 2007).

probably more as part of an undocumented second wave of migrants following the success of the great army.[37] This position has recently been echoed by Katherine Holman.[38] Based on a consideration of place names, Jesch has since reiterated her notion of 'the immigration of substantial numbers of women from Scandinavia', coupled with 'the extensive use of Scandinavian speech in the home'.[39]

An increase in the number of finds of Norse-style jewellery in the last two decades has led some scholars to suggest a larger number of female settlers. Indeed, it has been noted that there are more Norse female dress items than those worn by men.[40] Sue Margeson does not mention the prospect of women accompanying the great army, but the Norse jewellery finds in Norfolk have led her to suggest that women would have 'come over to join the first settlers' after the army had become domiciled.[41] A similar review of jewellery finds from Lincolnshire led Caroline Paterson to the conclusion that 'a substantial contingent of Scandinavian women were present in Lincolnshire in the late ninth and tenth centuries'.[42] Working with a corpus of '485 female dress items decorated in the Scandinavian Viking-Age styles of Borre and Jelling', Jane Kershaw has argued that female dress items 'indicate the presence in the Danelaw of substantial numbers of women dressed in an overtly Scandinavian manner'.[43] However Penelope Walton Rogers has argued that from a costume standpoint much of this jewellery is likely to have arrived as gifts and merchandise rather than with Norse women, and that the woman buried at Adwick-le-Street with oval brooches, which are a rarity in eastern England, 'would have been an unusual sight in ninth century Yorkshire'.[44] By contrast, Kershaw considers that the Norse-style jewellery had probably 'been introduced to England on the clothing of female settlers from Scandinavia, rather than items having arrived as trade goods for the mass market'.[45] Yet the use of Anglo-Saxon style pin fittings rather than Norse

[37] Jesch, *Women in the Viking Age*, pp. 77–8.
[38] K. Holman, *The Northern Conquest: Vikings in Britain and Ireland* (Oxford, 2007), p. 150.
[39] Jesch, 'Scandinavian Women's Names in English Place-Names', pp. 154–5.
[40] C. Paterson, 'Part 2. The Finds', in K. Leahy and C. Paterson, 'New Light on the Viking Presence in Lincolnshire: The Artefactual Evidence', in J. Graham-Campbell, R. Hall, J. Jesch and D.N. Parsons (eds), *Vikings and the Danelaw: Select Papers from the Proceedings of the Thirteenth Viking Congress* (Oxford, 2001), pp. 181–202, at p. 197; Kershaw, 'Culture and Gender in the Danelaw', p. 306.
[41] S. Margeson, *The Vikings in Norfolk* (Norfolk, 1997), p. 11. Mergeson is specifically referring to the members of the army that settled East Anglia in 879–80.
[42] Paterson, 'Part 2. The Finds', p. 193. See also K. Leahy, *The Anglo-Saxon Kingdom of Lindsey* (Stroud, 2007), pp. 166–7.
[43] Kershaw, 'Culture and Gender in the Danelaw', pp. 296–7.
[44] P.W. Rogers, 'The Significance of a Viking Woman's Burial in the Danelaw', in G. Speed and P.W. Rogers, 'A Burial of a Viking Woman at Adwick-le-Street, South Yorkshire', *Medieval Archaeology* 48 (2004), pp. 51–90, at pp. 86–7.
[45] Kershaw, 'Culture and Gender in the Danelaw', p. 299.

on a significant number of the Norse-style (rather than Anglo-Norse) brooches demonstrates that many were made locally,[46] and could suggest that they were adapted to also be worn by the Anglo-Saxon population, something previously acknowledged by Patterson.[47]

Oval brooches provide an example of the difficulty of interpreting some of the jewellery evidence. With over four thousand found throughout the Norse world, they remain the most 'secure indication of Scandinavian appearance and cultural affiliation' as they were made to be worn in pairs with a specific style of Norse dress.[48] So far only three pairs of oval brooches have been found in eastern England, along with fragments of three or four others.[49] This could suggest few Norse female settlers, or an abandonment of overtly Norse brooches.[50] However Kershaw attributes the rarity of oval brooches to them being more popular in eastern than southern Scandinavia, and suggests eastern England had 'close cultural connections to southern Scandinavia'.[51]

Dawn Hadley has probably given the most consideration to the issue of Norse women in England recently, and has reiterated that the available evidence suggests that most of the settlers were men.[52] In a recent article Hadley has suggested that although Norse women were present in England during both the conquest and settlement period, both the identified Norse graves and sculpture show that Norse funerary display was decidedly masculine.[53] Hadley considers inhumation with military and equine equipment to have been 'significant in the context of conquest because it utilised a widely recognised symbolic language of lordship, one that was unquestionably masculine'.[54] Any imbalance in the

[46] Kershaw, 'Culture and Gender in the Danelaw', pp. 299–300, and p. 310 for a specific example.
[47] Paterson ('Part 2. The Finds', p. 193) acknowledged 'the possibility that local women adapted their dress to suit Scandinavian fashions'.
[48] Kershaw, 'Culture and Gender in the Danelaw', p. 315.
[49] For the brooch pairs see P.W. Rogers, 'The Artefacts from the Grave', in G. Speed and P.W. Rogers, 'A Burial of a Viking Woman at Adwick-le-Street, South Yorkshire', *Medieval Archaeology* 48 (2004), pp. 51–90, at p. 75. For the brooch fragments see Kershaw, 'Culture and Gender in the Danelaw', pp. 315–16.
[50] For the latter see G. Thomas, 'Anglo-Scandinavian Metalwork from the Danelaw: Exploring Social and Cultural Interaction', in D.M. Hadley and J.D. Richards (eds), *Cultures in Contact: Scandinavian Settlement in England in the Ninth and Tenth Centuries*, Studies in the Early Middle Ages 2 (Turnhout, 2000), pp. 237–55, at p. 252.
[51] Kershaw, 'Culture and Gender in the Danelaw', p. 316. For the relative rarity of oval brooches in Denmark see A.H. Madsen, 'Women's Dress in the Viking Period in Denmark, Based on the Tortoise Brooches and Textile Remains', in P. Walton and J.P. Wild (eds), *Textiles in Northern Archaeology* NESAT III (London, 1990), pp. 101–6, at pp. 101–3.
[52] Hadley, *The Vikings in England*, p. 261.
[53] D.M. Hadley, 'Warriors, Heroes and Companions: Negotiating Masculinity in Viking-Age England', in S. Crawford and H. Hamerow (eds), *Anglo-Saxon Studies in Archaeology and History* 15 (Oxford, 2008), pp. 270–84.
[54] D.M. Hadley, 'Ethnicity and Identity in Context: The Material Culture of Scandinavian Settlement in England in the Ninth and Tenth Centuries', in V. Gazeau, P. Bauduin and

sexes has acculturation implications as it would necessarily result in male Norse settlers marrying Anglo-Saxon women and 'children must have been reared in ethnically and culturally diverse households'.[55] Yet the cultural masculinity evident in burials and sculpture noted by Hadley is likely to enhance the perception that the Norse settlers were primarily male, regardless of the obscure historical reality.

Unfortunately the evidence being used to assess the ratio of Norse women to men is inherently flawed. The account of the 890s campaign in the *Anglo-Saxon Chronicle* is more detailed than that for the great army of 865–78, which may explain the presence in the former of information on women and children. The women and children accompanying the 890s army were also of interest to the West Saxon author as they were captured in Wessex. Furthermore, that King Alfred and Ealdorman Æthelred of western Mercia were the godfathers of the two sons of Hæsten captured and subsequently presented to Alfred, along with Hæsten's wife, was likely to demand a notice in the *Chronicle*.

Although many of the Norse female personal names and place names incorporating a Norse female personal name known from eastern England appear to be early, they are mentioned in documents long after the recorded Norse settlements and are consequently difficult to date.[56] However it has been argued that the place names, especially those ending in Old Norse – *by*, most of which also include an Old Norse first element, largely date from when Old Norse was being spoken in England and are relatively early.[57] Consequently it has been suggested that these place names are evidence for Old Norse-speaking communities and numerous settlers,[58] and if such communities existed they are likely to have included a sizeable proportion of Norse-speaking women.[59] Therefore the small proportion of Norse female names in comparison to male attested in place names and later documents does not necessarily equate to a smaller proportion of Old Norse-speaking females.

Y. Modéran (eds), *Identité et Ethnicité: Concepts, débats historiographiques, exemples (III–XII siècle)*, Tables rondes du CRAHM 3 (CRAHM, 2008), pp. 167–83, at p. 172.

[55] Hadley, *The Vikings in England*, p. 83.

[56] Jesch, *Women in the Viking Age*, pp. 76–8. Jesch does however consider the names to be consistent with female Norse migrants.

[57] D.N. Parsons, '*Anna, Dot, Thorir* . . . Counting Domesday Personal Names', *Nomina* 25 (2002), pp. 29–52, at pp. 33–5, 45.

[58] L. Abrams and D.N. Parsons, 'Place-Names and the History of Scandinavian Settlement in England', in J. Hines, A. Lane and M. Redknap (eds), *Land, Sea and Home: Proceedings of a Conference on Viking-Period Settlement, at Cardiff, July 2001* (Leeds, 2004), pp. 379–431, at p. 422.

[59] Jesch, 'Scandinavian Women's Names in English Place-Names', p. 154.

Genetic evidence based on modern populations can also be difficult to date and has yet to win widespread support amongst scholars.[60] Inferences about past populations drawn from the results of modern genetic sampling are also complicated by such factors as post-Viking Age immigration, and genetic drift, whereby changes in frequencies of mtDNA and Y-chromosome types occur due to variations in the number of offspring in the intervening generations.[61] Although further advances in science may include better ancient DNA methods, including more widely applicable DNA-based sex-testing, it has thus far proved difficult to retrieve verifiable genetic material from ancient skeletons without the sample suffering from modern contamination.[62] One solution to the problem of using genetic evidence from modern populations is to concentrate on Y-chromosome haplotypes and to select the modern sample based on surnames known to have existed in a region during the medieval period, but this has yet to be attempted in eastern England.[63]

Most importantly, many of the identified Norse burials were discovered at a time when osteological sexing was not undertaken and burials were often sexed according to grave-goods, a practice which is highly problematic.[64] Furthermore, as Hadley suggests, Norse female burials may have been less elaborate than their male counterparts and therefore more difficult to distinguish from female Anglo-Saxon burials.[65] A good example of this is the proposed Norse woman buried at Saffron Walden, Essex, in a cemetery of east–west aligned graves in rows. The woman was wearing a necklace that included three pendants, two of which were in

[60] M.P. Evison, ' "All in the Bones": Evaluating the Biological Evidence for Contact and Migration', in D. Hadley and J.D. Richards (eds), *Cultures in Contact: Scandinavian Settlement in England in the Ninth and Tenth Centuries* (Turnhout, 2000), pp. 277–94.

[61] For the issue of later migration see G.R. Bowden, P. Balaresque, T.E. King, Z. Hansen, A.C. Lee, G. Pergl-Wilson, E. Hurley, S.J. Roberts, P. Waite, J. Jesch, A.L. Jones, M.G. Thomas, S.E. Harding and M.A. Jobling, 'Excavating Past Population Structures by Surname-Based Sampling: The Genetic Legacy of the Vikings in Northwest England', *Molecular Biology and Evolution* 25 (2008), pp. 301–9, at pp. 301, 307. For genetic drift see A. Keinan, J.C. Mullikin, N. Patterson and D. Reich, 'Measurement of the Human Allele Frequency Spectrum Demonstrates Greater Genetic Drift in East Asians than in Europeans', *Nature Genetics* 39 (2007), pp. 1251–5.

[62] Bowden *et al.*, 'Excavating Past Population Structures', p. 301.

[63] For the use of this approach in north-west England, see Bowden *et al.*, 'Excavating Past Population Structures', pp. 301–9.

[64] For the problems associated with ascribing sex on the basis of grave-goods, see E. Weglian, 'Grave Goods Do Not a Gender Make: A Case Study from Singen am Hohentwiel, Germany', in B. Arnold and N.L. Walker (eds), *Gender and the Archaeology of Death*, Gender and Archaeology Series 2 (Walnut Creek, 2001), pp. 137–55; D.L. Doucette, 'Decoding the Gender Bias: Inferences of Atlatls in Female Mortuary Contexts', in B. Arnold and N.L. Walker (eds), *Gender and the Archaeology of Death*, Gender and Archaeology Series 2 (Walnut Creek, 2001), pp. 159–77.

[65] Hadley, *The Vikings in England*, p. 258. For example, at Cumwhitton 'The absence of weaponry suggests a female grave, though most of the finds could also be found in a male grave': Brennard, 'Finding the Viking Dead', p. 626.

Table 1 Burials of 6 or 7 early Norse migrants sexed by grave assemblage

Burial	Burial Place	Grave-goods	Sex	Date
1	Thetford	sword	M	869–70
2	Thetford	spear, knife	M	869–70
3	Reading	sword, horse	M	870–71
4	Santon Downham	sword, oval brooches	M & F (?)	late 9th
5	Middle Harling	4 knives, whetstone	M	late 9th/early 10th
6	Wensley	sword, spear, knife, sickle	M	late 9th/early 10th

the Borre-style, as well as a knife.[66] The burial of Anglo-Saxon women with jewellery and small knives was not unusual, so it is only the Scandinavian appearance of the necklace that marks this burial as Norse.[67] Considering the possibilities of trade and intermarriage it cannot be certain that this burial is not of an Anglo-Saxon woman wearing a Scandinavian necklace.[68]

When Norse burials in England are discussed it is usually with all of the burials together, regardless of how they were sexed.[69] Yet the problems associated with sexing burials by their associated grave-goods make it a worthwhile exercise to separate those burials from more recent discoveries that have been sexed osteologically. The former are presented in Table 1 below.[70] These and most of the burials considered herein have been thought to be 'Norse' because they utilize forms unusual at the time amongst the local Anglo-Saxon population, for example burials under mounds or those including grave-goods more substantial than dress accessories and costume jewellery. Although it cannot be certain that those buried were genetically Norse, they do appear to have been buried in a culturally Norse manner. Even one of the more cautious scholars on questions of Norse ethnicity has stated that 'there seems little reason to

[66] V.I. Evison, 'A Viking Grave at Sonning, Berks.', *Antiquaries Journal* 49 (1969), pp. 330–45, at pp. 335–41.

[67] For a concise overview of late Anglo-Saxon burial practices see Hadley, *The Vikings in England*, pp. 246–9. See also D.M Hadley, 'Burial Practices in the Northern Danelaw, c. 650–1100', *Northern History* 36 (2000), pp. 199–216.

[68] The dating of the manufacture of the necklace to post-900 (Evison, 'A Viking Grave at Sonning, Berks.', p. 340) excludes this burial from further consideration in this article.

[69] For example Hadley, *The Vikings in England*, pp. 239–46; Redmond, *Viking Burial in the North of England*, pp. 92–118; and J. Graham-Campbell, 'Pagan Scandinavian Burial in the Central and Southern Danelaw', in J. Graham-Campbell, R. Hall, J. Jesch and D.N. Parsons (eds), *Vikings and the Danelaw: Select Papers from the Proceedings of the Thirteenth Viking Congress* (Oxford, 2001), pp. 105–23.

[70] As the purpose of this paper is to investigate the sex ratio of Norse migrants to eastern England in the early settlement period, Tables 1 and 2 only include burials of Norse who are likely to have been living in eastern England before *c.*900. Consequently some probable early tenth-century burials are included.

doubt that the burials with elaborate assemblages of grave goods, and certainly cremations, are those of the newcomers' – a conclusion with which I concur.[71]

Looking at Table 1, three of these six burials are thought to be associated with the documented movements of the great army of 865–78. Two weapon burials, one with a sword and another with a spear and knife, from Thetford in Norfolk (Table 1, nos. 1–2) may relate to the great army's wintering of 869–70.[72] Likewise the weapon and horse burial on the bank of the Thames at Reading in Berkshire (Table 1, no. 3) is possibly associated with the winter camp at Reading in 870–1.[73] A number of other burials may be tentatively dated to the early decades of documented Norse settlement, *c*.876 to 900. A burial at Santon Downham in Norfolk (Table 1, no. 4) contained a late ninth-century sword and a pair of oval brooches, although it is possible that the brooches were not directly associated with the sword burial.[74] Owing to the presence of both male and female grave-goods, it has been suggested that it was a double burial – a position supported by most scholars despite only a single skeleton being reported with the find.[75] Richards posits a single burial with the oval brooches as an offering, implying that the burial is male.[76] However it is equally likely that it was a female buried with a sword, as 'there was nothing to prevent a woman being buried with weaponry'.[77] A burial at Middle Harling, Norfolk (Table 1, no. 5), included four knives amongst the grave-goods and is thought to be male, but neither the sex nor the proposed late ninth/early tenth century date is certain.[78] Finally,

[71] Hadley, 'Ethnicity and Identity in Context', p. 169.

[72] Graham-Campbell, 'The Archaeology of the Great Army', p. 38.

[73] Graham-Campbell, 'Pagan Scandinavian Burial in the Central and Southern Danelaw', p. 115. Two burials at Hook Norton, Oxfordshire, one under a mound and another with a coin hoard deposited *c*.875–80, may also be associated with the great army but are excluded as they are unsexed. M. Biddle and J. Blair, 'The Hook Norton Hoard of 1848: A Viking Burial from Oxfordshire?', *Oxoniensia* 52 (1987), pp. 186–95.

[74] Evison, 'A Viking Grave at Sonning, Berks.', pp. 333–5.

[75] Graham-Campbell, 'Pagan Scandinavian Burial in the Central and Southern Danelaw', p. 111. The dating of the Santon Downham burial is given as late ninth century in Margeson, *The Vikings in Norfolk*, p. 15; Richards, *Viking Age England*, p. 205; and D.A. Hinton, *Gold and Gilt, Pots and Pins: Possessions and People in Medieval Britain* (Oxford, 2005), p. 118 – but as early tenth century in Evison, 'A Viking Grave at Sonning, Berks.', p. 335. The oval brooches are a P51 type, a style that was popular during the tenth century but began sometime before 890 yet after 841: I. Jansson, *Ovala spännbucklor: En studie av vikingatida standardsmycken med utgångspunkt från Björkö-fynden*, Anun 7 (Uppsala, 1985), p. 228.

[76] Richards, *Viking Age England*, p. 205. Despite the popularity of the double burial proposal I also find it difficult to ignore the report of a single skeleton.

[77] Brennard, 'Finding the Viking Dead', p. 628. Brennard is referring to the problems of sexing the burials at Cumwhitton where no bones were found in five of the graves. For examples of weapons being buried with Norse women, see Jesch, *Women in the Viking Age*, pp. 21–2.

[78] Graham-Campbell, 'Pagan Scandinavian Burial in the Central and Southern Danelaw', pp. 111–12. The surviving bone fragments suggest a male, but the skull was lost and the sex cannot be certain (p. 111). Margeson (*The Vikings in Norfolk*, p. 16) refers to the burial as male.

a churchyard burial including a late ninth-century sword, spear head, sickle and knife was recovered from Wensley, Yorkshire (Table 1, no. 6).[79]

The results of this table are six males and one possible female in the proposed double burial at Santon Downham, and this high ratio of males to females is consistent with the other forms of evidence. Other weapon burials that have not been included in this table, as no opinion of the sex of the burials has been offered by recent scholars, would appear to strengthen the case for the predominance of Norse men amongst the early settlers. A sword, horse, and coins dated to *c*.895 were found with a burial at Leigh-on-Sea, Essex, whilst a mound burial at Camphill, Yorkshire included a sword and spear.[80] Redmond lists two males at the cremation cemetery at Heath Wood near Ingleby, Derbyshire, owing to swords being found.[81] At Bedale, Yorkshire, a single burial contained a pair of oval brooches and a spear head, making it difficult to ascribe a sex by assemblage.[82] Finally seven or eight burials accompanied by at least four swords, an axe, a set of scales, and knives were discovered under, and were possibly earlier than, the church at Kildale, Yorkshire. At least five of these individuals were accompanied by the weapons.[83] It is possible that some of these burials were female, despite the characteristically 'male' grave-goods, but the impression is still one of predominantly male burials.[84]

However when the osteologically sexed burials are grouped together, as they are in Table 2, the results are very different. This table also benefits from recent advances in the field of isotope analysis, allowing many of the burials to be more confidently labelled as 'Norse'.[85] The other burials

[79] D.M. Wilson, 'Some Neglected Late Anglo-Saxon Swords', *Medieval Archaeology* 9 (1965), pp. 32–54, at pp. 41–2. Wilson dates the sword by noting parallels of the sword ornamentation with a brooch from the Beeston Tor hoard, dated *c*.873–5. Wilson's dating of the sword makes it reasonable to include the Wensley burial in the list of early Norse settlers. Redmond (*Viking Burial in the North of England*, p. 110) dates the sword to *c*.900.

[80] Graham-Campbell, 'Pagan Scandinavian Burial in the Central and Southern Danelaw', p. 114; Hadley, *The Vikings in England*, p. 241.

[81] Redmond, *Viking Burial in the North of England*, Appendix 5, p. XIV. As the most recent and thorough excavation report (Richards, 'Excavations at the Viking Barrow Cemetery at Heath Wood', pp. 28–30, 36–8) is careful to state that the sex of those recovered in earlier excavations is unknown, I have decided not to include Redmond's opinion in Table 1.

[82] Redmond, *Viking Burial in the North of England*, p. 95. Although Redmond dates the oval brooches to the mid-tenth century, like the Santon Downham brooches they were P51 type (Rogers, 'The Artefacts from the Grave', p. 75), making it impossible to provide such an exact dating. See n. 75 above.

[83] Four were buried with swords and other weapons including an axe and spearheads, Redmond, *Viking Burial in the North of England*, p. 110.

[84] Redmond (*Viking Burial in the North of England*, p. 110) states that 'it seems safe to suggest that at least four were male', and that there is nothing to suggest female interments. She considers one of the swords to date to the early tenth century (based on a nineteenth-century sketch).

[85] For the science and its application see P. Budd, C. Chenery, J. Montgomery, J. Evans and D. Powlesland, 'Anglo-Saxon Residential Mobility at West Heslerton, North Yorkshire, UK From Combined O- and SR-Isotope Analysis', in G. Holland and S.D. Tanner (eds), *Plasma Source Mass Spectrometry: Applications and Emerging Technologies*, The Proceedings of the 8th Interna-

Table 2 Burials of 14 early Norse migrants sexed osteologically

Burial	Burial Place	Grave-goods	Sex	Date
1	*Repton mortuary	axe, seaxes, sword pieces in mortuary	F	873–4
2	*Repton churchyd 511	12 items incl. Thor's hammer, sword	M	873–4
3	*Repton churchyd 295	knife	M	873–4
4	*Repton churchyd 529	coins	M	873–4
5 & 6	Sonning	sword, knife, ringed pin, arrow heads	2M	870–1
7 & 8	Heath Wood 50	sword hilt grip, shield clamps, knife	1F/1?	870s
9	Heath Wood 5	2 iron nails	F	870s
10	Heath Wood 6	2 buckles, strap-end, small brooch (?)	F	870s
11	*Adwick-le-Street	oval brooches, knife, bowl	F	late 9th
12–14	Cambois	disc brooch, comb	1F/2M	late 9th/early 10th

The burials that have been subject to isotope analysis are marked *. The grave numbers are given for the Repton churchyard burials, and the mound numbers for Heath Wood. There were more burials at Heath Wood but only those that were sexed have been included. The sexing results recovered from the Repton mass burial are not included owing to the problems of dating and identifying their place of origin, except for the four individuals subjected to isotope analysis. Of these, only one could be said to have grown up outside of Britain, highlighting the problems of using the evidence from the mass grave.[88]

included as Norse are those that are not consistent with local Anglo-Saxon burial practice in the late ninth/early tenth century. Although the sexing of skeletons is considered to be problematic by some osteologists, this method of ascribing sex is likely to be more accurate than sexing burials on the basis of their accompanying grave-goods.[86] Fortunately in this instance the osteological sexing results are largely consistent with the sex that would be ascribed using grave-goods alone, so the problem of archaeologists and osteologists providing different sexes for the same skeleton does not arise. The main exceptions are the Heath Wood cremations, especially mound 50.[87]

The results from this table of fourteen individuals are significantly different from those of Table 1, suggesting that females were a sizable proportion of the early Norse settlers. Table 2 is obviously restrictive,

tional Conference on Plasma Source Mass Spectrometry held at the University of Durham on 8–13 September 2002 (Cambridge, 2003), pp. 195–208, at pp. 196–9.

[86] The problems associated with osteological sexing are discussed in P.L. Walker, 'Problems of Preservation and Sexism in Sexing: Some Lessons from Historical Collections for Paleodemographers', in A. Herring and S. Saunders (eds), *Grave Reflections: Portraying the Past Through Skeletal Studies* (Toronto, 1995), pp. 35–44.

[87] In this instance Richards says, 'Whilst it is possible that the female has been misidentified, it would be unwise to dismiss the skeletal sexing simply because it conflicts with the grave-good evidence': Richards, 'Excavations at the Viking Barrow Cemetery at Heath Wood', p. 91. The problem of sexing cremated bones will be discussed below.

[88] P. Budd, A. Millard, C. Chenery, S. Lucy and C. Roberts, 'Investigating Population Movement by Stable Isotope Analysis: A Report from Britain', *Antiquity* 78 (2004), pp. 127–41, at pp. 137–8. Two males from the mass burial were examined but it could not be determined if they were local or of Danish origin. One female was from Britain.

being limited by date and to burials that have been sexed osteologically, and also to those burials that can be said with some confidence to be Norse migrants. A number of burials in the table have had oxygen and strontium isotopes from their teeth analysed, and the results often allow the individuals' approximate geographic location during childhood to be determined. Although this does not prove genetic origin, if the individual grew up in an area of Norse Scandinavia or an area known to have had Norse settlers it does greatly increase the likelihood of them having been at least culturally and probably genetically Norse. It consequently lessens the likelihood of the 'Norse' burials actually being Anglo-Saxons adopting Norse cultural forms, a possibility for the burials in Table 1.

The burials at Repton are thought to date to the winter camp of the great army in 873–4.[89] Of the three burials from the churchyard (Table 2, nos. 2–4), the men buried together in graves 511 and 295 were probably from the west coast of Denmark,[90] whilst the man in grave 529 probably grew up in south-eastern Sweden – a view strengthened by the gold finger ring with which he was buried, which has parallels from Birka and northern Jutland.[91] Two males and two females from the Repton mass burial were examined but only one of the females is likely to be Norse (Table 2, no. 1). She grew up in either mid-continental or Baltic Europe, which included parts of Scandinavia and other Norse settlements, so she is likely to have been from the Norse world and have arrived in England sometime before 873. Furthermore, the strontium isotope results were similar to those of the man buried in Repton grave 529, suggesting that they had spent their childhoods in a similar area. Despite the dating problems with the Repton mass burial the circumstantial evidence does suggest that this particular female accompanied the great army.[92] The burial at Adwick-le-Street (Table 2, no. 11) has been dated to the late ninth century by the excavators owing to the 'design and condition of the brooches'.[93] The woman buried may have grown up in a small area of

[89] Biddle and Kjølbye-Biddle, 'Repton and the Great Heathen Army', pp. 57–74.

[90] Their drinking water isotope compositions suggest a childhood in western Britain, northern France, the Low Countries, or the west coast of Denmark. The Sr-isotope results suggest a childhood in the east Midlands, East Anglia or Denmark: Budd, Millard, Chenery, Lucy and Roberts, 'Investigating Population Movement by Stable Isotope Analysis', p. 137. As only one locality, the west coast of Denmark, fits both results, I assign this locality as the most likely place of origin.

[91] There is a slight possibility that he had spent his childhood in Baltic Europe, eastern central Europe or south-western Russia: Budd *et al.*, 'Investigating Population Movement by Stable Isotope Analysis', pp. 137–8.

[92] Budd *et al.*, 'Investigating Population Movement by Stable Isotope Analysis', pp. 137–8. That one of the two women from the mass grave examined was not Anglo-Saxon calls into question the suggestion that all of the 18% of women that made up the mass grave were more likely to be 'English', as suggested in Biddle and Kjølbye-Biddle, 'Repton and the Great Heathen Army', p. 78.

[93] Speed and Rogers, 'A Burial of a Viking Woman at Adwick-le-Street, South Yorkshire', p. 51.

north-east Scotland,[94] but the results are 'a better fit with the Trondheim area of Norway'.[95] It is possible that advances in scientific techniques may in time cause these opinions regarding the isotope results to be altered, as happened with burials at Riccall.[96] However in this instance the Repton churchyard burials had been labelled Norse by the excavators prior to isotope analysis being undertaken, and the Adwick-le-Street burial is likely to have been given as Norse owing to the oval brooches.[97] Consequently, in combination with the grave-goods the isotope results presented in Table 2 do appear to be sound in terms of labelling them 'Norse', even if the exact geographic location of their childhood may be revised in future.[98]

The other burials in Table 2 may be considered 'Norse' owing to the style of burial. The cremation barrow cemetery at Heath Wood (Table 2, nos. 7–10), is the most obvious collection of Norse burials under discussion as cremation was no longer practised by the Anglo-Saxons. Unfortunately the site is also difficult to date. It has been variously proposed that it belongs to a previously unrecorded Norse settlement earlier than those noted in the *Anglo-Saxon Chronicle*;[99] that it was in use at the same time as the great army were wintering at nearby Repton;[100] that it was the principal war cemetery of the great army and was in use from 873–8;[101] and that it belongs to the early settlement period.[102] Cambois, Bedlington, in Northumberland (Table 2, nos. 12–14) is included as mound burial was not common in that part of Anglo-Saxon England at the time, although the minimal goods found in the grave were compatible with

[94] Specifically, 'in the rain shadow of the Cairngorm Mountains': Speed and Rogers, 'A Burial of a Viking Woman at Adwick-le-Street, South Yorkshire', p. 62.

[95] Speed and Rogers, 'A Burial of a Viking Woman at Adwick-le-Street, South Yorkshire', p. 63. The strontium results could equally fit either area.

[96] Preliminary isotope analysis of six burials in a cemetery on the banks of the River Ouse at Riccall, Yorkshire, originally indicated that all had come from Norway, helping to link the site with Harald Hardraada's invasion in 1066: R.A. Hall , 'Blood of the Vikings – The Riddle at Riccall', *Yorkshire Archaeology Today* 2 (2002), p. 5. However it is now thought that the isotopes indicate that all six were of local origin: R.A. Hall, 'The Case of the Missing Vikings', *Yorkshire Archaeology Today* 9 (2005), p. 3.

[97] For the Repton burials see Biddle and Kjølbye-Biddle, 'Repton and the Great Heathen Army', pp. 60–5.

[98] For the potential problems associated with isotope analysis, see J. Montgomery, 'Passports from the Past: Investigating Human Dispersals using Strontium Isotope Analysis of Tooth Enamel', *Annals of Human Biology* 37.3 (2010), pp. 325–46.

[99] J.D. Richards, M. Jecock, L. Richmond and C. Tuck, 'The Viking Barrow Cemetery at Heath Wood, Ingleby, Derbyshire', *Medieval Archaeology* 39 (1995), pp. 51–70, at pp. 67–8.

[100] J.D. Richards, 'Boundaries and Cult Centres: Viking Burial in Derbyshire', in J. Graham-Campbell, R. Hall, J. Jesch and D.N. Parsons (eds), *Vikings and the Danelaw: Select Papers from the Proceedings of the Thirteenth Viking Congress* (Oxford, 2001), pp. 97–104, at p. 102.

[101] Richards, 'Excavations at the Viking Barrow Cemetery at Heath Wood, Ingleby, Derbyshire', p. 107.

[102] Graham-Campbell, 'Pagan Scandinavian Burial in the Central and Southern Danelaw', pp. 109–10.

Anglo-Saxon burial.[103] Even though these artefacts, a brooch and comb, imply 'deposition no later than the middle of the 10th century', Alexander suggests that it represents 'an example of a Scandinavian (or Anglo-Scandinavian) late 9th- or early 10th-century élite'.[104] Consequently those buried may have been living in England prior to 900, hence its inclusion in Table 2. Finally, the double burial with weapons at Sonning, Berkshire (Table 2, nos. 5–6), is also more likely to be Norse than Anglo-Saxon, especially if the suggestion that it dates to 870–1 and the great army's winter camp at Reading is correct.[105]

This sample returns the results of three male burials in the Repton churchyard, one female in the mass grave,[106] three females and an unsexed infant or juvenile at Heath Wood,[107] a female burial at Adwick-le-Street,[108] two males at Sonning,[109] and two males and a female buried at Cambois,[110] for a total of seven males, six females, and one undetermined. Although this sample of thirteen osteologically sexed burials is small the results are more likely to be reliable than those of Table 1, both in terms of sexing and the classification of the burials as 'Norse'. Furthermore, this sample is at least larger than the six in Table 1.

The Heath Wood cremations make it obvious that caution is required with the results of Table 1. Despite the remains of three swords being recovered from the site, all three burials that could be sexed osteologically were thought to be female, including one with a sword and shield.[111] This female was accompanied by an unsexed infant or juvenile, so the sword and shield could have belonged to the latter.[112] However it is of course possible that these unsexed remains were also female. No doubt if only sexing by grave-goods had been undertaken, like those in Table 1, this burial would have been identified as male. The man in Repton grave 511

[103] M.L. Alexander, 'A "Viking Age" Grave from Cambois, Bedlington, Northumberland', *Medieval Archaeology* 31 (1987), pp. 101–5. The burial was previously thought to be Anglo-Saxon, but following Alexander's reappraisal it has been included in the corpus of likely Norse burials: e.g., Hadley, *The Vikings in England*, p. 241; Richards, *Viking Age England*, p. 194. However Redmond (*Viking Burial in the North of England*, p. 116) is more sceptical.

[104] Alexander, 'A Viking Age Grave from Cambois', p. 105.

[105] Graham-Campbell, 'Pagan Scandinavian Burial in the Central and Southern Danelaw', p. 115. A full discussion of the burial can be found in Evison, 'A Viking Grave at Sonning, Berks.', pp. 330–3 and 343–5.

[106] Budd *et al.*, 'Investigating Population Movement by Stable Isotope Analysis', pp. 137–8.

[107] Richards, 'Excavations at the Viking Barrow Cemetery at Heath Wood', pp. 33–4, 77 and 91. Four excavations at Heath Wood have identified the remains of eight individuals, but only three were able to be sexed by skeletal analysis. Despite this it is claimed that 'both male and female adults were identified', presumably owing to the remains of three swords being found (p. 77).

[108] Speed and Rogers, 'A Burial of a Viking Woman at Adwick-le-Street, South Yorkshire', pp. 60–1.

[109] H. Carter, 'Report on Human Bones from Sonning', *Antiquaries Journal* 49 (1969), pp. 334–5.

[110] Alexander, 'A Viking Age Grave from Cambois', p. 101.

[111] Richards, 'Excavations at the Viking Barrow Cemetery at Heath Wood', pp. 30, 36, 57 and 91.

[112] For discussion see Richards, 'Excavations at the Viking Barrow Cemetery at Heath Wood', p. 91.

most fits the expectation of a male Norse warrior burial, being accompanied by a number of grave-goods including a Thor's hammer, a sword and two knives.[113] However the other two male burials in the Repton churchyard, in graves 295 and 529, had minimal grave-goods, showing the diversity possible with Norse burials, even of those that were probably warriors.[114] Similarly, at Cambois a female and two males were buried under a mound with minimal grave-goods. These burials are dated to the late ninth/early tenth century and are somewhat remarkable for being Norse-style graves in an area further north than that controlled by the Norse kingdom centred on York.[115] Like the man in grave 511 at Repton, the woman buried at Adwick-le-Street fits the idealized image of a female Norse burial, especially in being buried with oval brooches.[116]

These results, six female Norse migrants and seven male, should caution against assuming that the great majority of Norse migrants were male, despite the other forms of evidence suggesting the contrary. This result of almost a fifty-fifty ratio of Norse female migrants to Norse males is particularly significant when some of the problems with osteological sexing of skeletons are taken into account. Skeletons are sexed on a scale with five categories: ambiguous sex, female, probable female, male, and probable male. Which category a skeleton is placed in is determined by the degree of certainty as judged by the osteologist.[117] There is often poorer preservation of crucial parts of female skeletons for analysis of sex, such as the pubic bone, resulting in other better preserved bones such as the cranium being used. This in turn is problematic as cranial developments in post-menopausal females often lead to them being misclassified as males. Because of these problems there is a tendency for females to be under represented in cemeteries where the names of the deceased are not available.[118] These problems are likely to be exacerbated in cremations, where the same bones are required to ascribe sex but only small and damaged pieces of bone remain. The problem of identifying the bones necessary for sexing, and then having a useable sample, can result in most

[113] Biddle and Kjølbye-Biddle, 'Repton and the Great Heathen Army', pp. 60–5.

[114] Biddle and Kjølbye-Biddle, 'Repton and the Great Heathen Army', pp. 60–6. The excavation report discusses other probable Norse burials at Repton, but I have concentrated on those where isotope analysis confirms that those buried did not spend their childhoods in England. Furthermore, these burials were chosen for isotope analysis as they were considered to be the most 'Norse' based on grave-goods and burial style: Budd *et al.*, 'Investigating Population Movement by Stable Isotope Analysis', p. 137. For more on the diversity of male Norse warrior burials in England see Hadley, 'Warriors, Heroes and Companions', pp. 274–5.

[115] Alexander, 'A Viking Age Grave from Cambois', pp. 101–5.

[116] The brooches are discussed in Speed and Rogers, 'A Burial of a Viking Woman at Adwick-le-Street, South Yorkshire', pp. 64–75.

[117] P.L. Geller, 'Skeletal Analysis and Theoretical Complications', *World Archaeology* 37.4 (2005), pp. 597–609, at p. 598.

[118] Walker, 'Problems of Preservation and Sexism in Sexing', pp. 35–40.

cremations not being ascribed a sex.[119] Considering the problem of identifying females, if there were any osteological sexing errors in the burials presented in Table 2 they would be likely to lessen the number of females recorded.

Whilst it may be unwise to use such a small sample to presume that there were as many or almost as many female Norse settlers as male, the results at least suggest that there were a greater number of female immigrants than has usually been acknowledged. Indeed it provides some support to the suggestions of a substantial female Norse presence in England made by Margeson, Paterson and Kershaw based on jewellery finds.[120] An earlier example of migration from Scandinavia to eastern England may be pertinent in this regard. Samples from twenty-four individuals from the fifth- to seventh-century cemetery at West Heslerton, North Yorkshire, were submitted to isotope analysis and all of those who had not spent their childhoods in Britain, a total of four individuals, were all female and probably from Scandinavia.[121] These results strengthen the conclusion drawn from Table 2 that, contrary to the findings of most previous scholarship, migrants were not necessarily overwhelmingly male. Even if the burials sexed by grave-goods in Table 1 are accepted as accurate and the results of both tables are combined, women make up six or possibly seven of the nineteen or twenty adults recorded, a not insubstantial proportion of approximately one-third of sexed Norse burials.

Another important implication of the osteological sexing results is that Norse women appear to have been present from the earliest stages of the migratory process, rather than, as the commonly held theory has it, arriving as part of a second wave after the great army had started to settle

[119] For example, only two of eleven human cremated remains from the Bronze Age burial ground at Nosterfield, North Yorkshire, were able to be sexed: M. Holst, *Draft Osteology Report* (2003) <http://www.archaeologicalplanningconsultancy.co.uk/mga/projects/noster/speciali/holst03.html>, accessed 30 September 2010. For the techniques used to sex cremated bones see Holst, *Draft Osteology Report*, and J. McKinley, 'The Analysis of Cremated Bone', in M. Cox and S. Mays (eds), *Human Osteology: In Archaeology and Forensic Science* (Cambridge, 2000), pp. 403–21, at p. 412.

[120] Margeson, *The Vikings in Norfolk*, p. 11; Paterson, 'Part 2. The Finds', p. 193; Kershaw, 'Culture and Gender in the Danelaw', pp. 296–7.

[121] There was a lesser chance that the four came from eastern continental Europe: Budd *et al.*, 'Investigating Population Movement by Stable Isotope Analysis', p. 135. Other than the isotope analysis the four burials were distinguished by a lack of grave-goods, with one juvenile having minimal goods and three adults none (p. 135). Unfortunately Budd provides only the grave number (117) of the juvenile, aged 12–15, buried with beads and a possible purse mount: see C. Haughton and D. Powlesland, *West Heslerton: The Anglian Cemetery, Vol ii. Catalogue of the Anglian Graves and Associated Assemblages* (Nottingham, 1999), p. 194. The skeleton of the juvenile was unable to be sexed so 'female' was based on the assemblage: Haughton and Powlesland, *West Heslerton*, p. 194. However as the three adults could not have been sexed by assemblage they were presumably sexed osteologically, as were many of the West Heslerton graves.

the homelands it had conquered. The presence of Norse women at Heath Wood and the woman in the Repton mass burial are highly suggestive of women accompanying the great army to England, as these sites are dated to the campaigning period or its immediate aftermath. It would appear that the first great army was similar to the 890s army, arriving in England with both men and women. As with the 890s army, there were possibly also children present. The man aged eighteen to twenty-two buried at Sonning, probably in 870–1, could have arrived with the great army in 865 as a juvenile aged twelve to sixteen.[122] The unsexed infant or juvenile found with the woman in mound 50 at Heath Wood is also likely to be evidence of someone either arriving in England at a young age with a Norse army, or being born during the campaigning period. The presence of women and children with the 890s army led Abels to declare that 'Vikings who had brought their families and goods clearly had no intention of returning to the famine-stricken lands of Francia'.[123] Whilst the intention of the Norse may not be certain – for example, the women and children may not have been able to remain in Francia[124] – the suggestion is certainly reasonable. As it can be demonstrated that women and probably children accompanied the great army of the 860s and 870s it increases the possibility that that army had also arrived in England with the intention of winning a homeland.

The practice of the 890s army of leaving women and children in Norse-controlled areas may have also been followed earlier. The great army conquered Northumbria in 866–7, East Anglia in 869–70, and Mercia in 873–4.[125] In each instance a client king, probably a member of the local Anglo-Saxon aristocracy, was placed upon the throne to rule in the army's absence.[126] It is possible that some non-combatants, perhaps accompanied by a detachment of warriors to ensure their safety, remained in the conquered kingdoms as part of the agreement made between the

[122] The other male buried at Sonning was thought to be 20 or older: Carter, 'Report on Human Bones from Sonning', pp. 334–5. Alternatively the young man could have arrived with the summer army recorded in 871 (ASC 871: *Anglo-Saxon Chronicle*, ed. Swanton, p. 70 (trans.)), or another undocumented arrival.

[123] Abels, *Alfred the Great*, p. 288.

[124] Indeed some members of the army of the 890s did return to Francia, but it is not known if they were accompanied by any women, ASC 897: *Anglo-Saxon Chronicle*, ed. Swanton, p. 89 (trans.).

[125] ASC 867, 870, 874: *Anglo-Saxon Chronicle*, ed. Swanton, pp. 68, 70, 72 (trans.).

[126] The best attested of these client kings is Ceolwulf II of Mercia, recorded in ASC 874: *Anglo-Saxon Chronicle*, ed. Swanton, p. 72 (trans.). The Northumbrian client king Egbert and his successor Ricsige are mentioned in some later Durham sources, for example Symeon of Durham, *Libellus De Exordio Atque Procursu Istius, Hoc Est Dunhelmensis, Ecclesie. Tract on the Origins and Progress of this the Church of Durham*, ed. D. Rollason (Oxford, 2000), pp. 98–9. The East Anglian kings Æthelred and Oswald are only known through coin issues but are thought to have been client kings ruling after the death of Edmund: M. Blackburn, 'Currency Under the Vikings. Part 1: Guthrum and the Earliest Danelaw Coinages. Presedential Address 2004', *The British Numismatic Journal* 75 (2005), pp. 18–43, at p. 35.

Norse leaders and the client kings.[127] Indeed, if women and children remained in conquered kingdoms during the campaigning period it may in part explain the policy of using client kings. It may also account for the *Anglo-Saxon Chronicle*'s failure to mention non-combatants with the great army, whereas it did record women and children with the 890s army. As Wessex was not attacked until 870–1 it is possible that those in Wessex, including the chronicler, were unaware of the presence of any women and children, as by 870 the latter could have been in the already conquered kingdoms of Northumbria or East Anglia.

The presence of Norse women in England during and in the immediate aftermath of the campaigning period of the great army, also has implications for the acculturation process. It has often been thought that the early Norse settlers were overwhelmingly male, and that Norse men must have married Anglo-Saxon women.[128] Considering the results of Table 2 this position may now require some modification. Intermarriage between local Anglo-Saxons and the new settlers must still have taken place, but not necessarily to the extent previously believed. The presence of Norse women during the campaigning period, as indicated by the results from Heath Wood and Repton, suggests that some women had come to England as the partners of warriors in the great army, as was the case with the 890s army. It would therefore be expected that at least some of the warriors would not have been looking for wives upon settlement. It also raises the possibility of war-widowed Norse women remaining in England during the settlement period and perhaps marrying Anglo-Saxon men, or indeed of single Norse women marrying Anglo-Saxon men. These scenarios make the early years of Norse settlement much more complex than that of a demobbed Norse army seeking Anglo-Saxon wives. There is little evidence to suggest that acculturation was not a remarkably quick process, but intermarriage, in the early settlement period at least, may have played only a minor role in this outcome.

The reappraisal of the burial evidence for Norse migrants in eastern England up to 900 has provided a different perception of the possible numbers of Norse women involved in the early settlement period. Based on jewellery finds and the notion of an undocumented secondary migration, it has been suspected by some scholars that substantial numbers of

[127] Richard Hall suggested that this may have been the case in York and Mercia: Hall, 'Scandinavian Settlement in England – The Archaeological Evidence', *Acta Archaeologica* 71 (2000), pp. 147–57, at p. 151.

[128] This position is found in a number of works, including F.D. Logan, *The Vikings in History*, 3rd edn (New York, 2005), p. 152; S. Keynes, 'The Vikings in England, c. 790–1016', in P. Sawyer (ed.), *The Oxford Illustrated History of the Vikings* (Oxford, 1997), pp. 48–82, at p. 68; Hadley, *The Vikings in England*, p. 83. Jesch (*Women in the Viking Age*, p. 77) briefly discusses the demographic problem of an imbalance of the sexes, arguing that such an imbalance would have encouraged more Norse women to migrate to England after the army settled.

Norse women were involved in the settlements. But there has previously been little substantive evidence to validate this claim, leading other scholars to suggest that the Norse settlers were overwhelmingly male. Although the results presented here cannot be used to determine the number of female settlers, they do suggest that the ratio of females to males may have been somewhere between a third to roughly equal. Furthermore, there is osteologically sexed burial evidence of Norse women in England during the earliest campaigning period of the great army of 865. It is possible that with further advances in science more evidence is likely to appear, providing a larger sample to work with, and enabling similar reappraisals of burial evidence from other areas of Norse settlement. The present results suggest new ways of understanding Norse migration and acculturation in late ninth-century England.

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