

# Preaspiration and tonal accents as Northern Gaelic features

Or: Reconsidering contact origins

Pavel Iosad  
Oilthigh Dhùn Èideann  
pavel.iosad@ed.ac.uk

15mh Còmhdhail Eadar-Nàiseanta na Ceiltis  
Oilthigh Ghlaschu  
16 an t-Iuchar 2015

## Preview of argument

- Preaspiration and tonal accents in Scotland and Ulster show the classic pattern of innovating centre vs archaic periphery
- This presupposes that the ‘archaic’ pattern was once spread throughout the entire area
- ☞ An early form of both phenomena must have been present in the entire Northern Gaelic area
  - No special status for areas of heavy Norse settlement
  - Reasonable internal reconstruction
- No *need* for recourse to contact

## 1 Reconstruction

### 1.1 Preaspiration

#### Preaspiration in the Gaelic languages

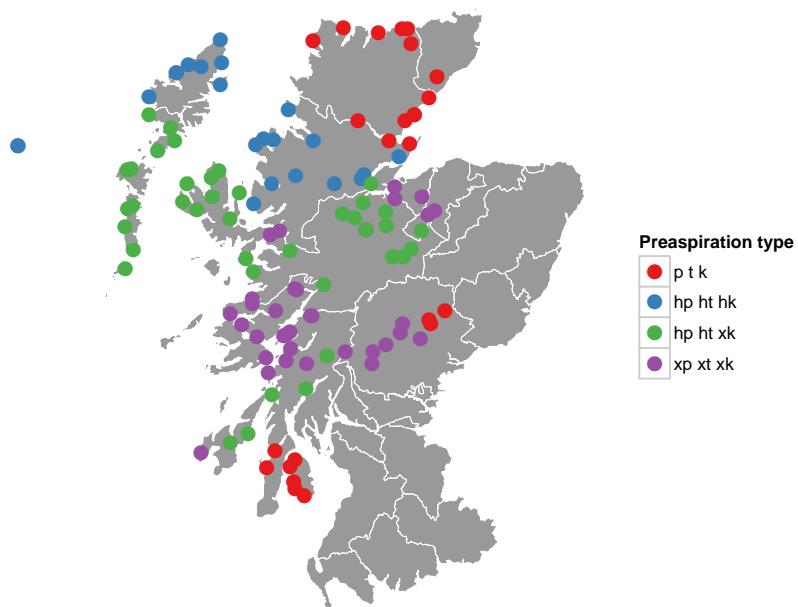
For discussion, see Ó Murchú (1985), Ní Chasaide & Ó Dochartaigh (1984), Ní Chasaide (1986), Bosch (2006), Ó Maolalaigh (2010), Clayton (2010)

- o. No preaspiration: most of Ireland, eastern and southern periphery in Scotland
  1. /<sup>h</sup>p <sup>h</sup>t <sup>h</sup>k/: Lewis, NW Scottish mainland, (*West*) Ulster (Ní Chasaide & Ó Dochartaigh 1984, Ní Chasaide 1986)
  2. /hp ht xk/: Western Isles south of Lewis, Skye, Inner Hebrides, parts of Ross-shire
  3. /xp xt xk/: Lorn, Lochaber, central mainland as far east as Banffshire on place-name evidence (Grant 2002)

## Reconstruction

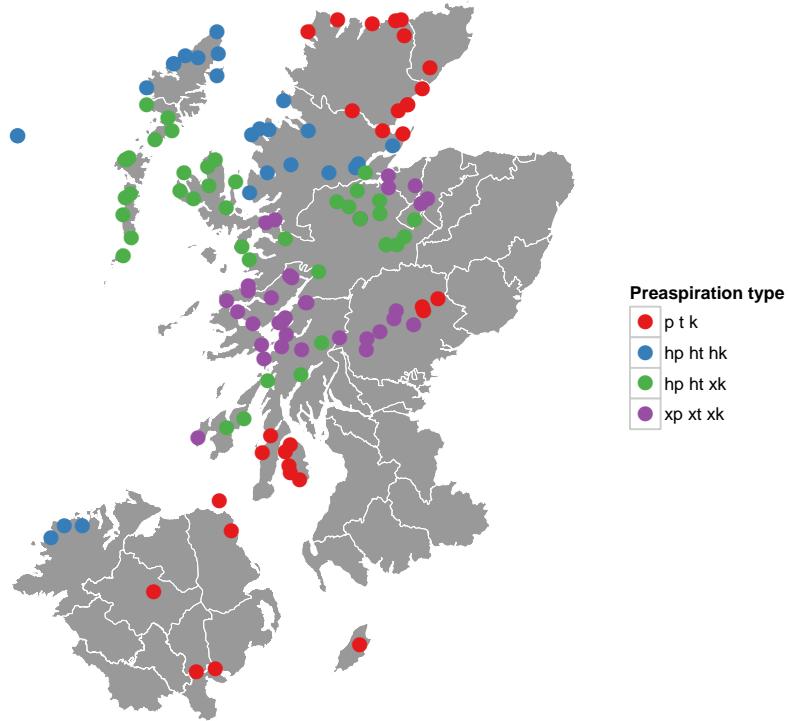
- Weak preaspiration (the 'Lewis' type) is the most archaic
  - Typological arguments (Ní Chasaide 1986, Silverman 2003, Clayton 2010)
  - Interaction between preaspiration and  $*xt \rightarrow xk$ : lack of *boc*—*bochd* merger in Lewis implies lack of  $xk \rightarrow hk$  sound change (provided the chronological assumptions hold)
- /hk/ becomes /xk/ for functional reasons: preaspiration is longest before [k] (Ní Chasaide 1986, Clayton 2010)
- Generalization of  $*h \rightarrow x$  before a stop

## The Scottish perspective



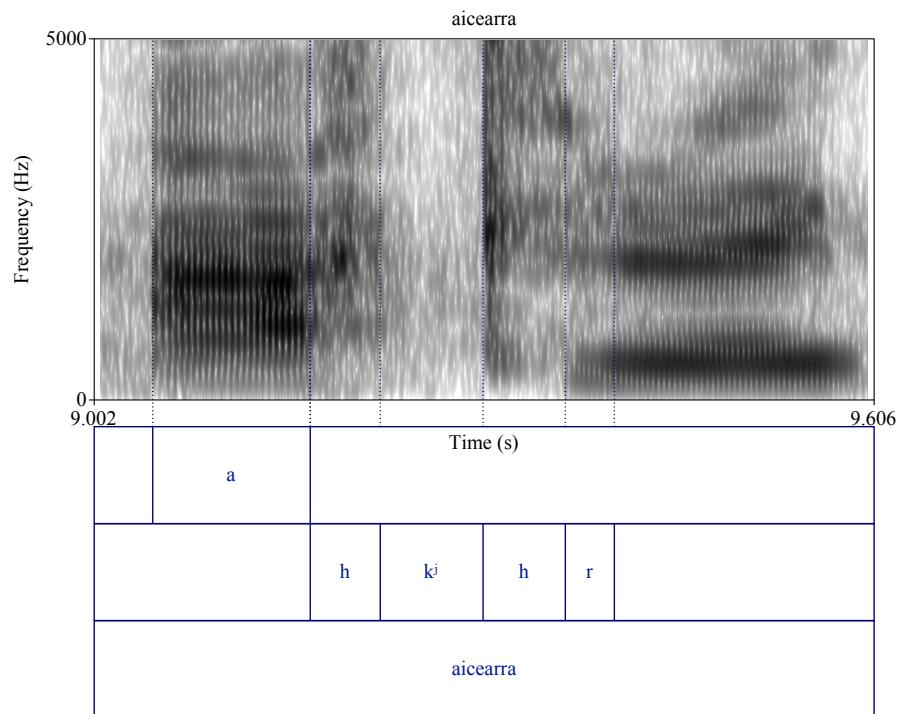
- Focusing just on Scotland, the spatial pattern is not immediately clear:
  - /hp ht hk/ is 'peripheral' on the islands, but intrudes far into the mainland
  - Both /hp ht xk/ and /hp ht hk/ are 'central' in some sense
- Several conceivable interpretations
- In particular, it is possible to see preaspiration spreading from the Western Isles to the east and south

## The Northern Gaelic perspective

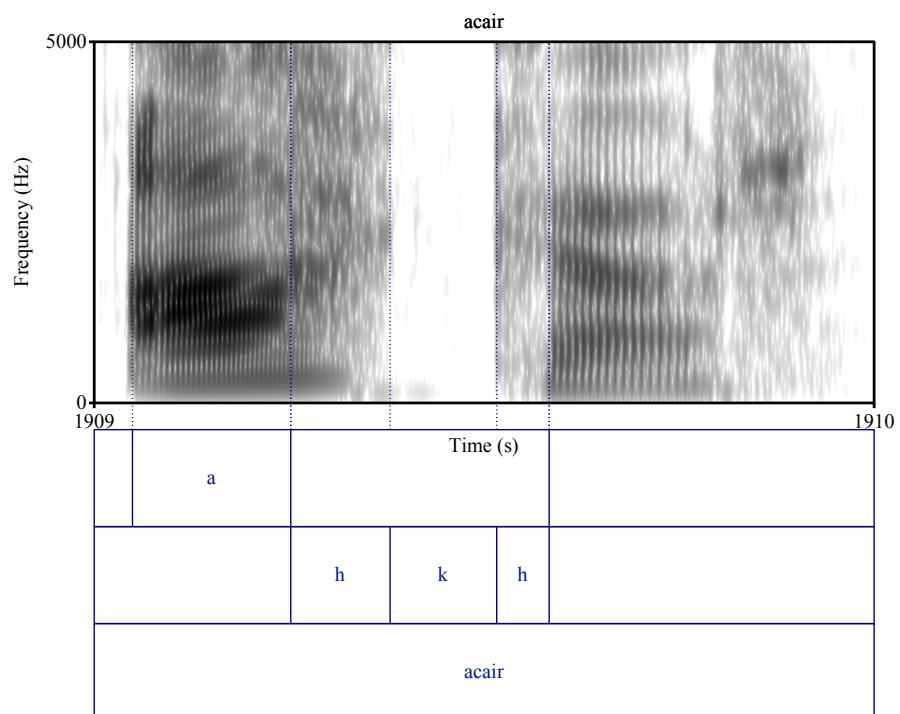


- In a pan-Gaelic perspective,  $/^h p \text{ } ht \text{ } hk/$  is clearly a *peripheral* pattern
- Preaspiration in Irish
  - Securely attested in Gaoth Dobhair (Ní Chasaide & Ó Dochartaigh 1984, Ní Chasaide 1986)
  - Possibly hiding behind some of the descriptions of ‘fortis’/‘lenis’ contrast, e.g. Teileann (Wagner 1959)?
- Perhaps less obligatory than in Scotland
- Crucially: Lewis and Irish preaspiration are of the same type and *unlike* that in  $/hp \text{ } ht \text{ } xk/$  dialects (Ní Chasaide 1986)
- $/^h p^h \text{ } ht^h \text{ } hk^h/$  vs  $/hp \text{ } ht \text{ } xk/$

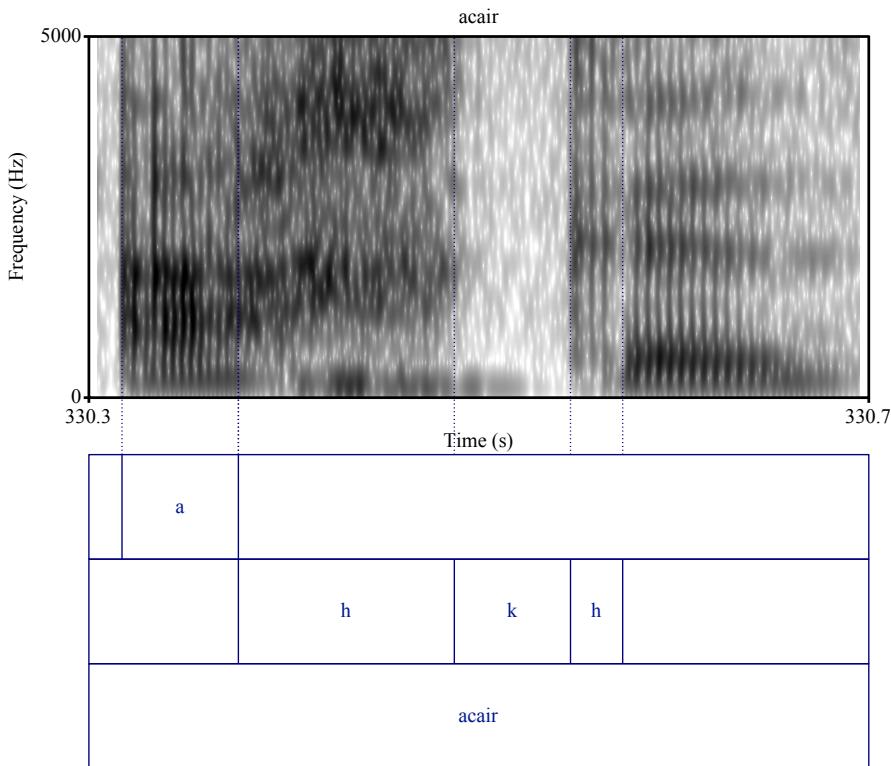
## Ulster Irish



### Lewis Gaelic



## North Uist Gaelic



## Mapping the interpretation

- Two possible interpretations:
  - Lewis and West Ulster show the same archaic feature
  - The developments in Lewis and West Ulster are independent but not far advanced
- ☞ Corollary: this kind of preaspiration is relatively easy to get
- ☞ Exactly this kind of preaspiration is attested in Welsh
- In either case: more advanced preaspiration systems should have gone through this stage!

## Discussion

- This map ignores potential *loss* of preaspiration in peripheral areas (cf. /p t xk/ system in SE Argyll)
- Even so: *some* form of preaspiration must have been current in *most* of the Northern Gaelic area
- ☞ For discussion of Northern Gaelic, see Ó Maolalaigh (1997), Ó Buachalla (2002), Ó Muircheartaigh (2014)
- The initial spread of preaspiration does *not* show a strong affinity with areas of extensive Norse settlement
- Interesting: persistence of archaic preaspiration, contra Silverman (2003)

## 1.2 Tone accents

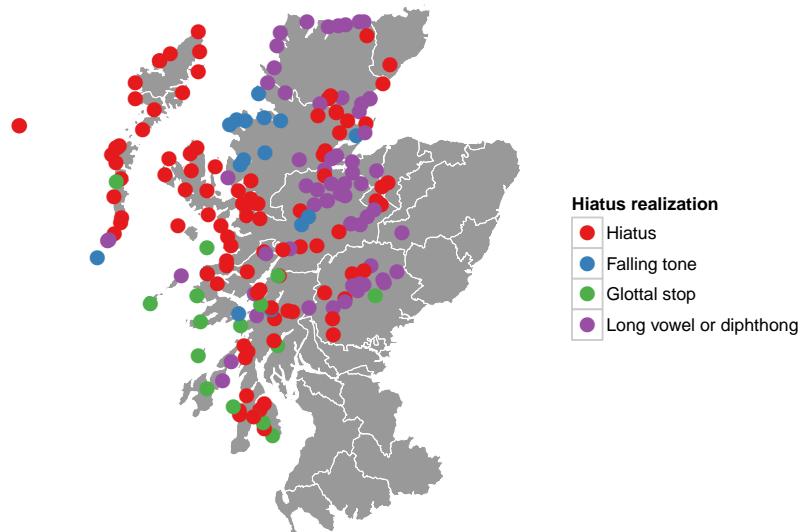
### Tonal accents in Gaelic

- See Borgstrøm (1974), Ternes (1980, 2006), MacAulay (1993), Brown (2009), Nance (2015)
- Lewis 'accent 1': early rise + fall
- Lewis 'accent 2': late rise, no fall
- Accent 1: historical disyllables
  - Hiatus words: *adha*
  - Plain disyllables: *balach*
- Accent 2: historical monosyllables
  - Plain monosyllables: *àth*
  - Svarabhakti words: *balg*
- Alternations: Lewis *leabhar* [<sup>1</sup>ʎɔ:r] vs *leabhraichean* [<sup>2</sup>ʎɔ:riçən]

### Diversity of realization

- Lewis: tonal accent as described (Oftedal 1956)
- Acoustic study of Ness by Brown (2009): L\* towards the end of stressed syllable, followed by intonational H (cf. Ladefoged et al. 1998, Ladefoged 2003)
- Applecross (Ternes 2006): additional falling onglide in accent 2, otherwise like Lewis (in isolation)
- SGDS transcriptions of hiatus (Ó Dochartaigh 1994–1997, vol. 1, §7.6.5)
  - /ʔ/: glottal stop (see also Holmer 1938)
  - /|/: 'salient hiatus'
  - /-/: 'hiatus with no glottal catch' (pitch? intensity?)
  - Two symbols that mostly represent falling tone

### Sample map: SGDS 474 *giuthas*



## Pitch and glottalization

- Glottalization can be reasonably connected with falling tone
- ☞ See Riad (2000), Hognestad (2007) for North Germanic, Kiparsky (forthcoming) for Finno-Ugric
- Falling tone across a syllable boundary presupposes a high tone towards the end of the first syllable
- But the high tone in Lewis is on the post-tonic syllable: why?

## Pitch in Ulster Irish

- Dalton & Ní Chasaide (2005)
  - Gaoth Dobhair nuclear accent is  $L^*+H$ ,  $H$  aligned at the right edge of phrase
  - Cois Fharraige: nuclear accent is  $H^*+L$ , left alignment of  $H$
- The Ulster nuclear accent is (again) similar to the Lewis  $L^*+H$ , except for the alignment of the trailing tone
- Ulster and Scotland show later peaks compared to Connacht and Munster
- Rising nuclear accents: typologically highly unusual (Köhnlein 2013)

## Peak delay

- Rightward drift of H tone: *peak delay* (Ladd 2008)
- Connacht/Munster H\*+L is the original system
- Northern Gaelic shows various stages of peak delay
  1. Lewis: trailing H on next syllable
  2. West Ulster: trailing H on right boundary
  3. Falls/creaks: right-drifting H runs into L

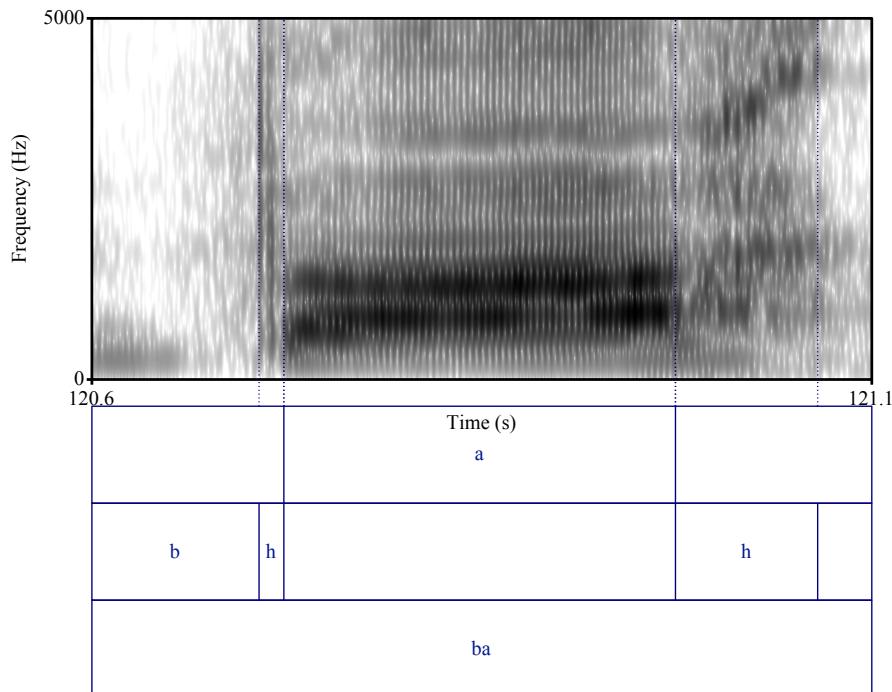
## Glottalization and stress-to-weight

- South Argyll: glottalization in all main-stressed light syllables: *teth, radan*
- But not *tapaidh* ['tʰahpi], *beò* ['pjɔ:]
  - Islay (Holmer 1938)
  - (South) Jura (G. Jones 2000, 2006, 2010)
  - Colonsay (Scouller 2015)
- Stress-to-weight (Smith 1999) generalized to all stressed syllables
- No glottalization when second mora present from another source
  - Consonant cluster
  - Preaspiration
  - Long vowel or diphthong

## Stress-to-weight elsewhere

- Ó Maolalaigh (2014) rounds up the evidence
  - ‘*Gestoflēne Silbe*’ in Ulster Irish monosyllables, especially Tyrone (Stockman & Wagner 1965, Hughes 1994)
  - [h]-epenthesis in light monosyllables all across Ulster
- Glottalization and/or aspiration of sonorants: *fear* [faɹ?], *darna* [da?Rnə] (G. Jones 2010) vs [darhnə] (Holmer 1938)
- ☞ This is more similar to the *stød* of Danish
- ☞ Although Danish also has varieties with *stød* on short vowels (Ringgaard 1960, Ejskær 1967)
- Consonants are commonly described as ‘fortis’ after short vowels in Ulster: might this be glottalization?
- Connection between glottalization and sonorant pre-stopping in Manx? Both after short vowels
- In Northern Sámi, some dialects have sonorant prestopping (Sammallahti 1998) corresponding to preglottalization in others (Bals Baal, Odden & Rice 2012)

### Gaoth Dobhair *ba*



- Epenthetic [h] is more difficult to connect to tone typologically
- Possible solution: S. Watson (1996), though see Ó Maolalaigh (2010)
- However, /h/-epenthesis in light syllables is unmotivated unless the stress-to-weight has already been established
- Stress-to-weight arises from tonal developments?

### Summary on glottalization

- Tones and glottalization all go back to peak delay
- Peak delay is a Northern Gaelic feature
- South Argyll, (East?) Ulster and Man: potentially most innovative area
- Lewis tone is *archaic*
- Peak delay is typologically *not* unusual
- ☞ Recurrent process in North Germanic (Bye 2004, Hognestad 2012)

## 2 Discussion

### 2.1 Preaspiration: why Norse?

Norse and Gaelic preaspiration

- Is the Gaelic stop system particularly similar to Norse anyway?
- Yes: Marstrander (1932), Oftedal (1947), Borgstrøm (1974)
- Special feature of the Gaelic stop system: contrast between (pre/post)aspirated and fully voiceless unaspirated (Ó Murchú 1985)
- This system in North Germanic: Icelandic, potentially SW Norway
- Preaspiration in North Germanic found in *other* systems (Pétur Helgason 2002, Pétur Helgason & Ringen 2008, Ringen & van Dommelen 2013)
- Icelandic preaspiration is *unusual* in a North Germanic context (Pétur Helgason 2002)
- Icelandic preaspiration is similar to *some*, but not *all* types of Gaelic preaspiration (Ní Chasaide 1986)

### The internal scenario

- Preaspiration is commonly found at least as an option in systems with postaspiration in stressed onsets
- ☒ English is relatively unusual: widespread foot-internal lenition (Honeybone 2012, Harris 2012), preaspiration attested even in non-contact contexts (Docherty & Foulkes 1999, M. J. Jones & Llamas 2003, K. Watson 2007, Gordeeva & Scobbie 2010, Hejná & Scanlon 2015)
- Northern Gaelic innovation: ‘non-normative’ preaspiration *across the entire area* (now West Ulster, Lewis) ⇒ ‘normative’ preaspiration (now Uist, North Argyll...)
- Parallel development in North Germanic: preaspiration is ‘normative’ in Iceland and bits of Norway (?) but mostly not

### Summary on preaspiration

- Old point 1: preaspiration *can* be an internal innovation (Ó Baoill 1980, Ní Chasaide 1986, Ó Murchú 1985, Ó Maolalaigh 2010)
- New point 1: preaspiration *must* have been Northern Gaelic in extent (adumbrated by Ó Maolalaigh 2010)
- ☒ No specific relationship to areas of Norse settlement
- Old point 2: Gaelic preaspiration isn’t a unified phenomenon, and only partially similar to Norse (Ní Chasaide 1986)
- New point 2: little evidence that Norse preaspiration *can* have been a source for Gaelic, let alone that it *must* have

## 2.2 Tone accents: why Norse?

### Why Norse?

- Typologically unusual: happy to talk about this (Iosad 2015)
- Borgstrøm (1974): Gaelic rising pitch is similar to Western Norwegian accents
- No wonder! Western Norwegian accent 2 has a later peak than accent 1 by peak delay (Hognestad 2012)
- Typologically almost trivial

### Peak delay: a Northern Gaelic feature

- By the same reasoning: various kinds of delayed peaks are common across the Northern Gaelic area
- ☒ Much more instrumental work needed to understand the hiatus realization (Brown 2009)
- ☒ However, peak delay must have covered areas like Ulster and all of Argyll, not generally associated with strong Norse influence
- The case is slightly less secure for lack of reliable data, but similar reasoning to above

### 2.3 The case for contact?

- Contact is impossible to deny in view of placename and lexical evidence
- Multiple causation of language change is *not* unusual (Thomason 2000, 2010)
- The early stages of the Gaelic innovations may have arisen at about the same time as the *early* stages of the relevant innovations in Norse
- ☒ This is contentious at least for tone (Riad 1998, 2003, 2005)
- ☒ No good understanding of the diachrony for preaspiration yet
- Some sort of (mutually?) reinforcing development is difficult to rule out at this stage — and probably undesirable?

### Summary

- Both preaspiration and tonal accents are pan-Northern Gaelic innovations
- Their distribution shows little cohesion with areas of strong Norse influence
- Similarities between relevant phenomena in North Germanic and Gaelic are explainable by typologically common processes
- Contact influence is difficult to exclude, but neither are the arguments for it particularly compelling

## References

Bals Baal, Berit Anne, David Odden & Curt Rice. 2012. An analysis of North Saami gradation. *Phonology* 29 (2). 165–212.

Borgstrøm, Carl Hjalmar. 1974. On the influence of Norse on Scottish Gaelic. *Lochlann* 6. 91–107.

Bosch, Anna R. K. 2006. Revisiting preaspiration: Evidence from the Survey of the Gaelic Dialects of Scotland. *Proceedings of the Harvard Celtic Colloquium* 26/27. 269–290.

Brown, Morag. 2009. *An investigation into prosodic patterns in the Ness dialect of Scottish Gaelic*. Edinburgh: University of Edinburgh MA (Hons) dissertation.

Bye, Patrik. 2004. Evolutionary typology and Scandinavian pitch accent. MS., University of Tromsø.

Clayton, Ian. 2010. *On the natural history of preaspirated stops*. Chapel Hill: University of North Carolina at Chapel Hill PhD thesis.

Dalton, Martha & Ailbhe Ní Chasaide. 2005. Tonal alignment in Irish dialects. *Language and Speech* 48(4). 441–464.

Docherty, Gerard J. & Paul Foulkes. 1999. Derby and Newcastle: Instrumental phonetics and variationist studies. In Paul Foulkes & Gerard J. Docherty (eds.), *Urban voices*, 47–71. London: Arnold.

Ejskær, Inger. 1967. *Kortvokalstødet i sjællandsk* (Udvalg for folkemaals publikationer. Serie A 22). København: Akademisk forlag.

Gordeeva, Olga B. & James M. Scobbie. 2010. Preaspiration as a correlate of word-final voice in Scottish English fricatives. In Susanne Fuchs, Martine Toda & Marzena Żygis (eds.), *Turbulent sounds: Interdisciplinary guide* (Interface Explorations 21), 167–208. Berlin: Mouton de Gruyter.

Grant, Seumas. 2002. Gaelic in Western Banffshire: The extent of Gaelic speech in 1881 and the nature of the Gaelic dialect spoken. In Nancy R. McGuire & Colm Ó Baoill (eds.), *Rannsachadh na Gàidhlig 2000: Papers read at the conference Scottish Gaelic Studies 2000 held at the University of Aberdeen, 2–4 August 2000*, 75–90. Obar Dheathain: An Clò Gaidhealach.

Harris, John. 2012. Wide-domain *r*-effects in English. *Journal of Linguistics* 49(2). 329–365.

Hejná, Michaela & Jane Scanlon. 2015. Pre-aspiration and glottalisation in English. Presentation at the 23rd Manchester Phonology Meeting, University of Manchester.

Hognestad, Jan K. 2007. Tonelag i Flekkefjord bymål. *Norsk lingvistisk tidsskrift* 25(1). 57–88.

Hognestad, Jan K. 2012. *Tonelagsvariasjon i norsk*. Kristiansand: University of Agder PhD thesis.

Holmer, Nils M. 1938. *Studies on Argyllshire Gaelic* (Skrifter utgivna av Kungliga Humanistiska Vetenskaps-samfundet i Uppsala 31). Uppsala: Almqvist & Wiksell.

Honeybone, Patrick. 2012. Lenition in English. In Terttu Nevalainen & Elizabeth Closs Traugott (eds.), *Handbook on the history of English: Rethinking approaches to the history of English*, 773–787. Oxford: Oxford University Press.

Hughes, Art J. 1994. A phonetic glossary of Tyrone Irish. *Zeitschrift für celtische Philologie* 36. 119–163.

Iosad, Pavel. 2015. An echoing tone: Pitch accent parallels in Scandinavia and Scotland. Presentation at the Nordic Research Network conference, University of Edinburgh. <https://anghyflawn.github.io/presentation/2015/an-echoing-tone-pitch-accent-parallels-in-scandinavia-and-scotland/>.

Jones, George. 2000. Beagan mu'n stad għlotasach ann an Gàidhlig Ceann a Deas Earraghaidheil. *Scottish Gaelic Studies* 20. 201–211.

Jones, George. 2006. Cunntas air an stad għlotasach ann an Gàidhlig Ceann a Deas Earra Ghàidheal. In Wilson McLeod, James E. Fraser & Anja Gunderloch (eds.), *Cànan & Cultar / Language & Culture: Rannsachadh na Gàidhlig* 3, 193–202. Edinburgh: Dunedin Academic Press.

Jones, George. 2010. *The Gaelic of Jura: A description*. Aberystwyth: Aberystwyth University PhD thesis.

Jones, Mark J. & Carmen Llamas. 2003. Fricated pre-aspirated /t/ in Middlesbrough English: an acoustic study. In Maria-Josep Solé, Daniel Recasens & Joaquin Romero (eds.), *Proceedings of the 15th International Congress of Phonetic Sciences*, 655–658. Barcelona: Universitat Autònoma de Barcelona.

Kiparsky, Paul. Forthcoming. Livonian stød. In Wolfgang Kehrein, Björn Köhnlein, Paul Boersma & Marc van Oostendorp (eds.), *Segmental structure and tone*. Berlin: Mouton.

Köhnlein, Björn. 2013. Optimizing the relation between tone and prominence: Evidence from Franconian, Scandinavian, and Serbo-Croatian tone accent systems. *Lingua* 131. 1–28.

Ladd, D. Robert. 2008. *Intonational phonology*. Cambridge: Cambridge University Press.

Ladefoged, Peter. 2003. Commentary: some thoughts on syllables — an old-fashioned interlude. In John Local, Richard Ogden & Rosalind A. M. Temple (eds.), *Papers in laboratory phonology VI*, 269–276. Cambridge: Cambridge University Press.

Ladefoged, Peter, Jenny Ladefoged, Alice Turk, Kevin Hind & St. John Skilton. 1998. Phonetic structures of Scottish Gaelic. *Journal of the International Phonetic Association* 28(1). 1–41.

MacAulay, Donald. 1993. The Scottish Gaelic language. In Donald Macaulay (ed.), *The Celtic languages* (Cambridge Language Surveys), 137–248. Cambridge: Cambridge University Press.

Marstrander, Carl. 1932. Okklusiver og substrater. *Norsk tidsskrift for sprogvitenskap* 5. 258–304.

Nance, Claire. 2015. Intonational variation and change in Scottish Gaelic. *Lingua* 160. 1–19.

Ní Chasaide, Ailbhe. 1986. *Preaspiration in phonological stop contrasts: An instrumental phonetic study*. Bangor: University College of North Wales PhD thesis.

Ní Chasaide, Ailbhe & Cathair Ó Dochartaigh. 1984. Some durational aspects of preaspiration. In Jo-Ann Higgs & Robin Thelwall (eds.), *Topics in linguistic phonetics: in honour of E. T. Uldall* (Occasional Papers in Linguistics and Language Learning 9), 141–157. Coleraine: The New University of Ulster.

Ó Baoill, Dónall P. 1980. Preaspiration, epenthesis and vowel lengthening: interrelated and of similar origin? *Celtica* 13. 79–108.

Ó Buachalla, Breandán. 2002. Common Gaelic revisited. In Nancy R. McGuire & Colm Ó Baoill (eds.), *Rannsachadh na Gàidhlig 2000: Papers read at the conference Scottish Gaelic Studies 2000 held at the University of Aberdeen, 2–4 August 2000*, 1–12. Obar Dheathain: An Clò Gaidhealach.

Ó Dochartaigh, Cathair (ed.). 1994–1997. *Survey of the Gaelic dialects of Scotland*. Dublin: Dublin Institute for Advanced Studies.

Ó Maolalaigh, Roibeard. 1997. *The historical short vowel phonology of Gaelic*. Edinburgh: The University of Edinburgh PhD dissertation.

Ó Maolalaigh, Roibeard. 2010. The sound of silence: Some structural observations on preaspiration in Scottish Gaelic. In Wilson McLeod, Abigail Burnyeat, Domhnall Uilleam Stiùbhart, Thomas Owen Clancy & Roibeard Ó Maolalaigh (eds.), *Bile ós chrannaibh: A Festschrift for William Gillies*, 365–404. Ceann Drochaid: Clann Tuirc.

Ó Maolalaigh, Roibeard. 2014. Glottal and related features in the Gaelic languages. Presentation at the 8th Celtic Linguistics Conference, University of Edinburgh.

Ó Muircheartaigh, Peadar. 2014. *Gaelic dialects present and past: A study of modern and medieval dialect relationships in the Gaelic languages*. Edinburgh: The University of Edinburgh PhD dissertation.

Ó Murchú, Máirtín. 1985. Varia VIII. Devoicing and pre-aspiration in varieties of Scots Gaelic. *Ériu* 36. 195–198.

Oftedal, Magne. 1947. Jærske okklusivar. *Norsk tidsskrift for sprogvitenskap* 14. 229–235.

Oftedal, Magne. 1956. *The Gaelic of Leurbost, Isle of Lewis* (A linguistic survey of the Gaelic dialects of Scotland 3). Oslo: W. Aschehoug & Co.

Pétur Helgason. 2002. *Preaspiration in the Nordic languages*. Stockholm: Stockholm University PhD thesis.

Pétur Helgason & Catherine Ringen. 2008. Voicing and aspiration in Swedish stops. *Journal of Phonetics* 36(4). 607–628.

Riad, Tomas. 1998. The origin of Scandinavian tone accent. *Diachronica* 15(1). 63–98.

Riad, Tomas. 2000. The origin of Danish *stød*. In Aditi Lahiri (ed.), *Analogy, leveling, markedness*, 261–300. Berlin, New York: Mouton de Gruyter.

Riad, Tomas. 2003. Diachrony of the Scandinavian accent typology. In Paula Fikkert & Haire Jacobs (eds.), *Development in prosodic systems* (Studies in Generative Grammar 58), 91–144. Berlin: Mouton de Gruyter.

Riad, Tomas. 2005. Historien om tonaccenten. *Studier i svensk språkhistoria* 8. 1–27.

Ringen, Catherine & Wim A. van Dommelen. 2013. Quantity and laryngeal contrasts in Norwegian. *Journal of Phonetics* 41(6). 479–490.

Ringgaard, Kristen. 1960. *Vestjysk stød*. Aarhus: Universitetsforlaget.

Sammallahti, Pekka. 1998. *The Saami languages: an introduction*. Kárásjohka: Davvi girji.

Scouller, Alastair MacNeill. 2015. Inter-related prosodic features in a dialect of South Argyll. Presentation at Teangeolaíocht na Gaeilge XV, Maynooth University.

Silverman, Daniel. 2003. On the rarity of pre-aspirated stops. *Journal of Linguistics* 39(3). 575–598.

Smith, Norval. 1999. A preliminary account of some aspects of Leurbost Gaelic syllable structure. In Harry van der Hulst & Nancy Ritter (eds.), *The syllable: Views and facts* (Studies in Generative Grammar 45), 577–630. Berlin: Mouton de Gruyter.

Stockman, Gerald & Heinrich Wagner. 1965. Contributions towards a study of Tyrone Irish. *Lochlann* 3. 43–236.

Ternes, Elmar. 1980. Scottish Gaelic phonemics viewed in a typological perspective. *Lingua* 52(1–2). 73–88.

Ternes, Elmar. 2006. *The phonemic analysis of Scottish Gaelic, based on the dialect of Applecross, Ross-shire*. 3rd revised. Dublin: Dublin Institute for Advanced Studies.

Thomason, Sarah G. 2000. Linguistic areas and language history. In Dickey Gilbers, John Nerbonne & Jos Schaeken (eds.), *Languages in contact*, 311–327. Amsterdam: Rodopi.

Thomason, Sarah G. 2010. Contact explanations in linguistics. In Raymond Hickey (ed.), *The handbook of language contact*, 31–47. Oxford: Blackwell.

Wagner, Heinrich. 1959. *Gaeilge Theilinn: Foghraidheacht, gramadach, téacsanna*. Dublin: Dublin Institute for Advanced Studies.

Watson, Kevin. 2007. Liverpool English. *Journal of the International Phonetic Association* 37 (3). 351–360.

Watson, Seosamh. 1996. Hiatus-filling /h/ in Irish and Scottish Gaelic dialects. *Scottish Gaelic Studies* 17. 376–382.