

# Preaspiration in North Argyll Gaelic and its contribution to prosodic structure

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## Outline of argument

- North Argyll & mainland preaspiration with [xp xt xk] is a real phenomenon
- North Argyll preaspiration allows us to establish neutralization of laryngeal contrast after a long vowel
- Preaspiration in Argyll varieties counts as a weight-bearing coda segment
- Phonological diversity within Gaelic may point to internal dynamics

## 1 North Argyll preaspiration

### 1.1 Preaspiration in Gaelic: basic facts

#### Laryngeal contrast in Gaelic

- Laryngeal contrasts in Gaelic (Ladefoged et al. 1998, Clayton 2010, Nance & Stuart-Smith 2013)
- 'Fortis' vs. 'lenis'
- Prevocalic: [p<sup>h</sup> t<sup>h</sup> k<sup>h</sup>] vs. [p t k]
- Postvocalic after a short vowel: [h<sup>h</sup>p h<sup>h</sup>t h<sup>h</sup>k] vs. [p t k]
- Postvocalic after a long vowel: [h<sup>h</sup>p h<sup>h</sup>t h<sup>h</sup>k] vs. [p t k], but with shorter preaspiration compared to short vowel context

## Dialect variation

- Ní Chasaide & Ó Dochartaigh (1984), Ní Chasaide (1986), Ó Murchú (1985), Grant (2002), Bosch (2006), Clayton (2010)
- ‘Preaspiration’ [h<sup>h</sup>p h<sup>h</sup>t h<sup>h</sup>k]: Lewis, mainland Ross-shire
- Partial ‘preaffrication’ [hp ht xk]: Outer Hebrides except Lewis, Skye, Islay, mainland Inverness-shire
- Across-the-board ‘preaffrication’/buccalization [xp xt xk]: N Argyll, Lochaber, W Perthshire, Banffshire

## Available evidence

- Traditional descriptions
- SGDS
- More recently instrumental studies (Ní Chasaide 1986, Ladefoged et al. 1998, Clayton 2010, Nance & Stuart-Smith 2013), but these focus on Western Isles/Skye
- Obligatory buccalization is typologically rare (Silverman 2003, Clayton 2010) and may involve homorganic fricatives: Fox [fp st çc]
- Homorganic fricatives occasionally attested in descriptions, including SGDS: *tapaidh* [t<sup>h</sup>aɸpi]

## 1.2 Acoustic study

### Our study

- Acoustic study of preaspiration in North Argyll Gaelic
- 4 speakers Isle of Lismore, 4 speakers Sunart (Strontian)
- Fortis and lenis stops
  - Palatalization of stop
  - Preceding vowel quality
  - Vowel length
  - Also after liquids
- Also stimuli with underlying coda [x] (e.g. *each, loch*)
- Attempted to find unambiguous (heteromorphemic) clusters, but these are rare

### Aims of study

- ☞ Verify the descriptions: is there oral frication? Is it dorsal or homorganic with following stop?
- Palatalization of the preaspiration: does it match the palatalization of the stop or the frontness of the vowel? Or both/neither?
- ☞ What is the realization of preaspiration after a long vowel in these dialects?

## Results at a glance

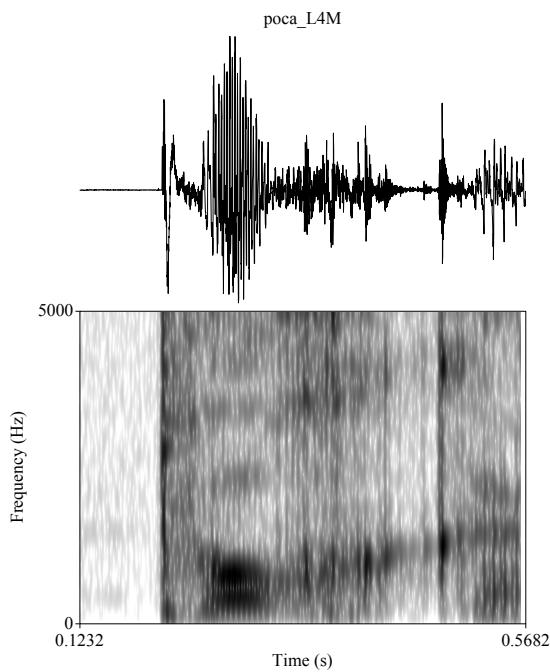
- Data analysis is ongoing
- Nature of frication: verified
  - Robustly dorsal frication across all places of stop
  - Velar or uvular
  - Intra-speaker variation in intensity (not understood yet)
- Preaspiration after long vowel: two possible outcomes
  - ‘Deaspiration’
  - Relexification with underlying fricative

## 2 Study results

### 2.1 Nature of frication

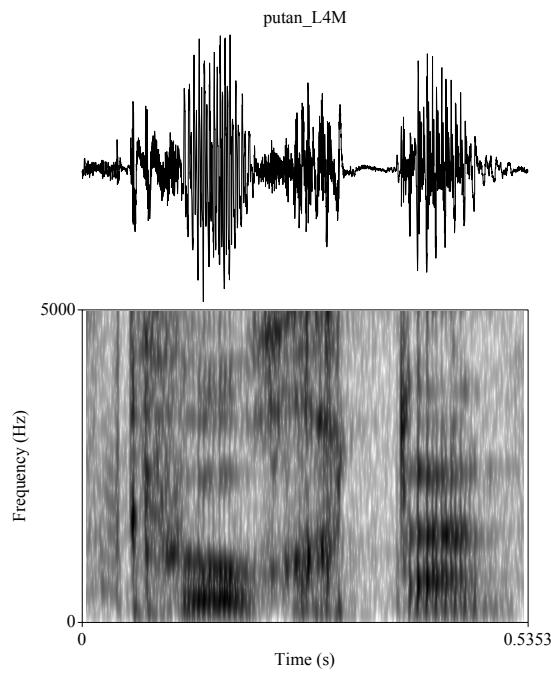
#### Velars

*poca* ‘pocket’



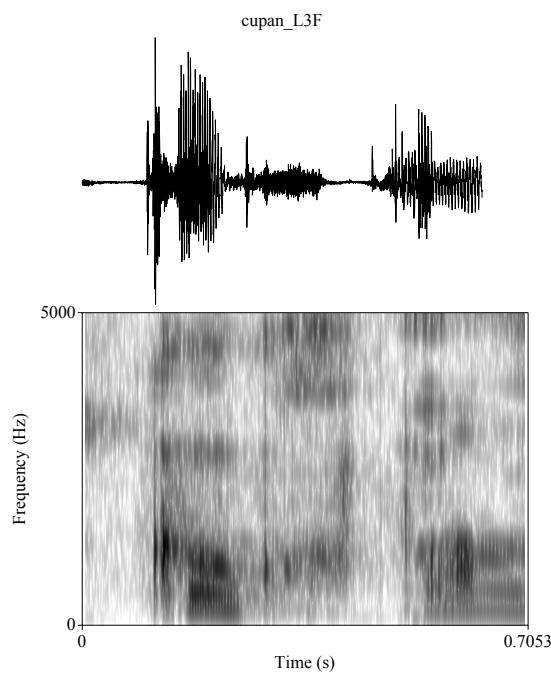
#### Coronals

*putan* ‘button’



### Labials

*cupan* 'cup'



## 2.2 Preaspiration after long vowels

### Existing descriptions

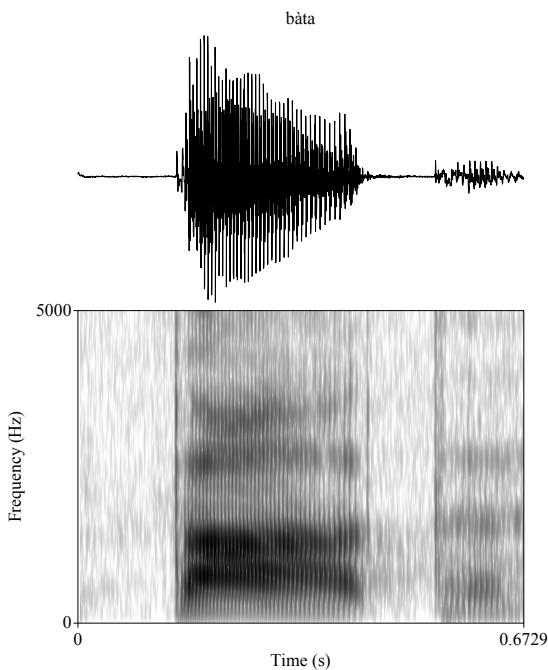
- Descriptions agree that preaspiration is appreciably shorter after long vowels and may even be absent ('deaspiration')
- However, descriptions (of other dialects) also agree that fortis stops in this position are (pre)aspirated, if perhaps in a variable manner
- Facilitated by the fact that (in relevant dialects) preaspiration after both short and long vowels is realized as glottal friction
- This is *not* the case for /xp xt xk/ dialects
  - Oral frication after short vowels
  - After long vowels (SGDS data): deaspiration (s.v. *bàta*, *mo bhàta*, *pàpa*) or robust friction (s.v. *ràcan*)

### The crucial point

In /xp xt xk/ varieties, glottal friction before a stop does *not* have to indicate preaspiration

### Results

- Broadly agree with SGDS: often no oral frication after a long vowel
- *bàta* 'boat'



## 3 The phonology of preaspiration

### 3.1 Preaspiration and foot structure

The proposal

- ‘Deaspiration’ of fortis stops after a long vowel represents an instance of weakly unconditioned deletion of |spread glottis|: lenition (Honeybone 2012)
- The feature |spread glottis| in stops is licensed by the foot
- ☞ Corollary: preaspiration in North Argyll Gaelic contributes a mora
- ☞ Corollary: if this analysis extends to other varieties, ‘weaker’ preaspiration in a V:<sub>C</sub> context is not the same phenomenon as in V<sub>-</sub>C

### Some assumptions

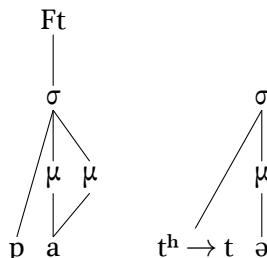
- Fortis stops in Gaelic are marked relative to lenis stops: we formalize this with a unary feature |spread glottis|
- Phonological processes can be ‘conditioned’ (triggered by their context) and ‘unconditioned’ (not triggered by a particular property of the context)
- Weakly unconditioned processes can be inhibited: this is *lenition* (Honeybone 2005, 2012)
  - Prosodic inhibition: position within the suprasegmental structure
  - Melodic inhibition: properties of other segments (e.g. geminate inalterability)
- Both kinds of inhibition found in Gaelic

### Prosodic inhibition

- Contrast between |spread glottis| and Ø stops
- Intact foot-initially: [t<sup>h</sup>a:v] *tàbh* vs. [tav] *damh*
- Intact after a short vowel: [pa<sup>h</sup>tə] *bata* vs. [fatə] *fada*
- Our claim: neutralized to Ø after a long vowel: [pa:tə] *bàta* (\*[par<sup>h</sup>tə]) = [l̪vu:tak] *lùdag* ‘little finger’
- Cf. Jones 2010 for a similar description
- Lenition: deletion of |spread glottis| because |spread glottis| is only licensed within the head foot

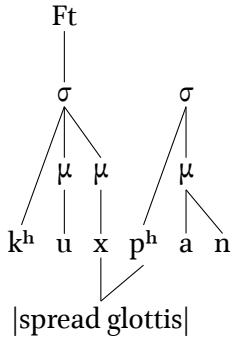
### Prosodic inhibition

#### (1) Foot structure of *bàta*



## Segmental inhibition

- (2) Structure of [k<sup>h</sup>uxpan] *cupan*



### The analysis

- The structure of *cupan* shows a mix of segmental and prosodic inhibition
  - Underlyingly |spread glottis| [p<sup>h</sup>] undergoes fission to produce (in this dialect) [x]
  - The |spread glottis| feature of [x] is licensed because it is in the head foot (prosodic inhibition)
  - |spread glottis| is not delinked from [p<sup>h</sup>] because of the double linkage (segmental inhibition)

Parallels

- Essentially the same situation in *linnæli* Icelandic (Jóhannes G. Jónsson 1994, Ringen 1999, Gunnar Ólafur Hansson 2003, Kristján Árnason 2011)
    - Contrast foot-initially: [tʰa:l] *tal* 'speech' vs. [ta:l] *dal* 'valley'
    - Contrast foot-internally: [kʰɔ:pɪ] *kobbi* 'young seal' vs. [kʰɔhpɪ] *koppi* 'chamber pot'
    - No contrast outside the head foot: [fata] *fata* 'barrel', \*[fa:tʰa]
    - Only real difference with Gaelic is weight-to-stress: *kobbi* has a geminate, Gaelic (apparently) does not (but cf. 'fortis'/'lenis' in Ulster Irish per Wagner 1959)
  - Danish (Basbøll 2005): [p<sup>h</sup> t<sup>h</sup> k<sup>h</sup>] only foot-initially, otherwise [p t k] only (or further developments)
  - English: Liverpool English stop lenition (Honeybone 2001), flapping in American & Ulster English (Honeybone 2012), [r]-deletion (Harris 2012) all foot-based

### 3.2 Foot structure in Gaelic

## Preaspiration and morae

- The analysis given above requires that preaspiration project a mora
  - This can be extended to other varieties of Gaelic
  - South Argyll Gaelic: Islay (Holmer 1938), Jura (Jones 2000, 2006, 2010), Colonsay (Scouller 2015), potentially also Manx (Ó Maolalaigh 2014)

- Glottal stop insertion

(3)	a.	[mɛ?]	<i>math</i>	'good'
	b.	[Ra?tan]	<i>radan</i>	'rat'

- Stress-to-weight (Smith 1999), or probably more precisely Main-to-Weight (McGarrity 2003, Bye & de Lacy 2008)

(4)	a.	['sru?]	<i>sruth</i>	'stream'
	b.	[sru-'tʃi:nəy]	<i>sruth-lionadh</i>	'flood'
	c.	'Cha bhi stad ann an lide nach eil fo phrìomh chudrom na h-abairt'	(Jones 2006, p. 198)	
				• Crucially, preaspiration in these varieties contributes a mora, making glottal stop insertion unnecessary
(5)	a.	['tʰahpi]	<i>tapaidh</i>	'clever'
	b.	['kʰohpan]	<i>cupan</i>	'cup'
				• The stress-to-weight effect is reminiscent of Ó Baoill (1980): prominence of stressed syllable

### 3.3 Prosodic structure in non-preaspirating dialects

#### Is there neutralization in other dialects?

- We suggest we don't know
- 'Preaspiration' noted after long vowels in sources
  - Gaelic lenis stops are actively devoiced, like in Icelandic or Danish, not partially voiced as in English or German
  - Thus, we expect some coarticulation between the vowels and the glottal spreading associated with the lenis stop
  - Breathy preaspiration before lenis stops even after short vowels (Nance & Stuart-Smith 2013)

☞ Just because there's a [h] in the transcription doesn't mean it's the same thing

#### Potential diagnostics

- One potential diagnostic is duration: if [ht] behaves like [st], this may be evidence of a moraic segment
  - Duration of preaspiration itself
  - VOT *after* the stop
- We know there is diversity across dialects on this (Ní Chasaide 1986, Iosad 2015)

### Coda: contact origins

- A reasonable hypothesis (Iosad 2015) is that the most archaic type of preaspiration (Lewis and Ulster Irish; see also Clayton 2010) is the one where preaspiration does *not* contribute a mora
- Phonologization: preaspiration goes from phonetic implementation to phonology by interacting with moraic structure
- Same internal development from Proto-Nordic to Icelandic (Pétur Helgason 2002)
- ☞ There is potentially no explanandum that requires exclusively Norse ⇒ Gaelic transfer

### Summary

- North Argyll Gaelic does demonstrate the /xp xt xk/ type of preaspiration
- Dialects such as these are important because they allow us to disentangle phonological preaspiration and vowel-consonant coarticulation
- Argyll Gaelic shows good evidence for moraicity of preaspiration
- Foot structure is important in Gaelic phonology: not just stress
- There may be a foot-based lenition pattern in Gaelic phonology
- Further evidence that contact explanations are not necessary

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