Variation in North Germanic preaspiration

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1 Preaspiration in North Germanic

1.1 Background

Background

- Most varieties of North Germanic: strict bimoraicity condition on stressed syllables (Riad 1992, Kristoffersen 2011), modulo extrametricality
  - ON *taka* [taka] 'take': No, Sw, Ic, Fa *
  - No *taket* [tɑːkə] 'the roof'
  - No *takke* [tɑkːə] 'to thank'
  - *[tɑːkːə]
- Laryngeal contrast: 'fortis' [p t k] vs. 'lenis' [b d g]
  - Fortis: aspiration foot-initially
  - Lenis: various realizations (Hutters 1985, Pétur Helgason & Ringen 2008, Ringen & van Dommelen 2013)
- No restriction on quantity: both fortes and lenes can be geminate

☞ *lapp* 'sheet' vs. *labb* 'paw'

Traditional view

- Preaspiration: rare cross-linguistically (Silverman 2003)
- Preaspiration in North Germanic: particularly geminate fortes in stressed syllables (Pétur Helgason 2002, Johnsen 2007)

- Icelandic and Faroese known to have it already in 19th century sources (Sweet 1877, Jakobsen 1886)
- Traditional dialect descriptions for Norwegian, see the overview in Pétur Helgason (2002)

Preaspiration in Norwegian

- North Gudbrandsdalen (e.g. Ross 1907)
- Senja (Iversen 1913)
- Jæren (Oftedal 1947, Wolter 1965)
- Trøndelag (Moxness 1997, van Dommelen 1998, Ringen & van Dommelen 2013)

1.2 The status of preaspiration

Kinds of preaspiration

Pétur Helgason (2002): 'normative' vs. 'non-normative' preaspiration
If the absence (or presence) of a particular phonetic trait leads to a pronunciation that is considered deviant by the speakers of a given dialect, that trait can be classified as normative (or normatively absent) in that dialect. Conversely, a trait whose absence or presence does not lead to deviant pronunciation can be classified as non-normative in that dialect.

The phonological status of preaspiration

- This is a sociolinguistic definition
- What are the system-internal consequences?
- Normative preaspiration is obligatory: but is it phonological?
  - Icelandic: yes, driven by synchronic considerations of weight
  - Faroese: probably yes, driven by synchronic considerations of weight, vowel quality…
- What is the phonological status of non-normative preaspiration?

1.3 Variation and change in preaspiration

Preaspiration and language change

- Pétur Helgason (2002): North Germanic develops from non-normative preaspiration to various systems:

  - No preaspiration: most traditional varieties *e silentiō*
  - Non-normative preaspiration: Central Standard Swedish
  - Normative preaspiration: Icelandic
  - West Jutland stød (see also Page 1997, Rießler 2004, Kusmenko 2008)
  - Postaspiration: Western Åland (Pétur Helgason 2002); Dalane (Oftedal 1947, but see below)
- How much change can we expect?

Diversity in North Germanic preaspiration

- Normative preaspiration
  - Difference in patterning after long vowels (*harðmæli* vs. *linmæli* Icelandic)
- Non-normative preaspiration
  - Presence of preaspiration controlled by preceding vowel height (reported for Faroese)
  - Presence of oral frication (Faroese)
  - Difference in patterning depending on vowel length
- Relationship between preaspiration and sonorant devoicing (Pétur Helgason 2002)?

2 Corpus evidence

2.1 Is there really no preaspiration in most dialects?

No preaspiration?

Tengesdal (2015: p. vii)

> I oktober 2012 skipa Lingvistisk studentforening til eit fyredrag med Rolf [Theil], med tittelen «Laryngal innstilling (laryngeal setting) ved plosivar i germanske språk. Synkrone og diakrone aspekt». Under fyredraget fann Rolf (og eg) ut at eg hadde preaspirasjon, og dette vart då kimen til denne masteruppgåva.

- Pétur Helgason (2002: 207): 'In this way the tendency to preaspirate, although it is not normative, permeates Scandinavian stop production.'

How reliable are the fieldworkers?

Oftedal (1947: 235)

> [Preaspirasjon] har nemleg òg halde seg i granneheradet mot aust, Bjerkreim (Dalane), der målet ikkje er jærsk, men av vestegdsk type. Det kan vera verdt å leggja merke til at tenues i Bjerkreim og i Dalane i det heile er postaspirerte i dei distinktive stillingane. Det heiter soleis *k'att', k'att'a* der Gjestal har *k'a^{h}tt, k'a^{h}tta.*

Tengesdal (2015: 138)

'Med den grundige akustiske analysen i kapittel 5 hev eg falsifisert denne påstanden […], og me ser då at fortes i Bjerkreim ter seg likt fortes som dei ifylgje Oftedal gjer i Gjesdal […] '

- The *very same* Oftedal (1956: 98–99), on Lewis Gaelic:

> The distinction $b \sim p$, $d \sim t$ etc. is a distinction between non-aspirated and aspirated stops… Preaspiration is… a voiceless interval after the voiced part of a preceding vowel, or devoicing of a preceding voiced consonants, before the closure of the stop… phonemic interpretation of the phonetic features: [k'aht] or [k'a^{h}t] *kat* 'cat'[1]

2.2 Preaspiration in phonetic corpora

Corpus studies

- Previous work on dialect corpora (SOFI, SWEDIA): Wretling, Strangert & Schaeffler (2002), Tronnier (2002), Pétur Helgason (2002)
- Here: Nordic dialect corpus (Johannessen et al. 2009)
- Recordings of conversations with representative dialect speakers all over Scandinavia
- Available in searchable form with recordings and processed acoustic data (waveforms, spectrograms, formant and pitch tracks)
- Rough phonetic transcription using (in this case) Norwegian orthography

[1] Personally, I cannot say I find the Lewis Gaelic preaspiration significantly more salient than the one in Jæren.

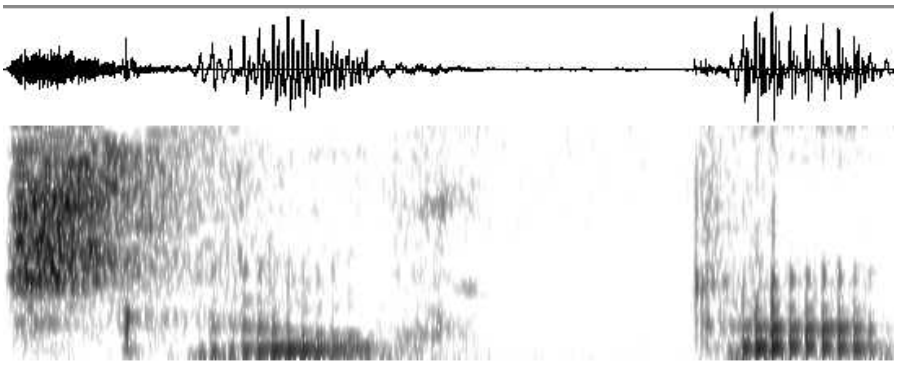

Figure 1: Valle, Setesdal, Aust-Agder fylke: [slʊʰtːa] (valle_03gm)

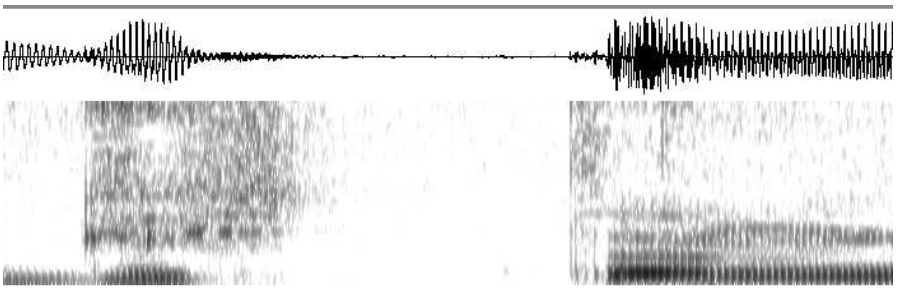

Figure 2: Evje, Setesdal, Aust-Agder fylke: [gʉʰtːɑn] (evje_02uk)

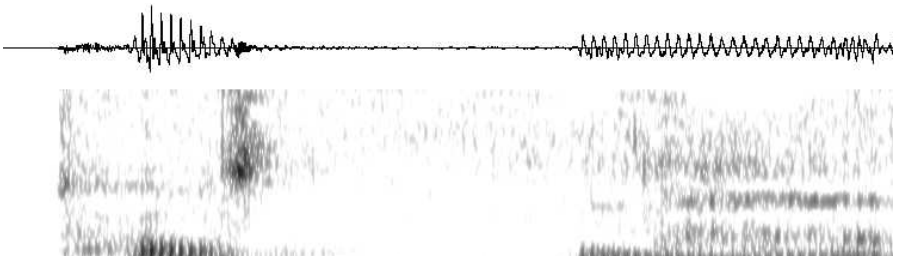

Figure 3: Kalvåg, Sunnfjord, Sogn og Fjordane fylke: [tʰɔˣtːnhæm] (kalvaag_-02uk)

Interim conclusion

- Some kind of (non-normative?) preaspiration seems to be common enough that we can easily find it in the corpus
- More evidence that reports of the *absence* of preaspiration might not be reliable

3 Acoustic study

3.1 Current study

Motivation

- Main interest: *variation across 'dialects'*
- Previous comparative work has mostly focused on duration: Wretling, Strangert & Schaeffler (2002), Tronnier (2002), van Dommelen, Holm & Koreman (2011)
- Pétur Helgason (2002): more information on other factors (distribution, interaction with sonorant devoicing)

Current study

- Western Norway (Jæren): widely regarded as a 'preaspirating' dialect
- Northern Norway (variety of regions): few if any reliable reports
- Word list: real words
  - Short vs. long vowels
  - Fortis vs. lenis stops, [s] for control
  - Labials vs. coronals vs. dorsals
  - Mono- vs. disyllables
  - Also: lC, NC, rC clusters with different C laryngeal specification
- Mostly balanced, though some conditions less available
  - [b d g] after long vowels
  - [b d g] after nasals

Mark-up

- In the phonetic literature, *preaspiration* tends to refer to both breathiness and voiceless preaspiration (e.g. Ní Chasaide 1986, Pétur Helgason 2002, Clayton 2010, Nance & Stuart-Smith 2013)

- Recent discussion in Hejná (2015): cannot assume that they have the same status
- Marked up separately

3.2 Results: incidence of preaspiration

How often do speakers preaspirate?

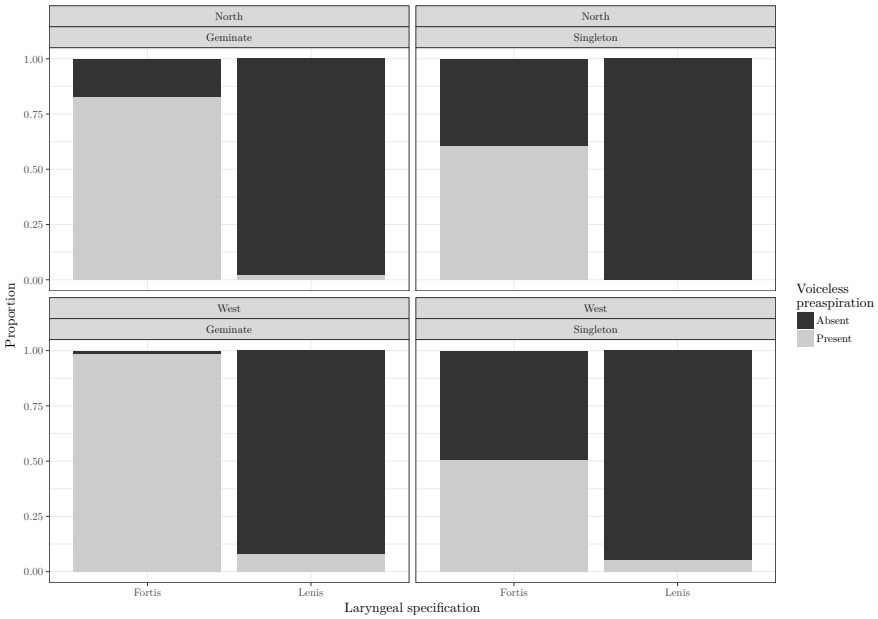

Figure 4: Voiceless preaspiration of stops by dialect and consonant length

Normative preaspiration in Norwegian?

- Preaspiration of *geminate* fortes is normative for western speakers
- Some northern speakers also show (near-)normative preaspiration of geminates

How many varieties?

- This is work in progress
- One way of looking at the data: *clustering*
- Fit a model that treats all effects as per-speaker random slopes: estimate of differences among speakers

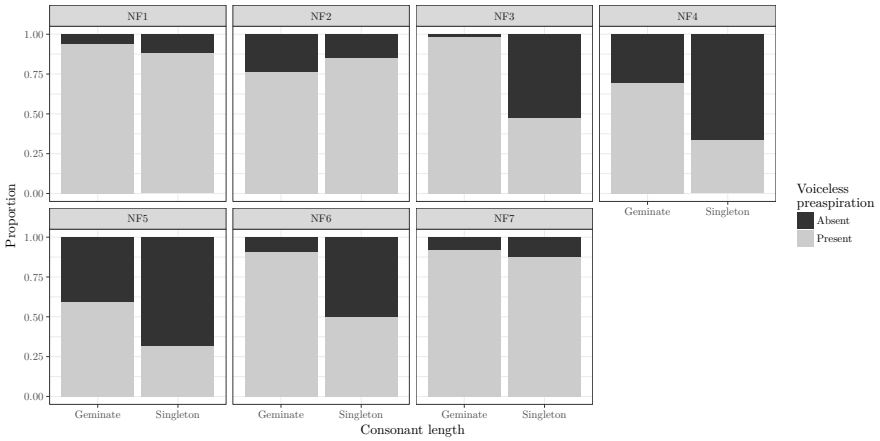

Figure 5: Preaspiration of fortes for northern speakers, by consonant length

- Here: modelling the *occurrence* of (voiceless) preaspiration in stops

```
fit <- glmer(p ~ 0 + (fortis + v_is_long + v - 1| speaker),
             data = stops,
             family = binomial(link=logit))
```

- Now take the random effects and conduct a clustering procedure
- Here: k-means clustering, best number of clusters is 5 by the 'elbow method'

Speaker	Cluster	Place of origin
NF1	1	Nordreisa
NF6	1	Øksnes
VF1	1	Stavanger
VF2	1	Bryne
VF3	1	Finnøy
VM1	1	Stavanger
NF2	2	Alta
NF7	2	Alta
NF4	3	Melbu i Vesterålen
NF5	3	Stokmarknes
VM2	4	Kvitsøy
VM3	4	Stavanger
NF3	5	Sørreisa

Table 1: Clustering of speakers by random effects

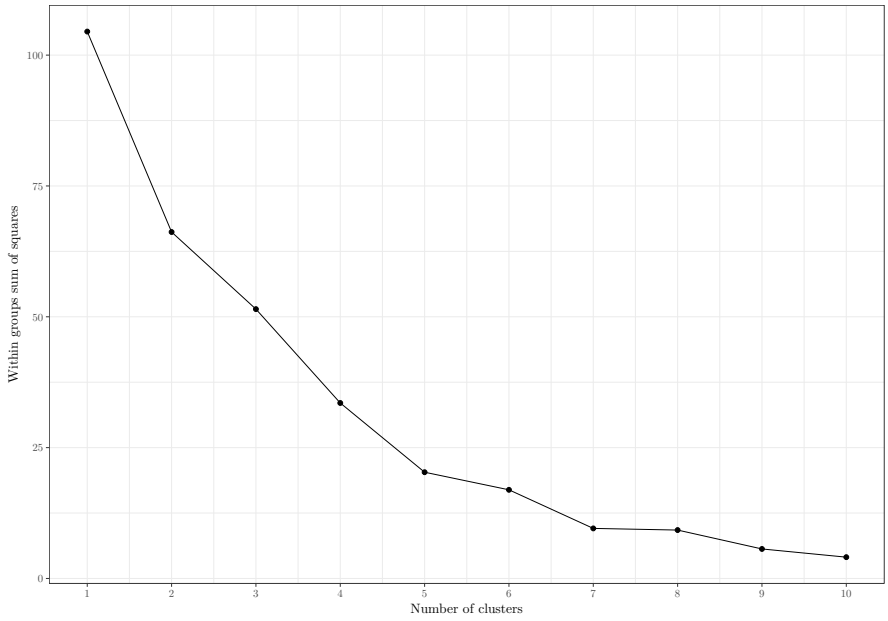

Figure 6: Within group sum of squares by number of clusters

- The ordering of the clusters is random, but some patterns seem to emerge
- Cluster 1 is the speakers who basically always preaspirate
- Clusters 2, 3 and 4 make geographical sense: some confidence in the method?

3.3 Norwegian laryngeal contrast: phonological analysis

Laryngeal realism?

- Laryngeal realism (Honeybone 2005 and much other work): Norwegian obstruents are |fortis| [p t k] vs. |∅| [b d g]
- Sources of evidence:
  - Phonological behaviour: Iverson & Salmons (1995, 2003), Spaargaren (2009)
  - Phonetic categoricity: Jessen & Ringen (2002), Ringen & Pétur Helgason (2004), Pétur Helgason & Ringen (2008), Beckman, Pétur Helgason, et al. (2011), Beckman, Jessen & Ringen (2013)
- Iosad (2017): phonological criteria > phonetic criteria

Laryngeal realism and lenis stops

- Problem: if lenis stops are |∅|, how are they realized phonetically?
  - Passive voicing: English (but see e. g. Docherty 1992, Scobbie 2006), German
  - Variable but frequent voicing: Trøndelag Norwegian (Ringen & van Dommelen 2013)
  - Categorical voicing: Central Standard Swedish (Pétur Helgason & Ringen 2008)
  - Categorical voicelessness: Icelandic (Magnús Pétursson 1976), Danish (Hutters 1985), Scottish Gaelic (Nance & Stuart-Smith 2013)
- Beckman, Jessen & Ringen (2013)
  - Categorical voicing equals phonological [voice]
  - Continuous [αs.g.] specification ($\alpha \in [0 \ldots 10]$) to allow/block passive voicing

Phonological evidence

- If the phonology specifies lenis stops as [αs.g.], $\alpha > 0$, what are the consequences?
- Alternative analysis
  - The |fortis| vs. |∅| distinction is robustly supported by phonological evidence (e. g. assimilation; Kristoffersen 2000)
  - The phonetic properties of |∅| are phonologically irrelevant
- 'Laryngeal realism' is right in noting the phonological asymmetry…
- … but wrong in tying phonetics too closely to phonology

Jæren lenis stops

- Jæren Norwegian has been previously described as having categorically voiceless lenis stops (Marstrander 1932, Tengesdal 2015)
- Same system as in Icelandic, Danish, Gaelic

Sonorant devoicing in Jæren

- All the Jæren speakers in the study have the uvular [ʁ]/[χ] as the categorical or overwhelming majority realization of the rhotic
- Gunnar Ólafur Hansson (2001), Pétur Helgason (2002): normative preaspiration associated with categorical voicelessness in [r]-stop and [lt] clusters
- Current data:

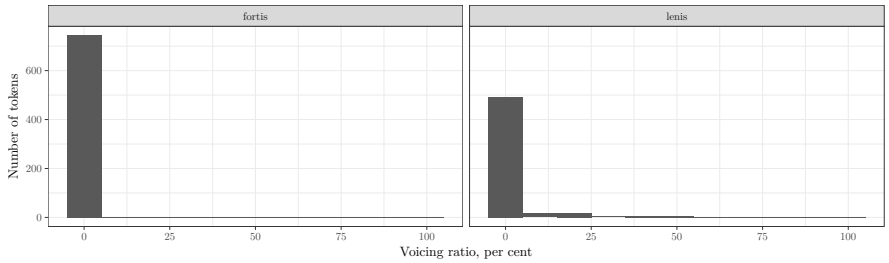

Figure 7: Distribution of the voicing ratio of stops, Jæren speakers

– Categorical assimilation of [ʁ]
– Variable assimilation of [l m n]

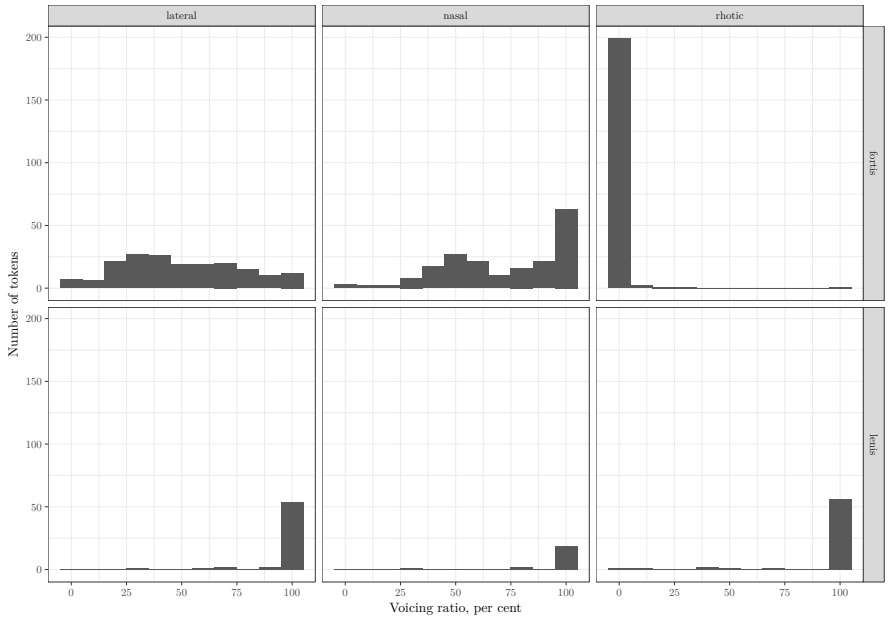

Figure 8: Histograms of voicing ratio of sonorants by manner and laryngeal specification of following stop, Jæren speakers

Analysis

- Fortis stops behave as expected in triggering phonological categorical assimilation of [ʁ]
- Fortis stops more likely to trigger phonetic gradient assimilation of [l m n]

- Lenis stops do neither, even if they are (partially) [s. g.]

Summary

- Phonological asymmetry is in line with the |fortis| vs. |∅| analysis
- Phonetic differences in [s. g.] are real but phonologically inert
- Support for more strongly substance-free position

Summary

- Preaspiration is attested (even) more widely than often assumed
- Lack of reports, especially in traditional descriptions, should not be taken to mean preaspiration is absent
- Significant amounts of variation across dialects
- Closer study of preaspirating varieties can (should?) inform theorizing about laryngeal features

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