Phonological variation as a window on covert structure

Gunnar Ólafur Hansson (Univ. of British Columbia)

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Roadmap

- Structural ambiguity: diphthongization and u-umlaut
- Structural ambiguity: V i̯ V sequences
- Structural variation: prosodic parsing of compounds
- Structure within variation: recurring “classes” in devoicing
- Afterthought: a future sociolinguistic variable?

Structural ambiguity: diphthongization and umlaut

Diphthongization before dorsal nasal [ŋ, ŋ̊] causes **neutralization** of phonemic **/a/** vs. **/au/** contrast; likewise for **/œ/** vs. **/øi/**

- e.g. *landar* [lantar], *langar* [l**au**ŋkar], cf. *nándar* [nauntar]
- e.g. *töskum* [tʰœskʏm], *tönkum* [tʰ**øi**ŋ̊kʏm], cf. *fauskum* [føiskʏm]

- U-umlaut **[a] – [œ]** alternations (in various morpho-phonol. contexts)
  - realized instead as **[au] – [øi]** alternations before [ŋ, ŋ̊]
  - but U-umlaut **does not apply** to phonemic/underlying **/au/**

Structural ambiguity: diphthongization and umlaut

U-umlaut is generally **NOT** variable (it's complicated, but not subject to idiosyncratic **lexical exceptions**, e.g. "non-umlautable" stems)

- But many words with diphthongized /a/ → [au] in ___ŋ(k)C contexts seem to show **variation** in undergoing u-umlaut
  - inf. *angra* vs. 1pl *öngrum* ~ *angrum*
  - inf. *hangsa* vs. 1pl *höngsum* ~ *hangsum*
  - inf. *dangla* vs. 1pl *dönglum* ~ *danglum*
  - m.nom.pl *hangnir* vs. dat.pl *höngnum* ~ *hangnum*
- Possible interpretation: **ambiguity** of surface [au] inviting **reanalysis** as (non-umlautable) /au/ instead of a realization of (umlautable) /a/
  - non-umlaut = **covert** reanalysis of the phonemic/underlying representation (/aŋkr-/ > /auŋkr-/, /haŋs-/ > /hauŋs-/, etc.)

Structural ambiguity: diphthongization and umlaut

Implications for ***vestfirskur einhljóðaframburður***?
("monophthongal pronunciation", NW Iceland)

- No diphthongization before [ŋ, n̊]
  - e.g. *langar* [l**a**ŋkar], *tönkum* [tʰ**œ**n̊kʏm]
    cf. "standard" [l**au**ŋkar], [tʰ**øi**n̊kʏm]
- Thus no surface **neutralization** with phonemic /au/, /øi/, etc.
  - and hence no **ambiguity** of surface V qualities in __ ŋ contexts
- If **covert reanalysis** account of variable u-umlaut is correct, consistently monophthongal NW speakers should **NOT** hesitate to apply u-umlaut to "variable" ___ ŋ(k)C stems (i.e. should **differ** from "standard" speakers)
  - i.e. should have consistent ***öngrum*** (not *angrum*), ***höngsum*** (not *hangsum*), ***dönglum*** (not *danglum*), etc.

Structural ambiguity: V j̯ V sequences

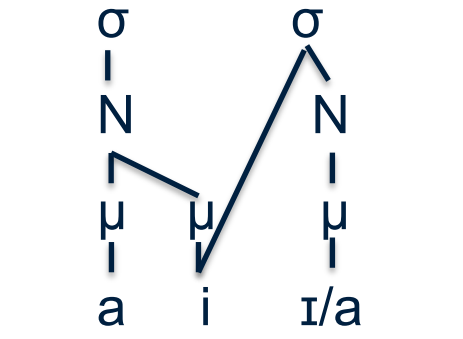
A number of (underlyingly/phonemically/orthogr.) distinct configurations, all realized as **phonetically equivalent**

- */ V j V /* (e.g. borrowings/hypocoristics with intervocalic /j/)
  - *Maja*, *Guja*, *soja*, *Toyota*, *nojari, Ryan*
- */ Vi V /* (/ai, ei, øi/ before V-initial ending)
  - *hræið*, *sveia*, *Gaui, tauið*
- */ Vi j V /* (/ai, ei/ + stem formative /j/ + V-initial ending)
  - *hlæja*, *eyja*
- */ Vi ɣ j V /* (/aiɣ, eiɣ/ + stem formative /j/ + V-initial ending)
  - *plægja*, *sveigja*, *teygja*
- */ Vi ɣ ɪ /* (/aiɣ, eiɣ, øiɣ/ + /ɪ/-initial ending)
  - *lægir*, *sveigir, teygir, laugin*
- */ V ɣ ɪ /* (/aɣ, ɛɣ, œɣ, ɔɣ, ʏɣ/ + /ɪ/-initial ending)
  - *lagir*, *vegir, lögin, bogi, tugir*

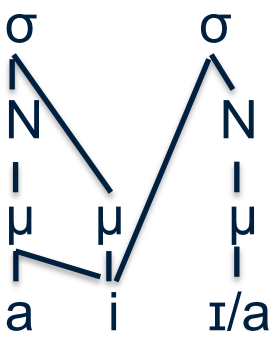
Structural ambiguity: V i̯ V sequences

What is the actual surface structure (syllabification, etc.)?

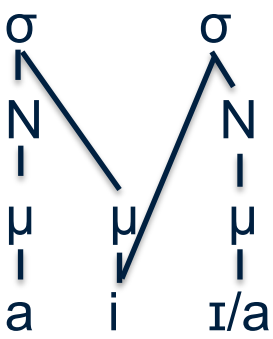
- Key assumption: “[i]”, “[j]” and diphthongal “[i]”-offglide are all **featurally identical**; difference merely in **syllabification**



= [aiː j ɪ] / [aiː j a]



= [ai jː ɪ] / [ai jː a]



= [a jː ɪ] / [a jː a]

σ_1 contains
[Vi] **diphthong**

σ_1 contains
[V] **monophthong**

Structural ambiguity: V j̥ V sequences

Implications for variation with regard to ***skaftfellskur einhljóða-framburður***? (“monophthongal pronunciation”, SE Iceland)

- **/ Vɣɪ /** → **[V:jɪ]** (instead of “standard” [Vj:ɪ] / [Vi:jɪ] / [Vij:ɪ])
  - e.g. *lagir* [la:jɪr], *vegir* [vɛ:jɪr], *lögin* [lœ:jɪn], *bogi* [pɔ:jɪ], *tugir* [tʰʏ:jɪr]
- If some degree of **intra-**speaker variation…
  - do the speaker’s varying/doublet representations involve a **monophthong** vs. a **dipthong**? (e.g. [a] vs. [ai], [ɛ] vs. [ei])
  - or do they involve a **short/singleton** vs. a **long/geminate** [j]?
- Indications (outside of this region) that ***/ɛi/*** has in fact been consistently **reanalyzed as */ei/*** in this / __ɣɪ / → [__ jɪ] context
  - transfer (levelling) of [ei] into forms where /ɣ/ → [j] doesn’t apply
    - e.g. *dreginn* [trei:jɪn]/[treij:ɪn] (hardly ?[trɛj:ɪn]) ‘drawn’, m.nom.pl *dregnir* [tr**ei**knɪr] (not *[trɛknɪr])
  - related to lower incidence of regional [ɛ:jɪ] vs. [a:jɪ], [ɔ:jɪ], etc.?

Varying structures: compounds and prosody

Phonological variability in compounding (and “Level 2” affixation, e.g. *X-legur, X-leiki*)

- Variable vowel shortening in 1st member with …**VC**#C…
  - may in turn trigger alternation in final **C** (e.g. devoicing)
  - but not quite like “true” word-internal contexts (e.g. stem-suffix)

raf#magn ‘electricity’	[raːvmakn̥] ~ [ravmakn̥]	
raf#lost ‘electric shock’	[raːvlɔst] ~ [ravlɔst]	(NB: not *[ra**pl**ɔst])
raf#bækur ‘e-books’	[raːvpaikʏr] ~ [ravpaikʏr]	
raf#tæki ‘electric appliance’	[raːvtʰaicɪ] ~ [ra**ft**ʰaicɪ]	(NB: not *[ra**ft**aicɪ])
raf#segul- ‘electromagnetic’	[raːvsɛɣʏl-] ~ [ra**fs**ɛɣʏl-]	(??[ra**vs**ɛɣʏl-])
raf#hlaða ‘battery’	[raːvl̥aða] ~ [ra**fl̥**aða]	(??[ra**vl̥**aða])

- Devoicing of /r/ (only!) and /v, ɣ/ (only!) before a [+spread glottis] C
  - but without deaspiration; also no hardening of /v, ɣ/ before /l, n/

Prosodic structure in compounds

Prosodic Hierarchy:

Intonational Phrase (IPh)

Prosodic Phrase (PPh)

Prosodic Word (PWd)

[? Prosodic Stem (PSt)]

[? Prosodic Root (PRt)]

Metrical Hierarchy:

(?)

Foot (Ft)

Syllable (σ)

Mora (μ)

Prosodic structure in compounds

Interpret as variation in how a compound is parsed into **prosodic constituents**?

- Long V in …VC#C… = final C is **extrametrical** (not syllabified)
  - extrametricality indicates that C is **PWd-final**
    = 1st member parsed as separate PWd
  - perhaps $[\ [\ \ldots\ ]_{PWd}$ # $[\ \ldots\ ]_{PWd}\ ]_{PWd}$
- Short V in …VC#C… = final C parsed as **(moraic) coda**
  - lack of extrametricality indicates that C is **PWd-internal**
    = 1st member **NOT** parsed as separate PWd
  - perhaps $[\ [\ \ldots\ ]_{PSt}$ # $[\ \ldots\ ]_{PSt}\ ]_{PWd}$
- Devoicing of /r, v, ɣ/ limited to PWd-internal contexts?
- Deaspiration (and hardening, etc.) limited to PSt-internal contexts?

Prosodic structure in compounds

Variation in **…VC#h…** cases

- Not long V ~ short V, but instead **preservation** vs. **deletion** of **/h/**

raf#hiti ‘electrical heating’	[raːvhɪtɪ] ~ [raːvɪtɪ]	(not *[ravhɪtɪ])
mál#hafi ‘lang. consultant’	[mauːlhavɪ] ~ [mauːlavɪ]	(not *[maulhavɪ])
cf. *mál#saga* ‘ling. history’	[mauːlsaɣa] ~ [maulsaɣa]	(short V)

- Possible account:
  - phonotactics: [h] restricted to **PWd-initial** position
  - dual-PWd parse: /h/ preserved, final C extrametrical (long V)
  - single-PWd parse: /h/ deleted, final C resyllabified (also long V)
- [[[m auː]$_{\sigma}$ (l)]$_{PWd}$ # [[h a]$_{\sigma}$ [v ɪ]$_{\sigma}$]$_{PWd}$]$_{PWd}$
- [[[m auː]$_{\sigma}$ [l # a]$_{\sigma}$ [v ɪ]$_{\sigma}$]$_{PWd}$

Structure within and across variation

Implicational hierarchy in ***raddaður framburður*** (“voiced pronunciation”, NE Iceland; Höskuldur Þráinsson 1980, Kristján Árnason 2005)

- T^h = phonemically/underlyingly [+spread glottis] plosive
  - /k(^{h})/ used as example (except /t(^{h})/ after /ɣ/)
- N = any nasal (/m/ used as example)
  - simplifying things quite a bit here;
    e.g. /l/ is more devoicing-prone before /t^h/ than before /p^h, k^h/

	N + T^h	l + T^h	r + T^h	ð + T^h	{ v, ɣ } + T^h
“Standard”	m̥k	l̥k	r̥k	θk	fk, xt
Type 1	m̥k	l̥k	r̥k	ðk^h	fk, xt
Type 2	mk^h	l̥k	r̥k	ðk^h	fk, xt
Type 3	mk^h	lk^h	r̥k	ðk^h	fk, xt

/r/ and /v, ɣ/ consistently devoice, across all varieties

Structure within and across variation

Mysterious recurring **“natural class”** with regard to laryngeal phonology

- **{ /r/**, **/v, ɣ/ }** in contrast to { /l/, /m, n, ŋ/, /ð/ }

Same “class” devoices before **ALL** [+spread glottis] segments

- before **/s/** (evident everywhere, e.g. before gen.sg. /-s/)
  - *spar#samur* [r̥s] vs. *lán#samur* [ls]; *lag-s* [xs] vs. *bað-s* [ðs'
- before **/θ, f/** (evident in borrowings and at compound boundary)
  - *morfín* [r̥f] vs. *alfa* [lf]; *af#þakka* [fθ] vs. *að#ferð* [ðf]
- before **/ç, l̥, n̥, r̥/** (evident at compound boundary)
  - *fjór#hjól* [r̥ç] vs. *vél#hjól* [lç]; *af#hlaup* [fl̥] vs. *að#hlaup* [ðl̥]
- before **/pʰ, tʰ, kʰ/ without deaspiration** (at compound boundary)
  - *for#könnun* [r̥kʰ] vs. *þol#könnun* [lkʰ]; *víg#tönn*[xtʰ] vs. *við#tal* [ðtʰ]
- before **/pʰ, tʰ, kʰ/ with deaspiration** (word-internally)
  - (see previous slide re: regional variation vs. consistency)

Structure within and across variation

A less mysterious, broader **natural class** w.r.t. laryngeal phonology:

- ***/r, l/*** (in contrast to /m, n, ŋ/) AND ***/v, ð, ɣ/***

All are subject to **utterance-final** (IPh-final?) **devoicing**

- e.g. *svar* [r̥], *val* [l̥], *haf* [f], *bað* [θ], *lag* [x]
    - BUT *draum* [m], *raun* [n] NOT *[trøim̥], *[røin̥]
    - that is, nasals are the most **resistant** to devoicing

Another place where “resistance” to voicelessness/devoicing may be emerging in **nasals** (vs. liquids + fricatives):

- word-initial /n̥/ is **acquired by children** much later, and less consistently
    - as compared to word-initial /l̥, r̥/ (and /ç/)
- e.g. ***hn****ífur,* ***hn****eta,* ***hn****útur* vs. ***hl****utur*, ***hr****inda*, ***hj****óla*
    - voiced [n] pronunciations frequent well into elementary school age

L1 acquisition of voiceless sonorants

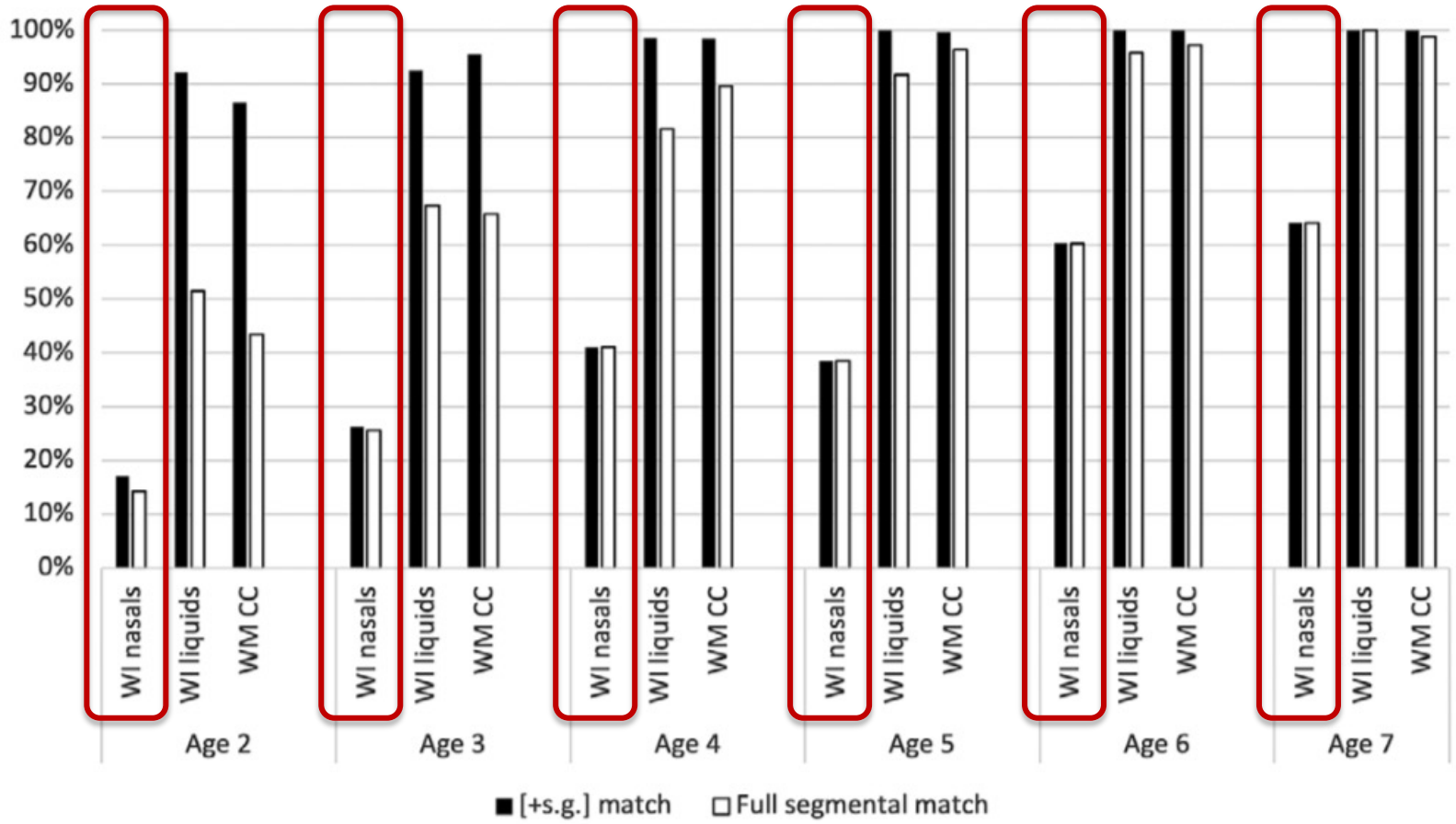


Figure 2. Percent [+s.g.] match and full segmental match for WI voiceless nasals and liquids plus WM sequences (CC) for all voiceless sonorants.

Másdóttir, Þ., B. M. Bernhardt, J. P. Stemberger & G. Ó. Hansson (2023) Acquisition of the feature [+spread glottis] in Icelandic. *Journal of Child Language.*

A future sociolinguistic variable?

To my knowledge, no one has attempted to track the acquisition timeline (production and/or perception) of word-initial /n̥/ **beyond** the ~7 yr age

- There is clearly rampant **"sociolinguistic variation"** in terms of word-initial **[n̥] ~ [n]** among 7-year olds
- What might we expect to happen if (when?) such variation persists into the **pre-teen** and **adolescent** age groups?
- Will a merger of word-initial /n̥/ > /n/ be the next **sound change** in the historical phonology of Icelandic?
    - (I think it's worth being on the lookout…)

Thank you!