English /aɪ/-raising: new insights into an old problem

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Session ❸ (Colloquium talk)
in Alternation types: computation, storage, history
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INTRODUCTION

§1 English /aɪ/-raising: the basics

(i) In many English dialects, the diphthongal phoneme /aɪ/ exhibits allophonic behaviour like the following:

\[ /aɪ/ \rightarrow \begin{cases} [a] & \text{e.g. sigh, sign, dive, side} \\ [i] & \text{e.g. life, sight} \end{cases} \]

This phenomenon used to be called ‘Canadian raising’ after its most famous and canonical instantiation in the Ontario dialect (Chambers 1973), but it is found in multiple dialects throughout the English-speaking world (see Moreton 2016: 17 for a list, with references), and it continues to arise through sound change in new dialects (e.g. Berkson et al. 2017, Davis et al. 2019).

(ii) The usual analysis of the diachronically mature, phonologically categorical version of this allophonic pattern is that it involves raising triggered by a following voiceless obstruent under certain prosodic conditions:

\[ aɪ \rightarrow aɪ / _[-\text{voice}] \] under certain prosodic conditions


(iii) Under this analysis, the overapplication of raising before flapped /t/ in words like writer and title involves a counterbleeding interaction between raising and /aɪ/-flapping (e.g. Halle 1962):

<table>
<thead>
<tr>
<th>rider</th>
<th>writer</th>
<th>idle</th>
<th>title</th>
</tr>
</thead>
<tbody>
<tr>
<td>UR</td>
<td>/aɪdə/</td>
<td>/aɪdə/</td>
<td>/aɪdə/</td>
</tr>
<tr>
<td>raising</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>flapping</td>
<td>aɪəɪ</td>
<td>aɪəɪ</td>
<td>aɪəɪ</td>
</tr>
</tbody>
</table>

§2 Why /aɪ/-raising matters

English /aɪ/-raising has played a prominent role in key debates in phonological theory:


(ii) on lexical abstractness e.g. Hall (2005), Farris-Trimble & Tessier (2019), etc.

(iii) on acquisition e.g. Bermúdez-Otero (2003), Hayes (2004), Pater (2014), etc.


§3 Today’s agenda

In this talk, I use evidence from English /aɪ/-raising as a parade example of the explanatory power of an approach to phonological alternations that combines three elements (◼️):

(i) contemporary constraint-based Stratal Phonology (Bermúdez-Otero 2018 and, specifically on /aɪ/-raising, Bermúdez-Otero 2003),

(ii) a theory of lexical storage in which stem-level outputs are listed nonanalytically (Bermúdez-Otero 2012: §2.3, Bermúdez-Otero 2013),

(iii) an understanding of the diachronic life cycle of phonological processes (Bermúdez-Otero 2015 and, specifically on /aɪ/-raising, Bermúdez-Otero 2014, 2017).

This is the topic of my Brugmann Fellow course: www.bermudez-otero.com/research.htm#Leipzig

§4 Preview

The talk makes the following points:

(i) Synchronically, the opacity of the diachronically mature, phonologically categorical version of /aɪ/-raising follows automatically from the affiliation of the process to the stem level: I show this through an analysis of the canonical Ontario pattern (Chambers 1973).

(ii) Since mature /aɪ/-raising is stem-level and sustains lexical exceptions, Chung’s Generalization predicts cyclic misapplication of /aɪ/-raising within stem-level forms: I corroborate this prediction with new data from Mississippi (Moreton 2016), and I explain the irregular nature of these cyclic misapplication effects in terms of lexical storage.

(iii) /aɪ/-raising always applies before flapped /t/—even in its incipient, phonetically gradient stage—because it first emerges as a phonetic enhancement of prefortis clipping, which is stem-level: I show that this diachronic account of /aɪ/-raising explains the pattern of rule generalization recently observed in Fort Wayne, Indiana (Davis et al. 2019).
(iv) Finally, improving the proposals of Bermúdez-Otero (2003), I sketch a non-stipulative account of the acquisition of free-ride derivations in dialects with mature /a*/-raising:

| e.g.   | idol /a*dəl/ → [a*ədəl]  |
| title /a*ta*til/ → [a*ta*til] |

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### THE CANONICAL ONTARIO PATTERN: OPACITY THROUGH STRATIFICATION

The canonicity of the Ontario pattern

§5 Data from /a*/-raising in Ontario are particularly valuable because, in this dialect, the process is

(i) exhaustively described
(ii) categorical
(iii) already established in the late 19th century;
(iv) sociolinguistically stable • no differences in application between the 1970s and today, aside from variation in respect of fronting of the nucleus; • remarkably identical pattern across the rest of Canada.


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### Prosodic conditions on Ontario /a*/-raising

§6 The phonological environment of Ontario /a*/-raising in a nutshell

<table>
<thead>
<tr>
<th>π</th>
<th>(where π ≤ o*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>s</td>
<td>w</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>[-voice]</td>
<td></td>
</tr>
</tbody>
</table>

(i) Raising is triggered by a following voiceless consonant (Cʘ):

| e.g.   | write [sait] cf. ride [zaud]  |
| knife [naul] cf. knives [nauvz] |

(ii) The trigger Cʘ must be in a weak branch of the lowest prosodic node dominating both trigger and target:

i.e. in the coda

| cite [sait] |
|---|----------------|

| cycle [sai.kal] |

in the a onset of a following weak syllable

| niträt [na*tər] |

in the onset of a following weaker foot

| niträt [na*tər] |

but not in the onset of a following stronger foot

| citations [na*təs] |

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### Excursus: against the ambisyllabic analysis

Paradis (1980) and Chambers (1989: §2) propose that raising is triggered by a tautosyllabic Cʘ.

Key assumption: ambisyllabic à la Kahn (1976).

| cite [sait] |

| cycle [sai.kal] |

(Coda Capture)

This analysis incurs a fatal paradox:

(i) In the canonical Ontario pattern, raising applies to niträt [na*tər]: see §6ii.

Therefore, the /t/ of niträt must be ambisyllabic in Paradis’s analysis.

Therefore, secondary stress on the following syllable must not block Coda Capture.

(ii) If secondary stress on the following syllable does not block Coda Capture, then intervocalic /t/ is ambisyllabic in words like phöten [foat*ən].

But, in the Kahnian approach to English syllabification, intervocalic /t/ flaps if ambisyllabic.

Therefore, the ambisyllabic approach to Canadian raising predicts that the /t/ of phöten flaps.

See footnote.

This prediction is incorrect: the /t/ of phöten never flaps.
The stratal affiliation of Ontario /a*/-raising

§8 Ontario raising underapplies before word-level suffixes (Bermúdez-Otero 2003):
e.g.  

cycle-ful  ['kaful],  *[aful]  cf. Eiffel  ['aful]  

Frau-ship  ['fluʃip],  *[fluʃip]  

:: The conditions of application for Ontario raising are determined at the stem level.

• Not an effect of secondary stress on the affix: cf. nitrète ['na.tret].
• Not an effect of an ω-boundary between stem and affix: see Bermúdez-Otero (2011: §4).


Opacity through stratification

§9 I assume Kiparsky’s (1979: 437) analysis of flapping (see also Jensen 2000):

hit Ann

e.g.  

/hut/  

• at the word level, obstruents become [lax] if not foot-initial  

• at the phrase level, lax [c] or [d] flap between in the environment [V,a]_V

huren

Flapping must be phrase-level because its domain straddles word boundaries.

See e.g. Kaisse & Shaw (1985: 4), among many others.

§10 :: Stem-level raising must apply before, and be counterbled by, phrase-level flapping.

<table>
<thead>
<tr>
<th>rider</th>
<th>writer</th>
<th>idol</th>
<th>title</th>
</tr>
</thead>
<tbody>
<tr>
<td>/sa*al/</td>
<td>/sa*al/</td>
<td>/as*al/</td>
<td>/ta*al/</td>
</tr>
<tr>
<td>§ L raising</td>
<td>—</td>
<td>—</td>
<td>ta*al</td>
</tr>
<tr>
<td>§ L flapping</td>
<td>azt*</td>
<td>azt*</td>
<td>azt*</td>
</tr>
</tbody>
</table>

Chung’s Generalization derived as a theorem

If a phonological property is cyclically inherited by stem-level derivatives, then it is contrastive (fully or marginally) in underived items, and vice versa.

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§12 In Stratal OT (Bermúdez-Otero 2010, 2011, 2018; Kiparsky 2000, 2015), faithful preservation of a phonological property during a cycle requires high-ranking faithfulness.

§13 But, by Richness of the Base, high-ranking faithfulness in the stem-level phonology predicts contrast, whether full (phonemic opposition) or marginal (lexical exceptionality):

§14 Chung’s Generalization

If a phonological property is cyclically inherited by stem-level derivatives, then it is contrastive (fully or marginally) in underived items, and vice versa.

§15 Lexical exceptions to the normal /a*/-raising pattern have been observed in many dialects:

(i) Some exceptions involve the unexpectedallophone of /a/ before a flap:

• unraised /a/ before etymological /t/-flaps in  
  neuritis, colitis  
  (Vance 1987: 200)

• raised /a/ before etymological /d/-flaps in  
  cider  
  (Vance 1987: 201, Fruehwald 2007: 89)
  spider  
  (Vance 1987: 201, Fruehwald 2007: 89)
  tidy  
  (Fruehwald 2007: 89, Moreton 2016: 40)

These could be explained away as involving lexical redistribution of underlying /t/ and /d/.

§16 The stem level is internally cyclic (§16-§19): each stem-level affix triggers a cycle of the stem-level phonology.

E.g. pretonic secondary stress

[asil, sil, imagine]  ation  

1st cycle  imagine  

2nd cycle  imagination  

cf. nonecyclic pretonic stress in monomorphemic abracadabra, délicatessen, Méditerranéen, etc.
(ii) But some exceptions involve /a*/ before segments other than flaps:

- unraised /a*/ before fortis obstruents in
  - nice (Vance 1987: 200)
  - bison \[b_\text{sn̩}\] (Vance 1987: 200)
- raised /a*/ before lenis obstruents or sonorants in
  - cyber (Fruehwald 2007: 89)
  - tiny (Fruehwald 2007: 89)
  - tiger (Vance 1987: 201, Moreton 2016: 41)

§16 Exceptions of the f[ai]ger type require the stem-level ranking IDENT-height \(\gg\) *ai:

<table>
<thead>
<tr>
<th>/taipa/</th>
<th>(\Delta \Sigma)</th>
<th>IDENT-height</th>
<th>*ai</th>
</tr>
</thead>
<tbody>
<tr>
<td>taipa</td>
<td>(\Delta \Sigma)</td>
<td>IDENT-height</td>
<td>*ai</td>
</tr>
<tr>
<td>taipa</td>
<td>(\Delta \Sigma)</td>
<td>IDENT-height</td>
<td>*ai</td>
</tr>
</tbody>
</table>

§17 But the stem-level ranking IDENT-height \(\gg\) *ai predicts cyclic overapplication of /a*/-raising in stem-level derivatives:

- typ-ology

  1\text{st} cycle: taipa

  2\text{nd} cycle: taipoladyc

  Where are the predicted cyclic misapplication effects?


Mississippi /a*/-raising confirms the predictions of Chung’s Generalization

§18 The Mississippi pattern of /a*/-raising (Moreton 2016) is largely like the canonical Ontario pattern, except

- Somewhat different ‘Southern’ phonetic realizations: unraised [æ], hereafter \(<^>\>
  - dum /da’mb.krə/ "A slow-witted or stupid person" (OED\(^2\): sub voce).
- Following secondary stress blocks raising: e.g. \(\text{py}^\text{th}b[ai]c\) (the snake)

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\[\pi\] \(\leq\text{Fe}^{\text{max}}\)

This is just a less general version of §6:

see Bermúdez-Otero (2015: §22.3.1) for the prosodic hierarchy as a dimension of rule generalization.

§19 Crucially, as in Ontario, there is no raising pretonically:

e.g. \(\text{cri}_\text{térion}, \text{Ly}_\text{sander}, \text{M}_\text{çéne}, \text{ty}_\text{cson}, \text{etc.}\)

§20 Moreton reports morphologically driven overapplication in pretonic position in a number of instances:

§21 Irrelevant evidence: neologisms involving stem-level affixes added to native bases

- \(\text{f}l\text{gh}^\text{th}-\text{dology}, \text{l}gh^\text{th}-\text{résis}, \text{ur}^\text{th}-\text{p-ation}, \text{ur}^\text{th}-\text{t-ión}, \text{etc.}\)

Why? Because of what I will call the ‘botheration-syndrome’ (❹).

Treating low-productivity stem-level affixes as fully productive, violating their selectional restriction to learned bases, triggers word-level behaviour.

E.g. • \(\text{dumb\-dracy} [\text{da}’\text{m.b}.\text{kaz}.\text{s}i]\) "Dumbocracy (duh’mock’rasheeecceeeeee) is the most widespread form of government in the whole wide world and its environs.”

http://uncyclopedia.org/wiki/Dumbocracy

Note the humorous flavour.

cf. \(\text{dumb-}a’ [\text{d}m.\text{b}.\text{a}]^\text{e}’\) "A slow-witted or stupid person" (OED\(^2\): sub voce).

- \(\text{h}^\text{b}\text{sn}-\text{Latin}e\text{c} \rightarrow \text{h}^\text{b}\text{sn}-\text{t}^\text{f}^\text{y}\) (stem-level weak retraction)
- \(\text{m}^\text{ar}\text{kt}-\text{Germanic} \rightarrow \text{m}^\text{ar}\text{kt}^\text{f}^\text{y}\) (word-level stress neutrality)

[See Hayes (2016) on how native speakers can induce the Latinate/Germanic distinction from phonotactic evidence.]

§22 Relevant evidence: normal application cyclic overapplication

\(\text{ti}^\text{th}^\text{tan} \rightarrow \text{ti}_\text{th}^\text{tan}-\text{ic}\) \(\text{ti}^\text{th}^\text{pe} \rightarrow \text{ti}^\text{th}^\text{pe}-\text{dology}\)

\(\text{ci}^\text{th}^\text{c} \rightarrow \text{ci}_\text{th}^\text{c}^\text{t}^\text{ion}\) \(\text{H}^\text{th}^\text{r}^\text{t}-\text{c} \rightarrow \text{H}^\text{th}^\text{r}^\text{t}-\text{dology}\)

§23 Q. Why is cyclic overapplication lexically specific, rather than systematic?

A. Because it is mediated by lexical storage (Bermúdez-Otero 2012: 25–40, 2013, and ❹).
§24

(i) Initial state: \( t_y^p pe \rightarrow t_y^p p-ogy \) (processes start their life cycle as transparent: ☀)

(ii) Both \( t_y^p pe \) and \( t_y^p p-ogy \) are stored nonanalytically in the lexicon, with their derived stem-level properties, including stress and raising.

(iii) When the ranking IDENT\( > \) *ai becomes established at the stem level (§16), online derivation of \( t_y^p p-ogy \) from stored \( t_y^p pe \) yields innovative \( t_y^p p-ogy \).

(iv) From now on there is lexical competition between

- \( t_y^p p-ogy \) produced whenever the inherited form is retrieved directly from the lexicon,
- \( t_y^p p-ogy \) produced whenever online derivation beats lexical retrieval.

(v) The conservative realization of the derivative tends to win if

- online derivation yields the wrong semantics;
- the base has relatively low token frequency compared with the derivative, and therefore is retrieved relatively slowly, and so causes online derivation to lose the race against retrieval of the derivative.

On the dual-route race model of morphological processing, see e.g. Schreuder & Baayen (1995).

§25

Lexical frequency (lexeme tokens in COCA):

<table>
<thead>
<tr>
<th></th>
<th>normal application cases</th>
<th>cyclic overapplication cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITAN</td>
<td>4,003</td>
<td>TYPE</td>
</tr>
<tr>
<td>TITANIC</td>
<td>2,710</td>
<td>TYPOLOGY</td>
</tr>
<tr>
<td>ratio</td>
<td>1.48</td>
<td>ratio</td>
</tr>
<tr>
<td></td>
<td>100,207</td>
<td>981</td>
</tr>
<tr>
<td></td>
<td>102.15</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>normal application cases</th>
<th>cyclic overapplication cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>CITE</td>
<td>28,732</td>
<td>HITTITE</td>
</tr>
<tr>
<td>CITATION</td>
<td>3,827</td>
<td>HITTITOLOGY</td>
</tr>
<tr>
<td>ratio</td>
<td>7.50</td>
<td>ratio</td>
</tr>
<tr>
<td></td>
<td>142</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>∞</td>
<td></td>
</tr>
</tbody>
</table>

§26

Semantics:

<table>
<thead>
<tr>
<th></th>
<th>normal application cases</th>
<th>cyclic overapplication cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>titanic</td>
<td>‘titan-like’</td>
<td>but more often ‘awesome, enormous’</td>
</tr>
<tr>
<td>citation</td>
<td>‘act of citing’</td>
<td>but more often ‘quotation / commendation / summons’</td>
</tr>
<tr>
<td>typology</td>
<td>‘study of types’</td>
<td>also ‘study of crosslinguistic variation’</td>
</tr>
<tr>
<td>Hittitology</td>
<td>‘study of Hittite’</td>
<td></td>
</tr>
</tbody>
</table>

§27

Dialect B?

- Joos (1942: 143-144): dialect A
  - write [xit] - writer [xitəz]

- dialect B
  - write [xit] - writer [aurə] (allegedly among Ontario schoolchildren)

Further reports in Rudes (1976) and, indirectly, Picard (1977).


- But it is highly unlikely that dialect B ever existed in Ontario, pace Joos.
  - Kaye (1990): if there had ever been any, they all without exception either
    - (a) underwent lifespan change in adulthood or
    - (b) died before the age of 50.

Both (a) and (b) are incredible (on the rarity of lifespan change, see Fruehwald 2017).

- Berkson et al. (2017): acoustic documentation of young speakers in Fort Wayne, Indiana, pronouncing /a*/ with a raised nucleus in write, but not in ride, riding, and—crucially—writing.

But this will turn out to not to be an instance of dialect B: see §42-§44 below.

§28

No diachronic explanation for the absence of transparent dialects

- If transparency is the unmarked state of affairs because opaque interactions are hard to learn (Kiparsky 1971: 632; cf. Baković 2011) then the virtual absence of transparent dialects like ‘dialect B’ is unexpected.

- Possible diachronic explanation:
  - there are no transparent dialects because...
    - in all dialects, /a*/-raising is chronologically older than /t/-flapping and the opaque derivation has been retained.
  - Counterexample:
    - In Philadelphia English, /a*/-raising is chronologically younger than /t/-flapping (Fruehwald 2013).
/aɪ/-raising overapplies before /t/-flaps even in its incipient, phonetically gradient stage

§29 Gradient offglide peripheralization before flapped /t/

- The phonetic precursor of nucleus raising is offglide peripheralization:
  i.e. [Ga*aɪt] > peripheralization [Gait] > raising [G6it]


- Offglide peripheralization is highly pervasive: all dialects investigated show it to some degree.

- Offglide peripheralization has been observed applying before flapped /t/, even in dialects where the nucleus has not yet been affected by raising, and where peripheralization remains a small, apparently gradient effect.

Time-normalized F1 and F2 trajectories for /aɪ/ in writer and rider uttered by a college-age American male. Note identical nuclei but peripheralized offglide in writer.

(Kwong & Stevens 1999: 8)

§30 A puzzle for classical modular feedforward architectures

- In such architectures, phonology serially precedes phonetics:
  Underlying representation (UR) (discrete)
    phonological processes
  Surface representation (SR) (discrete)
    phonetic processes
  Auditory and articulatory representations (continuous)


- Hence, a gradient phonetic process like offglide peripheralization should never be made opaque by a categorical phonological process.

- Yet /t/-flapping is demonstrably categorical (Herd, Jongman & Sereno 2010).

The solution: incipient gradient /aɪ/-raising targets categorically clipped allophones

§31 Prefortis clipping...

- is categorical,
- applies at the stem level,
- is therefore counterbled by phrase-level /t/-flapping in dialects that have the latter.

§32 Incipient gradient /aɪ/-raising...

- is a context-free process targeting categorically clipped allophones of /aɪ/,
- is therefore transparent (it is clipping that is opaque),
- starts out as an enhancement of clipping,
  though it can be stabilized and undergo telescoping later (as happened already long ago in Ontario).

§33 Therefore, the correct statement of incipient gradient /aɪ/-raising is
  not aɪ → aɪ / __[-voice] under certain prosodic conditions (context-sensitive)
  but aɪ → aɪ (context-free)
§34 Derivations in early 20th-century Philadelphia:

<table>
<thead>
<tr>
<th>Stem level (clipping)</th>
<th>rider</th>
<th>writer</th>
<th>idle</th>
<th>title</th>
</tr>
</thead>
<tbody>
<tr>
<td>X X X X</td>
<td>X X X</td>
<td>X X X X</td>
<td>X X X X</td>
<td>X X X X</td>
</tr>
</tbody>
</table>

The relative order of processes...
*was fully determined by their stratal affiliation,*
*unproblematically reflected the sequence of corresponding historical innovations.*

Prefortis clipping is categorical

§35 A long-standing question

“[W]hat is the status of vowel length before voiced sounds in English, *head* [biːd] versus *beat* [bit]? The difference is greater than observed in many other languages (Keating 1985), but does it count as phonological?”

(Cohn 2006: 26)

For discussion of the general approach to categoricity and gradience I adopt here, see Bermúdez-Otero & Trousdale (2012: 694-96) and Strycharczuk (2012: 45-7).

§36 Key points

- The magnitude of the durational difference between clipped and unclipped allophones in English is extreme
  (Chen 1970; see Sóskuthy 2013: 196-99 for a review of later literature).
- Prefortis clipping suffices to cue the laryngeal contrast by itself
- Prefortis clipping is itself not sensitive to the magnitude of other phonetic cues to the laryngeal contrast:
  crucially, in English dialects with anticipatory assimilation in voicing/voicelessness, vowel duration remains unaffected by assimilation (Jansen 2004: 142).

§37 If prefortis clipping is categorical, how is it represented in the phonology?

A simple proposal:
- voiceless obstruents share the skeletal unit of the preceding vocoid;
- skeletal attachments iconically reflect durational trade-offs.

On durational trade-offs in prefortis clipping, see Kluender et al. (1988).

On ‘mora sharing’, see Maddieson (1993), Maddieson & Ladefoged (1993), Hubbard (1995a,b), and Broselow et al. (1997).

A similar application of mora sharing to the analysis of Canadian raising has been independently proposed by Onosson (2014).

The environment of prefortis clipping

§38 The testimony of Wells (1990, 2008)

Instrumental studies of the effects of secondary stress and word-level suffixation on prefortis clipping are sadly lacking.

However, through the syllabification conventions of the Longman pronunciation dictionary, Wells (1990, 2008) reports (presumably introspective) judgements on the incidence of prefortis clipping.

Strikingly, as first observed by Bermúdez-Otero (2004: §21),

the environment of prefortis clipping as reported by Wells is exactly identical with

the environment of Canadian raising as reported by Chambers:

- Prefortis clipping is stem-level.

Independent confirmation: /au/-raising in Scottish English

§39 The Scottish Vowel Length Rule (SVLR)

In Scottish English, /au/, among other vowels, is...

- clipped before all consonants other than voiced continuants e.g. *v* sign, *side, life, night*
- unclipped elsewhere e.g. *v* sigh, dive

On the SVLR, see e.g. Aitken (1981), Agutter (1988), McMahon (1991), etc.

Note that the SVLR is categorical and stem-level, like prefortis clipping in my analysis.
§40 The SVLR and /a/-raising

If raising targets clipped tokens of /a/, then, in Scottish English, raising will target tokens of /a/ clipped by the SVLR even when such tokens are followed by a voiced consonant.

This is correct! (Scobbie et al. 1999: 241)

- [æ] clipped by the SVLR and so raised:
  - sign (cf. Ontario!)
  - side (cf. Ontario!)
  - life
  - sight

- [aɪ] unclipped by the SVLR and so unraised:
  - lie
  - alive

§41 A unified explanation for /a/-allophony across all English dialects

<table>
<thead>
<tr>
<th></th>
<th>alive</th>
<th>line</th>
<th>light</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>[æ]</td>
<td>[aɪ]</td>
<td>[aɪ]</td>
</tr>
<tr>
<td>2</td>
<td>[aɪ]</td>
<td>[aɪ]</td>
<td>[aɪ]</td>
</tr>
<tr>
<td>3</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
</tbody>
</table>

Relatively peripheralized offglides enhance clipping by preflosis clipping ⇔ ②,③
the SVLR ⇔ ①

Cf. the spread-of-facilitation hypothesis of Moreton (2004: 29) and Moreton & Thomas (2007), which fails to predict the Scottish pattern.

§42 Davis et al. (2017: 6) pattern 1: the putative dialect B

§43 Discussion of the data in §42:

(i) Write shows clear offglide peripheralization in comparison to ride, as per §29 above.

(ii) In contrast, the offglides of writing and riding are nearly identical. This is unlike the pattern documented by Kwong & Stevens (1999).

- Hypothesis 1: Offglide peripheralization is triggered by phonetically voiceless segments and so does not apply before flapped /t/ ⇒ dialect B.
- Hypothesis 2: Offglide peripheralization has undergone incrementation only in monosyllables, where the durational contrast between clipped and unclipped /a/ is maximal ⇒ not dialect B.

Discriminating between hypotheses 1 and 2 requires data on the behaviour of the offglides in pairs of disyllables like viper – fiber and biker – tiger, which Davis et al. (2017) do not provide.

§44 In 2017, before the relevant data had been collected, I predicted that hypothesis 2 above would prove correct (Bermúdez-Otero 2017: §41, p. 17).

This prediction has now been confirmed (Davis et al. 2019):

the majority of Fort Wayne speakers with raised [æ] in wrитель but not in wrитель do not have raising in trochaic words like Nike ['nakei] and bison ['basen] either.

REFERENCES


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