t-flapping vs. glottalling in Lancashire, London and beyond: a sociophonological analysis of variation and change

Danielle Turton

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Overview

- /t/ lenition processes in British English
  - focus on flapping
    - focus on a Lancashire variety (but later London and Newcastle)
- Taking a both phonological and variationist sociolinguistic perspective
- Understanding how social factors organise themselves within phonological constraints can help us understand a process's life cycle and progression of sound change

t-flapping in English

- Most commonly associated with American English
- t-flaps when intervocalic (intersonorant) and non-foot-initial
  - *better, city, got it*
  - no flapping e.g. in *attack*
- /t/ is voiced but also tapped/flapped rather than typical stop release

Todo the dog

t-flapping in American English

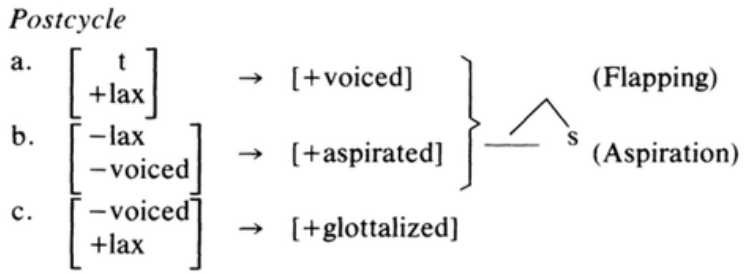
- t-flaps when intervocalic (intersonorant) and non-foot-initial

across word boundaries: *get in* [gɛr ɪn]

word-internally: *getting* [gɛrɪŋ]

Kiparsky (1979)

- Non-foot-initial /t/ is laxed at the word level
- Lax /t/ is voiced at the phrase level between vowels



If flapping is phrase level, what happens to laxed /t/ at the word level?

- Tokens of /t/ that undergo laxing by the word-level rule but find themselves outside the flapping environment at the phrase level (e.g. word-final tokens like *get, cat*) show other forms of lenition:
  - in conservative American English, they are typically unreleased
  - in RP they may be preglottalized (e.g. RP)
  - Urban British English replaces them with a glottal stop
    - This may be happening in some American varieties too (Eddington & Taylor 2009)
  - Scouse fricativises/spirantises them
    - As do Irish English speakers

t-flapping in British Isles?

Today's focus: Blackburn, Lancashire

- Synchronic analysis of /t/ realisations in Blackburn
- Variety that has variation between:
    - Standard [t]
    - glottal [ʔ]
    - flapped [ɾ]
- Looking at sociophonological variation
    - Constraints on flapping give us insight into phonological life cycle
    - Sociophonological variation suggests pathways to change

English Dialects App rhoticity (Leeman et al. 2017)

How did it get into English in the British Isles?

- Historical data from Minkova (2014: 147) provide evidence of flapping/voicing in England as early as the 15th century.
  - [t] > [d] > [r]
  - *water* spelt *wader*
  - Very early indications of voicing in OE potentially
- Dickens' drunken characters t-flap (Haugen 1938: 76)
  - Elphinston associates pronunciations like *proddestant* as London vulgarisms
    - Wells (1982) says it can be found in casual styles from RP to Cockney
  - Wright (1905), Wyld (1936) mention flapping in various descriptions of British English
  - Highly frequent in Northern Irish English
- It seems it's been around for a while

Patterns of sound change

- Yet flapping never reached a categorical rate of application in this variety (or any British English variety)
- Synchronic data from varieties which show some level of flapping will allow us to monitor the conditions on variation.
- This may give us an insight into how this sound change, and change in general, progresses along a historical trajectory

- **Complication:** it now it faces competition from the glottal

t-flapping in Blackburn, Lancashire

- Auditory observation indicates the same pattern as American English, although highly variable
  - Flap is in competition with glottal stop
- Somewhat conservative variety
  - Still rhotic (Turton 2015)
  - Low population movement
- Younger speakers more likely to use glottal stop
- Flap potentially associated with older speakers

Pathways of sound change

the life cycle of phonological processes

The life cycle of phonological processes

- Framework which can account for the relationship between synchronic and diachronic patterns
- A process begins its life by applying at lower levels of the grammar, over time advancing to progressively higher levels
- **Domain narrowing:** A process may move from applying at the phrase level (level most associated with flapping), to word and then stem
- **Rule generalisation:** A process ascends through a prosodic path (syllable, foot, colon, prosodic word etc.)

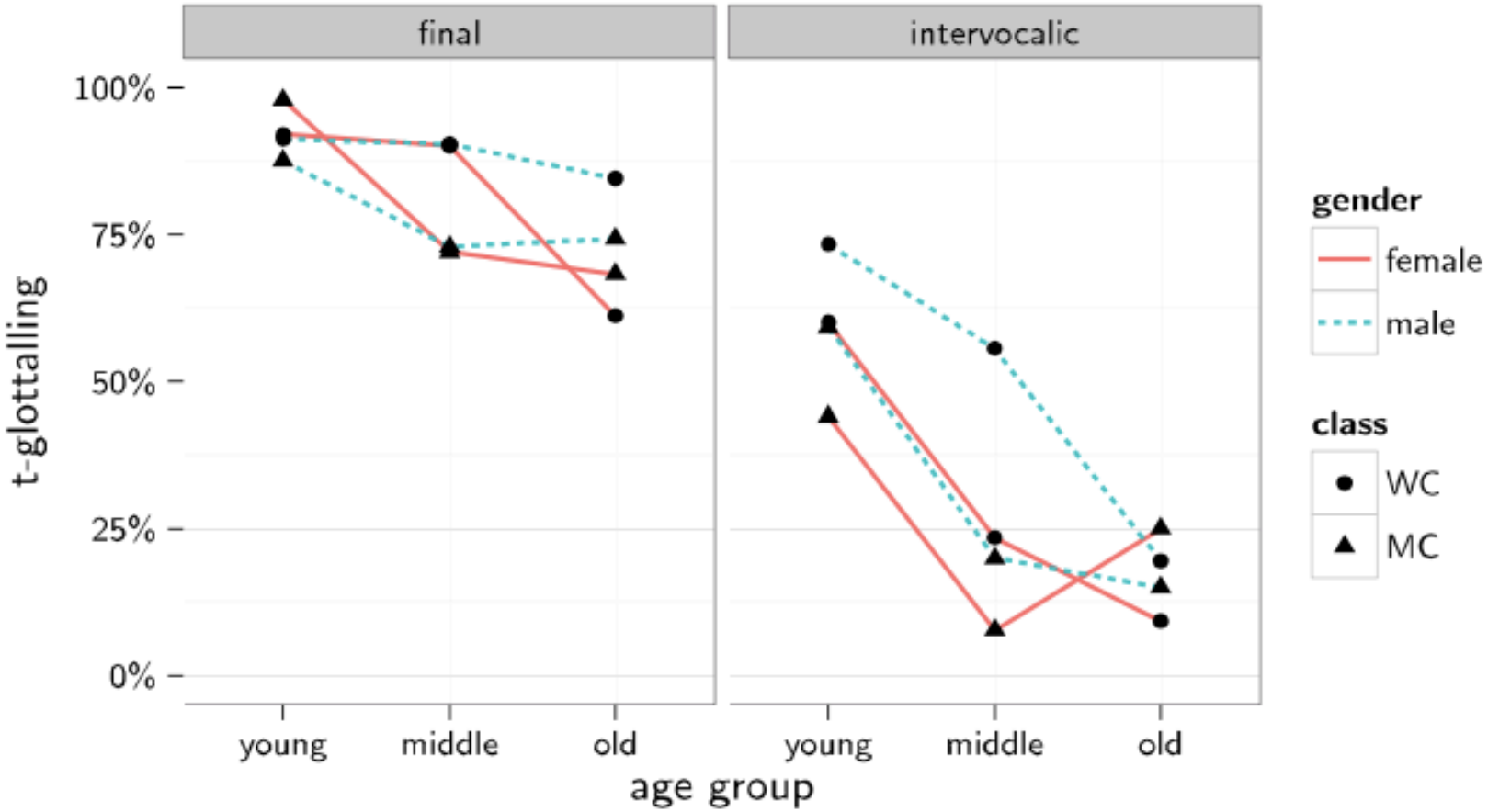
Bermúdez-Otero (2015)

Rule generalisation: t-glottalling advancing from syllable to foot in British English

- Earlier stage of sounds change: /t/ glottals in coda position e.g. *the ca[ʔ] sa[ʔ] on the ma[ʔ]*
- Advances over time to apply in all non-foot initial positions e.g. intervocalically in *water, city, better*
- Rates of application in British varieties reflect this progression:
  - glottalling in *cat, sat, mat* much more advanced than in *water, city, better*
- More social stigmatisation of glottal intervocalically (Foulkes & Docherty 2007)
- PDE urban t-glottalling shows typical advancement of originally applying in non-initial position in the syllable, to non-initial position in the foot
  - Also shows coda application by domain narrowing *get > get out > getting*

Rule generalisation: t-glottalling advancing from syllable to foot

Manchester (Baranowski & Turton, 2015)



Rule generalisation: flapping and preceding vowel

New Zealand basilect vs. acrolect (Bye & de Lacy 2008)

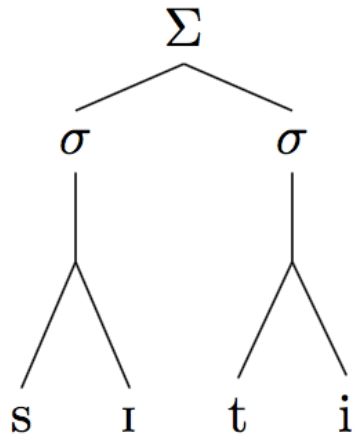
- NZ English speakers t-flap (Holmes 1994)
- NZ basilect speakers show flapping patterns similar to American English
- Acrolect has flapping after short vowels only
  - Basilect represents the more advanced stage of the dialect
  - Acrolect represents the more conservative stage
- Vowel length preceding intervocalic consonants has important role to play in lenition environments (Balogné Bérces & Honeybone 2012)

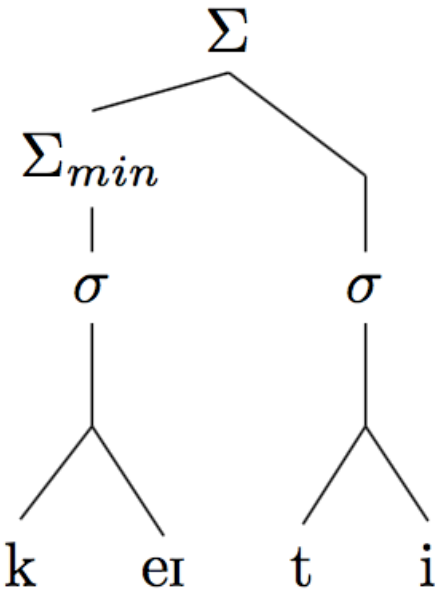
T-FLAPPING	acrolect	basilect
city	✓	✓
Katie		✓
attack		

Minimal foot projection as a stage of rule generalisation

- This pattern is interesting as it shows that, although more advanced dialects flap when non-initial in the foot, the more conservative dialect flaps only in the minimal foot projection
- Suggests a mid-stage of rule generalisation:
  - minimal foot projection
    - flaps in *city* but not *Katie*

  THEN
  - maximal foot projection
    - flaps in both





Life cycle and /t/ patterns: Blackburn data

- What will we find in Blackburn today – a variety with both flapping and glottalling?
- The life cycle makes different predictions about the rates of lenition by glottalling vs. flapping
- This is because of the levels of the derivation in which they occur.
  - Flapping: the /t/ must be intersonorant – we only expect flapping in words like *city, water* and phrases like *get it*
  - Glottalling is the opposite. We expect less of it in *water* and *get it*
- Impressionistically, flapping seems to be used more by older speakers. Is it stable, or on its way out?

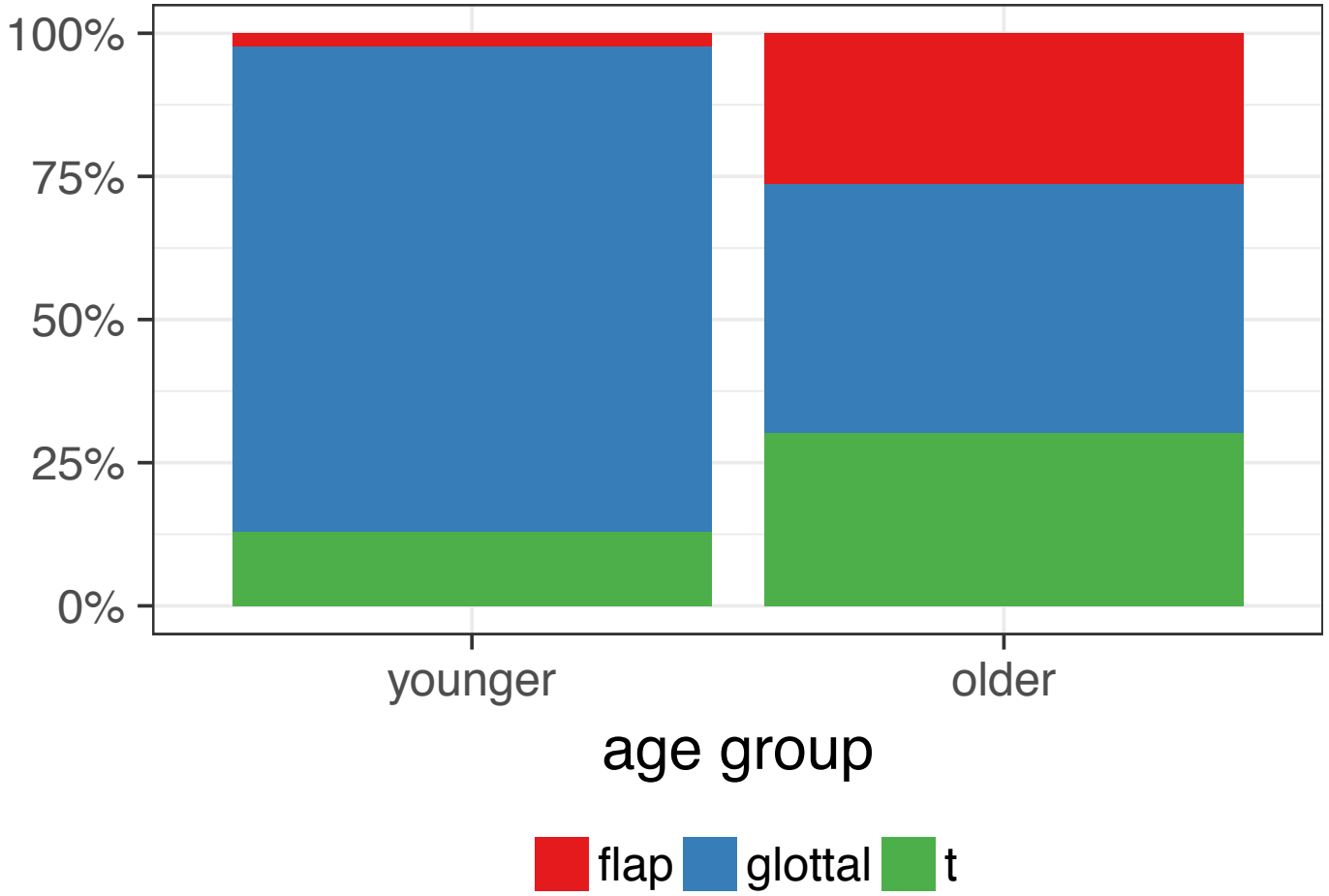
Blackburn data

Blackburn data

- Town in Lancashire, North-West England
- Auditorily coded by me and two postgraduate researchers
- Coded for [t], glottal, voiced and flapped, deleted
  - Collapsed voiced and flapped
  - Deleted deleted

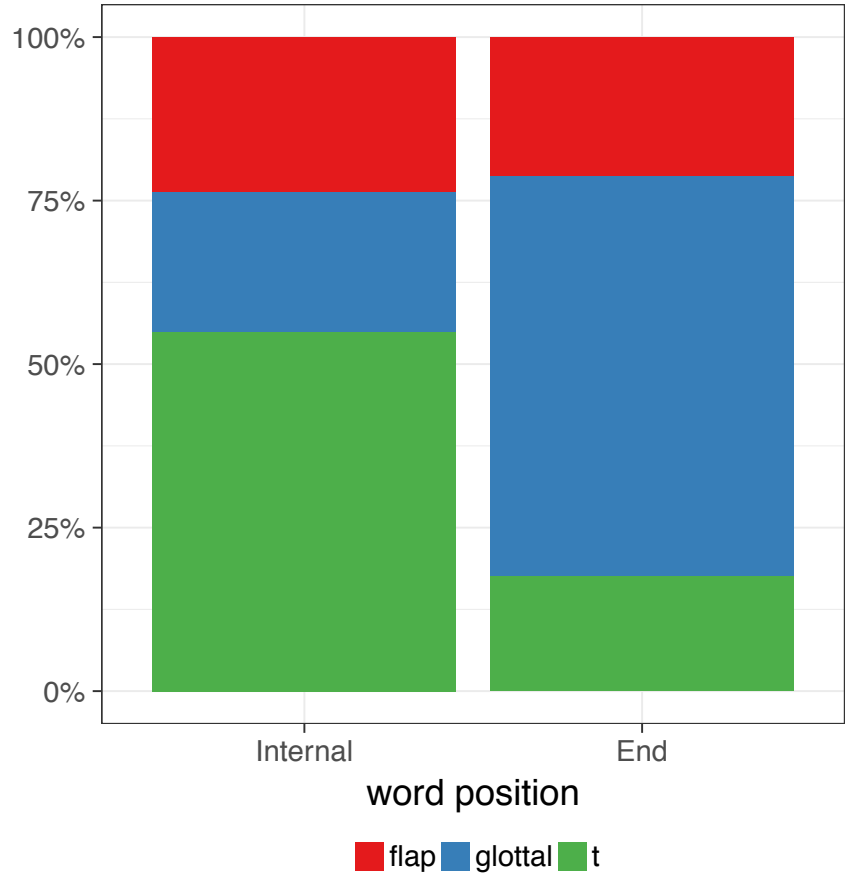
- Data from 12 speakers
  - 4 young < 35, 8 “old”
- Intervocalic contexts only
- Syllabic /n/ contexts removed e.g. *cotton* (/l/ left in)
- Tokens that don’t reduce in this variety removed:
  - *tattoo, settee*
  - *politics, lunatics*
- Leaving 2350 tokens of /t/

Overall distribution across age groups



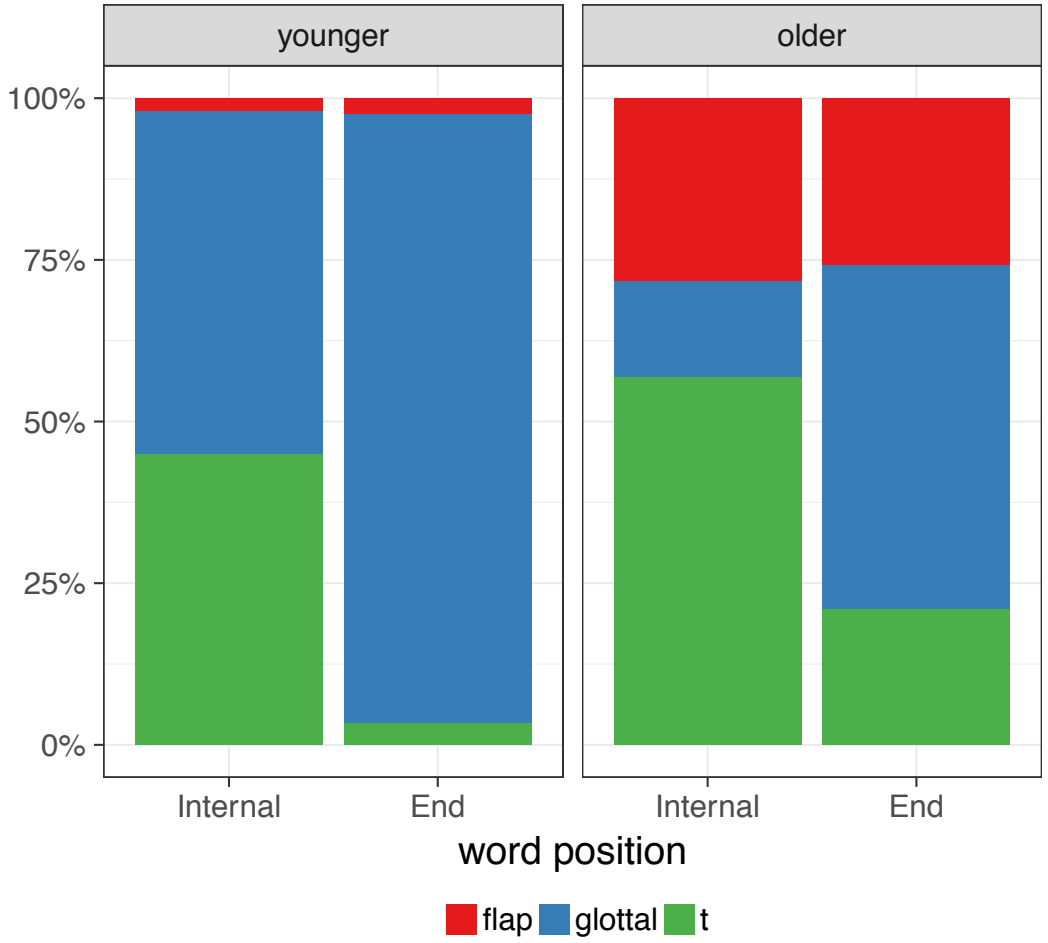
- As expected, younger speakers don’t flap their /t/s as much
- Glottalling has really taken over for them

Word position



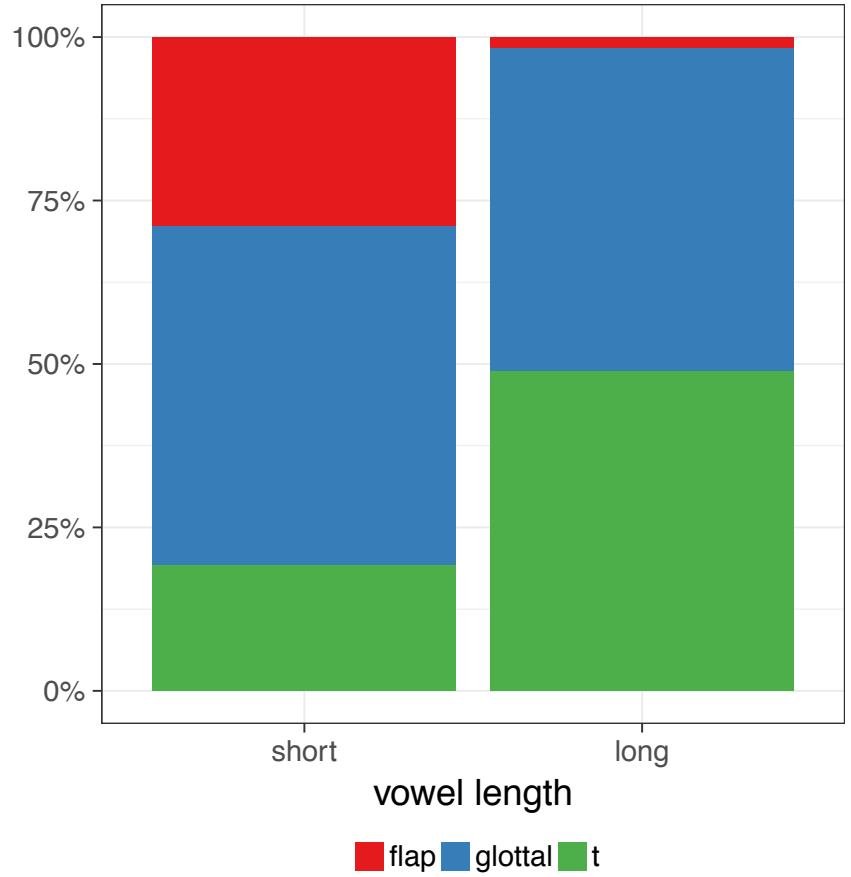
- As expected, more glottalling at the end of words than internally
- Almost identical rates of flapping in both word-internal and final position.
  - indication that flapping is truly a phrase-level process here
    - Just like American English

Age and word position



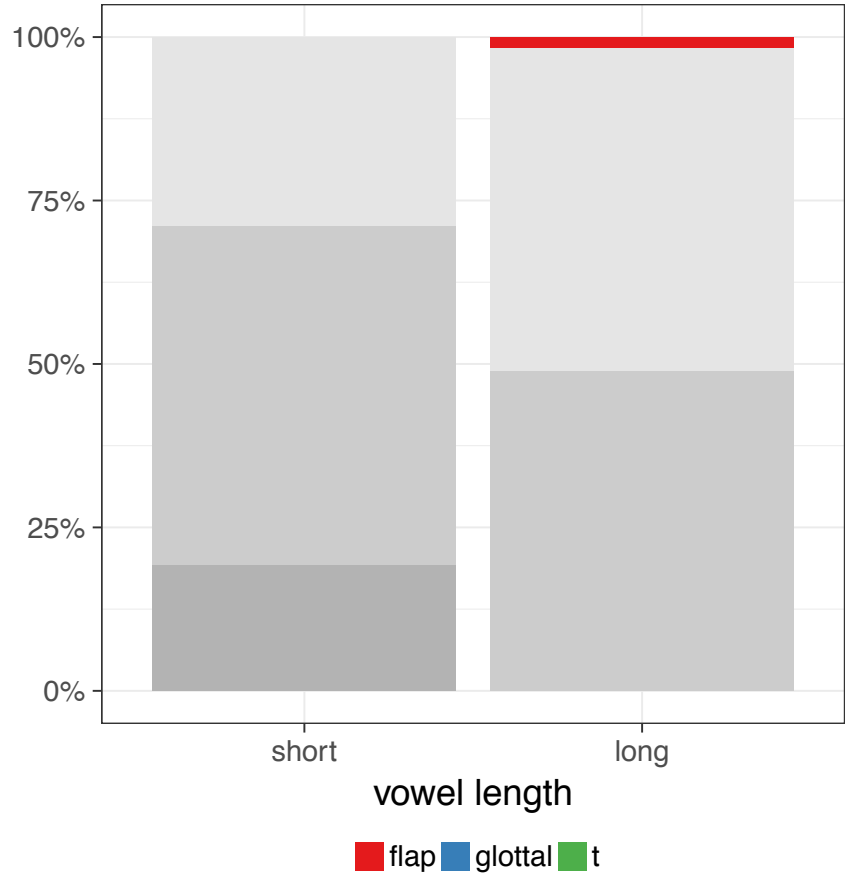
- Glottalling moving at a fast rate
  - in both environments
- Glottalling is mainly taking /t/s territory

Preceding vowel length



- Speakers can't seem to flap after a long vowel
- Flaps in *city, get it, getting, protestant, pretty, little*
- But not in *Katie, computer, totally, caught it*
- Preceding stage of sound change?

Preceding vowel



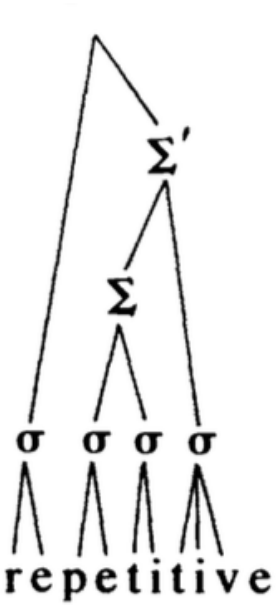
- Ten tokens of flapping after a long vowel
- *Waiting, thought about, outta, quite a, forty*
- Only uttered by old males in the dataset
- This advanced stage of flapping does seem to be associated with older males

Blackburn Lancashire

- Could it be that /t/ flaps only when non-initial in a minimal foot-projection?
  - the /t/ of (cí.ty) flaps because it is contained in the minimal foot-projection (and non-initial),
  - the /t/ of ((Ká)tie) doesn't.
    - Although it is non-initial in the foot, it is not the minimal foot
- Some older (so far male) speakers can also flap when non-initial in the maximal foot projection
  - Only ten tokens
  - Judgement elicitation from community suggests this might be an advanced form found in older generation
- Same as New Zealand basilect and acrolect (Bye & de Lacy 2008)
- Older Blackburn males are (variably) like American English speakers today, as are NZ basilect speakers, showing more advanced pattern
- Evidence of **rule generalisation**

Lenition and the minimal foot

- The difference between foot-initial and foot-internal is well accepted
- Further distinction between the minimal foot and a position outside the minimal domain has been argued for by some
    - For discussion of intervocalic consonants and preceding long vs. short vowels see Balogné Bérces & Honeybone (2012), Balogné Bérces (2015)
    - few examples of its role in the progression of sound change
- Perhaps most commonly discussed with reference to *compe**t**i**t**ive* reduction
    - Second /t/ can only be lenited if the first is: **repe[t]i[r]ive*, **compe[t]i[r]ive* (McCarthy 1982; Harris & Kaye 1990, Balogné Bérces, 2015: 145)
- Blackburn t-flapping *could* be constrained by the minimal foot, but it's possible that phrases like *get OUT* could flap.

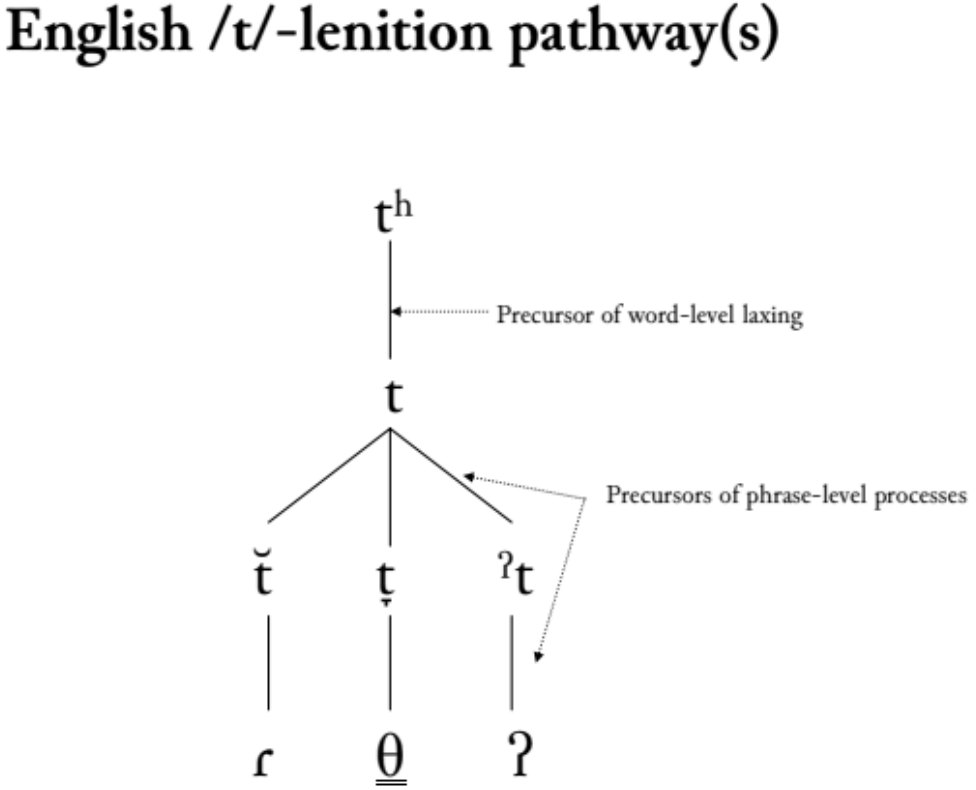


Old men leading sound change?

- Well, they're the most advanced users in phonological terms
  - Older women flap at a similar rate, but only within the minimal foot
- But they're not leading a sound change.
- It's stopped (probably fairly stable anyway)
  - Curtailed by a competitor form: t-glottalling
- This older generation reflects the direction the vernacular was heading in before flapping ran out of sociolinguistic steam
- Male-led innovations tend to even out gender-wise
  - e.g. *fight* Philly (Conn 2005)
  - Word final t-glottalling UK
    - What will happen to intervocalic glottalling?

Summary of findings so far

1. All varieties of English have a distinction between strong and weak/lax allophones of /t/ at the word level
   - foot-initial are strong (e.g. *time, attack)*
   - non-foot initial are weak (e.g. *better, get)* and are lenited in some way
- Word-level laxing is older than phrase-level flapping
   - That's why it occurs at a higher level of the grammar
   - That's why it is a less aggressive process of lenition

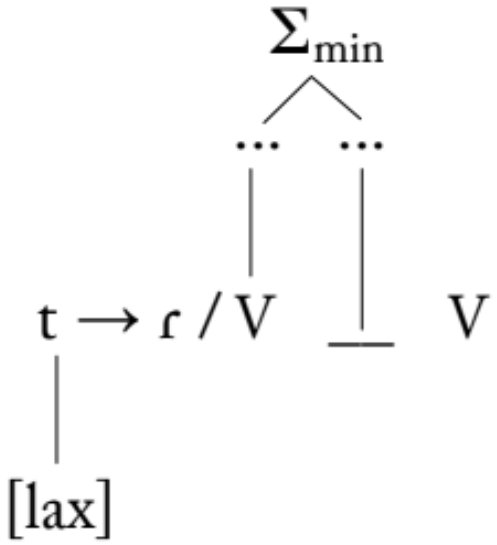


Bermúdez-Otero

Summary of findings II

3. Both American and Blackburn flapping are phrase level
   - But Blackburn is more conservative – requires the preceding vowel to be in the same foot
4. Process of rule generalisation is reflected in the division of labour between flapping and glottalling
   - In AmEng flapping > glottalling
   - In most British dialects glottalling > flapping
   - Blackburn is in between

Blackburn (phrase level)

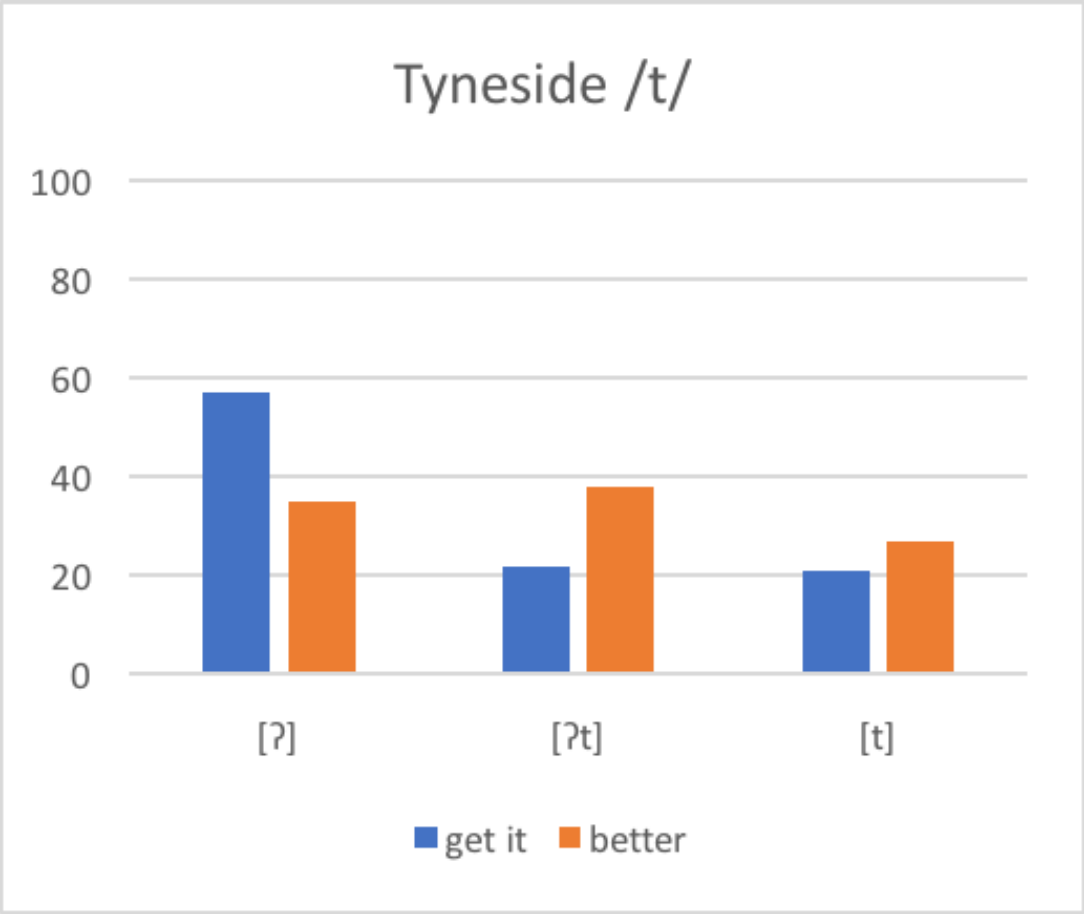


London and Tyneside

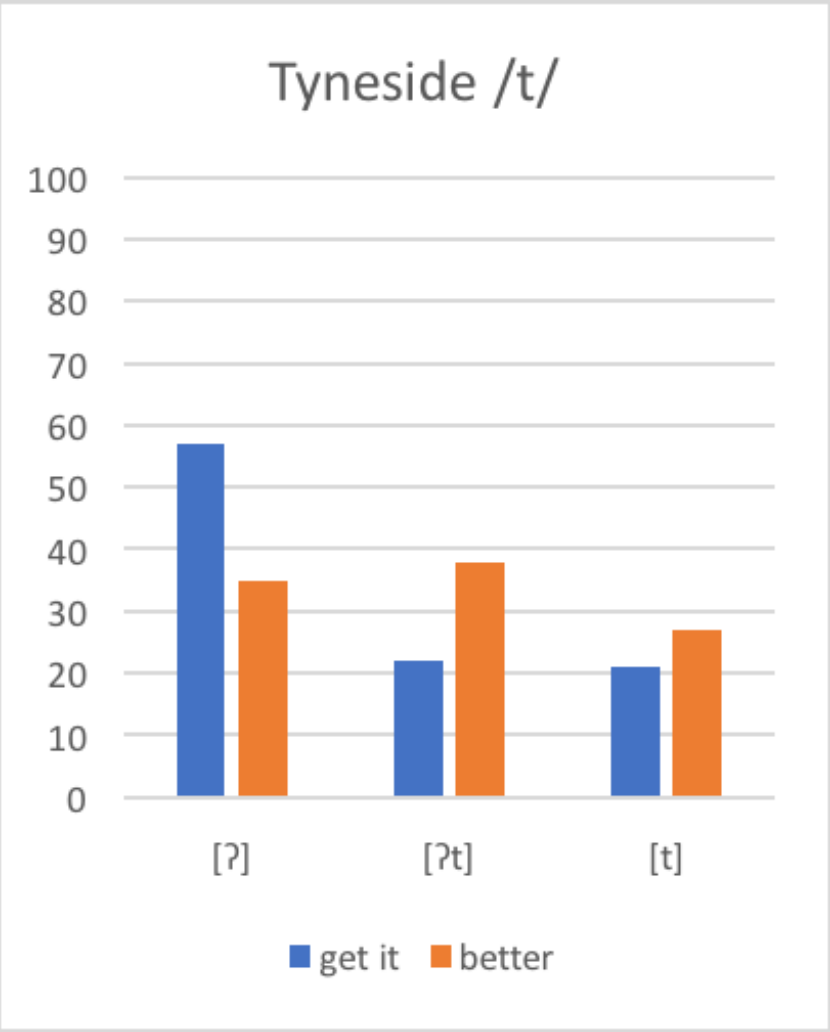
Intervocalic /t/ in other present day English English varieties

Tyneside and London intervocalic /t/-patterns

(SEL3094 students; Baugh 2017)



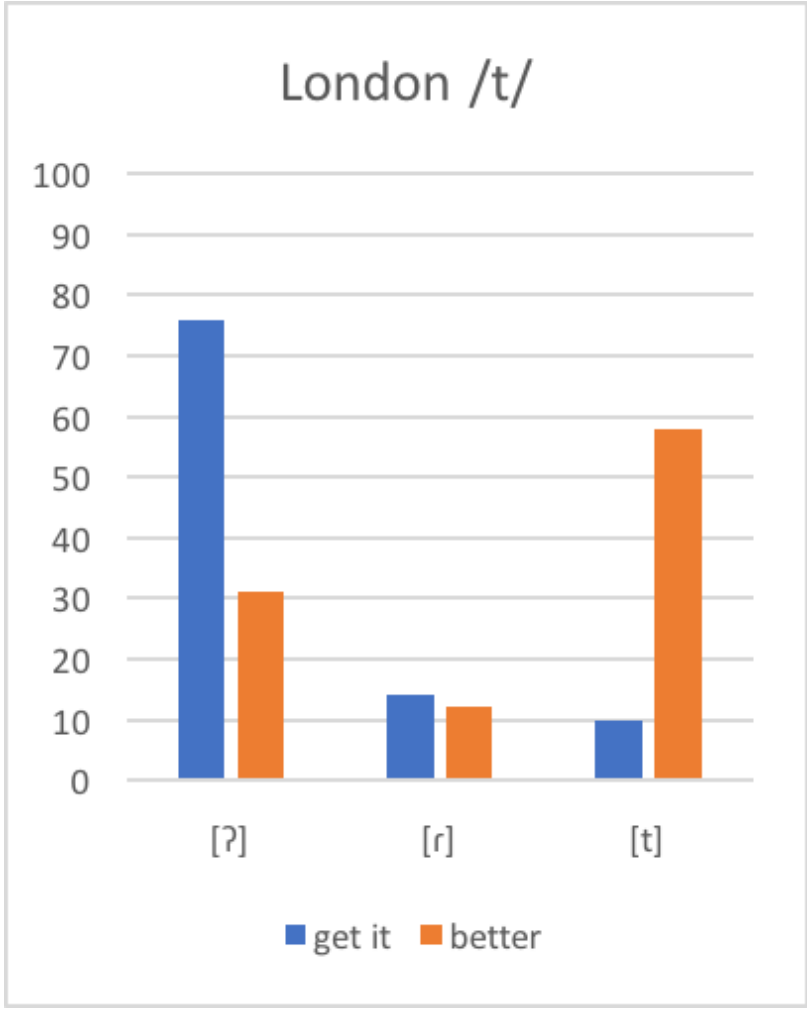
Tyneside vs. London /t/



- Tyneside's traditional variant occurs only in intersonorant position
  - Described as pre-glottalised, glottally reinforced, glottal masking...
- Present day situation is complicated:
  - Docherty & Foulkes (2005) say next to no full glottal
  - In 2017, younger speakers show UK-wide glottal stop variant word-finally and internally
- Rates of traditional reinforced variant are exactly what we expect:
  - higher in *getting* than in *get off*

Tyneside vs. London /t/

- London is famous for glottal replacement
- Speakers in Baugh (2017) upwardly mobile student types
- Glottalling less likely word-medially
- More evidence of /t/-flapping in South-East "educated" varieties (Hagyard 2015, Jell 2016)
  - Newer phenomenon?
  - More likely in males?
  - How would the phonological application work?
- It mirrors glottalling application here
  - Can flapping "piggyback" onto glottalling, whilst remaining intervocalic/sonorant?
  - Evidence after long vowels too



Baugh (2017)

Next...

- N-flap contexts
  - Possibly only across word boundaries?
  - Highly frequent in tag questions *didn't it* [dɪndɪt], more voiced than flapped
- Durational differences?
  - Can we differentiate between voiced and flapped with a more fine-grained analysis?
- Lenition trajectories: harsher lenition (flapping) at lower levels compared to weaker lenition (voicing; Bermúdez-Otero 2015:§22.3.2)
- Statistics: random forests
- Judgement elicitations
  - on *Katie* vs. *city*
  - on *t-to-r*

Summary

- Patterns of t-flapping in Northern English provide evidence for an intermediate stage of rule generalisation
  - t-flaps only in minimal foot projection for most speakers
  - Some advanced speakers show evidence of moving to the next stage
- The rates of glottalling and flapping are consistent with the expectations of domain narrowing
  - Flapping occurs most in the *better* set
  - Glottalling occurs most in the *get in* set
  - Although the inverse relationship between the two makes the picture murkier
- Other varieties with intervocalic /t/ processes help fill in the gaps
  - Judgement data on /t/-related phenomena will help further
- The picture makes a lot of sense once considered from the perspective of its diachronic trajectory and life cycle.

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Next: t-to-r

- *gerroff* for *get off*
  - See Honeybone (2014)
- This variant is reported in Liverpool (Clark & Watson 2011), Newcastle (Buchstaller et al. 2013), Yorkshire (Broadbent 2008) and Manchester (me, pc).
- The Blackburn speakers do not seem to exhibit this at all
- Can someone who taps /r/ in t-to-r t-flap?
- Does their rhoticity play a role?

Life cycle: Domain narrowing

- Ascending through the stem, word and phrase levels
  - Might expect more flapping word-internally (*better*) than across word boundaries (*get in*)
  - More levels of derivation
- Complication: tokens of /t/ that lax at the word level, but are not intervocalic at the phrase level still show other forms of lenition:
  - Lenition pathways (Bermúdez-Otero 2015: 399)
    - Urban British English /t/-glottalling
    - Pre-glottalisation/pre-aspiration?
    - Affrication/spirantisation (Scouse, Honeybone 2001)
      - Although this maybe looks more like flapping (more advanced in intervocalic position)

Domain narrowing: English /l/-darkening

	light	*helium*	*heal-ing*	*heal it*	*heal*	
RP	[l]	[l]	[l]	[l]	[ɫ]	Cruttenden (2008); Jones (1966)
Am. Eng. 1	[l]	[l]	[l]	[ɫ]	[ɫ]	Sproat and Fujimura (1993); Gick (2003)
Am. Eng. 2	[l]	[l]	[ɫ]	[ɫ]	[ɫ]	Olive et al. (1993)
Am. Eng. 3	[l]	[ɫ]	[ɫ]	[ɫ]	[ɫ]	Hayes (2000); Yuan and Liberman (2011)

Stage 1: /l/ darkens in the coda at the phrase level

Turton (2014; adapted from Bermúdez-Otero (2007)

Domain narrowing: English /l/-darkening

	light	*helium*	*heal-ing*	*heal it*	*heal*	
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Am. Eng. 2	[l]	[l]	[ɫ]	[ɫ]	[ɫ]	Olive et al. (1993)
Am. Eng. 3	[l]	[ɫ]	[ɫ]	[ɫ]	[ɫ]	Hayes (2000); Yuan and Liberman (2011)

Stage 2: /l/ darkens in the coda at the word level

Adapted from Bermúdez-Otero (2007)

Domain narrowing: English /l/-darkening

	light	*helium*	*heal-ing*	*heal it*	*heal*	
RP	[l]	[l]	[l]	[l]	[ɫ]	Cruttenden (2008); Jones (1966)
Am. Eng. 1	[l]	[l]	[l]	[ɫ]	[ɫ]	Sproat and Fujimura (1993); Gick (2003)
Am. Eng. 2	[l]	[l]	[ɫ]	[ɫ]	[ɫ]	Olive et al. (1993)
Am. Eng. 3	[l]	[ɫ]	[ɫ]	[ɫ]	[ɫ]	Hayes (2000); Yuan and Liberman (2011)

Stage 3: /l/ darkens in the coda at the stem level

Adapted from Bermúdez-Otero (2007)

Rule generalisation: English /l/-darkening

- Phonological processes may operate with prosodic spans of different sizes

	light	*helium*	*heal-ing*	*heal it*	*heal*	
RP	[l]	[l]	[l]	[l]	[ɫ]	Cruttenden (2008); Jones (1966)
Am. Eng. 1	[l]	[l]	[l]	[ɫ]	[ɫ]	Sproat and Fujimura (1993); Gick (2003)
Am. Eng. 2	[l]	[l]	[ɫ]	[ɫ]	[ɫ]	Olive et al. (1993)
Am. Eng. 3	[l]	[ɫ]	[ɫ]	[ɫ]	[ɫ]	Hayes (2000); Yuan and Liberman (2011)

Coda level darkening

Adapted from Bermúdez-Otero (2007, 2015)

Rule generalisation: English /l/-darkening

- Phonological processes may operate with prosodic spans of different sizes

	light	*helium*	*heal-ing*	*heal it*	*heal*	
RP	[l]	[l]	[l]	[l]	[ɫ]	Cruttenden (2008); Jones (1966)
Am. Eng. 1	[l]	[l]	[l]	[ɫ]	[ɫ]	Sproat and Fujimura (1993); Gick (2003)
Am. Eng. 2	[l]	[l]	[ɫ]	[ɫ]	[ɫ]	Olive et al. (1993)
Am. Eng. 3	[l]	[ɫ]	[ɫ]	[ɫ]	[ɫ]	Hayes (2000); Yuan and Liberman (2011)

Foot level darkening

Adapted from Bermúdez-Otero (2007, 2015)

t-flapping's lifespan: domain narrowing

- When compared to /t/-glottalling, the lifespan makes opposing predictions about the rates of application
  - Words which meet the conditions of application at more cyclic levels will show a higher rate of application overall; Guy 1991)
- Slightly different: flapping did start in coda position
  - Phonetically favourable pos rvocalic

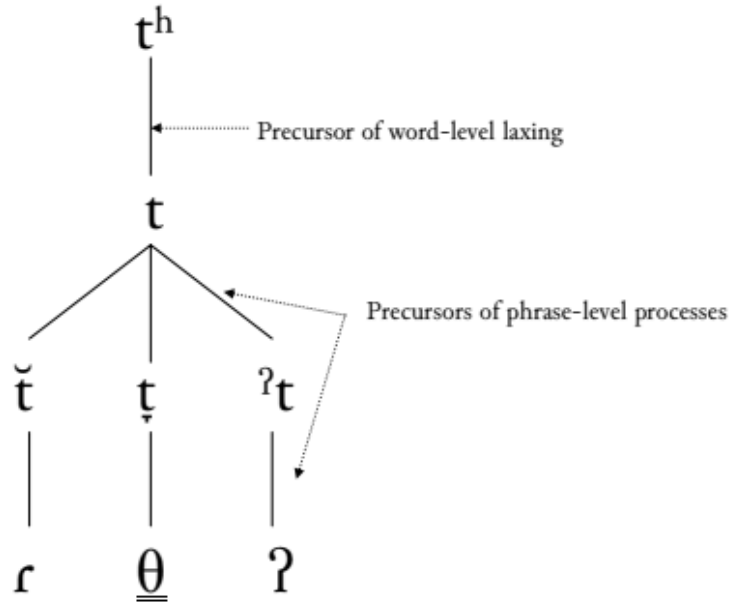
Or maybe *better >= get it?*

For variable progression through the levels see Turton (2016)

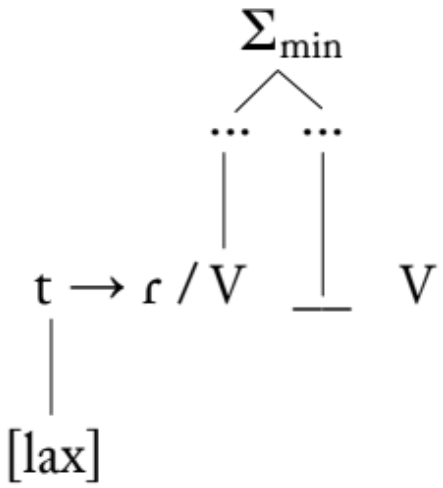
T-GLOTTALLING	/t/ in coda?		
	stem	word	phrase
get it	✓	✓	
getting	✓		
better			

FLAPPING	/t/ intervocalic?		
	stem	word	phrase
get it			✓
getting		✓	✓
better	✓	✓	✓

English /t/-lenition pathway(s)



Blackburn



(phrase level)

Types of unstressed syllables

Three types of unstressed syllables

a.	Footed, dependent of a FtMin	[(σ̲ 'σ)$_{Ft}$ ('σ)$_{Ft}$]$_{PrWd}$
b.	Footed, dependent of aFtNon-min	[((σ 'σ)$_{Ft}$ σ̲)$_{Ft}$]$_{PrWd}$
c.	Unfooted, directly linked to PrWd	[(σ 'σ)$_{Ft}$ σ̲]$_{PrWd}$

New Zealand basilect vs. acrolect (Bye & de Lacy 2008)

Basilect represents the more advanced stage of the dialect
Acrolect represents the more conservative stage

(16) NZE Basilect flapping

a. flapping intervocalically and in unstressed syllables

[hǽrə]	'hatter'	[bá:rə]	'barter'
[báɪrəŋ]	'biting'	[hɔ́spərʊw]	'hospital'
[rəpérərəv]	'repetitive'	[grəmæ̀rəkǽləri]	'grammaticality'

b. no flapping before or after a consonant

[wíntə]	'winter'	[sístə]	'sister'
[ʔæktə]	'actor'	[tʃʌ́tni]	'chutney'
[ʔætləs]	'atlas'	[tʰéntərəv]	'tentative'

c. no flapping intervocalically in a stressed syllable Onset

[ʔətʰæk]	'attack'	[ʔətʰènjuwéɪʃn̩]	'attenuation'

(18) NZE Acrolect flapping

a. Flapping after a short stressed vowel and before a vowel

[hǽrə]	'hatter'	[kǽri]	'catty'
[ɹəgǽrə]	'regatta'	[tʰæ̀rəməgútʃi]	'Tatamagouchee'

b. No flapping after a stressed long vowel or stressed diphthong

[bá:tə]	'barter'	[mí:tə]	'metre'
[kəmpjú:tə]	'computer'	[ɹáɪtə]	'writer'
[páʊtə]	'pouter'		

c. No flapping after unstressed vowels

[hɔ́spətəl]	'hospital'	[tʰéɹətən]	'Terreton'

Flaps vs. glottals across contexts