t-glottalling, flapping and pre-glottalisation in British Englishes: Patterns in phonological and social variability

Danielle Turton
Lancaster University

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• We’ll be considering a range of t-lenition processes in English
  • glottalling, flapping and pre-glottalisation
• Variation conditioned by a multitude of factors:
  • phonological context
  • morpho-syntactic context
  • sociolinguistic factors (age, sex, social class)
• Variation is entirely orderly when considering it from the perspective of phonological theory
  • Synchronic reflections of the life cycle of phonological processes
Three examples

- Glottal stops in Manchester
- Flapping in Blackburn
- Pre-glottalisation in Newcastle
Theoretical background
t-lenition processes
Kiparsky (1979) on American English flapping

• Stage 1: word level
  • /t/s which are not foot-initial are laxed
    • city, sit on, sit here, sit
    • *attack

• Stage 2: phrase level
  • lax tokens of /t/ between vowels are flapped
    • city, sit on
t-lenition processes

What happens to laxed /t/s at the word level outside of V_V?

- Stage 1: word level
  - /t/s which are not foot-initial are laxed
    - *city, sit on, sit there, sit*
    - *attack*
  - American English – unreleased
  - RP – pre-glottalisation
  - Scouse – fricativisation
  - Urban British – glottal stop

See also Harris & Kaye (1990)
The life cycle of phonological processes
Bermúdez-Otero (2015)

Ramsammy (2015); Turton (2017)
Example: English /l/-darkening

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Cruttenden (2008); Jones (1966)
Sproat and Fujimura (1993); Gick (2003)
Olive et al. (1993)
Hayes (2000); Yuan and Liberman (2011)

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

Bermúdez-Otero (2007), Turton (2014)
Example: English /l/-darkening

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

Bermúdez-Otero (2007), Turton (2014)
Example: English /l/-darkening

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

Domain narrowing

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Bermúdez-Otero (2007), Turton (2014)
The variation corollary

If a phonological process $\pi$ shows a rate of application $x$ in a small embedded domain $\alpha$, then $\pi$ will apply at a rate equal to or greater than $x$ in a wider cyclic domain $\beta$.

Turton (2016: 139)

See also Guy (1991)
Boersma & Hayes (2001)
**Example: English /l/-darkening**

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- Coda-level darkening

Bermúdez-Otero (2007), Turton (2014)
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Rule generalisation

- Bermúdez-Otero (2007), Turton (2014)
- Cruttenden (2008); Jones (1966)
- Sproat and Fujimura (1993); Gick (2003)
- Olive et al. (1993)
- Hayes (2000); Yuan and Liberman (2011)

Foot-based darkening
The data

Manchester
13,648 tokens, 128 speakers

Blackburn
3,200 tokens from 28 speakers

Newcastle
4,203 tokens, 32 speakers
t-glottalling

Manchester
13,648 tokens, 128 speakers
/t/-glottalling in Manchester

“things have got better but everyone...”
HallieT, UWC, 22
/t/-glottalling
Manchester (Baranowski & Turton, 2015)
Rule generalisation: /t/-glottalling advancing from syllable to foot
Manchester (Baranowski & Turton, 2015)

- Final intervocalic:
  - 0%
  - 25%
  - 50%
  - 75%
  - 100%

- Age group:
  - Young
  - Middle
  - Old

- Gender:
  - Female
  - Male

- Class:
  - WC
  - MC

- Sit:
  - Sit here
  - Sit on
  - Sitting
  - City
Manchester glottalling

Domain narrowing

Rule generalisation

Variation corollary

% glottalling

foot
syllable

Stem level
Word level
Phrase level

context

sit here
sit on
sitting
city
Glottalling contexts across age groups

almost all syllabic /n/s
Manchester summary

• Rates of application of t-glottalling in Manchester respect the architecture set out by the life cycle of phonological processes
  • domain narrowing: *sit here* > *sit on* > *sitting*
  • and rule generalisation: *sitting* > *city*
  • Frequency rates reflect those as predicted by the variation corollary

• Oldest age group show no/little evidence of rule generalisation yet
  • This stage was advanced by the middle age group
t-flapping

Blackburn
3,200 tokens from 28 speakers
Blackburn /t/: three main variants

- [t] (green circle, labeled "better")
- [r] (red circle, labeled "whatever")
- [ʔ] (blue circle, labeled "water")
Flaps in British English varieties

- Flaps have always been in British English (Haugen 1938, Minkova 2014: 147, Wells 1982)
  - It’s variable (unlike American English)
- Dickens’ drunken characters t-flap
- Primary contextual target is different to glottalling:
  - Glottalling intervocalically is advanced
  - Flapping intervocalically is expected – it’s flapping’s main domain!
- More recently South-East “educated” varieties
  - David Cameron/Tony Blair flapping (Hagyard 2015, Jell 2016)
Blackburn: Younger speaker don’t flap as much

![Bar chart showing percentage of flap, glottal, and t sounds in younger and older age groups. The chart indicates that younger speakers use flap sounds less frequently than older speakers.]
As expected, more glottalling at the end of words than internally.

Very similar rates of flapping in both word-internal and final position.

- If flapping is a phrase-level process, this is what we'd expect.
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?
• 16 tokens of flapping after a long vowel

• *Waiting, thought about, outta, quite a, forty*

• Almost always uttered by old males in the dataset

• This pattern is also reported for New Zealand basilect vs. acrolect (Bye & de Lacy 2008)
Intermediate stage of rule generalisation?
The minimal or maximal 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.
- Perhaps most commonly discussed with reference to competitive reduction
  - Second /t/ can only be lenited if the first is: *repe[t][i][ɾ]ive, *compe[t][i][ɾ]ive (McCarthy 1982; Harris & Kaye 1990)
- Not discussed in terms of sound change
  - Long vs. short vowels see Balogné Berces & Honeybone (2012), Balogné Berces (2015)
Am I saying that old men are leading sound change?

• Well, they’re the most advanced users in phonological terms
• But they’re not leading a sound change.
• This older generation reflects the furthest this sound change went before it ran out of sociolinguistic steam
• Flapping didn’t get that far, and new developments have taken over
Blackburn summary

• Glottalling has taken over from flapping for youngest generation

• Glottalling follows predictions of life cycle:
  • \textit{city/sitting} < \textit{sit on}
  • No data for \textit{sit here} contexts (yet!)

• For flapping, predictions were initially unclear but:
  • data shows the possibility for a short vowel > long vowel OR minimal > maximal foot hierarchy
  • more data needed e.g. judgement elicitation
  • Blackburn may not be the best speech community to confirm this effect
    • Older American English recordings?
Newcastle glottalisation

4,203 tokens, 32 speakers
Glottalisation in Newcastle and Tyneside
Docherty & Foulkes (1999, 2005); Milroy et al. (1994)

• The phonological conditions under which Newcastle selects glottalised variants are different from the rest of the British Isles.
  • It occurs between vowels (or sonorants)
  • Same environment as flapping

• The phonetic realisation is also different
  • Wells (1982): glottal masking of the oral plosive burst

• Traditionally reported that...
  • Full glottal stop replacement does not occur. Instead we find pre-glottalisation
  • Pre-pausal position is strong and requires release e.g. sit

• Phonetically like glottalling, phonologically like flapping

• Has this changed at all today?
Full glottal stop replacement has reached Newcastle

- Change from outside the speech community? Or lenition trajectory?
- Higher in *city* than *sit on*. Is this a problem for the life cycle approach?
- Or is it what we’d expect given the phonology of this variety?
- Pre-glottalisation’s target is intervocalic position
- Full glottal stop replacement is building on this
Effect found across age groups

![Graph showing the realisation of /t/ in different contexts for young, middle, and old age groups. The graph illustrates the proportion of realisation of /t/ as a function of context (city, sit on), with different shades representing the contribution of t, pre-glottalised, and glottal stop.]
Pre-pausal glottalling

• Previously unreported for Newcastle
  • Change from outside the speech community

• Target was intervocalic/sonorant – the same as flapping

• Seems to have made in-roads into younger speakers’ speech

• What does their phonology look like?
Newcastle summary

• Work in progress!

• Full glottal stop replacement exists
  • An old rule internal to the speech community competing with a new rule external to the speech community
  • Or just an advancement of the lenition trajectory?

• Pre-pausal glottalling exists

• Requires much further analysis (probably computational)
Conclusion

• t-lenition processes in English are highly variable, but constrained:
  • Glottalling in Manchester shows evidence of domain narrowing and rule
generalisation
    • *sit here > sit on > sitting > city*
  • Blackburn flapping shows new evidence of the role of the minimal vs. maximal foot
in rule generalisation
    • *city > ?* Katie
  • Variation in Newcastle glottalisation is messy:
    • but demonstrates that understanding the phonological system is important for interpreting
the direction of change.
    • more to come!

• The variation shows a great deal of orderliness when considering the
  perspective of the life cycle of phonological processes and the social and
  linguistic constraints in tandem
Thanks for listening and thanks to...

Ricardo Bermúdez-Otero, Brad MacKay, Dan McCarthy, Jasmine Warburton, Kaleigh Woolford

Newcastle University Faculty Research Fund

Matt Aspden, Laura Bannan, Hannah Lindsay, Jessica Gledhill, Megan Rawnsley

My speakers
References

References II


Jell, Catherine. 2016. t-flapping in received pronunciation. Undergraduate research paper, Newcastle University.


Preceding vowel length in Manchester glottalling

![Graph showing % glottalling for short and long contexts. The graph indicates a similar percentage of glottalling in both contexts.]
Preceding vowel length in Tyneside
London /t/

- London is famous for glottal replacement, in all non-foot initial /t/s
- 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?
  - 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
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

![Bar chart showing distribution of Tyneside /t/ sounds:]

- [ʔ]
- [ʔt]
- [t]

Legend:
- final pre-voc
- intervocalic
Lenition trajectories

- Harsher forms of lenition typically apply at lower levels of the grammar.
- What happens to /t/s that are lax ed at the word level but not between vowels?
  - in conservative American English, they are typically unreleased
  - 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
  - RP pre-glottalises
- Other examples:
  - /l/ vocalisation
  - Loss of post-vocalic /r/