Word final and intervocalic glottalised /t/ replacement in Estuary English: Variety of Essex*

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Carvajal, Camilo Andrés B. 2016. Word final and intervocalic glottalised /t/ replacement in Estuary English: Variety of Essex. Linguistic Research 33(2), 193-204. The realisation of /t/ as a glottal stop [ʔ] is a phenomenon described as occurring in word medial or final position (Docherty, 2010; Fabricius, 2002; Przedlacka, 2002; Roach, 1973). In English, sociolinguistic studies and phonological corpora (Schleef, 2013; Tagliamonte & Temple, 2005) have tried to frame and predict the context of glottal stops, since it is perceived as a phenomenon of change which is an index of membership to the Cockney or Estuary English, different from the variety of London. We explored a set of tokens containing glottalisation of the alveolar stop segment /t/ from a recorded corpus of naturally occurring data (British reality TV show The Only Way is Essex) in order to predict instances of glottal replacement. Main findings suggest that both onset or coda position are insufficient variables to determine the occurrence of [ʔ], but stress does allow a better calculation for contexts of glottalisation replacement. The present analysis expands prior findings in the literature by involving syllabic boundaries and stress to determine the maintenance of the alveolar feature in all studied samples, as well as to support former predictions that glottalised /t/ emerges in syllable final or intervocalic contexts relying on pure articulatory grounds. (University of Delaware)

Keywords Estuary English, Essex Accent syllabic structure, glottalic replacement, phonetic stress

1. Introduction

Across all varieties of English in the United Kingdom, the realisation of /t/ as a glottal stop [ʔ] is a well-documented phenomenon (Docherty 2010; Fabricius 2002;...
Przedlacka 2002; Roach 1973), that has been studied in other varieties of English, and not uncommon in the United States and Canada (Eddington and Taylor 2009). In England this feature has been traditionally perceived as an index of membership to the Estuary and Cockney varieties (South Eastern England), but it has been present in London and Glasgow for over a hundred years and it is growing in the number of dialects that acquire it at a rapid pace in all over Great Britain (Williams and Kerswill 1999).

This study focuses on the variety called Estuary English, which has introduced perceivable feature changes in the standardised dialect Received Pronunciation (RP) since mid 80’s, including the glottalised /t/ (Buades 1999).

The outline of this paper is as follows: Next I discuss the theoretical background of studies focusing on the patterns of glottalisation, as well as findings and hypotheses to classify their different phonological types. Section 3 presents the research question, and section 4 details the procedure of data collection and analysis. Finally, I suggest possible future work from the perspectives of phonology and pragmatics.

2. Theoretical background

Glottalisation of the alveolar stop segment /t/ is a phonological pattern attested before the 20th century, since it dates back to the early 1920, and even audio recordings are evidence of its origins further back, providing direct proof that glottalisation could have been common from at least the middle 19th century onwards (Collins and Mees 1996). For Andrésen (1968), glottalised stops in standard spoken British English have spread across England from north to south since the middle of the 17th century, and they have gained prestige of standard speech between the first and second World Wars.

There is an ample amount of empirical evidence of the glottalisation of /t/ in many dialects of the U.K., more specifically, in the Estuary/Cockney dialects. Glottalisation of /t/ is found in the environments:

(1) Word-final preconsonantal:  [gɛʔ ðɪs]
(2) Intervocalic: Word medially:  [wɔ : ?ə]
When analysing glottalisation of /t/ (as well as other voiceless stops) an important distinction is in order, namely: Glottal replacement as opposed to glottal reinforcement.

Glottal reinforcement occurs when [ʔ] concurrently appears with [t], e.g. [sta : ʔt], which is known as pre-glottalisation. A similar case is that of concomitant glottalisation, when [t] is together with [ʔ] e.g. [ntʔ], being a double articulation at the same time as the [t] oral occlusion. (Docherty 2010: 62-64). A final type of glottalisation ([t] replaced by [ʔ]) has been discussed, in opposition to the former two phenomena, especially, as a feature subject to diastratic variation, from one accent to another in terms of both distribution of the glottal closure and its articulatory characteristics (Roach 1973).

Glottal replacement of stops is a well-established element of RP in word final position, as it is clearly spreading to the overall dialect of RP, although not word medially, being a case more perceivable in Estuary-Essex (Milroya et al. 1994). To this end, Schleef (2013) examines the internal and external constraints on glottal replacement of /t/ among adolescents in London and Edinburgh, and concludes that phonological and stylistic constraints play a key role in determining the variation of the segment, given that glottalisation is constrained by word frequency. Glottalisation is likely due to stress in word-medial position, in word-final position, however, only London speakers show an effect of word frequency, whereas Edinburgh speakers do not.

The following table (based on Akamatsu 2007) offers a synthesis of the elements that determine both types of glottalisation.

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Phenomenon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glottal reinforcement</td>
<td>Pre-glottalisation</td>
<td>[t] preceded by [ʔ]</td>
</tr>
<tr>
<td></td>
<td>Concomitant glottalisation</td>
<td>[t] together with [ʔ]</td>
</tr>
<tr>
<td>Glottal replacement</td>
<td>Glottalisation (or full-glottalisation)</td>
<td>[t] replaced by [ʔ]</td>
</tr>
</tbody>
</table>
This phonological change has attracted studies from sociolinguistics, which try to locate the emergence and concentration of /t/ glottalisation and its status in Britain’s speech communities. In Tyneside, for instance, females lead in the use of glottal replacement, and males prefer glottalisation with the consonant (Docherty 2005). This is taken as evidence that women tend to be more readily oriented towards prestige norms than men, however no apparent preference for the glottal /t/ is found in a study with 65 participants from both Derby and Tyneside of the Northeast England (Milroya et al. 1999). In a similar vein, Fabricius (2000) focused on prepausal and prevocalic glottalised /t/, for which she found no overt difference between male and female speakers in /t/ glottalisation, but rather it seemed as a widely spread characteristic of young groups of speakers in England. More recently, the project Phonological Variation and Change within the Tyneside Variety of English (Docherty and Foulkes 2005: 176) warns of the multiple articulatory phonation mechanisms that coincide with what is commonly referred to as glottal stop, providing instrumental phonetic evidence to assert that this is a different type of segment that cannot be described as other stops, but simply produced in a different place of articulation. In that study, this specific type of glottal stop is not found in Northeast England, where a pre-glottalised tap is the segment for /t/.

Finally, instances of glottal replacement are similar to /t/ deletion, a contemporary phenomenon in British English which is sensitive to the preceding and following phonological contexts of /t/. Deletion applies mostly to weak verbs participial suffixes in /d/ (e.g. loved, trained), however, in this case syllabification could not be a variable to predict the surface form of elided coronal stops (as suggested by Tagliamonte and Temple 2005), which is a central concept for this paper to predict instances of /t/ glottalisation.

3. Research question

Being the voiceless alveolar stop /t/ realised as a glottal stop [ʔ] in colloquial Estuary English: Variety of Essex, this study sets out to explore the environments that condition its appearance. Thus the research question is: Is the syllabic position of /t/ relevant to predicting its realisation as [ʔ]? This paper limited the question to syllabic position in order to narrow possible factors shaping syllabic structure in
glottalisation patterns as a way to limit the scope of the study in an exploratory step.

4. Method of data collection

The phonological change /t/ → [ʔ] was analysed auditorily to identify as many segment environments as possible, the intention being that a word by word comparison of neighbour segments will shed light on systematic patterns of the target phonological change. To this end, with the assistance of three native speakers of English, 100 tokens containing the target /t/ (regardless of its occurrence as [ʔ] or [t]) were randomly selected and transcribed into IPA symbols. As a corpus of unscripted dialogue, an over 8 hour long repository of 3-5 minute clips from the reality TV series *The Only Way is Essex* was used (Wood, Wrigley and Brooks 2015). A comparison of the environments where [ʔ] occurs yielded evidence of the rules that condition its emergence in spoken word production.

Independently of most variationist / sociolinguistic analyses, no assumption was made a priori of differences in sex, age or social continuum from the speakers. It is worth noting that *The Only Way is Essex* is a TV show targeted to a 17-28 year old audience, and no child actors or elderly are part of the cast, therefore our conclusions will be limited to a young adult population, also in line of the findings by Milroya et al. (1999) and Docherty (2005). No communicative function or contexts of utterance were considered in choosing the sample data.

5. Analysis

Below we look at the immediate environments and syllabic structures of the words comprising the data sample.

A preliminary analysis of the environments for both segments suggests that both alveolar [t] and glottal [ʔ] stops are allophonic surface forms of the same phoneme /t/ because they do not conform minimal pairs, and they are in complementary distribution, where one appears the other does not:
Table 2. Contexts of glottalisation

<table>
<thead>
<tr>
<th>Voicless stop</th>
<th>[t] alveolar</th>
<th>[ʔ] glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>always onset</td>
<td>always coda</td>
</tr>
</tbody>
</table>

This is derived from the analysis of sample data, from which 45 tokens contain [ʔ] in lieu of the phoneme [t]: [ʧiʔ], [hɒʔ]. The remaining 55 present no glottalised /t/: [ˈtɒpi:k], [ˈkætə:pɪlə:], [əˈtæk]. The UR can be expressed schematically:

![Diagram]

As the table above indicates, the allophonic version of [t] as [ʔ] is contingent upon its occurrence in coda position. This is due to the post-nuclear locus where the feature [+ constr gl] is acquired.

A rule to predict the allophone is stated as follows: Voiceless alveolar stop /t/ becomes glottal [ʔ] in coda position; it keeps its alveolar feature elsewhere.

\[
/\text{t/} \rightarrow [\text{ʔ/}] / \quad \quad /\text{t/} \rightarrow \text{[t] elsewhere}
\]

This rule seems to apply in all contexts:

<table>
<thead>
<tr>
<th>waiting</th>
<th>twenty</th>
<th>bit</th>
<th>naughty</th>
<th>but</th>
<th>between</th>
<th>later</th>
</tr>
</thead>
<tbody>
<tr>
<td>underlying forms</td>
<td>/weɪtɪŋ/</td>
<td>/ˈtwɛnti/</td>
<td>/bɪt/</td>
<td>/nɔː tɪ/</td>
<td>/bʊt/</td>
<td>/bɪtwiː n/</td>
</tr>
<tr>
<td>onset</td>
<td>weɪʔɪŋ</td>
<td>twenti</td>
<td>__</td>
<td>nɔːʔi</td>
<td>__</td>
<td>bɪʔtwiː n</td>
</tr>
<tr>
<td>coda</td>
<td>__</td>
<td>__</td>
<td>bɪʔ</td>
<td>__</td>
<td>bʊʔ</td>
<td>__</td>
</tr>
<tr>
<td>surface forms</td>
<td>[weɪʔɪŋ]</td>
<td>[ˈtwɛnti]</td>
<td>[bɪʔ]</td>
<td>[nɔːʔi]</td>
<td>[bʊʔ]</td>
<td>[bɪʔtwiː n]</td>
</tr>
</tbody>
</table>
The pattern, however, is altered by *waiting, later and naughty:* [ˈweɪʔɪŋ], [ˈleɪʔə], [ˈnɔːːʔi], and the second syllable in *twenty* [ˈtwɛnti]. Upon a more detailed examination, the position of /t/ in the syllabic structure (onset or coda) seems optional, as long as it is in unstressed syllable. In a stressed syllable it is always in the coda of syllable boundary. This requires a modification of the rule:

\[ /t/ \rightarrow [ʔ] / \{+\text{stress}\} \] α

Voiceless alveolar stop /t/ becomes glottal [ʔ] in coda position or after a stressed syllable; it retains its alveolar feature elsewhere.

A deeper analysis of the data then reveals an additional context where coda position does not render a glottalised /t/, even in a stressed syllable.

In consonant clusters after [s], even in coda position, /t/ remains unaffected. Therefore this rule applies only in a post stressed syllable, if obstructed by another consonant (/s/, /n/) it would change the output:

\[ /t/ \rightarrow [ʔ] / V[^{\text{+stress}}] \alpha [ \_ (V) ] /t/ \rightarrow [t] \] elsewhere

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<table>
<thead>
<tr>
<th></th>
<th>roast</th>
<th>cost</th>
<th>chest</th>
<th>lost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>underlying forms</strong></td>
<td>/rəʊst/</td>
<td>/kəʊst/</td>
<td>/ʧɛst/</td>
<td>/lɒst/</td>
</tr>
<tr>
<td><strong>onset</strong></td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td><strong>coda</strong></td>
<td>rəʊst</td>
<td>kəʊst</td>
<td>ʧɛst</td>
<td>lɒst</td>
</tr>
<tr>
<td><strong>surface forms</strong></td>
<td>[rəʊst]</td>
<td>[kəʊst]</td>
<td>[ʧɛst]</td>
<td>[lɒst]</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th></th>
<th>beautiful</th>
<th>control</th>
<th>pretty</th>
<th>talking</th>
<th>bottom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>underlying forms</strong></td>
<td>/ˈbjuːtʃəl/</td>
<td>/kənˈtrəʊl/</td>
<td>/ˈprɪti/</td>
<td>/ˈtɔː kjuː/</td>
<td>/ˈbɒtəm/</td>
</tr>
<tr>
<td><strong>post stressed</strong></td>
<td>ˈbjuː ʔəʃəl</td>
<td>___</td>
<td>ˈprɪʔi</td>
<td>___</td>
<td>ˈbɒʔəm</td>
</tr>
<tr>
<td><strong>surface forms</strong></td>
<td>[ˈbjuː ʔəʃəl]</td>
<td>[kənˈtrəʊl]</td>
<td>[ˈprɪʔi]</td>
<td>[ˈtɔː kjuː]</td>
<td>[ˈbɒʔəm]</td>
</tr>
</tbody>
</table>
As part of the analysis, no overt difference was found between speakers’ sex. Female and male speakers of Estuary English: Variety of Essex since both produced equivalent number of utterances with [ʔ] in the predicted position. There were a total glottalisation of 45 tokens, distributed in 35 word final instances and 11 word medial. Elsewhere unmarked positions ([t]) had a total of 55 occurrences.

Readers are referred to the Appendix for a full list of the tokens with comparative tables of glottal and alveolar voiceless stops.

6. Conclusions

During the course of the present analysis, the main research question Is the syllabic position of /t/ relevant to predicting its realisation as [ʔ], was answered. Certainly, syllabic structure has proved to be an important element to predict the occurrence of glottal replacement. Nonetheless, stress determines the maintenance of the alveolar feature in all studied samples.

These results come to complement Akamatsu’s (2007: 8) notion that glottalised /t/ emerges in syllable final and intervocalic positions. His conclusion relied on pure articulatory grounds:

It may be appropriate to briefly conjecture why the glottal stop [ʔ] occurs in English as a realization of the phoneme /t/. The reason is, as I myself see it, that apical articulation is unstable in English in syllable-final context and the glottal stop acts as a secondary and accessory ‘prop’ for the apical articulation of [t], so that if the apical articulation fails to materialize, the presence of the unmissable stop articulation is nevertheless guaranteed by the occurrence of [ʔ] (Akamatsu 2007: 16-17, italics in original).

A similar point was made earlier by Gimson’s (1970). He propounded that the reason for the alteration of /t/, is an evident predominance of instability associated with the alveolar consonant clusters (including /t/, /d/). This change was later associated with coarticulation within consonantal clusters for English unstressed vowels (Scully 1973).

Our results offer a more precise description than Milroya et al. (1994) for whom
glottalisation in Estuary-Essex is simply a matter of word final or word medial /t/, regardless of syllabic structure. In that regards, Fabricius’ (2000) account of /t/ glottalisation as a widely spread characteristic of young groups of speakers in England with no overt difference between male and female speakers, is confirmed in this analysis, with an emphasis on the dialectal region of young speakers from South Eastern England.

7. Further research

As stated earlier in the research questions, this paper was limited to syllabic position in order to narrow possible factors shaping glottalisation patterns as a way to limit the scope of the study. This project opens up new terrains to determine whether glottal replacement is in free variation with glottal reinforcement and how the realisation of /t/ in various contexts can be analyzed and categorised into /t/ variation (such as deletion, /t/, glottalisation or replacement). An examination of the instances where reinforcement appears instead of replacement exceeds the scope of this paper. Such tokens—as well as those where /t/ was deleted—were discarded on the basis of not belonging to glottalisation replacement. Additional data, as well as a consideration of pragmatic variables (emphasis, slow speech) could cast light on the matter to predict the full allophonic variation of /t/ in Estuary English.

Appendix: Corpus of lexical items with the target segment /t/

Glottalisation: 45 tokens

Word final (35):

<table>
<thead>
<tr>
<th>[hɔʔ]</th>
<th>[bʌʔ]</th>
<th>[steɪʔ]</th>
<th>[ðæʔ]</th>
<th>[ɛʔ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>[kwaɪʔ]</td>
<td>[jɛʔ]</td>
<td>[pi ː ]</td>
<td>[meɪʔ]</td>
<td>[ə ˈ baʊʔ]</td>
</tr>
<tr>
<td>[wɔʔ]</td>
<td>[bɪʔ]</td>
<td>[laiʔ]</td>
<td>['estɪmeɪʔ]</td>
<td>[pʊʔ]</td>
</tr>
<tr>
<td>[ʃi ː ]</td>
<td>[pæʔ]</td>
<td>[faiʔ]</td>
<td>[fə:ɡɛʔ]</td>
<td>[bu ː ]</td>
</tr>
</tbody>
</table>
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Wood, Tony, Ruth Wrigley (Writers), and Gary Brooks. (Director). 2015. In Matt Bailey,
Daniella Berendson, and Andrew Jackman (Executive producers), The Only Way is

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Received: 2016. 02. 02.
Revised: 2016. 04. 07.
Accepted: 2016. 04. 07.