

Existing and Non-existing Accents : The Case of Intervocalic /t/ in English

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1 Introduction

Depending on our daily experience, we often get the impression that a given language can be spoken with many different accents, e.g. Cockney, Scouse, Geordie, Estuary... are just some of the accents of British English. In fact, the reason why we form such an impression is because different phenomena in spoken language, such as linking-*r* and intrusive-*r*, can combine in numerous ways. For example, take phenomena I (e.g. linking-*r*) and II (e.g. intrusive-*r*): each has two settings A and B (e.g. 'ON' and 'OFF'), thus creating the four parameters I-A, I-B, II-A and II-B. This ($1 \times 2 \times 3 \times 4$) provides 24 possible combinations: 24 different accents. In reality, however, it may not be true that all 24 accents exist. The total number is inevitably reduced since the existence of a particular phenomenon (rule) can be dependent on the existence of another phenomenon (Harris 1994: 232-237: e.g. the existence of intrusive-*r* implies that of linking-*r*, but not vice versa).

By focusing this discussion on a single phenomenon, it is revealed that restrictions exist on the extent of accent variation. The phenomenon in question is the realization of intervocalic /t/ in English, which will serve as an illustration of how and why accent/dialect variation is not unlimited. The article is structured as follows. Section 2 describes the phonetic realization of intervocalic /t/ in various accents of English. Section 3 then considers what causes the number of accents to be restricted and by what mechanism this comes about. Finally, some remarks are given in section 4.

2 The realization of intervocalic /t/ in English

The sound transcribed by /t/ is cross-linguistically one of the most commonly used sounds. In introductory linguistics textbooks, English /t/ is synchronically realized in at least three different ways, depending on the context. In RP (Received Pronunciation), for example, /t/ displays at least three different phonetic manifestations: aspirated [t^h], plain [t] and unreleased [t̚]. Aspirated [t^h] appears before stressed vowels if not preceded by /s/ (e.g. *tí*p, *retáin*), plain [t] after /s/ (e.g. *sting*, *steam*) and before an unstressed vowel (e.g. *pí*ty) and unreleased [t̚] utterance-finally (e.g. *pit*) and pre-consonantly (e.g. *footbá*ll). For a straightforward account of how accent variation is restricted, this discussion focuses on just one of these contexts, intervocalic /t/, which is generally regarded as a weak position (for details, refer to Lass 1984, Harris 1994, Honeybone 2008).

Following Harris (1994 : 196), intervocalic /t/ displays four different reflexes when intervocalic within a morpheme-internal foot, as illustrated below.

(1) Variation in foot-internal intervocalic /t/

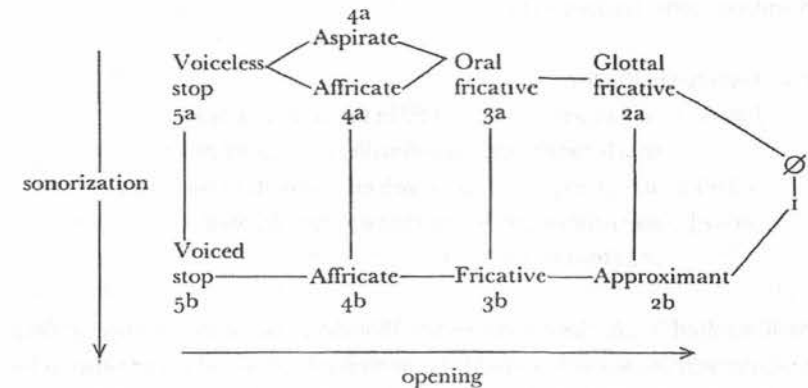
| A | B | C | D | Examples |
|-----|-----|-----|-------|---|
| [t] | [ʔ] | [ɾ] | [θ/s] | <i>pre<u>t</u>ty</i> , <i>P<u>t</u>er</i> , <i>wa<u>t</u>er</i> , <i>automa<u>t</u>ic</i> |
| | | | | <i>ph<u>t</u>ographic</i> , <i>au<u>t</u>omatic</i> |

Systems A and B are found in many areas of England and Scotland: the representative accent of England is Received Pronunciation (RP), which retains the historical /t/ sound; in Scotland /t/ typically undergoes glottalling of the kind which is also found in the Cockney (London) accent. The process is a form of **debuccalisation**, in which a consonant loses all articulatory properties associated with the oral cavity, and as a result, becomes a glottal sound (i.e. [ʔ] or [h]). Next, System C exhibits intervocalic tapping in foot-internal positions and is found throughout the United States and Canada, as well as in some areas of England and Ireland. Tapping is a type of **vocalisation**, in which a consonant loses all properties which characterize obstruency (e.g. occlusion, noise,

voicing contrasts, etc.). Finally, system D shows /t/-**spirantisation** typically to a slit fricative [θ] or sibilant fricative [s] and is found in southern Ireland and Liverpool (Honeybone 2001 : 238).

Historically speaking, as the spelling indicates, systems B, C and D are generally considered to have developed from system A. Then, sound changes from A to the other systems (debuccalisation, vocalization and spirantisation) are considered to be grouped into a single process called **consonantal lenition** (weakening). It may be defined as a phonological change in which a segment becomes less consonant-like than before (Trask 2000 : 190). This is captured by the following trajectory (cf. Honeybone 2008, Backley & Nasukawa 2009).

(2) Lenition trajectory (Lass 1984 : 178)



The point to emphasize here is that different varieties of English display four different realizations of intervocalic /t/ ([t, ʔ, ɾ, θ/s]), the last three of which ([ʔ, ɾ, θ/s]) fall under the same general description of /t/-lenition. (Precisely speaking, other variants are also possible, but these lie outside the scope of the present discussion.) This begs the question as to what kind of mechanism controls the number and kind of variation that exists in the phonological component of the language faculty.

3 The limit of variation and the segmental structure of /t/

In segmental phonology, which has been developed chiefly within the generative grammar tradition, restrictions on variation are attributed to the phonological organization of a given segment. More precisely, variants are produced only by reorganizing the phonological features which constitute the original form of a particular segment. In the case of lenition, according to Harris (1990, 1997), this reorganization is analysed as a process involving a reduction in the structural complexity of a segment (in terms of the number of features present in the segment's structure).

Let us consider which features constitute the English segment /t/, using single-valued (monovalent) features in order to restrict the generation of unattested phenomena (Harris 1990, Harris & Kaye 1990, Harris 1994, Nasukawa 2005, Backley 2011).

(3) Features in English /t/

- |mass| : convergence of F1 and F2 in the central region
which corresponds to coronality in consonants
- |edge| : abrupt drop of energy which corresponds to occlusion
- |noise| : aperiodic energy which characterizes frication
and stop release burst

As illustrated in (3), these features are thought to be mapped primarily onto acoustic patterns since they should be neutral properties which are shared by both speakers and hearers (rather than be biased towards only one of these).

In contrast to (3), the internal structure of the three reflexes of /t/ in (1) are assumed to be as follows.

(4) Features in the reflexes of intervocalic /t/ in English

- a. [ʔ] : |edge|
- b. [ɾ] : |mass|
- c. [θ/s] : |mass, noise|

Both the glottal stop [ʔ] in system B and the tap [ɾ] in system C consist of a single feature, |edge| and |mass| respectively (Backley 2011 : 115-124, 87-91). On the other hand, the slit dental fricative [θ] (or, in some cases, [s]) in system D comprises the two features |mass| and |noise|. Employing the segmental structure just described, /t/-lenition, which is a cover term for various forms of lenition including debuccalisation, vocalization and spirantisation, may be captured as in (5) (cf. Backley & Nasukawa 2009).

(5) /t/-lenition (suppressed features are crossed with double lines)

a. debuccalisation (glottalling)

| | | | |
|-------------------|--|---|--|
| [t] | | → | [ʔ] |
| mass, edge, noise | | | mass , edge, noise |

b. vocalization (tapping)

| | | | |
|-------------------|--|---|--|
| [t] | | → | [ɾ] |
| mass, edge, noise | | | mass, edge , noise |

c. spirantisation

| | | | |
|-------------------|--|---|------------------------------|
| [t] | | → | [θ] |
| mass, edge, noise | | | mass, edge, noise |

Although the number of features present in the reflexes of intervocalic /t/ is different, all of the above cases show that /t/-lenition is a set of processes which suppress some features of the original /t/. From this it may be concluded that there is no form of /t/-lenition which can refer to features that are not already present in the structure of the original /t/. The impossibility of this scenario is captured in (6), where a novel feature |rump| appears in the reflexed forms of intervocalic /t/. The two phenomena in (6) are unattested in any accent of English.

(6) Unattested phenomena (|rump| = acoustic pattern corresponding to labiality/velarity)

| | | | |
|-------------------|--|---|--|
| a. [t] | | → | [ϕ] |
| mass, edge, noise | | | mass , edge , noise , rump |

b. [t] [w]
 |mass, edge, noise| → |mass, edge, noise, rump|

It should be noted at this point that in addition to the three lenited structures in (5), other forms of lenition are also possible as a result of feature suppression.

(7) Other possible structures as a result of feature suppression

a. no stop release

[t] [t̚] (unreleased stop)
 |mass, edge, noise| → |mass, edge, noise|

b. debuccalisation (aspiration)

[t] [h]
 |mass, edge, noise| → |mass, edge, noise|

c. spirantisation

[t] [h] (pharyngeal fricative)
 |mass, edge, noise| → |mass, edge, noise|

(7a) is not possible as a lenited reflex of intervocalic /t/ if that /t/ is followed by a vowel. This is because the vowel forces the preceding stop consonant /t/ to be released. On the other hand, this unreleased reflex is possible word-finally and pre-consonantly. As for (7b), there has been little discussion of those cases in which [h] is attested as a lenited reflex of /t/. Nevertheless, this does occur in some dialects of English (Honeybone 2001). By contrast, the lenited structure in (7c) is impossible in English since the combination of |edge| and |noise| without any accompanying place feature is simply ruled out within the segmental inventory of English.

By focusing on just the process of intervocalic /t/-lenition, the preceding paragraphs have shown how easy it is to identify the possible/impossible variants of a segment by referring to that segment's original structure in terms of single-valued (monovalent) features. In contrast, segmental theories which employ two-valued (bivalent : +/-) features (Chomsky & Halle 1968,

et passim) fail to account for the fact that there is a limitation on the number of variants which may appear as a result of /t/-lenition. Without some additional theory of markedness to control the combination of +/- features, no explanation can be given for what is possible or impossible, since all segments are composed of the same set of bivalent features.

4 Final remarks

Finally, there are two further points to be noted : (i) whether the process discussed is found in other languages ; (ii) why the process in question takes place in intervocalic position.

First, with regard to (i), /t/-lenition is found not only in English but also in other (unrelated) languages. One such system is that of the Japanese accent spoken in wide areas of the Tohoku region.

(8) /t/-lenition in Tohoku Japanese (Nasukawa 2005 : 96-98)

| Standard Japanese | | Tohoku Japanese |
|--|---|--|
| <i>hata</i> 'flag' | → | <i>ha[ɺ]</i> ([ɺ] = alveolar lateral flap) |
| <i>kata</i> 'shoulder' | → | <i>ka[ɺ]</i> |
| <i>mita</i> 'someone saw' | → | <i>mi[ɺ]</i> |
| (< <i>mi</i> 'to see' + <i>-ta</i> 'PAST') | | |

In an approach which uses monovalent features, the process in (8) is analysed as tapping, a type of vocalization which suppresses the |edge| and |noise| features intervocalically to leave only the place feature remaining. This process is exactly the same as observed in the English C system described in (1). That is, system C (spoken throughout the United States and Canada, as well as in some areas of England and Ireland) shares the same rule (intervocalic tapping) with Tohoku Japanese. The same is true in many languages such as Spanish, Ibibio and Western Apache (cf. Harris & Urua 2001).

Regarding the other point (ii), intervocalic position (as well as word-final and pre-consonantal positions) is generally viewed as a weak position in pho-

nological studies. The properties of this position have been defined in various ways. A particularly persuasive formal analysis is given in Harris (1994, 1997) which advocates a theory of positional strength based on LICENSING INHERITANCE, in which a licensed position inherits its a[utosegmental]-licensing potential from its licensor. According to this principle, intervocalic position is treated as a weak position. Under this view, intervocalic position (as well as word-final and pre-consonantal positions) is deemed to be the most deeply-embedded part of the dependency network of prosodic structure. As such, it inherits the least amount of licensing potential from its ultimate structural head. Since we lack the space to further discuss this issue here, the reader is referred to Harris (1997) and other work in the Government Phonology (GP)-literature for a detailed account of this mechanism.

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CONTENTS

Article

1. How Attentional Direction on Certain Language Aspects during Shadowing Training Influences Japanese EFL Learners' Language Processing Hiroshi NAKANISHI (1)

Proceedings of the Open Lectures 2018

1. Existing and Non-existing Accents : The Case of Intervocalic /t/ in English Kuniya NASUKAWA (13)
2. Scientific Studies of English Grammar and Meaning Takashi TOYOSHIMA (23)
3. English Structure and Language Change — with Reference to Passives in English Kenji INOMATA (41)
4. Pronouncing Schwa in Spoken English Phillip BACKLEY (55)

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