

A Personal Note on the Larynx as Articulator in English

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Abstract In tribute to Professor Sobkowiak’s well-known ability to think “outside the box”, I offer some suggestions for expanding the teaching of English phonetics so as to include functions of the glottis such as degree of aspiration, devoicing, and glottal reinforcement. I suggest that a focus on only the features which are phonologically contrastive does not give a rounded picture of the perceptually significant features of the spoken language or of its unique personality.

1 Introduction

As a teacher of English phonetics, I have followed the traditional English IPA chart for consonants. The obvious reason is that consonants represented here (except for glottal stop) are the source of phonological distinctions and are thus linguistically primary. The larynx has also featured as a source of intonation and of F0 change in stressed syllables, culturally-attuned voice quality, the voiced/voiceless distinction, and the glottal fricative. While this is an impressive load for any physical system, I have subsequently become convinced that it does not cover all the services provided: at least for English, the larynx is also very active in distinguishing degree of stress and position in the syllable.

We find in the literature that the larynx is an active articulator for making laryngeal consonants, and activity at the uvula and farther down the vocal tract has been discussed at length with respect to Semitic, Caucasian, and other languages, but not foregrounded with respect to English. We have traditionally been introduced to articulation as an oral function, and despite our glottal stop and fricative, we tend to underplay anything farther back than “velar”. Yet, from watching the famous X-ray movies of Ken Stevens producing a series of one- and two-syllable words (Öhman & Stevens, 1963 and attendant website) it is immediately clear that

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the larynx moves at least as much and probably more than the oral articulators in a highly coordinated and complicated manner. The process of articulation would be better described if it emphasised both laryngeal and supralaryngeal activity, and this would, in addition, give a better overall picture of the *sound* of English as well as its contrastive properties.

1.1 *Aspiration*

No one doubts that aspiration in English is a property of (phonologically) voiceless plosives which begin stressed syllables. It is not generally recognised that *degree* of aspiration is positively correlated with degree of stress: in completely unstressed syllables such as in *Vanuatu*, there is little or no aspiration, but in intermediate cases, there are intermediate degrees of aspiration, as in words such as *Mediterranean*, where the main stress falls on the following syllable (cf. Vaux, 2002). Aspiration reflects a delicate balance between glottal opening and airflow but also provides a significant cue for perception of stressedness. Since stressed syllables are important for speech perception (cf. Cutler & Norris, 2002), an understanding of this variable is helpful for students of English. In addition, duration of aspiration can provide information about speech rate (cf. Summerfield, 1981).

I specify “phonologically voiceless” plosives above because of devoicing.

1.2 *Devoicing*

After a pause or a voiceless segment, English word-initial “voiced” plosives are generally voiceless (Lisker & Abramson, 1964 and many subsequent authors) and distinguished from voiceless plosives by lack of aspiration. In this position, the distinction is maintained by the timing of voicing onset rather than by voicing during the consonant. We have here, therefore, not a simple “buzz” of the vocal folds during the closure (as we are taught in Phonetics 101), but a complex interaction of the oral and laryngeal articulators. Vocal fold activity is not an “on/off” function ... it is a delicate adjustment between airflow and oral pressure. Baken (1987, p. 376) observes “VOT (onset of voice after plosive release) is a reliable and easily measured correlate of an important and precisely regulated aspect of speech motor coordination”.

Word-final devoicing of obstruents (not just plosives) is common in English (Shockey, 2003, p. 30), though it is a phonetic, not a phonological process. The underlying voiced/voiceless distinction is maintained through other means, such as greater duration in vowels before so-called voiced segments, i.e. the final voicing is (notionally) tagged onto the vowel rather than the consonant. This phenomenon is sometimes called “pre-fortis clipping”, which looks at the phenomenon from the opposite perspective, assuming that vowels are shortened before phonologically voiceless segments rather than lengthened before voiced. In either case, it involves

a complex balance between oral and laryngeal articulation which minimises the amount of back pressure on the vocal folds which occurs when true voicing takes place during an obstruction in the oral tract.

1.3 Glottal Reinforcement/Glottalisation

Glottal reinforcement is noted as a feature of some varieties of English by many if not most authors (cf. O'Connor, 1952; Higgenbottom, 1964; Roach, 1973). It is certainly found in spoken General American and Standard Southern British (Shockey, 2003, p. 36).

Here I refer not to the substitution of /t/ by glottal stop intervocalically, but rather the simultaneous or semi-simultaneous closure at the glottis in syllable-final (phonologically) voiceless stops followed by a consonant or silence, as in 'hatband, clocktower, stopwatch'. (Some have reported reinforcement before [ʃ] as well). It is tempting to say that voicelessness is characterised by a closed rather than an open glottis in this environment in English.

Kortlandt (1997, p. 75) presents evidence that glottal reinforcement has long been a firm feature of spoken English:

Collins and Mees have recently advanced our knowledge of the matter by listening 'to a number of pre-1930 audio recordings, together with two recordings of later date, to hunt for what evidence, if any, could be found of glottalisation in the speech of people who had been born in the latter half of the nineteenth century' (1994, p. 75). They were impressed by 'the general pervasiveness of glottalisation in the material we have at our disposal. Far from having to search for odd examples, as we thought might be the case at the outset of our investigation, we have found glottalisation in the speech of all our subjects, even in formal delivery' (1994, p. 78). They conclude that glottalization was well-established in upper-class English speech by the latter half of the nineteenth century and suggest that 'this would imply that glottalisation was even more widespread in the standard language than our observations indicate (1994, p. 79).

Garellek (2011) presents experimental evidence that glottalisation is an important cue to the perception of English 't' in the environments where it occurs, though it provides less reliable information about the other voiceless stops. It seems likely that laryngealisation rather than complete glottal closure affords a similar clue, though this is an empirical question.

2 Conclusions

The issues discussed here may seem too sophisticated for the average student of phonetics, and it is presumably the case that not all of them are interested in the "soundscape" of English. But, in my opinion, for those who want or need to deal competently with spoken language, a balance between focusing on the phonological

architecture of the language and phonetic detail such as contributed by laryngeal activity could be effective.¹ It offers a partial answer to the question “What makes English sound different from other languages?”

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¹ My students have been, on the whole native speakers, so I must skirt around the issue of whether NNS should be encouraged to use or to simply be aware of these features.