

Phonetically Accidental and Systematic Gaps:
Exemplifying British English Triphthong Reduction and American English Alveolar Sequences

Assuming that nonexisting segments consist of possible ones (accidental gap) and impossible ones (systematic gap) in the phonology of a language, the two pieces of previous research have posited two levels of the gaps: lexically (Halle 1962, Chomsky and Halle 1965) and phonologically (Iverson and Salmons 2005) accidental and systematic gaps. (This issue has recurrently activated the phonological theories, some of which are represented contemporarily as Kirby and Yu 2007, Sheer 2007, Hayes and Wilson 2008.) The former specifies, on the basis of phonotactic constraints, that, given the word *brick*, the lack of *blick* is assumed to be accidental, while that of *bnick* systematic. The phonology preferably contains the initial /bl/ cluster, but the onset /bn/ is disallowed to occur in it since all of the onsets that consist of voiced stop + nasal are disallowed. In the latter, tense vowel plus ESH was lacking in early English, but the gap has been filled in the later history. The sequence is allowed to occur in the grammar and easy to overcome for native speakers, and thus constitutes accidental gap. Building on phonetically driven phonological theory (Sound Change by way of Speaker vs. Listener by Ohala 1989, 1993, Derivation by Kirchner 1997, Licensing by Cue by Steriade 1997, Articulation and Perception by Boersma 1998, 2009, Flemming 2004, to appear, Hamann 2009, Inductive Grounding by Hayes 1999, Evolutionary Phonology by Blevins 2004, 2006a, b, Blevins and Wedel 2009, Bidirectional Phonology and Phonetics by Boersma 2007, Boersma and Hamann 2008, P-Map by Steriade 2008), the paper presents the segmental gaps caused by physical activity.

Phonetically accidental and systematic gaps are based on a certain physical activity, that is to say, lack of a movement, lack of an air flow, etc. Phonetic bases hold to segments with different syllabic affiliations (onset, nucleus, coda) and with different articulators (e.g. dental, alveolar, palato-alveolar, or front, mid, back), in the sense of identical phonetic category. On the condition that an articulation is easy or difficult for speakers, the articulation is required to hold to all of the segments with it irrespective of the syllabic slots and the articulators. Phonetically preferred patterns might not exist in earlier stage, but they appear with allophonic shift and the gap is filled. The articulation conforms to the one of the language and had been highly possible to exist in it prior to the appearance. Regarding the syllabic slots and the articulators, to fill the gap proceeds by way of more than one; identical articulation appears, say, at dental, palate-alveolar and uvular. This is referred to as phonetically accidental gap. Phonetically systematic gap is equivalent to the corresponding ones in the previous research on the gaps in the sense of difficulty to overcome and no motivation on the existence. One of the features on it is that phonetically dispreferred patterns do not appear in most or all of the languages. This gap is peculiar to consonant sequences due to some extremely impossible ones relative to sequences of vowels. The sequences of *tap/flap + alveolar and *dental/palato-alveolar + alveolar are involved in the crosslinguistically unpronounceable examples which are grounded in physical activity.

BrE triphthongs undergo reduction due to the loss of the second elements. For the diphthong [aə], the first low vowel shifts to the second mid and, given cardinal vowels, the distance between the two elements is 1.5. It commonly occurs word-finally (power, fire). Non-word-finally, it is followed by the alveolars (science, Howard), which have the slight effect to shift to front. Both the mid distance between the two elements and the slightly fronted second element are involved in the British preferences. The possible diphthong notwithstanding, BrE did not involve in the inventories of the 18th and 19th centuries the diphthong which the phonetic accounts allow to occur. The gap, however, has been filled in recent Received Pronunciation (cf. Wells 1997). The reduced diphthong is assumed to be ongoing or recently predominant. In any case, it has been increasingly common and replacing the triphthong. Thus, it is meant to be a phonetically accidental gap.

PDAmE has largely been uncontroversially characterized by hyperrhoticity, which is referred to as the very common pronunciations of rhotics such as tap, flap, approximant (cf. Britton 2007 for the phonology and de Jong 1998 for the phonetics, see also Broadbent 2008 for the related article.). Despite the highly common tap, AmE has the syllabic [n] preceded by either nasally released /t/ or glottal stop (eaten, button). The lack of the articulation such as the tap plus the syllabic [n] represents phonetically systematic gap. Differently from the laterally released tap, the tip of the tongue returns to the neutral position, if pronounced, before syllabic [n]. The appearance of the cluster [nr] phonetically differs from *[rŋ], the sonority contours being similar, since the former has, without the return, the firm contact of the tip with alveolar. Relevantly, alveolar stops neither precede nor follow the tap, whereas other rhotics precede an alveolar stop in the rhyme. This also stems from the return to the neutral position. There is no AmE articulation involving two alveolars of this sort without a vowel intervened or with a vowel deleted.

Functional accounts implicitly demonstrate that either hierarchical units or movements of articulators cause a certain entity to occur in the phonologies of individual languages. The applications of the latter to the English-internal phenomena have been exemplified in the violation of the Syllable Contact Law (Hall 2004), OE smoothing (Howell and Wicka 2007), and Coda Maximization (Oda to appear). Jensen (2000), Hall (2006) and McMahan et al. (2007) are included in the relevant articles. All of the phenomena share, in the sense of uncontroversial issue, the feature that they are incapable of being accounted for by phonological principles, which are implied to hold true for crosslinguistic phenomena: the distribution of stressed/unstressed vowels related to sonority (de Lacy 2004), to take one. The distribution of these two gives rise to the difference behind the functionalism, implying the language-specificity for the phonetic bases and the universality for the phonological ones. Accidental and systematic gaps are applied to individual, but not to worldwide, languages. I would like to ask, at this point, on what

distinguishes between the two groundings. With respect to the phonological side, Iverson and Salmons take up Tense V + /f/, *[ʒ] and *[ɲ], the former two and the last one being accidental and systematic, respectively; the double contact on alveolar ridge in AmE and /aə/-diphthong in BrE on the phonetic side, as shown above. Some additional explanations have to be made at this point. First, the latter has the less common distribution. The reason for it stems from the supposition that to fill the phonetic gap proceeds by way of two or more activities on account of the syllabic affiliations and points of articulations. Unless the number is more than one, the evidence does not come up that a certain movement on the phonetically accidental gap has been compensated for in the level of an individual grammar. Second, when choosing between the two accounts, the way of adducing evidence differs in part from that of the language-internal phenomena. In the case of the phonetic gap, one of the issues to be examined becomes same type of movement and posture (e.g. the largest/smallest distance, partly or wholly in interrupting air flow).

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