

On the Foot-based Analysis of Aspiration in American English
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There are a variety of views on the environment for the aspiration of voiceless stops in American English. These include the view that the environment is syllable-initial (Kahn 1976 Selkirk 1982) or that it is foot-initial (Nespor & Vogel 1986, Iverson & Salmons 1995, Jensen 2000). There are also perceptually-based views of English aspiration, not grounded in the possible role of prosodic constituents. This includes Flemming (1995) who suggests a view of English aspiration in terms of enhancement of contrast: since English word-initial voiced stops are not fully voiced, it then makes sense that the voiceless stops in that position should be aspirated to enhance the contrast between voiced and voiceless stops. A related view is the string-based phonotactic/licensing by cue approach to laryngeal features developed by Steriade (1997) and Blevins (2003) that relates aspiration to the position in a string (preference for post-aspiration is in an environment right before a sonorant element) rather than to prosodic position. In this paper, I will first defend the foot-based approach to English aspiration and then discuss certain potential problems for such an analysis arguing that these problems do not really challenge the foot-based view. I will contend that aspiration is important for the processing of English words: aspiration not only demarcates feet, but plays a crucial role in the processing of lexical words. In defending the foot-based view of English aspiration we detail two arguments. The first argument comes from the patterning of the phoneme /h/ in American English. As noted by Davis & Cho (2003), the surface distribution of the phoneme /h/ closely parallels that of aspiration. For example, in positions where voiceless stops are not aspirated (e.g. in coda position or intervocalically between a stressed and stressless vowel as in ‘rapid’) the phoneme /h/ does not surface (e.g. ‘bra~~h~~min’, ‘pro~~h~~hibition’); and in positions where voiceless stops are aspirated (e.g. word-initially or at the beginning of a stressed syllable) the phoneme /h/ is realized (e.g. ‘horizon’, ‘Tahiti). This suggests a foot-based alignment analysis of the feature [spread glottis] more generally along the lines developed by Davis & Cho. Note that in an approach to aspiration that references enhancement of contrast along the lines of Flemming (1995), the behavior of intervocalic voiceless stops as sometimes aspirated (e.g. appear’) and sometimes unaspirated (e.g. ‘rapid’) turns out to be problematic if prosodic constituents are not also referenced. A second argument for the foot-based approach comes from a pattern of obstruent devoicing found in the dialect of Pennsylvania Dutchified English (PDE) discussed by Anderson (2001, 2002). In this dialect voiced obstruents devoice in coda position (e.g. ‘dogs’ is pronounced as [daks]) and intervocalically between a stressed and stressless vowel (e.g. ‘habit’ is pronounced [hæpIt], but flapping does occur in words like ‘riding’). Voiced obstruents then surface at the beginning of a word or at the beginning of a stressed syllable. As Anderson argues, voiced obstruents in PDE only surface in foot-initial position. This does not reflect any German source dialect, but can be seen as a generalization of the foot-initial pattern of aspiration (which is part of PDE) to the other laryngeal feature [voice], so that in PDE the marked laryngeal features [spread glottis] and [voice] can only occur in foot-initial position. Intervocalic devoicing in examples like ‘habit’ ([hæpIt]) is highly problematic for the licensing-by-cue approach since the cue rich intervocalic position is the most favorable environment for the maintenance of voicing. On our analysis, devoicing of /b/ in ‘habit’ occurs because it is not in foot-initial position (note that the /b/ surfaces as such in ‘habitual’ where it would be foot-initial). While we will also discuss certain apparent exceptional cases to the foot-based view of English aspiration (e.g. what happens when a voiceless stop occurs between two stressless vowels), we will contend that the foot-based view is supported by speech error patterns

(Shattuck-Hufnagel 2008) and by processing evidence where aspiration is a crucial demarker of feet and lexical words (e.g. ‘appended’ with aspirated /p/ vs. ‘up ended’ without aspiration.)

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