When “secondary” cues take over: phonetic changes and resulting phonetics-phonology mismatches

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Hyman's (1976) seminal work on *phonologization* describes how a sound change can occur when an intrinsic phonetic correlate of a phonetic feature takes over the distinctive function of the primary feature, resulting in a change in the phonological system. One of the examples Hyman uses to illustrate this process is the development of rising tones in Southeast Asian languages: some languages enlarge the intrinsic pitch-lowering effect that voiced plosives have on following vowels, which can be interpreted by learners acquiring such a language as a tone contrast with an allophonic distribution of plosive voicing. This allophonic distribution can disappear in subsequent generations, resulting in a pure tone contrast. In phonologization, therefore, a change in the *phonetics* (voicing as primary cue is replaced by a tone cue), is accompanied by a change in the *phonological representation*, though, as Hyman mentions himself, it is not clear what triggered this phonological reinterpretation.

The present study proposes an alternative to Hyman’s phonologization proposal, namely a diachronic process that involves a phonetic change where an secondary cue takes over the distinctive function of the primary cue *without* a resulting change in the phonological system. This proposal can be viewed as a case of *Neogrammarian sound change*. Applied to the example of contour tones given above, this would predict a language with an underlying voicing contrast that changes the phonetic realization of the contrast from periodicity to a pitch change across several generations of speakers, keeping the phonological contrast constant.

The proposed type of diachronic change is only possible in a grammar theory with the following three characteristics:

1. a strict division between the phonetic and phonological module (in line with generative grammar theories, e.g. Chomsky & Halle 1968),
2. a non-universal mapping between perceptual cues and phonological representations, which has to be acquired by the language learner and is therefore part of the grammar (Boersma 1998),
3. the mapping between cues and phonological representations is bidirectional, i.e. employed both in the production and the perception process, thus speech perception (and comprehension) is part of the grammar (Boersma 2007).

In this account, the decision whether a diachronic change affects the phonological system can then only be made on the basis of phonological considerations, i.e. by testing whether phonological processes changed across generations. This proposal is illustrated with two diachronic changes that resulted in such *phonetic-phonology mismatches*: The phonetic merger of the two formerly distinct front mid vowels /e/ and /ɛ/ in Chukchi (Dunn 1999), and /u:/-fronting in Standard English of Southern England (Hawkins & Midgley, 2005, Harrington et al. 2008), where F2 diphthongization seems to take over the role of the front-back distinction.