Vowel subsegments in surface correspondence
Matthew Faytak—University of California, Berkeley

Agreement by Correspondence (ABC) was originally formulated to provide an account of long-distance consonant assimilation processes (Rose and Walker, 2004), but has since been adapted to account for a number of other phenomena: for instance, analyses of vowel harmony (Rhodes, 2010) and long-distance consonant dissimilation (Bennett, 2013) have recently both been implemented within ABC frameworks. Subsegmental correspondence, put forward as ABC with quantized segments (ABC+Q, Inkelas and Shih (2013); Shih and Inkelas (2014)) is a further significant expansion to the ABC framework. This paper assesses consonant-vowel interactions in the Mazatec languages and Aghem, both of which have been treated as instantiations of the Obligatory Contour Principle. I put forward that both are amenable to an ABC+Q analysis: the unusual property of the vowels involved, a non-vocalic "interruption," can be modeled as a subsegment that enters into correspondence with consonantal onsets.

Mazatec and Aghem both provide instances of complex vowels realized with consonant-like "interruption" mid-vowel. In Mazatec, a glottalized vowel typically transcribed as a glottalized portion followed by a modal portion (e.g. [ʔa]) is actually realized frequently with glottalization mid-vowel—that is, a substantial amount of the modal portion of the vowel is actually realized before the glottalized or creaky portion (e.g. [aʔa]) (Silverman, 1997). In Aghem, the interrupting segment is velar rather than glottal, and is present in two of the language's falling diphthongs, [i͡ɣa] and [u͡ɣo]. Evidence for the unity of the entire [VɣV] sequence comes from a regular process of high-tone spreading (Hyman, 1979): a sequence of syllables /H L/ is realized as [H HL]. For L [VɣV] sequences with a preceding H (typically of a noun class prefix), the resulting HL contour is realized over the entire sequence rather than on the first V alone, i.e. /kɨ-fɨɣa/ > kɨ́-fɨ́ɣà, *kɨ́-fɨ̂ɣà 'plantain'. Under the account schematized in Figure (1), onset consonants (C_{ons}) in both Huautla Mazatec or Aghem may enter into correspondence (dashed line, CORR) with a subsegment of a following vowel if that subsegment crosses a threshold of similarity. Dissimilation or assimilation would then be expected to result, depending on the particulars of the languages and (sub)segments involved.

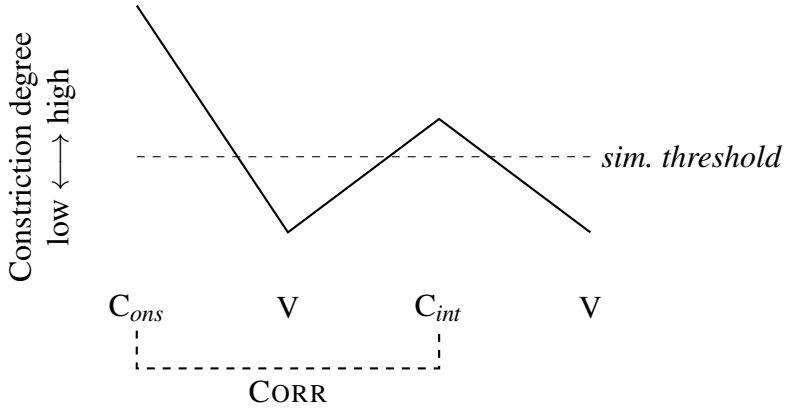

Figure 1: Schema of vowels predicted to correspond with initial consonants on the basis of similar constriction degree.

Attested phonotactic patterns in both Mazatec and Aghem are suggestive of just such a set

of interactions: a series of co-occurrence constraints appear to operate in both languages, and Aghem further exhibits an assimilatory process in this domain. Huautla Mazatec is typical of the Mazatec languages generally in disallowing any syllable-level combination of a glottalized or aspirated vowel (ʔV or ^{h}V) with a glottalized or aspirated consonant (ʔC or ^{h}C) in a single CV syllable (Golston and Kehrein, 1998, 319). Less ambiguously, Aghem's velarized diphthongs are in a clear complementary distribution with non-velarized diphthongs ([ɨa] and [uo]), the latter occurring when the syllable onset matches in place (labial or velar) the interrupting velar glide that would otherwise appear (Hyman, 1979). Furthermore, the velar glide *assimilates* to the syllable onset in nasality when the onset is an alveolar nasal.

A direction for analysis of the Aghem case is the type of analysis undertaken in Bennett (2013), in which dissimilation is modeled as correspondence avoidance. Taking the velarized diphthongs [VɣV] as whole segments (Q) separable into three subsegments (q_{1-3}), I posit that the interrupting subsegment (q_2 here) avoids correspondence with certain consonantal onsets to satisfy high-ranked markedness constraints, possibly penalizing a fully identical consonantal closure mid-vowel. A crucial characteristic of this analysis is that it captures a curious part of the dissimilation process: the velar segment in the rounded diphthong, when dissimilating from a labial initial, is the only site for dissimilation; that is, the entire vowel is not unrounded, and a phonotactically permissible sequence [buo] results, rather than *[bɨa] or *[bɨ̯ɣa]. This can be attributed to the consonant-like subsegment being the only part of the vocoid that passes the similarity threshhold in the first place, and thus the only part of the vocoid that must be changed to avoid correspondence.

To sum up, I argue that an ABC+Q analysis gives better empirical coverage of consonant-vowel interactions on two points. First, vowels with local constriction maxima—"consonant-like" portions appearing mid-vowel—correspond with their consonantal onsets to the exclusion of more vocalic parts, even if all subsegments have the same broad featural characterization, as in the case of the Aghem rounded and velarized diphthong.

References

Bennett, W. (2013). *Dissimilation, Consonant Harmony, and Surface Correspondence*. PhD thesis, Rutgers University.

Golston, C. and Kehrein, W. (1998). Mazatec onsets and nuclei. *International Journal of American LInguistics*, 64(4):311–337.

Hyman, L. M., editor (1979). *Aghem Grammatical Structure*. Number 7 in Southern California Occasional Papers in Linguistics. University of Southern California.

Inkelas, S. and Shih, S. S. (2013). ABC+Q: Contour segments and tones in (sub)segmental Agreement by Correspondence. *Handout, 21st Manchester Phonology Meeting*. http://linguistics.berkeley.edu/∼inkelas/Papers/InkelasShih-mfm2013.pdf.

Rhodes, R. (2010). Vowel harmony as Agreement by Correspondence. Unpublished ms., University of California, Berkeley.

Rose, S. and Walker, R. (2004). A typology of consonant agreement as correspondence. *Language*, 80(3):475–531.

Shih, S. S. and Inkelas, S. (2014). A subsegmental approach to contour tone (dis)harmony patterns. *Proceedings of Phonology 2013*.

Silverman, D. (1997). Laryngeal complexity in Otomanguean vowels. *Phonology*, 14(2):235–261.