

The weight of preaspiration: Laryngeal segmenthood & syllabic structure

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Background: Aspiration is traditionally considered to be the result of a spreading of the vocal folds coordinated with an oral consonant, which can result in the characteristic glottal frication being realized after the consonant release (postaspiration) or before its onset (preaspiration). Representational phonological models like Feature Geometry (Clements, 1985; Clements and Hume, 1995) or Articulatory Phonology (Browman and Goldstein, 1986, 1992) do not require the laryngeal and oral elements to be crucially ordered, allowing for variable phonetic realization of aspiration in some languages: Icelandic (Árnason, 2011), Scottish Gaelic (Nance and Stuart-Smith, 2013; Ní Chasaide, 1985), Mongolian (Svantesson et al., 2005), and Purépecha (Tarascan; Chamoreau, in press) are all examples of languages where the relative ordering of aspiration and oral occlusion is variable (although non-contrastive). However, this representationally symmetrical relationship between pre- and postaspiration is at odds with the actual phonological patterning of these two types of laryngealization. Preaspiration is cross-linguistically much rarer than postaspiration, and exhibits interactions with consonantal length and weight that are not observed in postaspiration.

Proposal: On account of the affinity of reported preaspiration for moraic weight, as well as its typological rarity and articulatory distinctiveness, I argue that preaspiration is in all cases actually a distinct heterosyllabic segment: a coda fricative in the preceding syllable. Thus, while postaspiration is a featural property of a segment, preaspiration is not a subsegmental element but a segment unto itself.

Discussion: Aspiration that surfaces phonetically preceding its “associated” oral segments exhibits some trends that are unexpected if we assume it is the phonological mirror image of aspiration that is realized afterwards. The primary asymmetries here are that **(a)** preaspiration consistently bears moraic weight while postaspiration does not; and **(b)** preaspiration is cross-linguistically rare, while postaspiration is common, which suggests an underlying structural difference between the two categories.

In the case of its weight affinity, preaspiration appears as a frequent consequence of degemination or as an alternative to compensatory vowel lengthening, both synchronically and diachronically. This is the origin of preaspiration historically in Icelandic (e.g., Thráinsson, 1978), as well as synchronic alternations in Andalusian Spanish (Torreira, 2007, 2012) and Italian (Stevens and Reubold, 2014). The ability of aspiration to bear the phonological weight of a deleted segment in these cases goes hand in hand with phonetic evidence showing that preaspiration is often moraic: in Icelandic, the duration of preaspiration varies in the same way a coda fricative would as a result of stress, and is inversely correlated with the length of the preceding vowel; Icelandic preaspiration is often argued to be a coda /h/ in modern analyses for this reason (Árnason, 2011).

As far as the rarity of preaspiration, we would not expect this to be the case if it were structurally the mirror image of postaspiration. This is recognized by Silverman (2003), who argues that the two types of aspiration are aerodynamically quite distinct, and that preaspirates are prone to either fortition (through enhancement with oral constriction) or loss. Clayton (2010) makes the same observation from a different angle, arguing that preaspiration is difficult to innovate rather than easy to lose. Based on the phonological evidence considered here, this paper argues a third position: preaspiration is never a segmental property, and as its realization before its originating segment makes it phonologically part of the preceding syllable.

In addition to a typological look at reported preaspiration patterns, this paper presents phonetic

data from North Saami (Odden, 2005), in which preaspiration very explicitly bears varying degrees of moraic weight. Specifically, the language features long and short preaspiration, which alternate with each other and with the absence of aspiration as the morphological expression of case. The language also features postaspiration in Norwegian loans, allowing for measurement and acoustic comparison of both patterns. Postaspiration is temporally and acoustically distinct from preaspiration, and the phonetic evidence supports the phonological analysis by Bals Baal et al. (2012), who posit that preaspiration belongs prosodically to the preceding syllable. Rather than taking this as evidence for a delinking process, as Bals Baal et al. do, I argue that this demonstrates the synchronically non-unary status of preaspiration, and that the weight and length alternations in Saami merely make that status more immediately visible than in other preaspirating languages.

Finally, I also consider what evidence we would need to establish the existence of preaspiration as a segmental property, rather than a distinct segment. In comparison to prenasalized segments, which have been established as unary in large part due to their word-initial appearance, preaspiration is conspicuously unattested word-initially (Ladefoged and Maddieson, 1996). However, predictions about gestural timing patterns in complex segments compared to clusters suggest we should look for evidence of onset-coupled gestures, where changes in the segmental duration do not significantly affect the lag between the gestures (Shaw et al., in press).

Conclusions: Although many common phonological frameworks treat postaspiration and postaspiration as fundamentally symmetrical, the phonological patterning of these laryngeal features suggests that only postaspiration is “true aspiration”, while preaspiration is essentially not aspiration, but rather a distinct preceding coda segment.

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