

Can fortis stops spirantise without aspiration?

We have known for over 200 years that fortis stops can spirantise to fortis fricatives in phonological change, but it is not clear that we know *why*. Grimm (1822) showed clearly (and others had noticed earlier), for example, that the fortis stops (in bold) in the Latin words in (1) correspond to the fortis fricatives in Gothic, and that Latin preserves Proto-Indo-European stops while Gothic illustrates a Germanic innovation of fricatives.

- (1) Latin Gothic
pes, frater, canis *fotus, broþar, hunds*

A change of this type (something along the lines of an unconditioned: p, t, k > f, θ, x) has also been recognised in other languages, including: Greek, Proto-Iranian, Proto-Italic, High German and Liverpool English. The latter two cases preserve evidence that a fortis *affricate* stage can (or must) intervene between the fortis stop and fortis fricative stages, which would mean that the change should be understood as: p, t, k > pf, tθ, kx > f, θ, x (ignoring the precise place of articulation of the fricatives). This paper is intended as an exploration of what it might mean to say that we *understand* this type of change.

One crucial facet of ‘understanding a type of change’ is to be certain about the nature of the pre-change phonological state into which it can be innovated – any notion that some aspect of a pre-change state might *cause* a change clearly requires this. A major claim along these lines is that: aspiration is required for fortis stops to spirantise in this way. For example, Salmons (2021, 138) writes that “aspiration is often taken for granted as a, or the, motivation for” changes like this, echoing a long tradition, including Whitney (1884, 92), who wrote that “the spirants (f, th, and so on) are almost universally derived from the full mutes ... and they come especially from such mutes as were originally aspirated”. If this claim can be shown to be true, we could reasonably see it as a firm step in the direction of understanding the fortis-stop-to-fortis-fricative change. The claim has never been rigorously tested, however. I test it in this paper.

In order to work out if this claim is true, we need two things:

- (i) a phonetic and/or phonological rationale to link aspiration and affrication/spirantisation to allow us to argue that the claim is plausible
- (ii) a consideration of all (or, rather, many) cases of changes of the fortis-stop-to-fortis-fricative type, to check if the pre-change fortis stops were aspirated in every case

I first show that there is reason to think that condition (i) can be met. A number of such rationales have been proposed: e.g., Davis & Iverson (1995) consider how fission and spreading of place features can account for affrication, which lays the ground for deaffrication to fricatives; Scheer (1999) argues for the inherent incompatibility of the elements representing aspiration and occlusion in a single segment if the former is incorporated into a unitary segment, leading directly to a fricative; and Honeybone (2002) considers a misperception analysis (whereby postaspiration could be reanalysed as affrication, which, again, could allow for deaffrication).

I focus for the main part on (ii). This calls for an engagement with diachronic phonological typology. Honeybone (2016) argues that diachronic phonological typology is possible but complex, requiring both wide-ranging typological surveys *and* detailed analysis of instances of a change. Consonant with this, I argue that previous relevant typological surveys (Kümmel 2007, Cser 2003, Kirchner 1998) largely fit with the claim that fortis stops must be aspirated in order to be able to spirantise, but not completely. I then show that a detailed analysis of potential counterexamples, informed by an understanding of how laryngeal phonology (‘voicing’ and ‘aspiration’) works (following such work as Iverson & Salmons 1995), promises to remove these counterexamples on a principled basis, allowing us argue with some degree of certainty that fortis stops can only spirantise if they are aspirated.

References

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