What is nasal loss before fricatives?

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The purpose of this paper is to present arguments for the interpretation of the cross-linguistically well-attested phenomenon of nasal loss before fricatives as an assimilation process whereby the nasal loses its occlusion under the influence of the following fricative. This change is well known to have occurred in the history of English; in fact, it is common to Ingvaeonic languages, to which Old English belongs along with Old Frisian and Old Saxon (cf. E *five, mouth* and G *fünf, Mund*), the loss of [ŋ] before [x] is common to Germanic (OE [foːn], Go [foːhan] 'catch' < *[foːhan] < *[faŋxan]).[1] It will also be shown that nasal loss is connected to another, superficially totally unrelated, change attested in OE, the occlusion of the stop in 3rd Sg verb forms of the type *cysiþ* > *cyst* 'he chooses', and later Old English changes of a similar kind exemplified by *þiefþ* > *þieft* > MoE *theft.* The arguments presented below will not be necessarily meant to be conclusive and it is possible that the solution lies elsewhere, but they certainly are worth considering, since they seem empirically well-supported.

The feature [continuant] does not often take part in assimilation or dissimilation processes, or at least far not so often as, for example, place features, voice or nasality. The reasons for this is probably the same as that for the similar reluctance of the feature [consonantal] (in this case only to assimilate) as Kaisse (1992 : 330) sees it:

> "I believe that [consonantal] spreads so rarely because of its rather abstract nature. The origin of most assimilations lies in articulatory phonetics. When [place] spreads, we are retaining a physical configuration of the oral articulators. When nasal spreads, we are prolonging or anticipating the open position of the velum. And when [voice] spreads, we are, in most cases, maintaining a configuration of the larynx. But [consonantal] refers to any narrowing of the oral cavity at least as narrow as that of a fricative... No actual articulatory position is being

[1] See any of the standard textbooks on the history of English and Germanic languages, e.g., Campbell 1959 : 47.

> maintained, only the abstract notion of a severe occlusion of the oral cavity."[2]

This is, in all likelihood, also the case with [continuant]; nevertheless, we do see, on occasion, assimilations and dissimilations involving this feature too. If we consider those assimilation and dissimilation[3] processes that involve the feature [continuant] cross-linguistically, what we find is described presently.

In changes where both sounds (the conditioning and the affected one) are obstruents, there is an obvious tendency for dissimilation in the feature [continuant]; as opposed to the feature [voice], the other primary feature of obstruents, which always assimilates on contact. Dissimilation may take the form of change in the strict sense of the word, as it happened in Byzantine Greek,[4] where every stop followed by another stop turns into the corresponding fricative, e.g., ClGr [hepta] > [efta] 'seven', [oktoː] > [oxto] 'eight'; on the other hand, aspirated stops, which turn into fricatives in all other positions, turn into plain stops if preceded by another fricative, e.g., [tʰeloː] > [θeːlo] 'I want', but [elewtʰeria] > [eleftʰeria] > [lefteria] 'freedom'. In the second case dissimilation is the change itself if the fricativization of aspirates had been completed or, at least, proceeded to a considerable extent, by the time it took place (hence the above sequence is [elewtʰeria] > [elefθeria] > [lefteria]), if not, the tendency of dissimilation plays a role of "diverting" the fricativization of aspirates.

Dissimilation manifests itself passively in Grimm's Law: in this series of unconditioned changes affecting obstruents, voiceless stops turned into fricatives (cf. L *pater* and E *father*), unless preceded by a fricative, whether it be /s/, the only available fricative in IE (cf. L *spuo* and E *spew,* not **sfew*), or a newly created one (cf. L *octo* and OE *eaht* [ɛːaxt] > MoE *eight,* not OE *[ɛːaxθ]). The overall effect of this passive dissimilation (and the rest of the law) was that sequences of two obstruents which were either both [+continuant] or [−continuant] were mainly banned from the language.[5]

[2] This last sentence can only be true, in my opinion, with certain qualifications, since most clusters exhibiting assimilation are homorganic, and this may not be accidental, though it may also be due to other principles.

[3] Both are to be interpreted in this paper as operating on contact, with nothing intervening between the sounds involved.

[4] The Greek data, unless stated otherwise, are from Brown (1969).

[5] Since there were probably no clusters of voiced stops in IE, no clusters of two voiceless stops could result in Gmc solely by virtue of Grimm's Law.

In Old English, the second members of two-fricative clusters that arose through syncopation usually turned into stops; this is exemplified by the 3rd Sg verb forms of the type *cysiþ* > *cyst* 'he chooses', and later Old English forms such as *þiefþ* > *þieft* > MoE *theft,* as has been mentioned above, further examples: *nosþyrl* > *nosterl* > MoE *nostril, gesihþ* > *gesiht* 'vision' (Campbell 1959 : 193f).[6] In fact, some other clusters of two fricatives were eliminated through dissimilation in the opposite direction, e.g., *wæfs* > *wæps* > MoE *wasp, weahsan* > *weaxan* 'grow' (Campbell 1959 : 171). The reason for the dissimilation of [f] and [x] rather than [s] is obviously that [s] has no plosive counterpart. This restriction on the occurrence of two consecutive fricatives has remained operative to a considerable extent in the modern Gmc languages as well: English, for instance, still abounds in words beginning with [sp-], [st-], [sk-] but not in words beginning with two fricatives. Dissimilation played a blocking role in the OHG Consonant Shift too, where voiceless stops turned into fricatives in certain environments (cf. E *open* and G *offen*), but never after other fricatives (cf. E *stone* and G *Stein,* E *eight* and G *acht,* with the stop intact in both German words). Furhermore, the change of [xs] to [ks] also occurred later in High German (*sechs* 'six').

As for those processes that involve an obstruent and a sonorant, the opposite seems to be the case: at least for the feature [continuant], assimilation is preferred to dissimilation. Obstruents assimilate to sonorants in widespread processes of occlusion after nasals (i.e., of the type [mv] > [mb], well attested in several languages); here again the principle of assimilation can manifest itself actively (that is, a fricative actually turns into a stop) or passively (that is, an otherwise general process of fricativization is blocked in post-nasal position), see (P)OE [ɣoːd] 'good', [buːɣan] '(to) bow', [folɣian] 'follow', but [siŋgan] 'sing'.

Another effect that nasals often have on following fricatives is the insertion of a stop between the two sounds (E *fence* pronounced [fents]). This may also be regarded as a case of assimilation in the sense that the nasal and the following stop are both [−continuant], on the other hand, the continuancy difference between the stop and the fricative is at peace with the principle advocated above.

One may argue that intervocalic fricativization is also an assimilation process (though this is slightly more controversial), in which a stop acquires the feature [+continuant] from environment that consists of vowels and/or

6 An interesting analysis of some of these OE and the previously mentioned Greek data from a different perspective can be found in Hock 1987.

liquids, but often excludes nasals, see FU [VpV] > Hu [VvV], but [VmpV] > [V(m)bV], cf. Fi *repo* 'fox', *kumpoa* 'froth' with Hu *ravasz* 'cunning' and *hab* 'froth, foam'.

The reverse, when sonorants assimilate to obstruents in continuancy, is also observed in various languages, though it is rarer, perhaps because the continuancy change in a sonorant is bound to produce more drastic alterations, cf. [j] > [c], where, in an SPE-framework, there is change in consonantality, sonorancy, voice and continuancy, as opposed to [p] > [f], where only continuancy changes. Since continuancy is not normally a distinctive feature of sonorants, it can hardly change in itself; that is to say, sonorants have nowhere to go in their vicinity, so if they must go, they must go far.

An example of this will be taken from Pre-Classical Greek, where postconsonantal [j] always disappears from that position, by metathesis after sonorants ([VnjV] > [VjnV]), through assimilation to a preceding palatalized velar ([VkjV] > [VcjV] > [VccV] > [VttV], e.g., *[prakjoː] > [prattoː] 'I do'), but after [p] it strengthens to [c] > [t], e.g., *[tupjoː] > ClGr [tuptoː] 'I hit'.[7] A similar process can be seen in certain dialects of Hungarian: in the South-West of Hungary, for instance, words like *apja* 'his/her father' are pronounced with [pc] instead of StHu [pj].[8]

My contention is that pre-fricative loss of nasals belongs to this last category: it is an instance of continuancy assimilation of a sonorant to an adjacent obstruent. [−continuant] is delinked from the Root-node of the nasal and [+continuant] spreads on it from the following fricative. Since,

[7] Notice that the full story of some of these clusters is [pj] > [pc] > [pt] > [ft]. The question may arise why clusters like [pt] were tolerated in Greek for a relatively long time; if we feel we need to answer it, we may refer to the fact that dissimilation is less capable of introducing new elements into the phonological system than assimilation is; indeed, the changes [pt] > [ft] etc. occurred after these hitherto nonexistent fricatives became independently available through the changes [pʰ] > [f], [tʰ] > [θ], [kʰ] > [x] and [w] > [v] or [f].

[8] The Cypriot Greek examples in Kaisse (1992) such as [aðerfja] > [aðerfka] 'brothers' are not counterexamples, since in these instances, as Kaisse very convincingly argues, it is the feature [+consonantal] that spreads; she also points out that after the spreading, continuancy adjustment often takes place, e.g., [na pjo] > [na pko] > [na fko] 'that I drink'.

however, place presupposes occlusion in nasals, the place features are also delinked, and nasality docks on the preceding vowel.[9]

To sum up so far, we have seen that changes affecting the feature [continuant] display different behaviour depending on the sounds involved: obstruents dissimilate from each other in this feature, whereas obstruents and sonorants assimilate one way or the other. This asymmetry may have to do with the fact that continuancy is normally distinctive in obstruents, but nondistinctive in sonorants; it may also be the result of the placement of this feature on different tiers in the two classes of sounds;[10] this problem needs further investigation and will not be pursued here. We may, however, try and place this phenomenon in a wider context and look at it in relation to syllable structure.

It seems that the dissimilations and assimilations discussed above (and probably many instances of them generally) favour [+continuant] [−continuant] clusters and tend to reduce the number of [−continuant] [+continuant] clusters.[11] Examples of the first case are the changes that uniformized the pattern of Greek medial obstruent clusters: two-stop clusters were entirely eliminated ([-pt-] > [-ft-]), two-fricative clusters similarly ([-ft^{h}-]> [-ft-], not [-fθ-]),[12] the only stop-fricative clusters that occur have [s] as second member, the only fricative in Greek with no corresponding stop (e.g., [fonaksa] 'I called'). Here belong, of course, the complications with obstruent clusters in Grimm's Law ([kt] turning into [xt], not [xθ]).

On the other hand, [−continuant] [+continuant] clusters are eliminated through the strengthening of glides, as in Greek and dialectal Hungarian, through the insertion of a stop between a nasal and a fricative, as in English *fence,* through the occlusion of a fricative after a nasal and through delinking the continuancy node of a nasal before a fricative, as in Ingvaeonic, see E *five.*

[9] At least usually; but cf. Hu *hányszor* 'how many times', where the nasal becomes a nasal approximant without occlusion but with a palatal place of articuation. Hungarian dental and palatal nasal loss, of course, operates before all [+continuant] sounds, not only fricatives.

[10] I do not wish to take sides here in the controversy over the place of [continuant] in feature geometry. For a discussion, see Kenstowicz 1994.

[11] This does not stand for initial (and probably generally for onset) clusters.

[12] With the exception of [sf].

Many of these assimilations and dissimilations can be explained with reference to the apparently universal preferred syllable contact rule,[13] which says that the coda of the first syllable should preferably be more sonorous than (or at least as sonorous as) the onset of the second; for instance, [Vn.tV] is preferred to [Vt.nV], because a nasal is more sonorous than a stop.[14] This will readily explain why e.g., onset [j] disappears in that form in PreClGr (and in many related languages) as it does all the changes affecting obstruent clusters in Greek as well as in Gmc (cf. Grimm's Law). It does not, however, account for the instability of nasal+fricative clusters, since their sonority relations are in accordance with this principle if intervocalic (hence heterosyllabic) and in accordance with the syllable-internal sonority sequencig principle if final (hence in coda). So it seems that the sonority principles alone are not sufficient for the explanation of these phenomena: I tentatively suggest that another principle may be at work here, which generally disprefers [−continuant] [+continuant] clusters and prefers [+continuant] [−continuant] clusters.

Naturally a few caveats are necessary: edge of constituent effects may interfere;[15] [s] often displays behaviour not parallel to that of other fricatives in the language, and so on. Finally, the most desirable goal would be to derive this principle from the structure of representations so that it will not have to be stipulated, as it is now, but how this is to be done, I do not yet know.

[13] See Hooper 1976, Murray & Vennemann 1983 and for an interesting and insightful reinterpretation Clements 1990.

[14] The sonority hierarchy is here taken to be vowels > glides > liquids > nasals > voiced fricatives > voiceless fricatives/voiced stops > voiceless stops. Voiceless fricatives and voiced stops are regarded as unordered with respect to each other.

[15] See the OE examples in note 3, where the apparently contradictory behaviour of these [s]-clusters may be the result of such effects; but also witness the later rearrangement of the cluster in *wæps*. For edge of constituent effects see, for example, Rubach 1990.

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