The strengthening of voiced fricatives in Germanic

András Cser

0 Introduction

The purpose of this paper is to present and analyse a process in the history of the Germanic obstruent system known as the strengthening of voiced fricatives. This drift will be described below from a structural point of view in two ways: its syntagmatic aspects (effects of the process in terms of phoneme-sequences and its interaction with phonotactic constraints) and its paradigmatic aspects (effects of the process in terms of the system of phonemes of the language) will be discussed separately. Finally, a short discussion closes the paper on the repercussions of the strengthening in Old English morphology.

1 Exposition of the change

The Germanic reflexes of the IE voiced aspirates were the voiced fricatives /β ð ɣ/. These phonemes started to develop stop allophones ([b d g]) in more and more environments: in OE, the word *nifol* 'cloud' shows [v] medially, the OE reflex of Gmc [β], but *brōðor* (MoE *brother*) shows [b] initially. Their cognates in other IE languages show that both sounds go back to IE /b^{h}/:

(1)	OE *nifol*	Gk *nephelē*	Skt *nabha-*	L *nebula*
	OE *brōðor*	Gk *phrātēr*	Skt *bhrātar-*	L *frāter*[1]

Eventually, by the time of written documents, in most Germanic dialects, the voiced fricatives (if at all) could be regarded as positional variants of voiced stops rather than vice versa. This was a "drift" that lasted through a lengthy period of time rather than a single change, and its inception is definitely to be placed in Primitive Germanic times since, in several environments, every Germanic language shows the same sounds. With the help of the oldest Germanic languages, a relatively precise picture can be drawn of the distribution of voiced stops *vs.* fricatives in PGmc. This work has been done most thoroughly, conscientiously and in a most

detailed manner by Moulton[2] (1954, a shortened version is included in van Coetsem & Kufner 1972). He reconstructed the following pattern for Primitive Germanic:[3] the stop allophones appeared uniformly after nasal and in gemination: [mb nd ng bb dd gg]; with the exception of the velar, the stop allophone appeared word-initially: #[b] #[d]; in the case of the dental, the stop allophone appeared after /l/: [ld]. In summary:

(2) **The PGmc reflexes of IE voiced aspirates**

	/β/	/ð/	/ɣ/
gem.	bb	dd	gg
N_	mb	nd	ng
#_	#b	#d	#ɣ
l_	lβ	ld	lɣ
else	β	ð	ɣ

These environmental restrictions remained operative later; this is the reason why voiced fricatives, when affected by West Germanic gemination before /j/,[4] appeared as voiced stops, so Gmc **biðjan* gave OE *biddan,* OS *biddian,* OHG *bitten* 'ask', *cf.* Go *bidjan,* ON *biþia,* Gmc **xaβjan* became OE *hebban* 'raise', and **liɣjan* became **liggjan,* later *licgan* /lidʒan/ 'lie' by palatalization of *g.* (Velars in Old English, whether geminated or not, underwent palatalization before /j/ and palatal vowels).

In the course of time, the distribution of the fricative allophones shrank: the dental fricative [ð] strengthened to [d] in all environments in West Germanic, word-initial [β] strengthened to [b] and, similarly, word-initial [ɣ] strengthened to [g] in some of the West Gmc dialects including OE, though at a later date (proof of this comes from the way palatalization affected this sound in OE; this point is not to be discussed here). In Old High German, the most progressive Gmc dialect regarding its obstruent system, strengthening took place in every environment, *i.e.,* the fricative allophones were completely eliminated.

2 Syntagmatic aspects of the change

In the phonotactic system of Proto-Germanic the following constraints operated on word-internal consonant clusters (see the chart in the **Appendix**):

(i) Nasals and Liquids were allowed with all other sounds as first elements of clusters;

(ii) /j/ was allowed with all other sounds except /w/ as second element of clusters;

(iii) /w/ was allowed to follow /t k d x l r/;

(iv) permitted clusters of obstruents are the following: /sp st sk ft xt fs xs zð/.

If we now concentrate on the overall strengthening of [ð], we might try and look for a tentative answer to the question why this particular sound, and why not the other two showed such a high capability to strengthen. The starting point, in my opinion, could be the exceptional status of the cluster [zð] in the phonotactic system of PGmc. This cluster is irregular in at least four ways: it contradicts three of the phonotactic rules of PGmc, and contradicts a generalization pertaining to the allophonic variation of voiced stops and fricatives, namely:

(i) Clusters whose members are both [+cont] and at least one of them is voiced, must include at least one sonorant: either a liquid in the first position (*e.g., lβ*) or a glide in the second (*e.g., θj;* word-initially liquids are allowed in second position, *e.g., fl*); [zð] is the only voiced [+cont] cluster that does not include a sonorant.

(ii) Clusters composed solely of obstruents could only be voiceless in PGmc; [zð] is the only voiced obstruent cluster.

(iii) Clusters composed solely of obstruents could not be homorganic in PGmc; [zð] and [st] are the only homorganic ([+cor, +ant]) obstruent clusters.

(iv) The distribution of voiced fricatives as opposed to voiced stops can be broadly specified as follows (where L stands for liquid):

$$\left\{ \begin{matrix} \mathrm{V} \\ \mathrm{L} \end{matrix} \right\} — \left\{ \begin{matrix} \# \\ \mathrm{V} \\ \mathrm{j} \end{matrix} \right\}$$

(though this formulation does not cover /lð/, which appears as [ld] and #/ɣ/, which appears as #[ɣ]). The cluster [zð] contradicts this rule as well.

It could perhaps be argued that [ð] strengthened to [d] in the position following [z] first, in order to comply with rules (i) and (iv) above. This local strengthening may have started the drift of general strengthening, at least with respect to this particular sound.

3 Paradigmatic aspects of the change

The strengthening of voiced fricatives was a subphonemic change whereby the environmental specifications of a bunch of allophonic rules gradually altered; for this reason it had no effect on the Germanic system of phonemic contrasts in the strict sense of the word. However, since the distribution of the fricative allophones continually shrank (in some dialects, eventually, to nil), the drift resulted in reversing the relationship between phoneme and allophone: instead of /β/ → [b] / ..., the rule acquired the form /b/ → [β] / ..., since the distribution of voiced fricatives became simpler to specify. What this means is that voiced fricatives were eliminated from the phoneme-inventory even in those dialects which retained them as positional variants of voiced stops (*e.g.*, OE).

One interesting aspect of the change can be revealed if we resort to the notion of markedness. Within the class of obstruents, markedness corresponds to sonority, *e.g.*, voiced obstruents are more marked than voiceless obstruents, and fricatives are more marked than stops. Thus voiceless stops are the most unmarked type of obstruents, voiced stops and voiceless fricatives are more marked than voiceless stops, finally, voiced fricatives are more marked than the other three.[5] Schematically:

(3) **Markedness within the class of obstruents**

markedness value	**category**
1	voiceless stops
2	voiced stops — voiceless fricatives
3	voiced fricatives

Since voiced fricatives are the most marked category within the class of obstruents, this process may illustrate the tendency to reduce the number of marked elements in the phonological system, and thereby reduce the overall markedness of the system itself.

4 Morphological repercussions

The strengthening of fricatives introduced allomorphy in those paradigms in which geminate consonants alternated with single consonants; these alternations in OE were due to West Germanic Gemination (see note 4; the alternation was, of course, based on some forms in a paradigm having a /j/ in them, others not). They affected all consonants except /r/; voiced fricatives alternated with geminate voiced stops, as we should expect. The following example is the present indicative paradigm of the verb *habban* 'have':

(4)	hæbbe	habbaþ
	hafast	habbaþ
	hafaþ	habbaþ

(The letter ⟨f⟩ denotes the sound [v] intervocalically. The paradigm of this verb, in reality, displays considerable variation in the different OE dialects (*hæfst* for *hafast, etc.*), which is disregarded here. The other three verbs that show the same alternations are *libban* 'live', *secgan* 'say' and *hycgan* 'think'.)

Since [ð] strengthened to [d] in all environments in WGmc, there are no alternations parallel to [b] ∼ [β] left in these dialects. There are reflexes of [g] ∼ [ɣ] in OE, but these have been thoroughly changed by palatalization in OE. This is exemplified by the paradigm of *secgan*:

(5)	secge	secgaþ
	sæġst	secgaþ
	sæġþ	secgaþ

(The grapheme ⟨cg⟩ is pronounced /dʤ/ and is the reflex of WGmc *[gg̑j]; ⟨ġ⟩ is pronounced /j/ and is the reflex of /ɣ/ in palatal environment; ⟨þ⟩ is pronounced /θ/. I have disregarded dialectal variance in this example as well.)

APPENDIX

Proto-Germanic consonant clusters (based on Moulton 1972)

	_p	**_t**	**_k**	**_f**	**_θ**	**_x**	**_s**	**_z**	**_β**	**_ð**	**_ɣ**	**_m**	**_n**	**_l**	**_r**	**_j**	**_w**
p_	pp													pl	pr	pj	
t_		tt												tl	tr	tj	tw
k_			kk										kn	kl	kr	kj	kw
f_		ft					fs							fl	fr	fj	
θ_															θr	θj	θw
x_		xt					xs						xn	xl	xr	xj	xw
s_	sp	st	sk				ss					sm	sn	sl			sw
z_										zð						zj	
β_									bb					bl	br	βj	
ð_										dd				ðl	dr	ðj	ðw
ɣ_											gg			ɣl	ɣr	ɣj	
m_	mp			mf			ms		mb			mm				mj	
n_		nt	nk		nθ	nx	ns			nd	ng		nn			nj	
l_	lp	lt	lk	lf	lθ	lx	ls		lβ	ld	lɣ	lm		ll		lj	lw
r_	rp	rt	rk	rf	rθ	rx	rs		rβ	rð	rɣ	rm	rn		rr	rj	rw
j_																jj	
w_														wl	wr		ww

(i) The clusters between thicker lines occur word-initially.

(ii) I have replaced Moulton's symbols *b, d, g* with the symbols for the fricatives where appropriate.

(iii) I have not included Moulton's /gd/ (=/ɣð/), which is attested in only one word (Go. *gahugd,* OE *hygd,* OS *gihugd* and OHG *huct* 'thought') and even there it is uncertain whether the *ð* is part of the stem.

(iv) The voiced geminates [bb dd gg] were extremely rare but since they have been included in the chart in (2) to represent the trend of strengthening, they have been included here as well.

NOTES

[1] In Latin, the labial aspirate /b^{h}/ developed into /f/ word-initially, but merged with /b/ internally.

[2] His work definitively settled the dispute over strengthening, in which the one extreme is represented by Martinet's (1937 : 121–122) and Meillet's (1964 : 85) claim that in Gmc voiced fricatives appeared only in intervocalic position and the "independent and normal" realization of these phonemes was stop (*i.e.*, the phonemes were actually stops), the other extreme is Brugmann (1933 : 190), who cautiously says that voiced fricatives had stop allophones after nasals and "perhaps word-initially".

[3] His detailed analysis of every old Gmc dialect will not be repeated here.

[4] A change whereby every consonant except /r/ was doubled if immediately followed by /j/: PGmc **satjan* > WGmc **sattjan* > OE *settan* (MoE *set*), G *setzen*.

[5] Gamkrelidze (1978) (partly with reference to Jakobson), Greenberg (1978b), Ferguson (1978), though the views espoused in these are not unambiguous with respect to markedness relationships within the class of obstruents. Gamkrelidze claims that in the labial group, the unmarked members of the oppositions are the voiced stop and the voiced fricative (*v* and *b* as opposed to *f* and *p*, respectively), whereas in the velar group it is the exact opposite. Furthermore, in his excellent analysis of $\eth \rightarrow d$ and $d \rightarrow \eth$ changes and alternations in different languages, Ferguson warns against regarding *d* as the more "natural" of the two sounds, though in the same article he admits that it is the $\eth \rightarrow d$ change which leads to the simplification of the phonological system.

For a detailed discussion (and severe criticism) of markedness in general and with respect to consonants, see Lass (1984 : 132ff) and references there. The seven characteristics of marked segments as opposed to unmarked ones enumerated on p. 132 are the following: marked segments (i) are less common cross-linguistically; (ii) tend not to appear in positions of neutralization; (iii) have lower text-frequency; (iv) appear later in language acquisition; (v) tend to be absorbed in the unmarked category in case of phonemic merger; (vi) are less stable historically; (vii) imply the existence of their unmarked counterpart.

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