

Grimm’s Law

Indo-European	Hittite	Tocharian	Sanskrit	Avestan	Old Persian	Old Ch. Slavonic	Lithuanian	Armenian	Greek	Latin	Old Irish	proto-Germanic	Gothic	Old Norse	Old High German	Middle Dutch	Old English
*p	p	p	p	p	p	p	p	h	p	p	∅	*f	f	f	f	v	f
*t	t	t c t ^s	t	t	t	t	t	th	t	t	t	*th	th	th	d	th d	th
*k	k	k ś	ś	s	th	s	s	s	k	c	c	*h	h (j)	h	h	h	h
*k ^w	ku	k ś	k c	k c	k	k tʃ c	k	k ^h	p t k	qu	c	*h ^w	h ^w w	hv	h ^w w	w	h ^w
*b	p	p	b	b	b	b	b	p	b	b	b	*p	p	p	p pf	p	p
*b ^h	p	p	b ^h	b	b	b	b	b	p ^h	f (b)	b	*b	b	b	b	b	b

The above table (adapted from the ITP Nelson Canadian Dictionary) shows a partial list of correspondence sets for proto-Indo-European stops across 12 subgroups of Indo-European. The table shows all of the unvoiced stops, but only one representative example from the voiced plain and voiced aspirated stops. Most of the letters represent spellings, although I have replaced a few of them with phonetic symbols for clarity.

We can summarize the pattern this way:

In the transition from proto-Indo-European to the Germanic languages:

Stop [-cont] consonants that were [-voice] became [+cont] (in other words, fricatives)

Stop [-cont] consonants that were [+voice] became [-voice]

Aspirated [+asp] stop [-cont] consonants became [-asp] (plain consonants)

[-continuant] indicates a stop; [+cont] changes that into a fricative; [+asp] adds aspiration

Written as a formal formula, we get the following rules for Grimm’s Law:

C	>	[+cont]	C	>	[-voice]	C	>	[-asp]
[-voice]			[+voice]			[+voice]		[-asp]
[-cont]			[-cont]			[-cont]		[+asp]

PIE		Gmc		PIE		Gmc		PIE		Gmc
p	→	f		b	→	p		b ^h	→	b
t	→	þ [θ]		d	→	t		d ^h	→	d
k	→	x/h		g	→	k		g ^h	→	g

Actually, for the aspirated stops there were [±cont] allophones in Germanic, so they could be either b, d, g or β, δ, γ. In the following table, Lines 1 through 7 exhibit regular application of Grimm’s Law for the Germanic languages, Gothic and English.

	PIE	Sanskrit	Greek	Latin		Gothic	English
1.	*b ^h	'b ^h ra:ta:	'p ^h ra:te:r	fra:ter		'bro:θar	'broθer
2.	*b ^h	'b ^h arati	'p ^h ero	fero		'baira	be'ir
3.	*b	--	turbe:	turba		θaurp	θor p
4.	*p	pad-	pod-	ped-		'fo:tus	fut
5.	*t	'b ^h ra:ta:	'p ^h ra:te:r	fra:ter		'bro:θar	'broθer
6.	*t	--	turbe:	turba		θaurp	θor p
7.	*t	tri:-/'trayas	trei:s/'tria	tre:s		'θrija	θri
8.	*p			spuo		'speiwan	'spit
9.	*t			est		ist	is
10.	*t			noktis		naxts	nixt
11.	*b ^h	bo:d ^h a	pe ^w t ^h o	fi:dere		'bi ^w dan	bid
12.	*p	sap ^l ta	hep ^l ta	septem		'siβun	'seven
13.	*t	pi ^l ta:		pater		'faðar	'fæder
14.	*t	ʃə ^l təm	(he)ka ^l ton	kentum		'hunda-	'hundred

In lines 8 to 10, voiceless stops stayed the same after /s/ and /t/ stayed as /t/ when it followed another stop (although the first stop did become a fricative). This last rule is sometimes called the Germanic spirant law.

Grassman’s Law

In line 11, we expect b^h to be kept in the Sanskrit and Greek subgroups (the only ones that preserved aspiration in the IE aspirated stops). What we get instead is b because Sanskrit has a d^h later in the word and Greek has a t^h later in the word. In both of these languages, as we’ve said before:

[aspirated stop] ... [aspirated stop] > [unaspirated stop] ... [aspirated stop]

or, in normal rule form:

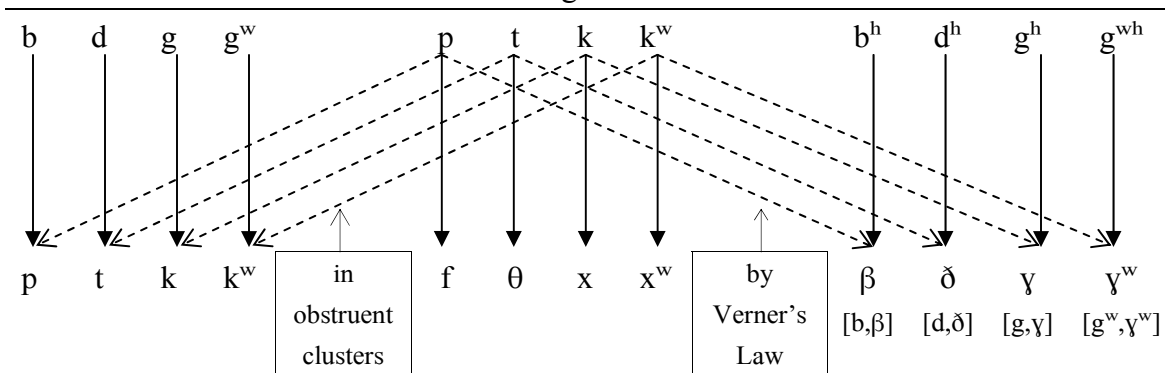
C [+asp] > [-asp] / _ ... C [+asp]

Verner’s Law

For decades, as large set of words like the ones in line 12 to 14 could only be considered exceptions to regular sound change until Karl Verner finally explained them in 1875. Verner’s Law applied to PIE stops if they were non-initial and immediately preceded by a syllable that carried no stress in PIE. As Campbell puts it:

´ ... C ... Grimm’s Law applies ... C ... ´ Verner’s Law applies

As shown by the Sanskrit forms 'b^hra:ta: and 'b^harati and the Greek forms 'p^hra:ter and 'p^hero, Grimm’s Law applied when a stressed syllable preceded, and Verner’s Law applied when the preceding syllable was not stressed as in sap^hta, hep^hta, pi^hta:, and $\text{ʃ}\text{ə}^{\text{h}}\text{t}\text{əm}$. So, the PIE consonants follow Grimm’s Law (indicated by the solid lines in the diagram below), except in specific environments where the voiceless stops can follow one of the two dotted lines in this final diagram:



Based on Bynon 1977:83