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# ON GRIMM'S CONCEPTION OF SOUND-SHIFT AND GENERATIVE PHONOLOGY

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## SINOPSIS

*Nama Jacob Grimm (1785–1863) sudah amat sebatu dalam bidang linguistik sejarah. Konsepsinya terhadap hukum perubahan bunyi yang dinamakan Hukum Grimm kuat mempengaruhi pengajian linguistik. Dalam karangan ini hukum perubahan bunyi beliau akan dibincangkan sebagai satu unit, dan satu pengimbasan dibuat untuk mencari relevansi hukum tersebut terhadap konsep ilmu perubahan bunyi seperti yang difahami oleh ahli-ahli bahasa yang mempraktikkan kajian bahasa dari sudut lunas-lunas tatabahasa generatif.*

## SYNOPSIS

*The name Jacob Grimm (1785–1863) is a household word for historical-linguistics. His conception of the consonant shift, which was formalized as Grimm's Law, had made a great impact on linguistics. In this paper we discuss his sound shift law as a unit and assess the relevance of this law to the concept of linguistic (phonological) change as it is understood and practiced by linguists committed to the conception of language and grammar implicit in the theory of generative grammar.*

## Introduction

It is, perhaps, justifiably said, that the first in the domain of law that one hears of in connection with linguistics is the fact of the existence of Grimm's law.<sup>1</sup>

The discovery of this phonetic law, or sound-shift (*lautverschiebung*) of the Germanic languages, is usually attributed to the German scholar, Jacob L. Grimm (1785–1863), although, evidently, the sound-shift phenomenon had more or less been asserted by several of Grimm's predecessors. For example, J. Ihre, the Swedish scholar, had come close to the discovery of the law in his 'Litterarum Permutationes' (Changes of Letters). A. Turgot, in his article on etymology in the French Encyclopaedia in 1756, had also noted the existence of different sets of sound changes in the histories of individual languages. But the credit, however, belongs to Rasmus Rask (1785–1832), the Danish linguist, who first demonstrated the regularity of correspondence among sounds in genetically related languages in his 'Under-

søgelse om det gamle Nordiske eller Islandske Sprogs Oprindelse' (Investigation on the Origin of Old Norse or Icelandic language). In the *Investigation* which was published in 1818, Rask wrote: "If there is found between two languages agreement in the forms of indispensable words to such an extent that rules of letter changes can be discovered for passing from one to the other, then there is a basic relationship between these languages."<sup>2</sup> The fact that Grimm in the preface to his first edition of 'Deutsche Grammatik' (1819) expressly mentions this essay of Rask, there is every possibility that it gave the first impulse to his investigations. As mentioned in Lehmann (1967:30), "We admire Rask for noting the correspondences; Grimm accepted these, supported them more fully and gave his well-known formulation."

### Grimm as a Linguist

Much praise had been given to 'Deutsche Grammatik' (4 vols. 1819–1837). In Lehmann (1967:46), for example, Grimm's formulation of the Germanic consonant shift was said to have "momentous consequences for the history of language." Yet in the same work we saw Grimm's weakness as a linguist. There was contradiction in his contention about language. In one tone he spoke of the downward course of linguistic development: "Language in its earliest form was melodious, but diffuse and struggling; in its middle form it was full of intense poetical vigour; in our own days it seeks to remedy the diminution of beauty by the harmony of the whole, and is more effective though it has inferior means,"<sup>3</sup> but in another tone he stressed that "human language is retrogressive only apparently and in particular point, but looked upon as a whole it is progressive, and its intrinsic force is continually increasing."<sup>4</sup>

Grimm's understanding of phonetics also left much to be desired. For he was capable of saying, "in our word *schrift*, for instance, we express eight sounds through seven signs, for 'f' stands 'ph'."<sup>5</sup> Thus, he considered 'sch' as containing three sounds! His incapability of distinguishing between an orthographic digraph and an actual sound gave, in Lehmann (1967:46), the following remarks: "He is groping through the consonants; his remarks on the liquids show great uncertainty; and the vowels are quite obscure for him."

Yet through some ironical fate it was on the domain of linguistic sounds that Grimm made himself famous. As Oertel (1901:31) wrote: "The turn which he thus gave to phonological investigation was of the highest importance for the future development of linguistic work."

Grimm was credited for having coined several of the terms now popular in linguistics, namely 'ablaut' (gradation) 'umlaut' (mutation), 'strong' and 'weak' declensions and conjugations. By 'umlaut' he meant the changing of a vowel under the influence of the vowel in a following syllable. In many cases umlaut can be established by comparing related words. For example, the word '*sohn*' in Modern High German shows that the 'o' in '*sohne*' is an

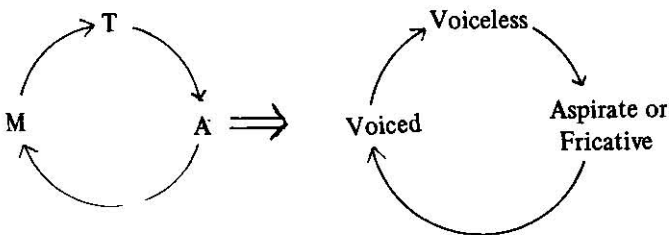
umlaut. But in Gothic, the non-umlauted vowel is preserved as shown in the following examples: 'sunus' (son) > 'sunjus' (plural). 'Ablaut', on the other hand, is the alternation or 'innere modifikation' of vowels as it occurs in the verb forms 'sing', 'sang', 'sung' (English), or 'du-ginnan', 'du-gann', 'du-gunnans' (Gothic). Unlike umlaut, ablaut is present in all languages of the Germanic group, and occurs, especially, in the inflection of the so-called strong verbs. Grimm's theory of 'ablaut', however, led him to a controversy with Bopp, particularly, on the question of Sanskrit 'Guna'. The general idea of his ablaut-theory was that this 'innere modifikation' had been grammatical, that is, significant originally, whereas Bopp maintained the idea that 'Guna' was not so much of an alternation of vowels, and that only 'ablaut' had "Bedeutung gewonnen für die Grammatik, wenn er sie gleich ..... ursprünglich nicht hätte; wir glauben beweisen zu können da auch der Ablaut von der Beschaffenheit der Endungen herbeigezogen werde."<sup>6</sup>

Another of Grimm's contribution to modern linguistics was his foresight with regard to the study of the dialects. Prior to this, no linguists had given a serious thought to the importance of the dialects for linguistic research. Grimm stressed that the dialects are unmatched for what they reveal of language, and insisted that they must not be neglected in linguistic studies.

**The Sound-Shift (lautverschiebung)**

It was, however, Grimm's conception of the sound-shift, more than anything else, that has made the greatest impact on linguistics, or more specifically, modern generative linguistics. As Oertel (1901:31) has aptly put it, "The law which goes by his name is the foundation upon which the method of modern phonology has been reared, and it is this new department of grammar which was the first to deprecate chance and caprice and to insist upon order and regularity, without which no scientific investigation can exist."

Grimm's law can be mnemonically summarized by the formula TAM, where following the Latin grammatical terminology, T stood for *tenuis*, or what we now call voiceless stop, eg. / p, t, k/; A for *aspirate*, eg. / p<sup>h</sup>, t<sup>h</sup>, k<sup>h</sup> / or /b<sup>h</sup>, d<sup>h</sup>, g<sup>h</sup> / and also for what we call voiceless fricative, eg. / f, θ, x /; and M for *media*, now called voiced stop / b, d, g/. The relations can schematically be presented as:



A more detailed illustration of the sound-shift, however, is given in the table below:<sup>7</sup>

Table I

Sanskrit	Greek	Latin	Germanic	
			Gothic	English
1 p t k	pous podos (gen.)	pes pedis	fotus	foot
	treis	tres	threis	three
	kardia	cor	hairto	heart
2 b d g	turbē	turba	thaurp	thorp
	dakru	lacruma (dacruma)	tagr	tear
	agros	ager agri (gen.)	akrs	acre
3 bh dh gh	phero	fero	baira	bear
	...tithemi	facio		do
	chen	anser	gans	goose

The above sets only illustrate what we used to call the first sound-shift which took place even before the Christian era, as certain references of the old Roman historians show. There was another sound-shifting which was said to have taken place after the Anglo-Saxons separated from their North-German cousins, about the seventh or eighth century.

Looking at the above examples, we find that in most cases the Gothic or other forms of the Germanic correspond to the Anglo-Saxon and English forms. But if we include the German forms, i.e., High-German forms, they disagree as the following examples show:

Gothic	English	German
þreis	three	drei
ga-teihan		zeigen
dags	day	tag
helpan	help	helfen
plegen	play	pflegen

The above exception leads to a formulation of another law which states that Old Germanic p, t, k, become the affricates pf, ts (written z), kx (written h), and the hard spirants f, þ and x become soft spirants b, ð and s. These

changes are what historical linguists often called the 'second sound-shift' which the Anglo-Saxon and certain Low German dialects apparently escaped.

Another exception to Grimm's Law may be found in the words: Sanskrit *pītā*, Greek *pater*, Latin *pater* which become Gothic *fadar* and English *father*, when indeed we expected a *p* in place of *d*, as in Gothic *broþar* which corresponds to Sanskrit *bhrata*, Latin *frater*, and English *brother*.

Of course, when Grimm proposed the sound correspondence, he had noted that they were frequent, but not without exceptions. It was clearly stated in 'Deutsche Grammatik' that "the sound-shifts succeed in the main, but work out completely only in individual sounds, while others remain unchanged." Grimm's successors, however, were not happy to regard these irregularities as mere exceptions and left them unaccounted for. One of them, namely, C. Verner (1875) was able to dispose of some of these exceptions to Grimm's law on observing cases such as below:

Sanskrit	Gothic	German	OHG
sapta	siburí		
aimkáḥ	halsagga		
śvaśrú			swigar
ketuh	haidus	heit	

and found that the hard spirants *f, þ, χ*, in word medial or final positions become 'soft', only when the original Indo-Germanic accent was not on the immediately preceding syllable. Verner's findings became a corollary to Grimm's law and was later to be known as Verner's law.

### The Sound-shift and Generative Phonological View

What interest us at this stage is to find out how much of these studies on historical-comparative linguistics of the nineteenth century have found their place in present linguistics. More specifically, how much of Grimm's proposition or formulation of the Germanic sound-shift has become the subject of study of present-day linguistics.

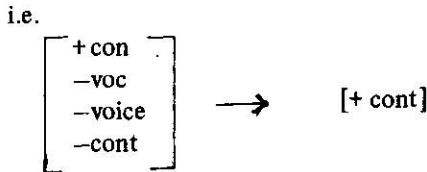
The growing awareness among linguists of the relevance of Grimm's sound-shift theory for contemporary linguistic appeared only recently with the popularization of the Transformational-Generative grammar by Chomsky-Halle and their colleagues. Halle made particular reference to Grimm's Law when he discussed the new concept of linguistic (phonological) change as it is understood and practiced by linguists committed to the conception of language and grammar implicit in the theory of generative grammar. It was on the discussion of the simplicity criterion and the role of simplicity in phonological rules that Halle (1964:347) expressed the following often-quoted words:

It has been proposed here that the primary mechanism of phonological

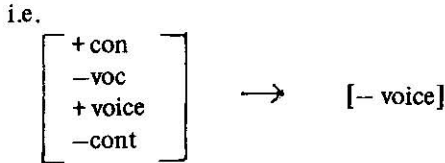
change is the addition of rules to the grammar with special (although not exclusive) preference for the addition of single rules at the ends of different subdivisions of the grammar. If we now assume that rules are added always singly and always at a given spot in the grammar, then it follows that the synchronic order of the rules will reflect the relative chronology of their appearance in the language. Moreover, under this condition the proposed simplicity criterion can be used as a tool for inferring the history of the language, for it allows us to reconstruct various stages of a language even in the absence of external evidence such as is provided by written records or by borrowings in or from other languages ..... My point can perhaps be illustrated most graphically by a discussion of the so-called Grimm's law ..... The law describes stages in the evolution of the Germanic languages from the Indo-European proto language, stages, which it should be noted, are not attested by any external evidence.

To show the necessity of rule ordering as a criterion of simplicity as well as a reflection of the relative chronology of their appearance in the language, Halle cited the following two rules which are part of Grimm's law:

G-1 In certain contexts where condition  $C_i$  (the precise nature of which need not concern us here) is satisfied, nonvocalic, consonantal, voiceless non continuants become continuant. (It is by virtue of this law that English *five* is said to be cognate with Greek *pentē*, Russian *pjat*, and Sanskrit *panca*.)



G-2 Nonvocalic, consonantal, voiced noncontinuants become voiceless. (G-2 establishes the correspondence between English *ten* and Greek *deka*, Russian *desjat* and Sanskrit *daca*.)



It is Halle's contention that these two rules came into the language in the order indicated, because if rule G-2 had come before G-1, then the voiceless continuants produced by rule G-2 would have become noncontinuants as a result of rule G-1.

A more detailed and lucid discussion on simplicity and rule ordering and their relevance to Grimm's law was given by J.B. Voyles (1967), who pre-



sented a set or rules for deriving the phonology of Proto-Germanic from that of Pre-Germanic. The input to this set of rules consists of individual Pre-Germanic lexical items specified completely in terms of Jakobsonian features, while the output consists of the corresponding lexical items of Proto-Germanic. The ordering of the rules, which Voyles claims to have maintained the overall simplicity of the description, and also appears to be in agreement with the external evidence and with most of the traditional explanations as regards the relative chronology of the sound changes, is as follows:

$$1. \quad [-\text{tense}] \quad \rightarrow \quad [+ \text{tense}] \quad / \quad \left[ \begin{array}{c} + \text{con} \\ \sim \\ - \text{son} \end{array} \right] \quad \left[ \begin{array}{c} + \text{con} \\ - \text{voice} \end{array} \right]$$

i.e. voiceless lax consonants become tense where they are not preceded by phones having the features [+con] and [-son].

eg. p → ph/ after l m n ŋ r a e i o u ə #

$$2a. \quad [-\text{cont}] \quad \rightarrow \quad [+ \text{cont}] \quad / \quad \left[ \begin{array}{c} + \text{tense} \end{array} \right]$$

i.e. tense noncontinuants become continuants.

eg. ph → φ, bh → b

$$2b. \quad [-\text{voice}] \quad \rightarrow \quad [+ \text{voice}] \quad / \quad \left[ \begin{array}{c} + \text{son} \\ - \text{accent} \end{array} \right] \rightarrow \left[ \begin{array}{c} + \text{con} \\ \sim \\ - \text{son} \end{array} \right]$$

i.e. a voiceless consonant which is preceded by an unaccented sonorant and is followed by a sonorant or is in word-final position becomes voiced.

eg. φ → b # or when it is after: l m n ŋ r a e i o u ə

$$3. \quad [+ \text{cont}] \quad \rightarrow \quad [- \text{cont}] \quad / \quad \left[ \begin{array}{c} - \text{son} \\ - \text{str} \\ + \text{voice} \\ - \text{flat} \end{array} \right] \quad \left[ \begin{array}{c} - \text{grv} \\ + \text{nas} \end{array} \right]$$

i.e. voiced continuant consonants arising from 2a and 2b become their corresponding stops before n.

eg. b → b/ n

$$4. \quad \left[ \begin{array}{c} - \text{grv} \\ + \text{nas} \\ \gamma \text{ features} \end{array} \right] \rightarrow \left[ \begin{array}{c} \alpha \text{ grv} \\ \beta \text{ nas} \\ \gamma \text{ features} \end{array} \right] / \left[ \begin{array}{c} + \text{con} \\ - \text{str} \\ + \text{voice} \\ - \text{flat} \\ \alpha \text{ grv} \\ \beta \text{ nas} \\ \gamma \text{ features} \end{array} \right] \rightarrow$$

i.e. this is a rule of assimilation by which Germanic b, d, g, l, m, n, and r followed by n become bb, dd, gg, ll, mm, nn, and rr. The Greek letters before 'grave' and 'nasal' mean that they change to '+' or '-' depending

on whether their values in the preceding matrix are '+' or '-'. The word 'features' means that the n takes on all other '+' or '-' values of the preceding matrix not otherwise specified..

eg. n → 1/1 \_\_\_\_\_

5. [+voice] → [-voice] /  $\left[ \begin{array}{c} \text{---son} \\ \text{---cont} \\ \text{---} \end{array} \right]$

i.e. Pre-Germanic stops become voiceless

eg. b → p

By ordering the rules as indicated, Voyles rejects an earlier proposal by Fourquet (1948) who put rule 5 before rules 2a and 2b. Such ordering, Voyles argues, would increase one more feature in Verner's law (rule 2b), thereby reducing its simplicity:

2bi [-voice] → [+voice] /  $\left[ \begin{array}{c} \text{+son} \\ \text{---accent} \end{array} \right] \left[ \begin{array}{c} \text{+cont} \\ \text{---} \end{array} \right] \left[ \begin{array}{c} \sim \left( \begin{array}{c} \text{+ con} \\ \text{--- son} \end{array} \right) \end{array} \right]$

The overall simplicity of the description would also be reduced if rule 1 were to be put after rule 2a, as the following innovation shows:

1j  $\left[ \begin{array}{c} \text{---cont} \\ \text{---tense} \end{array} \right] \rightarrow \left[ \begin{array}{c} \text{+cont} \\ \text{+tense} \end{array} \right]$

i.e., p (as opposed to ph) → φ in the same environment as in 1 above. Then 2a would be the same, but would apply only to bh → b̥.

Also, according to Voyles, the proposed order of the rules would yield correctly a great number of Proto-Germanic roots from the corresponding roots of Pre-Germanic; thus: \*Pre-Germanic \*lignh (application of rules 2a and 2b) > \*lignān (application of rule 3) > \*lignān (application of rule 4) > \*liggan (application of rule 5) > \*likkān > OHG *leckōn* (lick).

In his concluding remarks, Voyles (1967:655) stressed the important consideration of the relative chronology of the rules, through which, he said, "certain regular environments may be discovered which account for changes which would otherwise remain unexplain."

Apart from Foley (1970) who attempted a discussion on the Germanic consonant shifts by relating them to the Spanish consonant shifts, Kiparsky (1965) also made a thorough study of sound change in the perspective of the theory of generative grammar. One great difference between the non-generative linguists (in particular, the neo-grammarians and most varieties of structuralism) and the generative linguists, according to Kiparsky, is that the former regards sound changes as due to deviations in performance, whereas the latter instead suggests that they are due to changes in compe-

tence. Grammars, Kiparsky said, are subject to changes of two kinds: the addition of new rules to them and simplification of them. In phonology, the addition of rules corresponds roughly to the concept of 'sound change' (Halle, 1962; Postal, 1968). To show how the phenomenon of sound change is treated in taxonomic grammar and in the theory of generative grammar, Kiparsky cited the umlaut rule in Germanic, by which, vowels were fronted before *i* (for example, Old High German *wurni* > *würmi* 'worm', *tāti* > *tæti* 'deeds', *nōti* > *nōti* 'needs' (1); Short *a* was not only fronted but also raised to *e* (for example, *slagi* > *slegi* 'strokes', *gasti* > *gesti* 'guests' (2)). According to the theory of taxonomic grammar, changes like (1) involve the introduction of new allophones before *i*, but the change of *a* to *e* as in (2) must be regarded as a phonemic change because *a* and *e* contrast in other environments. Thus, if a taxonomic grammar is to account for the regularities of the language, it must contain two separate umlaut rules, a morpho-phonemic umlaut rule turning *a* into *e* (e.g. /slagi/ > /slegi/) to provide the phonemic level of representation, and a phonemic umlaut rule affecting the remaining vowels (e.g. /nōti/ > [nōti]) to provide the phonetic level of representation. The theory of generative grammar, on the other hand, has a radically different view. Since a grammar is a system of rules, it becomes natural to regard sound changes as added rules. Thus, umlaut is the addition of the following phonological rule to the grammar of Old High German:

$$6. \left[ \begin{array}{c} + \text{voc} \\ <-long> \end{array} \right] \rightarrow \left[ \begin{array}{c} -\text{back} \\ <-low> \end{array} \right] / \text{_____ } C_0 i$$

But Kiparsky went on to suggest that the above umlaut rule requires a slight modification since it was found that in the majority of Germanic dialects, the productive umlaut of *a* is not *e*, as originally observed, but *æ*. For example, in the Low German dialect of Prignitz, we have *gast*: *gæst*, *kraft*: *kræftig* with a low front vowel in the umlauted forms, rather than the expected *gast*: *gest*, *kraft*: *krefstig*. Thus, the grammar requires a simplification of the umlaut rule from its original form of 6 to the form in 7:

$$7. V \rightarrow [-\text{back}] / \dots$$

Kiparsky also made an interesting treatment of Grimm's Law as an illustration of his discussion on the question of *restructuring*. He used the following underlying representations: (8) *skabian*, *skabtas*, *nasian*, *nasitas* (infinitive and past participle forms) from the verb stems *skab* 'shape' and *nas* 'save'. (8) is phonetically realized as: (9) *skabjan*, *skaptas*, *nasjan*, and *nasitas* respectively. The devoicing of *b* in *skaptas* is due to a rule of regressive assimilation of Indo-European origin:

$$10. \left[ +\text{obstruent} \right] \rightarrow \left[ \alpha \text{ voice} \right] / \text{_____} \left[ \begin{array}{c} + \text{obstruent} \\ \alpha \text{ voice} \end{array} \right]$$

The first step of Grimm's Law states: voiceless stops are tensed everywhere except after obstruents:

$$11. \begin{bmatrix} -\text{cont} \\ +\text{obstruent} \\ -\text{voice} \end{bmatrix} \rightarrow [+tense] / \left\{ \begin{array}{l} [-\text{obstruent}] \\ \# \end{array} \right\} \text{---}$$

Rule 11 changes *skaptas* to *skap<sup>h</sup>tas* and *nasitas* to *nasit<sup>h</sup>as*. This is not restructuring but a case of rule addition to the grammar: with the underlying forms (8) and the rules 10 and 11, in that order, giving the phonetic forms:

12. *skabjan, skap<sup>h</sup>tas, nasjan, nasit<sup>h</sup>as.*

By the next step of Grimm's Law which states: aspirated stops turn into continuants:

$$13. \begin{bmatrix} +tense \\ +obstruent \end{bmatrix} \rightarrow [+cont]$$

the form *skap<sup>h</sup>tas* (from rule 11) changes to *skaftas*, and *nasit<sup>h</sup>as* to *nasiθas*. The rule also applies to the voiced aspirates, e.g. *b<sup>h</sup>eran* > *βeran*. The alternation of aspiration now appears as a stop-continuant alternation. One possible grammar for this stage, Kiparsky said, has the same dictionary representations as before, with the rules (10, 11, 13). But at this point there is a quite different grammar which accounts for the same language in a simpler way. The old voiced aspirates *b<sup>h</sup>* etc. are replaced in the dictionary representations by the corresponding continuants *β* etc. The restructured grammar has rule (10), by which *skabtas* > *skaptas*, followed by a new rule (14) that combines the effect of (11) and (13), turning *skaptas* > *skaftas* and *nasitas* > *nasiθas*.

$$14. \begin{bmatrix} +\text{obstruent} \\ -\text{voiced} \end{bmatrix} \rightarrow [+cont] / \left\{ \begin{array}{l} [-\text{obstruent}] \\ \# \end{array} \right\} \text{---}$$

With this restructuring the feature of tenseness has ceased to play a role in the obstruent system, and has been replaced by the feature of continuance. Thus Kiparsky claimed that the very simple rule (13) has triggered considerable revision in both the rules and underlying representations of the language.

The final part of Grimm's Law makes the voiced stops unvoiced (*skabjan* > *skapjan*):

$$15. \begin{bmatrix} +\text{obstruent} \\ -\text{cont} \end{bmatrix} \rightarrow [-\text{voiced}]$$

thereby yielding the phonetic forms:

16. *skapjan skaftas nasjan nasiθas*

## Conclusion

What we have attempted to show in the preceding paragraphs is the fact

that linguistic change, such as formulated in Grimm's Law, is a change in competence and not simply in performance. A linguistic change, for example, from Pre-Germanic [d] to Proto-Germanic [t], means that a rule has been added to the grammar in the form of rule (15). D. King (1969:108), in his insightful study of sound change from the point of view of generative phonological grammar, explained the above change as follows: "..... we assume that a rule  $d > t$  has been added to the speaker's grammar. Where he previously said  $d$  he now says  $t$ , and we register this fact in our account by the addition of a rule — a change in competence."

King, like many other generative linguists, has therefore taken a radical view of the problems and methods of historical linguistics. Their efforts in popularizing generative phonological grammar provide us with new ways of looking at historical-comparative linguistics, and therefore new insights into language.

#### Footnotes

1. Bloomfield, however, considers the term 'law' in this case to be misleading, for he believes, "sound-change is not in any sense a law, but only a historical occurrence." (see Bloomfield, 1961, p. 354).
2. See Robins, 1967, p. 171.
3. See Jespersen, 1959, p. 62.
4. Ibid.
5. Ibid., p. 46.
6. Verburg, P.A., *The Background to the Linguistic Conception of Bopp, Lingua*, Vol. 2 (1949-50), p. 438.
7. These examples are taken from Dinneen, 1967, p. 185.

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