A RESTRICTION ON GRASSMANN'S LAW IN GREEK

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It is well-known that Grassmann's law is restricted in its application in Greek vis-à-vis Sanskrit.[1] In Greek, the rule applies generally to deaspirate an initial underlying aspirated stop in a reduplicating syllable: *títhēmi* 'I place' < **thí-thēmi*, *pépheuga* 'I have fled' < **phé-pheuga*, *kékhutai* 'it has poured forth' < **khé-khutai*, etc; but within a root it applies only to an initial dental and to /h/ from an underlying /s/: *tréphō* 'I nourish' < **thréphō* (cf. *thrépsō* 'I shall nourish'), *trikhós* 'hair, gen. sg.' < **thrikhós* (cf. *thríks* 'hair, nom. sg.'), *ékhō* 'I hold' < **hékhō* < **sékhō* (cf. *héksō* 'I shall hold', *éskhon* 'I held'), etc. There are no cases in Greek in which a root-initial labial or velar voiceless unaspirated stop alternates with the corresponding aspirated stop.[2]

Therefore it may be presumed that diaspirate Indo-European roots were inherited by Greek with an initial voiceless unaspirated stop if and only if that stop was grave (labial or velar). For example, the Indo-European root **bheudh* was inherited by Greek in the form *peuth*, since the initial labial of the root never appears as an aspirated stop in the paradigm of *peúthomai* 'I ask'. Thus *peúsomai* 'I shall ask' is the attested form, not **pheúsomai*, which would be the expected form of the future if the underlying representation of the root were **pheuth*.

One possible interpretation of these facts is to say that at some stage in pre-Greek, root-initial aspirated (i.e. tense) grave stops in diaspirate roots were rephonemicized as unaspirated (i.e. lax) stops. Despite this apparent rephonemicization, however, and despite also the pre-Greek rephonemicization of the voiced aspirates in general as voiceless aspirates, Grassmann's Law can be stated for Greek in exactly the same form as for Sanskrit:[3]

[1] For a brief discussion and summary of the facts see A. Meillet and J. Vendryès, *Traité de grammaire comparée des langues classiques*[3] 57–8 (Paris, 1960).

[2] With one possible exception. The Greek reflex of the Indo-European root **gʷhedh* appears in Greek in the first aorist form *théssasthai* 'to pray for', in the nominal form *póthos* 'yearning', and in the derived verb *pothéō* 'I yearn for'. However, because of the defective nature of this root in Greek, it is possible to assume that at the time that the restriction in the domain of application of Grassmann's law in Greek came about, the initial stop of *théssasthai* had already been rephonemicized as /th/, and hence as a dental stop retained its inherited aspiration.

[3] The statement of the phonological rules in this paper conforms to the notational conventions established by Halle, Chomsky, and other generative phonologists. In particular, the subscript one appearing in Rule 1 is to be read 'one or more segments'. Triliteral abbreviations for the Jakobson-Halle features are used throughout. 'cnt' means 'continuant'.

In connection with Grassmann's law, I am not concerned here whether the law is an independent innovation in Greek and in Indic, or whether it antedates the split of the two families. The former assumption is made by the neogrammarians, and a typical argument is given by Leonard Bloomfield, *Language* 350–1 (New York, 1933). Recently, in 'Analogy and sound change', a paper read at the 1964 annual meeting of the Linguistic Society of America, Paul Kiparsky has challenged the neogrammarian assumption within the framework of generative phonology.

	Final stop:	Vl	Vd	Asp
Initial stop:	Vl	*tek*	*ped*	–
	Vd	*derk*	–	*degh*
	Asp	–	*bheug*	$\begin{cases} bheudh \\ dhrebh \end{cases}$

TABLE 1. Possible initial and final stop combinations in the Indo-European stop-closed root

	Final stop:	Vl	Vd	Asp
Initial stop:	Vl	*tek*	*ped*	–
	Vd	*derk*	–	*dekh*
	Asp	–	*pheug*	$\begin{cases} pheuth \\ threph \end{cases}$

TABLE 2. Initial and final stop combinations in pre-Greek stop-closed roots upon devoicing of aspirate stops

	Final stop:	Vl	Vd	Asp
Inital stop:	Vl	*tek*	*ped*	*peuth*
	Vd	*derk*	–	*dekh*
	Asp	–	*pheug*	*threph*

TABLE 3. Initial and final stop combinations in stop-closed roots upon application of Rule 2

Rule 1. $[-\mathrm{voc}] \rightarrow [-\mathrm{tns}] \, / - [+\mathrm{cnt}]_1 \begin{bmatrix} -\mathrm{voc} \\ +\mathrm{tns} \end{bmatrix}$

Upon closer examination, however, we discover that the replacement in Greek of *ph* by *p* and of *kh* by *k* in initial position in inherited diaspirate roots need not be considered a rephonemicization at all. Consider the restrictions on the structure of those Indo-European roots which begin and end with a stop, as summarized in Table 1.[4] For convenience, we shall call such roots stop-closed roots.

Upon the devoicing of the aspirates, the restrictions becomes as given in Table 2. But now, as one can readily see, the replacement of pre-Greek **pheuth* by *peuth* turns out not to be a rephonemicization at all. The new form *peuth* merely fills a neutralized slot in the pattern, as illustrated in Table 3.

Notice in particular that the deaspiration of initial grave stops in diaspirate roots can be considered to be subphonemic only after the devoicing of the aspirates has taken place, not before. This observation tells us of the relative chronology of these developments; the devoicing of the aspirates must have occurred before the replacement of the initial grave aspirated stops in diaspirate roots by the corresponding unaspirated ones.[5]

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[4] Table 1 summarizes Rules 1 and 2 of Winfred P. Lehmann, *Proto-Indo-European phonology* 17 (Austin, 1955). Permitted combinations of initial and final stops are illustrated by 'typical' roots, and prohibited combinations are indicated by a dash.

[5] If we disallow the use of the term rephonemicization for this change, it would be useful to have a technical term to cover this particular change and others like it, for example the Latin development **p...kʷ → kʷ...kʷ*. One good candidate is the term RESPECIFICATION, since these changes involve respecifying the values of particular redundant features in particular contexts.

We are now in a position to state the rule which specifies the aspiration of a root-initial stop in Greek, given that the root-final stop is an aspirate. That rule may be stated as follows.[6]

Rule 2.
$$\begin{bmatrix} -\text{cnt} \\ -\text{voi} \\ \alpha\text{grv} \end{bmatrix} \rightarrow [-\alpha\text{tns}] \ / \ [\ -\ [+\text{cnt}]_1 \begin{bmatrix} -\text{cnt} \\ +\text{tns} \end{bmatrix}]_{\text{Root}}$$

Rule 2 as it stands has only one clear exception in Greek; it is violated by the root meaning 'hit', which must be represented *teukh*, rather than *theukh*, in order to account for the fact that in the future tense, the root appears with an initial unaspirated stop: *teúksomai* 'I shall hit', not *theúksomai*. For this reason, this particular root has to be specially marked as not undergoing Rule 2, and the non-aspiration of its initial stop must be considered phonemic.[7]

[6] The use of the variable α in the statement of this rule conforms to the conditions on the use of variables in phonological rules as stated by Noam Chomsky, *Aspects of the theory of syntax* 175-6 (Cambridge, Mass., 1965). It will be noted that the effect of Rule 2 is to prevent the occurrence of a root-final nongrave aspirated stop following a root-initial aspirated stop, since an Indo-European root does not begin and end with the same phoneme (Lehmann 17). As is noted in Meillet and Vendryès 58, medial /th/ in Greek is subject to a special rule which deaspirates it when another aspirate precedes. The effect of Rule 2 together with the rule that prevents a root from beginning and ending with the same phoneme is to prevent this special rule involving /th/ from ever applying within a root.

[7] Hesychius, however, cites a form *sunthúksō*, which, although more recent in root vocalism and in voice, has the expected initial /th/. Calvert Watkins, to whom I am endebted for the Hesychius citation, has also pointed out to me that an initial dental stop regularly retains its aspiration in inherited diaspirate roots only if it is followed by /r/, and in two cases by /a/. Those cases are the roots *thakh* and *thaph*, appearing in the words *takhús* 'swift', *thásson* 'swifter' and in *tháptō* 'I bury', *táphos* 'grave'. If we incorporate these restrictions into the statement of Rule 2, then the form *teukh* is no longer exceptional.