

Schließlich kann ich der Beobachtung von Dobesch, daß diese *μῦῖα* mit der Priesterin in Dodona, wie die von Dobesch genannten Gelehrten angenommen hatten¹⁰), nichts zu tun hat, nur zustimmen. Das *μῦῖας δάκρυον* ist, wie das vulgärbyzantinische zeigt, ganz konkret (= Der Fliege Träne) aufzufassen.

Ancient Greek Accentuation

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1. The aims of this paper are three: first, to formulate the rules of stress and pitch for Ancient Greek (AGk.) insofar as they can be reconstructed from the philological evidence and the accounts of the grammarians; second, to observe the changes in this system which account for the development of various of the AGk. dialects (primarily Attic, Doric, and Lesbian) as well as the development of the Modern Greek (MGk.) stress rules; finally, to speculate on what the nature of IE stress and pitch might have been based on the AGk. evidence—in particular as regards the frequent assertion that Indo-European was primarily a tonal as opposed to a stress language.

Our stress rules will be on the model of those in Chomsky and Halle (1968, esp. pp. 68–163). They apply to the outputs of the syntactic component of the grammar and are themselves part of the phonology. Certain of the stress rules are cyclic. By this is meant that they apply first to the innermost brackets of a structural description and then to successive outer brackets. For example, an English compound like *minute man* has the structural description [[minute] [man]] —which is to say that it is a compound noun $\begin{matrix} \text{NNa} & & \text{NaNb} & & \text{NbN} \end{matrix}$ (N) which consists of two other nouns (Na and Nb). The stress rules of English first apply to the innermost brackets (which are then considered deleted) producing the output $\begin{matrix} \text{N} & & \text{N} \end{matrix}$ [minute man]. Then a compound stress rule of English (given in Chomsky and Halle,

¹⁰ So W. Pape, Wörterbuch der griechischen Eigennamen, s.v. *Μῦῖα* Nr. 6; W.H. Roscher, Ausführliches Lexikon der griechischen u. römischen Mythologie II², s.v. *Myia* Nr. 4; J. Pley, RE XVI 1 (1933) Sp. 1151,45ff.

1968, p. 92) applies to this structure restressing the first stressed vowel, $\left[\begin{smallmatrix} \text{m} \\ \text{N} \end{smallmatrix} \text{í} \text{nute} \begin{smallmatrix} \text{m} \\ \text{N} \end{smallmatrix} \text{án} \right]$. By convention, the first vowel is considered to have primary stress and the vowel in *man* is considered to have secondary stress. This results in the final stress pattern $\left[\begin{smallmatrix} \text{m} \\ \text{N} \end{smallmatrix} \text{í} \text{nute} \begin{smallmatrix} \text{m} \\ \text{N} \end{smallmatrix} \text{án} \right]$. We shall assume a similar cyclic application for certain of the AGk. stress rules. We shall also adopt the convention whereby when primary stress is assigned in a constituent, all other stresses in the constituent are reduced by one.

2. The AGk. Rules. As is well known, in the manuscripts which indicate stress, there are three types of accentual marks used: the acute, which may appear on short vowels, long vowels, or diphthongs — *ἄνθρωπος* ‘man’, *καταρρέγγνυμι* ‘to break down’, *βασιλεύς* ‘king’; the circumflex, which appears only on long vowels or diphthongs: *μῆτις* ‘cunning’, *μηνιαίος* ‘monthly’; and the grave, which may appear on short vowels, long vowels, or diphthongs: *ἀλλὰ* ‘but’, *μὴ ὅτι* ‘not being the case that’, *καὶ* ‘and’. It is generally assumed that the acute represents the presence of stress (which, we shall argue, consisted of both intensity and pitch); the grave, the absence (see ftn. 1) or in some cases — as we shall see — the reduction of stress; and the circumflex a sequence of acute and grave, namely the first element of a diphthong or long vowel (which we shall consider a sequence of two short vowels such that $\bar{V} = VV$) being stressed, the second element being unstressed. Hence $\hat{V} = \acute{V}\grave{V}$.¹⁾ Our phonetic transcription of the above forms will be /ánthroopos/, /katarreégnumi/, /basileús/, /méetis/, /meeniáios/, /allà/, /meè hóti/, and /kaì/.

The rules which assign the stress to such forms are these: (1) three morphologically conditioned stress (MCS) rules; (2) one compound stress (CompS) rule; (3) the recessive stress (RS) rule; (4) the circumflex stress (CircumS) rule; (5) the pitch or tone rule (P rule).²⁾ Of these rules, types 1, 2, and 3 are cyclic and apply successively to the inner bracketings, then to the outer ones in the

¹⁾ For a detailed consideration of the philological evidence, see Laum, 1928. As noted by Kiparsky (1967, p. 76), the Alexandrian scribes often used a grave to mark the unstressed syllables of a word instead of an acute for the stressed one: hence *γέγραγον* ‘majestic’ = *γεραρόν*.

²⁾ The environments of the MCS rules are given in Appendix I; the phrasal stress rule (PS rule) for constructions larger than words is sketched in Appendix II; and one principle of AGk. stress which may be a lexical redundancy rule is given in Appendix III.

structural descriptions of words. The CircumS rule determines which sequences of VV (long vowels or diphthongs) have circumflex stress ($\acute{V}\acute{V}$) and which are acute ($V\acute{V}$). The CircumS rule is what might be called an “anywhere” rule in that it must apply both after the RS rule and before as well as after the PS rule. (This is discussed in Appendix II.) The PS rule, usually referred to as the rule for proclitics and enclitics, is a post-cyclic rule and applies over word boundaries to certain phrasal structures. As such it is analogous to the nuclear stress rule posited for English in Chomsky and Halle, 1968, p. 90. The rule of pitch, P rule, associates tone and intensity, which, we shall argue, were both present in the stress of Ancient Greek. The order of these rules is, first, the MCS rules, then the CompS rule, the RS rule, and the PS rule. The CircumS rule applies after the RS rule and again after the PS rule. Finally, the tonal or P rule applies after primary ($\acute{}$), secondary ($\grave{}$), and lesser (undesigned) stress have been assigned.

2.1. The Morphologically Conditioned Stress Rules. These rules assign stress to +vocalic segments in syntactically (and sometimes in addition phonologically) specifiable formatives as they issue from the syntactic component of the grammar. The three rules are these:

$$(2.1 a) \left[\begin{array}{c} V \\ +\text{Inflectional} \\ \text{Suffix} \end{array} \right] \rightarrow [+stress]$$

/ — $\langle CV \rangle C_o \#$ Noun, Adj, $\langle \text{Verb} \rangle$ (in those environments defined in Appendix I)

$$(2.1 b) \left[\begin{array}{c} V \\ +\text{Stem} \end{array} \right] \rightarrow [+stress]$$

/ — $C_o +$ (in those environments defined in Appendix I)

$$(2.1 c) \left[\begin{array}{c} V \\ +\text{Stem} \end{array} \right] \rightarrow [+stress]$$

/ — $C_o V_o C_o +$ (in those environments defined in Appendix I)

where V is any vocalic segment; C is any consonantal segment; C_o is a sequence of any (including no) consonantal segments; $\#$ is a word boundary; and $+$ is a morpheme boundary. MCS rule 2.1 a says that certain forms³⁾ are stressed on their inflectional endings. Rule 2.1 b says that certain forms are stressed on the last vocalic segment of the stem. And rule 2.1 c says that certain other forms are stressed on the penultimate vowel of the stem. As far as we

³⁾ We consider only nouns, adjectives, and verbs.

(c) B = Prefix; C = Verb + /-t-/, i.e. C = Adj (stressed by 2.1a-ii-m); A = Adj meaning 'capable of being Verb-ed'. E.g., *δια-λυτός* 'capable of being dissolved'.

(ii) Syntactic and phonological conditions

(a) B = Noun; C = Verb, Active; A = Adj or Noun, 1-2 Decl.
verb stem = + ... $\begin{Bmatrix} VC_2 \\ V_2C_0 \end{Bmatrix}$ + . E.g., *αἰγο-βοσκός* 'goat-herder', *ψυχο-πομπός* 'soul-escorting'.

(b) C = Adj or Noun. Word in nom. sing. ends as ... $V_2C_0\#$.
E.g., *ἀνα-βολή* 'delay', *ἀντι-δωρεά* 'return gift', *ἀρχι-πειρατής* 'head pirate', *αὐτο-γραμμή* 'written by oneself', *μηλο-βοτήρ* 'shepherd', *εὖ-γενής* 'well-born', *λιμο-φορέυς* 'causing hunger', *δειν-ώψ* 'fierce-eyed'.

$$(B) \quad \begin{bmatrix} +\text{Stem} \\ - \end{bmatrix} C_0^1 + \begin{bmatrix} +\text{Inflectional} \\ \text{Suffix} \\ +\text{stress} \end{bmatrix} C_0\#$$

I.e., the stress on a compound is moved from the inflectional ending to the last syllable of the stem when:

(i) Syntactic and phonological conditions

(a) Same as A-ii-a above except Verb stem = + ... VC_0^1 + .
E.g., *ἀδη-φάγος* 'eating one's fill', *νυμφο-κόμος* 'dressing as a bride', *πατρο-κτόνος* 'killing one's father' *φυτο-σκάφος* 'digging plants, a gardner', *φυτο-φάγος* 'vegetable-eating'.

The stress of compounds illustrates the cyclic principle. E.g.,
[[aigo][[bosk/os]]] (by rule 2.1b-iv-c for *aigo* and 2.1a-i-b for *boskos*) → [aígo[boskós]] (by 2.2-A-ii-a) → [aígoboskós]. By convention, the last stressed vowel has primary stress and any other vowels in the construction with primary stress are reduced by one, which results in [aígoboskós]. Similarly, [[patro][[kton/os]]] (by 2.1b-iv-c for *patro* and 2.1a-i-b for *ktonos*) → [patró[ktonós]] (by 2.2-B-i-a) → [patróktónós], i.e. [patròktónòs]. Those compounds which are not stressed by rule 2.2 undergo the RS rule 2.3 given below. E.g., *πατρό-κτονος* 'slain by one's father' has the same structural description as the immediately preceding case except that the verb has the passive sense and thus does not fit the conditions for the application of 2.2-B-i-a. Similar pairs of compounds are these: *δια-λυτός* 'capable of being dissolved',

$$\begin{array}{c} \text{[[dia]}/\text{[[lu]}/\text{tos}]] \\ \text{AP} \quad \text{PAV} \quad \text{V} \quad \text{AA (Capable)} \end{array} \quad (\text{by 2.1 a-ii-m}) \rightarrow \text{[diá]}/\text{lutós}} \quad (\text{by 2.2-A-i-c})$$

$$\rightarrow \text{[diá]lutós}; \text{ but } \delta\acute{\iota}\alpha\text{-}\lambda\upsilon\tau\omicron\varsigma \text{ 'dissolved', } \begin{array}{c} \text{[[dia]}/\text{[[lu]}/\text{tos}]] \\ \text{AP} \quad \text{PAV} \quad \text{V} \quad \text{AA} \end{array} \quad (\text{by 2.1 a-ii-m}) \rightarrow \text{[diá]lutós}} \quad (\text{by RS rule}) \text{ [diá]lutòs}}^4). \text{ Other participle compounds have a similar derivation: } \begin{array}{c} \text{[[a]}/\text{[[lu]}/\text{tos}]] \\ \text{AP} \quad \text{PAV} \quad \text{V} \quad \text{AA} \end{array} \rightarrow \acute{\alpha}\text{-}\lambda\upsilon\tau\omicron\varsigma \text{ 'unwashed'.$$

There are a few exceptions to rule 2.2. These also undergo the RS rule: $\gamma\alpha\iota\acute{\eta}\text{-}\omicron\chi\omicron\varsigma$ 'holding the world' (an exception to 2.2-B-i-a); and $\epsilon\upsilon\text{-}\acute{\eta}\theta\eta\varsigma$ 'good-hearted' and $\mu\acute{\upsilon}\text{-}\omega\psi$ 'short-sighted', both of these forms being exceptions to 2.2-A-ii-b. ⁵⁾ Certain compounds, depending on their structural descriptions, are restressed on a second pass through the rules: $\begin{array}{c} \text{[[[auto] } / \text{] } / \text{krator}] / \text{ikos}] \\ \text{A} \quad \text{N} \quad \text{A} \quad \text{A} \quad \text{N} \quad \text{N} \quad \text{N} \quad \text{A} \end{array} \quad (2.1 \text{ a and RS rule 2.3}) \rightarrow \text{[[[autó] } / \text{] } / \text{krátor}] / \text{ikos}] \quad (\text{RS rule 2.3}) \rightarrow \text{[[autókrator} / \text{] } / \text{ikos}] \quad (2.1 \text{ a-ii-a}) \rightarrow \text{[autòkratorikós], } \alpha\upsilon\tau\omicron\kappa\rho\alpha\tau\omicron\rho\iota\kappa\acute{\omicron}\varsigma \text{ as opposed to } \alpha\upsilon\tau\omicron\text{-}\kappa\rho\acute{\alpha}\tau\omega\rho \quad (\text{by 2.3}).$

2.3. The Recessive Stress Rule. The last of the cyclic rules is the RS rule:

$$\begin{aligned}
 (2.3) \quad & V \rightarrow [+stress] \\
 & / (1) \text{ --- } C_o \left\{ \begin{array}{l} V_1^2 C_1 V \\ V_2 \end{array} \right\} C_o \# \\
 & (2) \# C_o \text{ --- } X \#
 \end{aligned}$$

Conditions: all V's in environment 1 are ---stress and any V occurring in X in environment 2 is ---stress. The environments of the rule are disjunctively ordered: a form undergoing the rule is first tested for environment 1, then for 2. The C's stand for --- vocalic segments---i.e., consonants or morpheme boundaries. The rule says that (1) words ending in a short vowel are stressed on the ante-

⁴⁾ This is referred to as Lobeck's Rule. Postgate (1924, p. 53), "Lobeck's Rule . . . that those [verbal adjectives in -tos] expressing Possibility take $\acute{\iota}$ and those expressing Completion [which are participles] take $\acute{\upsilon}$ is reasonable in itself and observed in many instances."

⁵⁾ For more examples of compounds, see Vendryes (1945, pp. 189-200): $\acute{\omicron}\delta\acute{\omicron}\varsigma$ 'road', $\epsilon\acute{\iota}\sigma\omicron\delta\omicron\varsigma$ 'entrance'; $\lambda\epsilon\upsilon\kappa\acute{\omicron}\varsigma$ 'white', $\pi\alpha\rho\acute{\alpha}\lambda\epsilon\upsilon\kappa\omicron\varsigma$ 'almost white', etc., by the RS rule. Probably an additional proviso should be added to the compound stress rules somewhat like that for 2.1c-iv-a such that the penultimate vowel in a compound is stressed if the last element is a 3rd declension noun ending in /p, ph, k, kh/. E.g., $\text{A}\iota\theta\iota\omicron\psi$ 'Ethiopian' /aithí-op-s/ 'burnt face', $\pi\omicron\iota\kappa\iota\lambda\acute{\omicron}\theta\epsilon\rho\iota\varsigma$ 'with colorful hair' /poikiló-thrikh-s/, $\omicron\iota\kappa\omicron\phi\acute{\upsilon}\lambda\alpha\varsigma$ 'house watchman' /oiko-phúlak-s/.

penultimate syllable and words ending in a long vowel or diphthong (V₂) are stressed on the penult. Otherwise (2), a word is stressed on its first vocalic segment. For this rule, certain morphologically marked diphthongs (/ai/ and /oi/ before #) must be considered short. These are the nom. pl. endings, infinitive endings in /ai/ (but not the perfect), and finite verb endings in /ai/. E.g., nom. pl. *ἄνθρωποι* ‘men’ by 2.3-1, but gen. pl. *ἄνθρώπων* /anthróop-on/; and the middle infinitive *λύεσθαι* ‘to loose’ by 2.3-1.⁶)

Some examples of derivations are these: nom. sing. /anthroop-os/ (2.3-1) → /ánthroop-os/, gen. sing. /anthróop-ou/; /thalatt-a/ ‘sea’ (2.3-1) → /thálatt-a/, gen. sing. /thalatt-ees/ (2.3-1) → /thalátt-ees/, gen. pl. /thalatt-a-oon/ (2.3-1) → /thalatt-á-oon/, after a rule of vowel contraction /thalattóon/ *θαλαττῶν*; nom. sing. /hike-tid-s/ ‘female suppliant’ (2.1 c-i-b) → /hiké-tid-s/, eventually /hikétis/ *ἱκέτις*, gen. sing. /hike-tid-os/ (2.1 c-i-b) → /hiké-tid-os/ *ἱκέτιδος*, gen. pl. /hike-tid-oon/ (2.1 c-i-b) → /hiké-tid-oon/. Since neither of the last two vowel nuclei in this word are stressed, the form fits the conditions from 2.3, which results in /hiké-tid-oon/. If we consider the last rule to apply within a cycle as determining the stress for that cycle, then the result is /hike-tíd-oon/ *ἱκετίδων*. Most verb forms undergo 2.3: imp. sing. /mene/ ‘stay’ (2.3-2) → /méne/; 3rd sing. pres. /dei/ ‘it is necessary’ (2.3-2) → /déi/ *δεῖ*. A form like nom. sing. *αἴξ* ‘goat’ is not affected by 2.3: /aig-s/ (2.1 b-iv-c) → /aíg-s/, eventually /áik-s/. The first vowel, /a/, could be stressed by 2.3-2 if the /i/ had not already been stressed. This would have resulted in **alḗξ* /áik-s/.⁷)

The sharp sign # is the boundary between words or between the elements of a compound: *κλυτόπωλος* ‘having noble steeds’, [#/[kluto]/ #/[pool/os]/] (by 2.1 a and 2.3 on the first pass through the cycle) → [#/klutó/ #/póolos/]. On the second pass, rule 2.3 stresses it [#/klutó/ #/póolos/], i.e. [klutópòolos]. Our proviso for the application of 2.3 that all V’s in (1) and any V in X in (2) must be —stress must be further clarified: for compounds, the proviso holds only if the V’s have been stressed on the same cycle in which 2.3 is to apply. Hence 2.3 applies to #klutó#póolos# even though the ó is followed by a stressed V since this vowel was stressed on a previous cycle. However, a compound like ‘causing hunger’ is not stressed by 2.3 since rule 2.2-A-ii-b applies on the second cycle stressing one of the vowels that inhibits the application of 2.3:

⁶) Why these diphthongs should count as short vowels is not known. It may be connected with the monophthongization of /ai/ and /oi/ in later Greek whereby AGk. /kai/ ‘and’ became MGk. /ke/. The monophthongization rules may have begun in AGk. times affecting only certain diphthongs and later extended their domains to all /ai/ and /oi/.

⁷) Our rule 2.3 is similar to that in Warburton (1970, p. 109).

$$\begin{array}{cccc} \text{[[liimo]} & \text{[[phor]} & \text{eus]} & \text{]} \\ \text{AN} & \text{NAV} & \text{V} & \text{AA} \end{array}$$
 (first cycle) \rightarrow
$$\begin{array}{cccc} \text{[liimó]} & \text{[phoreús]} & \text{]} & \text{]} \\ \text{AN} & \text{NAV} & \text{V} & \text{AA} \end{array}$$
 (second cycle,
2.2-A-ii-b) \rightarrow
$$\begin{array}{cccc} \text{[liimóphoreús]} & \text{]} & \text{]} & \text{]} \\ \text{AN} & \text{NAV} & \text{V} & \text{AA} \end{array}$$

We have now completed our consideration of the cyclic stress rules in Ancient Greek. Rule 2.3 differs from rules 2.1 and 2.2 in that it is in a sense a more general type of statement and is phonologically conditioned. It admits of no exceptions.⁸⁾ Rules 2.1 and 2.2, on the other hand, are morphologically conditioned and more restricted in their domains of application. Rule 2.3 has a filtering function in that even those forms which are stressed by 2.1 or 2.2 must be checked by 2.3. It moves the stress to the right whenever it is too far to the left: gen. pl. /hike-tid-oon/ 'female suppliant' (2.1 c-i-b) \rightarrow /hiké-tid-oon/ (2.3) \rightarrow /hike-tíd-oon/. Rule 2.3 is an AGk. innovation while rules 2.1 and 2.2 are considered to reflect in the main the situation of the IE parent language.

Although producing the same output, our MCS rules 2.1 and 2.2 differ from Kiparsky's (1967) rules in a number of ways. One of the major differences between our MCS rules and Kiparsky's analysis is that Kiparsky posits the following rule of recessive stress which applies in certain morphologically definable environments (1967, p. 81):

$$V \rightarrow \acute{V} / \langle VC_1 \rangle \rightarrow C_0 \acute{V} V \langle C_0 V \rangle$$
. This rule is a reformulation and a conflation of the earlier formulated laws of Wheeler and Vendryes. In their original versions, these laws were as follows: Wheeler, $-\cup\cup > -\cup\cup$. E.g., *βου-κόλος* 'shepherd' $>$ *βου-κόλος*; Vendryes' Law (for Attic), $\cup\cup\cup > \cup-\cup$. E.g., *ἑτοιμος* 'ready' $>$ *ἑτοιμος*. In the original version of Wheeler's Law, the antepenultimate syllable had to be long—either V_2C_0 or VC_2 . As Kiparsky has noted (ibid., p. 75), the rule may be generalized to include forms with a short antepenult: *ἀνθρωποφαγός* 'cannibal' $>$ *ἀνθρωποφάγος*. Other examples of Kiparsky's rule are *ἀγκαλή* 'arm pit' $>$ *ἀγκάλη*, *ἀγκυλή* 'noose' $>$ *ἀγκύλη*, and *ἐργατής* 'worker' $>$ *ἐργάτης*. However, as Kiparsky remarks (ibid., p. 80, ftn. 5), his rule—like those of Wheeler and Vendryes—admits of numerous exceptions: e.g., *ἵππικος* 'pertaining to horses' instead of **ἵππικος* and *ἀρπαγή*

⁸⁾ There are forms which at first glance appear to be exceptions to 2.3 but are instead the results of later rules: gen. sing. *πόλεως* 'city' instead of **πολέως*. The derivation of this form is /polee-os/ (2.3) \rightarrow /pólee-os/ (by an Attic rule of vocalic assimilation) \rightarrow /póle-oos/. Nouns in this class ending in /ee/ undergo this rule; otherwise the short vowel remains in the inflectional ending: *σὺ-ός* 'sow', *ἰχθύ-ος* 'fish'. The form *πόληος* occurs in Homer. (Cf. Smyth, 1959, pp. 67–68.)

‘pillage’ instead of *ἀρπάγη. There are in fact so many exceptions to all these laws that Postgate says of Wheeler’s Law (1924), pp. 28–29), “A number of such words are certainly so accented. But there are numerous exceptions. Why the dactylic rhythm should have an affection for this particular accent no one has explained. Hence the ‘law’ may be simply due to coincidence.” In view of the fact that there are at least as many exceptions to Wheeler’s and Vendryes’ (and Kiparsky’s) rules as there are instances of their application, it becomes questionable whether the stress retractions involved were in fact caused by the addition of a rule to the grammar. It seems more likely that these stress retractions resulted from changes in the domains of the MCS rules. Take, for example, the case of Vendryes’ Law. A change like ἐρῆμος ‘solitary’ to ἔρημος is accounted for in our terms by saying that a form which had undergone rule 2.1b-iii-a became unmarked for this MCS rule. Then the word was automatically filtered by the RS rule 2.3. The occurrence of accentual doublets furnishes another example of this type of change (cited by Kiparsky, *ibid.*, p. 80, ftn. 5). The adjective ἀγοραῖος ‘pertaining to the agora’ is stressed by 2.1b-ii-c. But the metaphorical extension of the word meaning ‘vulgar’ undergoes Vendryes’ Law, which is to say that it does not undergo 2.1b-ii-c but 2.3 instead. This results in ἀγόραιος ‘vulgar’. The meaning ‘vulgar’ was not directly associated with the noun ἀγορά; thus it no longer fit the conditions for 2.1b-ii-c and underwent 2.3 instead. There are several other instances of this kind: ἀγελαῖος ‘pertaining to a herd’ (ἀγέλη) and ἀγέλαιος ‘common’. Similarly, the examples Kiparsky gives can be accounted for by assuming that forms marked for one of the MCS rules tended to become unmarked and to be stressed by 2.3: ἐργατής > ἐργάτης. All instances of Vendryes’ (and Kiparsky’s) and the majority of Wheeler’s⁹⁾ laws can be explained in the same way. Other instances of this same tendency can be found besides those captured in Wheeler’s or Vendryes’ formulations. Hirt (1904, p. 76) says, “. . . wohl aber gibt es zahlreiche Worte der zweiten Deklination, in denen der Akzent schwankt. So finden wir στρουῖθος und στρουθός; γαῦλος und γανυλός; πῆρως und πηρός; βαῦνος und βαννός; κριῖος und κριός; γαιῖος und γαιός; ἱπνός

⁹⁾ Although most instances of Wheeler’s Law may be explained as a change from the 2.1 rules to 2.3, a few of them are the results of other changes within the MCS rules: e.g., a change from 2.1a-iii-c to 2.1b-ii-x when ποικίλος ‘colorful’ → ποικίλος; and the addition of condition ii-a to rule 2.2A and of 2.2B-i-a so that φντο-φαγός > φντο-φάγος.

und *ἰπνός*; *χαῖος* und *χαιός*; *λοῦτρον* und *λουτρόν*.” In each of these pairs the first (and historically later) form undergoes 2.3; the second (and earlier) form 2.1.

Such changes reflect then a general tendency for forms to undergo rule 2.3 instead of 2.1 or 2.2. That this should happen is not surprising. In one AGk. dialect, Lesbian, this tendency became generally prevalent and all words except prepositions and conjunctions were stressed by 2.3. Hence Attic *ἀληθής* ‘true’ is Lesbian *ἀλήθης*, etc. Such a development is to be expected; it constitutes a simplification of the grammar in that all the environmental conditions for rules 2.1 a, b, c and 2.2-A, -B were deleted for nouns, adjectives, adverbs, pronouns, and verbs. (Most of the remaining prepositions and conjunctions underwent 2.1 b, e.g., *ἀλλά* ‘but’, etc.) These forms were then stressed by 2.3. If Greek provides any indication of the way the original IE stress rules were replaced in the other IE daughter languages, then the development was something like this. The IE stress assignment rules were probably primarily morphologically conditioned, generally corresponding to our rules 2.1 (and possibly 2.2). Most of the IE dialects¹⁰) then added their own simpler stress rules. These dialects, like Greek, underwent a period when both the IE and the innovative stress rules were active. In all these dialects except Greek, the innovations eventually became the only stress rules. We shall consider directly why this tendency was not eventually realized in Attic Greek.

2.4. The Circumflex Stress Rule. As mentioned earlier, the extant philological evidence has led most scholars to assume that the circumflex accent on a long vowel or diphthong represents a sequence of a stressed and an unstressed vowel; and an acute mark over a long vowel or diphthong represents a sequence of an unstressed and a stressed vowel. This seems a reasonable interpretation in that languages have been recorded in which a distinction is made for long vowels, diphthongs, and sometimes for sequences of vowels and resonant consonants /l, m, n, r/ between those sequences with stress—which consists of both pitch and intensity—on the first element and those with stress on the second¹¹). Van Wijk calls languages such as Lithuanian which have this distinction poly-

¹⁰) I.e., Latin, Celtic, Germanic, later Sanskrit, Armenian, certain of the Slavic languages, etc.

¹¹) Cf. Trubetzkoy, 1962, p. 172; van Wijk, 1939, pp. 52–53; and Szemerényi, 1970, pp. 67–68.

tonous and those which do not (like English or German) monotonous. Ancient Greek, having both types of sequences, was polytonous.

The occurrence of the sequences $\acute{V}V$ as opposed to $V\acute{V}$ was — at least for Attic Greek — predictable according to the following rule:

(2.4) $V \rightarrow [+stress]$

$$/ (a) - \left[\begin{array}{c} V \\ +stress \end{array} \right] C_o \#$$

I.e., move the stress onto the first V in a VV sequence in the final syllable of a form when:

- (i) +Genitive or +Dative for all adjectives, nouns, and pronouns.¹²⁾
- (ii) +Deadjectival adverb (no exceptions).
- (iii) +Adverb.¹³⁾

$$(b) - \left[\begin{array}{c} V \\ +stress \end{array} \right] C_o V C_o \#$$

I.e., move the stress onto the first V in a VV sequence in the penultimate syllable of a form when the final syllable has a short vowel. (No exceptions.)

For example, (a-i) nom. sing. *φυγή* 'flight', gen. sing. *φυγῆς*, dat. sing. *φυγῇ*, acc. sing. *φυγῆν*, nom.-acc. dual *φυγά*, gen.-dat. dual *φυγαῖν*, nom. pl. *φυγαί*, gen. pl. *φυγῶν*, dat. pl. *φυγαῖς*, acc. pl. *φυγάς*. Derivations: nom. sing. /phug-ee/ (2.1 a-i-a) → /phug-eé/; gen. sing. /phug-ees/ (2.1 a-i-a) → /phug-eés/ (2.4) → /phug-ées/, etc. Likewise for all other nouns, adjectives, and pronouns of all declensions: nom. sing. *ὁδός* 'way', gen. sing. *ὁδοῦ*, nom. dual *ὁδῶ*, dat. dual *ὁδοῖν*, acc. pl. *ὁδοῦς*, etc.; nom. sing. *ἡγεμών* 'leader', *ποιμήν* 'shepherd'; *ἄνθρω* 'man', gen. dual *ἀνδροῖν*, gen. pl. *ἀνδρῶν*; nom. pl. *ἀγαθοί* 'good', gen. pl. *ἀγαθῶν*; nom. sing. *ἀληθής* 'true', gen. sing. *ἀληθοῦς*; nom. sing. fem. *ἡ* 'the', gen. sing. *τῆς*. In all these forms the last vowel in the word is stressed by either 2.1 a (*φυγή*) or 2.1 b (*ἡγεμών*); then those forms which end in $V_a V_b C_o \#$ in the genitive or dative have the stress retracted to V_a by 2.4-a-i.

¹²⁾ Except for the indefinite pronouns *πῇ* 'somehow', *πώς* 'somehow', *ποῖ* 'to some place', *πού* 'somewhere'; the demonstrative pronouns of manner *τῶς*, *ὥς* 'thus'; and the dat. sing. of the first and second person pronouns *ἐμοί* 'me' and *σοί* 'you'.

¹³⁾ Except *ἐκποδών* 'out of the way', *πανδημεί* 'in full levy', *πρῶ* 'early'. The first example is an original genitive; the last two are locatives.

There are a few nom. and acc. forms with circumflex accents on their final syllables. This accentuation often results from later phonological rules and does not constitute an exception to 2.4; e.g., nom.sing. *σνκῆ* 'fig' is derived /suuke-ee/ (2.1 b) → /suuké-ee/, eventually by one of the many vowel contraction rules /suukée/. The earlier form *σνκέη* /suuké-ee/ is also attested. Sometimes this type of accentuation is caused by the application of stress rules other than 2.4: nom.sing. *νοῦς* 'mind', gen.sing. *νοῦ*, dat. sing. *νοῦ*, acc. sing. *νοῦν*, etc. Derivation: nom.sing. /noo-s/ (2.3) → /nóos/, eventually *νοῦς*; gen. sing. /noo-o/ (2.3) → /nóo-o/, by various vowel contraction rules, *νοῦ*, etc.¹⁴). Also, nom. sing. /aleethee-s/ 'true' (2.1 b-iv-a) → /aleetheé-s/ (*ἀληθής*), acc. sing. /aleethee-e/ (by 2.1 b-iv-a again) → /aleetheé-e/, and by a later rule of vowel contraction /aleethée/ (*ἀληθῆ*). In Attic there occur apparent irregularities like nom. sing. *νεώς* 'temple', gen. sing. *νεώ*, dat. sing. *νεῶ*, acc. sing. *νεών*, etc., with all their endings in V_aV_bC₀#. This results from a later Attic development of forms which were originally—as in Ionic—nom. sing. *νῆος*, gen.sing. *νηοῦ*, dat. sing. *νηῶ*, and acc.sing. *νήον*¹⁵). The Ionic derivations are nom.sing. /nee-os/ (2.1 b) → /neé-os/, gen. sing. /nee-oo/ (2.1 a-iv-d) → /nee-oó/ (2.4) → /nee-óo/, eventually *νηοῦ*, dat. sing. /nee-ooi/ (2.1 a-iv-d) → /nee-ooí/ (2.4) → /nee-oóí/, eventually *νηῶ*, etc. The phonological rules of Attic modified the original output as follows: nom. sing. /nee-os/ (2.1 a) → /nee-ós/ (by an Attic vowel assimilation rule) → /neo-ós/, i.e. *νεώς*; gen.sing. /nee-oo/ (2.1 a-iv-d) → /nee-óo/ (2.4) → /nee-óo/ (Attic vowel assimilation) → /neo-óo/ → /neo-ó/, i.e. *νεώ*, etc.

Other instances of rule 2.4 are (a-ii) /soph-oos/ 'wisely' (2.1 a) → /soph-oós/ (2.4) → /soph-óos/, i.e. *σοφῶς*; (a-iii) *πανταχοῖ* 'in every direction'. Finally, 2.4-b: nom. sing. *χείρ* 'hand', acc. sing. *χεῖρα*: derivations, /kheir/ (2.1 b-iv-c) → /kheír/, /kheir-a/ (2.1 b-iv-c) → /kheír-a/ (2.4-b) → /khéir-a/, i.e. *χεῖρα*. Likewise, nom. sing. *ἄγων* 'contest', *θήρ* 'animal', acc. sing. *ἄγωνα*, *θῆρα*. (Of course, not all circumflexes in final syllables result from rule 2.4: /poos/ 'how?' (2.3) → /póos/ *πῶς*; and /pote/ 'when?' (2.3) → /póte/ *πότε*.)

Rule 2.4 as given here derives the forms of Attic. This version is generally agreed to be a later development, the original state of AGk. stress being more nearly reflected by the Doric dialects.¹⁶) Although the situation in these dialects is not completely clear, their stress rules are substantially like those given here except that rule 2.4 has a more restricted domain in that environments 2.4-a-iii

¹⁴) There are a number of monosyllabic 3rd declension nouns which do not undergo 2.1 b-iv-c, but rather are stressed by 2.3 and thus have circumflex stress in the nominative: *βοῦς* 'cow', *γεαῦς* 'old woman', *μῦς* 'mouse', *ναῦς* 'ship', *σῦς* 'swine', and *ῥῦς* 'swine'. The stems of these nouns are all of the form +C₀V₂+, as /bóu-s/, etc. Since this seems to constitute a grammatical regularity for Greek, we have excluded such nouns from the domain of rule 2.1 b-iv-c with the proviso Stem = +C₀V₂C₁+

¹⁵) On this, see Smyth, 1956, pp. 55–56.

¹⁶) Cf. Boisacq, 1891, pp. 29–33; and Thumb, 1932, volume 1, pp. 74–77: p. 75: "Die dorische Betonung ist die altertümlichere."

and 2.4-b are lacking. Hence Attic forms such as σοφῶς ‘wisely’, ἀληθῶς ‘truly’, and χεῖρες ‘hands’ are in Doric σοφῶς, ἀληθῶς, and χεῖρες. In addition, environment 2.4-a-i must be restricted in that there are some gen. pl. forms without the circumflex: καλῶν ‘beautiful’ (Attic καλῶν). The Attic forms would seem to be innovations in that rule 2.4 came to have an ever broader domain. We suggest that this tendency was to have a profound effect on the development of Modern Greek. (This is not to say that Attic does not differ from Doric in other ways: e.g., Doric οὕτως ‘thus’, Attic οὕτως, which became unmarked for the MCR 2.1a and automatically underwent 2.3 instead.)

2.5. The Pitch Rule. The general consensus of scholars is that the AGk. accent was in some sense tonal while the MGk. accent is primarily one of intensity. Opinions in point are Allen (1967, p. 54), who remarks on “. . . the Greek change from a tonal to a stress accent . . .”; Atkinson (1952, p. 62), “In Hellenistic times the Greek pitch accent changed to a stress accent upon the same syllable as that on which the pitch had previously been”; Vendryes (1945, p. 27), “. . . on peut conclure que l’accent grec, si haut qu’on remonte dans l’histoire de la langue, était un accent de hauteur”; and Warburton (1970, p. 108, fn. 3), “About the nature of the [AGk.] accent the general agreement is that it was a pitch accent.”

However, the extant sources on Ancient Greek do not necessarily lead to this conclusion. Dionysius of Halicarnassus reports that a stressed syllable was higher than the lowest-pitched syllable in a word by approximately one fifth.¹⁷⁾ This does not differ substantially from Modern Greek: Mirambel (1959, p. 28), “Du point de vue de la hauteur, la variation musicale de la voyelle tonique est environ d’une tierce à une quinte.” For both Ancient and Modern Greek there was a pitch rule something like this:

$$(2.5) \left[\begin{array}{l} a \text{ stress} \\ +\text{sonorant} \end{array} \right] \rightarrow [a\text{High}]$$


where High refers to pitch.¹⁸⁾ I.e., primary stressed vowels had highest pitch, secondary stressed vowels had lower pitch, and unstressed vowels had lowest pitch.

¹⁷⁾ See Sturtevant, 1940, pp. 97–98.

¹⁸⁾ We are ignoring certain of the details of this rule such as the fact that syllabics following the main stress probably had a somewhat higher pitch than those preceding the stressed syllable.

We are suggesting then that intensity and pitch were combined in AGk. stress and that the pitch element in the stress was not fundamentally different from that of Modern Greek. The evidence available in the form of attestations—given in Sturtevant (1940)—of the ancient grammarians such as Dionysius of Halicarnassus mentioned above points to this conclusion. Nor does the philological evidence available provide conclusive evidence that Ancient Greek was primarily tonal. The word traditionally used for stress, *τόνος*, means ‘tension, straining, intensity’ as well as, derivatively, ‘musical key’. It seems that the musical terminology employed by the classical authors to describe AGk. stress led a number of later investigators to the assumption that the stress was in some sense primarily one of pitch. But the use of musical terms to describe degrees of stress is surely attributable to the fact that a musical terminology had already been developed and was in use by the time the ancients (beginning around the time of Plato) got around to considering stress. The already extant musical terminology was simply borrowed for a new purpose.¹⁹⁾

The principal difference between the ancient and the modern language is that Ancient Greek was in Van Wijk’s sense polytonous: the vowel sequences *ṼV* as well as *VṼ* both occurred. Modern Greek, on the other hand, is monotonous in that in any stressed syllable, the stress begins on the first element. Mirambel (1959, p. 28) says of Modern Greek, “Le ton musical n’est pas ‘ascendant’, dans la langue commune du moins, mais ‘immédiatement atteint’ par une brusque elevation de la voix . . .” Mirambel illustrates with the word *πικράδα* ‘bitterness’ which has the pitch pattern



pikráada, as opposed to *pikraáda*.

Of course, in the modern language vowel sequences separated by a morpheme boundary may have stress and pitch on the second element: *πάι* /pá-i/ ‘he goes’ and *φαί* /fa-í/ ‘to eat’.

In view of the structure of the accentual rules of Ancient Greek, the most natural account of the change from a polytonous to a monotonous language appears to be the progressive generalization

¹⁹⁾ One of the most complete philological analyses is Laum, 1928. He says (p. 21), “Die Übertragung des Begriffes *πρῶσιδια* [originally a purely musical term] auf das gesprochene Wort ist bereits vor Aristoteles erfolgt.”

of the CircumS rule 2.4. At the earliest stage (as reflected in Doric) the rule had a relatively limited domain. In Attic, its domain was extended. Finally, the domain of the rule was generalized completely to

$$V \rightarrow [+stress] / - \left[\begin{array}{c} V \\ +stress \end{array} \right]$$

I.e., in any sequence VV the stress pattern is $\acute{V}V$.²⁰) Thus a form like AGk. βασιλεύς ‘king’ developed as /basileús/ > /basiléus/ (automatically) /basiléws/, eventually MGk. /vasiléfs/. Even in Ancient Greek postvocalic and unstressed /u/ was phonetically [w]. This /w/ was then further consonantized to /f/ before voiceless consonants and /v/ before voiced ones. This /w/ is occasionally indicated in the orthography by F, e.g. ἄφρός ‘him’ (AGk. /awtós/, MGk. /aftós/).²¹) There is no instance among those cited by Sturtevant of a stressed /u/ being transcribed with an F: *βασιλεῤς. For the /u/ in βασιλεύς to become consonantal, it first had to lose its stress. Then the developments of /w/ to /f/ or /v/ followed.

3. Conclusions

3.1. Not only Greek, but most of the other IE daughter languages substituted their own particular simpler stress rules for the original IE rules. In all these languages except Attic Greek, the new rules eventually became the only ones in the language, presumably through a progressive expansion of their domains—a tendency which is also evident in Attic Greek. But in Attic, unlike Lesbian, the new rule (2.3) advanced only so far and did not become dominant. The reason for this is that by a fairly early time the phonological conditioning for rule 2.3 was disturbed by the loss of the distinction between long and short vowels. Atkinson (1952, p. 62) mentions attestations from the third century B.C., “... where accented syllables are spelt with ω or η, where the true orthography requires ο or ε, and unaccented syllables *vice versa*.” This change has been taken by some as evidence for an accent of intensity rather than of tone. If correct, this provides additional evidence

²⁰) The simplest—and, we suggest, the correct—version of rule 2.4 is as it appears here rather than, say, a rule which would move the stress forward for the nom. and acc. cases:

$$V \rightarrow [+stress] / \left[\begin{array}{c} V \\ +stress \end{array} \right] - C_o \#.$$

Such a rule would incorrectly stress a number of forms like βοῦς ‘cow’, μῦς ‘mouse’, etc., as *βούς and *μῦς.

²¹) See Sturtevant, 1940, pp. 53–55.

that Ancient Greek had a stress-cum-pitch accent and that the major difference between Ancient and Modern Greek is polytony as opposed to monotony. In any case, this change together with the monophthongization of the diphthongs *αι*, *ει*, *οι*, and *ου* and their subsequent reduction to short vowels as well as the conversion of the diphthongs *αυ* and *εϋ* into sequences of vowel plus consonant (/av, ev/ or /af, ef/) led to the emasculation of rule 2.3 and to a restructuring of the MGk. stress rules.²²⁾ In all the other IE languages which added their own stress rules, there were no concomitant developments which could obliterate the environments for these rules. Hence the phonologically conditioned (or at least, as in Germanic, simpler) rules were able to become dominant.

3.2. Several ancient sources mention a middle accent (*τόνος μέσος*) for Greek in addition to the acute, circumflex, and grave. (See Sturtevant, 1940, p. 99–101.) Unfortunately, no examples of the middle accent are given. Our analysis automatically predicts intermediate or secondary stress on certain syllables such as in compounds like *λιμοφορεύς* /liimòphoreús/ ‘hunger-bringing’ as well as for the outputs of the phrasal stress rule (given in Appendix II) such as proclitics, enclitics, and phrases like *καλὴ παρθένος* /kaleè parthénos/ ‘beautiful girl’. We have formulated the PS rule so that it does not delete stress but rather restresses already stressed vowels in certain environments. This results in secondary stress—not the removal of stress—on the other previously stressed vowels within the domain of the rule: /kaleé parthénos/ (PS rule) → /kaleé parthénos/, i.e. /kaleè parthénos/.

3.3. We have rather diffidently suggested that AGk. stress consisted of both intensity and pitch, the pitch not differing significantly from that of Modern Greek and that the principal difference between Ancient and Modern Greek is that Ancient Greek was, like Lithuanian, a polytonous language. The usual languages cited as evidence that Indo-European was tonal are Greek, Lithuanian,

²²⁾ Although a consideration of MGk. stress is beyond the scope of this paper, an analysis of it would probably reveal a number of differences from the AGk. stress. One of these is that with the elimination of the vocalic conditioning of the RS rule 2.3, AGk. alternations like nom. sing. *αἰλόγυρος* ‘enclosure’, gen. sing. *αἰλογύρου* tend to disappear. Mirambel, 1959, p. 76, says, “. . . la tendance du système nominal est de fixer l’accent a une seule et même place au cours de la flexion.” On this, see also Warburton, 1970, p. 111. This phenomenon is sometimes referred to as the columnar stress pattern in MGk. paradigms.

and Sanskrit. (The suprasegmental patterns of Croatian and Slovene are definitely independent later developments and cannot be adduced as evidence for Indo-European.) If our analysis is correct, Greek does not support this conclusion. Lithuanian, like Ancient Greek, is polytonous²³); and intensity and pitch are both combined in the stress. The status of Sanskrit is not clear. Although some scholars have made mention of a “musical” accent, it could well be that pitch and intensity were, as in Ancient Greek, combined: Wackernagel and Debrunner (1959, p. 284), „Der Akzent . . . ist ein wesentlich musikalischer . . . Doch scheint ursprünglich die Stimmerhöhung von Stimmverstärkung begleitet gewesen zu sein . . . ; der . . . besprochene Lautwandel setzt expiratorische Betonung der haupttonigen Silbe voraus.“

The reconstruction of the suprasegmental patterns of Indo-European is then not a question of whether it was a tone language like, say, Chinese or certain African languages.²⁴) Rather, the question is whether it was a polytonous or a monotonous language. It is not known whether Sanskrit was monotonous or polytonous. Thus only two IE languages which were in their earliest attested stages clearly polytonous are Ancient Greek and Lithuanian. Convincing evidence for IE polytony would be the demonstration of a systematic relation of some sort between the AGk. CircumS rule 2.4 and the corresponding rule(s) for $\acute{V}V$ as opposed to $V\acute{V}$ in Lithuanian. But until and unless such a relation is discovered, it is not obvious that there is a connection between the sequences $\acute{V}V$ and $V\acute{V}$ in Ancient Greek and in Lithuanian²⁵). And of course, the great majority of IE languages are monotonous. Thus Indo-European may have been a monotonous language and AGk. and Lith. polytony may represent independent developments. The burden of proof rests with anyone who wants to show that Indo-European was polytonous.

²³) See the treatment in Halle and Zeps, 1971.

²⁴) Westermann and Ward, 1957, p. 114, describes languages in which “. . . the two elements [stress and pitch] are independent of each other, and a strong stress can occur on any pitch . . .”

²⁵) E.g., in the gen. sing. fem. ending the stress is exactly reversed: AGk. $\theta\epsilon\acute{\alpha}\varsigma$ /the-áas/ ‘goddess’ and Lith. $\text{dovan}\acute{o}\varsigma$ /dovan-oós/ ‘gift’. (The Lith. orthography is exactly the reverse of that of Ancient Greek. In Greek orthographic $\acute{V} =$ phonemic $\acute{V}V$; in Lithuanian orthographic $\acute{V} =$ phonemic $V\acute{V}$.)

3.4. Finally, if our analysis is correct, the AGk. system of accentuation in its development from Indo-European does not provide an instance of phonological change by rule insertion—contrary to the analysis proposed in Kiparsky (1967). This is another case in addition to those adduced by King (1972) where an analysis appeared at first glance to be an instance of rule insertion, but upon further investigation turned out to be a different type of change. As such, it lends some support to King's contention that rule insertion does not occur—except under very definite and restricted kinds of circumstances—as a possible type of phonological change.

Appendix I: The Morphologically Conditioned Stress Rules

Below are given the domains of the morphologically conditioned stress rules. Our formulation of these rules as well as of the compound rule 2.2 is based on the information in Postgate (1924), Vendryes (1945), Smyth (1959), and Kuryłowicz (1958, pp. 130–139). Our formulation is not complete. There are doubtless additional environments which we have not given. There are also exceptions to some of the environments listed here. We have considered only nouns, adjectives, and verbs. Insofar as our rules are correct, it can be assumed that any constructions not explicitly mentioned undergo the RS rule 2.3, e.g. the comparative and superlative of adjectives.

$$(2.1a) \left[\begin{array}{c} V \\ +\text{Inflectional} \\ \text{Suffix} \end{array} \right] \rightarrow [+stress] \\ / - \langle CV \rangle C_o \# \text{ Noun, Adj. } \langle \text{Verb} \rangle$$

(i) Structural description: $\left[\begin{array}{cc} [&] \\ A B & B A \end{array} \right]$

(a) A = Noun, Feminine, 1st Decl., Action or Result or Action; B = Verb. E.g., *ἀκοή* 'hearing', *ὀροφή* 'roof'.

(b) A = Noun, Masculine or Feminine, 2nd Decl., Agent or Instrument or Result of action; B = Verb, Active. E.g., *τροφός* 'nurse', *ζυγός* 'yoke', *τομός* 'book, section'.

(ii) Structural description: $\left[\begin{array}{ccc} [&] & [&] \\ A B & B C & C A \end{array} \right]$, where C is a derivative suffix

(a) C = -ak- or -ik-; B = Noun; A = Adj, 1–2 Decl. E.g., *βαρβαρικός* 'barbarous', *καρδιακός* 'of a heart', *παιδικός* 'of a young boy'.

(b) C = -an- or -n-; B = Verb; A = Adj, 1–2 Decl. E.g., *ἀγνός* 'honored', *λιτανός* 'supplying', *πιθανός* 'persuasive'.

(c) C = -eel-; B = Noun; A = Adj, 1–2 Decl. E.g., *ὀμβρηλός* 'rainy', *ὕδρηλός* 'wet'.

(d) C = -eer-; B = Noun; A = Adj, 1–2 Decl. E.g., *ἀχμηρός* 'dry', *μοχθηρός* 'difficult'.

(e) C = -ein- or -in-; B = Noun; A = Adj, 1-2 Decl. E.g., *αἰπινός* 'high', *ἑσπερινός* 'of evening', *θερινός* 'of summer'.

(f) C = -er- or -r-; B = Verb; A = Adj, 1-2 Decl. E.g., *λεπρός* 'scabby', *μαδαρός* 'humid', *σφαλερός* 'sliding'.

(g) C = -et-; B = Verb; A = Adj, 1-2 Decl. or Noun, 2nd Decl. E.g., *ἐλετός* 'that which can be caught', *νιφετός* 'falling snow', *παγετός* 'ice'.

(h) C = -i-; B = Noun; A = Noun, Feminine, 1st Decl., Collective or Noun, Masculine, 2nd Decl., Animate. E.g., *πρασιά* 'garden plot', *αἰγυπιός* 'vulture', *ἀνεψιός* 'nephew'. Exception: *νυμφίος* 'bridegroom'.

(i) C = -m-; B = Noun; A = Noun, Masculine, 2nd Decl. E.g. *δρυμός* 'forest'.

(j) C = -on-; B = Noun or Adj; A = Noun, Feminine, 1st Decl. E.g., *καλλονή* 'beauty' < *καλός* 'beautiful', *πημονή* 'suffering' < *πῆμα* 'act of suffering'.

(k) C = -ool-, -oor-, -l-, or -r-; B = Verb; A = Adj, 1-2 Decl., Noun, Feminine, 1st Decl., or Noun, Masculine, 2nd Decl. E.g., *ἁμαρτωλός* 'sinful', *τυφλός* 'blind', *ἐλπωρή* 'hope', *θαλπωρή* 'heat', *θηλή* 'nipple', *τεπωλή* 'joy', *βηλός* 'threshold'.²⁶⁾

(l) C = -oot- or -ost-; B = Noun or Numeral; A = Adj, 1-2 Decl. E.g., *ὀλιγοστός* 'very few', *τριακοστός* 'thirtieth', *χειριδωτός* 'sleeved'.

(m) C = -s- or -t-; B = Verb; A = Adj, 1-2 Decl., Past Passive Participle, or Noun, Feminine, 1st Decl., or Noun, Masculine, 1st Decl., Agent. E.g., *κλητός* 'called', *κριτός* 'chosen', *λεκτός* 'read', *βροντή* 'thunder', *γενετή* 'birth', *βουλευτής* 'councillor', *δικαστής* 'judge', *θεραπευτής* 'servant'.²⁷⁾

(n) C = -sm- or -thm-; B = Verb; A = Noun, Masculine, 2nd Decl. E.g., *ἀγαπησμός* 'affection', *καυθμός* 'burning', *πλοχμός* 'tress'.

(o) C = -tr-; B = Verb; A = Noun, Masculine or Neuter, 2nd Decl. E.g., *δαιτρός* 'he who cuts', *δαιτρών* 'a cut, a part', *λοετρών* 'bath'. Exception: *ἄροτρον* 'plow'.

(iii) Syntactic conditions

(a) A list of nouns and adjectives, Genitive, Dative, Singular: /thuga-
teer/ 'daughter', /pant/ 'all'.

(b) A list of nouns, 3rd Decl., Genitive, Singular, Dative, Singular and Plural: /daid-/ 'torch' (*δαίς*, *δαιδός*), /doru-/ 'tree' (*δόρυ*, *δονρός*), /dmoo-/ 'slave' (*δμώς*, *δμωός*), /gonu-/ 'knee' (*γόνυ*, *γουνός*), /thoo-/ 'jackal' (*θώς*,

²⁶⁾ There may be an additional phonological restriction for the feminine nouns. Kiparsky (1967, p. 80) notes that if these nouns have the /-l-/ suffix, then the stem must be of the form +...V₂l+. Otherwise, feminine 1st declension nouns undergo the RS rule: *νεφέλη* 'cloud'.

²⁷⁾ According to Kiparsky (1967, p. 80), the further proviso that the stem must end in V₂C₀+ must be added for masculine 1st declension nouns. Hence *ἐργάτης* 'worker' is stressed by the RS rule 2.3. However, the fact that this noun does not undergo rule 2.1a may be because the noun was felt to be derived from the noun *ἔργον* 'work' since a verb **ἐργω* does not occur. (Instead, the usual verbs for 'work' are *ἐρδω* or *ῥέζω*.)

θωός), /kraat-/ 'head' (κράς, κῤῥᾱτός), /out-, oot-/ 'ear' (οὔς, ὠτός), /paid-/ 'child' (παῖς, παιδός), /see-, se-/ 'moth' (σής, σεός), /troo-/ 'Tros, founder of Troy' (Τρώς, Τρωός), /phooid-/ 'light' (φωίς, φωιδός), /phoot-/ 'light' (φῶς, φωτός).

(c) A list of nouns and adjectives, 1st or 2nd Decl. E.g., σκιά 'shadow', νομός 'pasture', ὁδός 'road'; ἀραιός 'thin', πολιός 'gray', θοός 'quick', etc.

(d) Verb, 2nd Aorist, Infinitive. E.g., βαλεῖν 'throw'. (The CircumS rule also applies to verbs: /bal-ein/ (2.1a-iii-d) → /bal-eín/ (2.4) → /bal-éin/.)

(e) Verb, 2nd Aorist, Imperative, 2nd Person, Active. E.g., εἰπέ(τε) 'speak', ἐλθέ(τε) 'come', εὔρε(τε) 'find', ἴδε(τε) 'see', λαβέ(τε) 'take'.

(f) Verb, 2nd Aorist, Imperative, 2nd Person, Middle, Singular. E.g., λαβοῦ 'take for yourself' from /lab-éo/.

(g) Verb, Clitic (i.e., a list). E.g., φημί 'say', εἰμί 'be'.

(iv) Syntactic and phonological conditions

(a) Adj, 1–2 Decl. Stem = +...a+; +C(a, o)i+; +...(ee, oo)l+; +...C+. E.g., ἀλαός 'blind', βαιός 'small', διός 'double', ἀπατηλός 'false', ἀγαθός 'good', ἱκανός 'capable'. There are numerous exceptions to these conditions in iv-a: νόθος 'counterfeit'.

(b) Noun, Feminine, 1st Decl. Stem = +...Cm+ (and perhaps some other types of stem). E.g., ἀκμή 'edge'.

(c) Noun, Maculine, 2nd Decl. Stem = +...(e, s)t+; +...(l, V₂)l+; +...oon+; +...(C, V₂)m+; +...V+. E.g., ἀετός 'eagle', ἀστός 'citizen', θαλλός 'branch', πηλός 'clay', οἰωνός 'vulture', ἀριθμός 'number', θῦμός 'soul', λαός 'people'. Exceptions: βῶλος 'clod', κόσμος 'cosmos', νόστος 'return'.

(d) Noun, 3rd Decl., Genitive, Dative, Singular, Dual, Plural. Stem = +C_oV{C_o+. E.g., γῦψ 'vulture', γῦπός, γῦπί, γῦπα, γῦπε, γῦποῖν, γῦπας. No exceptions.

$$(2.1b) \left[\begin{array}{c} V \\ +\text{Stem} \end{array} \right] \rightarrow [+ \text{stress}] \\ / - C_o +$$

(i) Structural description: $\left[\begin{array}{cc} [&] \\ A & B \end{array} \right] \left[\begin{array}{cc} [&] \\ B & A \end{array} \right]$

?(a) A = Noun, Feminine, 1st Decl.; B = Verb, Active. E.g., βλάστη 'sprout'. (Also found as βλαστή.)

(ii) Structural description: $\left[\begin{array}{ccc} [&] & [&] \\ A & B & BC & CA \end{array} \right]$, where C is a derivative suffix

(a) C = -ad-; B = Verb; A = Noun, Feminine, 3rd Decl., Agent; or B = Noun; A = Noun, Feminine, 3rd Decl. E.g., μαινάς, μαινάδος 'angry woman' < μαίνομαι 'be angry'; φθινάς 'she who consumes' < φθίνω 'consume'; φυλλάς 'foliage' < φύλλον 'leaf'.

(b) C = -ai-; B = Verb; A = Noun, Masculine, 2nd Decl. E.g., δαμαῖος 'horse-trainer'.

(c) C = -ai-, -ei-, or -oi-; B = Noun or Adj; A = Adj, 1–2 Decl. E.g., ἀνδρείος 'manly' < ἀνήρ 'man'; λεχαιός 'of a bed' < λέχος 'bed'; παντοίος 'of all kinds' < πᾶς 'all'. Exceptions: δειλῖαιος 'wretched', δίκαιος 'just'.

(d) C = -ale- or -e-; B = Noun, Adj, or Verb; A = Adj, 1-2 Decl. E.g., *ῥωμαλέος* 'robust' < *ῥώμη* 'strength'; *ἀτασθαλέος* 'arrogant' < *ἀτάσθαλος* 'arrogant'; *αὔαλέος* 'dry' < *αὐαίνω* 'be dry'.

(e) C = -alid- or -allid-; B = Noun; A = Noun, Feminine, 3rd Decl. E.g., *θρυαλλίς*, *θρυαλλίδος* 'wick'; *τρυνφαλίς* 'little piece'.

(f) C = -an- or -on-; B = Verb; A = Noun, Feminine, 1st Decl. E.g., *ἀγχόνη* 'act of hanging', *θηγάνη* 'whetstone'.

(g) C = -edoon- or -doon-; B = Verb; A = Noun, 3rd Decl., Abstract. E.g., *ἀλγηδών* 'suffering', *τηκεδών* 'liquefaction'.

(h) C = -eeid-; B = Noun; A = Adj, 3rd Decl. E.g., *ποταμήις*, *ποταμηίδος* 'of a river'.

(i) C = -een-; B = Noun or Verb; A = Noun, 3rd Decl. E.g., *κωλήν* 'hip' < *κῶλον* 'limb'; *πενθήν* 'spy' < *πεύθομαι* 'find out'.

(j) C = -ei-; B = Verb; A = Noun, Feminine, 1st Decl., Abstract; or B = Noun; A = Noun, Neuter, 2nd Decl. E.g., *ἀγιστεῖα* 'cult' < *ἀγιστεύω* 'perform sacred rites'; *κυλικεῖον* 'armor' < *κύλιξ* 'cup'; *λοφεῖον* 'case' < *λόφος* 'crest'.

(k) C = -emoon-, -moon-, or -oon-; B = Verb; A = Noun, Masculine, 3rd Decl. E.g., *ἀρηγών* 'defender', *κενθμών* 'cavern'.

(l) C = -ent-; B = Verb, Passive, Aorist, or Verb, Active, Present, -emi Class; A = Adj, Participle, 3rd Decl. E.g., *φανείς*, *φανείσα* *φανείσα*, *φανέν* 'spoken'; *τιθείς*, *τιθεῖσα*, *τιθέν* 'putting, placing'. Derivation of masc. sing. nom. form: /phan-ent-s/ becomes /phan-ei-s/ by a phonological rule of Greek which applies before 2.1b-ii-1. By the same rule fem. sing. nom. /phan-ent-sa/ → /phan-ei-sa/.

(m) C = -eoon- or -oon-; B = Noun; A = Noun, Masculine, 3rd Decl. E.g., *αὐλών* 'canal', *λυχνεών* 'chandelier'.

(n) C = -eu-; B = Noun or Verb; A = Noun, Masculine, 3rd Decl. E.g., *ἵππεύς* 'horseman' < *ἵππος* 'horse'; *σκαλεύς* 'one who hoes' < *σκάλλω* 'hoe'.

(o) C = -i-; B = Noun; A = Noun, Neuter, 2nd Decl.; or B = Verb; A = Noun, Feminine, 1st Decl. E.g., *παιδίον* 'child' < *παῖς* 'child'; *θερμασία* 'heat' < *θερμαίνω* 'to heat'; *μανία* 'madness' < *μαίνομαι* 'rage'.

(p) C = -iaad- or -saad-; B = Noun; A = Adj, 3rd Decl.; or B = Noun; A = Noun, Feminine, 3rd Decl.; or B = Verb; A = Noun, Masculine, 3rd Decl., Agent. E.g., *γυπιᾶς*, *γυπιᾶδος* 'inhabited by vultures' < *γῶψ* 'vulture'; *τετρᾶς*, *τετρᾶδος* 'fourth day of the month' < *τέσσαρες* 'four'; *τρεσᾶς* 'trembler' < *τρέω* 'fear'.

(q) C = -iai-; B = Noun; A = Adj, 1-2 Decl. E.g., *πλεθριαῖος* 'long as a plethron', *ποδιαῖος* 'long as a foot'.

(r) C = -id- or -rid-; B = Noun or Verb; A = Noun, Feminine, 3rd Decl. E.g., *γραφίς*, *γραφίδος* 'pencil' < *γράφω* 'write'; *ἀκεστορίς* 'female savior' < *ἀκεστωρ* 'savior'; *ἀμνίς* 'ewe' < *ἀμνός* 'sheep'; *αὐλητρὶς* 'female flute player' < *αὐλητής* 'flute player'.

(s) C = -ide-; B = Noun; A = Noun, Masculine, 2nd Decl. E.g., *ἀδελφοῦς* from /adelphidé-os/ 'son of one's brother or sister' < *ἀδελφός* 'brother'.

(t) C = -iid-; B = Noun; A = Noun, Feminine, 3rd Decl. E.g., *σχοινίς* 'reed', *σχοινίδος* < 'reed'.

(u) C = -iin-, B = Noun; A = Noun, Masculine, 2nd Decl. E.g., *γελασίνος* 'laughter' < *γέλας* 'laughter'. Possible exception: *κάμινος* 'oven'.

(v) C = -ik-; B = Pronoun; A = Adj, 1-2 Decl. E.g., *πηλίκος* 'how much', *ήλίκος* 'as much as'.

(w) C = -ikh-; B = Adj; A = Adj, 1-2 Decl. E.g., *όστίχος* 'how small' < *όσσος* 'as much as', *πυρόίχος* 'reddish' < *πυρόός* 'red'.

(x) C = -il- or -ul-; B = Adj or Noun; A = Adj, 1-2 Decl. or Noun, Masculine, 2nd Decl. E.g. *ήδύλος* 'sweet' < *ήδύς* 'sweet', *άγκύλος* 'bent' < *άγκος* 'a bend', *άρκτύλος* 'little bear' < *άρκτος* 'bear'; *όργίλος* 'angry' < *όργή* 'rage'.

(y) C = -imai-; B = Noun; A = Noun, Masculine, 2nd Decl. E.g., *έπιστολιμαίος* 'promise by letter' < *έπιστολή* 'letter'.

(z) C = -isk-; B = Noun; A = Noun, Feminine, 1st Decl., or Noun, Masculine, 2nd Decl. E.g., *παιδίσκη* 'young girl' < *παῖς* 'child', *χηνίσκος* 'little goose' < *χήν* 'goose'.

(aa) C = -men-, -oo-, -ui-, or -o-; B = Verb, Perfect; A = Adj, 3rd Decl., Participle. E.g. *λελυμένος*, *λελυκώς*, *λελυκυῖα*, *λελυκός* 'loosed'.

(bb) C = -oo-; B = Verb; A = Noun, Feminine, 3rd Decl. E.g., *αἰδώς* 'shame' < *αἰδοῦμαι* 'be ashamed', *πειθώ* 'persuasion' < *πείθομαι* 'persuade'.

(cc) C = -oon-; B = Verb, 2nd Aorist, Active; A = Adj, 3rd Decl., Participle. E.g. *βαλών* 'throwing'.

(dd) C = -ont-; B = Verb, -omi Class, Present, Active; A = Adj, 3rd Decl., Participle. E.g., *διδούς*, *διδούσα*, *διδόν* 'giving' from /did-ont-s/, /did-ont-sa/, and /did-ont-Ø/.

(ee) C = -plo-; B = Numeral; A = Adj, 1-2 Decl. E.g., *άπλός* 'one-fold'.

(ff) C = -sun-; B = Adj; A = Noun, Feminine, 1st Decl. E.g., *δικαιοσύνη* 'justice'.

(gg) C = -t-; B = ?Adj, ?Noun; A = Noun, Masculine, 1st Decl., Agent. E.g. *δυνάστης* 'master'. This form does not seem to be derived directly from the verb *δύναμαι* 'be able' as is, say, *δικαστής* 'judge' from *δικάζω* 'to judge' by 2.1a-ii-m.

(hh) C = -te-; B = Verb; A = Adj, 1-2 Decl. E.g., *λυτέος* 'having to be loosed', *ποιητέος* 'having to be done', *τιμητέος* 'having to be honored'. All such adjectives have the obligational and passive senses of the verb.

(ii) C = -teer-; B = Noun or Verb; A = Noun, Masculine, 3rd Decl. E.g., *κλιμακτήρ* 'debarking ladder', < *κλίμαξ* 'ladder'; *άροτήρ* 'plowman' < *άρόω* 'plow'.

(jj) C = -teet-; B = Adj or Noun; A = Noun, Feminine, 3rd Decl. E.g., *ταχτής* 'speed', *ταχτήτος* < *ταχύς* 'fast'; *άνδροτής* 'virility' < *άνήρ* 'man'.

(kk) C = -thr-; B = Verb; A = Noun, Feminine, 1st Decl. E.g., *κολυμβήθρα* 'bath'.

(ll) C = -tr-; B = Verb; A = Noun, Feminine, 1st Decl. E.g., *καλύπτρα* 'veil'.

(mm) C = -tu-; B = Numeral or Verb; A = Noun, Feminine, 3rd Decl. E.g., *τριπτός* 'sacrifice of three beasts' < *τρεις* 'three'.

(nn) C = -ulid-; B = Verb; A = Adj, 3rd Decl. E.g., *ειδυλός*, *ειδυλίδος* 'one who knows'.

(iii) Syntactic conditions

(a) A list of nouns and adjectives, 1st and 2nd Decl. E.g., *ἡμέρα* 'day' (pl. *ἡμέραι*, not **ἡμεραι*), *καρκίνος* 'crab', *χαλκοῦς* 'brazen' from /khalkó-os/, etc.

(iv) Syntactic and phonological conditions

(a) Adj, 3rd Decl. Stem = +...ee+; +...u+. E.g., *ψευδής* 'false' from /pseudeé-s/, *ἡδύς*, *ἡδέος* 'sweet' from /heedú-s/, heedé-os/. Exceptions: *πλήρης* 'full', *ἡμισυς* 'half', *θηλυς* 'female'. The gen. pl. fem. *ἡδειῶν* is from /heedeiá-oon/.

(b) Noun, Feminine, 1st Decl. Stem = +...V₂(m, n)+. E.g., *ἀξίνη* 'hoe', *εἰρήνη* 'peace', *ἐπιστήμη* 'knowledge'.

(c) Noun, 3rd Decl. (Monosyllabic stems must be -Dative and -Accusative.) Stem = +C₀V₁²C₁+; +...V₂(n, r)+; +...Cu+; +...eu+. E.g., *γλαύξ* 'owl' /glaúk-s/, *γύψ* 'vulture' /guúp-s/, *μήν* 'month' (/meén-Ø/ → /meén/), *ῥίς* 'nose' (/hriín-s/ → /hriís/), *βήξ* 'cough' /beék-s/, *ὥλξ* 'furrow' /oólk-s/; *λιμήν* 'harbor', *παιάν* 'victory song'; *ἀχλὺς* 'fog', *ισχύς* 'strength'; *βασιλεύς* 'king', *Ζεύς* 'Zeus'. Exceptions: *ἄκτωρ* 'leader', *ἀλάστωρ* 'angel', *γένυς* 'jaw', *Ἑλλην* 'Greek', *τρίβων* 'a threadbare garment'.

A further proviso is necessary for the formulation of rule 2.1b-iv-c: forms in +...eer+ which are Human do not undergo the rule if they are (+Vocative, +Singular) or (+Feminine, +Nominative, +Singular). Such forms are unmarked for this rule and undergo the RS rule 2.3 instead. E.g., voc. sing. *πάτερ* 'father', *μήτηρ* 'mother', *θύγατερ* 'daughter', *ἄνερ* 'man'; nom. sing. *πατήρ*, *μήτηρ*, *θυγάτηρ*, *άνήρ* — the masc. forms by 2.1b-iv-c, the feminine ones by the RS rule 2.3.

$$(2.1c) \begin{bmatrix} V \\ +\text{Stem} \\ / - C_0 V_0 C_0 + \end{bmatrix} \rightarrow [+stress]$$

(i) Structural description: $\begin{bmatrix} / & / & / & / & / \\ A & B & B & C & C & A \end{bmatrix}$,

where C is a derivative suffix

(a) C = -ent-; B = Noun; A = Adj, 3rd Decl. E.g., *αἱματόεις*, *αἱματόεσσα*, *αἱματόεν* 'characterized by blood' from /haimato-ent-s/, /haimato-ent-sa/, /haimato-ent-Ø/; *δαφνήεις*, *δαφνήεσσα*, *δαφνήεν* 'characterized by laurel trees'; *εὐρώεις* 'mouldy'; *ῥοδόεις* 'characterized by roses'.

(b) C = -tid-; B = Noun or Verb; A = Noun, Feminine, 3rd Decl., Agent. E.g., *πολιτίς*, *πολιτίδος* 'female citizen' < *πόλις* 'city'; *ἰκέτις*, *ἰκέτιδος* 'female suppliant' < *ἴκω* 'come to'.

(iii) Syntactic conditions

(a) Opt. Verb, Stem, -Prefix, 2nd Aorist Middle, Imperative. E.g., *προδοῦ* 'betray' /pro-dó-o/; also *ἀπώδου* 'sell' /apó-do-o/.

(b) Verb, Stem, -Prefix, Infinitive. E.g., *ἀποτρέπειν* 'to dissuade' /apo-trép-ein/.

(c) Verb, Stem, -Prefix, Participle. E.g., *ἀποτρέπον* 'dissuading' /apo-trép-on/. The domain of this rule must exclude those participles stressed by 2.1b-ii-cc with specifications such as -Passive, -Aorist; -Present, -Active, etc.

(d) Opt.(?) Verb, Stem, -Prefix, Subjunctive. E.g., *ἀποδῶμαι* and *ἀπόδωμαι* 'betray' /apo-doo-mai/. The second example is stressed by rule 2.3.

(iv) Syntactic and phonological conditions

(a) Noun, 3rd Decl. Stem = +...V₂C₁V₂¹ $\begin{bmatrix} + \text{consonant} \\ - \text{sonorant} \\ - \text{coronal} \end{bmatrix}$ +, i.e. /kh, k, ph, p/. E.g., *ἀλώπηξ*, *ἀλώπεκος* 'fox'; *θώραξ*, 'thorax'; *κατήλυσ*, *κατήλυφος* 'attic' /kateeliph-/.

(b) Verb, Stem, Prefix. Prefix = +C₀VCVC₀+. E.g., *συνέκδος* 'give up together' /sun-ek-dos/ where /sun/ and /ek/ are prefixes²⁸).

Appendix II: The Phrasal Stress Rule (Enclisis and Proclisis)

The PS rule applies after rules 2.1, 2.2, 2.3, and 2.4 have assigned the stressed within words. Its function, like that of the nuclear stress rule of English (Chomsky and Halle, 1968, p. 90), is the assignement of stress within constructions larger than words.

V → [+stress]

(1a) #X $\begin{bmatrix} + \text{vocalic} \\ + \text{stress} \end{bmatrix}$ C₀ # #Y $\begin{bmatrix} + \text{stress} \\ - \end{bmatrix}$ Z #

(1b) Opt.: # (Proclitic) # #Y $\begin{bmatrix} + \text{stress} \\ - \end{bmatrix}$ Z # # (Enclitic) #

(2) $\begin{bmatrix} + \text{sonorant} \\ - \text{stress} \end{bmatrix}$ C₁ $\begin{bmatrix} + \text{vocalic} \\ - \text{stress} \end{bmatrix}$ C₀ # #Y $\begin{bmatrix} + \text{Enclitic} \\ + \text{vocalic} \\ - \text{stress} \end{bmatrix}$ C₀ #

(3) $\begin{bmatrix} + \text{vocalic} \\ - \text{stress} \end{bmatrix}_1^2$ C₀ # # C₀VCV₀ $\begin{bmatrix} + \text{Enclitic} \\ - \end{bmatrix}$ C₀ #

X, Y, and Z are sequences of C or V segments.

The environments apply in the order given (1a and 1b may apply in either order). Part 1a restresses the stressed vowel in a word which is preceded by a word stressed on its last vowel: /kaleé parthénos/ 'beautiful girl' → /kaleé parthénos/, by convention /kaleè parthénos/, *καλή παρθένος*. Similarly, part 1b restresses the stressed vowel in a word if it is either preceded by a proclitic (ὁ, ἡ, αἱ 'the', εἰ 'if', etc.) or followed by an enclitic (τις 'anyone', εἰμί 'be', φημί 'say', etc.). This in effect reduces the stress on the clitic words

²⁸) Environments iii-a through iii-d and iv-b for verbs are discussed in Smyth, 1959, p. 144.

from primary to secondary: acc. sing. /tón ánthroopon/ ‘the man’ → /tón ánthroopon/, i.e. /tòn ánthroopon/ τὸν ἀνθρώπον. Part 1a is optional in that enclitics and proclitics, if emphasized, retain their stress. All of part 1 (a and b) of this rule could be reformulated as a stress deletion rule such that V → [—stress] for enclitics, proclitics, and word-final stressed vowels. We have opted for our formulation because stress deletion rules of this type seem to be rather rare.

Part 2 stresses the final vowel of a word followed by an enclitic provided that the vowel is preceded by an unstressed sonorant. E.g., /sóoson mé/ ‘save me’ (1b) → /sóoson mē/ (2) → /sóosón mē/, σῶσόν με. The rule also applies if the unstressed sonorant is /l, m, n, r/: /lámpe té/ ‘shine’ (1b) → /lámpe tē/ (2) → /lámpe tē/, λάμπε τε. (Environment 2 must actually be further specified. If unstressed /l, m, n, r/ is involved, it must be followed by another consonant: hence imp. μένε τε ‘stay’, but ἐνθά ποτε ‘then’.) Part 3 restresses the final syllable of a polysyllabic enclitic if it is preceded by a word whose final syllable is unstressed—i.e., it has neither an acute nor a circumflex accent. E.g., /megáloi tinés/ ‘certain big men’ (1b) → /megáloi tinēs/ (3) → /megáloi tinés/, μεγάλοι τινές; /trophoí tinés/ ‘certain nurses’ (1b) → /trophoí tinēs/, τροφοί τινές; /paídes tinés/ ‘certain children’ (2.4) → /paídes tinēs/ (1b) → /paídes tinēs/ (2) → /paídés tinēs/, παῖδες τινές; gen. pl. /guupoón tinoón/ ‘of certain vultures’ (2.4) → /guupóon tinóon/ (1b) → /guupóon tinòon/, γυπῶν τιῶν; dat. dual /paídoin tinoín/ ‘for two children’ (2.4) → /paídoin tinóin/ (1b) → /paídoin tinòin/ (3) → /paídoin tinóin/ (2.4) → /paídoin tinóin/, παίδων τινοῖν. The Circum rule 2.4 must apply before the PS rule—otherwise παῖδες τινές would be derived as *παῖδες τινές. It must also apply after the PS rule—otherwise παίδων τινοῖν would be *παίδων τινοῖν. Hence 2.4 is an anywhere rule.

Rule PS is given here in outline and more details are necessary in a complete formulation: (Postgate, 1924, p. 70) “Words in -ξ or -ψ with [a circumflex on the penult] followed by the enclitic ἐστίν are not accented . . . as οἰκός ἐστίν, but κῆρυξ ἐστίν . . .” Also (Ibid., p. 71), “. . . Enclitics beginning with σφ- . . . throw an accent on to All Prime Words with [an acute on the penult].” E.g., ἰνά σφισι. Finally, the PS rule is postcyclide and applies simultaneously to any number of co-ordinated enclitics: /eí pou tís tiná/ (1b) → /ei pou tís tiná/, i.e., /eí pou tís tinà/, εἰ πού τις τινα.

Appendix III: The “Appellative” Rule

One of the principles of Gk. stress not captured in our rules is the fact that there is a regular alternation of stress in adjectives and on occasion nouns when they are employed as proper nouns.²⁹) Thus the adjective λευκός ‘white’ is stressed by MC rule 2.1a while the derived name Λεῦκος is stressed by the RS rule 2.3. Conversely, the adjective ἀμφοτέρως ‘both’ is stressed by 2.3 while the proper noun Ἀμφοτερός is stressed by 2.1a. The usual alternation is between 2.1a and 2.3. Infrequently 2.1b is involved: e.g., ἀξίος ‘valuable’ by 2.3 and Ἀξίος by 2.1b. The alternation is then between the MC stress rules and rule 2.3.

²⁹) Vendryes (1945, pp. 152–155) refers to this as the “loi des appellatifs”.

It is not clear to us what sort of process is going on here. Perhaps it is a lexical redundancy rule somewhat like this:

$$\left[\begin{array}{l} +(\text{Adj or Noun}) \\ +\text{Proper Noun} \\ \alpha \text{ MCS Rule} \end{array} \right] \rightarrow [-\alpha \text{ MCS Rule}]$$

Any adjective or noun meeting the structural conditions for any of the MCS rules 2.1a, 2.1b, or 2.1c—i.e., where α is plus—and being used as a proper noun becomes marked as not undergoing its original rule. Then it automatically undergoes 2.3. And any adjective or noun not meeting the conditions for the MCS rules—where α is minus—if used as a proper noun, becomes marked for one of the MCS rules (usually 2.1a). There are numerous examples of this in Ancient Greek and the process was doubtless productive: γλαυκός ‘silvery’, Γλαῦκος; διογενής ‘born of Zeus’, Διογένης; σωζόμενος ‘saved’, Σωζομενός; σκύμνος ‘cub’, Σκυμνός. There are some examples of this in Sanskrit: krsnás ‘black’ and Kṛśnas. The rule was probably operative in Indo-European.

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Matoas, the Thraco-Phrygian name for the Danube, and the IE root *madu

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Before the Scythians gave the name Danube (Δάνουβις or Δάρουσις) to the river known to the Greeks as the Ἰστρος,¹⁾ it was known as the Matoas (Ματόας). This piece of information is reported

¹⁾ This name may reflect the local word for "river", as *is-* and *tar-* are both common elements in river names of the area.