Tone-to-Stress and Stress-to-Tone: Ancient Greek Accent Revisited[*]

LEV BLUMENFELD
Stanford University

0.   Introduction

De Lacy (2002) proposed a theory of the interaction of tone and stress, highly restrictive both with respect to the types of influence between the two systems, and with respect to the set of tones available to enter into such interactions. Assuming a tone markedness hierarchy shown in (1)a, de Lacy proposed the constraints in (1)b driving the attraction of more marked tones to more prominent metrical positions and the repulsion of less marked tones from less prominent positions.

(1)   a. H ⟩ M ⟩ L   b. *HD/L ⟫ *HD/M
                                        *NON-HD/H ⟫ *NON-HD/M

The constraints in b predict two types of interactions: tonal systems that cater to the metrical phonology, via attraction of Hs to prominent positions and repulsion of Ls from non-prominent ones (TONE-TO-STRESS), and stress systems that cater to the tonal phonology, via attraction or repulsion of stress to or from syllables depending on their tonal properties (STRESS-TO-TONE). Ancient Greek, as I will argue below, shows both types of interactions at different strata in the phonology: the lexical phonology behaves like a tone-to-stress system, while the post-lexical component is a stress-to-tone system.

At the same time, the Greek data cannot be handled with de Lacy's theory, because, *ceteris paribus*, it is the L tone rather than the H tone that is attracted to the prominent positions. In this paper I will offer a solution, modifying de Lacy's proposal. My analysis of the stress-tone interactions will depend on a new conception of Greek accent, abandoning long-standing assumptions about the lexical representation of accents and partitioning the data among strata in a novel way. I

will argue that this proposal offers a better empirical coverage of Greek and makes it possible to conceive of the system in terms of de Lacy's modified theory.

The paper is organized as follows. In Section 1 I lay out the data and briefly discuss previous analyses of Greek accent, followed by my reanalysis in Section 2. In Sections 3 and 4 I will propose a Delacean analysis of the lexical and phrasal components of the phonology, respectively.

1.   The Data

Finite verbs, neuter nouns, exocentric compounds, and some other categories are accented according a generalization termed RECESSIVE ACCENT. Final consonants are extrametrical; CV̆ syllables are light, and all other syllables are heavy. This generalization, stated in (2)a, is exemplified in (2)b with words ending in a light syllable and in (2)c with words ending in a heavy syllable, modulo final consonant extrametricality.

(2)   a. RECESSIVE ACCENT
         Accent the penult if the final syllable is heavy, antepenult otherwise.
         b. e.lám.ba.<u>ne</u>   'take.3SG.IPF'   ⬴ σ CV
            elám.ba.<u>no</u>⟨n⟩   'take.1SG.IPF'   ⬴ σ CV⟨C⟩
         c. lam.bá.nei   'take.3SG.PRES'   ⬴ CVV
            lam.bá.nei⟨s⟩   'take.2SG.PRES'   ⬴ CVV⟨s⟩
            poi.ki.ló.tʰrĭk⟨s⟩   'dappled'   ⬴ CVC⟨C⟩

In addition to defining the location of accent in words like those in (2), the recessive generalization delimits the accentable window in ANY Greek word: the accent cannot stand to the left of the syllable defined by (2)a.

Three metrical analyses of the recessive generalizations have been proposed. Steriade (1988) argued for a syllabic trochee analysis, constructing a quantity-insensitive foot at the right edge with final consonant and final light syllable extrametricality. Sauzet (1989) and Golston (1990) have pointed out some problems with such an approach: first, Greek has a bimoraic, not a bisyllabic word minimum; second, quantity-insensitive systems with quantity-sensitive extrametricality are not attested. In light of these difficulties, I will assume Sauzet and Golston's quantity-sensitive analysis, summarized below in (3).

(3)   a. Final consonants are extrametrical.
         b. A moraic trochee is constructed at the right edge of the word.
         c. HL* is associated to the head of the word.

If the final syllable of the word is light, the head of the word will be on the penultimate syllable, and associating the HL* melody will result in the H tone on the antepenult. Final heavy syllables, on the other hand, are heads, and hence the H tone in words like *lambánei* ends up on the penult.

(4)   a. elám(bane)   b. elám(bano)⟨n⟩   c. lambá(nei)

      H L*   H   L*   H L*

Either of the vocalic morae of a long vowel may bear H tone, yielding a contrast between falling tone, called circumflex (spelled *â*) and rising tone, called acute (spelled *ǎ*). The interesting restrictions on the distribution of contours at the word level fall outside of the scope of this paper.

2.   Lexical Tones and Phrasal Accents

As mentioned in the previous section, not all words are recessively accented: nouns, adjectives, and non-finite verbs may have unpredictable accent, as long as it is within the accentuation window. The majority of such forms have an ortho-graphic acute accent on the final syllable (5)a—such words are called OXYTONE—and a smaller number of forms have unpredictable penultimate accent (5)b. I will refer to such words as PAROXYTONE.

(5)   a. adelpʰós   'brother'   tʰeós   'god'
          psykʰḗ   'soul'   tʰȳmós   'spirit'
       b. megálos   'big'   olígos   'small'
          poikílos   'variegated'

All previous analyses have assumed that oxytone words bear a lexical tone on the final mora, an assumption I will reject in this paper. I will argue in this section that oxytone words are lexically unaccented, but receive their H tone by phrasal default.

On the standard analysis, the final acutes are subject to a rule of lowering (deletion) unless a clitic or a phrase boundary follows. The orthographic grave accent in place of the lowered acute indicates a toneless vowel (Allen 1973).

(6)   a. FINAL LOWERING   b. [êltʰen][ho adelpʰós]   c. [ho adelpʰòs] [êltʰen]
          ́μ → μ / __]ω [ω   'the brother came'   'the brother came'

Given the hypothesis that final acutes are not present in the lexical representation, the rule (6)a must be reversed. I propose that rather than deleting a lexical H, the alternations in (6)b are accounted for by a rule that inserts a H phrase-finally unless one of the last three syllables already bears a tone. A more formal version of the informal statement (7) will be given in Section 4.

(7)   PHRASAL DEFAULT
       Insert phrase-final H tone unless there is a tone on one of the last three σs.

In the remainder of the section I will give five arguments favoring (7) over (6)a. First, preaccenting enclitics require the generalization (7) independently of the analysis of the oxytones. Such enclitics impose a H tone on the final mora of the

word, unless that mora is already linked to a tone (H or L*), or unless the immediately preceding mora in the same syllable is linked to a tone. If, as a result of this preaccentuation, none of the last three syllables of the clitic group bears an accent, the final mora of the clitic is accented. Details are given in Section 4.

Second, the reanalysis (7) simplifies the account of adposition accent. Synchronically, all prepositions are oxytone and postpositions are recessive, with a small set alternating between the two classes, e.g. *perí* 'about' is a preposition, and *péri* is a postposition. On the traditional analysis it is an accident that all prepositions should have lexically unpredictable final accent, while on my analysis, prepositions, being proclitics, are unaccented, while postpositions are independent phonological words and receive default accent.

Third, my hypothesis resolves what I would like to call 'the intonable consonant paradox.' Some morphemes like the NOM.PL MASC *-oi* and FEM *-ai* count as light syllables for the purposes of recessive accent, indicating they have the phonological representations /oj/ and /aj/, with a consonantal offglide which is extrametrical: *ánthrōpo⟨j⟩* 'humans'. However, this same segment in oxytone words can bear orthographic acute accent: *adelphoí* 'brothers'. If oxytone accent is not present in the lexicon and supplied only as a phrasal default, and if the contrast between *j* and *i* is neutralized only postlexically, there is no paradox.

Fourth, my hypothesis provides an account of the accentual paradigms of third declension nouns, which otherwise cannot be derived except by stipulation. According to the traditional generalization, polysyllabic nouns such as *agṓn* 'contest' are accented invariantly on the same syllable throughout the paradigm, while monosyllables such as *thḗs* 'theif' are oxytone in the genitive and dative.

(8)

	SG	PL	SG	PL
NOM	agṓn	agônes	tʰḗs	tʰêtes
GEN	agônos	agṓnōn	tʰētós	tʰētôn
DAT	agôni	agôsi	tʰētí	tʰēsí
ACC	agôna	agônas	tʰêta	tʰêtas

Nouns of the type *thḗs* are better characterized as MONOMORPHEMIC rather than monosyllabic: *gynḗ* 'woman', *anḗr* 'man', and *gonΰ* 'knee' follow the same pattern, while some synchronic (but not historical) monosyllables like *êr* 'spring' do not. On the other hand, stems with invariant accent contain accented derivational morphology, e.g. stem formatives: *elp-íd-* 'hope', *asp-id-* 'shield', *alēth-és-* 'true', *graph-eú-* 'scribe'. Traditional analyses are forced to stipulate accent mobility in monosyllables; my hypothesis allows us to treat them as simply unaccented, the mobile acute simply being an orthographic reflex of their lack of a phonological tone.[1]

---

[1] The ACC.SG and NOM.PL affixes are preaccenting—a category of affixes independently needed for Greek—while the GEN.PL is itself accented. For reasons of space, I am not able to discuss the complex and interesting interactions of accent with morphology in this paper.

The fifth and final argument for my reanalysis of oxytones is conceptual. The assumption that words like *agathós* are lexically associated with a tone raises the question of where that tone is located: *-o* is a thematic vowel, not part of the stem, so stems like *agathós* must be postaccenting. Given that there are no post-accenting stems in the third declension, treating *agathós* as atonic would maintain the same generalization for the first and second declensions as well. The only true lexical final accent on this account is on nouns like *elpís*, where the accent falls on the stem formative *-íd* followed by a non-syllabic desinence.

Having established that oxytones are phonologically toneless, it remains to spell out my assumptions about lexical representation of recessive and paroxytone words before moving on to the analysis. I will treat words with an unpredictable penultimate accent as bearing a lexically linked H tone on the relevant syllable. Recessive words, on the other hand, have an unlinked H in the lexicon, whose placement is driven by tone-to-stress constraints in a fashion to be detailed in the following section. These assumptions are illustrated below.

(9)   a. /anthrōpos/   b. /poikílos/   c. /agathós/
                                            |
            H   H

Now we are up to the task of analyzing the lexical component of Greek accent.

3.   **Tone-to-Stress: The Lexical Phonology**
De Lacy's universal tone markedness scale H > M > L faces obvious difficulties in the face of languages where metrical prominence is marked with a tone other than H, as in Greek. Such cases suggest that it suffices to associate a salient pitch event rather than a particular tone with metrical prominence. The pitch event that gravitates toward stressed syllables in Greek is a fall, as Sauzet's HL* melody makes clear: in the default case, the syllable selected as prominent by the stress system must bear a L immediately preceded by H.

Let me begin the analysis by spelling out the stress system of the language. Following the Sauzet-Golston account, I assume a moraic trochee at the right edge of the word, with final consonant extrametricality. This translates into the standard OT constraints below, and the ranking given in (10). No tableau should be necessary here; I refer the reader to (4) for illustration of the outputs.

(10)   a. Non-Fin(C)   d.   Ft-Bin
        b. Al-Ft-R   ╱   ╲
        c. Ft-Bin   Non-Fin(C)   Al-Ft-R

I propose the following constraints in lieu of de Lacy's tone-to-stress scales. Their application is illustrated below the constraints, with σ̱ indicating the metrically prominent syllable.

(11) a. FALL-ONTO-HEAD   'Any tonal fall ends on the prominent syllable'
      Satisfied by: σ σ ó (σ̱ σ)   Violated by: σ σ (σ̱́ σ)
                       σ σ σ (σ̱ σ)   ó σ (σ̱ σ)
                       σ σ σ (σ̱̂ σ)

      b. FALL-OFF-HEAD   'Any tonal fall begins on the prominent syllable'
      Satisfied by: σ σ (σ̱́ σ)   Violated by: σ σ (σ̱́ ó)
                       σ σ (σ̱̂ σ)   σ ó (σ̱ σ)
                       σ σ (σ̱ σ)

These constraints force a pitch event—in this case, a fall—to gravitate toward the metrically prominent position.

I will now develop an analysis of the tone-to-stress component of Greek accent. First, the F-ONTO-H constraint must outrank the F-OFF-H constraint, as illustrated by the following tableau.[2]

(12)

			F-ONTO-HD	F-OFF-HD
/pelekys, H/	☞	pe$_H$(le$_L$ky)s		*
		pe(le$_H$ky$_L$)s	*!	

Next, the tone-to-stress constraints interact with constraints on contour tones in a way that allows contours to surface on long but not short vowels. The constraint *V̆-CONTOUR is undominated in Greek phonology, while the constraint against contours in general is dominated by the high-ranking tone-to-stress constraint.

(13) a. *V̆-CONTOUR   'No contour tones on short vowels'
      b. *CONTOUR   'No contour tones'

			*V̆-CONTOUR	F-ONTO-HD	*CONTOUR
/logos, H/	☞	(lo$_H$go$_L$)s		*	
		(lo$_{HL}$go)s	*!		*
/dōron, H/	☞	(dō$_{HL}$)ron			*
		(dō$_H$)ro$_L$n		*!	

Next, the three faithfulness constraints shown below regulate the behavior of underlying linked and unlinked tones.

(14) a. MAX-T   'Input tones have output correspondents'
      b. DEP-T   'Output tones have input correspondents'
      c. FAITHLINK 'Input association lines are preserved in the output'

---

[2] A language where F-OFF-HD is ranked above F-ONTO-HD is Japanese.

The anti-delinking constraint must dominate the tone-to-stress constraint in order to prevent the accent of underlying paroxytones from regularizing to the recessive pattern.

(15)

			FAITHLINK	F-ONTO-HD
poiki$_H$los	☞	poi(ki$_H$lo$_L$)s		*
		poi$_H$(ki$_L$lo)s	*!	

In a similar fashion, the anti-insertion constraint must be ranked high enough to allow toneless words like *agathós* to emerge from the lexical component without an accent.

   Due to the high-ranking FAITHLINK, the system so far does not guarantee that the accentuation window is observed: prelinked lexical tone will surface faithfully on any syllable, including syllables outside of the accentable domain. To account for the absence of [σ́ σ σ σ] words, I will deploy the conjunction of the two tone-to-stress constraints at the top of the hierarchy, called F-ONTO & OFF-HD for short. This ensures that no form will surface where the prominent syllable neither ends nor begins with a tonal fall.

(16)   F-ONTO & OFF-HD   Violated iff both constraints in (11)a are violated.
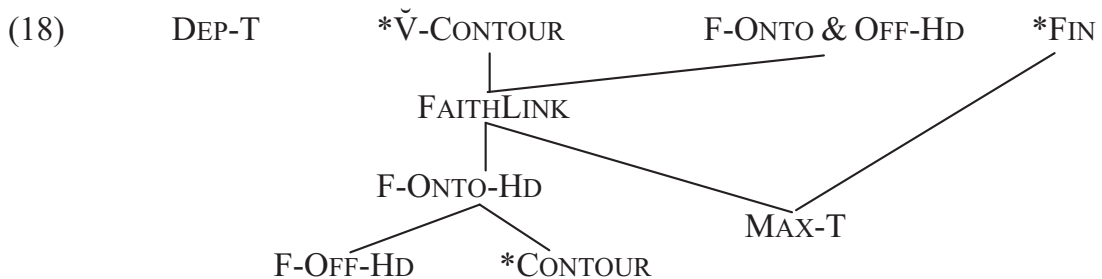
			FOOT PLACEMENT	F-ONTO & OFF-HD	FAITHLINK
/σ́ σ σ σ/	☞	σ σ́ (σ̱ σ)			*
		σ́ σ (σ̱ σ)		*!	
		σ́ (σ̱ σ) σ	*!		

To complete the analysis, we have to account for words with a truly lexical final accent, namely, third declension nominatives like *elpís*, where the accented derivational affix occurs in the last syllable. The desired output of these words is toneless, but the system so far predicts that these words should surface with the final H. In order to prevent this, I use the constraint *FIN, which, ranked above MAX-T, forces tone deletion.

(17) a. NOM   GEN   Gloss   b. *FIN   'No final tone'
          elp-id-s   elp-íd-os   'hope'
          asp-id-s   asp-íd-os   'shield'
          ag-ōn   ag-ôn-os   'contest'

	*V̆-CONTOUR	FAITHLINK	*FIN	MAX-T
elpi$_H$ds ☞ el(pid)s				*
el(pi$_{HL}$d)s	*!			
el(pi$_H$d)s			*!	
e$_H$l(pi$_L$d)s		*!		

The ranking arguments given in this section are summarized below.

(18)   DEP-T   *V̆-CONTOUR   F-ONTO & OFF-HD   *FIN

                               FAITHLINK

                          F-ONTO-HD

              F-OFF-HD   *CONTOUR   MAX-T

As in all OT analyses that crucially rely on specifying properties of the input, the issue of Richness of the Base (ROB) must be addressed: does the system predict unattested patterns derived from inputs other than those posited above? The account of the accentuation window above forced a potential underlying tone linked outside of the window to shift to the recessive position: that was a ROB argument.

Since the system in general allows prelinking of tones in the lexicon, as was necessary in the analysis of paroxytones, and since recessive words were lexically represented with unlinked tones, we might ask what the output of a form with a tone prelinked in the recessive position might be. Because the faithful realization of a H tone prelinked to, say, the first syllable of *ánthrōpos*, would satisfy the tone-to-stress constraints, the output would be identical to that of an unlinked H. In the oblique forms like *anthrṓpou* ending in a heavy syllable, the linked H would be outside of the accentable domain and would be shifted to the recessive position by the constraint in (16). Prelinking gives the same result as underlying unlinked tone.

By ROB, the situation where two different inputs converge on the same output ought to give rise to a covert contrast between two types of recessive forms: ones with an unlinked tone and ones with a linked H. It turns out that precisely such a contrast provides an account for a rather subtle difference in the accentuation of, on the one hand, first declension nouns like *polítēs* 'citizen', and, on the other, second declension nouns, as well as adjectives of both declensions. It so happens that all of the desinences of the first declension contain a long vowel, except the

NOM.PL -*ai*, underlyingly /-aj/. The recessive accent is thus expected to surface on the penultimate syllable in all case forms except the NOM.PL, where it should fall on the antepenult. However, the actual form is *polîtai*, not **pólîtai*. This shows that the H tone in *polítēs* is prelinked in the recessive position. However, adjectives in the same morphological category behave differently: the nominative plural of *dikaíā* 'just.FEM' is *díkaiai*, not **dikaîai*. Thus, in these forms, the H tone must be unlinked in the lexicon.[3] The formal difference between linked and unlinked tones corresponds to the difference in behavior between *polítēs* and *dikaíā*.

This concludes the discussion of the lexical component of Greek accent. To summarize: I have argued for treating oxytone words as lexically toneless, while other words were supplied either with a linked or an unlinked H. Greek lexical phonology is a clear case of a tone-to-stress system, in that, to the extent that tonal faithfulness constraints allow it, the metrical constraints determine the placement of tone. I have argued for a modification of de Lacy's constraint set by allowing metrical prominence to be associated with a salient pitch event like a fall rather than with particular tones. In the next section I move on to the stress-to-tone component of Greek: the phrasal phonology.

4.   Stress-to-Tone: Phrasal Phonology and Preaccenting Enclitics

As argued above, Greek has a phrasal default inserting a H tone on the domain-final mora, unless none of the last three syllables contains a H tone.[4] This generalization accounts for the accent of oxytones; I will begin this section by showing that the same generalization is independently required to account for the accent of enclitics.

Enclitics of the preaccenting class, such as indefinite pronouns, oblique case forms of personal pronouns, and several particles, impose a H tone on the mora immediately preceding them under certain conditions, summarized below. The host word to which the enclitic attaches bears the tones assigned to it by the lexical component.

(19)   The mora preceding the enclitic receives H tone, unless:
    a. That mora is already linked to a tone (H or L), or
    b. The mora immediately preceding within the same syllable is linked to a tone.[5]

---

[3] The contrast between nouns like *polítēs* and adjectives like *dikaíā* arises because adjectives have corresponding masculine forms of the second declension, *díkaios*, which behave just like second declension nouns and have unlinked Hs. Naturally, the stem with an unlinked H used to form the masculine is the same stem that is used to form the feminine, hence forms like *díkaiai*.

[4] More strictly, the last three syllables of the last word must be toneless, to ensure the insertion of H in words like *hodós* 'road' when a circumflex accent immediately precedes. For reasons of space I cannot address this complication.

[5] This fact suggests that the actual melody is not HL* but something like HL*L. This hypothesis would also explain all of the generalizations regarding the distribution of contours, and the enclitic

Thus, enclitic accent is assigned to recessive words, oxytone words, and proclitics, but is blocked in all other cases.

(20) a. pe_Hle_Lkys + tis → pélekýs tis   'some axe'
      b. sō_{HL}ma + ti   → sômá ti   'some body'
      c. kalos + tis   → kalós tis   'someone beautiful'
      d. ei + tis   → eí tis   'if someone'
      e. pʰilō_{HL}n + tis → pʰilôn tis *pʰilỗn tis 'one of the friends'
      f. pʰi_Hlo_Ls + tis   → pʰílos tis *pʰílós tis 'some friend'
      g. lo_Hgo_Lu + ge   → lógou ge   *lógoú ge   'of word, at least'

Following the assignment of tone to the host by the preaccenting enclitic, the last mora of the entire phrase receives a H tone unless one of the last three syllables of the phrase bears a H tone, in accordance with the generalization (7). This situation can only arise in disyllabic enclitics, as shown below. The final H appears just in case the host word has a penultimate accent. I take enclitic accent as proof of the final phrasal H generalization in (7).

(21) a. kalón estin   'it is beautiful'
      b. tīmôn tina   'honoring someone'
      c. sôsón tina   'save someone!'
      d. kʰórā tis   'some land'
      e. kʰórā tinós   'someone's land'
      f. pʰílos tinós   'someone's friend'
      g. kêryks tinós   'someone's messenger'

While the lexically assigned tone clearly survives faithfully at the postlexical level, I propose that the stress phonology of phrases differs from that of words: metrical heads simply gravitate to lexical Hs, and the stress constraints only emerge when there is no H tone in the relevant domain. In other words, Greek phrasal phonology is stress-to-tone, in contrast to the tone-to-stress lexical component. There is a quantity-insensitive stress system that marks the final syllable as prominent by default. Its quantity insensitivity is clear from forms such as *kalỗn tinōn* 'of some beautiful ones', where the final syllable is heavy and does not attract the postlexical default. In the quantity-sensitive lexical system, the circumflex of *kalỗn tinōn* would fall outside of the accentuation window, while in the quantity-insensitive postlexical system it does not.

   I assume a default degenerate syllabic trochee at the right edge of the word. Underlying tones can force the final syllabic trochee to be constructed in a way that makes the H tone fall on the head of the foot, but only in case the tone occurs on one of the last three syllables of the word. One formal account of such a

---

accent with CVCC-final hosts, such as *kêryks tis*. For lack of space I will not pursue these issues here.

window stress system is Weak Local Parsing (Hayes 1995) or, more exactly, its OT equivalent (Elenbaas and Kager 1999), which prohibits foot edges from being adjacent. This analysis is sketched below.

(22) a. H-TO-HD   'Any H tone must be on the head of a foot'
      b. AL-HD-R   'Metrical head is on the right edge of the word'
      c. WLP   Weak Local Parsing (cover constraint)

		MAX	H-TO-HD	WLP	AL-HD-R	DEP
/σ σ σ/ ☞	σ σ (ó)					*
	σ (ó σ)				*!	*
/ó σ σ/ ☞	(ó σ) σ				**	
	(ó σ) (ó)			*!		*
	ó σ (ó)		*!			*
/σ ó σ/ ☞	σ (ó σ)				*	
	σ σ (ó)	*!				*
/ó σ σ σ/ ☞	(ó σ) σ (ó)					*
	(ó σ) σ σ				*!**	

5.   Conclusions

I have argued for a reanalysis of Greek accent that separates the lexical component from the phrasal component in a novel way: I argued that orthographically oxytone words are lexically toneless. In addition to a number of empirical advantages, this move permits Greek accent to be analyzed within the framework of de Lacy's theory of tone-stress interactions. Both directions of interaction are attested in Greek, the lexical phonology being a tone-to-stress system, and the postlexical phonology a stress-to-tone system.

There are a number of outstanding issues. First, the notion that a 'salient pitch event' rather than a H tone is what gravitates toward metrically prominent position is in need of a more precise formal characterization. This can be resolved only by looking at a broader typology of languages with tone and stress. Second, the analysis of Greek must be extended to aspects of Greek grammar left outside of the scope of the present paper: the interaction of accent with morphology, the restrictions on contour tones, and an analysis of enclitics other than those of the preaccenting class.

References

Allen, W. Sydney. 1973. *Accent and Rhythm. Prosodic Features of Latin and Greek: A Study in Theory and Reconstruction*. Cambridge: Cambridge University Press.

Chandler, Henry W. 1881. *A Practical Introduction to Greek Accentuation*. Oxford: Clarendon Press.

De Lacy, Paul. 2002. The interaction of tone and stress in Optimality Theory. *Phonology* 19:1-32.

Elenbaas, Nine, and René Kager. 1999. Ternary rhythm and the Lapse constraint. *Phonology* 16:273-329.

Goldsmith, John. 1987. Tone and accent, and getting the two together. *Proceedings of the Thirteenth Annual Meeting of the Berkeley Linguistics Society*, 88-104. Berkeley: Berkeley Linguistics Society.

Golston, Chris. 1990. Floating L* (and H) tones in Ancient Greek. In J. Myers and P. Pérez, eds., *Arizona Phonology Conference: Volume 3*, 66-82.

Hayes, Bruce. 1995. *Metrical Stress Theory*. Chicago: Chicago University Press.

Sauzet, Patrick. 1989. L'accent du grec ancien et les relations entre structure métrique et représentation autosegmentale. *Langages* 95:81-113.

Steriade, Donca. 1988. Greek accent: A case for preserving structure. *Linguistic Inquiry* 19:271-314.

Veitch, William. 1887. *Greek Verbs, Irregular and Defective: Their Forms, Meaning, and Quantity*. Oxford: Clarendon Press.

Vendryes, J. 1945. *Traité d'accentuation grecque*. Paris: Klincksieck.

Linguistics Dept., Bldg. 460
Stanford University
Stanford, CA 94305

lblum@stanford.edu