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Ancient Greek Nominal Accentuation*

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Ancient Greek accentuation has been notoriously difficult to categorize comprehensively. We set out a new model which we believe is the first fully comprehensive account that formally treats nominal accentuation as approximations of recessive accentuation. This is done using Direct OT, according to which morphemes are represented by the constraints they violate.

1 Introduction

Ancient Greek accentuation has a long history of scholarship, well summarized in Probert 2006. Much of this work is purely descriptive, putting words into one of five types based on type (high, low, falling) and location (ultima, penult, antepenult):

(1) Traditional nomenclature for accentual placement

oxytone	πατήρ [paˈtéér]	‘father’
paroxytone	πηνέλοψ [pεεnéˈlòps]	‘duck’
proparoxytone	ἄνθρωπος [ánˈtʰrɔ̀ɔ̀pos]	‘person’
perispomenon	κανοῦν [kaˈnóòn]	‘cane basket’
properispomenon	οἶκος [óìkòs]	‘house’

Thus *oxytone* is H on the ultima, *paroxytone* H on the penult, and *proparoxytone* H on the antepenult; *perispomenon* is HL on the ultima, *properispomenon* is HL

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on the penult; falling tones never surface left of the penult. We follow Jakobson (1937) in believing that such terminology is useless for understanding Greek:

> [T]he traditional classification artificially lumped together words with progressive and regressive accent, e.g. γαμέτις and μελάνων but aimlessly separated essentially homogeneous cases (e.g., μελάνων and μέλανος). The pretended diversity can and must be reduced to two basic types. (Jakobson 1937[2002]:266)

Jakobson's two central accentual classes for Greek, then, are the *progressive* and the *recessive*. Pride of place for him goes to the progressives:

> The progressive accent signals the independence of a word, whereas the regressive accent by itself signals neither the independence nor the dependence of the word: besides a large number of independent words, all enclitics of more than three morae have the regressive accent; cf. the orthotonumena ἡμῖν, ὑμᾶς and the corresponding enclitics ἧμιν, ὕμας. Wackernagel has fittingly characterized the regressive accent as *quasienclisis*. The progressive accent, which unambiguously signalizes the orthotonic status of a word, constitutes a marked category opposed to the unmarked regressive accent. (ibid.)

Jakobson defines *progressives* as words where the H tone "falls on the first or only mora of the syllable which contains the pre-final mora of the word" (p. 265):

(2) Jakobson's core accentual classes

progressive	ἱκέτις [hiˈkétis]	'suppliant'
	καλῶς [kaˈlɔ́ɔ̀s]	'beautifully'
	πολῖτις [poˈlíitis]	'citizen (f.)'
recessive	μέλανος [méˈlànos]	'black (GEN.SG)'
	μελάνων [melάˈnɔ̀ɔ̀n]	'black (GEN.PL)'
	ἄνθρωπος [ánˈtʰrɔ̀ɔ̀pos]	'person'
	κατῆλιψ [katéɛ̀ˈlìps]	'ladder'

In *recessives*, the H tone surfaces on the syllable immediately before main stress. To these major accentual classes, we would add four others that occur. Words with *oxytone* accentuation have a H tone one mora to the right of where progressives have it and what we call *pre-recessive* words have the H tone one mora to the left of where recessives would have it.

(3) Additional accentual classes

oxytone	πατήρ [paˈtéér]	'father'
	ὁδός [ˈhodós]	'way'

pre-recessive	πόλεως [pólèˈɔɔs]	‘city (GEN.SG)’
	πήκεων [péékèˈɔɔn]	‘forearm (GEN.PL)’
enclitic	τις [tis]	‘a, some’
	τινά [tiná] ~ τινα [tina]	‘a, some (ACC.SG)
proclitic	εἰς [ees]	‘into’
	ἐν [en]	‘in’

Finally, *enclitics* sometimes keep their H tone and sometimes lose it or deposit it on a preceding word (ἄνθρωπός τις), while proclitics have no H tone at all.

We seek here to provide a unified account of the six accentual classes in (2)–(3). Much ink has been spilled on the default case, the recessive, and we will follow the groundbreaking work of Sauzet (1989) in analyzing it as a pitch accent that assigns a falling tone HL*, where L* docks to the stressed syllable and H docks to the preceding syllable if one is present. We update Sauzet’s rule-based autosegmental analysis with a more surface-oriented analysis based in Optimality Theory (Prince and Smolensky 1993/2004); see Sandell 2023 for a competing account less focused on the exceptional patterns. Previewing things, we use the following constraints:

(4) Constraints used here

H	Every word has exactly one H tone
HL[1]	Every H tone is followed by a L tone
Pk|Str	No σ intervenes between H or HL and the stressed syllable
NoPkStr	No H occurs on a stressed syllable
V̏%	Every word ends in a boundary tone
NoFall	HL does not occur on a single syllable

The first constraint, H, is undominated: it is the most important of the bunch, so if an HL sequence won’t fit on a word due to its length, we get the H rather than the L (θρίξ [tʰríks] ‘hair’, not *[ˈtʰrìks]). The constraint HL gives us a falling pattern when a word is long enough to host it (HL ˈτόμος [ˈtómòs] ‘cut’, not LH *[ˈtòmós] or the like). Pk|Str puts the H right before the the stressed syllable (πηνέλοψ [pɛɛnéˈlòps] ‘duck’) rather than letting a syllable intervene between the H and the stressed syllable (*[péénèˈlòps]). V̏% is a constraint that induces a word-final low

1 Our analysis factors Sauzet’s L* into multiple constraints: HL requires the L; Pk|Str and NoPkStr position the L on the stressed syllable when possible.

boundary tone when it will fit, as argued for Greek by Ito and Mester 2016 and Gunkel 2023; we represent the boundary tone with a double grave and assume it is phonetically and phonologically distinct from the H and L tones of the pitch accent. Thus we take ἄνθρωπος to be [ánthrɔ̀ɔ̀pɔ̏s] rather than *[ánthrɔ̀ɔ̀pos] or *[ánthrɔ̀ɔ̀pòs]. As Ito and Mester show, the boundary tone helps push the H tone one mora to the left of where it might otherwise occur, as we will see in greater detail below. Finally, low-ranked NOFALL avoids syllables with two tones: ἥλιος [hέέˈlìɔ̀s] ‘sun’ is thus preferred to *ἧλιος [hέὲˈlìɔ̀s]. We also assume that any vowel not specifically toned surfaces with a low tone; this simplifies the analysis greatly and is grounded in the example of many modern languages. This much is just a translation of Sauzet’s work and subsequent refinements into current theory, but covers the same range of data.

Where we innovate is in how these preferences can be used to capture the other five accentual classes in (2) and (3). We use Direct OT (Golston 1996), according to which morphemes are represented directly by the constraints they violate. Applied to Greek accentuation, the idea is that exceptionally accented words all *approximate the recessive pattern*. The approximations can be given directly as violations of the very preferences (constraints) that yield recessive accent. Bluntly, progressives, proclitics, enclitics and the rest are wanna-be recessives; the specific ways in which they fail to be recessive provide a gradient of classes that approximate recessive accentuation in various ways. This fact, that “exceptional” cases are regularly patterned, is not captured in accounts which assume a pre-specified lexical accent.

As we’ve just sketched, recessively accented words minimize violations of the above constraints. Progressive words like ἱκέτις [iˈkétìs] ‘suppliant’ and κανοῦν [kaˈnóɔ̀n] ‘basket’ distinctively violate NOPKSTR because the H tone occurs on the stressed syllable rather than before it—their stress pattern is thus a marked approximation of the default recessive accent and our analysis models it as such, as we will see below in more detail. κανοῦν additionally violates NOFALL as it contains a falling HL tonal contour. Words like ὁδός [ˈhodós] ‘way’ and πατήρ [paˈtéér] ‘father’ violate high-ranked HL because the H tone that they have isn’t followed by a L, again approximating the recessive accent but falling one step short of it. Words of the pre-recessive class like πόλεως [pólèˈɔɔs] violate PK|STR because a syllable [lè] separates the H tone on [pó] from the main stress on [ˈɔɔs].

Proclitics and enclitics are subject to a different, postlexical set of constraints (5). Under these postlexical constraints, proclitics like εἰς are unmarked, lacking any tone at all.

(5) Postlexical constraints

OCP-H	No adjacent H tones
NoPk)	No word-final syllable contains a H or HL
NoPkStr	No H or HL occurs on a stressed syllable
$\text{NoPk)}_{\text{clitic}}$	No clitic-final syllable contains a H or HL
V̈%	Every word ends in a boundary tone

Conversely, enclitics prefer to have no H tone of their own and an extra H tone at the end of the preceding word, ἄνθρωποί τινες ‘some people’, in violation of the constraint NoPk).

(6) Sketch of the analysis

Accentual class		Violated constraint
recessive	ἄνθρωπος ‘person’	
progressive	ἱκέτις ‘suppliant’	NoPkStr
oxytone	πατήρ ‘father’	HL
pre-recessive	πόλεως ‘city’ (GEN.SG)	Pk|Str
proclitic	εἰς ‘into’	
enclitic	τινές ‘some’	NoPk)

That’s the sketch. In what follows, we treat recessive accentuation more explicitly (§2); then turn to the other, more exceptional cases of accentuation (§3); and end with a brief conclusion (§4).

2 Recessive accentuation

The prosody of Ancient Greek involves a delicate interplay between stress (Allen 1973) and pitch accent (Sauzet 1989). Each prosodic word contains a moraic trochee aligned as close to the end of the word as possible (Golston 1990). Words with a final short vowel (φύλακε ‘guards’ [ACC.DU]) are thus stressed on the penult [ˈphúˈlake]. A single word-final consonant is excluded for weight so that ἱκέτις ‘suppliant’ has three light syllables as far as stress is concerned; it is therefore stressed on the penult, [hi.ˈké.tis], as if it ended in a short vowel. All other words end in a heavy syllable and have final stress, whether they end in a long vowel (συκῆ [suuˈkéè] ‘fig tree’), consonant cluster (ἄναξ [áˈnàks] ‘king’), or both (συκῆς

[suuˈkéès] ‘fig tree’ [GEN.SG]). No word of Greek has stress on the antepenult. The stress rule is thus similar to that of Latin, but on the last two syllables: stress the ultima if it’s heavy, otherwise stress the penult.

The pitch accent is generally positioned relative to the word stress. The position of pitch accent is of course marked orthographically in Greek with either an acute or circumflex over the vowel. A circumflex indicates a falling contour HL and we assume that an acute represents a level high tone both on short vowels and on long (Bally 1945:13–5; see Sandell and Gunkel 2024:82–4). The HL pitch accent is a falling contour either across (γάλα [ˈgálà] ‘milk’) or within syllables (συκῆ [suuˈkéè] ‘fig tree’). We argue that the L* of Sauzet 1989 is an emergent property of constraint interactions rather than an inherent element of the tonal melody.

The first part of recessive accentuation is that every word culminates in a single metrical prominence:

(7) H

Every word has exactly one H tone.

This constraint is the tonal equivalent of CULMINATIVITY (Hyman 2006:231), which requires that each word culminate in a single primary stress. H requires that each word culminate in a single H tone. This covers light-syllable words like δέ ‘and’ and θές ‘put!’ as well as heavy-syllable words like θρίξ ‘hair’ that have a single tone-bearing unit (vocalic mora, [í] in this case):

(8) θρίξ ‘hair’ and H

	H	HL	PK|STR	NOPKSTR	V̈%	NOFALL
a. ☞ ˈtʰríks		*		*	*	
b. ˈtʰrìks	*!				*	
c. ˈtʰriks	*!				*	

We’ve greyed out the constraints that don’t yet matter to simplify the presentation. All that matters for the present is that the undominated constraint H rules out candidates (b) and (c) because they lack an H. Monosyllabic words with two tone-bearing units (a long vowel or diphthong) can host two tones—assuming a short vowel can only hold one tone, which seems clear for Greek—and bring the constraint HL into play:

(9) HL

Every H tone is followed by a L tone.

This constraint rules out words like (b) in (10), where H is not followed by L, i.e., words whose pitch peak does not fall.

(10) γῆ ‘earth’ and HL

	H	HL	PK|STR	NOPKSTR	V̋%	NOFALL
a. ☞ ˈgέὲ				*	*	*
b. ˈgέέ		*!		*	*	
c. ˈgὲὲ	*!				*	
d. ˈgεε	*!				*	

Candidates (c) and (d) violate undominated H, leaving (a) as the optimal choice.

Bimoraic words with two syllables work similarly, as the only way to respect HL is to place the H on the first vowel and the L on the second:

(11) νόμος ‘law’ and HL

	H	HL	PK|STR	NOPKSTR	V̋%	NOFALL
a. ☞ ˈnómòs				*	*	
b. ˈnomós		*!			*	

The constraint PK|STR rules out words where the tonal peak isn’t adjacent to the stress peak:

(12) PK|STR

No σ intervenes between H or HL and the stressed syllable.

(13) πηνέλοψ ‘duck’ and PK|STR

	H	HL	PK|STR	NOPKSTR	V̋%	NOFALL
a. ☞ pεεnέˈlòps					*	
b. pέέnὲˈlὸps			*!			

PK|STR rules out (b) above, where the syllable [nὲ] separates the H toned syllable [pέέ] from the stressed syllable [ˈlὸps]. Note that (b) does not violate the Dreisilbengesetz, showing that this notion is insufficent to explain recessive accentuation.

Longer words like ἄνθρωπος ‘person’ have more accentuation possibilities and show that the H ideally does not fall on the stressed syllable but preceding it:

(14) NOPKSTR

No H or HL occurs on a stressed syllable.

(15) ἄνθρωπος ‘person’ and NOPKSTR

	H	HL	PK|STR	NOPKSTR	V̏%	NOFALL
a. ☞ án'thrɔ̀ɔ̀pös						
b. án'thrɔ́ɔ̀pös				*!		*
c. án'thrɔ́ɔ́pös				*!	*	

The H peak in (a) is adjacent to the stressed syllable but not in it, respecting both PK|STR and NOPKSTR. Not so for (b) and (c), which have the tonal peak on the same syllable as the stress peak.

As has been pointed out by a number of authors (Golston 1990, Kiparsky 2003), words like κατῆλιψ ‘ladder’ require special treatment to keep an acute off of the penult, *κατήλιψ [katéé'lìps]. We effect this by means of a boundary tone, following Ito and Mester (2016:6):

(16) V̏%

Every word ends in a boundary tone.

(17) κατήλιψ ‘ladder’ and V̏%

	H	HL	PK|STR	NOPKSTR	V̏%	NOFALL
a. ☞ katéè'lìps						*
b. katéé'lìps					*!	
c. kátèè'lìps			*!			

Candidate (a) manages to squeeze the falling HL sequence plus the boundary tone onto the vowels, but (b) fails to realize the boundary tone and (c) realizes the H tone too far away from the stressed syllable in violation of PK|STR.

V̏% forces the HL onto the initial syllable of a word like οἶκος, so as to leave the ultima free to host the boundary tone (a). Failure to realize the boundary tone (b) is fatal, just as failure to realize HL is fatal (c):

(18) οἶκος ‘house’ and V̏%

	H	HL	PK|STR	NOPKSTR	V̏%	NOFALL
a. ☞ 'óikös				*		*
b. 'óikòs				*	*!	
c. 'óikös		*!		*		

Finally, our constraint NOFALL keeps HL off a single syllable when possible:

(19) NoFall

HL does not occur on a single syllable

We see it at work below in (20) and (21), where it rules out the (b) candidates:

(20) ἥλιος 'sun' and NoFall

	H	HL	Pk|Str	NoPkStr	V̈%	NoFall
a. ☞ hέέˈliös						
b. hέὲˈliös						*!
c. hεεˈlíös				*!	*	

(21) ἀνθρώπου 'person' (GEN.SG) and NoFall

	H	HL	Pk|Str	NoPkStr	V̈%	NoFall
a. ☞ anthrɔ́ɔ́ˈpòö						
b. anthrɔ́ɔ̀ˈpöö						*!
c. anthrɔɔˈpóò				*!	*	*
d. ánthrɔ̀ɔ̀ˈpöö			*!			

That concludes our discussion of what we take to be the default accentuation of Greek, Sauzet's HL*. We have cast our analysis in OT, but point out that it can be done in other frameworks as well, as Sauzet 1989 demonstrates for autosegmental phonology. The exceptional cases of accentuation in Greek—progressive, oxytone, pre-recessive, proclitic, and enclitc—are another story. They require additional mechanisms in standard OT and in autosegmental and other approaches. We show here, though, that this is not the case for Direct OT, which can model these exceptional cases as marked approximations of the very constraints in (4) that give us default recessive accentuation. We turn to that now.

3 Exceptional cases

The exceptions to recessive accentuation are many, but we'll see that they fall into patterns easily modeled by Direct OT (Golston 1996), whose central tenet is that *morphemes are represented by the constraints they violate*. How this works will become clear shortly, we hope. The crucial point is that exceptions are not random, but violate constraints already needed in the phonology; in the present circumstances they violate the constraints that drive recessive accentuation. In this way, exceptions are marked approximations of the norm.

We treat all five exceptional classes using minimal violation of the constraints in (4). Distinctive constraint violations are desiderata for morphemes and

grammatical categories in Direct OT and show the phonological markedness associated with them. The recessive accent has no desiderata of its own because it is the unmarked default for lexical words; similarly, the proclitic accent for function words. Other accentual classes violate one or more of the constraints in (4) or (5) distinctively, as sketched in (6) above, repeated here for convenience:

(22) Sketch of the analysis (= (6))

Accentual class		Violated constraint
recessive	ἄνθρωπος ‘person’	
progressive	ἱκέτις ‘suppliant’	NoPkStr
oxytone	πατήρ ‘father’	HL
pre-recessive	πόλεως ‘city’ (GEN.SG)	Pk|Str
enclitic	τινές ‘some’	NoPk)
proclitic	εἰς ‘into’	

3.1 Desiderata and morpheme composition

Desired violations (desiderata) introduced by morphemes are no more arbitrary than the morphemes’ phonetic forms. Further, combinations of morphemes may generate desired violations that neither morpheme carries in isolation. For example: the combination of NOM.SG and the stem ἀνάλυσις has no desiderata,[2] and takes the expected recessive accent. In combination with the genitive singular ending, however, it carries a desideratum for Pk|Str, introduced precisely by the combination of stem and suffix. The form ἀναλύσεως must be the combination of the two morphemes, of course, as not all forms of the stem nor all forms with the suffix have pre-recessive accent. This precisely parallels the fact that ἀναλύσεως is also exceptional by ending in -ως, something which is true only of the combination of certain stems with this case (GEN.SG). Exceptions are, rather by definition, compositionally unexpected. We turn now to each of the cases.

3.2 Progressives

Our first case of exceptional words is Jakobson’s *progressives*, where “the accent falls on the first or only mora of the syllable which contains the pre-final mora of the word” (1937:265). These include words with a contracted vowel like ὀστοῦν

2 At least relevant desiderata for this analysis.

'bone' (cf. Homeric ὀστέον), as well as some words not so derived, like χαλκοῦς 'made of bronze' (cf. Homeric χάλκεος). These words have a HL accent (respecting the constraints H and HL) that isn't separated from the stressed syllable (respecting the constraint PK|STR) and in that way are good approximations of the recessive accent. But they have the tonal peak directly *on* the stressed syllable, in violation of NOPKSTR:

(23) κανοῦν 'basket' and distinctive violation of NOPKSTR

	H	HL	PK|STR	NOPKSTR	V̈%	NOFALL
a. ☞ kaˈnóòn				D	*	*
b. káˈnòòn				~~Đ~~!		
c. kaˈnóón		*!		D	*	

The violation of NOPKSTR is not accidental in the case of κανοῦν, but part of its DNA, what makes it exceptional with respect to the rest of the language. Violation of NOPKSTR is a desideratum of κανοῦν, something it is supposed to do. Desiderata are marked as D in the tableau and count in favor of a candidate instead of asterisks, which count against it. Candidate (a) satisfies its desideratum of violating NOPKSTR and no higher ranked constraints. It is thus a better output than (b), which is unexceptional (recessive) and lacks the desideratum associated with κανοῦν; recessive *κάνουν isn't marked *enough* to instantiate the meaning BASKET. Candidate (c) fails for being marked too much, i.e., for violating a constraint HL that isn't supposed to be violated by BASKET. As is typical in OT, the winning candidate (a) isn't perfect, but it's better than any other candidate.

ἱκέτις 'suppliant' works out identically except that NOPKSTR is distinctively violated on the penult [ˈké] rather than the final [ˈnóòn] in κανοῦν:

(24) ἱκέτις 'suppliant' and distinctive violation of NOPKSTR

	H	HL	PK|STR	NOPKSTR	V̈%	NOFALL
a. ☞ hiˈkétìs				D	*	
b. hiˈkétìs				~~Đ~~!		
c. hiˈketís		*!		~~Đ~~!	*	

Candidate (a) wins because it's marked just enough to be exceptional in the right way (progressive rather than recessive) and thus beats out (b), which isn't marked enough (~~Đ~~!) and (c) which is marked too much (*!).

The well-known σωτῆρα Law falls out naturally from the analysis and doesn't need special pleading. The σωτῆρα Law stipulates that an accent on the penult must be a circumflex if the last two vowels of the word are long-short (25).

(25) σωτῆρα ‘savior’ (ACC.SG) and distinctive violation of NOPKSTR

	H	HL	PK|STR	NOPKSTR	V̈%	NOFALL
a. ☞ sɔɔˈtɛ́ɛ̀rə̀				D		*
b. sɔɔˈtɛ́ɛ́rà				D	*!	
c. sɔ́ɔ́ˈtɛ̀ɛ̀rə̀				~~D~~!		
d. sɔɔˈtɛɛrá		*!		~~D~~	*	

For our analysis, this is guaranteed by V̈%, which rules out (b) and by distinctive violation of NOPKSTR, which rules out (c).

3.3 Oxytones

Oxytones like ὁδός ‘way’ are marked by distinctive violation of HL, since they end with a H tone:

(26) HL

Every H tone is followed by a L tone.

They are also marked by violation of V̈%, since the final H tone precludes the boundary tone from docking.

(27) V̈%

Every word ends in a boundary tone.

ὁδός is as marked as it should be and no more:

(28) ὁδός ‘way’ and distinctive violation of HL and V̈%

	H	HL	PK|STR	NOPKSTR	V̈%	NOFALL
a. ☞ ˈhodós		D			D	
b. ˈhódòs		~~D~~!		*	D	
c. ˈhódös		D		*!	~~D~~	

Candidate (b) isn’t marked enough because it fails to violate distinctive HL and (c) is too marked beause it violates NOPKSTR, which (a) respects.

A word with four tone-bearing units like σωτήρ ‘savior’ (29) allows more possibilities, but the effect is the same. Candidate (a) is the only one of the four to distinctively violate both HL and V̈%. Candidate (b) violates HL but not V̈%; (c) violates V̈% but not HL; (d) violates neither HL nor V̈%. The optimal candidate is therefore σωτήρ (a).

(29) σωτήρ ‘savior’ and distinctive violation of HL and V̈%

		H	HL	PK|STR	NOPKSTR	V̈%	NOFALL
a. ☞	sɔɔˈtéér̈		D		*	D	
b.	sɔɔˈtér̈̈r		D		*	~~D~~!	
c.	sɔ́ɔ́ˈtɛ̀ɛ̀r		~~D~~!		*	D	*
d.	sɔɔˈtér̈̈r		~~D~~!			~~D~~	

3.4 Pre-recessives

Pre-recessive accentuation takes the H tone to the left of where recessive accentuation allows it. We model it as distinctive violtion of PK|STR:

(30) PK|STR

No σ intervenes between H or HL and the stressed syllable.

Violation of PK|STR favors the candidate where a syllable intervenes between the the tonal peak and the stressed peak, as we see in words like πόλεως ‘city’ (GEN.SG):

(31) πόλεως ‘city’ (GEN.SG) and distinctive violation of PK|STR

		H	HL	PK|STR	NOPKSTR	V̈%	NOFALL
a. ☞	pólɛ̀ˈɔ̈ɔ̈s			D			
b.	polɛ́ˈɔ̀ɔ̈s			~~D~~!			
c.	poleˈɔ́ɔ̀s			~~D~~!	*	*	*
d.	poleˈɔ́ɔ́s			~~D~~!	*	*	

Recessively accented πολέως (b) isn’t marked enough because there’s no syllable between the tonal and stress peaks; ditto for progressive πολεῖς (c) and oxytone πολεώς (d). All are possible accentuations in Greek, but none of them has the desiderata required for ‘city’ (GEN.SG).

Longer words let us put the accent increasingly far back, with fatal effect:

(32) ἀναλύσεως ‘analysis’ (GEN.SG) and distinctive violation of PK|STR

		H	HL	PK|STR	NOPKSTR	V̈%	NOFALL
a. ☞	analúsɛ̀ˈɔ̈ɔ̈s			D			
b.	análùseˈɔ̈ɔ̈s			D*!			
c.	ánàluseˈɔ̈ɔ̈s			D*!*			

The problem with (b)–(d) is that they are too marked when compared to (a) rather than not marked enough. *ἀνάλυσεως (b) has two syllables intervening between

the pitch peak and the stress peak, one more than desired. *ἄναλυσεως (d) has three such syllables, making it worse yet. The winner isn't Helen so much as a one-legged *hetaira*: marked in a certain way, no more and no less.

3.5 Proclitics

Proclitics and enclitics don't meet their hosts until after the lexical phonology, so we take a Stratal OT approach here (Kiparsky 2015, Bermúdez-Otero 2018) and adopt a different constraint-ranking for the postlexical phonology. We also assume that proclitics and enclitics aren't prosodic words and so do not require (or want) a boundary tone.

There are only eleven proclitics and they are all monosyllabic: four definite articles ὁ 'the' M.SG, ἡ 'the' F.SG', οἱ 'the' M.PL, αἱ 'the' F.PL; four prepositions ἐν 'in', εἰς 'into', ἐξ 'from', ὡς 'before'; two complementizers εἰ 'if' and ὡς 'that'; and one negative οὐ 'not' (see also Devine and Stephens 1994:357). Clitics are subject to the following postlexical constraints:

(33) Postlexical constraints (= (5))

OCP-H	No adjacent H tones
NoPk)	No word-final syllable contains a H or HL
NoPkStr	No H or HL occurs on a stressed syllable
NoPk)$_{clitic}$	No clitic-final syllable contains a H or HL
V̈%	Every word ends in a boundary tone

(See Leben 1973 and Myers 1997 for the Obligatory Contour Principle or OCP.) We assume that proclitics are unmarked with respect to these and surface without peaks of any kind to avoid violating them. Note that all words (orthotonic or not) are subject to NoPk), while only clitics are subject to NoPk)$_{clitic}$.

(34) εἰς 'into' and postlexical constraints

	OCP-H	NoPk)	NoPkStr	NoPk)$_{clitic}$	V̈%
a. ☞ ees ˈpólìn			*		*
b. éès ˈpólìn		*!	*	*	*
c. éés ˈpólìn	*!	*	*	*	*

In (a) the proclitic surfaces toneless and thus avoids issues with tonal peaks. Not so for (b), which fatally introduces a violation of NoPk) and (c), which violates the OCP with adjacent H tones.

3.6 Enclitics

Enclitics are more challenging: sometimes they surface toneless with no change to their host (ἀνήρ τις); sometimes they deposit a H tone on the last TBU of their host (ἄνθρωποί τινες); sometimes they retain their H tone and have no visible effect on the host (ἀνθρώπου τινός):

(35) ἄνθρωποί τινες ‘some people’ and distinctive violation of NoPk)

		OCP-H	NoPk)	NoPkStr	NoPk)$_{clitic}$	V̈%
a.	☞ án'thrɔ̀ɔ̀pój tines		D			*
b.	án'thrɔ̀ɔ̀pö̀j tinés		D		*!	
c.	án'thrɔ̀ɔ̀poj tines		~~Đ~~!			*

Candidate (a) is just as bad as desired and wins given the constraint ranking; in autosegmental terms, the floating H tone of the enclitic docks onto ἄνθρωποί. Candidate (b) is worse than (a) because it has a clitic-final tonal peak (H) in violation of NoPk)$_{clitic}$; in autosegmental terms, the clitic’s H tone has failed to dock on ἄνθρωποι. Candidate (c) is better than desired because it fails to violate NoPk), a desideratum introduced by the clitic; in autosegmental terms, the clitic’s H tone has been lost.

Other configurations yield a H tone on the enclitic, as follows:

(36) ἀνθρώπου τινός ‘some person’s’ and distinctive violation of NoPk)

		OCP-H	NoPk)	NoPkStr	NoPk)$_{clitic}$	V̈%
a.	☞ anthrɔ́ɔ́'pòò tinós		D		*	*
b.	anthrɔ́ɔ́'pòò tínos		~~Đ~~!			*
c.	anthrɔ́ɔ́'pòò tinos		~~Đ~~!			*
d.	an'thrɔ́ɔ́póó tinos	*!	D	*		*

Candidate (a) has the desired violation of NoPk), unlike (b) and (c) which therefore lose out to it. Candidate (d) is worse because it violates undominated OCP-H, which prohibits H tones on adjacent syllables.

When an enclitic’s host has a final H tone of its own, OCP-H forces loss of the H tone introduced by the enclitic:

(37) πατήρ τινος ‘someone’s father’ and distinctive violation of NoPk)

		OCP-H	NoPk)	NoPkStr	NoPk)$_{clitic}$	V̈%
a.	☞ pa'téér tinos		D	*		*
b.	pa'téér tìnós		D*!	*	*	*
c.	pa'téér tínos	*!	D	*		*

Candidate (a) has the desired violation of NOPK), provided by oxytone πατήρ. Candidate (b) is more marked than desired as more than one final syllable contains a peak. Candidate (c) is ill-formed because no tones separate the H tone of πατήρ and the H tone of τινός; in autosegmental terms, they are tier-adjacent and see each other, violating the OCP. Thus, when the host is oxytone, there is no way for the H tone associated with the enclitic to dock and it is deleted.

OCP-H also resolves cases like ικέτις τινός as docking to the host would surface tier-adjacent H tones, and failing to dock would be better than desired as there would be no violation of NOPK).

(38) ικέτις τινός 'someone's supplicant' and distinctive violation of NOPK)

	OCP-H	NOPK)	NOPKSTR	NOPK)$_{clitic}$	V̈%
a. ☞ hiˈkétìs tinós		D	*	*	*
b. hiˈkétìs tínos		~~D~~!	*		*
c. hiˈkétís tinos	*!	D	*		*

There is an expected wrinkle in οἶνοψ τινός 'someone's wine-face' and οἶκός τινος 'someone's house', as the host words appear tonally identical but the enclitics behave differently. We attribute the difference to the final stress of οἶνοψ vs. the penultimate stress of οἶκός. NOPKSTR keeps H and HL off of the stressed syllable in οἶνοψ, dinging (b) below and letting (a) win:

(39) οἶνοψ τινός 'someone's wine-face' and distinctive violation of NOPK)

	OCP-H	NOPK)	NOPKSTR	NOPK)$_{clitic}$	V̈%
a. ☞ óìˈnöps tinós		D		*	
b. óìˈnóps tinos		D	*!		*
c. óìˈnöps tínos		~~D~~!			
d. óìˈnöps tinos		~~D~~!			

This doesn't apply to οἶκός, whose final syllable is unstressed and therefore allows the enclitic's H tone to dock onto it (a):

(40) οἶκός τινος 'someone's house' and distinctive violation of NOPK)

	OCP-H	NOPK)	NOPKSTR	NOPK)$_{clitic}$	V̈%
a. ☞ óìˈkós tinos		D	*		*
b. óìˈkös tinós		D	*	*!	
c. óìˈkös tínos		~~D~~!	*		
d. óìˈkös tinos		~~D~~!	*		

4 Conclusion

We've presented an OT analysis of recessive accentuation that builds upon previous insight, especially that of Sauzet 1989. Standard OT encounters no difficulties in translating Sauzet's autosegmental insights here, nor does it convey any obvious advantages as far as we can see.

Our use of Direct OT, on the other hand, allows us to bring the exceptional classes of Greek accentuation into the fold without extra machinery: progressives (ἱκέτις 'suppliant'), oxytones (πατήρ 'father'), pre-recessives (πόλεως 'city' (GEN.SG), proclitics (εἰς 'into'), and enclitics (τινες 'some'). Under our analysis, these accentual classes have as desiderata violations of the same constraints required for recessive accentuation. The exceptions fall out as marked approximations to the default case. That is not statable in standard OT as far as we can see, nor in autosegmental phonology. Assuming we have not missed anything, which is a big assumption of course, this would mean our analysis is the first to cover all classes of Greek accentuation in a unified and principled way.

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