

WHEN THE DEFAULT IS EXCEPTIONAL: WORD STRESS IN MODERN GREEK NOUNS

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Greek nouns offer an interesting case of competition between the lexical accent of the stem and accent assigned by some inflectional suffixes (e.g. genitive plural *-ōn*). I show that previous accounts make incorrect predictions for some nouns (e.g. *ANTÍLALOS* ‘echo’, *DAMÁSKINO* ‘plum’). These reflect stress levelling that turns out to be challenging to account for in theoretical terms. I sketch a formal analysis based on the principles of NETWORK MORPHOLOGY (Brown & Hippisley 2012). Key properties of the analysis are that it treats inflectional suffixes and inflectional accent as separate dimensions of exponence and distinguishes between the fact that some suffixes are associated with accentual properties and the form that the accent takes. Finally, I discuss the implications of the data and analysis for the concept of headedness below the level of the word.*

Keywords: Modern Greek, inflectional morphology, stress, paradigm levelling, headedness, defaults, Network Morphology

DEDICATION. I have been very fortunate in my career to have Brian Joseph as my graduate advisor, mentor, friend, and now department colleague (times two). There is no way to put into words how much I have benefited from the advice and guidance that he has so generously offered. But among the many things that Brian has taught me, one is that even the smallest bits of data can be significant, if we look closely enough. (Probably all academia nuts in his acquaintance know that he has a great love of the idiosyncratic example.) So in that spirit, I offer the following paper, which hinges on a single, highly specific (although hardly idiosyncratic) fact about noun inflection in Modern Greek, the significance of which has, to the best of my knowledge, been overlooked until now.

1. INTRODUCTION. Stress in Modern Greek nouns offers interesting insight into the nature of competition between stem accent and inflectional accent. In the language,

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word stress must fall within the final three syllables of the prosodic word.¹ However, within this constraint, there is competition in nouns between stem accent and inflectional accent for realization as word stress.² Noun stems can underlyingly bear accent on either of the final two syllables of the stem or can be ‘postaccenting’, with accent specified as falling on the first syllable following the stem (i.e. on the class marker vowel or inflectional ending). However, three suffixes—genitive plural (GEN PL) *-ōn* [-on], genitive singular (GEN SG) *-ou* [-u], and accusative plural (ACC PL) *-ous* [-us]—also specify accent as part of their underlying representation (henceforth ‘inflectional accent’ or ‘suffix accent’).³ For these, inflectional accent can be either ‘preaccenting’ (falling on the syllable immediately preceding the inflectional suffix, which I will write as, e.g. *‘-ōn*) or ‘accenting’ (falling on the inflectional suffix, e.g. *-ōn*).⁴

Since stem accent and inflectional accent do not necessarily coincide, the question becomes which accent is dominant in the realization of word stress. In cases of conflicts, do we find that inflectional accent surfaces, or that stem accent does? Sometimes stem accent surfaces throughout the paradigm, as in *MANÁVIS* ‘greengrocer’ in Table 1;⁵ we find GEN PL *manávīdōn*, not *manavídōn* or *manavīdōn*. Contrasting with this are words like in Table 2, where inflectional accent surfaces in the genitive plural (TOURISTAS ‘tourist’), in both singular and plural of genitive (PRÓSŌPO ‘face, person’), or in these plus accusative plural (ÁNTHRŌPOS ‘person, man’).

Previous research has framed this competition as a question of HEADEDNESS (e.g. Revithiadou 1998, 1999, Touratzidis & Ralli 1992). Is the stem the head? Or is the inflectional suffix the head? The answer is not clear, with the fundamental problem being that even in the context of GEN PL *-ōn*, GEN SG *-ou*, and ACC PL *-ous*, inflectional accent does not always surface. Of particular interest here are the words in Table 3 on page 324, which have the same set of inflectional endings as PRÓSŌPO and ÁNTHRŌPOS, but with stem accent surfacing throughout the paradigm. (I will sometimes refer to these

¹ The prosodic word includes any postposed clitics. When a noun has antepenultimate lexical stress but is followed by a weak possessive pronoun, primary word stress obligatorily occurs on the final syllable of the noun, (e.g. *o geitonas* ‘the neighbor’, *o geitonás mas* ‘our neighbor’). In this paper I leave aside stress shifts caused by the requirement that primary word stress fall within the three-syllable window.

² I distinguish between underlying representation and surface form. I use ‘stem accent’ and ‘suffix accent’ (or more theory-neutrally, ‘inflectional accent’) to mean the underlying representation of subword prosodic prominence. I use ‘stress’ to refer to the surface realization of this prominence, where ‘stem stress’ means the surfacing of stem accent as primary word stress and ‘inflectional stress’ means the surfacing of suffix accent as primary word stress.

³ There is also a fourth suffix, NOM PL and ACC PL *-eis*, that is preaccenting. I set it aside here for the sake of exposition, and because previous analyses do not consider it. However, I do not see that it presents any significant obstacle to the analysis given below.

⁴ Actually, as we will see below, ACC PL *-ous* is never suffix-accenting. But I leave aside this detail for the moment.

⁵ Transliteration in this paper is according to the ISO 843 system.

‘GREENGROCER’	SINGULAR	PLURAL
NOMINATIVE	manáv-ī-s	manáv-ī-d-es
GENITIVE	manáv-ī	manáv-ī-d-ōn
ACCUSATIVE	manáv-ī	manáv-ī-d-es

TABLE 1: Inflectional paradigm for the noun MANÁVIS ‘greengrocer’
(no inflectional accent surfaces)

‘TOURIST’	SINGULAR	PLURAL			
NOMINATIVE	touríst-a-s	touríst-es			
GENITIVE	touríst-a	touríst-ōn			
ACCUSATIVE	touríst-a	touríst-es			
‘FACE, PERSON’	SINGULAR	PLURAL	‘MAN, PERSON’	SINGULAR	PLURAL
NOMINATIVE	prósōp-o	prósōp-a	NOMINATIVE	ánthrōp-o-s	ánthrōp-oi
GENITIVE	prósōp-ou	prósōp-ōn	GENITIVE	ánthrōp-ou	ánthrōp-ōn
ACCUSATIVE	prósōp-o	prósōp-a	ACCUSATIVE	ánthrōp-o	ánthrōp-ous

TABLE 2: Inflectional paradigms for nouns in which
inflectional accent surfaces (boxed cells)

as having ‘stem-dominant’ stress, as opposed to ‘suffix-dominant’ stress.) Antepenultimate word stress in these examples makes it clear that inflectional accent does not surface, since inflectional accent is never on the antepenultimate syllable. Thus, on the one hand, patterns as in Table 2 suggest that suffixes are the heads of the word, since the accent specified by the suffix overrides stem accent. On the other hand, patterns as in Table 3 (and MANÁVIS in Table 1) suggest the opposite conclusion—that stem accent overrides inflectional accent, even in the context of those same suffixes, and the stem is therefore the head. The nature of the competition between stem accent and inflectional accent is thus complex. In this paper, I examine a small subpart of the total set of accentual patterns, specifically, words of the type in Table 3 and their relation to the type in Table 2. A full account cannot divorce the formal issues from social and stylistic factors of language use.⁶ However, the formal aspects are interesting in their own right and the focus of this paper.

⁶ The two patterns do not exist in a social vacuum. Nouns of the type in Table 3 reflect an ongoing shift towards fixed stress in nouns (Holton et al. 1997:24, Revithiadou 1998:45–46). This, in turn, is connected to recent diglossia in Greek. In the period of official diglossia, starting in 1885 with further official entrenchment after 1911 (Mackridge 2009), the high variety, katharevousa, was a conservative force in the language. Among other things, it promoted maintenance of inflectional stress in nouns (Joseph & Philippaki-Warbuton 1987:253). By contrast, stress levelling was associated both with the low, demotic variety and with uneducatedness (Warbuton 1976:264–65), but was also used by educated elites on the left to index oppositional political stances (Frangoudaki 1992:371). However, the two varieties were not

‘IRON’	SINGULAR	PLURAL	‘WILDCAT’	SINGULAR	PLURAL
NOMINATIVE	síder-o	síder-a	NOMINATIVE	aílour-o-s	aílour-oi
GENITIVE	síder-ou	síder-ōn	GENITIVE	aílour-ou	aílour-ōn
ACCUSATIVE	síder-o	síder-a	ACCUSATIVE	aílour-o	aílour-ous
‘PLUM’	SINGULAR	PLURAL	‘ECHO’	SINGULAR	PLURAL
NOMINATIVE	damáskīn-o	damáskīn-a	NOMINATIVE	antílal-o-s	antílal-oi
GENITIVE	damáskīn-ou	damáskīn-ōn	GENITIVE	antílal-ou	antílal-ōn
ACCUSATIVE	damáskīn-o	damáskīn-a	ACCUSATIVE	antílal-o	antílal-ous

TABLE 3: Inflectional paradigms for nouns showing stem accent throughout the paradigm

At first glance, the pattern in Table 3 represents a run-of-the-mill levelling of word stress within the paradigm. However, it turns out to be surprisingly challenging to account for in theoretical terms. In §2 and §3 I show that previous analyses make incorrect predictions about the stress of these words. In §4 I propose that the pattern in Table 3 represents an instance of a known kind of inflectional distribution, dubbed an EXCEPTIONAL CASE DEFAULT (Brown & Hippiusley 2012, Fraser & Corbett 1997). I argue that an adequate account of regularized stress in Greek nouns requires distinguishing information about inflectional form (‘rule’) from how that information comes to be associated with the word (‘route’), and that the failure to (be able to) separate these dimensions is a primary cause of previous analyses’ wrong predictions. In §5 I argue that inflectional accent and suffixes are separate but intertwined dimensions of exponence. Based on this observation, in §6 I sketch an analysis within the theory of NETWORK MORPHOLOGY that is empirically adequate to the data. I argue that word stress is not dominated solely by either stems or suffixes. Instead, inflectional information is distributed among different parts of the inflectional system, and these operate jointly to produce surface word stress. In §7 I therefore suggest that framing the discussion of Greek noun stress as a question of suffix heads vs. stem heads misses the point. The question is instead about how different sources of information interact to produce the full inflectional (in this case, stress) information of a word form. To the

as distinct in usage as their official separation and opposite associations would suggest, and they influenced each other and intermingled significantly (Alexiou 2001[1982], Hawkins 1979, Kazazis 1993). Stress variation was common even in the diglossic period and since 1976, when demotic became the sole official variety, the trend towards stress levelling seems to have continued apace, if not accelerated. Nonetheless, the influence of katharevousa can still be felt in the language, including in the lexical stock. The result is widespread community-level (and possibly intraspeaker) stress variation for some lexemes. Nonetheless, despite this use of noun stress for social and stylistic meaning-making, whether a noun has inflectional stress or uniformly stem-dominant stress is largely lexically conditioned. The two stress patterns thus coexist within a single grammar. The goal in this paper is to describe the formal aspects of this coexistence.

best of my knowledge, Modern Greek nouns represent the first identified example of an exceptional case default pattern that has to do with competition between stem and suffix. The paper thus contributes a new kind of evidence to the much larger debate about the status of heads in morphology (Selkirk 1982, Spencer 1997, Stump 1997, Williams 1981). In §8 I offer some conclusions.

2. PREVIOUS ACCOUNTS. Since Warburton (1976), Greek noun stress has been analyzed as morphologically conditioned. A range of formal analyses have been offered (Burzio & Tantalou 2007, Malikouti-Drachman & Drachman 1989, Ralli 1988, Revithiadou 1998, 1999, Touratzidis & Ralli 1992). These have largely approached the topic as a question of the dominance of stems versus suffixes, framed in terms of the notion of headedness. Notably, Touratzidis and Ralli (1992), based on Ralli 1988, offer an analysis in which stems are always lexically specified for accent, but suffixes are the head of the word and determine the surface stress properties of the word. Accent specified in the lexical entry for a suffix thus overrides stem accent. Stem accent surfaces only when a suffix is unspecified for accent. By contrast, Revithiadou (1998, 1999) proposes an analysis in which the stem is the head. Stems may be lexically specified for accent, or unspecified underlyingly for accent. Suffix accent surfaces only when a stem is unspecified for accent. She formalizes the account in OPTIMALITY THEORY; the intuition underlying stem headedness is accounted for by ranking faithfulness to the stem input (ROOT FAITH C) over faithfulness to the suffix input (INFLECTSUFFIX FAITH C).

- (1) Implementation of stem headedness in Revithiadou's (1998) analysis
 ROOT FAITH C >> INFLECTSUFFIX FAITH C

Despite their opposite approaches and different theoretical frameworks, these two analyses draw on the revised PERCOLATION PRINCIPLE (Selkirk 1982) in similar ways. In Touratzidis and Ralli's analysis, stem accent surfaces by the percolation principle, according to which inflectional information is inherited from nonheads if the head is unspecified for the property. This is how they account for patterns like *manáv-ī-d-ōn* 'mother-CM-D-GEN.PL' and presumably, also the words in Table 3 above (e.g. *antílal-ōn* 'echo-GEN.PL'). All contain accentually unspecified *-ōn*. In contrast, *tourist-ōn* 'tourist-GEN.PL', *prosōp-ōn* 'face-GEN.PL', and *anthrōp-ōn* 'person-GEN.PL' reflect the dominance of the genitive plural suffix (either *-ōn* or *'-ōn*) and its accentual properties. In Revithiadou's analysis, the same kind of interaction occurs, but the situation is reversed. Here, accent surfaces from non-heads (i.e. suffixes) only when the stem does not bear accent underlyingly. She analyzes *tourist-ōn*, *prosōp-ōn*, and *anthrōp-ōn* as having stems that are underlyingly unspecified for accent, allowing inflectional accent to surface. An important prediction deriving from Revithiadou's analysis is that inflectional accent should surface only in the context of unspecified stem accent.

Revithiadou's stem-dominance approach allows her to posit fewer inflectional suffixes underlyingly. Touratzidis and Ralli must posit three lexical entries for each suffix that is compatible with inflectional accent (e.g. *'-ōn*, *-ōn*, and unaccented *-ōn*). Since suffixes are never underspecified in Revithiadou's analysis, she can posit only

two lexical entries for each suffix ($-\bar{o}n$, $-\acute{o}n$), resulting in greater economy of representation. However, since stems may be underspecified for accent, she needs a mechanism for default stress assignment, which applies in the absence of both stem accent and suffix accent (e.g. in nominative singular). She uses a series of constraints to derive the three-syllable window for word accent and antepenultimate default stress. Together, these ensure that in the context for default word stress, a two-syllable word will surface with the structure $(\acute{\sigma}-\sigma)$, a three-syllable word will surface as $(\acute{\sigma} \sigma)-\sigma$, and a four-syllable word will surface as $\sigma(\acute{\sigma} \sigma)-\sigma$. This is how she derives, for instance, antepenultimate stress in the nominative singular forms *prósōpo* ‘face, person’ and *ánthrōpos* ‘man, person’.

Burzio and Tantalou (2007) represent a third approach. For independent theoretical reasons, their model does not allow underspecified inputs, disallowing the major mechanism used by Revithiadou and Touratzidis and Ralli to regulate competition between stems and suffixes for stress realization. As a result, Burzio and Tantalou reject both the stem as head and the suffix as head, arguing that ‘The notion that headhood controls the accent is thus too crude for stems ... It is also too crude for affixes ...’ (Burzio & Tantalou 2007:1119). Without underspecification as a tool, they must assume that suffixes are sometimes dominant (i.e. head-like), and sometimes recessive (nonheads). Specifically, when inflectional accent surfaces, faithfulness to the accent of the suffix must be ranked above faithfulness to the accent of the stem, as schematized in 2 (derived from Burzio & Tantalou 2007:1098), whereas a more general constraint enforcing faithfulness to the accent of other suffixes must be ranked below faithfulness to the stem. Ranking faithfulness to genitive plural accent in the separate, higher position has the effect of bleeding any intervening constraints (here, FAITH-STEM), which would otherwise be determinative of the form of the word.

- (2) Constraint ranking in Burzio and Tantalou’s (2007) analysis, initial version
 FAITH-AFFIX[GEN PL] >> FAITH-STEM >> FAITH-AFFIX

Instead of positing heads as primitives of the theory, Burzio and Tantalou derive this constraint ordering from ‘representational entailments’. The idea here is that ‘Mental representations of linguistic expressions are sets of entailments. For example, a representation consisting of A and B corresponds to the entailments: $A \rightarrow B$, $B \rightarrow A$ (if A then B; if B then A)’ (1086). In the present context, we can think of A and B as two dimensions of the representation of an inflected form. For example, an entailment $-\bar{o}n \rightarrow \acute{\sigma}$ (based on Burzio & Tantalou 2007:1098), states that for a given lexeme, if the exponent of genitive plural is $-\bar{o}n$, then it is preaccenting. Importantly in their analysis, entailments are not only form based, but also reflect semantic content. So for genitive plural, there are also entailments of the type OBJECT $\rightarrow \acute{\sigma}$ (if the word has the semantics of an object, it is preaccenting) and PLURAL $\rightarrow \acute{\sigma}$ (if the word is plural, it is preaccenting). And so on. The entailments are formalized in OT in terms of faithfulness constraints, with the ranking of a constraint being a function of the number of entailments it represents. Constraints reflecting a greater number of entailments are promoted in the constraint ranking. A correlation between having more semantic content (i.e. being semantically more marked) and morphologically

dominant behavior (i.e. head properties) is thus predicted. Genitive plural is argued to be the most semantically contentful paradigm cell in Greek nouns; this is how Burzio and Tantalou derive the constraint ranking in 2 above, where faithfulness to the accentual properties of the genitive plural is promoted ahead of faithfulness to the stem. Moreover, genitive plural is argued to create an ‘attraction force’ on genitive singular and accusative plural, based on shared semantics, pulling these cells into an even more overlapping/identical set of entailments as genitive plural—including inflectional accent. Remember that GEN SG *-ou* and ACC PL *-ous* are also associated with inflectional accent.

Finally, one last issue that is important to the following discussion has to do with how Burzio and Tantalou account for inflectional accent NOT surfacing in words like *MANÁVIS* ‘greengrocer’, given that *-ōn* in the input must be assumed to bear inflectional accent. Burzio and Tantalou’s answer lies again in representational entailments: class markers (CMs), consisting of theme vowels and/or *-d* [-ð], also project representational entailments, and ‘[w]hen a CM is added, the overall number of components making up the stem is increased, and so is the number of entailments binding each aspect of the representation to the others’ (Burzio & Tantalou 2007:1110). This increase in the number of entailments on the stem raises the ranking of FAITH-STEM in the presence of a class marker—a form of the constraint that Burzio and Tantalou label Faith-Stem+ but I label here as FAITH-STEM[CM] for clarity. We can thus update the constraint ranking for their analysis as in 3.

- (3) Constraint ranking in Burzio and Tantalou’s (2007) analysis, revised version
 FAITH-STEM[CM] >> FAITH-AFFIX[GEN PL] >> FAITH-STEM >> FAITH-AFFIX

Ultimately, Burzio and Tantalou’s analysis produces the basic predictions that (1) genitive plural inflectional accent should surface in word forms where class markers fail to surface; and (2) when genitive plural inflectional accent surfaces, accusative plural and genitive singular should surface with the same accent (accentual syncretism).

Touratzidis and Ralli’s analysis is not fully described in their paper, making it hard to test its predictions. However, as I show in the next section, both Revithiadou’s and Burzio and Tantalou’s predictions turn out to be problematic, and the countervailing data motivate an alternative conceptualization of the problem.

3. THE CRUX OF THE PROBLEM. In Burzio and Tantalou’s model, affix dominance (for *-os*, *-ou*, *-ous*) is generally predicted in the absence of a CM, and stem dominance in the presence of a CM. However, as observed already, there are words that do not follow this basic pattern. Specifically, words of the type illustrated in Table 3 (e.g. *SÍDERO* ‘iron’, *AÍLOUROS* ‘wildcat’) have suffixes that are compatible with inflectional accent and lack a CM, but exhibit stem dominance.

Burzio and Tantalou’s approach to this variability is rooted in foot structure and alignment constraints. Crucially, they claim that the relevant combination of factors—no CM and stem accent that surfaces as stem-dominant, antepenultimate stress throughout the paradigm—is found only in three-syllable words. Four-syllable words with stem accent falling on the antepenultimate syllable and no CM always

exhibit affix dominance. (They appear to have inherited this generalization from Revithiadou (1998, 1999), who makes the same claim.) Note that the focus here is on words with antepenultimate stress because they unambiguously have stem-dominant stress throughout the paradigm, whereas words with penultimate or final stress are ambiguous.

Burzio and Tantalou propose that stem dominance in three-syllable words derives from the conjunctive effects of FAITH-STEM and ALIGN FOOT L. Consider the example of GEN PL *ailour-ōn* ‘wildcat-GEN.PL’. (In Greek orthography <ai> represents phonetic [ɛ] or [e]. So this is a three-syllable word: [éluron].) Both FAITH-STEM and ALIGN FOOT L are individually ranked below FAITH-AFFIX[GEN PL], so the candidate that is faithful to the underlying accent of ‘-ōn, namely *ai(lourōn)*, would normally be the winner at EVAL. However, Burzio and Tantalou propose that when both FAITH-STEM and ALIGN FOOT L are violated, their conjoined effect makes them indeterminately ranked relative to FAITH-AFFIX[GEN PL]. The candidate *ai(lourōn)* represents exactly this condition, since it does not align a foot with the left edge of the word and is not faithful to the accent of the stem: *ailour-*. The actual winning candidate, (*ailourōn*), is faithful to stem accent, but not to the accent of ‘-ōn. Thus, *ai(lourōn)* and (*ailour-ōn*) are equally bad according to these indeterminately ranked constraints. Lower ranked constraints become determinative, and in this case favor *ailourōn*.

Important to Burzio and Tantalou’s account is the role of foot structure in enabling stem-dominant stress in three-syllable words. Foot structure is sensitive to the number of syllables in a word. In a four-syllable word like ASTRÁGALOS ‘ankle’, the winning candidate (*àstra*)(*gálon*), with suffix-dominant stress, does not violate ALIGN FOOT L, unlike in comparable three-syllable words. ‘FAITH-STEM and ALIGN FOOT L are not violated jointly ..., so the conjunction ... will not come into play, allowing FAITH-AFFIX GEN.PL. to fully determine the outcome’ (Burzio & Tantalou 2007:1118). In other words, foot structure entails that in four-syllable words with stem accent on the antepenultimate syllable, inflectional accent should always surface in the absence of a class marker.

Revithiadou’s analysis differs from that of Burzio and Tantalou’s, but she seeks to exclude the same set of four-syllable words. Her approach is also rooted in foot structure. Without going in detail through her analysis, she proposes that the supposedly unattested structures, including (non-default) σ(σ) σ-σ, ‘lack binarity’ (30). She proposes to enforce binarity through an ad hoc constraint HIERARCHICAL ALIGNMENT stating that ‘Every prosodic constituent is aligned with some prosodic constituent that contains it’ (Revithiadou 1998:33). This has the effect of differentiating three-syllable from four-syllable words, enforcing (*ailou*)*rōn* (with stem-dominant stress) over *ai(lourōn)* but (*àstra*)(*gálon*) (with suffix-dominant stress) over *a(strága)lōn*.

The problem is that the basic claim about different accentual behavior in three-syllable vs. four-syllable words is simply empirically wrong. In fact, we have already encountered some of the problematic data, repeated here as Table 4. The four-syllable words DAMÁSKINO and ANTÍLALOS belong to the same declension class as PRÓSÓPO ‘face, person’ and ÁNTHRŌPOS, respectively (repeated as Table 5). Burzio and Tantalou thus

‘PLUM’	SINGULAR	PLURAL	‘ECHO’	SINGULAR	PLURAL
NOMINATIVE	damáskīn- <u>o</u>	damáskīn-a	NOMINATIVE	antílal- <u>o</u> -s	antílal-oi
GENITIVE	damáskīn-ou	damáskīn-ōn	GENITIVE	antílal-ou	antílal-ōn
ACCUSATIVE	damáskīn- <u>o</u>	damáskīn-a	ACCUSATIVE	antílal- <u>o</u>	antílal-ous

TABLE 4: Inflectional paradigms for the nouns *damáskīno* ‘plum’ and *antílalos* ‘echo’. Both surface with lexical accent throughout the paradigm. The class marker is underlined.

‘FACE, PERSON’	SINGULAR	PLURAL	‘MAN, PERSON’	SINGULAR	PLURAL
NOMINATIVE	prósōp- <u>o</u>	prósōp-a	NOMINATIVE	ánthrōp- <u>o</u> -s	ánthrōp-oi
GENITIVE	prosōp-ou	prosōp-ōn	GENITIVE	anthrōp-ou	anthrōp-ōn
ACCUSATIVE	prósōp- <u>o</u>	prósōp-a	ACCUSATIVE	ánthrōp- <u>o</u>	anthrōp-ous

TABLE 5: Paradigm of *ánthrōpos* ‘man, person’

must analyze *DAMÁSKĪNO* ‘plum’ and *ANTÍLALOS* ‘echo’ as deleting the CM in the genitive singular and genitive plural, and in the latter, also in the accusative plural.⁷ Since *ALIGN FOOT L* is not violated by four-syllable words (actually, by any word with an even number of syllables), the conjunction of this constraint with *FAITH-STEM* is not relevant, and *FAITH-AFFIX[GEN PL]* is predicted to always dominate, contrary to fact. *HIERARCHICAL ALIGNMENT* is likewise predicted to exclude such words in Revithiadou’s analysis.

We might ask whether words of the *DAMÁSKĪNO* and *ANTÍLALOS* type are exceptions. If there are few types of this sort, then perhaps they can be dismissed as falling outside of the grammatical system. This idea turns out not to be viable. The online version of the *Lexikó tis koinīs neoellīnikīs* (1998) lists at least 137 four-syllable words in the *os*-class (*ANTÍLALOS*) with antepenultimate stress throughout the paradigm.⁸ In the *o*-class (*DAMÁSKĪNO*) there are at least 289 four-syllable words with antepenultimate stress throughout the paradigm. This compares to 45 and 177 comparable three-syllable words, respectively. Some of the four-syllable words are likely borrowings, for instance *KOÚÁKEROS* ‘Quaker’, but these represent only a very small portion of the words and the same types of words can be found among three-syllable words.

⁷ The spelling might suggest an analysis of genitive singular as CM *-o* and case-number *-u*, but remember that orthographic *-ou* corresponds to a single vowel [-u], and genitive singular and accusative plural must be analyzed as having CM deletion in order to account for the dominance of inflectional accent in words like *ÁNTHRŌPOS*.

⁸ There are an additional handful of words (e.g. *DIÁKOSMOS* ‘décor, decoration’) that have either three or four syllables, depending on the analysis of glide formation. The dictionary also lists fifteen six-syllable words with the same properties; these present the same theoretical challenge as four-syllable words. A similar situation obtains for the *o*-class.

Most of the relevant four-syllable words are compounds, raising the question of whether stress works differently in compounds than in other nouns.⁹ Modern Greek has two kinds of nominal compounds that surface with a single primary word stress (Malikouti-Drachman & Drachman 1989, Nespor & Ralli 1994, 1996). These are differentiated by whether they preserve the lexical accent of the rightmost compound member as in 4a, or have antepenultimate compounding stress, potentially not coinciding with the lexical accent of either compound member, shown in 4b.¹⁰

- (4) a. Preservation of lexical accent of rightmost compound member
 peukodásos ‘pine forest’ <peúko ‘pine’ + dásos ‘forest’
 chartopetséta ‘paper napkin’ < chartí ‘paper’ + petséta ‘napkin’
- b. Antepenultimate compound stress
 vromókairos ‘rotten weather’ < vromo- ‘wretched’ + kairos ‘weather’
 antílogos ‘retort, response’ < anti- ‘against’ + lógos ‘speech’
 nychtolouloudo ‘night flower’ < nýchta ‘night’ + loulouídi ‘flower’
 omorfópaído ‘pretty child’ < ómorfos ‘pretty’ + paídi ‘child’

What is notable here is that compounds of the type in 4b can either have antepenultimate stress throughout the paradigm (stem dominance), or inflectional stress in the relevant paradigm cells (suffix dominance). The examples in 4b are all of the former type. The examples in 5 show the latter type, with inflectional stress showing up in either two or three paradigm cells, depending on the inflection class.¹¹

⁹ It is hard to find words of this type that are neither compounds nor borrowings. Possible candidates are a handful of botanical terms, including *ASFÓDELLOS* ‘daffodil; plant in the asphodelus family’ and *ELLÉVOROS* ‘hellebore’. The latter may have been a compound in Ancient Greek but it does not seem to have a transparent compound structure in Modern Greek (Rexhina Ndoci, p.c.). Both have been borrowed from Greek into other languages. The small number of non-compounds probably reflects that roots tend to be short and so the longer a word is, the more likely it is to be a compound.

¹⁰ Words like *xionánthrōpos* ‘snowman’ < *xióni* ‘snow’ + *ánthrōpos* ‘man’ are ambiguous. This word could be analyzed either as preserving the lexical accent of *ánthrōpos*, or as compound stress on the antepenultimate. However, impressionistically, such examples seem to be rare, perhaps reflecting a tendency of righthand compound members to be bisyllabic.

¹¹ Some words exhibit variation, falling into either stress type. For instance, the *Lexikó tīs koinīs neoellīnikīs* (1998) lists *AMMÓLOFOS* ‘sand dune’ (< *ámmos* ‘sand’ + *lófos* ‘hill’) as having stem-dominant stress throughout, but wiktionary lists it as varying (<https://en.wiktionary.org/wiki/αμμόλοφος>; accessed June 5, 2018). Similarly, *ANTHÓKTPOS* ‘flower garden’ (< *ánthos* ‘flower’ + *kípos* ‘garden’) is listed in the dictionary as having only stem-dominant stress throughout, and in wiktionary as having only the inflectional stress pattern (<https://el.wiktionary.org/wiki/ανθόκηπος>; accessed June 5, 2018). This kind of variation is unsurprising and probably more widespread than is documented.

- (5) a. Compound stress (antepenultimate) + inflectional stress (penultimate) in genitive plural, genitive singular, and accusative plural
 exáðelfos ‘cousin’ < ex- ‘from’ + adelfós ‘brother’
 mellónymfos ‘person about to be married’ < méllon ‘future’ + nýmfi ‘bride’
 íppódromos ‘hippodrome’ < íppos ‘horse’ + drómos ‘road’
- b. Compound stress (antepenultimate) + inflectional stress (penultimate) in genitive plural and genitive singular
 anávathro ‘steps, staircase’ < aná ‘by, per’ + váthro ‘pedestal’
 varómetro ‘barometer’ < város ‘weight’ + métro ‘gauge’
 dafnófylo ‘bay leaf’ < dáfnī ‘bay’ + fýllo ‘leaf’

In short, compounds seem to be as variable in whether they exhibit inflectional stress as noncompound nouns are. Moreover, there is no evidence that I am aware of that foot structure operates according to different principles in compound nouns than in noncompound nouns. In fact, the data suggest the opposite. In the context of the present discussion, compounds thus present the same theoretical issues as noncompounds. We cannot ‘explain away’ counter-examples to the predictions made by Revithiadou (1998, 1999) and Burzio and Tantalou (2007). There is simply no good evidence that the number of syllables in a word, or foot structure, plays a role in whether a word exhibits inflectional stress.

It turns out to be possible to modify both analyses in order to accommodate the data, but not in ways that are particularly appealing or satisfactory on evaluation. The basic version of Revithiadou’s account allows for both three- and four-syllable words with antepenultimate stress throughout the paradigm; she must add extra mechanisms to exclude the four-syllable words. Thus, as far as I can see, her analysis just needs to be modified to remove the HIERARCHICAL ALIGNMENT constraint that is used to exclude these words. This is actually a trivial change to the model. However, Revithiadou’s account exhibits other undesirable qualities, including accidentally homophonous lexical entries for suffixes, as noted earlier. It also fails to capture syncretism on the stress dimension between GEN PL *-ōn*, GEN SG *-ou*, and ACC PL *-ous*, treating stress in these three suffixes as independent even though the suffixes pattern together.

Modifying Burzio and Tantalou’s model to accommodate the data is more challenging, exactly because the basic version of their model excludes both three- and four-syllable words with no CM and antepenultimate stress throughout the paradigm; they must add extra mechanisms to allow for the three-syllable words. Since those mechanisms are based on foot structure, they are not readily extended to four-syllable words (by design, but incorrectly as it turns out). In the absence of evidence that foot structure precludes certain combinations of syllable count and stress type, the most obvious solution within Burzio and Tantalou’s framework would in fact be to add another FAITH-STEM at the top of the constraint ranking, indexed to the *os*-class (ANTÍLALOS) and *o*-class (DAMÁSKĪNO).

- (6) A modification of the constraint ranking of Burzio and Tantalou (2007)
 FAITH-STEM[ANTÍLALOS,DAMÁSKINO], FAITH-STEM[CM] >> FAITH-AFFIX[GEN PL]
 >> FAITH-STEM >> FAITH-AFFIX

Such an approach is seemingly allowed within Burzio and Tantalou's model from a mechanistic perspective, but not from a conceptual one. As discussed above, a core feature of Burzio and Tantalou's approach is that they (try to) derive the relative rankings of faithfulness constraints from representational entailments, and specifically from segmental material and inflectional semantics. Since the classes of ANTÍLALOS and SÍDERO are identical segmentally and in terms of their inflectional semantics to classes in which inflectional accent does surface, there is nothing from which to predict the different accentual properties. The change thus moves the model from one in which constraint ranking has independent motivation to one in which it is stipulative. This cuts to the bone of the theory. It also makes the two versions of FAITH-AFFIX logically independent of each other and the three versions of FAITH-STEM are equally independent. This means that in formal terms, stem-dominant stress in the *os*- and *o*-classes is independent of stem-dominant stress in the Modern Greek nominal system generally—a counterintuitive proposal. It misses the generalization that the stress pattern of ANTÍLALOS, etc. is a regularization relative to the system of noun stress as a whole.

In the remainder of the paper I propose an alternative analysis of stress in Modern Greek nouns, one that takes seriously the idea that stress is an inflectional exponent in its own right, with its own distribution. As we will see, this will allow us to more adequately capture the empirical facts. I begin by connecting the facts of Greek to a known distributional pattern, the EXCEPTIONAL CASE DEFAULT.

4. ANTÍLALOS IS AN EXAMPLE OF THE EXCEPTIONAL CASE DEFAULT. Words like DAMÁSKINO 'plum', ANTÍLALOS 'echo', SÍDERO 'iron', and AÍLOUROS 'wildcat' are examples of a known distributional problem, dubbed the 'exceptional case default' by Fraser and Corbett (1997), who illustrate the notion with Arapesh noun gender and class assignment. Fraser and Corbett observe that the term 'default' is used in multiple senses. It can refer to a morphological formative that appears as the Elsewhere form in the absence of some more specific rule or specification (the 'normal' case). However, the term 'default' can also refer to the morphological formative that appears as a 'last resort' when 'some idiosyncratic feature of a lexical entry gets in the way of normal class assignment' (Fraser & Corbett 1997:44) (the 'exceptional' case). Taking up this distinction between a 'normal case default' and an 'exceptional case default', Brown and Hippisley (2012) show that such a pattern can be observed in various languages. Specifically, we find words with an inflectional pattern that is the default or most productive pattern overall, but which is unexpected in the context of that word's inflection class. For example, Brown and Hippisley observe that in Russian nouns, [-i] (orthographically either *-i* or *-y*) is the general default nominative plural suffix for class I nouns (e.g. *zakón-y* 'law-NOM.PL'). However, for nouns in class I that have ending stress in plural, the normal nominative plural ending is [-a] (e.g. *sneg-á* 'snow-NOM.

PL'). Within this class and stress pattern, however, there is a subclass of words that has [-i] (e.g. *grob-i* 'coffin-NOM.PL'). Thus, *grob-i* exhibits the general default pattern, rather than the *-a* that is expected based on it having ending stress and belonging to the first declension class. Brown and Hippius (2012:90) define the exceptional case default as a situation in which '... the lexeme resorts to a default which is unexpected RELATIVE to the other information associated with it.'

We find the same pattern in the stress system of Modern Greek nouns. In Greek, stem-dominant stress is the default pattern overall. Although the focus here has been on endings that bear inflectional accent, in fact most noun classes in Greek have stem-dominant word stress throughout the paradigm. We can thus construe that word stress reflecting stem accent is the default. As already demonstrated, however, in the *os-* and *o-*classes, inflectional stress normally occurs. However, within these classes, there are subclasses of the type of ANTÍLALOS, etc., that instead have stem-dominant stress throughout. The lack of inflectional stress in these subclasses represents the exceptional case default pattern.

The particular thing that is interesting about exceptional case defaults is that they represent a pattern that is 'irregular' exactly by virtue of having default inflection. This may initially seem counterintuitive, to the extent that default inflectional patterns are, almost by definition, the opposite of the lexical specification that defines irregularity. However, Brown and Hippius (94) argue that exceptional case defaults illustrate that two different dimensions of inflectional information are involved—the inflectional information itself (the 'rule'), and how that information is associated with a lexeme (the 'route'). In the case of Russian, the 'rule' of taking *-i* is the default, but its association with *grobí* must be lexically specified, since this is not the expected pattern for its class. Thus, the 'route' by which GROB comes to be associated with the default *-i* rule is irregular.

Yet most theoretical models conflate these two notions. Most relevantly here, in Optimality Theory, constraints are statements about inflectional form and the ranking of constraints governs how words come to be associated with particular forms. Higher ranked constraints enforce deviations from more general patterns. This is the equivalent of 'route'. Crucially, however, since the constraints themselves cannot (in classical OT) be separated from the order in which they appear, a default constraint ('rule') is inherently one that is low ranked.

The Greek case shows why exceptional case defaults are a challenge. The 'rule' of stem-dominant stress can be analyzed as the default, but its association with words like ANTÍLALOS must be somehow specially accounted for, since this stress pattern is unexpected in the context of its class. Taking the modification of Burzio and Tantalou's analysis as given in 6 above, FAITH-STEM[ANTÍLALOS, DAMÁSKĪNO] would need to be highly ranked for classes like ANTÍLALOS in order to capture that its stem dominance is exceptional in the context of its class (i.e. to capture 'route'). However, once this is done, there is no way to capture that this is the same default pattern as in nouns in general ('rule'). This identity becomes an accident of the grammar.

5. INFLECTIONAL ACCENT AND INFLECTIONAL SUFFIXES HAVE SEPARATE DISTRIBUTIONS. Except for Sims (2006), previous accounts of Greek nominal stress have treated inflectional accent as a subsidiary property of suffixes, bundled together into a single lexical entry. One consequence of this assumption is that all of these works must also assume multiple lexically-stored allomorphs of a given affix—minimally, a preaccenting suffix (e.g. *‘-ōn*) and an accented one (e.g. *-ṓn*). However, this has at least two negative properties: first, it multiplies coincidences of the lexicon, and second, it implicitly posits that the distribution of stress is a function of the distribution of suffixal allomorphs. The latter issue is the one that I focus on here.

	INFLECTIONAL STRESS (SURFACE FORM)		NO INFLECTIONAL STRESS (SURFACE FORM)		
	PREACCENTING SUFFIX	ACCENTING SUFFIX	ACCENTING STEM (STEM PENULT) ¹²	ACCENTING STEM (STEM FINAL)	POST- ACCENTING STEM
gen pl -ōn (various classes)	N = 1075 fýlakas ‘custodian’ sálpigga ‘trumpet’	N = 6167 tourístas ‘tourist’ thálassa ‘sea’ naútīs ‘sailor’		N = 687 manávīs ‘greengrocer’ kanónas ‘scale’	N = 2309 kardiá ‘heart’ psychḗ ‘soul’ nikḗtīs ‘victor’
gen pl -ōn gen sg -ou (o-class)	N = 1293 prósōpo ‘face’ voútyro ‘butter’		N = 1054 sídero ‘iron’ damáskīno ‘plum’	N = 765 peúko ‘pine-tree’	N = 491 vounó ‘mountain’
gen pl -ōn gen sg -ou (i-class)		N = 1412 tragoúdi ‘song’ tsái ‘tea’ paidí ‘child’			
gen pl -ōn gen sg -ou acc pl -ous (os-class)	N = 738 ¹³ ánthrōpos ‘person’ ypókosmos ‘underworld’ egkýklios ‘newsletter’		N = 314 antíalos ‘echo’ ailouros ‘wildcat’	N = 1325 drómos ‘road’ dichotómos ‘bisector’ períplous ‘circumnavi- gation’	N = 1711 ouranós ‘sky’ odós ‘street’

TABLE 6: Counts of inflectional stress patterns

¹² The absence of nouns of this type is related to the prevalence of genitive plural gaps among these nouns; see Sims 2015. (Compare to use of Sims (2006) in fn. 20).

¹³ A subset of these, represented here by *ypókosmos* ‘underworld’, are variable between penultimate inflectional stress and stem-dominant stress throughout the paradigm (N = 273).

A crucial observation is that for the three suffixes that can bear inflectional accent (GEN PL *-ōn*, GEN SG *-ou*, ACC PL *-ous*), the distribution of stress patterns cannot be conflated with the distribution of affixes. Table 6 is based on counts from the online version of the *Lexikó tis koinís neoellīnikís* (1998).¹⁴ It shows that for all classes except the *i*-class represented by TRAGOÚDI ‘song’, etc., both having and not having inflectional stress on the surface is robustly attested.¹⁵ This is not to say that the stress patterns and declension class are unrelated. In fact, whether inflectional accent is pre-accenting or accenting is to some degree a function of class: the *os*-class and *o*-class have only the preaccenting type (or no inflectional stress at all), whereas the *i*-class has only the suffix-accenting type. What kind of inflectional stress a word has is thus tied to its declension class, but not fully: in classes in which the only accent-bearing suffix is GEN PL *-ōn*, either type is possible. But whether it has inflectional stress in the first place is lexeme specific. The basic observation is thus that the assumption that stress is bundled together with affixes into lexical entries does not derive directly from the empirical facts. The distribution instead motivates recognizing that inflectional accents and suffixes each have their own organizational structure within the inflectional system. We need a way to capture such generalizations.

6. SKETCH OF AN ALTERNATIVE ANALYSIS. In this section I sketch an analysis of the inflectional structure of Modern Greek nouns that adapts Brown and colleagues’ (1996) and Brown and Hippiisley’s (2012:71–80) analysis of Russian noun stress. They observe that nominal stress in Russian ‘... can be viewed as an additional paradigmatic layer on top of the affixal morphology’ (Brown & Hippiisley 2012:71). The most common pattern in Russian is stress fixed on the stem throughout the paradigm, but there are also three basic types of inflectional stress and a number of subtypes. While there is a partial relationship between suffix-based inflection classes and these stress patterns, the two dimensions are to some degree cross-cutting in their distribution,

¹⁴ All words listed as nouns were drawn from the online version of the dictionary. The counts in Table 6 exclude nouns not assigned to inflection classes in the dictionary, or which lack a genitive plural form. Nouns with a theme vowel and/or stem extension in the genitive plural (e.g. *-e-ōn*, *-a-d-ōn*) are also not listed since, as noted by Burzio and Tantalou (2007), these rarely exhibit inflectional stress. The exception to this generalization consists of nouns with stem extension *-t* (e.g. *ÓNOMA* ‘name’ N = 2400), which virtually always have preaccenting (penultimate) inflectional stress in the genitive plural. There is also a small subset of nouns with the *-d* stem extension that have penultimate stress throughout the plural (e.g. *KÁLFAS* ‘apprentice’; N=30). Note that words with penultimate or final stem accent are ambiguous: they could have inflectional accent that happens to occur on the same syllable as stem accent.

¹⁵ *PAIDÍ* ‘child’ is listed in Table 6 as having inflectional accent and stem accent that coincide—a postaccenting stem and accenting inflectional suffix. This reflects the fact that within this declension class, inflectional accent always surfaces on the final syllable in nouns with nonfinal stem accent (i.e. when unambiguous). The assumption that inflectional accent surfaces also in nouns with final stress throughout, like *PAIDÍ*, allows for a unified analysis of the stress properties of the class.

with a single suffix-based class being associated with more than one stress pattern. In all of these respects, Russian and Modern Greek nouns are parallel.

Brown and Hippisley (2012) frame their analysis within Network Morphology, a formal, inferential-realizational model of morphology that conceptualizes morphological structure as a lexical network, or more accurately, as a series of connected inheritance hierarchies that together specify the realization of word forms. Morphological information is distributed among nodes within these networks. Information specified at a given node is inherited by default by lower nodes (this is a HIERARCHY RELATION). Orthogonal inheritance is also possible. In this case, the node specifies the node from which inheritance should take place, for some set of properties (this is a NETWORK RELATION). Hierarchy relations and network relations define the network structure of the morphological system by connecting nodes within and across the hierarchies. While inflectional patterns for new words can be generated from this morphological information, the theory is not transformational, but rather a set of declarative statements about the morphological structure and relatedness of words in the lexicon.

We can employ the inheritance mechanisms of Network Morphology to develop an analysis of Greek nouns. To review, we need our analysis to capture three fundamental generalizations about Greek nouns.¹⁶

- a) Only three inflectional suffixes are compatible with inflectional accent: GEN PL *-ōn*, GEN SG *-ou*, and ACC PL *-ous*.
- b) Inflectional accent type is related to declension class. Inflectional accent for the *o*-class (e.g. ΠΡΟΣΩΠΟ) and *os*-class (e.g. ΑΝΘΡΩΠΟΣ) is always the preaccenting type, but for the *i*-class (e.g. ΤΡΑΓΟΥΔΙ) is always the accenting type, despite the fact that these three classes share some endings (e.g. all have GEN SG *-ou*). In classes in which the only accent-bearing suffix is GEN PL *-ōn*, either type is possible.
- c) With the exception of the *i*-class, declension classes with nouns in which inflectional accent surfaces also have nouns in which inflectional accent does not surface (i.e. with stem-dominant stress throughout the paradigm). Within these classes, whether a noun has inflectional stress is lexeme specific.

The first generalization indicates that in Greek nouns, inflectional accent is a property of particular suffixes. The second indicates that inflectional accent is a property of particular declension classes. The third indicates that inflectional accent is a property of particular lexemes. This might initially seem contradictory, but as we will see, a network inheritance approach allows us to combine inflectional information at each

¹⁶ Actually, we can make a fourth generalization: Whatever the stress pattern of the genitive plural *-ōn* is, this will also be the stress pattern of the genitive singular and accusative plural, to the extent that the suffixes for these cases are *-ou* and *-ous*, respectively. In other words, there is syncretism on the stress dimension. This fact is not the focus of the present paper, but the analysis proposed below does, in fact, capture this generalization.

of these levels of representation in order to produce a full description of the competition between stem accent and inflectional accent.

6.1. ACCENTUAL HIERARCHY. The distributions in Table 6 above suggest that inflectional accent has its own morphological organization. Figure 1 defines a partial inflectional accent hierarchy, showing the parts that are relevant for noun stress.¹⁷ Information that is broadly relevant is specified high in the hierarchy, while information that is specific to particular accentual classes is specified at successively lower nodes. At the root (ACCENT) node, the empty path '<>' is associated with no accent—this indicates that the default pattern for all words in Modern Greek is for inflectional accent to be undefined. Individual nouns may inherit this information directly, in which case stem accent surfaces. Information also flows down the hierarchy, unless overridden by more specific information. At the daughter node NOUN_ACCENT, the statement <> == ACCENT indicates that by default, information is inherited from the ACCENT node. However, in the genitive singular and accusative plural this default inheritance is overridden. Genitive singular accent is specified as being the same as genitive plural accent (whatever that turns out to be), and accusative plural accent is specified as being the same as genitive singular accent.¹⁸ These are thus referrals in the sense of Zwicky (1985). At the lowest level in the hierarchy, genitive plural

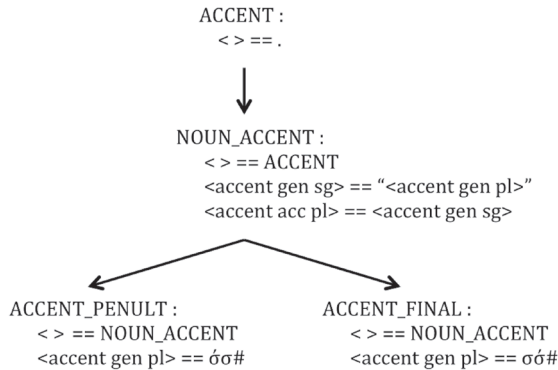


FIGURE 1: Inflectional accent hierarchy

¹⁷ The accent node is defined separately from the NOUN_ACCENT node, because adjectives and verbs show different stress patterns than nouns. Adjectives always have stress dictated by the stem. In other words, inflectional accent is always undefined for adjectives. Verbs exhibit inflectional stress in past tense but it works differently than in nouns. Here I just note that a node for verb accent would be needed as a daughter of accent and a sister to NOUN_ACCENT. The hierarchy in Figure 1 is thus only partial. Working out the details is left for the future.

¹⁸ Another possibility is to specify that ACC PL accent is the same as GEN PL accent, rather than GEN SG. As far as I can see, this choice has no empirical consequences. I have chosen to specify a 'chain' of referrals to reinforce the fact that ACC PL *-ous* entails GEN SG *-ou*: any noun with the former also has the latter. There are thus no situations in which ACC PL is syncretic on the stress dimension with GEN PL to the exclusion of GEN SG.

accent is specified as being either penultimate (i.e. preaccenting) or word-final (i.e. accenting); the referrals are inherited by default. The hierarchy thus captures both the relatedness of the different accentual patterns, and also the relative degree of defaultness of the patterns, with undefined inflectional accent as the overall default.¹⁹

6.2. DECLENSIONAL HIERARCHY. Turning now to how the accentual hierarchy interacts with declension class information, Figure 2 on the following page shows a portion of the declensional hierarchy.²⁰ As with accent, declensional information that is shared across noun classes is specified at high nodes in the hierarchy, information that is specific to particular classes is specified low in the hierarchy, and information flows down the hierarchy by default but can be overridden. For example, the three accent-bearing suffixes differ in their distributions. GEN PL *-ōn* is the (at least partial) realization of genitive plural for all nouns. The corresponding rule is therefore specified high in the declensional hierarchy, at the NOUN_DECL node. By contrast, GEN SG *-ou* occurs in only a subset of classes, and ACC PL *-ous* has an even more specific distribution; it is found only in the *os*-class represented by *ÁNTHRŌPOS*. Accordingly, the rule for *-ou* realization is listed at an intermediary node (N_1) and the rule for *-ous* is listed at the bottom of the hierarchy (N_1_1_1). Nodes N_2_2 (e.g. *THÁLASSA* ‘sea’) and N_2_1 stand for groups of classes and further information would need to be specified at these and further subnodes in the hierarchy. However, these parts of the lexicon never exhibit inflectional stress. Figure 2 is meant to specify all of the information required to account for the stress patterns of nouns and to give the flavor of what a full analysis of noun inflection would look like.

The declensional hierarchy in Figure 2 encodes three important aspects of the analysis. First, at the top node, $\langle \text{mor gen pl} \rangle == \langle \text{stem pl} \rangle \bar{o}n \langle \text{accent gen pl} \rangle$ specifies that the morphological form of the genitive plural evaluates as the plural stem, the suffix *-ōn*, and genitive plural accent. Note that it does not specify a particular accentual pattern for genitive plural, only that information from the accentual hierarchy is relevant to evaluation of the genitive plural. This is how the analysis captures that the genitive plural suffix is associated with inflectional accent, while allowing the particular form of the realized accent to vary. In other words, it captures generalization (a) above. As we will see below, the evaluation of “ $\langle \text{accent gen pl} \rangle$ ” depends on both the

¹⁹ This is the same conceptual approach as in Sims (2006). The present analysis differs in some respects, however. Most notably, Sims (2006) builds the different surface patterns of stress syncretism (which cells are syncretic) directly into the stress hierarchy. Here, I instead posit that differences across the lexicon in which cells are syncretic is an indirect consequence of the suffixal patterns of classes. The present analysis thus derives some facts of the distribution of syncretism from the implicative relations between suffixes and accent patterns, rather than specifying the distribution directly.

²⁰ Actually, in a full analysis that included adjectival declension, we would probably want to specify some information differently. Adjectives inflect via suffixes that are shared with nouns, but with a somewhat different distribution. This problem is left for the future but it does not seem to threaten the present analysis.

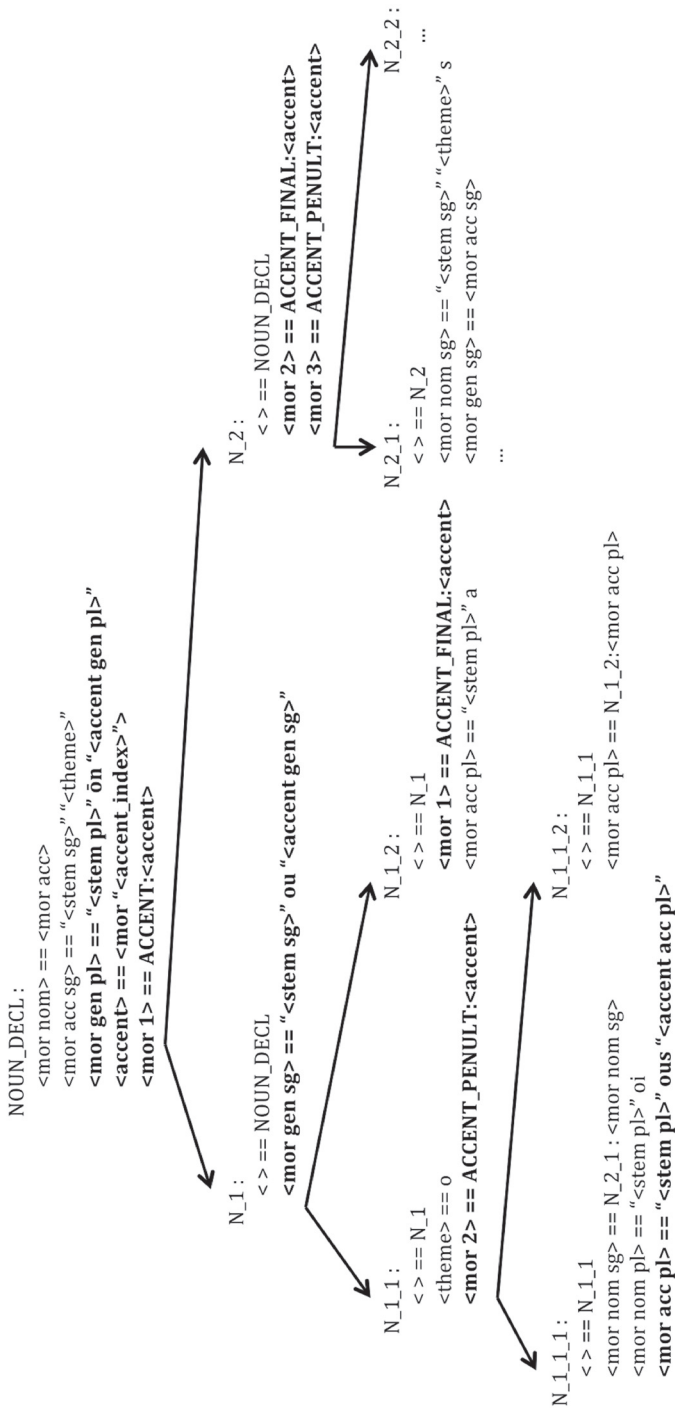


FIGURE 2: A partial declension class hierarchy

declension class and the lexeme. The same applies to the rules for genitive singular and accusative plural given at nodes N_1 and N_1_1_1, respectively.

Second, nodes in the declensional hierarchy specify inheritance from nodes in the accentual hierarchy. For example, the rule <mor 1> == ACCENT:<accent>, listed at the root node NOUN_DECL, states that for lexemes bearing accent index 1 (described below), accent information is inherited from the ACCENT node in the accentual hierarchy. As noted above, a noun that ultimately inherits this information will have stem-dominant stress throughout the paradigm. Accentual patterns that are specific to individual declension classes, or groups of classes, are listed at lower nodes. For example the rule <mor 2> == ACCENT_PENULT:<accent> at node N_1_1 states that accentual information is inherited from the ACCENT_PENULT node in the accentual hierarchy. Importantly, this rule is specific to the classes of PRÓSŌPO and ÁNTHRŌPOS; remember that when inflectional accent surfaces in these classes, it is always the preaccenting type. The specification of accent inheritance rules at different nodes in the declensional hierarchy thus accounts for generalization (b) above. (Since the rule for ACC PL *-ous* is listed low in the hierarchy, at a daughter of N_1_1, it also accounts for the fact that *-ous* is never accented, unlike *-ón* and *-oú*.)

Third, default inheritance of the rule <mor 1> == ACCENT:<accent> by lower nodes accounts for the fact that in all but one class, stem-dominant stress throughout the paradigm is possible, alongside class-specific patterns of inflectional accent. This partly captures generalization (c) above, by associating multiple accentual patterns with the same class through default inheritance. (It does not specify which pattern applies to which nouns, but this is specified at the level of the lexeme, discussed next.) Observe that at N_1_2, this information is overridden by the rule <mor 1> == ACCENT_FINAL:<accent> because the class of TRAGOÚDI ‘song’ is exceptional in having only final inflectional stress, never stem-dominant stress for accent-bearing suffixes.

6.3. LEXICAL ENTRIES. Lexemes have an ‘accent index’ as part of their lexical entries. This is interpreted in terms of the lexeme’s declension class. For our example words, the morphological information in 7 would be part of their respective lexical entries.

- (7) a. **ÁNTHRŌPOS:**
 <root> == ánthrōp
 <declension_class> == N_1_1_2:<mor>
 <accent_index> == 2
- b. **PRÓSŌPO:**
 <root> == prósōp
 <declension_class> == N_1_1_2:<mor>
 <accent_index> == 2
- c. **ANTÍLALOS:**
 <root> == antílal
 <declension_class> == N_1_1_1:<mor>
 <accent_index> == 1

- (7) d. SÍDERO:
 <root> == síder
 <declension_class> == N_1_1_2:<mor>
 <accent_index> == 1
- e.²¹ MĪTÉRA:
 <root> == mitér
 <declension_class> == N_2_2:<mor>
 <accent_index> == 1
- f. TOURÍSTAS:
 <root> == tourist
 <declension_class> == N_2_1:<mor>
 <accent_index> == 2
- g. TRAGOŪDI:
 <root> == tragoúd
 <declension_class> == N_1_2:<mor>
 <accent_index> == 1

6.4. AN EXAMPLE. We can see how these different aspects of inflectional information produce inflected forms by tracing an example through the network. Let us say that we want to produce a genitive plural form of the lexeme *ÁNTHRŌPOS*. This noun's lexical entry in 7a specifies that it belongs to the declension class whose information *s* at node *N_1_1_1* in the declensional hierarchy. The noun inherits morphological information from this node. In technical terms, the righthand side of the rule for <declension_class> states that the noun inherits a rule from *N_1_1_1* that matches the path <mor>, extended by the morphosyntactic properties being realized. So, if the question is one of the GEN PL form, the noun inherits inflectional information from the designated node that is the most specific path that <mor gen pl> is an extension of. In this particular case, the applicable rule would ultimately be the one in 8.

- (8) <mor gen pl> == "<stem pl>" òn "<accent gen pl>"

This rule is inherited by *N_1_1_1* from the *NOUN_DECL* node, since it is not overridden at any intervening nodes. The genitive plural form is thus specified to be the plural stem, the suffix *-òn*, and the relevant genitive plural accent. Here I ignore how the plural stem is evaluated; it turns out to be the same as the root. The information "<accent gen pl>" is evaluated in terms of the most specific rule that this path is an extension of (with the left-hand side of rules being what is relevant). This turns out to be the rule in 9, which is likewise inherited by *N_1_1_1* by default.

- (9) <accent> == <mor "<accent_index>">

The noun *ÁNTHRŌPOS* has an accent index of 2. The rule in 9 thus evaluates as <mor 2 gen pl> (the rule is extended by the morphosyntactic properties being realized, since they were part of "<accent gen pl>"). In the evaluation of this path, the rule in 10 applies.

²¹ MĪTÉRA = 'mother'

(10) <mor 2> == ACCENT_PENULT:<accent>

This, in turn leads to inheritance of the most specific rule that <accent gen pl> is an extension of, from the node ACCENT_PENULT, given in 11.

(11) <accent gen pl> == $\acute{\sigma}\sigma\#$

Information distributed in different areas of the network (lexical entry for $\acute{\text{A}}\text{N}\text{T}\text{H}\text{R}\text{O}\text{P}\text{O}\text{S}$, declensional hierarchy, and accentual hierarchy) thus leads, eventually, to the genitive plural form of $\acute{\text{A}}\text{N}\text{T}\text{H}\text{R}\text{O}\text{P}\text{O}\text{S}$ being evaluated as *anthrṓpōn*, with inflectional stress on the penultimate syllable. (The reader can verify that for e.g. GEN SG *-ou*, the rules in 9 and 10 would apply in the same manner, but would ultimately lead to inheritance of a referral from GEN SG to GEN PL. There would thus be one extra evaluative step between 10 and 11; the extra step enforces systematic syncretism on the stress dimension between genitive singular and genitive plural.)

6.5. DIFFERENT PARTS OF THE NETWORK WORK IN TANDEM TO PRODUCE WORD STRESS. In the analysis proposed here, inflectional information is distributed among locations in the network and different parts of the network function jointly to produce word stress. In this section I highlight some important aspects of how this works, including in producing the exceptional case default pattern.

We can see the interplay of declension class and lexical specification by examining the other lexical entries in 7. The class of $\text{P}\text{R}\text{O}\text{S}\text{O}\text{P}\text{O}$ (represented by node N_{1_1}) overlaps with but is partly distinct from that of $\acute{\text{A}}\text{N}\text{T}\text{H}\text{R}\text{O}\text{P}\text{O}\text{S}$ (represented by node $\text{N}_{1_1_1}$); the relatedness of the two classes is represented by the fact that the latter node is a subset of the former. And since they have an accent index of 2, and the relevant rule in 10 is given at a node shared by both classes, they are ultimately evaluated as having the same inflectional stress pattern, despite being partly distinct declension classes. In essence, they belong to the same accent class. Conversely, however, $\text{A}\text{N}\text{T}\acute{\text{I}}\text{L}\text{A}\text{L}\text{O}\text{S}$ has an accent index of 1. It thus inherits all of the same suffixal information as $\acute{\text{A}}\text{N}\text{T}\text{H}\text{R}\text{O}\text{P}\text{O}\text{S}$, but inflectional accent ultimately evaluates as undefined, leading to stem-dominant stress throughout the paradigm. Accent index, as part of an individual lexeme's lexical entry, thus captures the lexeme-specific nature of word stress—generalization (c) above.

At the same time, accent index is not in a direct relationship to inflectional stress: it is interpreted through declension class. For example, $\text{T}\text{O}\text{U}\text{R}\text{I}\text{S}\text{T}\text{A}\text{S}$ has the same accent index as $\text{A}\text{N}\text{T}\acute{\text{I}}\text{L}\text{A}\text{L}\text{O}\text{S}$, but it does not have the same inflectional stress pattern. This is because <mor 2> is defined differently for different declension classes (compare N_{1_1} and N_{2}). Also, the class of $\text{T}\text{R}\text{A}\text{G}\text{O}\acute{\text{U}}\text{D}\text{I}$, represented by node N_{1_2} , overrides the value of <mor 1>. Thus, evaluation of its accent index of 1 does not lead to stem-dominant stress but instead produces inflectional stress on the final syllable. In fact, the override precludes the possibility of stem-dominant stress in this class. Accent index and declension class thus function together.

Similarly, suffixes and accentual patterns interact to produce the full morphological pattern of a noun. Notice that $\text{P}\text{R}\text{O}\text{S}\text{O}\text{P}\text{O}$ ultimately inherits accent information from the ACCENT_PENULT node in the accentual hierarchy. This node inherits the two

referrals from its parent node. Yet *PRÓSŌPO* only exhibits inflectional stress in the genitive singular and genitive plural, not in the accusative plural. This is because the rule for ACC PL suffix *-a* does not specify accent as part of the realization of accusative plural. The ACC PL = GEN SG rule of referral from the accentual hierarchy is thus never ‘called’ as part of the evaluation of the accusative plural suffix *-a*. The same principle applies to 11d,f. One nice feature of the separation of accentual and declensional information is thus that it allows for a maximally simple description of the accentual system, with the realization of accent constrained by information in the declensional hierarchy.

Also notice that genitive plural stress is evaluated in ALL classes, since in all classes this cell is realized via the rule of *-ōn* suffixation given at NOUN_DECL. This is no less true in words of the type of *MANÁVIS* ‘greengrocer’ (Table 1), which has stem stress throughout the paradigm, than in words like *TOURÍSTAS* ‘tourist’ (Table 2), which has final-syllable inflectional stress in genitive plural. However, since *MANÁVIS* ultimately inherits from the top node in the accentual hierarchy, genitive plural stress for this word evaluates as undefined. In the context of undefined inflectional accent, stem accent dominates. The present analysis has this in common with Touratzidis and Ralli (1992). However, remember that Touratzidis and Ralli’s analysis also requires positing three distinct and coincidentally similar underlying forms of the genitive plural: preaccenting *’-ōn*, accented *-ṓn*, and underspecified *-ōn* (and similar duplication for the other accent-bearing suffixes). The analysis proposed here requires no such assumption—only one form of the genitive plural suffix is needed. By separating information about suffixal exponence from that of accent exponence, it is possible to capture the idea that accent is always RELEVANT to the suffix *-ōn*, without specifying the particular form inflectional stress takes. By distributing these aspects of morphological information to different parts of the inflectional network, the analysis avoids the coincidences of the lexicon that are negative consequences of previous analyses.

Finally, and most importantly, the present analysis is able to capture the exceptional case default pattern in an intuitive way by capitalizing on the availability of network relations. While *ÁNTHRŌPOS* and *PRÓSŌPO* inherit the accentual patterns that are the default for their classes, *ANTÍLALOS* and *SÍDERO* instead have accent indices that result in undefined genitive plural accent, and thus stem-dominant stress throughout the paradigm. Crucially, *ANTÍLALOS* and *SÍDERO* are irregular in the fact that they override the default pattern for the class. However, the override in fact leads to the OVERALL DEFAULT stress pattern for nouns. Thus, the ‘route’ by which these words inherit undefined inflectional accent is exceptional and lexically specified as such, but the inherited rule itself is not. In their discussion of exceptional case defaults, Brown and Hippisley (2012) emphasize exactly this need to distinguish how inflectional information comes to be associated with a lexeme (‘route’) from the inflectional information itself (‘rule’). It is the failure to be able to separate these two issues that is ultimately the cause of problems in Burzio and Tantalou’s analysis in particular.

7. RETURNING TO THE QUESTION OF HEADEDNESS. As discussed in §2, previous work on word stress in Modern Greek nouns has tended to frame the issue as one of headedness, with some analyses positing that the suffix is the head (Touratzidis & Ralli 1992), others positing that the stem is the head (Revithiadou 1998, 1999), and yet others treating neither as uniformly the head (Burzio & Tantalou 2007). These reflect a notion of head corresponding to the definition offered by Anderson (1992:310–11):

The basic idea is that the head of a word should be that one of its constituent parts that determines its properties. Properties of the head should be inherited by (or ‘percolate to’) the word as a whole, while the properties of non-heads are not inherited.

The frame of reference for Anderson’s quote consists of approaches in which inflectional affixes are treated as functional heads resulting from syntactic or postsyntactic head movement. This conceptualization and concomitant claims about hierarchical word-internal structure are the subject of an old but unresolved debate in morphological theory, with arguments both for functional heads below the level of the word (Embick & Noyer 2001, Julien 2002, Lieber 1992, Selkirk 1982, Williams 1981), and against them (Anderson 1992, Spencer 1997, Stump 1997), with some intermediary positions (e.g. di Sciullo and Williams’s (1987) concept of ‘relativized head’). While previous analyses of Greek word stress have not necessarily engaged with all of the theoretical assumptions that are baked into the notion of functional heads, nonetheless the nature of the competition between stem accent and inflectional accent has raised questions about how prosodic properties are inherited by the word as a whole. We can likewise ask how the present analysis bears of the question of heads in morphological structure.

The present analysis can, in some respects, be interpreted as a suffixal head analysis. Specifically, accents that are part of the lexical representations of the suffixes GEN PL *-ōn*, GEN SG *-ou*, and ACC PL *-ous* uniformly override stem accent. In fact, in the present analysis, for inflected forms with these suffixes, surface word stress is analyzed as ALWAYS being a result of evaluation of inflectional accent. Stem accent surfaces only when inflectional accent evaluates as undefined for a given noun. This is conceptually similar to the way that Touratzidis and Ralli use underspecification of suffix accent to moderate competition between stems and suffixal heads.

In other respects, however, the present analysis cannot be straightforwardly interpreted in terms of the concept ‘head of a word’ at all. In particular, the exceptional case default distribution—stem-dominant stress in words like ANTILALOS and DAMÁSKINO—is revealing here. To the best of my knowledge, Greek noun stress represents the first example of an exceptional case default distribution that has to do with competition between stems and suffixes, and thus the first that bears on questions of headedness. And the thing to observe here is that a traditional notion of ‘head of a word’ conflates two aspects of inflectional information. As Anderson’s definition reflects, the head of the word is that constituent that both determines what the properties of the word are and is also the source for inheritance. My argument in this paper is that for words like ANTILALOS and DAMÁSKINO, these two dimensions need to be

pulled apart. The relevant suffixes determine what the properties of the word are—they specify that the word is realized via inflectional accent. However, the evaluation of the inflectional accent leads in the relevant case to inheritance (and surfacing) of the STEM accent. The stem is thus the source of inheritance.

The exceptional case default distribution of word stress thus highlights that the notion ‘head of a word’ is incoherent. Suffixes and stems each have some of the properties that we expect of heads, and it is only in combination that the realization of word stress is fully determined. Within Network Morphology this is a normal result of the distribution of inflectional information among different nodes in the network, but it means that we cannot identify either suffixes or stems as fully the heads of Greek nouns. With this paper I hope to have made a modest contribution to this much larger debate about headedness in morphology by offering a new line of argument about the way that competition between stems and suffixes is regulated.

8. CONCLUSIONS. In summary, in this paper I have shown that an analysis based on the principles of Network Morphology is able to capture Modern Greek noun stress patterns in a way that is both empirically adequate and avoids the major coincidences of the lexicon/grammar that are negative aspects of previous analyses. Of particular interest were exceptional case defaults—words with a stem-dominant stress pattern that is exceptional in the context of its class, but reflects the default for nouns as a whole. Examples include ANTÍLALOS ‘echo’, AÍLOUROS ‘wildcat’, DAMÁSKĪNO ‘plum, and SÍDERO ‘iron’. These pose problems for previous analyses, including Revithiadou (1998, 1999) and especially Burzio and Tantalou (2007). I have argued that the problem for these analyses stems fundamentally from two issues: first, an assumption that inflectional accent is a property of suffixes, and second, an inability to separate information about inflectional form from the way that rules/constraints interact.

I proposed an analysis that separates inflectional accent and declension class into separate but interacting domains on exponence. In the analysis, three suffixes (*-ōn*, *-ou*, *-ous*) are specified as occurring with inflectional accent, but crucially, the particular realized pattern is evaluated in the context of individual lexemes, and can be inherited from different nodes in the accent hierarchy. In addition to capturing the fact that various stress patterns can (and frequently do) occur with the same suffix, this also allowed for a natural analysis of the exceptional case default pattern.

One goal of this paper was to illustrate how seemingly straightforward issues can pose significant theoretical challenges. In this paper I have attempted to tease out one such issue—stress levelling—and show how it can offer unique insight into the nature of the competition between stem accent and inflectional accent in morphological realization. Inasmuch as this is an issue of headedness, the analysis has suggested that with regard to the question ‘is the stem the head or is the suffix the head?’, the answer is ‘both and neither’. Neither stems nor suffixes uniquely control word stress. Instead, different aspects of inflectional structure work in tandem. The present analysis reaffirms that even data that seem straightforward can shed new light on theoretical issues.

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