

WEIGHT POLARITY IN ANCIENT GREEK AND OTHER LANGUAGES*

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Abstract

This paper addresses cases of weight alternation occurring at morpheme boundaries, commonly referred to as ‘weight polarity’ and focuses on data from Hausa and Ancient Greek. The analysis presented explains such alternations by means of OCP constraints that ban consecutive syllables of identical weight. The account naturally extends to a host of other phenomena, many of which are totally oblivious to morphology, e.g. iambic/trochaic lengthening, shortening and reduplication. Consequently, rather than requiring any special treatment, ‘weight polarity’ does not constitute a separate phenomenon, but is merely a term with descriptive value. The similarity between other cases of polarity (tonal & featural) and analogous cases that are purely phonologically-driven is also explored, suggesting that polarity on the whole may not exist as an independent phenomenon.

1. Introduction

Morpho-phonological polarity refers to the phenomenon whereby morphological contrast is realized by changing the value of a binary opposition into the respective opposite (Trommer 2007). For instance, in Luo the genitive singular is formed by reversing the value of the [voice] feature of the final stem consonant in the nominative singular, e.g. Nom.Sg. [bat] ~ Gen.Sg [bad] ‘arm’, [kidi] ~ Gen. Sg. [kit] ‘stone’. Such polarity however is not restricted to featural cases. Prosodic polarity also occurs in the guise of tonal and weight polarity. The present paper focuses on the latter case drawing attention on relevant Ancient Greek and Hausa data (§2) and builds an analysis that accounts for them (§3). However, it is shown that the analysis can also explain other, somewhat different data (§4) offering an account which argues that weight polarity (§5) - and possibly polarity in general - is not really an independent phenomenon, but merely a response to OCP constraints that militate against strings of syllables with identical weight, tonal or featural specifications (§6). Section 7 offers some concluding remarks.

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2. Weight Polarity data

Weight polarity indicates the alternation of light and heavy syllables at morpheme boundaries. A good example is the so-called (Rhythmic) Weight Polarity of Hausa (Newman 1997), whereby the verbalizing suffix alternates between [-ataa] ~ [-aata]. The former is chosen when the preceding stem syllable is heavy cf. (1a), and the latter when the preceding stem syllable is light (1b). The resulting word is then either Lt-Hv-Lt or Hv-Lt-Hv (where Hv = Heavy; Lt = Light).

(1) Hausa Rhythmic Weight Polarity

	<u>noun</u>	<u>verb</u>		<u>gloss</u>
a.	t ^s òoroo	t ^s ooràtaa	Hv-Lt-Hv	‘fear - frighten’
	kàunaa	kàunatàa	Hv-Lt-Hv	‘love - love s.o’
b.	fujii	fùjaatà	Lt-Hv-Lt	‘anger - be angry’

A similar pattern arises in the comparative and superlative of Ancient Greek adjectives in stems ending in e/o. These are normally formed through the attachment of the suffixes -teros (comp.) and -tatos (super.) after the stem (Chantraine 1998) whose last vowel appears either long [o:] or short [o] depending on the weight of the previous syllable¹. The vowel /o/ before the suffix comes up as [o] if the preceding syllable is heavy (2a), i.e. CVV or CVC, but as [o:] if the preceding syllable is a light CV (2b).

(2) Ancient Greek comparative – superlative (Kühner & Blass 1992, Zuntz 1994)

(a) heavy syllable + short [o] (orthographic o)

	<u>Comparative</u>	<u>Superlative</u>	<u>Gloss</u>
πτωχός	πτωχότερος	πτωχότατος	‘poor’
θερμός	θερμότερος	θερμότατος	‘warm’
γενναίος	γενναιότερος	γενναιότατος	‘brave’
κουφός	κουφότερος	κουφότατος	‘deaf’

(b) light syllable + long [o:] (orthographic ω)

	<u>Comparative</u>	<u>Superlative</u>	<u>Gloss</u>
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¹ Note that these adjectives have two stems: a) e/o for the masc./neut. and b) e/a: for the feminine [or with the derivational suffix -ja(:) as in γλυκός - γλυκεῖα; Chantraine 1998: 133-134]. The comp/super. formation uses stem (a) as its base.

νέος	νεώτερος	νεώτατος	‘new, young’
σοφός	σοφώτερος	σοφώτατος	‘wise’
καθαρός	καθαρώτερος	καθαρώτατος	‘clean’

3. The analysis

It is evident from the data above that a weight alternation occurs at morpheme boundaries so that we either get Lt Hv or Hv Lt syllables, but not Lt Lt or Hv Hv. This is obviously reminiscent of an OCP effect (Leben 1973, McCarthy 1986, Yip 1988 and many others) which is usually taken to be a featural or tonal condition, rather than one which also applies to prosodic structure at the level of foot or mora. However, standard accounts of stress (involving foot structure) already invoke some version of the OCP, as e.g. *CLASH and *LAPSE (Marina Nespou, p.c.) which ban sequences of stressed and unstressed syllables respectively illustrate. The present account proposes to further extend these constraints with respect to moraic structure in the shape of *CLASH- μ and *LAPSE- μ , which for convenience will be dubbed *OCP-moraic constraints*.

- (3) *CLASH- μ : Adjacent heavy syllables are prohibited, i.e. *Hv Hv
 *LAPSE- μ : Adjacent light syllables are prohibited, i.e. *Lt Lt

This formulation stems from Selkirk’s (1984) *Principle of Rhythmic Alternation* which invokes alternation of strong and weak positions as a strategy to avoid sequences like **Str Str* and **Wk Wk* (on strong and weak positions, also see Beckman 1999 and Smith 2005). Given that stressed syllables are strong positions, while unstressed are weak, then **Str Str* in stress corresponds to *CLASH and **Wk Wk* to *LAPSE. In weight, if we assume that a Hv syllable is a strong position and a Lt syllable, a weak one, then *CLASH- μ and *LAPSE- μ fall out naturally.

3.1. Hausa

To understand how the constraints in (3) work, consider that data from Hausa (1) and the verbalizing suffix which alternates between [-ataa] ~ [-aata]. The assumption made is that the UR for this suffix is actually /-a^μta^μM/, where μ is a pre-linked mora and *M* is a floating one, i.e. unlinked in the input. The introduction of floating moras is not novel; they have been employed in other previous work, e.g. Brown (2003) for Southern Sierra Miwok or van Oostendorp (2005) for Limburg Dutch. The idea of a floating mora is that it exists in the input and somehow needs to be realised (provided *FLOAT- μ , which bans floating moras, is high-ranked), but its exact position is not fixed; instead it is regulated by other constraints in the language. The OCP-moraic along with alignment constraints are assigned with that role, as shown below (numbers next to moras serve

to map input to output moras). Let us first consider the case where the verbal stem ends in a heavy syllable, thus taking the [-ataa] suffix, e.g. /t^soor-ata^M/ → [t^soor-ataa]².

(4) /t^so^{μ1}r-a^{μ2}ta^{μM}/ → [t^so^{μ1}r-a^{μ2}ta^{μM}]

	t ^s o ^{μ1} μ ² r-a ^{μ3} ta ^{μ4} M ⁵	*CLASH-μ, *LAPSE-μ	ALIGN-R (μ, PrWd)
☞	a. t ^s o ^{μ1} μ ² r-a ^{μ3} ta ^{μ4} μ ⁵		
	b. t ^s o ^{μ1} μ ² r-a ^{μ3} μ ⁵ ta ^{μ4}	*! (*CLASH-μ)	*
	c. t ^s o ^{μ1} μ ² r-a ^{μ3} ta ^{μ4}	*! (*LAPSE-μ)	

The latter two candidates violate the high-ranked OCP-moraic constraints by either producing a sequence of light (4c), cf. [t^sorata]) or of heavy syllables (4b), cf. [t^soorataa]). The winner (4a) on the other hand avoids such a violation due to its Hv-Lt-Hv alternation pattern. At the same time, it observes the constraint ALIGN-R (μ, PrWd) (cf. Crowhurst 2004 on mora alignment, albeit of a different type) which asks that the floating mora appears word-finally³.

(5) /fu^μʃ-a^μta^{μM}/ → [fu^μʃa^{μM}ta^μ]

	fu ^{μ1} ʃ-a ^{μ2} ta ^{μ3} M ⁴	*CLASH-μ, *LAPSE-μ	ALIGN-R (μ, PrWd)
☞	a. fu ^{μ1} ʃ-a ^{μ2} μ ⁴ ta ^{μ3}		*
	b. fu ^{μ1} ʃ-a ^{μ2} ta ^{μ3} μ ⁴	*! (*LAPSE-μ)	
	c. fu ^{μ1} ʃ-a ^{μ2} ta ^{μ3}	*! (*LAPSE-μ)	

The second case involves a verbal stem ending in a CV syllable that consequently takes the [-aata] alternant, e.g. /fuʃ-ata^M/ → [fuʃ-aata]. *LAPSE-μ is again violated in the latter two candidates, as they include consecutive strings of light syllables. The winner (5a) escapes such violation through the alternating weight pattern. However, it violates ALIGN-R (μ, PrWd) by misaligning the floating mora by one syllable from the right edge of the word. This violation though is unimportant given the low ranking of the constraint and ensures the satisfaction of the higher-ranked constraints.

² In Hausa, I assume that *FLOAT-μ is high-ranked, so that floating moras receive an overt surface representation. Deletion of the floating mora would also violate MAX-μ, since it is no longer preserved in the output. The winning candidates avoid both violations, by realising the mora in alternating positions depending on the weight pattern each time. Note that candidates (4c) and (5c) also violate MAX-μ, but are already ruled out by *LAPSE-μ which is independently required, as (5b) illustrates.

³ Actually, ALIGN-R (μ, PrWd) [and ALIGN-R (μ, Stem) later] evaluates all other moras too. The fact that other moras are not shifted towards the end of the word can be expressed by dominant *FLOP-μ, which asks that underlying mora links are not moved around. Floating moras are unlinked and therefore vacuously satisfy *FLOP-μ. In the tableaux, I evaluate ALIGN-R with respect to the floating mora only.

3.2. Ancient Greek

A similar analysis is viable in Ancient Greek too. Again, we need to assume that the comparative and superlative morphemes not only contain segmental material but also moraic content, some of which is unlinked, i.e. floating, as in $/-^M \text{teros}/$ for the comparative and $/-^M \text{tatos}/$ for the superlative. Adjectives like $\pi\tau\omega\chi\acute{o}\varsigma$ choose the short version of the stem vowel in the comparative and superlative, as in e.g. $/\text{ptooch-o-}^M\text{teros}/ \rightarrow [\text{ptooch-o}^\mu \text{teros}]$.

(6) $/\text{pto}^{\mu 1 \mu 2} \text{ch-o}^\mu \text{-}^M \text{teros}/ \rightarrow [\text{pto}^{\mu 1 \mu 2} \text{ch-o}^{\mu M} \text{teros}]$

	$\text{pto}^{\mu 1 \mu 2} \text{ch-o}^{\mu 3 - M 4} \text{-teros}$	MAX- μ	ALIGN-R (μ , Stem)	*CLASH- μ	*FLOAT- μ
☞ a.	$\text{pto}^{\mu 1 \mu 2} \text{ch-o}^{\mu 3 M 4} \text{-teros}$				*
b.	$\text{pto}^{\mu 1 \mu 2} \text{ch-o}^{\mu 3 \mu 4} \text{-teros}$			*!	
c.	$\text{pto}^{\mu 1 \mu 2} \text{ch-o}^{\mu 3} \text{-teros}$	*!			
d.	$\text{pto}^{\mu 1 \mu 2 \mu 4} \text{ch-o}^{\mu 3} \text{-teros}$		*!		

The floating mora cannot be realised at any position; it has to be as close as possible to the right edge of the stem. For this reason, (6d) loses, since it presents unnecessary misalignment. But actually, the winner itself (6a) does not realise the floating mora that comes with the suffix, because in doing so, it would violate *CLASH- μ (6b) bringing two heavy syllables next to each other, i.e. $*[\text{ptooch-oo-teros}]$. Instead, it remains afloat, only violating low-ranked *FLOAT- μ (6a). An alternative would of course be to delete the floating mora altogether causing a MAX- μ violation (6c). I claim however that this is a highly-ranked constraint, and hence incurs a highly severe violation.

For (6c) to win, MAX- μ would need to be low-ranked implying that *CLASH- $\mu \gg$ MAX- μ should hold. Empirically though this would entail that whenever a sequence of heavy syllables occurred, then the language would be forced to resolve the *CLASH- μ violation by deleting a mora from a heavy syllable. But this is not the case: the language *does* allow sequences of heavy (and for that matter light) syllables aside the comparative and superlative paradigms, as indicated by words like $\pi\omicron\iota\eta\tau\acute{\eta}\varsigma$ ‘poet-NOM-SG’, $\chi\epsilon\iota\mu\acute{\omega}\nu$ ‘winter-NOM-SG’ or $\pi\acute{\epsilon}\lambda\epsilon\kappa\upsilon$ ‘axe-VOC-SING’ and $\lambda\acute{\epsilon}\gamma\epsilon$ ‘speak-2SG-IMPERATIVE’ that contain heavy or light syllables throughout respectively. It is only in the latter cases that the weight alternation occurs. The ranking MAX- $\mu \gg$ *CLASH- μ ensures retention of underlying moras. Floating moras - although underlying - can remain afloat, thus satisfying MAX- μ , at the expense of *FLOAT- μ which is in their case relevant. In other words, in languages like Hausa and Ancient Greek, weight alternations of the polarity type can only be found when there is a floating mora, which is being introduced by particular morphemes,

but not generally in the language. There, high-ranked MAX- μ and DEP- μ ⁴ (not shown in tableau) protect pre-linked moras from the weight alternation process.

In adjectives like *soph-os* that contain a light syllable right before the stem vowel -o- *CLASH- μ is no longer relevant. The floating mora can be fully realised producing a long *o* (7a) and win over (7b) due to the lack of a *FLOAT- μ violation⁵.

(7) /so^{μ1}ph-o^{μ2}-^{M3}teros/ → [so^{μ1}ph-o^{μ1μ}-teros]

	so ^{μ1} ph-o ^{μ2} - ^{M3} teros	MAX- μ	ALIGN-R (μ , Stem)	*CLASH- μ	*FLOAT- μ
☞	a. so ^{μ1} ph-o ^{μ2μ3} -teros				
	b. so ^{μ1} ph-o ^{μ2M3} -teros				*
	c. so ^{μ1} ph-o ^{μ2} -teros	*!			
	d. so ^{μ1μ3} ph-o ^{μ2} -teros		*!		

4. Justifying OCP-moraic constraints

So far our attention was drawn on weight polarity, the analysis of which was based on the interaction of two new constraints *CLASH- μ and *LAPSE- μ that ban sequences of heavy and light syllables respectively. Introduction of new constraints in OT however should not be taken lightly, but should be justified. One way to do that is to show that the relevant constraints apply in other cases too rather than ad hoc on a particular situation. This is exactly the purpose of this section; I will show that we can find independent support for *CLASH- μ and *LAPSE- μ elsewhere in phonology, an indication that both are well-grounded. The relevant data come from: a) iambic lengthening, b) trochaic lengthening, c) shortening and d) reduplication, each of which is presented in the following subsections.

4.1. Iambic lengthening

According to the Iambic Iambic/Trochaic Law (Hayes 1995: 80), elements contrasting in intensity naturally form groupings with initial prominence, whereas elements contrasting in duration naturally form groupings with final prominence. This then means that trochaic feet are preferably (' μ μ) and iambic feet are preferably (μ ' $\mu\mu$). Iambic Lengthening, that is, the change of a light syllable in the foot-head to a heavy one, e.g. (CV ' CV) → (CV ' CVV) or (CV ' CVC), is seen

⁴ High-ranked DEP- μ militates against insertion of moras and could then perhaps block a process like compensatory lengthening that Ancient Greek also presents, e.g. /pan-s/ → [pa:s], which presumably would require a low-ranked DEP- μ . This is not quite true though, since DEP- μ would only need to be low-ranked with respect to the constraint - let's call it C for current purposes - that forces deletion of certain segments yielding: C >> DEP- μ >> *CLASH- μ . This is consistent with the present facts too. For a somewhat different view of compensatory lengthening, see Topintzi (2006).

⁵ Note that (7c) also violates *LAPSE- μ , but is already ruled out by MAX- μ .

as a result of this preference. Many Cariban, Algonquian and Eskimo languages (among others; see Hayes 1995: 83 for a more comprehensive list) present iambic lengthening, which according to Hayes, is always related to stress placement.

This is however not necessary as data from Kashaya (Buckley 2000) illustrate. In Kashaya, there is only one stress, normally on the first syllable. Although there are no secondary stresses, there are alternating Lt-Hv syllables, which Buckley analyses as a product of Iambic Lengthening, e.g. kel-mul-ad-uced-u → (kél)(mula:)(duce:)(du) ‘keep peering around’. The interesting point here is that iambic footing is constructed in the absence of stress contra Hayes. Although this pattern of lengthening is consistent with iambic footing (despite the absence of stress, which however remains an issue), one could simply view this as a requirement for alternating syllables in terms of weight. *LAPSE-μ is active and forces every other syllable to emerge as heavy. The Kashaya data are particularly informative since they show that apart from weight polarity, other processes too, like iambic lengthening can happen independently of stress, a conclusion that is consistent with the facts from Hausa and Ancient Greek, where stress did not regulate the weight alternation process. Moreover, Kashaya also illustrates that instances of weight alternation are not unique to the morpho-phonological so-called weight polarity process, but may arise in the phonology of a language as a whole.

4.2. Trochaic lengthening

*LAPSE-μ also seems responsible for another process, namely trochaic lengthening, which given Hayes’ (1995) Iambic/Trochaic Lengthening is unexpected, since syllables in trochees do not contrast in terms of duration, thus a lengthening of the type (' CV CV) → (' CVV CV) or (' CVC CV) is considered merely phonetic. Revithiadou (2004) nonetheless finds that genuine *phonological* trochaic lengthening occurs too in varied languages, including Swedish (lengthening of CV to CVV in head of trochee under stress) and Cypriot Greek (same but with gemination). Interestingly, one of her examples comes from Ancient Greek epic poetry, where a syllable with a short vowel can become heavy through gemination of the following consonant so that the dactylic (– ∪ ∪) hexameter pattern is satisfied

(8) – ∪ ∪ | – ∪ ∪

possí d hypòl liparóisin... ‘under his fat feet’ Homer, β4 [Revithiadou: 40]

* – ∪ ∪ | ∪ ∪ ∪

*possí d hypò liparóisin

This change of Lt Lt → Hv Lt, although unexpected in Hayes’ system, is attested as Revithiadou shows. Crucially it is also entirely anticipated in a system like the present one that relates weight alternation to OCP constraints like *LAPSE-μ which work independently of the footing assumed. Both iambic and *trochaic* lengthening fall out naturally as a result of highly-ranked *LAPSE-μ.

4.3. Shortening

If lengthening (at least some instances of it) can be seen as a result of *LAPSE-μ, then there should be some instances of shortening that can be seen as a result of *CLASH-μ. Data from Latin confirm this prediction (9).

(9) *Shortening in Latin* (Itô and Mester 1996 and references therein)

a.	mamma	‘breast’	mamilla	‘breast-DIM.’	* mammilla
	saccus	‘sack’	sacellus	‘sack-DIM’	* sacellus
b.	canna	‘reed’	canaalis	‘channel’	* cannaalis
	pollen	‘fine flour’	polenta	‘barley-groats’	* pollenta

A well-known law in Latin is the so-called *Lex Mamilla*, that is, the degemination that occurs when another geminate follows. This is the case illustrated in (9a). The alternating consonants are in bold. When the diminutive suffix *-illa* – which contains a geminate – attaches to a root that also contains a geminate, e.g. *mamm-a*, then the first geminate degeminates producing *mamilla* instead of the anticipated **mammilla*. An identical process also occurs in other cases too, when a geminate is followed by a simple heavy syllable CVV or CVC (9b). Both instances can be viewed as an avoidance of consecutive heavy syllables due to *CLASH-μ. The issue is resolved by shortening the first syllable.

4.4. Reduplication

Another phenomenon that can be analysed by means of the OCP moraic constraints is the “quantitative complementarity” (McCarthy & Prince 1986) that appears in Ponapean, where the durative in verbs is marked via prefixing reduplication. The reduplicated material (indicated

underlined) is either σ^H or σ^{HH} depending on the weight of the base. If the base is light, then the reduplicant is heavy (10a). If the base is heavy, then the reduplicant is light (10b)⁶.

(10) Ponapean reduplication [data from McCarthy and Prince 1986]

a.	pa	<u>paa</u> -pa	‘weave’
	mi	<u>mii</u> -mi	‘exist’
b.	pou	<u>po</u> -pou	‘cold’
	duup	<u>du</u> -duup	‘dive’

One could claim that the input for the reduplicant is $/\sigma^H/$ and indeed will appear with a CV copy of the base if the latter is heavy, but with a CVV copy if the base is light as a response to *LAPSE- μ . Alternatively, the input for the reduplicant could be $/\sigma^{HH}/$, which will show up bimoraic if the base is light, but monomoraic if the base is heavy, this time due to *CLASH- μ . In short, the weight alternation between the base and the reduplicant can be triggered by either *LAPSE- μ or *CLASH- μ depending on the input assumed.

5. Is there really weight polarity?

In the preceding sections, apparent instances of weight polarity have been examined and it has been argued that these are subject to the constraints *CLASH- μ and *LAPSE- μ whose application however extends to numerous other phenomena (§4). In fact, instances like Kashaya lengthening, illustrate that weight alternations may also occur in languages exclusively for phonological reasons, without any involvement of morphology, as the term weight polarity suggests. Consequently, it is reasonable to claim that there is no such thing as real weight polarity, i.e. in the sense of being an independent phenomenon. Instead, it is more appropriate to talk about weight alternations and merely use the term weight polarity for convenience in order to refer to weight alternations conditioned by morphology.

However, bear in mind that so far we have examined weight alternation cases where the quantity of the syllable is determined by that of the previous syllable. But there are also a few other cases of alleged weight polarity in which syllable weight alternates between members of the morphological paradigm. Thus in Diegueño, the final syllable in the plural is heavy if the corresponding one in the singular is light and vice versa. I argue that these cases too do not need

⁶ Things are more complicated in polysyllabic stems; I set this aside as it is orthogonal to the argument presented here. See McCarthy & Prince (1986) for further discussion.

any machinery other than the present one to be accounted for. Their weight alternation is merely an epiphenomenon of other constraint interaction.

(11) Diegueño [data from Langdon 1970, Walker 1970]

	<u>Singular</u>	<u>Plural</u>	
a.	muʔ	mu:ʔ	‘gather’
	xi:nuʔp	xi:nu:ʔp	‘be cute’
b.	sa:w	saw	‘eat’
	ki:xa:r	ki:xarc	‘complain’

The idea here is that the input for the plural contains a floating mora, which can normally dock onto a short V at the right edge of the word turning it into long $[mu^{\mu^1} \uparrow^{M2} \rightarrow mu^{\mu^1\mu^2} \uparrow]$. If the V is already long, cf. *sa:w*, no such thing can occur, because it would create an undesirable trimoraic syllable (due to high-ranked $*3\mu$), however the floating mora *has* to be realised by overwriting the underlying moras of the V as in $[sa^{\mu^1\mu^2} w^{M3} \rightarrow sa^{\mu^3} w]$. A sketchy analysis follows.

(12) $/mu^{\mu^1} \uparrow^{M2}/ \rightarrow [mu^{\mu^1\mu^2} \uparrow]$ ‘gather-PL’

	$mu^{\mu^1} \uparrow^{M2}$	*FLOAT- μ	* μ -CODA	DEP-SEG	* 3μ	MAX-FL- μ	P-DEP- μ
a.	$mu^{\mu^1} \uparrow^{M2}$	*!					
b.	$mu^{\mu^1\mu^2}$		*!				
c.	$mu^{\mu^1} \uparrow e^{\mu^2}$			*!			
d.	$mu^{\mu^1} \uparrow$					*!	
e.	$mu^{\mu^1\mu^2} \uparrow$						*

Floating moras are not allowed to be retained in Diegueño, so (12a) is eliminated. There is also no evidence that codas are moraic, so $*\mu$ /CODA rules out (12b). Segment insertion is no option either, therefore (12c) must be ruled out by DEP-SEG. Deletion of the floating mora as implied by (12d) does not take place, hence MAX-FL- μ must be relatively high-ranked. The only candidate that can survive then is (12e) which presents lengthening. This also incurs a violation, that of P-DEP- μ , a constraint that has been introduced in previous work by Bermudez-Otero (2001), Campos-Astorkiza (2004) and Topintzi (2006). P-DEP- μ (13) is a specific version of DEP- μ (for its justification and need, see the works above), which only evaluates non-positional μ -

licensors, i.e. moras that dominate a segment along with another mora or prosodic unit (as opposed to positional μ -licensors, i.e. moras that uniquely dominate a segment).

(13) P-DEP- μ : A non-positional μ -licensor mora in the output has a correspondent in the input

In (12e), both moras are non-positional μ -licensors (as they do not uniquely dominate a segment), but only μ_2 violates P-DEP- μ . Topintzi (2006) argues that the input mora correspondent must also be linked to the same segment as it does in the output. This is observed by μ_1 , but not by μ_2 , where the link to the V does not exist⁷. However, the constraint is too low-ranked to affect the outcome in this instance. Its effects are nonetheless visible in the next case, that is, where the final heavy syllable in the singular becomes light in the plural (11b).

(14) /sa ^{$\mu_1\mu_2$} w^{-M}/ → [sa ^{μ} w] ‘eat-PL’

	sa ^{$\mu_1\mu_2$} w ^{-M3}	*FLOAT- μ	* μ -CODA	DEP-SEG	*3 μ	MAX-FL- μ	P-DEP- μ
a.	sa ^{$\mu_1\mu_2$} w ^{μ_3}		*!		*		
b.	sa ^{$\mu_1\mu_2$} w ^{eμ_3}			*!			
c.	sa ^{$\mu_1\mu_2\mu_3$} w				*!		*
d.	sa ^{$\mu_1\mu_2$} w					*!	
e.	sa ^{$\mu_1\mu_3$} w						*!
f.	sa ^{μ_3} w						

Candidates (14a, b, d) are ruled out for the same reasons as above. Candidate (c) loses because it is superheavy, a property banned by *3 μ . This leaves us with candidates (e) and (f). The former realises the floating mora (and deletes μ_2), but in so doing violates P-DEP- μ (cf. discussion of (12e)). (14f), which has overwritten both pre-linked moras and realises the floating one, thus satisfying MAX-FL- μ (which presumably dominates MAX- μ), is the winner. Note that the mora in (14f) is also positionally- μ -licensed since it is only a mora that *uniquely* dominates the segment [u] and thus escapes evaluation of P-DEP- μ . (14e) on the other hand is non-positionally- μ -licensed and thus subject to P-DEP- μ , which gets violated since μ_3 has no corresponding link in the input.

6. Evaluation of the proposal

While the present proposal has focused on cases of alleged weight-polarity, there also exist instances of other types of polarity, namely featural and tonal polarity. For instance, in DhoLuo

⁷ Note that although both lengthened and long Vs are non-positionally μ -licensed, it is only the former that violate P-DEP- μ (see Topintzi 2006 for discussion)

the value for [voice] in the last stem consonant is reversed in the Genitive and the Plural (de Lacy 2002, Trommer 2006, Wolf 2007).

(15) (Dho)Luo (data from Okoth-Okombo 1982)

Nom.Sg.	bat	kidi
Nom. Pl.	bede	kite
Gen. Sg.	bad	kit
Gen.Pl.	bede	kite
	‘arm’	‘stone’

Tonal polarity is similar. For example, in Mundurukú inalienable nouns are formed through the addition of the suffix *-ta* (Picanço 2005), whose tone – H or L – emerges as the opposite of the preceding syllable (H=acute accent, L=no accent).

(16) Mundurukú tones

kasop- tá	‘star’	(L)LH
məsək- ta	‘manioc’	(L)HL

For tonal polarity, it is clear that OCP-based analyses are possible too, as Suzuki (1998) and Picanço (2005) explain. Cases like featural polarity are less common and in fact according to some researchers less likely to present real instances of polarity. For example, although the (Dho)Luo data are often considered a classic example of featural polarity, Trommer (2006) has recently shown that facts are more complex, so that more general restrictions for plural formation have to be invoked, that however do not require any special treatment specific to polarity.

These conclusions are in line with the present account, which as explained, claims that what has been dubbed weight polarity is actually a mere instantiation of a more general phenomenon in morphophonology, namely, that of weight alternation triggered by OCP-like weight constraints. Other accounts of polarity, however, stress the role of morphology and render it a crucial component of the analysis itself.

One account along these lines is Anti-Faithfulness (Alderete 1999), a model that works on the OO-domain, requiring that a derived word becomes dissimilar from its base in some respect (defined by the Anti-Faith constraint). This idea can naturally extend to polarity cases, so that one form is chosen as the base and then the other presents the opposite value on a particular

dimension (feature, tone, weight). But often it is unclear to determine what the base is. For instance, what is the base of the Gen. Pl. in DhoLuo? Is it the Gen.Sg. or the Nom.Pl.? Furthermore, as Wolf (2007) observes, in the Optimal Paradigms model of McCarthy (2005), all members of a paradigm stand in correspondence with one another. In this view of paradigms, Anti-Faithfulness also fails to predict the right results. To see why, consider again the Ancient Greek data. If the Positive, Comparative and Superlative forms of adjectives are all part of the same paradigm, then application of an Anti-Faithfulness constraint that induces weight reversal incorrectly generates [πτωχός - πτωχότερος - πτωχότατος] rather than the attested [πτωχός - πτωχότερος - πτωχότατος], because Anti-Faithfulness over the *whole* paradigm is better satisfied in the former case rather than the latter.

This problem is avoided in the ‘No Vacuous Docking’ polarity approach of Wolf (2007), whereby the input contains the stem plus the morpheme that induces polarity. This morpheme takes the shape of two allomorphs, each of which contains a floating feature with opposing values for that feature. Which of the two allomorphs will surface is determined by the constraint NOVACUOUSDOCKING, which asks that the selected floating feature has the opposite value of the value of the original stem feature. This analysis presents certain attractive features and has inspired the present account too (with respect to floating moras). It can also not extend to polarity of the type illustrated in Ancient Greek, since NOVACUOUSDOCKING cannot access neighbouring material, as is required in Ancient Greek where the length of /-o-/ is determined by the weight of the previous syllable. This is a good result, because as argued, the weight alternation in Ancient Greek is really due to *CLASH-μ. However, Wolf’s analysis treats cases like Diegueño (cf. §5) as polarity ones, a position we have argued to be incorrect.

More generally, morphologically-oriented accounts like the ones briefly mentioned above fail to make an important connection between certain morpho-phonological and purely phonological processes. On the one hand, we find cases of so-called polarity in Ancient Greek (weight), Mundurukú (tone) or even Dahl’s Law in Kirundi (featural)⁸ which in the present, *phonological*, account are treated as instances of dissimilation. On the other hand, we find similar processes in instances where no morphology is involved, such as the prohibition against C_iVC_iVC_j roots in Arabic, blocking of syncope in Afar if it were to create a C_iC_i sequence, ban on LLH or HHL tones in morphologically simplex words in Mende (McCarthy 1986) and lengthening in Kashaya

⁸ Dahl’s Law refers to the alternations in prefix voicing based on the voicing of the base, e.g. [ku-guma] ‘to stay’, but [gu-seka] ‘to laugh. While it is not reported as a polarity case in the literature, I include it here for reasons of symmetry with featural polarity of the type found in DhoLuo. The pattern it presents is completely analogous to the other alleged cases of weight and tonal polarity and hence could validly be considered a case of polarity at first sight.

to avoid Lt Lt sequences (Buckley 2000). The driving force behind the feature/weight change process here can clearly be merely phonological, i.e. some version of the OCP. This similarity in patterns comes out as totally accidental in the morphologically-oriented accounts, but falls out naturally in the current phonological explanation.

7. Conclusion

This paper has examined the phenomenon of weight polarity focusing on Ancient Greek and Hausa and has argued that weight polarity does not independently exist as a separate phenomenon, because reversals of the polarity type not only emerge in cases of morpho-phonology, but also more generally in the phonology of languages. The term ‘weight polarity’ then only seems to have descriptive value, as it is not a separate phenomenon. This view can possibly be generalised in the light of other work that tries to dismiss other cases of polarity too, cf. Trommer’s (2006) account of featural polarity in DhoLuo. It becomes then obvious that morphological accounts of the reversals discussed in the paper are insufficient, whereas a phonological account manages to unify the morpho-phonological patterns with the purely phonological ones⁹.

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⁹ It is possible that more accurate accounts of each of the polarity, i.e. morpho-phonological, cases, requires the use of an OCP variant that is morphological. Alternatively, the effects of morphology could be attained through input considerations or even alignment effects. I leave this issue open for further research.

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