On the non-polarity of Kipsigis across-the-board polarity*

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1. Introduction

In Kipsigis (Southern Nilotic, Nilo-Saharan), a language which displays a marked nominative case system (Toweett (1979); Kouneli (2019)), nominative (NOM) case realization is signalled via tonal alternations. In nouns, this is instantiated as the superimposition of a LH_0L tonal melody, resulting in a predictable pattern for a given syllable count (1a-b). In nominal modifiers, however, nominative marking uses a different kind of tonal alternation: tonal superimposition still obtains, but in a way that crucially depends on the modifier's tonal shape in the oblique (OBL) case (1c-1d; 1e-1f).

(1) *Kipsigis nouns and nominal modifiers* (Kouneli and Nie 2021:e118, e131, e133)

	OBL		NOM		Gloss
a.	sʊ̀gàrʊ́ːk	L.L.H	sʊ̀gárʊ̀ːk	L.H.L	'sugar'
b.	mágásɛ́ːt	H.H.H	màgásɛ̀ːt	L.H.L	'skin'
c.	-(n)ì/-(n)ì	L	-(n)í/-(n)í	H	PROX.SG
d.	-(n)áːn	H	-(n)àːn	L	MED.SG
e.	ʧéptʃépèːn	H.H.L	ʧèptʃèpéːn	L.L.H	'swift.PL'
f.	ɲígîːsèːn	H.HL.L	ɲìgíːséːn	L.H.H	'heavy.PL'

Kouneli and Nie (2021) take this pattern to represet the only known instance of morphophonological polarity with respect to tone (1c-f): H(igh)-toned syllables in NOM correspond to L(ow)-toned syllables in OBL, whereas L-toned NOM syllables have a H-toned OBL counterpart[1]. They further argue that it challenges two traditionally held assumptions about the morphology-phonology interface: ① that the realization of morphosyntactic fea-

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[1]As evidenced in (1f), falling (HL) tones are also found in OBL forms, but map to NOM H's and not to the expected rising (LH) contour. This is consistent with a phonologically general property of the language, whereby the creation of LH's systematically results in a H surfacing (Creider 1982).

tures is strictly item-based (Bye and Svenonius 2012); and ② that polarity is not a primitive operation of the grammar (Bye (2006); Trommer (2008)).

In this paper I present an analysis of the nominal modifier data that is both item-based and polarity-free. More concretely, I argue that the characterization of the Kipsigis pattern as polar is incorrect once a broader set of facts is considered. Indeed, modifiers possess a third tonal shape, the predicative (PRED; section 2.1), which allows for an alternative morphological analysis of the case forms, and non-polar correspondences are attested in morphological case inflection (section 2.2). I then propose an implementation of the *illusion* of polarity in Kipsigis as the interaction between the shape and linearization properties of the exponents involved in morphological case realization (section 3).

2. The issue with morphophonological polarity

The term "morphophonological polarity" is contentious under both its descriptive and formal interpretations. First, its empirical basis is debatable, as patterns presented as canonical examples of the phenomenon, like voicing mutation in Dholuo (Western Nilotic, Nilo-Saharan; Okoth-Okombo (1982), a.o.), often fail to meet the minimal empirical standard for polarity upon closer inspection of the data (de Lacy 2012). Second, its theoretical status is unclear, as it appears to be possible to generate seemingly polar patterns without dedicated mechanisms in a variety of frameworks (de Lacy 2020). Given this state of affairs, more economical models of the morphology-phonology interface might want to dispense with this concept altogether.

Kouneli and Nie (2021) contend that the Kipsigis pattern not only forces the opposite conclusion, i.e. that polarity is a morphophonological primitive, but also receives a more straightforward account if process-based morphological realization is available more generally. This is crucially warranted by the fact that the alternation targets every syllable it can in a context-specific way. First, this would require the theoretical tools typically invoked to derive paradigmatic effects, like anti-faithfulness constraints (Alderete 2001), to enforce *maximal* instead of *minimal* contrast, effectively turning them into dedicated mechanisms (see for instance Sande (to appear), who additionally presents the Kipsigis pattern as a prototypical case of process-based morphology). Second, this would require item-based accounts to be augmented with the means to generate morphologically conditioned phonological mappings, rendering them equivalent to process-based accounts.

In the remainder of this section I examine two additional datapoints to show that Kouneli and Nie's (2021) arguments for a dedicated polarity mechanism and process-based morphological realization are premature. I first consider the PRED tonal shape of nominal modifiers to propose that OBL and NOM do not stand in a direct morphological relationship with respect to one another, thereby obviating the need to generate a polar mapping in the first place. I then argue for the superiority of this morphological analysis on the basis of the existence of non-polar correspondences between the two case forms, which are expected if the pattern is indeed non-polar.

2.1 The third tonal shape: PRED

Contrary to nouns, nominal modifiers (i.e. adjectives, demonstratives and possessives) exhibit a special tonal shape when they are used predicatively, the PRED. I illustrate this alongside the morphological case tonal shapes in (2):

(2) *Tonal shapes in Kipsigis nominal modifiers* (Kouneli and Nie 2021:e131, e133)

	PRED		OBL		NOM		Gloss
a.	-(n)ì/-(n)ì	L	-(n)ì/-(n)ì	L	-(n)í/-(n)í	H	PROX.SG
b.	-ɲô:n	HL	-ɲò:n	L	-ɲó:n	H	'my.SG'
c.	-(n)á:n	H	-(n)á:n	H	-(n)à:n	L	MED.SG
d.	lítít	H.H	lítìt	H.L	lìtít	L.H	'straight.SG'
e.	ʧéptʃépè:n	H.H.L	ʧéptʃépè:n	H.H.L	ʧèptʃèpé:n	L.L.H	'swift.PL'
f.	ɲígî:sè:n	H.HL.L	ɲígî:sè:n	H.HL.L	ɲìgí:sé:n	L.H.H	'heavy.PL'

The existence of this third form increases the number of logically possible ways in which the three morphological categories can be related. Kouneli and Nie (2021) partially motivate their OBL to NOM mapping on the basis of the marked nominative nature of the Kipsigis case system: since nominative is both a morphologically and functionally marked (i.e., complex) category, it should be derived from a more basic category. However, the morphological markedness of the nominative does not automatically entail the morphological unmarkedness of the other case (König 2008). The Kipsigis OBL exemplifies this fact, since its almost constant final L suggests the presence of additional morphological marking (2a-b; d-f).

If both OBL and NOM are complex morphological categories, it becomes necessary to identify the form from which they are derived. In the case of the OBL, a derivation via PRED preserves the insight that OBL is less marked than NOM and accounts for the strong similarities between the PRED and the OBL tonal shapes. In the case of the NOM, however, morphological markedness can in principle be achieved in *two* different ways: one via PRED, and one via OBL. Since Kouneli and Nie (2021) assume the latter possibility, they are led to argue for the necessity to generate polar mappings.

However, this conclusion crucially hinges on the assumption that NOM indeed derives from OBL. If one considers a PRED-based derivation for NOM, the pattern to be generated is not polar. Indeed, PRED H's can have both polar and non-polar correspondents in the NOM (2d), and this is unlikely to be phonologically-driven, since the same configuration can also correspond to the expected L.L sequence in the NOM (2f). This conception additionally implies that OBL and NOM are only morphologically related insofar as they are built off of the same base form, and crucially, that the polarity they display bears no theoretical status: *there are no polar mappings to generate if there are no mappings to begin with*.

The main contribution of this paper is to argue that the PRED-based explanation is the correct one, and that this across-the-board "polarity" is in fact epiphenomenal on the way in which both OBL and NOM are derived from PRED. This is a conceptually attractive move, since it does not resort to the concept of polarity, which is otherwise ill-motivated both descriptively and theoretically. This is also an empirically attractive move, since it readily

captures additional generalizations about the Kipsigis case system. First, it obviates the need to treat nouns and nominal modifiers differently with respect to nominative marking, especially since both resort to tonal alternations in the same morphological context. Second, it allows to treat all nominative marking in the language as tonal melodies with total overwriting properties: LH_0L in the case of nouns (1a-b), and LH in the case of modifiers (2). Third, it derives the fact that both nominal modifiers and a class of nominal forms called *primary nouns* (Creider 1982) mark nominative identically, under the assumption that they both realize the LH melody.

(3) kùrùtí
blood.NOM
'blood' (Toweett 1975:142)

(4) là:kwá:-ní
child-PROX.SG.NOM
'this child' (Kouneli 2019:147)

Indeed, the association of that melody to the medial syllable in trisyllabic forms is sensitive in both cases to syllabic weight: the resulting pattern is L.L.H when the penultimate syllable is light, as in examples (3) and (2e), whereas a L.H.H melody surfaces in the context of a heavy penultimate syllable, as seen in (4) and (2f).

2.2 Non-polar mappings

Another empirical expectation of the non-polar conception of the Kipsigis pattern is that there should exist OBL tones whose NOM correspondents are not polar. As exemplified below in (5), this is indeed borne out in the data.

(5) *Non-polar correspondences between* OBL *and* NOM (Kouneli and Nie 2021:e133)

	PRED		OBL		NOM		Gloss
a.	tàlà	L.L	tàlà	L.L	tàlá, tàlà	L.H/L	'gentle.SG'
b.	tû:è:n	HL.L	tû:è:n	HL.L	tù:é:n	L.H	'black.PL'
c.	ê:ʧè:n	HL.L	ê:ʧè:n	HL.L	è:ʧé:n	L.H	'big.PL'
d.	lɛ̂:làʧ	HL.L	lɛ̂:làʧ	HL.L	lɛ̀:láʧ	L.H	'white.PL'
e.	mjâ:ʧɛ̀:n	HL.L	mjâ:ʧɛ̀:n	HL.L	mjà:ʧɛ́:n	L.H	'good.PL'
f.	jâ:ʧɛ̂:n	HL.L	jâ:ʧɛ̂:n	HL.L	jà:ʧɛ́:n	L.H	'good.PL'

This group of adjectives illustrates the non-polar correspondence between an OBL HL and a NOM L. These forms are undergenerated by Kouneli and Nie's (2021) polar analysis, who treat them as lexical exceptions on the basis of their morphological idiosyncrasies. An additional advantage of the present non-polar account is that it does not require any reference to their morphological properties to be able to generate them, as they otherwise conform to the expected tonal patterns for both the OBL and the NOM. Indeed, their OBL forms display a final L, and the expected bisyllabic L.H shape is found in the NOM.

In this section, I have briefly discussed the empirical and theoretical issues surrounding morphophonological polarity, as well as outlined Kouneli and Nie's (2021) motivation for defending the concept. On the basis of the PRED tonal shape of nominal modifiers and the existence of non-polar correspondences between OBL and NOM, I have argued for an

alternative conception of the pattern, which derives OBL and NOM independently from one another, thus obviating the need for polar mappings between the two case forms.

3. Deriving OBL and NOM via tonal affixation

In this section I present an implementation of the PRED-based analysis I argued for in section 2.1 in Colour Containment Optimality Theory (CC-OT; Trommer (2015); Paschen (2018); Zaleska (2018)). I first introduce two key theoretical tools of this framework, namely phonetic markedness constraints and morphological colouring. I then show how these tools can produce both OBL and NOM patterns in a purely item-based way under the assumption that just like their segmental counterparts, tonal affixes may linearize differently with respect to their base. Finally, I illustrate how this system generates both "non-polar" and "polar" cases previously discussed.

3.1 Theoretical background

A core architectural assumption of CC-OT is that the relationship between phonological input and output is not one of correspondence, but one of containment: the output *contains* the entire input. Accordingly, phonological material is never truly deleted; rather, "deletion" is reconceptualized as phonetic non-realization in the output. This means that markedness constraints may assess different parts of a given phonological object: general markedness constraints evaluate the entire structure, whereas phonetic markedness constraints are limited its phonetically visible portion (Trommer 2011).

On the representational side, CC-OT also assumes that the underlying morphological structure of a given linguistic object is minimally reflected in the phonology via morphological colouring, which uniquely identifies every exponent present in the input and can be referred to by phonological constraints (van Oostendorp 2006). This means that the phonological computation may be sensitive to the underlying (i.e., coloured) or epenthetic (i.e., colourless) nature of a given autosegment, as well as the presence of morphological boundaries (i.e., colour differences).

3.2 The proposal: differential linearization of tonal affixes

Both phonological containment and morphological colouring have been shown to provide a straightforward account of tonal overwriting effects like the ones displayed in the Kipsigis pattern (Trommer 2022). However, as general phonological properties of the framework, they cannot derive on their own the fact that the resulting tonal alternations in both OBL and NOM are specific to the morpheme under consideration. I illustrate this problem in examples (6) and (7) below.

(6) lɪtɪt 'straight.SG': H.H
- a. OBL: H.**L**
- b. NOM: **L**.**H**

(7) tuːeːn 'black.PL': HL.L
- a. OBL: HL.**L**
- b. NOM: **L**.**H**

As indicated in examples (6a) and (7a), the OBL overwriting effect is partial in that it is limited to the final syllable of the base, whereas the NOM pattern targets all syllables of the base, as in (6b) and (7b). It is this morpheme-specific behaviour that led Kouneli and Nie (2021) to conclude that item-based approaches would fail to account for the Kipsigis pattern unless they could directly refer to the underlying morphological structure, which would turn them into notational variants of process-based approaches. In what follows I argue that a fully general, phonological account of the Kipsigis pattern is indeed possible if one allows tonal affixes to linearize as prefixes, suffixes or circumfixes (Pulleyblank 1986). In other words, I claim that the overwriting differences between OBL and NOM come from the fact that in the former case, tonal affixation takes the shape of a -Ⓛ suffix, whereas it is instantiated as a Ⓛ- -Ⓗ circumfix in the latter case. I schematize this respectively in examples (8a) and (8b) below.

(8) a. $\acute{\sigma}_{\text{PRED}}$ ... $\acute{\sigma}_{\text{PRED}}$ + Ⓛ → $\acute{\sigma}_{\text{PRED}}$ ... $\grave{\sigma}_{\textbf{OBL}}$

b. Ⓛ + $\acute{\sigma}_{\text{PRED}}$ ... $\acute{\sigma}_{\text{PRED}}$ + Ⓗ → $\grave{\sigma}_{\textbf{NOM}}$ ... $\acute{\sigma}_{\textbf{NOM}}$

In OBL contexts, the Ⓛ suffix, which appears last on its tier, associates to the final syllable of its base, which triggers (potentially vacuous) overwriting. Importantly, spreading the OBL tone past this final syllable is not possible. Turning to NOM contexts, the two tones making up the circumfix are most peripheral on their tier, and association of the NOM exponent to the base forces the non-realization of all intervening (underlying) tones. Just as in OBL contexts, it is the rightmost NOM tone that surfaces when there is not enough syllabic space to host the entire exponent (recall (2a-b)). When there is additional syllabic space, as in trisyllabic forms, either NOM tonal element can spread, with a preference for the Ⓗ component to appear on heavy medial/penultimate syllables (recall (2e)).

3.3 Implementing the proposal

I follow Trommer (2022) in attributing tonal overwriting effects to markedness constraints penalizing the creation of contour tones in the output. More specifically, I assume that the following constraint is high-ranked in Kipsigis:

(9) *$\underline{\sigma_{\text{2COL}}}$ (Trommer 2022:25): Assign * for every syllable phonetically linked to tones of more than one colour.

I also propose that there exists a general preference for autosegments that belong to the same exponent (i.e. share a colour) to be realized in a contiguous fashion in the output:

(10) CONTIGUITY-COLOUR (CTG-C) (Trommer 2022:27): For every pair of morphologically adjacent tones τ_1,τ_2, assign * for every phonetic tone that intervenes between τ_1 and τ_2.

I also suggest that the association of floating tones to syllables is regulated by constraints which enforce a preference for matching the linear position of a tone on the tonal tier to the linear position of its TBU on the syllabic tier (11, 12), a positional preference of heavy penultimate syllables for H tones (13), and a general dispreference against spreading the rightmost tone (14).

(11) $\tau_\alpha \rhd \sigma_\alpha$ (Trommer 2022:15): Assign * for every final tone in domain D not associated to the final syllable in D.

(12) $\tau_\omega \rhd \sigma_\omega$ (Trommer 2022:15): Assign * for every final tone in domain D not associated to the final syllable in D.

(13) HEAVYPENULT $\rhd$ H: Assign * for every heavy (i.e. bimoraic) penultimate syllable not linked to a H(igh) tone element.

(14) *SPREAD-τ_ω (Trommer 2022:15): Assign * for every additional phonetic association line between a tone with a domain-final phonetic association line and a syllabic node.

I analyze the OBL tonal shape in tableau (15) below, using the adjective presented in example (6) above as a representative example. I leave out tonal faithfulness constraints from all tableaux presented below, since the tonal overwriting present in all outputs necessarily violates them.

(15) PRED H.H $\rightarrow$ OBL H.L

Input = i.	*$\underline{\sigma_{2\text{COL}}}$	CTG-C	$\tau_\omega \triangle \sigma_\omega$	$\tau_\alpha \triangle \sigma_\alpha$	HEAVYPEN $\triangle$ H	*SPREAD-τ_ω
i. lítít + Ⓛ			*!			
ii. lítît	*!					
☞ iii. lítùt						
iv. lìtùt						*!

The $\tau_\omega \rhd \sigma_\omega$ constraint enforces association of the OBL exponent to the final syllable of the base. This creates a derived (i.e. multiply-coloured) contour tone, which is prevented from surfacing by high-ranked *$\underline{\sigma_{2\text{COL}}}$, effectively knocking out candidate (15ii). The optimal candidate (15iii) therefore displays minimal overwriting, as spreading the OBL Ⓛ to the left encurs unwarranted violations of *SPREAD-τ_ω (15iv). This means that any non-final tonal specification from PRED must be retained in OBL contexts, a fact to which I return below.

I analyze the NOM bisyllabic tonal shape in tableau (16) below, using the adjectives presented in examples (6) and (7) as representative cases.

(16) PRED H.H, HL.L → NOM L.H

	Input = i.	*$\underline{\sigma_2}$	CTG-C	$\tau_\omega \triangleright \sigma_\omega$	$\tau_\alpha \triangleright \sigma_\alpha$	HEAVYPEN ▷ H	*SPREAD-τ_ω
	i. Ⓛ + lítít + Ⓗ		*!*	*	*		
	ii. Ⓛ + litit + Ⓗ			*!	*		
☞	iii. lìtít						
	iv. lítít				*!		*
	Input = v.						
	v. Ⓛ + tûːèːn + Ⓗ		*!*	*	*		
☞	vi. tùːéːn					*	
	vii. túːéːn				*!		*

That NOM contexts require more overwriting than OBL contexts is directly enforced by the way in which both configurations fare with respect to the CTG-C constraint. In the OBL, this constraint is vacuously satisfied due to the fact that the tonal affix is a single suffix. However, in the NOM, the circumfixal nature of the exponent entails that the base tones systematically intervene, and non-realization of all intervening tones is the only way to circumvent CTG-C violations (16ii). The interaction of tone association constraints enforces edge-in association of the NOM tones, as in optimal candidates (16iii) and (16vi). Indeed, leaving out the leftmost NOM Ⓛ fatally violates $\tau_\alpha \triangleright \sigma_\alpha$, as in candidates (16iv) and (16vii).

The analysis also correctly derives the H and L.L.H/L.H.H patterns respectively found in monosyllabic and trisyllabic bases. The monosyllabic pattern directly emerges as a consequence of the $\tau_\omega \triangleright \sigma_\omega \gg \tau_\alpha \triangleright \sigma_\alpha$ ranking, which favours the surfacing of the final NOM tone over that of the initial one. The trisyllabic patterns are the product of the way in which various bases fare with respect to HEAVYPENULT ▷ H. Since trisyllabic bases require tonal overwriting on an additional syllable which cannot be decided on the basis of either $\tau_\alpha \triangleright \sigma_\alpha$ or $\tau_\omega \triangleright \sigma_\omega$, spreading necessarily obtains. When the medial/penultimate syllable is light, HEAVYPENULT ▷ H cannot be violated, and *SPREAD-τ_ω ensures that spreading the final NOM Ⓗ remains less optimal than spreading the initial NOM Ⓛ, which leads to L.L.H being outputted. On the contrary, when the medial/penultimate syllable is heavy, spreading of the final NOM Ⓗ is the optimal solution, given that it helps avoiding a HEAVYPENULT ▷ H violation, and L.H.H is derived.

In more general terms, the analysis generates X ... L outputs in the context of the OBL exponent, and L ... H outputs in the context of the NOM exponent, where X ranges over {L, H, HL}, i.e the possible tonal specifications in Kipsigis. When X assumes the value {H}, as in the adjective in example (6), the two case forms *appear* to be polar opposites,

since OBL H is found in the same position as NOM L, and vice-versa. However, when X assumes any other value, as is the case in the adjective presented in example (5), NOM L no longer strictly appears in the same position as OBL H, and the polarity parallel breaks down. A strength of the present account is that it can generate both situations using the same mechanism, whereas Kouneli and Nie (2021) must resort to two different explanations for the same facts.

3.4 Exceptional forms

Two cases that I have not yet discussed seem problematic for the analysis. The first one is the medial demonstrative *-(n)aːn*, which is already presented in (1d): in the OBL, it is H-toned, whereas it appears L-toned in the NOM, in direct contradiction to the statement I made in section (3.3). I suggest that this form can be ruled in if one assumes a slightly different underlying representation for it, i.e. abstract bisyllabicity: $(\text{nɑːn})_{\sigma_1}(\quad)_{\sigma_2}$. This would put it in line with all other bisyllabic forms in the language, with /H.L/ (OBL) and /L.H/ (NOM) respectively surfacing as [H] and [L] since empty prosodic nodes cannot be overt. Note that this is also consistent with the diachronic origin of this marker, as it consisted of two syllables in Proto-Kalenjin (Rottland 1982:225).

The second case concerns the only two underived trisyllabic adjectives so far attested in the language, *míntìlíːl* 'sour.SG' and *kárâːrán* 'beautiful.SG'. They respectively display the OBL shapes H.L.H and H.HL.H, and both surface as L.H.L in the nominative. Since neither the OBL nor the NOM conform to the otherwise exceptionless patterns I discussed in this paper, I tentatively suggest that treating them as lexical exceptions is appropriate, especially given the fact that their being the only known underived trisyllabic adjectives in the languages already gives them a marginal status in the lexicon.

4. Conclusion

In this paper, I have presented a reanalysis of morphological case marking in Kipsigis, which Kouneli and Nie (2021) reported as representing the only known instance of morphophonological polarity with respect to tone. I have argued that under closer scrutiny, the pattern does not count as polar, since OBL and NOM are best analyzed as being independently derived in a non-polar way from a third category, the PRED. I have also argued that the idiosyncratic behaviour of both OBL and NOM, which seems at first glance more straightforwardly amenable to process-based approaches, can be derived in a strictly item-based, phonogically general way, provided that tonal affixes may also linearize differently with respect to their base.

More generally, this paper provides an additional argument against positing a concept of polarity in grammar. It also illustrates that de Lacy's (2012) class-based "complementary exponence" is not the only way to generate (the illusion of) polar patterns without dedicated mechanisms. Whether all putatively polar data can be accounted for under a single approach is a topic for further research.

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