Paradigmatic tonal polarity in Kipsigis nominal modifiers

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Overview: The correct analysis of non-segmental morphophonological patterns, such as polarity, has generated much debate. Anti-faithfulness constraints (Alderete 2001) have been proposed but remain controversial (de Lacy 2002, Trommer & Zimmermann 2014, Trommer 2015). In this paper, we show that nominative case formation of nominal modifiers in Kipsigis (Nilotic, Kenya) exhibits across-the-board paradigmatic tonal polarity: the nominative forms of modifiers are segmentally identical to their oblique counterparts but have the opposite tonal pattern. We argue that this polarity is straightforwardly captured using a modification of anti-faithfulness constraints, while a tonal affixation analysis cannot account for the data, which come from original fieldwork.

Language background: Kipsigis has three tones: High (H), Low (L), and High-Falling (HL); HL is found only in bimoraic syllables. Due to a constraint against rising tones, a tautosyllabic LH sequence simplifies to a level H tone. Kipsigis is a marked nominative VSO language: subjects are marked for nominative case, while DPs in any other position are left unmarked. All DP elements (demonstratives, adjectives, etc.) agree with the head noun in case. While the oblique form of nouns is unpredictable for tone, the nominative form of nouns has a predictable LH_0L melody, where L tones associate to the first and last syllables of the noun, and a H tone is assigned to any and all medial syllables. The nominative form is derived from the oblique form, as evidenced by TBU deletion, which occurs as a repair for illegal HL.HL sequences in oblique nouns, e.g. **môokwêek* → *môokwék* 'throat.pl.obl'. Nominative nouns have their predictable LH_0L melody assigned on the shortened form, resulting in *mòokwèk* 'throat.pl.nom', suggesting that the nominative melody applies *after* TBU deletion.

Paradigmatic polarity: Unlike nouns, nominal modifiers (bolded in (1)) exhibit across-the-board paradigmatic tonal polarity: their nominative and oblique forms have opposite tonal patterns.

(1) a. Á-kéer-é làakwéet **nè** **tóròor**. **L H.L**
1sg-see-ipfv child.obl rel.obl tall.obl
'I see a tall child.'

b. Rú-è làakwèet **né** **tòróor**. **H L.H**
sleep3-ipfv child.nom rel.nom tall.nom
'The tall child is sleeping.'

Table 1 summarizes the attested cases of tonal polarity in our data. Syllables with HL contour tones in the oblique are consistently H in the nominative; the opposite of a HL sequence on a syllable is LH, which regularly simplifies in Kipsigis to H.

Table 1: Attested polarity patterns with examples

Oblique		**Nominative**		**Gloss**
nyùun	**L**	nyúun	**H**	'my'
náan	**H**	nàan	**L**	'medial demonstrative'
tûuy	**HL**	túuy	**H**	'black'
ányìny	**H.L**	ànyíny	**L.H**	'tasty'
púrgéèen	**H.H.L**	pùrgèéen	**L.L.H**	'warm.pl'
tórôorèen	**H.HL.L**	tòróoréen	**L.H.H**	'tall.pl'
kárâarán	**H.HL.H**	kàráaràn	**L.H.L**	'beautiful'

Anti-faithfulness analysis: A well-known case of polarity comes from DhoLuo, in which the voicing value of the final stop in the nominative singular is reversed in the plural and genitive (Okoth-Okombo 1982). Alderete (1999) proposes that in DhoLuo, the plural and genitive morphemes are indexed to an

anti-faithfulness (AntiFaith) constraint that forces a change in the [voice] value of the base, roughly as in (2), which must be defined existentially because only one segment changes its value for [voice].

(2) ¬OO-Ident[voice]: There is an OO-corresponding segment that disagrees in the feature [voice].

In Kipsigis, however, *every* tone in the nominal modifier changes. Thus an AntiFaith constraint enforcing polarity must be defined universally (3) and ranked higher than the input-output faithfulness. The tableau in (4) derives *pùrgèéen* 'warm.pl.nom' from its oblique base *púrgéèen* 'warm.pl.obl'.

(3) ¬OO-Ident(Tone): Assign a violation for every OO-corresponding segment that agrees in Tone.

(4) Anti-faithfulness analysis of *pùrgèéen* 'warm.pl.nom'

	⟨BASE: /púrgéèen.OBL/, DER: /pùrgèéen.NOM/⟩	¬OO-Ident(Tone)	IO-Ident(Tone)
	a. ⟨BASE: /púrgéèen.OBL/, DER: /púrgéèen.NOM/⟩	*!**	
☞	b. ⟨BASE: /púrgéèen.OBL/, DER: /pùrgèéen.NOM/⟩		***

Two markedness constraints, a top-ranked *LH constraint which enforces the ban against tautosyllabic rising tones in Kipsigis and a low-ranked *L, capture the change of a HL contour in *tûuy* 'black.obl' to H in *túuy* 'black.nom'. The behavior of the falling tones suggests that the nominative form is derived from the oblique rather than the other way around: the switch from falling to high is predictable, while a switch from high to falling would not be. Evidence that the nominative form refers to the surface tones of the oblique rather than UR tones comes from the behavior of nouns with TBU deletion, discussed earlier.

Affixation alternative: An alternative to AntiFaith is to treat polarity as a case of affixation (Wolf 2007, Trommer 2014, Trommer & Zimmermann 2014, a.o.). In Wolf (2007), exchange processes are triggered by a floating morpheme with two or more opposing allomorphs. The floating morpheme must be realized due to the markedness constraint MaxFloat (Avoid floating morphemes); the allomorph that is chosen is the one that obeys the constraint NoVacuousDocking (NoVacDock; Avoid docking a feature [F] on a segment if its input has the same value for [F]). For Kipsigis tonal polarity, the relevant morpheme would have two allomorphs with opposing tonal values: {[H], [L]}. MaxFloat and NoVacDock ensure that the nominative allomorph that docks successfully has the tone opposite to that of the stem. This is straightforward for monosyllabic nominal modifiers if we assume that MaxFloat and NoVacDock dominate IO-Ident(Tone). However, it is unclear how this analysis can be made to work for forms that are two syllables or longer. Consider the derivation of *pùrgèéen* 'warm.pl.nom' in (5). Docking a non-vacuous allomorph (H) of the nominative morpheme in candidate (a), satisfies both MaxFloat and NoVacDock and violates IO-Ident(Tone) once. Candidate (b), in which every tone has changed, satisfies MaxFloat and NoVacDock but incurs three violations of IO-Ident(Tone). Thus changing one tone is always more harmonic than changing two or more tones in the floating morphemes approach.

(5) Floating morphemes analysis of *pùrgèéen* 'warm.pl.nom'

	/púrgéèen/ + NOM={[H], [L]}/	MaxFloat	NoVacDock	IO-Ident(Tone)
☹	a. púrgééen–NOM			*
	b. pùrgèéen–NOM			**!*

Even if some spreading mechanism were invoked in order to capture the across-the-board nature of tonal polarity in polysyllabic words, the spreading would crucially have to occur *before* the tonal allomorphs were selected to dock, as the output realization varies between H and L. Neither would the combination of an affixal tonal morpheme, say H, and shift, say leftward, of the stem tones, which would predict nominative **púrgèéen* for 'warm.pl' (cf. oblique *púrgéèen*). **Discussion:** Kipsigis nominal modifiers present a true case of across-the-board paradigmatic polarity and cannot be captured with affixation or a fixed tonal melody. Universally-quantified AntiFaith constraints, however, can account for the data; if such constraints indeed exist, they suggest that AntiFaith may be more parallel to traditional faithfulness constraints than previously thought. However, this approach would then need to appeal to other factors in order to explain why across-the-board polarity phenomena are so rare cross-linguistically.