Simplifying the analysis of Lango ATR harmony

Lango (Nilotic; Uganda) has a complex ATR harmony system that has been the subject of a number of analyses (e.g. Archangeli & Pulleyblank 1994; Smolensky 2006; Potts et al. 2010). In Lango, harmony depends on the interaction of directionality (progressive vs. regressive), trigger quality (high front vs. high back vs. non-high), target quality (high vs. non-high), and distance (across a single consonant vs. across a mora). As Potts et al. (2010) note, analyses of Lango previous to theirs have suffered from loss of generality and/or typological over-generation. The Potts et al. (2010) analysis itself requires substantial representational complexity, in that it requires identifying certain vowels as heads, with several independent constraints to do so, and with the stipulation that heads must be faithful. It further uses a harmony constraint that specifies which feature is dominant, and many of the patterns are derived in a complicated way through gang effects. It is unclear whether or how such an approach extends to other languages and types of harmony with complex interactions among similar factors.

In this paper, I propose a novel way of analyzing these facts about Lango harmony, from an interaction of simpler, more generalizable constraints and principles. Specifically, only basic faithfulness and harmony constraints are required, but the penalty for disharmony depends on the specific vowels interacting and their distance apart. I argue that this approach maintains the restrictive nature of the Potts et al. analysis, while also using a simpler framework that can be more obviously extended to other languages with other types of harmony.

The conditions on Lango harmony can be summarized as in the table below, with examples from Woock & Noonan (1979). Progressive harmony across a single consonant applies regardless of the vowels involved; other contexts require the trigger to be high, while regressive harmony across two consonants also requires either the trigger to be front or the target to be high.

	Across 1 C	Across 2 Cs
Progressive	Always e.g. 1SG inalienable POSS: [á]~[ə́] ŋèt-ə́, wód-ə́ vs. lɛ́b-á, bwɔ́m-á	High trigger e.g. 1SG alienable POSS: gemination + [á]~[ə́] píg-gə́, òpúkkə́ vs. dòk-ká, gwèn-ná, bɛ̀l-lá
Regressive	High trigger e.g. 2PL POSS: [wú] lɛ̀ + wú → lèwú; jɔ̀ + wú → jòwú vs. INF [o], way-o	Trigger [i], or trigger [u] + high target e.g. 2SG inalienable POSS: gemination + [í] dɛ̀k → dɛ̀kkí; kɔ̀m → kɔ̀mmí; lɔ̀t → lùttí e.g. 2PL POSS: [wú] lɔ̀t → lùtwú vs. dɛ̀k → dɛ̀kwú; kɔ̀m → kɔ̀mwú e.g. INF [o], lɪmmo; nɛnno

I adopt an approach in which weighted harmony constraints are scaled by trigger, target, and distance, as motivated independently for other languages by Kimper (2011) and Ozburn (2019). Scaling factors are determined by articulatory and perceptual properties that make certain vowels better at triggering or undergoing harmony; languages have a limited set of phonetically motivated options. For example, in ATR harmony, it is known that high vowels have properties making them ideal triggers; languages with an ATR contrast in high vowels typically have ATR-dominant harmony, and high vowels are common triggers (e.g. Rose 2018). In all ATR harmony languages, trigger scaling factors must therefore be set such that harmony triggered by high vowels is either more or equally likely to harmony triggered by other vowels. In the tableaux shown below, the

trigger scaling of [u] is 4, which must be greater than or equal to trigger scaling of non-high vowels.

The sample tableaux for Lango below show how target and distance scaling permit /-wú/ to trigger harmony except across multiple consonants to a non-high vowel. Each harmony violation is scaled by numbers representing the dispreference for disharmony for the potential trigger ([u] here), the potential target ([ɔ], [ʊ], [ɔ] respectively), and the distance (across a C vs. across a μ). The constraint *[RTR]∞[ATR] prohibits sequences of RTR followed by ATR; *[ATR]∞[RTR] is also necessary for progressive harmony, weighted higher since progressive harmony is stronger, but with identical scaling factors. I assume very highly weighted IDENT-IO[ATR] to enforce ATR dominance. With appropriate weights and scaling factors, this approach successfully accounts for all facts dealt with in previous analyses, using just a combination of harmony and faithfulness.

	/jɔ̀ + wú/	IDENT-IO[RTR] 10	*[RTR]∞[ATR] 2	H
	jɔ̀wú		-1*4(u)*2(ɔ)*1(C) =-8	-16
☞	jòwú	-1		-10

	/lòt + wú/	IDENT-IO[RTR] 10	*[RTR]∞[ATR] 2	H
	lòtwú		-1*4(u)*3(ʊ)*0.5(μ)=-6	-12
☞	lùtwú	-1		-10

	/kɔ̀m + wú/	IDENT-IO[RTR] 10	*[RTR]∞[ATR] 2	H
☞	kɔ̀mwú		-1*4(u)*2(ɔ)*0.5(μ)=-4	-8
	kòmwú	-1		-10

I argue for this approach over previous ones: it maintains generalizations without overgenerating, but does not require the complexities of the Potts et al. (2010) account. Instead, this analysis uses only interactions between harmony and faithfulness, with the insight that how harshly harmony is penalized should depend on the specific interacting segments.

References:

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