

Postlexical tone in Poko provides evidence for serial, directional transformations

Poko (Skou, PNG) displays a complex tone system, with three contrastive levels, toneless syllables, and floating tones. Lexical tone is characterized by robust patterns of anti-alignment, wherein H tones may not be initial and L tones may not be final (McPherson and Dryer, 2021; McPherson, 2022). This talk focuses on the behavior of tone at the postlexical level, including the docking and deletion of floating tones, repair of toneless syllables, and treatment of dispreferred LM and LH rising tones. We demonstrate that the behavior of floating H tones cannot be accounted for in a constraint-based theory with global evaluation, as in parallel Optimality Theory or Harmonic Grammar, nor can their behavior be captured by Harmonic Serialism with constraints that count violations. Instead, the data provide evidence for directional Harmonic Serialism (Lamont, 2022), wherein changes are made incrementally left-to-right or right-to-left.

Two lexical melodies in Poko carry floating H tones, $/M^H/$ and $/^L\emptyset^H/$; we focus here on the former. In utterance-final position, the floating H tone is deleted:

(1) $/n\bar{a}n\ r\bar{i}^H/ \rightarrow [n\bar{a}n\ r\bar{i}]$ ‘my pig’

Followed by a toneless stem or a plain M-toned stem (i.e. without a floating H tone), the floating H docks to the right. This replaces the M tone, as seen in (2b):

(2) a. $/n\bar{a}n\ r\bar{i}^H\ ne/ \rightarrow [n\bar{a}n\ r\bar{i}\ n\acute{e}]$ ‘I made a pig’
b. $/n\bar{a}n\ r\bar{i}^H\ n\bar{a}/ \rightarrow [n\bar{a}n\ r\bar{i}\ n\acute{a}]$ ‘I ate a pig’

If followed by an L-initial melody, whether that L is floating (3a) or associated (3b), the floating H tone docks leftwards (i.e. tautomorphemically), creating a MH contour:

(3) a. $/r\bar{i}^H\ ^Ld\bar{a}/ \rightarrow [r\bar{i}\ ^Ld\bar{a}]$ ‘the pig went’
b. $/n\bar{a}n\ r\bar{i}^H\ n\bar{i}as\acute{i}/ \rightarrow [n\bar{a}n\ r\bar{i}\ n\bar{i}as\acute{i}]$ ‘I hid a pig’

Followed by an MH or M^H , the floating H does not dock leftwards, but instead deletes:

(4) a. $/k\bar{a}k^H\ k\bar{a}/ \rightarrow [k\bar{a}k\ k\bar{a}]$ ‘his friend’
b. $/k\bar{a}k^H\ r\bar{i}^H/ \rightarrow [k\bar{a}k\ r\bar{i}]$ ‘his pig’

Rightward docking does not occur here to avoid associating stems to more than two tones.

These floating tone data are challenging in a couple of ways. First, there is the question of why tautomorphemic docking is licensed by L tone but not by the forms in (4), where instead the H tone deletes, seeing as there is no restriction in the language against MH MH sequences (e.g. $[n\bar{a}n\ k\bar{a}\ n\bar{i}]$ ‘my friend sleeps’). We propose that tautomorphemic docking before L is a unique instantiation of crosslinguistic patterns of tone raising before L (e.g. Bamileke, where M raises to H before floating L, Hyman, 2017, or Yorùbá, where H tones are higher before L tones, Laniran and Clements, 2003). In Poko, this has been phonologized as a low-ranked constraint $*ML$, which dominates NOTAUTOMORPHEMIC-DOCKING, but is not high enough ranked to force H tone epenthesis or otherwise alter a lexical M and or L tone.

Second, the pattern in (4b), whereby both floating H tones are deleted in a sequence of two M^H words, cannot be captured by parallel OT. With global evaluation, the winning candidate would be one in which the second H tone deletes and the first docks onto the following stem, as shown in (5), as this incurs just a single violation of MAX(H).

(5)	/kāk ^H rī ^H /	*FLOAT	NOTAUTDOCK	MAX(H)	DEP(link)/H
	a. kāk ^H rī ^H	W 2		L	L
	b. kāk rī		W 1	L	W 2
	⊖ c. kāk rī			W 2	L
	● d. kāk rī			1	1

Harmonic Serialism likewise cannot capture the pattern with constraints that count violations, as there is a divergent tie between the two candidates that each delete a floating H tone: deleting the first H tone first leads to the correct final output, whereas deleting the second H tone leads eventually to the incorrect output produced by OT.

All of Poko's complex postlexical data patterns can be accounted for using directional Harmonic Serialism (Lamont, 2022), in which constraints are evaluated directionally (either right-to-left or left-to-right). Right-to-left constraints will push violations further to left, while left-to-right evaluation pushes violations further to the right. For Poko, *FLOAT must crucially be evaluated left-to-right: given the option of retaining the first floating H tone or retaining the second, the violation for retaining the second is further to the right and hence preferable. Thus, on the first step of evaluation, /kāk^H rī^H/ would have the intermediate output |kāk rī^H|; on the second step, the second floating H deletes.

(6)	/kāk ^H rī ^H /	*FLOAT [⇒]	*CROWD	NOTAUTDOCK	MAX(H)	DEP(link)/H
	a. kāk ^H rī ^H	W 1 1 0 1 2 3 4			L	
	☞ b. kāk rī ^H	1 0 1 2 3 4			1	
	c. kāk ^H rī	W 1 0 1 2 3 4			1	
	d. kāk rī ^H	1 0 1 2 3 4		W 1	L	W 1
	e. kāk rī ^H	1 0 1 2 3 4	W 1		L	W 1
	f. kāk ^H rī	W 1 0 1 2 3 4		W 1	L	W 1
	g. kāk rī ^H	W 1 0 1 2 3			L	
	☞ h. kāk rī				1	
	i. kāk rī			W 1	L	W 1

In sum, this talk demonstrates how data from the postlexical tone system of Poko, an underdescribed language of PNG spoken by likely fewer than 100 people, can provide evidence for both serialism and directionality in phonological grammar.

References

- Hyman, Larry M. (2017). Possessive tone in Tswefap (Bamileke): Paradigmatic or derivational? *UC Berkeley PhonLab Annual Report* 17. 243–254.
- Lamont, Andrew (2022). *Directional Harmonic Serialism*. Ph.D. dissertation, University of Massachusetts Amherst.
- Laniran, Yetunde O. and G. N. Clements (2003). Downstep and high raising: interacting factors in Yoruba tone production. *Journal of Phonetics* 31(2). 203–250.
- McPherson, Laura (2022). Word tone is epiphenomenal: A case study from Poko. In Haruo Kubozono, Junko Ito and Armin Mester (eds.), *Prosody and prosodic interfaces*, Oxford: Oxford University Press. Oxford Studies in Phonology and Phonetics, 329–364.
- McPherson, Laura and Matthew S. Dryer (2021). The tone system of Poko-Rawo (Skou). *Phonological Data & Analysis* 3(1). <https://doi.org/10.3765/pda.v3art1.54>.