Phantom structure: A representational account of floating tone association

Introduction. This talk proposes new representations to account for a difference in behavior between two types of floating tones. In one, the association of a floating tone is determined by fully predictable phonological principles, e.g. associating to metrically prominent positions as in Lamba [lam] (Bantu - Bickmore 1995, De Lacy 2002) in (1). The morphemes in red sponsor a floating Ⓗ tone (circled), which is systematically realized on the initial, stress-bearing syllable of the stem (in square brackets). Sponsors can appear both outside (1a) and inside (1b) the stem, and a morpheme may both have an inherent tone and sponsor a floating tone (1c). Since floating tones are unlinked in the input, their surface position cannot be determined by faithfulness and therefore tone association is only subject to markedness (essentially, a TETU effect).

(1)

(a) Ⓗ	(b) Ⓗ	(c) H Ⓗ
ta-tu-[ká-kom-a]	tu-[lúku-leemb-a]	á-ba-[ká-kom-a]
NEG-we-FUT-hurt-FV	we-PROG1-write-FV	REL-they-FUT-hurt-FV
‘we will not hurt’	‘we are writing’	‘they who will hurt’

(2)

(a) Ⓗ	(b) Ⓗ	(c) Ⓗ
n-to-oka-[hoótoote-ey-a]	n-to-re-[hootóoter-a]	to-ra-[hootoóter-a]
FOC-we-PST.PROG-reassure-PFV-FV	FOC-we-REM.FUT-reassure-FV	we-INCEP-reassure-FV
‘we have been reassuring’	‘we will reassure’	‘we are about to reassure’

In contrast are cases like Kuria [kuj] (Bantu - Marlo *et al*. 2015) in (2), where the sponsored floating Ⓗ tone must appear on a specific mora of the internal stem constituent, e.g. on the second (2a), third (2b), or fourth mora (2c) from the left (among others) Because these floating tones target distinct positions, Kuria-like patterns cannot be captured by the same mechanisms as in Lamba.

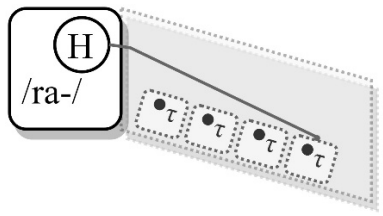
Types of accounts. Both grammatical and representational accounts have been proposed for the Kuria case above. Marlo *et al*. (2015) reject several representational analyses (see below), and adopt a grammatical approach, albeit with no explicit formalization. One of their most theoretically important claims is that such pattern provide evidence that natural grammars can count (i.e. ‘place H on fourth mora’), which if correct would constitute a radical counterexample to previous claims (Kenstowicz 1994:372, Smith & Tsimpli 1995, Hayes 1995:307, Corbett 2008:293, a.o.). In fact, allowing grammar to count is inevitable in a grammatical account of the Kuria data.

Proposal. In maintaining that natural grammars do not count, we propose an alternative representational account of floating tone in Kuria, crucially relying on new representations which we call “PHANTOM STRUCTURE”. The main intuition behind phantom structure is that certain morphemes *require* structure to be present in order for their sponsored floating tone to be realized, but do not and cannot provide this structure themselves. The proposed representation for the inceptive prefix /raⒽ-/ in (2c) is as in (3) below, where Ⓗ associates to the 4th tone-bearing unit (τ) of the stem. The representation contains two planes: one carrying the actual structure (segmental, tonal, *etc*.) of the morpheme (i.e. /raⒽ/), and another “parallel plane” which carries the “desired” phantom structure, i.e. $\bullet_\tau$ $\bullet_\tau$ $\bullet_\tau$ $\bullet_\tau$ (in dotted boxes within the grey transparent parallel plane). The floating tone is pre-linked to the 4th phantom TBU underlyingly.

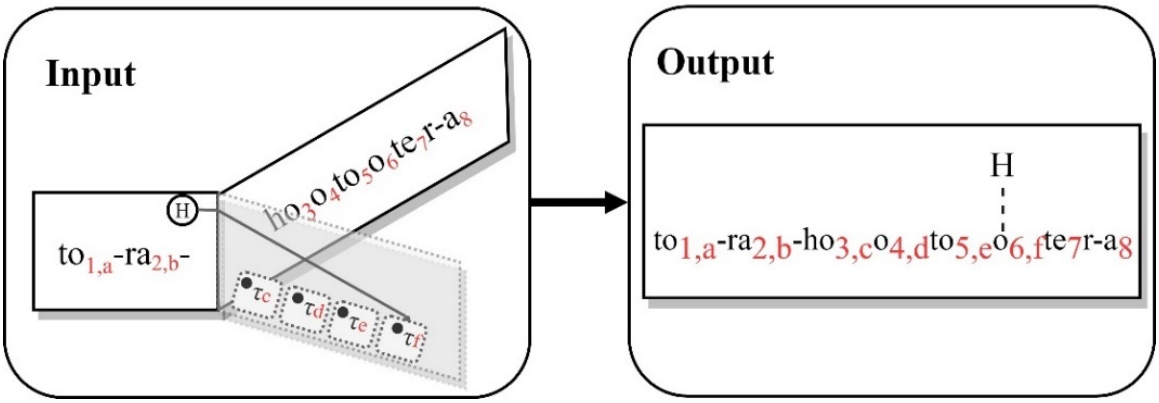
In context, both planes are present in the input and represent two distinct chains, shown in (4). We implement input-output computation via Optimality Theory (Prince & Smolensky 1993/2004), crucially relying on two partially overlapping correspondence relations (McCarthy & Prince 1995): one between the actual input structure and output (IO, number indices), and another between phantom and output structure (PO, letter indices). The output merges these two planes, resulting in verb stem morae in the output partaking in both correspondence relations. Ranking IDENT-PO(τ) (“corresponding TBUs in the parallel plane and output have identical tonal

associations") above IDENT-IO(τ) and other constraints (e.g. UNIFORMITY, against multiple correspondence - McCarthy & Prince 1995, a.o.) preserves the H on the 4th TBU of the input. In this way, the "desired" but absent structure is provided by independent morphemes in the input chain and the floating tone to the 4th τ retained, without granting grammar the ability to count. In total, Kuria-type floating tones are accounted for by pre-linking them to a position within a parallel plane, while the Lamba-type are 'truly' floating and thus not subject to such correspondence relations. We therefore predict the latter type to uniformly associate to a limited set of 'pivot' positions (in the sense of Yu 2007), such as the first TBU in the relevant domain.

(3)



(4)



Against other accounts. We will restrict our criticism to dismissing four rival representational accounts. The first is to posit latent (~ ghost) structure (Zoll 1996, Zimmermann 2018, a.o.) – e.g. segmentally empty/deficient nodes /raττττ^{H}-/ – which differs from phantom structure in not requiring two parallel planes. One crucial difference is that latent structure consists of actual material, which has problematic consequences. In this alternative, fusion of the latent morae and the first four morae of the verb stem can only be accounted for through copy epenthesis and deletion of the original: /to-raττττ^{H}-hootooter-a/ → to-rahootoó-~~hootoo~~ter-a. This makes several foul predictions, including a possibility for such ττττ^{H} sequences to trigger reduplication (copy epenthesis without deletion), e.g. /to-raττττ^{H}-hootooter-a/ → to-rahootoó-hootooter-a. Such a reduplicative pattern is not attested in the Bantu grammatical tone systems in the literature.

A second alternative is to view association lines as active phonological objects, recently posited independently by Ben Si Saïd & Scheer (2019) and Berger (2019). Under this approach, the distinction between Lamba-type vs. Kuria-type floating tones would be represented as the absence vs. presence of an association line, i.e. Ⓗ vs. Ⓗ. This alone, however, would not distinguish the three cases in (2a-c) unless association lines were able to count up to four. Moreover, our proposal with phantom structure maintains the nature of association lines as a *relation* between phonological objects, rather than being a (potentially contrastive) phonological object itself.

Finally, we highlight the third and fourth alternatives, which Marlo *et al*. (2015) originally rejected for Kuria. One is a floating low tone analysis (/raⓁⓁⓁⒽ-/), which they reject due to (i) its violation of the OCP, (ii) Kuria being a H vs. Ø language where L is inactive, and (iii) later H tone spread operations spreading into the ⓁⓁⓁⒽ sequence which are expected to be blocked if there were *bona fide* L tones in the representation. The other is a metrical constituent analysis, whereby floating Ⓗ tones are assigned to *ad hoc* prominent metrical positions, e.g. /raⒽ-/ assigns its Ⓗ to the last mora of the first colon in the stem: [{(. .)$_{Ft}$(. H)$_{Ft}$}$_{\kappa}$]$_{STEM}$. Marlo *et al*. reject this alternative on the basis that (i) there is no independent evidence for such metrical constituents in Kuria, (ii) each floating Ⓗ in (2a-c) would require a different metrical parse.