Appendices

The following online appendices serve three main purposes: ① to give a synopsis of the empirical facts in Kuria with a slightly extended data set (appendix A). ② to provide a reference to the complete OT-analysis of Kuria including all constraint definitions and rankings (appendix B). This also contains an analysis of morphological patterns which combine several morphological tone patterns in a single verb form not analyzed explicitly in the main text of the paper. ③ to further substantiate problems of Construction Phonology approaches raised by the Kuria facts by elaborating on problematic typological predictions they make (appendix C) and by listing specific technical problems of the CbP analysis of Kuria provided by SJI (appendix D). Appendix E contains more details on data from other languages cited in the main text. E.1 gives the sketch of an analysis for morphological tone in Chimwiini, and E.2 lays out the Collectivity Problem in Turkish velar deletion, both employed in the argumentation of section 5. Additional references for the appendices are given in appendix F.

A Summary of Kuria Data

A.1 Overview of Simple Morphological Tone Patterns in Kuria

(omitting patterns which combine several morphological Hs such as the 3pl Immediate Past and the Affirmative Infinitive)

	H Target	*H Spreading*	*Across-word Association*	*Association to Prefix*	*Phrase-final Superlowering*	*H Clipping*	*Underlying Tone*	*Full Gloss*
Hortatory Imperative$_1$	–	–	n.a.	n.a.	+	n.a.	L	*Hortatory Imperative$_1$*
Hortatory Imperative$_2$	μ1	–	n.a.	+	+	–	ta- HL	*Hortatory Imperative$_2$*
Past	μ1	+	+	–	–	–	H	Untimed Past Anterior Focused
Past Progressive	μ2	+	+	–	–	–	LH	Past Progressive
Remote Future	μ3	+	+	–	–	–	LLH	Remote Future Focused
Negative Remote Future$_1$	μ3	–	–	–	+	+	LLH+L	Negative Remote Future$_1$
Mandatory Imperative	μ3	–	–	–	+	–	LLHL	Mandatory Imperative
Inceptive	μ4	+	+	–	–	–	LLLH	Inceptive

H Target: The leftmost ('anchor') position of the morphological H in the stem (e.g., μ2 ≈ H on the second stem mora)

H Spreading: '+' if the morphological H shows phrasal spreading to the penultimate syllable of the phrase

Across-word Association: '+' if the the morphological H associates to moras of an independent word following the verb (stem) for stems of a specific length (non-applicable with the Hortatory Imperative$_1$ which lacks a morphological H, and the Hortatory Imperative$_2$ where the morphological H appears consistently on the first stem mora and does not spread)

Association to Prefix '+' if the morphological H associates to a prefix for stems of specific lengths (only in the Hortatory Imperative$_2$, non-applicable with the Hortatory Imperative$_1$ which lacks a morphological H)

H Clipping: '+' if no morphological H shows up in stems of a length equal or shorter than the H Target position (only in the Negative Remote Future$_1$, see section 3.1)

Superlowering: '+' if phrase-final verb stems exhibit lowering of a final L-mora after another L-mora (in complementary distribution to H-Spreading which inherently eliminates a phrase-penultimate L)

Underlying Tone: The underlying Stem-Level representation of the tonal prefix under the analysis developed in the paper

A.2 Simple Verb Paradigms

The paradigms here summarize and slightly add to the data for all Kuria paradigms discussed in the text (I give 2 examples for every number of stem moras whenever available in the published sources. i.e., Mwita 2008, Marlo Mwita & Paster 2012, 2014, 2015).

(1) *Hortatory Imperative$_1$ (no morphological H on the stem)*
(Mwita 2008:134-135, Marlo, Mwita & Paster 2014:287) 'let him . . . !'

a. 1μ-*Stems*: a-tá-[h-a] 'give'
a-tá-[rj-a] 'eat'

b. 2μ-*Stems*: a-tá-[rom-à] 'bite'
a-tá-[βun-à] 'break'

c. 3μ-*Stems*: a-tá-[saamb-à] 'burn'
a-tá-[tɛrɛk-à] 'brew'

d. 4μ-*Stems*: a-tá-[βereker-à] 'call'
a-tá-[haɣaatʃ-à] 'build'

e. 5μ-*Stems*: a-tá-[koondokor-à] 'uncover'

3SG-TAM-[√-FV]

(2) *Hortatory Imperative$_2$ (μ1) (Marlo, Mwita & Paster 2014:288) 'do . . . !'*

a. 1μ-*Stems*: [tá-rj-a] 'eat'
[tá-sj-a] 'grind'

b. 2μ-*Stems*: [ta-róm-a] 'bite'

c. 3μ-*Stems*: [ta-súkur-à] 'rub'
[ta-βíím-a] 'measure'

d. 4μ-*Stems*: [ta-káraaŋg-à] 'fry'
[ta-βéreker-à] 'fry'

[TAM-√-FV]

(3) *Past (μ1) (MMP:254) '(indeed) we have (already) . . . '*

a. 1μ-*Stems*: n-to-o-[rj-á] 'eaten'

b. 2μ-*Stems*: n-to-o-[róm-a] 'bitten'

c. 3μ-*Stems*: n-to-o-[tɛ́rɛ́k-a] 'brewed'
n-to-o-[sáámb-a] 'burned'

d. 4 μ-*Stems* n-to-o-[tɛ́rémék-a] 'been calm'
n-to-o-[kárááŋg-a] 'fried'

e. 5 μ-*Stems* n-to-o-[kóóndókór-a] 'uncovered'
n-to-o-[kírííɣít-a] 'scrubbed'

f. 6μ-*Stems*: n-to-o-[hóótóóter-a] 'reassuring'

FOC-1PL-TAM-[√-FV]

(4) *Past Progressive (μ2) (MMP:254-55) 'we have been . . . '*

a. 3μ-*Stems*:	n-to-oka-[rom-ér-e]	'biting'
	n-to-oɣa-[re-ɛ́j-e]	'eating'
c. 4μ-*Stems*:	n-to-oɣa-[terɛ́k-ér-e]	'brewing'
	n-to-oɣa-[saámb-ér-e]	'burning'
d. 5 μ-*Stems*	n-to-oɣa-[terémék-ér-e]	'being calm'
	n-to-oɣa-[karááŋg-ér-e]	'frying'
e. 6 μ-*Stems*	n-to-oɣa-[koóndókó-ój-e]	'uncovering'
	n-to-oɣa-[kirí ɣíít-ír-e]	'scrubbing'
f. 7μ-*Stems*:	n-to-oka-[hoótóót-ɛ́j-e]	'reassuring'
	FOC-1PL-TAM-[√-PFV-FV]	

(5) *Remote Future (μ3) (MMP:254) 'we will . . . '*

a. 1μ-*Stems*:	n-to-re-[rj-a]	'eat'
	n-to-re-[h-a]	'give'
b. 2μ-*Stems*:	n-to-re-[rom-ă]	'bite'
	n-to-re-[βun-ă]	'break'
c. 3μ-*Stems*:	n-to-re-[tɛrɛk-á]	'brew'
d. 4 μ-*Stems*	n-to-re-[teremɛ́k-a]	'be calm'
	n-to-re-[karaáŋg-a]	'fry'
e. 5 μ-*Stems*	n-to-re-[koondóókór-a]	'uncover'
	n-to-re-[kiriɣíít-a]	'scrub'
e. 6 μ-*Stems*	n-to-re-[hootóótér-a]	'reassure'
	FOC-1PL-TAM-[√-FV]	

(6) *Negative Remote Future$_1$ (μ3) (Mwita 2008:198) 'they will not . . . then'*

a. 1μ-*Stems*:	βa-ta-re-[rj-à]	'eat'
b. 2μ-*Stems*:	βa-ta-re-[rom-à]	'bite'
c. 3μ-*Stems*:	βa-ta-re-[tɛrɛk-à]	'brew'
d. 4 μ-*Stems*	βa-ta-re-[βerekɛ́r-a]	'call'
e. 5 μ-*Stems*	βa-ta-re-[koondóokor-à]	'uncover'
	3PL-NEG-TAM-[√-FV]	

(7) *Mandatory Imperative (μ3) (MMP:254, Marlo, Mwita & Paster 2014:288-289)*[8]

a. 1μ-*Stems*:	[rj-a]	'eat!'
	[sj-a]	'grind!'
a. 2μ-*Stems*:	[rom-ă]	'bite!'
	[βun-ă]	'break!'
b. 3μ-*Stems*:	[tɛrɛk-á]	'brew!'
	[sukur-á]	'rub!'
c. 4μ-*Stems*:	[karaáŋg-a]	'fry!'
	[heetók-a]	'remember!'
d. 5μ-*Stems*:	[koondókor-à]	'uncover!'
e. 6μ-*Stems*:	[hootóóter-à]	'reassure!'
	[√-FV]	

(8) *Inceptive 1pl (μ4) (MMP:253) 'we are about to . . . '*

a. 1μ-*Stems*:	to-ra-[rj-a]	'eat'
	to-ra-[sj-a]	'grind'
b. 2μ-*Stems*:	to-ra-[rom-a]	'bite'
	to-ra-[βun-a]	'break'
c. *3μ-Stems*	to-ra-[saamb-ă]	'burn'
	to-ra-[sukur-ă]	'rub'
d. *4μ-Stems*	to-ra-[heetok-á]	'remember'
	to-ra-[karaaŋg-á]	'fry'
e. *5μ-Stems*	to-ra-[koondokór-a]	'uncover'
	to-ra[kiriɣiít-a]	'scrub'
f. *6μ-Stems*	to-ra-[hootoótér-a]	'reassure'
	1PL-TAM-[√-FV]	

(9) *3pl Immediate Past (μ1+μ4) (MMP:263, Mwita 2008:145) 'they have just . . . '*

a. *4μ-Stems:*	βa-a-[tɛ́rɛ́k-er-é]	'brewed'
b. *5μ-Stems*	βa-a-[βéréke-éj-e]	'called'
	βa-a-[káraaŋg-ér-e]	'fried'
	3PL-TAM-[√-PF-FV]	

(10) *Negative Infinitive (μ4) (MMP:261, Mwita 2008:224-25) 'to not . . . '*

a. *1μ-Stems:*	o-ɣo-tɔ́-kó-[rj-a]	'eat'
b. *2μ-Stems:*	o-ɣo-tɔ́-kó-[róm-a]	'bite'
c. *3μ-Stems:*	o-ɣo-tɔ́-kó-[sáámb-a]	'burn'
d. *4μ-Stems:*	o-ɣo-tɔ́-kó-[βéréker-á]	'call'
	o-ɣo-tɔ́-kó-[héétok-á]	'remember'
e. *5μ-Stems:*	o-ɣo-tɔ́-kó-[kóóndokór-a]	'uncover'
	AUG-INF-NEG-[√-FV]	

[8]For 2μ-stems and 3μ-stems, there are alternative Mandatory Imperative forms, where the H is clipped, and consequently Superlowering applies ([rom-à], [βun-à], [saamb-à], [sukur-à]). This tone pattern is hence identical to the one of the Negative Remote Future$_1$.

A.3 Association across Independent Morphosyntactic Words

This appendix provides virtually all data from Mwita (2008), Diercks et al. (2015) and Marlo et al. (2012, 2014, 2015) where a H which is part of a morphological stem tone melody docks on an independent following word (omitting only examples which are structurally identical to the ones given here), especially object nouns ((11), (12)), object pronouns ((15)-a), the negative particle [hai] ((13)), several locative particles ((14)), and an embedded Infinitive verb across an object pronoun. ((15)-a). Marlo et al. (2015):258 claim that Mwita (2008) contains additional data where morphological verb tone is realized on an embedded Infinitive, but I have been unable to verify this claim in an exhaustive search of the dissertation. Possibly this statement refers to a handful of data for auxiliary+Infinitive constructions Mwita provides without an explicit analysis (pp. 180+181).

(11) *Inceptive μ4 on following object (MMP:259)*

a. to-ra-[rj-a] eɣetɔ́ɔ́kɛ
1PL-TAM-[eat-FV] banana
'we are about to eat a banana'

b. to-ra-[rom-a] eɣétɔ́ɔ́kɛ
1PL-TAM-[bite-FV] banana
'we are about to bite a banana'

c. to-ra-[sukur-a] éɣétɔ́ɔ́kɛ
1PL-TAM-[rub-FV] banana
'we are about to rub a banana'

d. to-ra-[karaaŋg-á] éɣétɔ́ɔ́kɛ
1PL-TAM-[fry-FV] banana
'we are about to fry a banana'

(12) *Remote Future μ3 on following object (MMP:259)*

a. n-to-re-[rj-a] eɣétɔ́ɔ́kɛ
FOC-1PL-TAM-[eat-FV] banana
'we will eat a banana'

b. n-to-re-[rom-a] éɣétɔ́ɔ́kɛ
FOC-1PL-TAM-[bite-FV] banana
'we will bite a banana'

(13) *Negative Remote Future$_2$ μ3 on following negative particle (Mwita 2008:220)*

a. 1μ-Stem: te-βá-ré[rj-a] háí 'they will not eat (then)'
NEG-S3PL-TAM-call-FV NEG

b. 2μ-Stem: te-βá-ré[róm-a] háí 'they will not bite (then)'
NEG-S3PL-TAM-call-FV NEG

c. 4μ-Stem: te-βá-ré[βérekér-á] hai 'they will not call (then)'
NEG-S3PL-TAM-call-FV NEG

d. 5μ-Stem: te-βá-ré[koondókór-á] hai 'they will not uncover (then)'
NEG-S3PL-TAM-call-FV NEG

I assume that [hai] in the Negative Remote Future$_2$ has only a single mora (hence should rather be transcribed as [haj]), which would explain that the H in (13-b) seems to be phonetically realized on the entire particle and that H-spreading in (13-c-d) does not affect [a] (*[hái]). That the particle does have a H instead of a rising tone in (13-a) might be related to a blocking effect for contours on monomoraic words. See also section 4.1 of the main text for discussion of Plateauing in the Negative Remote Future$_2$.

(14) *Immediate Past μ4 on following locative particles (Mwita 2008:147+148)*

a. βa-a-[rómér-é] hɔ́ 'they have just bitten there'
S3PL-TAM-call-PV-FV Loc16

b. βa-a-[rómér-é] kɔ́ 'they have just bitten on (it)'
S3PL-TAM-call-PV-FV Loc17

c. βa-a-[rómér-é] mɔ́ 'they have just bitten in (there)'
S3PL-TAM-call-PV-FV Loc18

Mwita only gives trimoraic stem examples of the type shown in (14). That the local particles do not have an underlying H is illustrated by longer Hodiernal Past Progressive Anterior Focused (μ2) forms such as [m-ba-aka-[βiím-ír-é] hɔ] FOC-S3PL-TAM-measure-PV-FV '(indeed) they have been measuring there (today)' (Mwita 2008:147). The 3pl Immediate Past forms in (14) also have a μ1 tone in addition to the μ4 tone found in all forms of this tense. See appendix B.3 for more discussion and formal analysis of this pattern in isolated verbs.

(15) *Inceptive μ4 association across two syntactic words (Diercks et al. 2015:59 → (33))*

a. n-da-[mo-gaɲ-a] wɛ́ á-tánɔr-ɛ́
S1SG-INCEP-O1-expect-FV 3SG S1SG-leave-SBJ.FV
'I expect him to leave'

b. n-da-[gaɲ-a] wɛ á-tánɔr-ɛ́
S1SG-INCEP-expect-FV 3SG S1SG-leave-SBJ.FV
'I expect him to leave'

As mentioned in section 3.3 of the main text, the published literature on Kuria does not contain any examples where a word providing the mora for docking a morphological H has underlyingly specified tone. The only available data where an object noun has underlying tone at all are given in (16). Here the morphological H of the verb and the underlying H of the object noun trigger Plateauing, but the nouns do not provide the docking site for the morphological H: the Inceptive (μ4) H docks on the fourth stem syllable and spreads to the first syllable of the following noun if this has a root-initial H (compare this to the toneless noun [eɣetɔɔkɛ] 'banana' in (11) of the main text, where – melody-final – spreading continues to the penultimate syllable). These data thus also provide evidence that Plateauing in Kuria is a Phrase-Level process.

(16) *Plateauing across word boundaries (Marlo, Mwita & Paster 2012:6)*

a. to-ra-[kiriɣigít-á] é-ke-ráándi 'we are about to scrub a gourd'
1PL-TAM-[scrub-fv] AUGM-CLS-gourd

b. to-ra-[kiriɣigít-á] á-ma-ɣéna 'we are about to scrub stones'
1PL-TAM-[scrub-fv] AUGM-CLS-stones

B Summary and Additional Details for the Stratal-OT Analysis

B.1 OT-Constraints and Rankings Employed in the Analysis

(17) *Constraints triggering overall association*

a. $\tau \rhd \mu$ Assign $*$ to every tone which is not associated to a μ

b. $\mu \rhd \tau$ Assign $*$ to every μ which is not associated to a tone

(18) *Constraints implementing left-to-right association*

a. $*\underline{\textcircled{\tau}\tau}$ Assign $*$ to every phonetic floating tone which immediately precedes a phonetic non-floating tone

b. $*\underline{\textcircled{\mu}\mu}$ Assign $*$ to every phonetic unassociated mora which immediately precedes a phonetic associated mora

c. $*_{\mu}\tau_{\mu}\ \tau$ Assign $*$ to every multiply associated tone of color *C* which immediately precedes another tone of color *C*

(19) *Basic Faithfulness Constraints*

a. MAX τ Assign $*$ to every tone which is marked as phonetically invisible

b. DEP τ Assign $*$ to every epenthetic tone

c. MAX | Assign $*$ to every phonetically invisible association line connecting an underlying tone and an underlying mora

d. DEP | Assign $*$ to every epenthetic association line connecting an underlying tone and an underlying mora

(20) *Constraints against multiply associated moras ('contour tones')*

a. $*_{L}\underline{\mu}_{H}$ Assign $*$ to every μ which is phonetically associated to a L and a following H

b. $*_{L}\underline{\mu}_{L}$ Assign $*$ to every μ which is phonetically associated to two Ls

c. $\underline{\mu}_{(H,L)}\ldots]$ Assign $*$ to every phonetic mora *M* associated to two different tones such that *M* is not final

(21) ALTERNATION Assign $*$ to every epenthetic association line which connects two nodes of the same color

(22) *Constraints capturing Plateauing*

a. *H ... H: Assign $*$ to every mora which intervenes between two Hs

b. OCP^{H}_{σ} Assign $*$ to every pair of distinct Hs which are associated to adjacent syllables

(23) *Constraints triggering and delimiting spreading*

c. *$\acute{\mu}]$ Assign $*$ to every PWord-final mora which is associated with a H

d. *SPREAD-LEFT Assign $*$ to every association epenthetic line of a tone *T* which immediately precedes a non-epenthetic association line of *T*

(24) $*\underline{\mu}_{3}$ Assign $*$ to every syllable which is phonetically associated to more than two moras

(25) *Complete Rankings*

a. *Stem Level:* $\left\{ \begin{array}{c} *\overline{\textcircled{\tau}\tau} \\ {}^{*}_{\mu}\tau_{\mu}\ \tau \\ \textsc{Max}\ \tau \\ \textsc{Dep}\ \tau \\ \textsc{Max}\ | \\ {}^{*}_{L}\underline{\mu}_{H} \\ {}^{*}_{L}\underline{\mu}_{L} \\ \underline{\mu}_{[H,L]}\ldots] \\ *\textsc{Spread-Left} \\ *\underline{\mu}_{3} \end{array} \right\} \gg \tau \rhd \mu \gg \textsc{Alternation} \gg \textsc{Dep}\ | \gg \left\{ \begin{array}{c} \mu \rhd \tau \\ *\overline{\textcircled{\mu}\mu} \\ *\overline{H \ldots H} \\ \textsc{OCP}^{H}_{\sigma} \\ *[\acute{\mu}] \end{array} \right\}$

b. *Word Level:* $\left\{ \begin{array}{c} *\overline{\textcircled{\tau}\tau} \\ {}^{*}_{\mu}\tau_{\mu}\ \tau \\ \textsc{Dep}\ \tau \\ {}^{*}_{L}\underline{\mu}_{H} \\ {}^{*}_{L}\underline{\mu}_{L} \\ \underline{\mu}_{[H,L]}\ldots] \\ \textsc{Alternation} \\ *\textsc{Spread-Left} \\ *\underline{\mu}_{3} \end{array} \right\} \gg \tau \rhd \mu \gg \left\{ \begin{array}{c} \textsc{Max}\ \tau \\ \textsc{Max}\ | \end{array} \right\} \gg \textsc{Dep}\ | \gg \left\{ \begin{array}{c} \mu \rhd \tau \\ *\overline{\textcircled{\mu}\mu} \\ *\overline{H \ldots H} \\ \textsc{OCP}^{H}_{\sigma} \\ *[\acute{\mu}] \end{array} \right\}$

c. *Phrase Level:* $\left\{ \begin{array}{c} \mu \rhd \tau \\ *\overline{\textcircled{\tau}\tau} \\ *\overline{\textcircled{\mu}\mu} \\ {}^{*}_{\mu}\tau_{\mu}\ \tau \\ {}^{*}_{L}\underline{\mu}_{L} \\ \underline{\mu}_{[H,L]}\ldots] \\ \overline{\textsc{OCP}^{H}_{\sigma}} \\ *\textsc{Spread-Left} \\ *\underline{\mu}_{3} \end{array} \right\} \gg *H \ldots H \gg \tau \rhd \mu \gg *[\acute{\mu}] \gg \left\{ \begin{array}{c} \textsc{Dep}\ \tau \\ \textsc{Max}\ \tau \end{array} \right\} \gg \left\{ \begin{array}{c} {}^{*}_{L}\underline{\mu}_{H} \\ \textsc{Max}\ | \\ \textsc{Dep}\ | \\ \textsc{Alternation} \end{array} \right\}$

B.2 Complete Derivations for Isolated Verb Forms

In this appendix, I give the stratal derivations (i.e., the input-output mappings for all three strata) for the majority of the simple word forms as they appear in appendix A.2 (omitted are forms whose derivation is basically identical to others already given, i.e. verbs with the same number of moras, or longer verbs only distinguished from shorter ones by additional L-epenthesis).

In the derivations, vowels without diacritics (e.g., [a]) indicate moras without tone, grave accent ([à]) denotes L and double grave ([ȁ]) Superlow. Vowels with epenthetic tone are shaded in gray ([a]), blue indicates Stem-Level affixes (or base material associated to tonal Stem-Level affixes ([a]), and red ([a]) segmental or tonal Word-Level affixation. The effects of Bracket Erasure/Monochromization are indicated by omission of hyphens.

(1) *Hortatory Imperative$_1$ (no morphological H on the stem)*
(Mwita 2008:134-135, Marlo, Mwita & Paster 2014:287) 'let him . . . !'

a. 1μ-*Stems*: a-tá-[rj-a] 'eat' Stem-↻: (L)rj-a → rjà
Word-↻: a-tá-rjà
Phrase-↻: atárjà → àtárjà

b. 2μ-*Stems*: a-tá-[rom-à] 'bite' Stem-↻: (L)rom-a → ròma
Word-↻: a-tá-ròma
Phrase-↻: atáròma → àtáròmȁ

(2) *Hortatory Imperative$_2$ (μ1) (Marlo, Mwita & Paster 2014:288) 'do . . . !'*

a. 1μ-*Stems*: [tá-rj-a] 'eat' Stem-↻: ta-(H)(L)rj-a → tárjà
Word-↻:
Phrase-↻:

b. 2μ-*Stems*: [ta-róm-a] 'bite' Stem-↻: ta-(H)(L)rom-a → tarómà
Word-↻:
Phrase-↻: tarómà → tàrómà

c. 3μ-*Stems*: [ta-súkur-à] 'rub' Stem-↻: ta-(H)(L)sukur-a → tasúkùra
Word-↻:
Phrase-↻: tasúkùra → tàsúkùrȁ

(3) *Past (μ1) (MMP:254) '(indeed) we have (already) . . . '*

a. 1μ-*Stems*: n-to-o-[rj-á] 'eaten' Stem-↻: (H)rj-a → rjá
Word-↻: n-to-o-rjá
Phrase-↻: ntoorjá → ntòòrjá

b. 2μ-*Stems*: n-to-o-[róm-a] 'bitten' Stem-↻: (ĥ)rom-a → róma
Word-↻: n-to-o-róma
Phrase-↻: ntooróma → ntòòrómà

(4) *Past Progressive (μ2) (MMP:254-55) 'we have been . . . '*

a. 3μ-*Stems*: n-to-oka-[rom-ér-e] 'biting' Stem-↻: (L)(H)rom-er-e → rómére
Word-↻: n-to-oka-rómére
Phrase-↻: ntookarómére → ntòòkàrómérè

(5) *Remote Future (μ3) (MMP:254) 'we will . . . '*

a. 1μ-*Stems*: n-to-re-[rj-a]	'eat'	Stem-↺:	(L)(L)(H)rj-a	→ rjà(L)(H)
		Word-↺:	n-to-re-rjà(L)(H)	
		Phrase-↺:	ntorerjà(L)(H)	→ ntòrèrjà(L)(H)
b. 2μ-*Stems*: n-to-re-[rom-ă]	'bite'	Stem-↺:	(L)(L)(H)rom-a	→ ròmà(H)
		Word-↺:	n-to-re-ròmà(H)	
		Phrase-↺:	ntoreròmà(H)	→ ntòrèròmă
c. 3μ-*Stems*: n-to-re-[tɛrɛk-á]	'brew'	Stem-↺:	(L)(L)(H)tɛrɛk-a	→ tɛ̀rɛ̀ká
		Word-↺:	n-to-re-tɛ̀rɛ̀ká	
		Phrase-↺:	ntoretɛ̀rɛ̀ká	→ ntòrètɛ̀rɛ̀ká
d. 4 μ-*Stems* n-to-re-[teremék-a]	'be calm'	Stem-↺:	(L)(L)(H)teremek-a	→ tèrèméka
		Word-↺:	n-to-retèrèméka	
		Phrase-↺:	ntoretèrèméka	→ ntòrètèrèmékà

(6) *Negative Remote Future$_1$ (μ3) (Mwita 2008:198) 'they will not . . . then'*

a. 1μ-*Stems*: βa-ta-re-[rj-à]	'eat'	Stem-↺:	(L)(L)(H)rj-a	→ rjà(L)(H)
		Word-↺:	βa-ta-re-rjà(L)(H)(L)	→ βa-ta-re-rjà
		Phrase-↺:	βatarerjà	→ βàtàrèrjà̀
b. 2μ-*Stems*: βa-ta-re-[rom-à]	'bite'	Stem-↺:	(L)(L)(H)rom-a	→ ròmà(H)
		Word-↺:	βa-ta-re-ròmà(H)(L)	→ βa-ta-re-ròmà
		Phrase-↺:	βatareròmà	→ βàtàrèròmà̀
c. 3μ-*Stems*: βa-ta-re-[tɛrɛk-à]	'brew'	Stem-↺:	(L)(L)(H)tɛrɛk-a	→ tɛ̀rɛ̀ká
		Word-↺:	βa-ta-re-tɛ̀rɛ̀ká(L)	→ βa-ta-re-tɛ̀rɛ̀kà
		Phrase-↺:	βataretɛ̀rɛ̀kà	→ βàtàrètɛ̀rɛ̀kà̀
d. 4 μ-*Stems* βa-ta-re-[βerekér-a]	'call'	Stem-↺:	(L)(L)(H)βereker-a	→ βèrèkér-a
		Word-↺:	βa-ta-re-βèrèkér-a(L)	→ βa-ta-re-βèrèkérà
		Phrase-↺:	βatareβèrèkérà	→ βàtàrèβèrèkérà
e. 5 μ-*Stems* βa-ta-re-[koondókor-à]	'uncover'	Stem-↺:	(L)(L)(H)koondokor-a	→ kòòndókora
		Word-↺:	βa-ta-re-kòòndókora(L)	→ βa-ta-re-kòòndókòra
		Phrase-↺:	βatarekòòndókòra	→ βàtàrèβatarekòòndókòrà̀

(7) *Mandatory Imperative (μ3) (MMP:254, Marlo, Mwita & Paster 2014:288-289)*

a. 1μ-*Stems*:	[rj-a]	'eat!'	Stem-↺:	(L)(L)(H)(L)rj-a → rjà(L)(H)(L)
			Word-↺:	
			Phrase-↺:	
b. 2μ-*Stems*:	[rom-ă]	'bite!'	Stem-↺:	(L)(L)(H)(L)rom-a → ròmà(H)(L)
			Word-↺:	
			Phrase-↺:	ròmà(H)(L) → ròmă(L)
c. 3μ-*Stems*:	[tɛrɛk-á]	'brew!'	Stem-↺:	(L)(L)(H)(L)tɛrɛk-a → tɛ̀rɛ̀k-á(L)
			Word-↺:	
			Phrase-↺:	
d. 4μ-*Stems*:	[karaáŋg-a]	'fry!'	Stem-↺:	(L)(L)(H)(L)karaaŋg-a → kàràáŋgà
			Word-↺:	
			Phrase-↺:	
e. 5μ-*Stems*:	[koondókor-à]	'uncover!'	Stem-↺:	(L)(L)(H)(L)koondokor-a → kòòndókòra
			Word-↺:	
			Phrase-↺:	kòòndókòra → kòòndókòrà
f. 6μ-*Stems*:	[hootóóter-à]	'reassure!'	Stem-↺:	(L)(L)(H)(L)hootooter-a → hòòtóòtera
			Word-↺:	
			Phrase-↺:	hòòtóòtera → hòòtóótèrà

At the Phrase Level of (7-f) a local H-spreading process applies which extends a H on the first mora of a bimoraic syllable to its second mora (see Mwita 2008:11 and footnote 5 of the main text).

(8) *Inceptive 1pl (μ4) (MMP:253) 'we are about to . . . '*

a. 1μ-*Stems*:	to-ra-[rj-a]	'eat'	Stem-↺:	(L)(L)(L)(H)rj-a → rjà(L)(L)(H)
			Word-↺:	to-ra-rjà(L)(L)(H)
			Phrase-↺:	torarjà(L)(L)(H) → tòràrjà(L)(L)(H)
b. 2μ-*Stems*:	to-ra-[rom-a]	'bite'	Stem-↺:	(L)(L)(L)(H)rom-a → ròmà(L)(H)
			Word-↺:	to-ra-ròmà(L)(H)
			Phrase-↺:	toraròmà(L)(H) → tòràròmà(L)(H)
c. *3μ-Stems*	to-ra-[saamb-ă]	'burn'	Stem-↺:	(L)(L)(L)(H)saamb-a → sààmbà(H)
			Word-↺:	to-ra-sààmbà(H)
			Phrase-↺:	torasààmbà(H) → tòràsààmbă
d. *4μ-Stems*	to-ra-[heetok-á]	'remember'	Stem-↺:	(L)(L)(L)(H)heetok-a → hètètòká
			Word-↺:	to-ra-hètètòká
			Phrase-↺:	torahètètòká → tòràhètètòká
e. *5μ-Stems*	to-ra-[koondokór-a]	'uncover'	Stem-↺:	(L)(L)(L)(H)koondokor-a → kòòndòkóra
			Word-↺:	to-ra-kòòndòkóra
			Phrase-↺:	torakòòndòkóra → tòràkòòndòkórà
f. *6μ-Stems*	to-ra-[hoototér-a]	'reassure'	Stem-↺:	(L)(L)(L)(H)hootootera-a → hòòtòótera
			Word-↺:	to-ra-hòòtòótera
			Phrase-↺:	torahòòtòótera → tòràhòòtòótérà

(9) *3pl Immediate Past (μ1+μ4) (MMP:263, Mwita 2008:145) 'they have just . . . '*

a. *4μ-Stems:*	βa-a-[tɛ́rɛ́k-er-é]	'brewed'	Stem-↺:	(L)(L)(L)(H)tɛrɛker-e → tɛ̀rɛ̀kɛ̀ré
			Word-↺:	βa(∧)(ĥ)-a-tɛ̀rɛ̀kɛ̀ré → βaàtɛ́rɛ̀kɛ̀ré
			Phrase-↺:	βaàtɛ́rɛ̀kɛ̀ré → βààtɛ́rɛ̀kɛ̀ré
b. *5μ-Stems*	βa-a-[βéréke-éj-e]	'called'	Stem-↺:	(L)(L)(L)(H)βereke-ej-e → βèrèkèéje
			Word-↺:	βa(L)(H)-a-βèrèkèéje → βaàβérèkèéje
			Phrase-↺:	βaàβérèkèéje → βààβérékèéjè

(10) *Negative Infinitive (μ4) (MMP:261, Mwita 2008:224-25) 'to not . . . '*

a. *1μ-Stems:*	o-ɣo-tɔ́-kó-[rj-a]	'eat'	Stem-↺:	(L)(L)(L)(H)rj-a → rjà(L)(L)(H)
			Word-↺:	o-ɣo-tɔ́-ko-rjà(L)(L)(H)
			Phrase-↺:	oɣotɔ́korjà(L)(L)(H) → òɣòtɔ́kórjà(L)(L)(H)
b. *2μ-Stems:*	o-ɣo-tɔ́-kó-[róm-a]	'bite'	Stem-↺:	(L)(L)(L)(H)rom-a → ròmà(L)(H)
			Word-↺:	o-ɣo-tɔ́-ko-ròmà(L)(H)
			Phrase-↺:	oɣotɔ́koròmà(L)(H) → òɣòtɔ́kóròmà(L)(H)
c. *3μ-Stems:*	o-ɣo-tɔ́-kó-[sáámb-a]	'burn'	Stem-↺:	(L)(L)(L)(H)saamb-a → sààmbà(H)
			Word-↺:	o-ɣo-tɔ́-ko-sààmbà(H)
			Phrase-↺:	oɣotɔ́kosààmbà(H) → òɣòtɔ́kósáámbà(H)
d. *4μ-Stems:*	o-ɣo-tɔ́-kó-[βéréker-á]	'call'	Stem-↺:	(L)(L)(L)(H)βereker-a → βèrèkèrá
			Word-↺:	o-ɣo-tɔ́-ko-βèrèkèrá
			Phrase-↺:	oɣotɔ́koβèrèkèrá → òɣòtɔ́kóβérékèrá
e. *5μ-Stems:*	o-ɣo-tɔ́-kó-[kóóndokór-a]	'uncover'	Stem-↺:	(L)(L)(L)(H)koondokor-a → kòòndòkóra
			Word-↺:	o-ɣo-tɔ́-ko-kòòndòkóra
			Phrase-↺:	oɣotɔ́kokòòndòkóra → òɣòtɔ́kókóóndòkórà

See (37) in the paper for the Phrase-Level OT evaluation of (10-d). Note in (10-a-c) that the Plateauing effect holds even though the second H triggering it is floating. This follows from the analysis since the relevant constraint *H . . . H is not restricted to Hs associated to a mora. That there is no contour formation in (10-c) (*o-ɣo-tɔ́-kó-[sáámb-ă]) follows since $\text{OCP}^{\text{H}}_{\sigma}$ is ranked higher than τ ▷ μ. H-association here also cannot be acommodated by limiting spreading to the prefix syllable as in (*o-ɣo-tɔ́-kó-[sààmb-ă]) since this would lead to additional violations of *H . . . H which also outranks τ ▷ μ ((*o-ɣo-tɔ́-kó-[sáámb-ă]) is independently excluded by the exceptionless ban on HL-contours on single syllables in Kuria.

B.3 An Extension of the Kuria Analysis to Multiple Morphological Tones

In this appendix, I provide an analysis of an additional set of Kuria data for which MMP claim implicitly that it is problematic for a tone-melody approach, and show that it falls out naturally under the assumption of Stratal OT. Note that MMP do not provide a worked out analyses of these data (see section 5.3 of the paper on the dilemma these data constitute for the Cophonology approach by SJI).

The apparent problem for the tone melody approach emerges in construction which exhibit the combination of melodic Hs. Thus in Inceptive and Immediate Past forms, 3pl subject agreement contributes a stem-initial H in addition to the 4th-mora H of the TAM category.

(11) *The stacking problem: H on μ1 and μ4 (MMP:263)*

a. *3pl* + *Inceptive*	b. *3pl* + Immediate Past	
'they are about to…'	'they have just …ed'	
(4μ-stems)	(5μ-stems)	
βa-ra-[káraaŋg-á]	βa-a-[káraaŋg-ér-e]	'fry'
βa-ra-[βéréker-á]	βa-a-[βéréke-éj-e]	'call'
3PL-TAM-[√-FV]	3PL-TAM-[√-PF-FV]	

In a concatenative approach to tone morphology, it is expected that the combination of tone melodies is in principle additive. From representing μ1-morphologies as a simple H-prefix and μ4-morphologies as LLLH, their combination should be the simple concatenation of both affixes, hence (H)(L)(L)(L)(H). But if this melody is associated left-to-right by the Stem-Level phonology, we expect that the additional the TAM-H of the LLLH-melody is incorrectly shifted to the *fifth* mora of the base (*ká$_\mu$rà$_\mu$à$_\mu$ŋgè$_\mu$ré$_\mu$), not to the fourth mora as in (11-b).

However, this conclusion depends on the assumption that both inflectional tones are added in the same phonological evaluation cycle. The Stratal-OT architecture assumed here immediately solves this problem. The constraint ranking developed for single tone melodies above predicts the lack of interaction between μ1 and μ4 patterns under the natural assumption that 3pl-tone is not added at the Stem Level but at the Word Level together with the segmental 3pl-prefix [βa]-. At the Stem Level, only the tonal tense exponent for the Immediate Past is concatenated, a LLLH melody. The association of floating tone here is completely parallel to the Stem-Level Evaluation of the Remote Future form in (16) in section 3.1: (L)(L)(L)(H)+ka$_\mu$ra$_\mu$a$_\mu$ŋge$_\mu$re$_\mu$ → kà$_\mu$rà$_\mu$à$_\mu$ŋgé$_\mu$re$_\mu$. The tableau in (12) shows the crucial part of the derivation at the Word Level where the segmental tense prefix [a]- is added along with the 3pl prefix [βa]-. The latter comprises a floating LH-sequence (12-f).[9] The floating L cannot associate to tautomorphemic [βa-] due to ALTERNATION excluding (12-e). Since Kuria does not allow for tone shifting, line crossing, or non-final contours (12-d), there is now a lack of TBUs in the medial portion of the word – 2 floating tones face 1 free TBU. In contrast to the Stem-Level association of tones, these medial floating tones are followed by tones which are already underlyingly associated, thus they inherently violate *$\underline{\text{(τ)}}$τ, which means that at least one medial tone must be deleted as in (12-a,c). Note that just displacing the stem-initial L by the floating tense-H without deleting it as in (12-b) does not solve the problem because the resulting floating L still violates *$\underline{\text{(τ)}}$τ). That the stem-initial L is deleted (12-a), not the floating tense-H (12-c) is now simply a consequence of the generalized markedness constraint τ ▷ μ, which favors underlyingly floating tones (see section 2). Since the L remains associated even under deletion by Containment, associating the floating H instead carries an extra bonus. This is basically the same constraint interaction which also derives the association of the Word-Level L-suffix in the Negative Remote Future$_1$ (see (25) in section 3.1):

[9]Note that this shape of the 3pl prefix is morphologically an allomorph conditioned by the presence of the Immediate Past since [βa-] in other TAM categories lacks a tonal reflex.

(12) *1 ⊕ 4 pattern (3pl Immediate Past → (11)-b)) – Word Level*

Input: f.	Alt	*Ⓣτ	μ$_{[H,L]}$ . . .]	*$_{L}$μ$_{L}$	τ ▷ μ	Max τ	*Ⓜμ
☞ a. βa a ka ra aŋ ge re						*	*
b. βa a ka ra aŋ ge re		*!					*
c. βa a ka ra aŋ ge re					*!	*	*
e. βa a ka ra aŋ ge re	*!						
f. βa a ka ra aŋ ge re		*!*			**		*

At the Phrase Level, there is again L-epenthesis due to high-ranked μ ▷ τ.

Striking support for the stratal analysis of the 1 ⊕ 4 pattern comes from vowel-initial verb roots in the Immediate Past, contrasted in (13) with the consonant-initial roots already discussed above: The tense prefix [a]- is deleted (marked by 'Ø' in (13-b)), plausibly to avoid a triphthongal [a-a-i/a] sequence in a single syllable. Whereas the Immediate Past-H is again on the 4th root mora, the 3pl-H appears instead on the *second* mora of the root:

(13) *Consonant-initial vs. vowel-initial verbs: 3pl + Immediate Past 'they have just . . . ed' (MMP:263)*

a. *Consonant-Initial Root:H on μ1 and μ4*

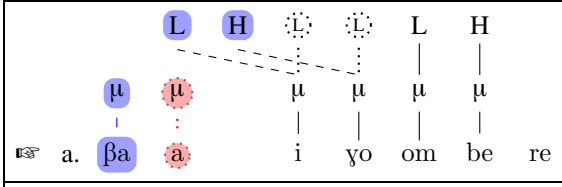
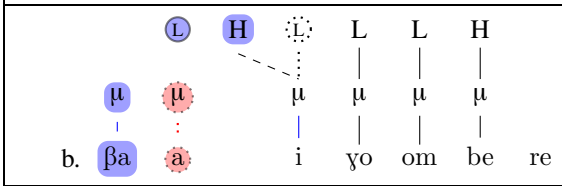
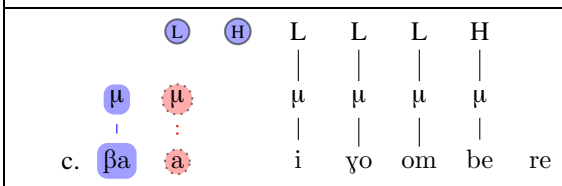
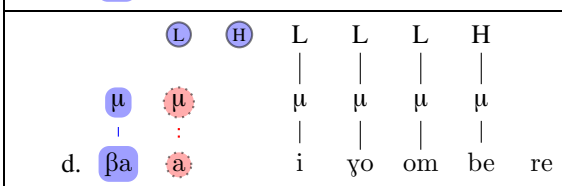
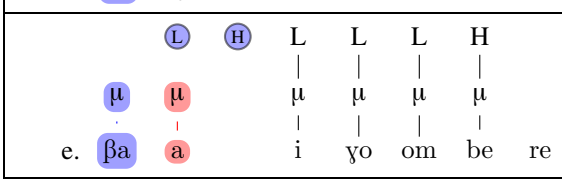
βa-a-[kárraaŋg-ér-e]	'fry'
βa-a-[βéréke-éj-e]	'call'

b. *Vowel-Initial Root: H on μ2 and μ4*

βa-Ø-[iɣóómb-ér-e]	'desire'
βa-Ø-[anéké-éj-e]	'lay out'
3PL-TAM-[√-PF-FV]	

That the Immediate Past-H is insensitive to vowel deletion while the 3pl-H is shifted follows now simply from the fact that they are concatenated at different strata. Immediate Past-LLLH again enters the derivation at the Stem Level and is associated 1:1 (ⓁⓁⓁⒽ+i$_{μ}$ɣo$_{μ}$o$_{μ}$mbe$_{μ}$re$_{μ}$ → ì$_{μ}$ɣò$_{μ}$òm$_{μ}$ŋbé$_{μ}$re$_{μ}$). The segmental context for vowel deletion is only created at the Word Level when 3pl [βa]- and the tense prefix [a]- are added. I represent the trigger for deletion here summarily by the constraint *μ$_{3}$ against 3 moras in a single syllable which enforces deletion of the vowel and one of the affix moras. Due to the resulting reduction of moras, association of the floating tones shifts to the right, whereas the already associated Immediate Past-H is unaffected:

(14) *1/2 ⊕ 4 pattern (3pl Immediate Past→ (13)) – Word Level*

Input: e.	*$\underline{\mu}_3$	Alt	*$\underline{\textcircled{\tau}\tau}$	*$\underline{{}_{L}\mu_{H}}$	*$\underline{{}_{L}\mu_{L}}$	τ ▷ μ	Max τ	*$\underline{\textcircled{\mu}\mu}$
☞ a. 							**	*
b. 			*!			*	*	*
c. 						*!*	**	*
d. 			*!			**		*
e. 	*!		*!			**		*

C Predictions of Construction Phonology Approaches

This appendix demonstrates in technical detail the predictions of Construction Phonology for tonal morphophonology mentioned in different parts of the main text.

C.1 (Pseudo-)OCP-Violations

Here, I substantiate the claim made in section 4.3 that Construction Phonology approaches make the assumption of the OCP as a constraint on input morphemes empirically vacuous. I will start with OCP-violating tone melodies explicitly mentioned in the main text. The approach of MMP can emulate the effect of affixal tone melodies with multiple adjacent Hs or Ls simply by assuming a morpheme-specific spreading rule as shown by the toy grammar illustrated in (15), where the Past (15-a) (like in Kuria) has a melodic H only associated to the first mora of the stem. The Hypothetical Past 1 (15-b) and the Hypothetical Past 2 (15-c) melodies have exactly the same underlying shapes (a single H), but they are subject to additional morpheme-specific rules. The H of the Hypothetical Past 1 undergoes bounded spreading to the following mora, and the Hypothetical Past 2 triggers insertion and association of an additional H. (15-b) is based on a similar analysis of OCP-violating morphology in Manyika by Paster (2019), and (15-c) slightly modifies a rule proposed for a different dialect of Kuria by Odden (1987). On the surface, the results are partially or completely indistinguishable from a HH-melody excluded by the input OCP:[10]

(15) *Emulating OCP-violating tone melodies with morpheme-specific rules*

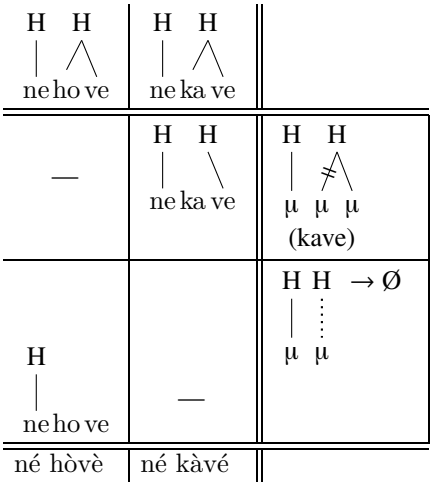
a. *Past*	b. *Hypothetical Past 1*	c. *Hypothetical Past 2*	
(H)	(H)	(H)	
ro ma	ro ma	ro ma	
—	—	(H) H ro ma	H ← Ø STEM[μ μ (Hypothetical Past 2)
H ro ma	H ro ma	**H** H ro ma	H' STEM[μ (Hypothetical Past 1/2, Past)
—	H ro ma	—	H STEM[μ μ (Hypothetical Past 1)
rómà	rómá	rómá	

The empirical equivalence of Construction Phonology assuming the OCP on underlying representations to a version without it holds also for non-melodic tones in lexical items where they are prelinked to segmental material. An illustrative example I will use here is Shona cited by Kenstowicz (1994) as a prototypical case of evidence for the input OCP, where after specific H-clitics and prefixes H-roots lower (e.g. [né] 'with' + [mbwá] 'dog' → [né mbwa] 'with a dog'. Crucially, if the root starts with a sequence of multiple H-syllables, *all* of these syllables lower, not just the first one [né] 'with' + [hóvé] 'fish' → [né hove/*né hové] 'with a fish' providing evidence that the OCP has ensured that multiple TBUs in a single morpheme can only be linked to a single H, not to different adjacent Hs. At this point, it is important to stress again that the OCP is an abstract principle which is not describing (potential) phonetic realization. An input/output with two adjacent H-syllables is perfectly licit (as evidenced by nouns like [hóvé]). What advocates of the input OCP like Hyman (2014) ultimately aim to exclude by the OCP is the existence of lexical contrasts between a noun like [hóvé] (with one multiply linked H) with other nouns, say hypothetical [kávé] which have the same surface tone in isolation, but behave as if they have two underlying tones. While the unviolable input OCP will ensure this result in a model of grammar without morpheme-specific phonology, Construction Phonology by its very nature again allows to circumvent it by stating minimally different

[10]The derivation of the Hypothetical Past 2 would be excluded in an interpretation of the OCP which assumes that it universally blocks application of rules generating representations violating it (see McCarthy 1986). Hence it is important to note that even proponents of the OCP as an unviolable input constraint typically assume that output representations may violate it. Thus Hyman's (2014) argument for the input OCP in Kukuya is essentially based on contrastive output forms where monomorphemic HH sequences obey the OCP, whereas heteromorphemic HH-sequences freeely violate it.

phonological behavior by the application of different phonological rules. Thus to derive a scenario where hypothetical [kávé] behaves like having two underlying Hs after a H-clitic (/né/ + /kávé/ → [né kavé]), all we have to do is to posit an additional rule specific to this lexeme as shown in (16). Whereas both [hóvé] and [kávé] have underlyingly a single doubly linked H, and Meussen's rule would in principle apply to both, there is an additional earlier retraction rule restricted to apply to [kave] which simply deletes its first association line after another adjacent H, thus bleeding deletion of the H itself:

(16) *Emulating OCP-violating lexical roots with morpheme-specific rules*



C.2 Tone Infixation in Agreement by Correspondence

Here, I show that the pathological tone infixation pattern predicted by the rule-based approach of MMP (see section 5.1) can also be generated in CbP simply by applying the analysis for Kuria for a language with underlying stem tones. Since the correspondence-theoretic approach of SJI allows true dislocation of tones, there is a possible candidate where the prefix-H is shifted to the μ3 position (17-a). If μ3 and MAX τ outweigh LINEARITY, this will become optimal. (I implicitly assume here that line crossing is universally excluded or the constraint penalizing it is undominated):

(17) *Hypothetical Tone Infixation in CbP*

Input: d.	μ3 10	MAX τ 5	LINEARITY 1	H
☞ a. M L H H te re me ka	0	1	3	-8
b. H H te re me ka	1	3	0	-25
c. H L M H te re me ka	1	1	1	-16
d. (H) M L M H te re me ka	1	0	0	-10

C.3 Stratal Ordering of Spreading and Shifting

This appendix details the predictions of MMP's approach for Stratal Ordering laid out in section 5.2 of the paper. Under the Stratal OT-architecture, the predicted interaction of spreading and shifting processes at different strata is that processes at earlier strata obligatorily feed processes at later strata (if the former create the appropriate phonological conditions for the latter). A classical example is Shona where H-tone rightwards spreading by two syllables at the Stem Level feeds tone spreading for one more syllable across the word boundary, as in ku-téng-és-á sádza 'to sell porridge' where the H originates in the verb root /téng/ and spreads to the end of the stem [téng-es-a] ([téng-es-a] → [téng-és-á]) and later to the initial syllable of the toneless noun [sadza] ([téng-és-á sadza] → [téng-és-á sádza] Myers 1997:682). See van de Velde (2008) on Eton and van der Veen (2001) on Geviya for similar interstratal spreading interactions, Downing (1988) on Nguni and Roberts (1992) on Sukuma on the interaction of lexical and phrase-level tone shifting, and Jones (2014) on the interaction of spreading and shifting in Kinande. Two scenarios would contradict Stratal Ordering ① *Anti-stratal Feeding* where a Phrase-Level spreading process feeds a Stem-Level (or Word Level) spreading process and ② *Stratal Counterfeeding* where a lexical spreading process fails to feed a phrasal process although it would be expected to do so. I will illustrate both scenarios with hypothetical examples.

① *Anti-stratal Feeding:* (18) shows a hypothetical example which is roughly the inverse of the situation in Shona where (iterative) Stem-Level spreading of Hs feeds (non-iterative) H-spreading across word boundaries: Assume there is an anticipatory process by which a H spreads locally from the initial mora of a word to the final mora of the preceding word, in Stratal OT necessarily a phrasal process since it involves multiple words. Now assume the language also has unbounded anticipatory H-spreading at the Stem level. In the MMP-model bounded Phrase-Level spreading could feed unbounded Stem-Level L spreading simply by rule ordering as in (18). In (18-a), we see the application of Stem-Level spreading in a monomorphemic word ('(,)' indicate word boundaries, '[,]' again stem boundaries). In (18-b) a Kuria-type verb precedes a noun with an initial H. The bounded Phrase Level spreading feeds unbounded spreading up to the left boundary of the stem:

(18) *Phrase-level spreading feeds stem-level spreading in MMP's global rule based approach*

H la kimu	H (to ra [su kura]) ([te la])	
—	H (to ra [su kura]) ([te la])	H μ)$_{\omega}$ $_{\omega}$(μ (Domain: phrase)
H la kimu	H (to ra [su kura]) ([te la])	H (Iterative) μ μ (Domain: stem)

To be sure, there are cases where phrasal spreading is sensitive to word boundaries, as for example in Copperbelt Bemba (Kula and Bickmore 2015). This is predicted by stratal Bracket Erasure ('Monochromization') since the transition of word level to the phrase level, word-internal colors are monochromized, but different words (which constitute separate stratal domains) are assigned different colors. What is excluded is the interaction of phrasal processes with roots, stems or stem-level affixes which are only visible at lexical strata.

② *Stratal Counterfeeding:* A similar hypothetical example for Counterfeeding is shown in (19). In (19-b), due to rule ordering, Stem-Level iterative spreading of a H to the right boundary of a stem does *not* feed Phrase Level spreading across word boundaries which applies in (19-a) to an underlyingly final H. Again this kind of process interaction would be impossible in Stratal OT where Stem-Level processes are inherently ordered before Phrase-Level processes.

(19) *Stem-level spreading counterfeeds Phrase-Level spreading in MMP's global rule based approach*

H ([roma]) ([te la])	H (to ra [su kura]) ([te la])	
H ([roma]) ([te la])	—	H μ)$_{\omega\,\omega}$(μ (Domain: phrase)
H ([roma]) ([te la])	H (to ra [su ku ra]) ([te la])	H (Iterative) μ μ (Domain: stem)

As far as I know, no cases of *Antistratal Feeding* or *Stratal Counterfeeding* have been reported in the literature on Bantu or other tone languages.[11]

[11] I do not discuss here Stratal Ordering for CbP where stems and words are neither cyclic domains (as in Stratal OT) nor processes at these levels can be ordered by derivational rules as in rule-based Construction Phonology. Whereas Anti-stratal Feeding and Stratal Counterfeeding might thus (correctly) be excluded, it is also unclear how attested cases of Stratal Ordering as in Shona can be derived. Another potentially problematic prediction of CbP for Stratal Ordering is that spreading and shifting processes specific to vPs and DPs should feed CP-Level spreading/shifting processes. Again, patterns of this type seem to be unattested.

D Problems in the Analysis of Sande, Jenks & Inkelas (2020)

In this appendix, I list a number of further problems with SJI's Kuria analysis which I have not included in the main text for reasons of space and because they seem to be prima facie problems of the specific Kuria analysis developed by SJI, and not necessarily by the CbP approach in general. Still these problems undermine SJI's argument that a CbP approach is more natural or simpler for the Kuria facts than a stratal tone melody analysis (see section 5 for discussion).

D.1 H-Spreading

The constraint proposed by SJI for capturing H-spreading in Kuria, repeated in (20), is incompatible with the data.

(20) SPREAD-(H,R): Assign one violation for each input H that is not associated with at least one tone-bearing unit to the right of its input location

First, it refers to the input position of the H (on the Tense prefix) which also forms the anchor for the μ4 constraint. Thus dislocation of the H to the 4th position on its right as required by μ4 should also satisfy SPREAD-(H, R) and fail to trigger any additional spreading. *Second,* even if this problem would be solved, SPREAD-(H,R) would trigger bound spreading to a right-adjacent mora, whereas Inceptive forms actually exhibit unbound spreading to the penultimate mora of a phrase. While this conundrum might simply be due to the authors' confounding of Kuria with the remotely related language Moro discussed in the same paper which *has* bound H-spreading, this lapsus also seems to point to a more principled problem for the idea that the Inceptive exhibits both tone shift and spreading. The natural implementation of this approach is that shifting and spreading are independent processes where shifting feeds spreading, corresponding roughly to the analysis in MMP, but it is not obvious how this can be translated into the parallel constraint evaluation assumed by SJI

D.2 Underlying Tone and Tone Shifting

Adding to the Collectivity Problem discussed in section 5.3, there is a further technical problem related to the μ4 constraint posited by SJI: "four moras from its input location" is not well defined if the underlying H is floating. Thus SJI's notation ra^{H} ro ma corresponds to (21-a), but under basic autosegmental assumptions linearization of elements between different tiers is exhaustively defined by association lines. Thus (21-a) is non-distinct from (21-b) and (21-c), and SJI's μ4-constraint basically lacks the input anchor:

		Ⓗ				Ⓗ						Ⓗ	
a.	to	ra	ro	ma	b.	to	ra	ro	ma	c.	to	ra	ro	ma .

This problem is non-existent in the stratal account, where association is driven by the constraints implementing autosegmental association conventions, and the local stem domain excluding the prefixes to and [ra]- is simply a consequence of the stratal architecture

A possible technical solution in the CbP analysis is to assume that the moras apart from the tense prefix [ra]- have underlying Ls as in (21), and to compute linear input position indirectly with reference to the adjacent preassociated tones (see, e.g., Archangeli abd Pulleyblank 1994) for a proposal to establish inter-tier linearization in autosegmental representations, based on association lines):

	L	Ⓗ	L	L	
	|		|	|	
(21)	to	ra	ro	ma	

This highlights that the SJI analysis might actually require floating features and underlying Ls in addition to antifaithfulness constraints (like μ4) and morpheme-specific constraints more generally. The stratal melody account thus would use a subset of the theoretical machinery required by the CbP analysis.

D.3 Contour Formation

As discussed in detail in section 3.3, in utterance-final verb stems which fall short of realizing a tone melody by one mora, the H is realized as part of a rising (LH) contour on the final vowel of the verb (the 'Contour Pattern', section 3.3). In MMP's, account, this is accounted as a Duke-of-York derivation (Pullum 1976): the final vowel is lenghthened before H-association and subsequently shortened again. The melody-based analysis proposed here

circumvents the empirical and conceptual problems of a Duke-of-York analysis (McCarthy 2003) without any additional theoretical machinery – the L-component of the final rise is simply part of the morphological tone pattern, and thus independent from length. Whereas SJI claim that they simply "modify the phonological rules" of MMP "to a constraint-based analysis" (p. 27), they do not address contour formation, and their theoretical assumptions make it impossible to adopt the Duke-of-York account. Since phrase finality is determined in the same Phase (CP), in which Tense morphology is merged, lengthening, tone association, and shortening, would all have to take place sequentially in the same optimization cycle, which is incompatible with the strictly parallel architecture of Harmonic Grammar. Note also that a constraint requiring domain-final lengthening is at odds with crosslinguistic and Bantu-internal evidence, where cases of productive and categorial final *shortening* are well-documented while final lengthening is virtually unattested, in contrast to the well-known subphonemic phrase final lengthening (Myers& Hansen 2007).[12].

[12]Myers & Hansen (2007) explain the apparent tension between phonetic and phonological naturalness by the different impact of phonetic production and perception. While final lengthening is a production effect, final shortening follows from other typical phrase-final effects – especially devoicing – which favor the perception of final vowels as short. This asymmetry also militates against adopting a variant of MMP's Duke-of-York-analysis, where lengthening and contour formation apply in phonology

E Data and Analyses for other Languages

E.1 A Stratal-OT Analysis of Morphological Tone in Chimwiini

Chimwiini has been cited by Hyman (2012) as a case in parallel to Kuria where word-level inflectional morphology is realized at the phrase level. The analysis here shows that Phrase Straddling in Chimwiini is of a much simpler type than the one observed in Kuria since there is just a single morphological pattern which can be captured as an affixal H.

Crucially all phonological phrases in the language have exactly one single H-syllable which is in the default case the penultimate as in the sentence in (22-a). Certain inflections such as 2nd person subject agreement trigger a different pattern where the H appears instead on the phrase-final syllable, as shown in (22-b):

(22) *Default and morphological H in Chimwiini (Kisseberth & Abasheikh 2011:1994)*

a. jilee náma '(s)he ate meat' *(Default H)*
   eat meat

b. jilee namá 'you ate meat' *(Morphological H)*
   eat meat

My analysis here is based on the accounts of Hagberg (2006) and Zimmermann (2018) of strictly Word-Level accent systems in Mayo and Tagalog which show similar alternations between final/penultimate (or initial/peninitial prominence). Specifically I assume that the 'special' phonology of morphemes like 2nd-person agreement is simply an affix consisting of a floating H, which is added at the Word Level, and stays floating due to undominated MAX H and DEP | in parallel to the Kuria Past-H. (23) defines the relevant constraints, and (24) shows the Word-Level evaluation of [jile] in ((22)-b):

(23) *Constraints governing Chimwiini Tone (Word Level)*

a. MAX H — Assign ∗ to every morphological H which is not phonetic

b. DEP | — Assign ∗ to every epenthetic association line connecting an underlying tone and an underlying mora

c. *FLOAT — Assign ∗ to every phonetic tone which is not associated

(24) *Chimwiini Word Level evaluation: 2sg (underlying inflectional Ⓗ → (22)-b)*

Input: c.	MAX H	DEP |	*FLOAT
a. ji (H) le	*!		
b. ji H le		*!	
☞ c. ji (H) le			*

Postlexically, Phrase Level constraints become relevant which are defined in (25):

(25) *Constraints governing Chimwiini Tone (Phrase Level)*

a. 1H — Assign ∗ to every phonological phrase which does not have exactly one mora associated to a H

b. DEP H — Assign ∗ to every phonetic H which is not morphological

c. DEP H]$_{\Phi}$ — Assign ∗ to every phonetic H which is associated to the rightmost mora of a Phonological Phrase and is not morphological

d. ALG(H,R,Φ,R) — Assign ∗ to every mora which intervenes between the right edge of a Prosodic Phrase *P* and the rightmost H-tone mora in *P*.

The central idea is that Phrase Level tone is is governed by undominated constraints ensuring that there is exactly one H per Phonological Phrase, abbreviated here by the cover constraint 1H (25-a). If there is an underlying H inherited from the Word Level as in ((22)-b) this appears on the rightmost syllable due to the lower-ranked Alignment constraint ALG(H,R,Φ,R) (25-d) which requires tones to be as rightwards as possible. Epenthesis as in (26-c) would unnecessarily violate DEP H (25-b) and is therefore blocked (26-c):

(26) *Chimwiini Phrase Level evaluation: 2sg (underlying inflectional Ⓗ → (22)-b)*

Input: d.	1H	DEP H]$_\Phi$	DEP H	ALG(H,R,Φ,R)	DEP |
☞ a. [ji le na H má]$_\Phi$					*
b. [ji le H ná ma]$_\Phi$				*!	*
c. [ji le Ⓗ H ná ma]$_\Phi$			*!	*	
d. [ji le Ⓗ na ma]$_\Phi$	*!				

If there is no underlying H in a Phrase as in a simple 3rd person clause ((22)-a), 1H is satisfied by an epenthetic H as in (27-a). Here the positional faithfulness constraint DEP H]$_\Phi$ becomes effective and blocks the positioning of the H on the ultima as in (27-b). The positional effect thus falls out, not from morpheme-specific phonology but from the simple difference between epenthetic and underlying tones:

(27) *Chimwiini Phrase Level evaluation: 3sg (no underlying inflectional Ⓗ → (22)-a)*

Input: c.	1H	DEP H]$_\Phi$	DEP H	ALG(H,R,Φ,R)	DEP |
☞ a. [ji le H ná ma]$_\Phi$			*	*	
b. [ji le na H ma]$_\Phi$		*!	*		
c. [ji le na ma]$_\Phi$	*!				

Note finally that realization of Hs in Chimwiini involves additional interesting complications such as the copying of Hs in recursive phonological phrases (see Kisseberth & Abasheikh 2011:2007ff for details), but these seem to involve strictly the Phrase-Level phonology of the language not its interaction with word-internal morphological tone. Thus recursive-phrase copying applies to every underlying H in the relevant prosodic structure in the same way and is not dependent on its morphological source.

E.2 The Collectivity Problem in Turkish Velar Deletion

Section 5.3 cites Turkish velar deletion – a classical set of data from the (pre-Phase) Cophonology literature — as a further example of the Collectivity Problem for Cophonology by Phase. This appendix substantiates this argument.

In Turkish, specific (vowel-initial) suffixes such as the accusative and person number inflection trigger deletion of a final velar obstruent (28), whereas others such as the Future suffix -[edʒek] do not (29):

(28) *Turkish affixes triggering velar deletion (Orgun 1996:106)*

a. bɑdʒɑk	'leg '	bɑdʒɑ-ɯ	'leg-Acc'	bɑdʒɑ-ɯ	'leg-3Poss'
		bɑdʒɑ-ɯm	'leg-1sgPoss'	bɑdʒɑ-ɯn	'leg-1sgPoss'
b. sɑlɑk	'stupid'	sɑlɑ-ɯm	'stupid-1sgSubj'	sɑlɑ-ɯz	'stupid-1plSubj'

(29) *Turkish affixes not triggering velar deletion (Orgun 1996b:106)*

gʲedʒikʲ	'be late'	gʲedʒikʲ-edʒekʲ	'be.late-Fut'	gʲedʒikʲ-ebilʲ	'be.late-Abil-Imprf'
		gʲedʒikʲ-en	'be.late-PPl'	gʲedʒikʲ-indʒe	'be.late-Adv'

Assuming that Turkish has the standard phasal structure [[ ]$_{vP}$]$_{CP}$, Subjunctive, agreement and Tense marking marking should all be spelled out in the higher CP-Phase. Thus by Collectivity we expect that if the two classes of affixes cooccur, either both trigger velar deletion or both fail to do it. But again what we find is that the two affixes simply maintain their independent morphonological behavior: Subjunctive agreement markers still trigger deletion (on the Future suffix), and the Future affix still fails to do so:

(30) *Turkish deletion triggers outside of non-triggers (Orgun 1996:106)*

a. gʲedʒikʲ-edʒe-im	'be.late-Fut-1sgSubj'	b. birikʲ-edʒe-i	'accumulate-Fut-3sgSubj'
c. bɯrɑk-ɑdɑ-ɯn	'let.go-Fut-2sgSubj'	d. gʲerekʲ-edʒe-imiz	'be.necessary-Fut-1plSubj'
e. ɑdʒɯk-ɑdɑ-ɯnɯz	'become.hungry-Fut-2plSubj'		

In Orgun's original analysis, the strictly local applicability of affix Cophonologies follows from the very fact that cophonologies (i.e., morphophonological constructions) are coextensive with single morphological (here: affixation) operations. Strikingly, the adoption of bigger domains (Phases) as evaluation domains of morphophonological constraints here does not lead to an extension of the explanatory domain of Cophonologies, but to a loss of earlier insights.

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