

Lexically Conditioned Phrasal Tone

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Agenda

- ▶ **Sande & Jenks (2018):** Lexically Conditioned Phrasal Tone is Evidence for Phases as Phonological Domains
- ▶ **This Talk:** Autosegmental Representations Account for Apparent Morphosyntax-Phonology Mismatches

Traditional Phonological Domains (Kenstowicz 1994)

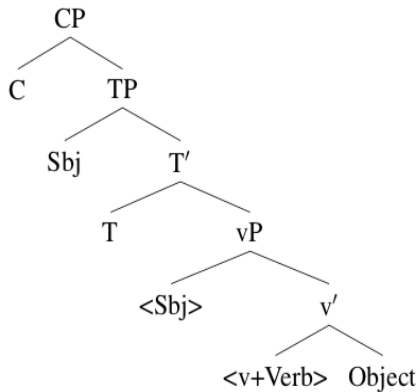
- ▶ **Words:** e.g. Trisyllabic Shortening
tri-dent/tri-nity, penal/penal-ize, clear/clar-ify,
but not: *nightingale, stevedore, ivory*
 - ▶ applies only inside of words
 - ▶ sensitive to word-internal structure

- ▶ **Phrases:** e.g. Flapping,
letter and *let it* (le[r]er, le[r] it)
 - ▶ applies (inside and) across words
 - ▶ insensitive to word-internal structure

Domains Based on Syntactic Phases

- ▶ Every syntactic phase (vP, CP, DP, Chomsky 2001, 2008)
- ▶ every category-defining head (nP, aP, etc.) (Marantz 2001)
- ▶ Under postsyntactic morphology (Halle and Marantz 1993) phonological phrases might **cut** across word boundaries

Potential Lexico-Syntactic Domains



Kuria Tone Melodies

(Marlo et al. 2015:252)

Past	μ 1	n-to-o-[hóótóótér-a] FOC-1 PL-TNS-reassure-FV 'we have reassured'
Progressive Past	μ 2	n-to-oka-[hoótóóté-éj-a] FOC-1 PL-TNS-reassure-PFV-FV 'we have been reassuring'
Remote Future	μ 3	n-to-re-[hootóótér-a] FOC-1 PL-TNS-reassure-FV 'we will reassure'

Kuria Remote Future

(Marlo et al. 2015:254)

Stem

3 μ's	n-to-re-[saambá]	'burn'
	n-to-re-[tɛɾɛká]	'brew'
4 μ's	n-to-re-[heetó-ka]	'burn'
	n-to-re-[karaǎŋg-a]	'fry'
5 μ's	n-to-re-[koondókór-a]	'uncover'
6 μ's	n-to-re-[hootótér-a]	'reassure'

Kuria Remote Future – Short Stems (Marlo et al. 2015:254)

Stem

2 μ 's	n-to-re-[romă]	'bite'
	n-to-re-[βună]	'break'
1 μ 's	n-to-re-[rj-a]	'eat'
	n-to-re-[h-a]	'give'

H on 3rd μ of [[Stem]] + Object-NP:

2 μ -Stem n-to-re-[rom-a] **é**yétóóke 'bite a banana'

1 μ -Stem n-to-re-[rj-a] ey**é**tóóke 'eat a banana'

The Kuria Tone Morphology Dilemma

The left edge of the domain is **word**-internal

but

The right edge of the domain is **phrasal**

Gã Final Raising in Verb Roots

(Paster 2003:18+19)

e-káne gbɛmẽĩ	‘he counted people’
e-cála mãmã [↓] ĩ	‘he mended clothing’
e-bóte-ɔ	‘he entered (habitual)’

$$HL|| \rightarrow H^{\downarrow}H||$$

e-ká [↓] né	‘he counted’
e-cá [↓] lá	‘he mended’
e-bó [↓] té	‘he entered’

Gã: No Final Raising in Suffixed Verbs (Paster 2003:20)

Habitual

e-fó-ɔ	'he weeps'
e-télé-ɔ	'he carries'
e-cú-ɔ	'he sends'

Negative Perfective

e-fó-kɔ	'he hasn't wept'
e-télé-kɔ	'he hasn't carried'
e-cú-kɔ	'he hasn't sent'

Gã Final Raising: Dilemma

Final Raising is sensitive to **word**-internal structure

but

triggered by **phrase**-final position

Roadmap of the Talk

- ▶ **Classical** Autosegmental Phonology
 - ▶ Lexical Conditioning by Autosegmental Representations
 - ▶ Kuria Reanalysis
-

- ▶ **Subtonal** Features
- ▶ Lexical Conditioning in Gã

Autosegmental Representation of Tone

Segmental Representation of Tone

kátá

≈

$$\begin{array}{|l}
 +\text{cons} \\
 -\text{son} \\
 \text{DORSAL} \\
 -\text{voice}
 \end{array}
 \left| \right|
 \begin{array}{|l}
 -\text{cons} \\
 -\text{high} \\
 +\text{low} \\
 \mathbf{+HIGH}
 \end{array}
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 \begin{array}{|l}
 +\text{cons} \\
 -\text{son} \\
 \text{CORONAL} \\
 -\text{voice}
 \end{array}
 \left| \right|
 \begin{array}{|l}
 -\text{cons} \\
 -\text{high} \\
 +\text{low} \\
 \mathbf{+HIGH}
 \end{array}
 \left| \right|$$

Autosegmental Representation of Tone

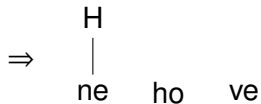
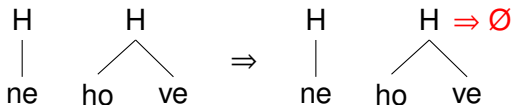


Across-the-Board Deletion in Shona

mbwá	‘dog’	né mbwa	‘with a dog’
hóvé	‘fish’	né hove	‘with a fish’
hákátá	‘diviner’s bones’	sé hakata	‘like diviner’s bones’
badzá	‘hoe’	né badzá	‘with a hoe’
capúpu	‘witness’	sé capúpu	‘like a witness’

(Kenstowicz 1994:325)

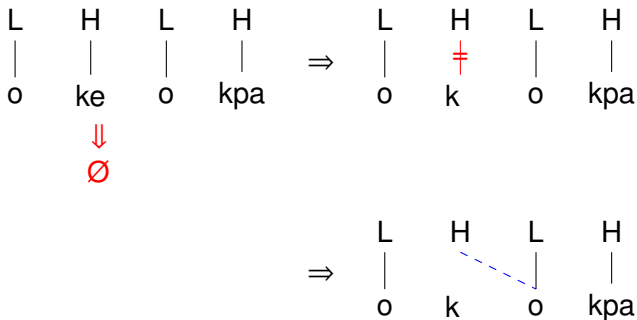
Autosegmental Explanation of ATB-Deletion



Tone Stability (Yekhee, Elimelech 1976)

ídzé	+	éla	ídzéla	'three axes'
eké	+	éla	ekéla	'three rams'
údzé	+	okpá	údz ^ô kpá	'one axe'
oké	+	okpá	ok ^ô kpá	'one ram'

Autosegmental Explanation of Tone Stability



Lexical Conditioning by Floating Features

Autosegmental Analysis of Kuria Tone Morphology

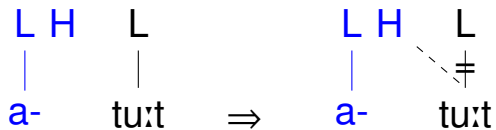
L L H
+
te re me ka → L L H
| | |
te re me ka

Anywa Raising vs. Inert L-Prefixes

(Reh 1993:151)

ǝjà:ŋ	~	à-ǝjá:ŋ	'durra bird'
jà:k	~	à-jà:k	'red with white line on side'
tù:t	~	à-tù:t	'neighbor'
<hr/>			
jà:θ	~	ɲì-jà:θ	'tree fruit'
dùòŋ	~	ɲì-dùòŋ	'light yellow beads'
là:l	~	ɲì-là:l	'child'

Raising as an Effect of Floating Tones



Category-specific Downstep in Mao

(Ahland 2012:109/116)

- (3.11) $\left[\begin{array}{cccc} - & - & - & - \end{array} \right]$
 ha-tí-héz-^lá
 AFF-1SG-hit-DECL
 'I hit (it).'

Predictable downstep after **all** H-tone verbs

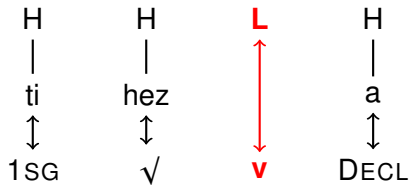
- (3.4) $\left[\begin{array}{cc} - & - \end{array} \right]$
 ha-int^h-á
 AFF-see-DECL
 'S/he saw.'

M-tone verb stem

- (3.5) $\left[\begin{array}{ccc} - & - & - \end{array} \right]$
 ha-àld-á
 AFF-know-DECL

L-tone verb stem

Category-specific Downstep in Mao: RR Analysis



Capturing Clusters of Exceptionality

Clusters of Exceptionality

Autosegmental representations are visible to **all** phonological rules

Crucial predictions:

- ▶ Exceptionality should extend to multiple processes
- ▶ Exceptionality should be consistent/follow from more general alternation patterns in the language

Anywa Raising vs. Inert L-Prefixes

(Reh 1993:151)

ǫ̀jà:ŋ ~ à-ǫ̀já:ŋ ‘durra bird’

jà:k ~ à-jà:k
‘red with white
line on side’

tù:t ~ à-tù:t ‘neighbor’

jà:θ ~ ɲì-jà:θ ‘tree fruit’

dùòŋ ~ ɲì-dùòŋ
‘light yellow
beads’

là:l ~ ɲì-là:l ‘child’

Anywa Clustering: Raising L-Prefixes also lower (Reh 1993)

pí:w ~ à-pìf:w 'first-born twin'

gú:t ~ à-gùf:t 'person with big navel'

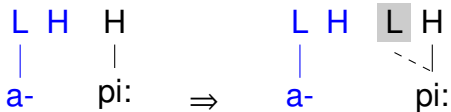
tíédí ~ à-tièdí 'brave person'

wá:x ~ ɲì-wá:x 'cousin'

pí: ~ ɲì-pí: 'drop of water'

có:kó ~ ɲì-có:kó 'niece'

Triggering Lowering by Floating Tones



Effects of Overt H-tones

H-Tone Spreading

máth	-ò	→	máth-ó	(p.68)
drink:VENT	-INF		'to drink' (VENT)	
gwá:t	-ò	→	gwá:t-ó	
ominous:sign	-SG		'ominous:sign' (SG)	

L-Tone Epenthesis

ú	máth	-à	→	ú-màth-á	(p.204)
HAB	drink:PD	-1SG		'whenever I drink'	

Effects of Floating H-tones

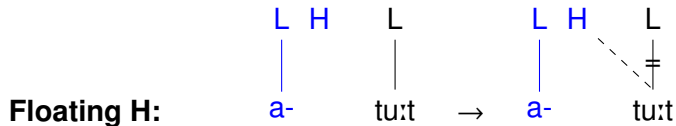
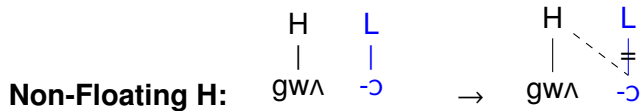
H-Tone Spreading

- a. \grave{a}^H - dhyàŋ → \grave{a} -dhyáŋ (p.68)
 NOM- durra:bird 'durra bird'
- b. \grave{a}^H - càŋ -jì → \grave{a} -cáŋ-jí
 PST- eat -it 'you ate it'

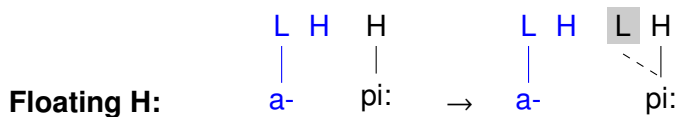
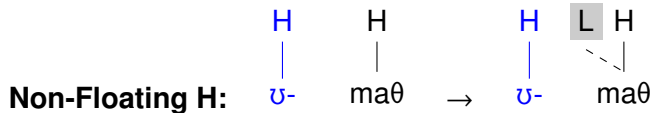
L-Tone Epenthesis

- a. $m\grave{a}n\grave{a}^H$ kénó → $m\grave{a}n\grave{a}$ -kénó (p.68-69)
 this:be hearth 'this is a hearth'
- b. $\grave{e}n\grave{a}^H$ - ó → $\grave{e}n\grave{a}^H$ -ǒ:
 3S:PA come '(s)he came'

H-Tone Spreading



L-Tone Epenthesis



Kuria Reanalysis

Kuria Remote Future

(Marlo et al. 2015:254)

Stem

3 μ's	n-to-re-[saambá]	'burn'
	n-to-re-[tɛɾɛká]	'brew'
4 μ's	n-to-re-[heetó-ka]	'burn'
	n-to-re-[karaǎŋg-a]	'fry'
5 μ's	n-to-re-[koondókór-a]	'uncover'
6 μ's	n-to-re-[hootóótér-a]	'reassure'

Kuria Remote Future – Short Stems (Marlo et al. 2015:254)

Stem

2 μ 's	n-to-re-[romǎ]	'bite'
	n-to-re-[\beta unǎ]	'break'
1 μ 's	n-to-re-[rj-a]	'eat'
	n-to-re-[h-a]	'give'

H on 3rd μ of [[Stem]] + Object-NP:

2 μ -Stem n-to-re-[rom-a] **é**yétóóke 'bite a banana'

1 μ -Stem n-to-re-[rj-a] ey**é**tóóke 'eat a banana'

Sande and Jenks (2018) on Kurua

- ▶ Major problem for standard **Stratal Morphophonology**:
Phrasal access to Stem-level morphology
- ▶ Central Argument for non-lexicalist syntactic phrases
as phonological locality domains
(**‘Cophonologies by Phase’**)

Autosegmental Analysis of Kuria Tone Morphology

L L H
 +
te re me ka → L L H
 | | |
 te re me ka

Reanalysis of Kuria Phrase Straddling

Stem Level:

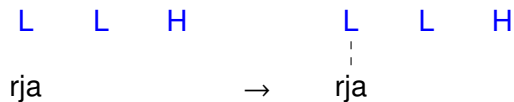
- ▶ 3rd- μ follows from stem-prefixation of a **L L H** melody
- ▶ If $\text{length}(\text{stem}) \geq 3\mu \Rightarrow$ Full association
If $\text{length}(\text{stem}) < 3\mu \Rightarrow$ Partial Association
- ▶ Rightmost floating tones remain floating

Phrase Level:

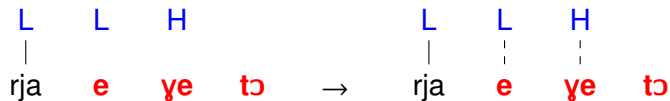
- ▶ Surviving floating tones associate to object NP
or form contours on object-less verbs

Reanalysis of Kuria Phrase Straddling

Stem Level:



Phrase Level:

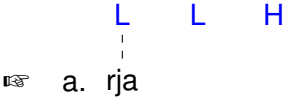
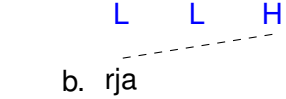
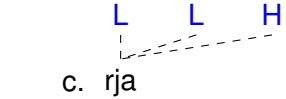
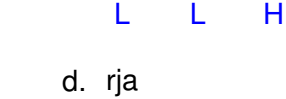


Constraints

- ⊕] Assign * to every floating tone which is not at the right edge (or which is only followed by other floating tones)
- *CONT Assign * to every μ which is associated to both a H and a L tone
- $\mu_{L\underline{L}}$ Assign * to every μ which is associated to more than one L-tone
- τ
↓
 μ Assign * to every tone which isn't associated to a μ
- CONT] Assign * to every μ which is associated to a H and a L tone and not at the right edge


Stem Level

(Marlo et al. 2015:254)

Input: d.	τ]	*CONT	* $\underline{\mu}_L$	τ ↓ μ
 <p>a. rja</p>				**
 <p>b. rja</p>	*!*			**
 <p>c. rja</p>		*!	*	
 <p>d. rja</p>				*!***


Phrase Level

(Marlo et al. 2015:259)

Input: b.	⊙]	CONT]	* $\underline{\mu}_L$	τ ↓ μ
 a. rja L L H rja e ye tɔ				
L L H rja e ye tɔ				*!*


Stem Level

(Marlo et al. 2015:254)

Input: c.	τ]	*CONT	* $\mu_{\underline{L}}$	τ ↓ μ
 a. ro ma L L H 				
b. ro ma L L H \ - - -		*!		
c. ro ma L L H				*!***

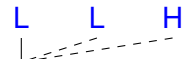
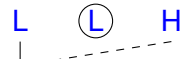


Phrase Level

(Marlo et al. 2015:254)

Input: b.	⊙]	CONT]	* <u>μ</u> _L	τ ↓ μ
 a. L L H ro ma				
b. L L H / ro ma				*!***

Phrase Level

(Marlo et al. 2015:254)

Input: c.	⊙]	CONT]	* μ_L	τ ↓ μ
 <p>a. rja</p>			*!	
 <p>b. rja</p>	*!			
 <p> c. rja</p>				**

Subtonal Features

Subtonal Features

Basic Idea:

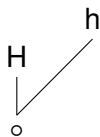
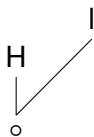
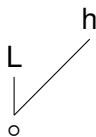
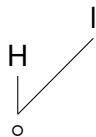
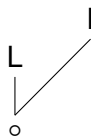
Just as segments, tones form natural classes (e.g. High + Mid vs. Low) which can be captured by subtonal features

Specific Proposal here:

Feature-geometric decomposition of tone into melody and register features (Snider 1999)

Tone in Register Tier Theory

(Snider 1999)

High**Mid₁****Mid₂****Low****Downstepped
High**

Downstep in English (Beckman and Pierrehumbert 1986, 273)

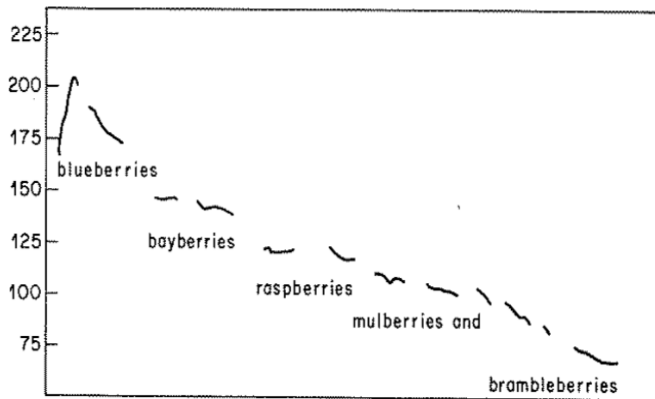
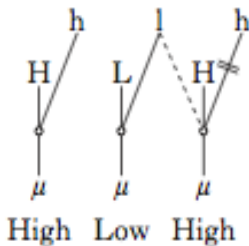
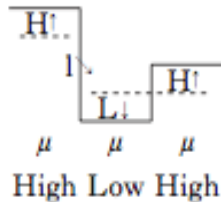


Figure 1

Representation of Downstep in Snider (1999)

*Downstepped High (automatic)*a. *structural representation*b. *phonetic representation*

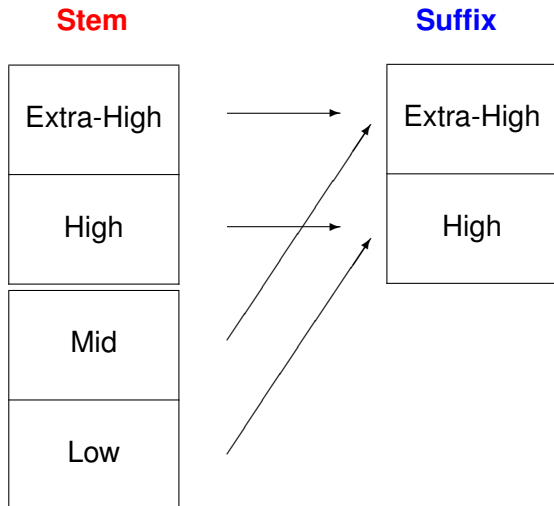
Tenyidiye Variable Affixes

(Meyase 2016:21)

<i>petā̃ + te</i>	=	<i>petā̃ tē̃</i>	'to drive' + past
<i>rəli + te</i>	=	<i>rəli té</i>	'to rest' + past
<i>rədī + te</i>	=	<i>rədī tē̃</i>	'to change' + past
<i>pelè + te</i>	=	<i>pele té</i>	'to tie' + past

Tenyidiye Variable Affixes

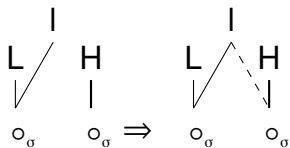
(Meyase 2016:21)



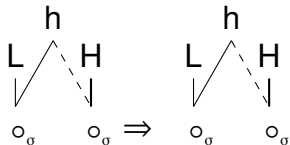
Tenyidie Variable Affixes

(Meyase 2016:21)

Low+Affix \Rightarrow Low+High



Mid+Affix \Rightarrow Low+Extra-High



2 Types of Root-final Floating Tones in Konni

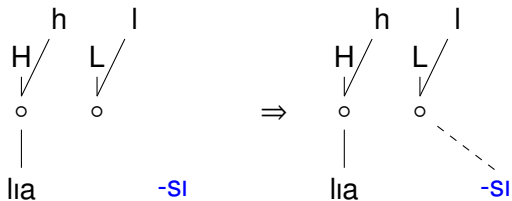
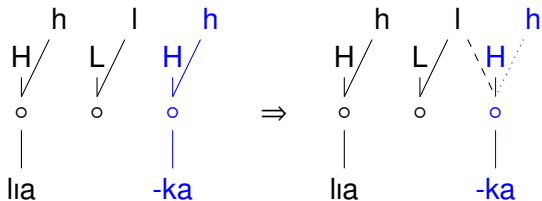
	Singular Definite	Plural	
Low	jùlì- ká	jùlì- sì	'whydah' (bird)
High	kpíá- ká	kpíá- sí	'chicken'
High+ (L)	líá [↓] - ká	líá- sì	'axe'
High+ (I)	cí:á [↓] - ká	cí:á [↓] - sí	'squirrel'

2 Types of Root-final Floating Tones in Konni (Cahill 1999:340-41)

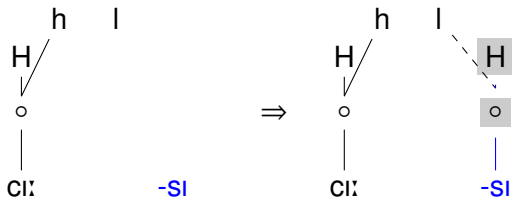
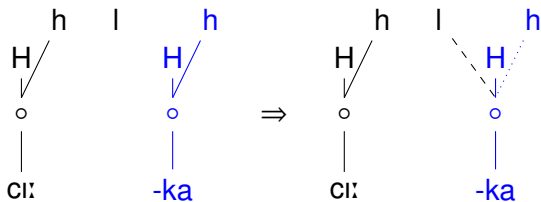
Analysis:

- ▶ **Full floating L-tone:**
emerges as full L on free affix syllables
only by its l-register if trapped between H-tones
- ▶ **Floating l-register:**
consistently realized as downstep
(+ H-epenthesis on affix if necessary)

Konni Floating (L)



Konni Floating ①



Gã Reanalysis

Gã Final Raising in Verb Roots

(Paster 2003:18+19)

e-káne gbɛmẽĩ	‘he counted people’
e-cála mãmã [↓] ĩ	‘he mended clothing’
e-bóte-ɔ	‘he entered (habitual)’

HL|| → H[↓]H||

e-ká [↓] né	‘he counted’
e-cá [↓] lá	‘he mended’
e-bó [↓] té	‘he entered’

Gã: No Final Raising in Suffixed Verbs (Paster 2003:20)

Habitual

e-fó-ɔ	'he weeps'
e-télé-ɔ	'he carries'
e-cú-ɔ	'he sends'

Negative Perfective

e-fó-kɔ	'he hasn't wept'
e-télé-kɔ	'he hasn't carried'
e-cú-kɔ	'he hasn't sent'

Gã: No Final Raising in Noun Roots

(Paster 2003:20)

fóte 'termite'

kpúlu 'cup'

zéŋgle 'roof'

jí[↓]cú 'head'gbé[↓]ké 'child'gó[↓]wá 'guava'

Gã: Final Raising with Suffixed Nouns

(Paster 2000:19)

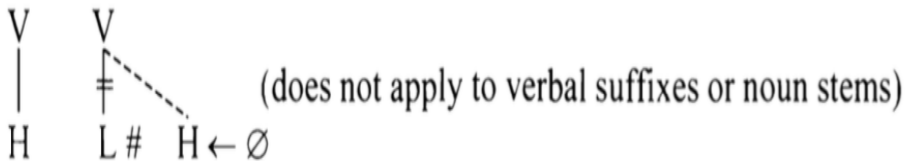
gbɛ	'path'	gbɛ-i	'paths'
nane	'leg'	nane-i	'legs'
kpúlu	'cup'	kpúlu-i	'cups'
cwíí	'heart'	cwíí- í	'hearts'
kaklá	'knife'	kaklá- í	'knives'

Distribution of Final Raising

	Verbs	Nouns
Bare Roots	+	-
Suffixed Forms	-	+

Gā Final Raising

(Paster 2003:20)



Gã Final Raising: Dilemma

Final Raising is sensitive to **word**-internal structure

but

triggered by **phrase**-final position

Gã Final Raising: Reanalysis

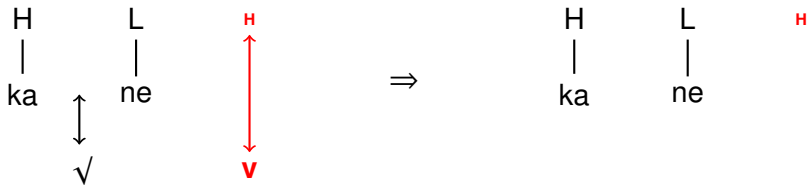
Word Level

- ▶ Categorizing little *v* is realized by a floating melody tone H
The nominal plural suffix *-i* carries a floating melody tone H
- ▶ Floating H is neither associated nor deleted

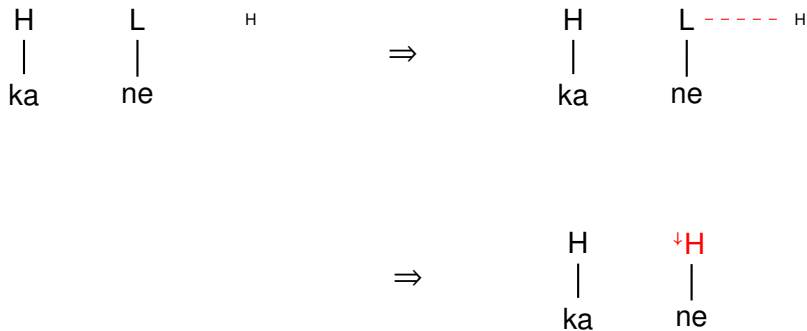
Phrase Level

- ▶ Floating H is retained utterance-finally (by positional faithfulness)
- ▶ but deleted otherwise (utterance-internally)

Word Level: Bare Verbs



Phrase Level: Utterance-Final Bare Verbs



Phrase Level: Verbs + Object

H	L	H	L	⇒
		↓		
ka	ne	∅	sho	

H	L	L
ka	ne	sho

Constraints

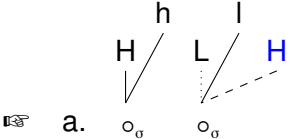
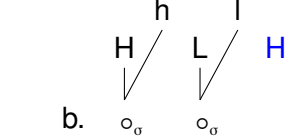
- *L↓H Assign * to every downstepped H-tone which immediately follows a L tone

- $\tau|| \rightarrow \circ$ Assign * to every domain-final tonal melody node which isn't associated to a tonal root node

- MAX | Assign * to every input association line which isn't present in the output

Utterance-final HL Verb

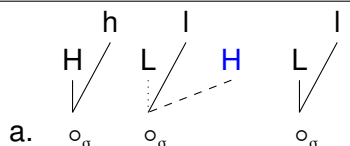

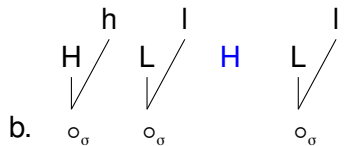
(Paster 2003:20)

Input: = b.	*L↓H	$\tau \rightarrow \circ$	MAX	FAITH
 <p>a.</p>			*	
 <p>b.</p>		*!		

(or H-tone noun + plural suffix)


Non-final HL Verb

(Paster 2003:20)

Input: = b.	*L↓H	$\tau \rightarrow \circ$	MAX	FAITH
<p>a.</p> 			*!	
<p> b.</p> 				

Final HLL Verb

(Paster 2003:20)

Input: = b.	*L↓H	$\tau \rightarrow \circ$	MAX	FAITH
<p>a.</p>	*!		*	*
<p> b.</p>		*		

Summary

Autosegmental representations

- ▶ **allow limited** communication across phonological strata
- ▶ obviate the assumption of non-standard domains straddling word/phrase boundaries
- ▶ **explain** why
 - ▶ tone is more likely to interstratal effects than segments
 - ▶ stratal straddling tends to happen at edges

Syntactic Phases in Phonology

- ▶ must be **complemented** by substantial additional machinery (Pak 2008)
- ▶ lead to proliferation of predictions and to diacritic stipulation (D'Alessandro and Scheer 2015)
- ▶ make **wrong** predictions for sentence-level prosody (Cheng and Downing 2012, Bonet et al. 2018)
- ▶ isn't necessitated by stratal straddling (Sande and Jenks 2018)

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Overview

Intro

Autosegmental Representation of Tone

Lexical Conditioning by Floating Autosegmental Features

Clusters of Exceptionality

Kuria Reanalysis

Subtonal Features

Subtonal Underspecification: Tenyidie

Subtonal Floaters: Konni

Gã Reanalysis