

Polarity, Floating Tones and the OCP in Anywa

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Morphophonological Polarity

A tone in a morphologically derived form
is systematically different
from an underlying tone of the base form

Syntagmatic Polarity

“In some languages, certain affixes have tones that are fully predictable from the tone of the foot to which they attach, but instead of receiving their tone by spreading in the usual way they show a tone that is the opposite of the neighbouring tone. Words that end in L take H affixes, and words that end in H take L affixes. This is termed ‘polarity’” (Yip, 2002:159)

Stem	Affix
L	H

Stem	Affix
H	L

(see also Pulleyblank 1986 on Margi, Kenstowicz et al. on Mooré, Antilla & Bodomo 2001 on Dagaare, Trommer 2005 on Kanuri)

Syntagmatic Polarity in Kɔnni (Cahill 2004:14)

Root	Plural	Stem Tone	Suffix Tone	
tàn	tàn-á	L	H	'stone(s)'
bì:s	bì:s-á	L	H	'breast(s)'
sí	sí-à	H	L	'fish(es)'
zùnzú	zùnzú-à	H	L	'maggot(s)'

Syntagmatic Polarity and the OCP (Leben 1973, Myers 1997)

OBLIGATORY CONTOUR PRINCIPLE: Avoid identical tones linked to adjacent syllables

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Stem	Affix							
H	L							

Paradigmatic Polarity in Kɔnni' (unattested?)

Singular	Plural	Sg. Tone	Pl. Tone	
tàn	tán	L	H	'stone(s)'
bì:s	bí:s	L	H	'breast(s)'
sí	sì	H	L	'fish(es)'
zùnzu	zúnzù	H	L	'maggot(s)'

pí:w ~ ā-pí:w ‘first-born twin’

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

cā:n ~ ā-cā:n ‘second-born twin’

Claims in this Talk

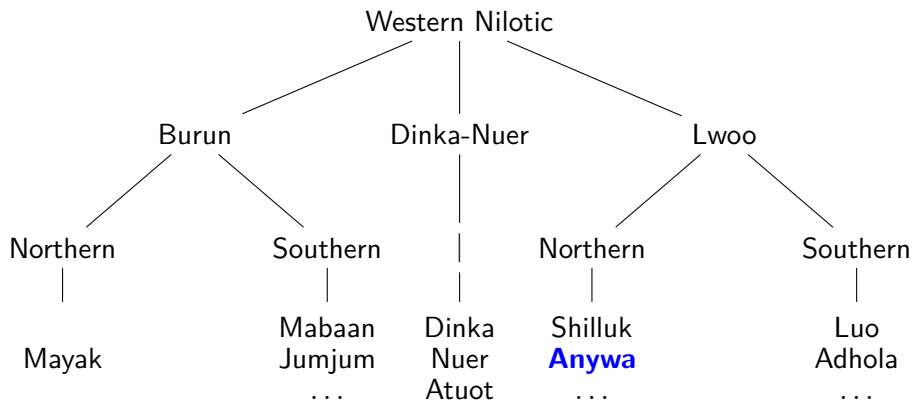
- Polarity in Anywa is *syntagmatic*
- triggered by a floating High tone
- provides evidence for floating tones as a possible trigger of OCP effects

Anywa

Anywa

- Western Nilotic language of the Northern Lwoo sub-branch
- spoken by roughly 100.000 speakers in Southern Sudan and Ethiopia
- Rich non-concatenative morphology crowded on monosyllabic stems (tone, vowel quality, segmental features of Cs, length)
- All data in this talk from the detailed grammar of Reh (1993)

Western Nilotic Languages



Anywa



Anywa Phonology

- Root-dominant [ATR]-harmony and [anterior] harmony for coronals
- Canonical shape of lexical roots: (C)VC
Canonical shape of suffixes: -(C)V or subsegmental
- Complex two-tone system (High + Low)
- No falling tone
- Derived rising tones in word-final position

The Anywa “Mid” Tone (Reh 1996)

“... a tone which is phonetically hardly distinguishable from a low tone but which triggers a number of tone sandhis ... which do not occur with low tones in the same position. I have 'called this tone *mid* ... although it may be analyzed differently as a result of further study.” (p.45)

“mid tones are hardly distinguishable from low tones acoustically, in particular in non-final utterance position ... in utterance-final position, differences between low tones and mid tones may appear because low tones may be realized as falling from low to extra low, while mid tones may not” (p.47)

Data + Representations

Anywa Feminine (“Mid” Tone) \bar{a} -

$p\acute{i}:w \sim \bar{a}-p\grave{i}:w$ ‘first-born twin’

$j\grave{a}:k \sim \bar{a}-j\acute{a}:k$ ‘red with white
line on side’

$c\bar{a}:n \sim \bar{a}-c\bar{a}:n$ ‘second-born twin’

My Reanalysis of the “Mid” tone

Mid = **Low** + Floating ^H

Anywa Feminine ā- as **Low** + **H**

pí:w ~ à^H-pí:w 'first-born twin'

jà:k ~ à^H-já:k 'red with white
line on side'

cà:^Hn ~ à^H-cà:^Hn 'second-born twin'

Analysis: Basic Ideas

- Polarity is the effect of two processes:
L-tone insertion and H-tone spreading
- Both processes are triggered by associated and floating tones
- (**but:** complications in different prosodic environments)
- L-tone insertion is OCP-triggered

Effects of **Overt** H-tones**H-Tone Spreading**

má:th	-ò	→	má:th-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	má:th	-à	→	ú-mà:th-á	(p.204)
HAB	drink:PD	-1SG		'whenever I drink'	

Effects of Floating H-tones

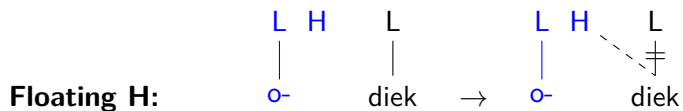
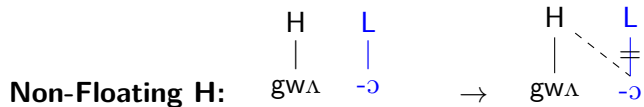
H-Tone Spreading

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

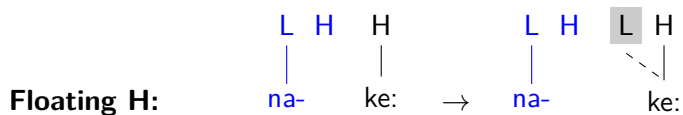
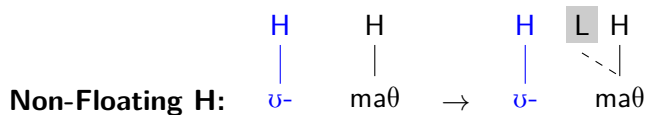
L-Tone Epenthesis

- 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



The Prosodic Structure of Anywa Words

[Prefix]_{PWord} [Lexical Root + Suffix]_{PWord}

Sensitivity to Prosodic Structure in Tone

- **Crisp-Edge:** No H-tone spreading **across** PWord boundaries
- **Contiguity:** L-Insertion **only** at PWord boundaries

OT-Analysis

Theoretical Assumptions (Trommer 2011)

- **Colored Containment:** (van Oostendorp 2006)
Underlying material (i.e. nodes and association lines) is never literally deleted, but retained in the output, and marked as phonetically invisible.

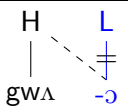
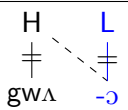
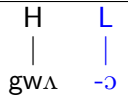
- **Doubling:** (cf. Doubling in Correspondence Theory, McCarthy & Prince 1995)
All markedness constraints are assumed to exist in two versions, one referring only to phonetically visible material, and one to all material in a given structure.

Constraints

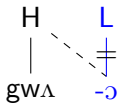
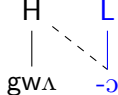
- ω
* H^ω Assign * to every H-tone which is linked
to two distinct PWords
- H
↑
σ Assign * to every syllable which is not associated to a H-tone
- MAX | Assign * to every morphological tone-syllable pair
which is associated morphologically, but not phonetically
- *F Assign * to every σ which is phonetically
associated to the tone sequence HL
- DE Assign * to every tone T associated epenthetically
to a tautomorphic syllable S
if T is not also associated to a heteromorphic syllable S'
(‘Derived Environment’)

H-Tone Spreading


Linked-H-Tone Spreading from Root to Suffix

Input: = c.	ω *H ω	DE	*F	H ↑ σ	MAX
<p>a. </p>					*
<p>b. </p>					**!
<p>c. </p>				*!	

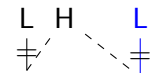
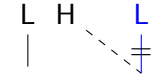
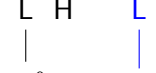
Fall Avoidance

Input: = c.	ω H ω	DE	<u>*F</u>	H ↑ σ	MAX
 <p>a. gwΛ</p>					*
 <p>b. gwΛ</p>			*!		

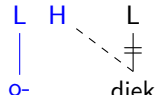
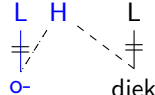
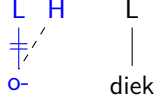
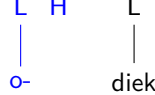
No Tautomorphemic Association of Floating H

Input: = b.	ω *H ω	DE	<u>*F</u>	H ↑ σ	MAX
a. $\begin{array}{c} L \ H \\ \ / \\ ga\theta \end{array}$			*!		
 b. $\begin{array}{c} L \ H \\ \\ ga\theta \end{array}$				*	

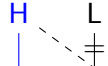
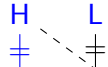

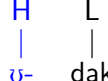
Floating-H-Tone Spreading from Root to Suffix

Input: = c.	ω *H ω	DE	*F	H ↑ σ	MAX
 <p>a. gaθ</p>					**
 <p>b. gaθ</p>				*!	*
 <p>c. gaθ</p>				*!*	

Floating-High-Tone Spreading from Prefix to Root

Input: = d.	ω * H ω	DE	<u>*F</u>	H ↑ σ	MAX
 <p>a. o- diek</p>				*	*
 <p>b. o- diek</p>	*!				**
 <p>c. o- diek</p>		*!		*	*
 <p>d. o- diek</p>				**!	

No Linked-High-Tone Spreading from Prefix to Root

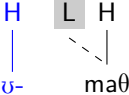
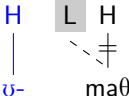
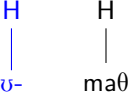
Input: = c.	ω *H ω	DE	*F	H ↑ σ	MAX
a. $\begin{array}{c} \text{H} \\ \\ \text{v-} \end{array} \text{dak}$ 	*!				
b. $\begin{array}{c} \text{H} \\ \# \\ \text{v-} \end{array} \text{dak}$ 	*!				*
 c. $\begin{array}{c} \text{H} \\ \\ \text{v-} \end{array} \text{dak}$ 				*	

L-Tone Insertion

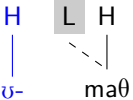
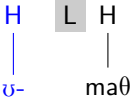
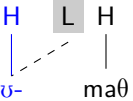
Constraints

- OCP Assign * to every pair of adjacent identical H-tones
- [Dep τ] Assign * to every PWord-internal epenthetic tone
- * $\textcircled{\text{T}}$ Assign * to every epenthetic tone which is not associated
- * [R] Assign * to every phonetic rising tone
which is not at the right edge of a PWord
- NO SKIP Assign * to every tone which is associated to two syllables S_1 and S_3
but not to a syllable S_2 intervening between S_1 and S_3

L-Insertion between Linked-Prefix H and Root-H

Input: = c.	OCP	H ↑ σ	MAX	DEP τ
 <p>a. $\begin{matrix} H \\ \\ u- \end{matrix} \quad \begin{matrix} L & H \\ \diagdown & \\ ma & \theta \end{matrix}$</p>				*
 <p>b. $\begin{matrix} H \\ \\ u- \end{matrix} \quad \begin{matrix} L & H \\ \diagdown & \\ ma & \theta \end{matrix}$</p>			*!	*
 <p>c. $\begin{matrix} H \\ \\ u- \end{matrix} \quad \begin{matrix} & H \\ & \\ ma & \theta \end{matrix}$</p>	*!			

More Candidates Excluded by Undominated Constraints

Input: = c.	OCP	*F	* T	H ↑ σ	MAX
<p>a. </p>					
<p>b. </p>			*!		
<p>c. </p>		*!			*


L-Insertion between Linked-Prefix-H and Root-H+Suffix

Input: = d.	OCP	*[<u>R</u>]	H ↑ σ	MAX	DEP
<p>a. $\begin{array}{c} \text{H} \\ \\ \text{u-} \end{array} \quad \begin{array}{c} \text{L} \\ \\ \text{ma}\theta \end{array} \quad \begin{array}{c} \text{H} \\ \\ \text{ma}\theta \end{array} \quad \begin{array}{c} \text{L} \\ \\ \text{-a} \end{array}$</p>				**	**
<p>b. $\begin{array}{c} \text{H} \\ \\ \text{u-} \end{array} \quad \begin{array}{c} \text{L} \\ \\ \text{ma}\theta \end{array} \quad \begin{array}{c} \text{H} \\ \\ \text{ma}\theta \end{array} \quad \begin{array}{c} \text{L} \\ \\ \text{-a} \end{array}$</p>		*!		**	**
<p>c. $\begin{array}{c} \text{H} \\ \\ \text{u-} \end{array} \quad \begin{array}{c} \text{L} \\ \\ \text{ma}\theta \end{array} \quad \begin{array}{c} \text{H} \\ \\ \text{ma}\theta \end{array} \quad \begin{array}{c} \text{L} \\ \\ \text{-a} \end{array}$</p>			*!	*	*
<p>d. $\begin{array}{c} \text{H} \\ \\ \text{u-} \end{array} \quad \begin{array}{c} \text{H} \\ \\ \text{ma}\theta \end{array} \quad \begin{array}{c} \text{L} \\ \\ \text{-a} \end{array}$</p>	*!			*	

L-Insertion between Floating-Prefix-H and Root-H

Input: = d.	OCP	* T	NoSKIP	H ↑ σ	MAX
<p>a. $\begin{array}{cc} L & H & L & H \\ & & \diagdown & \\ na- & & & ke: \end{array}$</p>				*	
<p>b. $\begin{array}{cc} L & H & L & H \\ & & \diagup & \\ na- & & & no \end{array}$</p>			*!	*	
<p>c. $\begin{array}{cc} L & H & L & H \\ & & & \\ na- & & & ke \end{array}$</p>			*!	*	
<p>d. $\begin{array}{ccc} L & H & H \\ & & \\ na- & & ke: \end{array}$</p>	*!			*	

No L-Insertion between Floating-Root-H and Suffix-H

Input: = b.	[DEP τ]	OCP	H ↑ σ	MAX
a. L H L H ma: -I	*!		**	
 b. L H H ma: -I		*	*	

Theoretical Consequences

Theoretical Significance of the Anywa Pattern

- Tone polarity on stems, not on affixes
(cf. Hantgan 2009 on Bangime)
- Mono-tier OCP effect for tone
(vs. segment-based accounts of tone, cf. Shih and Inkelas 2014)
- completes the typology of the role
floating tones may play in OCP-effects

Two Potential Versions of the OCP

- Purely Tone-Based OCP (Leben 1973)
- Tone+TBU OCP
- (**but:** more complex combination in Myers 1987)

Purely Tone-Based OCP: OCP^τ

Assign a violation to every pair of adjacent tone tokens of identical type:

violated	H H σ σ	H H σ σ σ	H H
not violated	H L H σ σ σ	H L H σ σ	H L H

Tone+TBU-Based OCP: OCP_{σ}^{τ}

Assign a violation to every pair of adjacent tone tokens of identical type which are linked to adjacent TBUs:

violated	$\begin{array}{cc} H & H \\ & \\ \sigma & \sigma \end{array}$			
not violated	$\begin{array}{ccc} H & L & H \\ & & \\ \sigma & \sigma & \sigma \end{array}$	$\begin{array}{ccc} H & L & H \\ & & \\ \sigma & & \sigma \end{array}$	$\begin{array}{ccc} H & L & H \end{array}$	
	$\begin{array}{ccc} H & & H \\ & & \\ \sigma & \sigma & \sigma \end{array}$	$\begin{array}{cc} H & H \end{array}$		$\begin{array}{ccc} H & L & H \\ & \swarrow & \\ \sigma & \sigma & \end{array}$

The Typology of Floating-Tone OCP Effects

- Floating Tone as an OCP **Target**
(Myers 1987 on Shona)
- Floating Tone as an OCP **Repair**
(cf. Paster and Kim 2011 on Tiriki)
- Floating Tone as an OCP **Trigger**

Floating Tone as an OCP-Repair/-Blocker

OCP-Repair by Deletion (Meeussen's Rule):

v-áá-rhùmul-il-an-a 'they have hit for each other before (experiential)'
 y-áá-xàrag-a zi-nguza 'he has cut vegetables before'


OCP-Repair by Intervening Floating L:

v-áá-molom-el-a mu-limi 'they have spoken for a farmer before'
 v-áá-[!]mólóm-él-á mú-lína 'they have spoken for a friend before'

(Tiriki, Paster and Kim 2011:79,82)

Appendix

Immunity of L + Floating H against Spreading

Input: = b.	${}^*_{\text{H}}\square_{\text{H}}$	${}^{\omega}\text{H}^{\omega}$	DE	H ↑ σ	MAX	DEP								
 a. <table style="display: inline-table; vertical-align: middle; margin-left: 10px;"> <tr> <td style="text-align: center; padding-right: 10px;">L H</td> <td style="text-align: center; padding-right: 10px;">L H</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;">a-</td> <td style="text-align: center;">ca:n</td> </tr> </table>	L H	L H			a-	ca:n				**				
L H	L H													
a-	ca:n													
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L H	L H													
a-	ca:n													
	⊥													

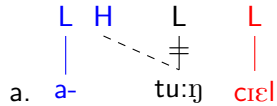
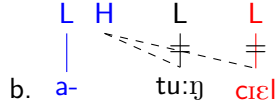
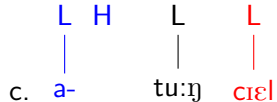
Immunity of L + Floating H against Spreading

*_H □_H

Assign * to every color which immediately dominates more than one H tone

Restricted Floating-High-Tone Spreading

(no spreading to the second part of a compound)

Input: = c.	ω * $H\omega$	DE	H ↑ σ	MAX	DEP
 <p>a. a- tu:ŋ cɪɛl</p>			**		*
 <p>b. a- tu:ŋ cɪɛl</p>	*!		*		**
 <p>c. a- tu:ŋ cɪɛl</p>			***!		

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Overview

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