Mutual Counterfeeding and Duke-of-York Blocking in Bari

Jochen Trommer
jtrommer@uni-leipzig.de

Universität Leipzig
Institut für Linguistik

OCP 14
February 20, 2017

Duke-of-York Blocking

Tone Spreading is blocked if it would restore

the pronunciation of underlying representations

(before dissimilation):

dók kó.pò   ⇒   **dók kò**.pò   (⇒ *__**dók kó**.pò__)

Central Claim of this Talk

Duke-of-York Blocking is due to a constraint

blocking multiple H-tones on specific syllables ($^{*}_{H}\sigma_{H}$)

in optimality-theoretic Containment Theory

(Prince & Smolensky 1993, van Oostendorp 2005, Zimmermann & Trommer 2014)

Bari

Bari (Owen 1908, Spagnolo 1933, Yokwe 1986)

- Eastern Nilotic language spoken in parts of Southern Sudan, Northwest Uganda & the Democratic Republic of Congo

- Polysynthetic, mainly suffixing, grammatical verb tone and complex phrasal tonology

- H(igh), L(ow) tones and word-final F(alling) (HL) tones

- All data discussed in this talk from the comprehensive tonal grammar of Yokwe (1986)

Theoretical Assumptions

Theoretical Assumptions

- **Autosegmental Containment:** (extending Prince & Smolensky 1993)
  Underlying material
  is never literally deleted, but retained in the output,
  (but may be marked as phonetically invisible).

- **Constraint Cloning:** (cf. Cloning 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.

Representation of Association Lines (Zimmermann & Trommer 2011)

Morphological association lines		Epenthetic association lines
phonetically visible:	phonetically invisible:	phonetically visible:
X	X	X
|	⋮	⋮
Y	Y	Y

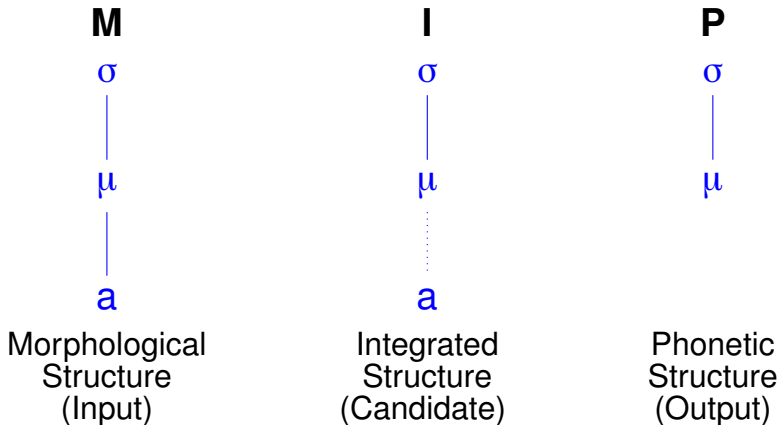# Axiom of Phonetic Visibility (Zimmermann & Trommer 2014)

A phonological node is visible to phonetics

if and only if

it is dominated by the designated ancestor node of the structure

through an uninterrupted path of phonetic association lines

Deletion

Epenthesis

M	**I**	**P**
σ	σ	σ
μ	μ	μ
	⋮		
	ə	ə
Morphological Structure (Input)	Integrated Structure (Candidate)	Phonetic Structure (Output)

The Cloning Hypothesis

Every markedness constraint exists in 2 incarnations:

The **general clone** refers to all structure in I

The **phonetic clone** refers only to structure in P

(cf. Cloning in Correspondence Theory, McCarthy & Prince 1995)

The Cloning Hypothesis

<u>OCP</u>   Assign ∗ to every pair of adjacent H-tones in **P**

OCP   Assign ∗ to every pair of adjacent H-tones in **I**

	<u>OCP</u>	OCP
H L H | | a. mat wi ni		
H L H a. mat wi ni	∗	
H H | c. dep ke re	∗	∗

Central Prediction

In contrast to Correspondence Theory

markedness constraints may be sensitive

to **underlying** phonological representations

Data

Empirical Generalizations

Duke-of-York Blocking is part of a bigger
opacity cluster of mutual counterfeeding:

- H-Tone **spreads** to right-adjacent words

- H-initial words **dissimilate** after H-final words

- In specific contexts, dissimilation feeds spreading

- Otherwise, dissimilation and spreading
  mutually counterfeed each other

H-Spreading (Yokwe 1986:208)

ríp	'sawed'	+	dù.pà	'cradle'	→	**ríp dú**.pà
nín	'twisted'	+	gwàkà	'forked stick'	→	**nín gwá**.kà
tór	'tied'	+	bòn.**gó**	'dress'	→	**tór bón**.**gó**
dót	'stuck'	+	kù.**mé**	'nose'	→	**dót kú**.**mé**
dér	'cooked'	+	là.kâ	'durra'	→	**dér lá**.kâ
tór	'tied'	+	dì.kâ	'wound'	→	**tór dí**.kâ

H-Dissimilation (Yokwe 1986:207)

dók 'fetched' + **kó**.pò 'cup' → **dók kò**.pò

gwó 'kicked' + **gú**.rè 'dove' → **gwó gù**.rè

rják 'robbed' + **túr** 'village' → **rják tùr**

gwé 'weave' + **mé?** 'basket' → **gwé mè?**

H-Dissimilation feeds H-Spreading (Yokwe 1986:206)

dép 'held' + **ké.ré** 'gourd' → **dép ké**.**rè**

kúr 'dug' + **kí.dí** 'well' → **kúr kí**.**dì**

dép ké.ré ⇒ **dép kè.rè** ⇒ **dép ké**.**rè**

H-Dissimilation counterfeeds H-Spreading . . .

dók 'fetched' + **kó**.pò 'cup' → **dók kò**.pò

gwó 'kicked' + **gú**.rè 'dove' → **gwó gù**.rè

. . . if this restores the input pronunciation:

dók kó.pò ⇒ **dók kò**.pò (⇒ *<u>**dók kó**</u>.pò)

H-Spreading counterfeeds H-Dissimilation . . .

tór	'tied'	+	bòn.gó	'dress'	→	**tór bón**.gó
pák	'scared'	+	dì.rán	'birds'	→	**pák dí**.rán
dér	'cooked'	+	là.kâ	'durra'	→	**dér lá**.kâ
tór	'tied'	+	dì.kâ	'wound'	→	**tór dí**.kâ

tór bòn.gó ⇒ **tór bón**.gó (⇒ ***tór bón**.**gò**)

Basic Analysis

Basic Analysis

- ▶ **Dissimilation** $\not\leadsto$ **Spreading** (Duke-of-York Blocking):
  follows from a containment-based constraint against
  two overlapping (input+output) H-tone domains

- ▶ **Spreading** $\not\leadsto$ **Dissimilation**:
  follows from the containment-based version of the OCP itself
  which is satisfied by intervening 'deleted'/input L-tones

Central Constraint

$$*]_{HH}$$

'Assign $*$ to every TBU which is

simultaneously the right edge

of two H-tone spans in **I**'

Additional Constraints
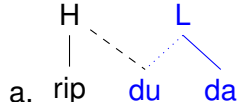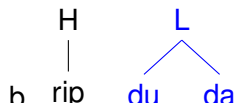
OCP   Assign $*$ to every pair of adjacent H-tones in **I**

$*_{\text{T}}$ Assign $*$ to every floating epenthetic H-tone
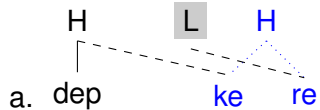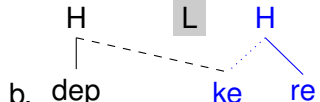
$_{PW}H_{PW}$ A H should span a prosodic word boundary in **P**

FAITH | Assign $*$ to every epenthetic or deleted association line

H-Spreading
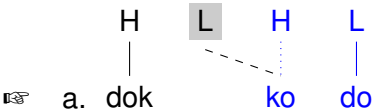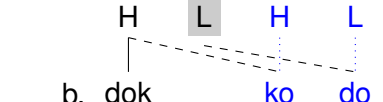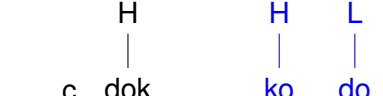
Input: = b.	OCP	*]$_{HH}$	*ⓣ	$_{PW}$H$_{PW}$	FAITH |
☞ a. H L / rip du da					**
b. H L / rip du da				*!	
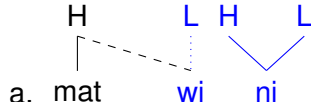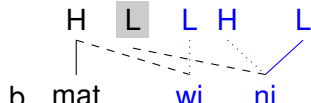
H-Spreading + L-Epenthesis

Input: = c.		OCP	*]$_{HH}$	*⊤	$_{PW}$H$_{PW}$	FAITH |
☞ a.	dep H L H ke re					****
b.	dep H L H ke re				*!		**
c.	dep H H ke re	*!			*!	

27 / 61

Duke-of-York Blocking:
L-Epenthesis without H-Spreading

Input: = c.					OCP	*]$_{HH}$	*ⓣ	$_{PW}$H$_{PW}$	FAITH |
☞	a. dok	H | dok	L	H ko	L | do				*	**
	b. dok	H | dok	L	H ko	L do		*!			****
	c. dok	H | dok		H | ko	L | do	*!			*	

28/61

Blocking of L-Epenthesis by Underlying L

Input: = c.		OCP	*]$_{HH}$	*$\textcircled{\tau}$	$_{PW}$H$_{PW}$	FAITH |
☞ a. mat H L H L wi ni						**
b. mat H L L H L wi ni						***!*
c. mat H L H L wi ni					*!	

29 / 61

Potential Alternatives

Potential Alternatives

- ► **Ordered Rules** (Yokwe 1986)

- ► Output-output constraints (Alderete 2001, Kurisu 2001)

- ► Correspondence-theoretic **ANCHOR constraints** (Myers 1997)

Ordered Rules (Yokwe 1986)

Dissimilation > **Spreading**

	dép ké.ré	**tór** bòn.gó	**dók kó**.pò
Dissimilation	**dép kè.rè**	——	**dók kò**.pò
Spreading	**dép ké.rè**	**tór bón**.gó	*__dók kó__.pò

Spreading > **Dissimilation**

	dép ké.ré	**tór** bòn.gó	**dók kó**.pò
Spreading	**dép ké.ré**	**tór bón**.gó	*__dók kó__.pò
Dissimilation	**dép ké.rè**	*__tór bón.gò__	——

Yokwe (1986:219)

Is there any motivation for High Tone Spread failing to affect a HL noun after it undergoes High Tone Lowering? One possible answer would seem to have roughly the following form: if High Tone Spread could apply to kòpò (derived from underlying kópò via High Tone Lowering), it would (in conjunction with Contour Simplification) have the effect of changing kòpò back to kópò. In other words, the fact that such words have undergone High Tone Lowering would be completely obscured if they were also allowed to undergo High Tone Spread. While this explanation for the fact that kópò alternates with kòpò in the post-High environment is not entirely convincing in our judgement, we will continue to assume that somehow such words must be barred from undergoing High Tone Spread. (Later we will in

Output-Output Correspondence? (Alderete 2001, Kurisu 2001)

Output of HL-noun *N* **in isolation**

≠

Output of *N* **after H-final verbs**

Problems:

▸ OO-effects are usually restricted to lexical phonology

▸ OO-constraints restrict different related words,
  not the same word in different phonological contexts

Duke-of-York Blocking in Shona

í	+	sadza	**í**	**sá**.dza		H$_1$-Spreading
í	+	badzá	**í**	badzá		↯ H-Spreading
chí	+	kóro	**chí**	**ko**.ro		
í	+	bángá	**í**	**ban.ga**	H$_2$-Deletion	↯ H-Spreading

sadza 'porridge', *badzá* 'hoe', *bángá* 'knife' *kóro* 'school', *(ch)í* (copula)

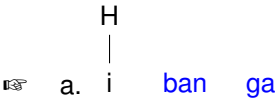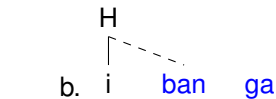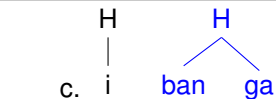(Myers 1987:195, 1997:860,864)

Myers (1997:868) on DoY-Blocking in Shona

ANCHOR-L

Assign a violation if and only if:

(a) there is an output syllable S' that has an input correspondent S,

(b) both *S* and *S′* bear tone, and

(c) either *S* or *S′* is the leftmost syllable associated with its tone, and

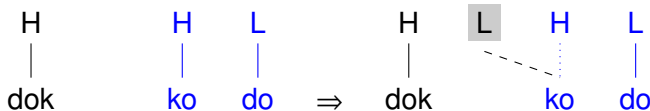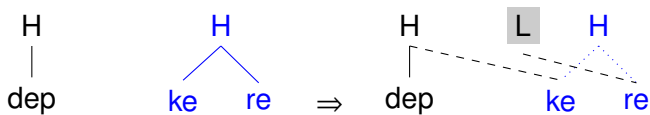　　its correspondent syllable is not the leftmost syllable

　　associated with its tone.

Myers (1997) on DoY-Blocking in Shona

ANCHOR: An output H-tone syllable
which is H-span-initial in the input
must also be H-span-initial in the output

Input: = c.		OCP	ANCHOR-L	MAX τ	MAX |	SPEC τ
☞ a.	H | i ban ga			*		**
b.	H ⌐ - - - | i ban ga		*!	*		*
c.	H H | /\\ i ban ga	*!				

Problem for Bari

Spreading to Underlying HH, but not to underlying HL:

($\nleftrightarrow$ ANCHOR-L and opposite of prediction by ANCHOR-R)

Generalizing the Analysis

Polysyllabic Nouns

Generalizing the Bisyllabic Patterns

Dissimilation feeds Spreading (Yokwe 1986:212)

dé   'hid'   +   pí.lí.lí   'knife'   →   **dé pí.lì**.lí

dér 'cooked'   +   sú.mút.tî   'fish'   →   **dér sú.mùt**.tî

Spreading counterfeeds Dissimilation (Yokwe 1986:213)

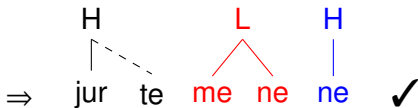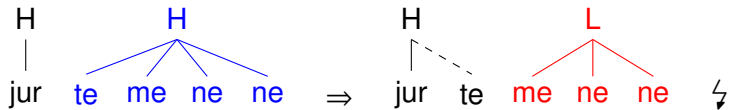**tín**   'gave'   +   pì.rí.tán   'places'   →   **tír pí.rí**.tán

léng 'killed' +   kì.múr.tê 'mosquito' →   **léng kí.múr**.tê

Yokwe's Paradox (Yokwe 1986:213)

dé	'hid'	+	pí.lí.lí	'knife'	→	**dé pí.lì**.lí

dér	'cooked'	+	sú.mút.tî	'fish'	→	**dér sú.mùt**.tî

júr	'burnt'	+	té.mé.né.né	'ants'	→	**júr té.mè.nè**.né

júp	'wore	+	dí.dí.lí.tî	'ornament'	→	**júp dí.dì.lì**.tî

⇒   Final H-tone syllables of 3σ- and 4σ-nouns
    are exempt from dissimilation

Yokwe's Paradox (Yokwe 1986:213)

Additional Constraint

The Pot Constraint (ʊ):

Assign $*$ to every pair of adjacent H-tones

in a $H_\sigma^+ \, L_\sigma^+ \, H_\sigma^+$ sequence

H-Spreading + L-Epenthesis

Input: = d.		OCP	ʊ	$_{PW}H_{PW}$	FTH │
☞ a.	H L H / jur te me ne ne				$*_6$
b.	H L H / jur te me ne ne				$*_8$!
c.	H L H / jur te me ne ne		*!		$*_4$
d.	H H / jur te me ne ne	*!		*	

Monosyllabic Nouns

Monosyllabic Nouns

Generalization

- ► All monosyllabic nouns show the expected effects of H-tone dissimilation

- ► Two lexically arbitrary classes of monosyllabic H- and L-nouns: **Class₁** nouns allow H-spreading, **Class₂** nouns don't

Analysis

- ► **Class₁** noun tones are underlyingly floating **Class₂** noun tones are underlyingly associated

- ► 1σ-words are protected by a faithfulness constraint shielding **Class₂** nouns against spreading

Monosyllabic H-Tone Nouns (Yokwe 1986:224)

Dissimilation without Spreading

dén	'know'	+	njé	'him'	→	**dén njè**
gín	'cut'	+	két	'thread'	→	**gín kèt**

Dissimilation with Spreading

mát	'drank'	+	lé	'milk'	→	**mát lê**
ró	'scratched'	+	kwé	'head'	→	**ró kwê**

Additional Constraint

FAITH [σ]

Assign ∗ to every tonal modification

of a monosyllabic word

with an underlying tone specification

Monosyllabic Preassociated H

Input: = d.	OCP	*]$_{HH}$	*⊙	FTH [σ]	$_{PW}$H$_{PW}$	FTH |
☞ a. den H L H nje				*	*	
b. den H L H nje			*!		*	
c. den H L H nje		*!		*		
d. den H H nje	*!				*	

50 / 61

Monosyllabic Unassociated H

Input: = d.	OCP	*]$_{HH}$	*$\textcircled{\tau}$	FTH [σ]	$_{PW}$H$_{PW}$	FTH |
H L H a. mat le					*!	*
H L H b. mat le			*!		*	
H L H ☞ c. mat le						*
H H d. mat le	*!				*	*

Monosyllabic L-Tone Nouns (Yokwe 1986:224)

No Spreading

lók	'trapped'	+	mòk	'ant bear'	→	**lók** mòk
kén	'read'	+	bùk	'book'	→	**kén** bùk

Spreading
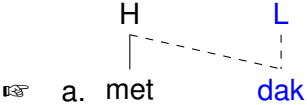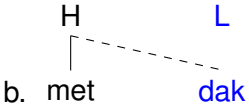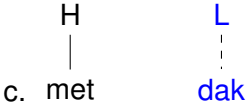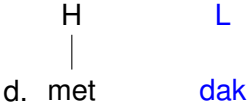
mét	'saw'	+	dàk	'pipe'	→	**mét dâk**
júp	'scratched'	+	góp	'head'	→	**júp gôp**

Monosyllabic Preassociated L-Noun

Input: = b.	OCP	$*]_{HH}$	$*\circledT$	FTH [σ]	$_{PW}H_{PW}$	FTH |
H L a. lok mok				*!		
H L ☞ b. lok mok					*	

Monosyllabic Unassociated L-Noun

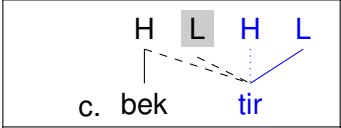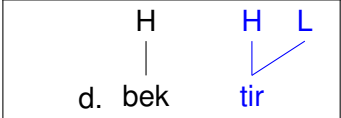| **Input:** = d.	OCP	*]$_{HH}$	*Ⓣ	FTH [σ]	$_{PW}$H$_{PW}$	FTH │
☞ a. H L met dak						
b. H L met dak						*!
c. H L met dak					*!	
d. H L met dak					*!	*

54 / 61
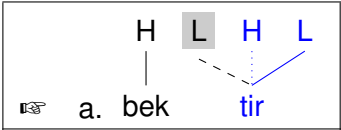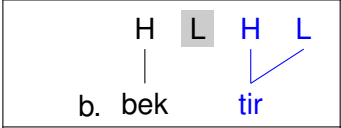
Monosyllabic F-Tone Nouns (Yokwe 1986:225-226)

Dissimilation without Spreading:

bék   'opened'   +   tîr   'area'   →   **bék tìr**

rjá   'found'   +   nân   'me'   →   **rjá nàn**

Monosyllabic F-Noun

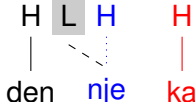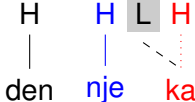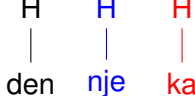| **Input:** = d. | | OCP | *]$_{HH}$ | *τ | FTH [σ] | $_{PW}$H$_{PW}$ | FTH | |
|---|---|---|---|---|---|---|---|
| ☞ | a. bek   tir | | | | * | * | |
| | b. bek   tir | | | *! | | * | |
| | c. bek   tir | | *! | | * | | |
| | d. bek   tir | *! | | | | * | |

Theoretical Consequences

- Evidence for two-level markedness constraints

- New support for insertion-based repair for OCP-violations as in insertion-based approaches to downstep (Paster and Kim 2011)

- Containment-based approach captures opacity patterns which are not amenable to simple rule ordering (cf. Baković 2011)

References

Alderete, J. (2001). Dominance effects as transderivational anti-faithfulness. *Phonology*, 18:201–253.

Baković, E. (2011). Opacity and ordering. In Goldsmith, J. A., Riggle, J., and Yu, A. C. L., editors, *The Handbook of Phonological Theory*, pages 40–67. Oxford University Press, Oxford, 2nd edition.

Kurisu, K. (2001). *The Phonology of Morpheme Realization*. PhD thesis, UC Santa Cruz.

Myers, S. (1997). OCP effects in Optimality Theory. *Natural Language and Linguistic Theory*, 15(4):847–892.

Myers, S. P. (1987). *Tone and the structure of words in Shona*. PhD thesis, UMass Amherst.

Owen, R. C. R. (1908). *Bari grammar and Vocabulary*. J. & E. Bumpus, London.

Paster, M. and Kim, Y. (2011). Downstep in Tiriki. *Linguistic Discovery*, 9(1):71–104.

Spagnolo, L. M. (1933). *Bari grammar*. Missioni Africane, Verona.

Yokwe, E. M. (1986). *The tonal grammar of Bari*. PhD thesis, University of Illinois at Urbana-Champaign.

Monosyllabic Preassociated H

Input: = d.		* L L	OCP	*]$_{HH}$	*τ		
☞ a.	den nje ka (H L H H)		*$_2$		*	*	
b.	den nje ka (H H L H)		*$_1$!			*	
c.	den nje ka (H L H L H)	*!			*		
d.	den nje ka (H H H)		**!			*	

59/61

Myers (1997) on DoY-Blocking in Shona

Input: = c.		OCP	ANCHOR-L	*σ$_{HH}$	MAX |	SPEC τ
☞ a.	H H i ban ga			*		**
b.	H H i ban ga			*!		*
c.	H H i ban ga	*!				

Overview