

## The OCP: A summary

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### The birth of the OCP

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## The birth of a principle: Leben (1973)

Observation: not all imaginable combinations of surface tone patterns are attested in Mende (and Tiv):

- (1) a. H<sup>+</sup>, HL<sup>+</sup>, LHL, L<sup>+</sup>, LH<sup>+</sup>  
b. \*HHL, \*LLH, ...

Analysis:

- No adjacent identical tone melodies.
- 1-1 association from L-R and spreading of only the final tone

→ The 'OCP' as Morpheme Structure constraint

## The birth of the OCP: Goldsmith (1976)

- (2) *Obligatory Contour Principle (OCP)*  
At the melodic level of the grammar, any two adjacent tonemes must be distinct.
- HHL is not a possible melodic pattern; it automatically simplifies to HL

## The first steps of the OCP

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- originally, it excludes adjacent identical tones in the underlying representation
- is it more general and holds for other tiers as well?
- is it more general and restricts the phonological derivation as well?

## McCarthy (1986): A universal OCP for non-tonal phonology

- (3) *Obligatory Contour Principle*  
At the melodic level, adjacent identical elements are prohibited.
- the OCP also holds for **non-tonal** phonology
  - and this non-tonal OCP is a universal (=inviolable) principle
  - it is not only a **lexical** restriction but also restricts phonological **derivation**

## Segmental OCP I: lexical restriction

- distributional constraint on Semitic roots
- e.g. Arabic: /samam/, but \*/sasam/

## Segmental OCP II: restriction on phonological derivations

(4) *Vowel syncope in Afar*

xamīla	xam-l-ī	'swampgrass (acc./nom.-gen.)'
ʕagāra	ʕagr-ī	'scabies'
darāgu	darg-ī	'watered milk'

→ unstressed vowels in peninitial position are deleted

(5) *Blocked syncope*

miḏaḏī	'fruit'
sababá	'reason'
xarar-é	'he burned'

→ vowel syncope is blocked if two adjacent identical C's would result  
**Antigemination**

## Odden (1988): Not a universal principle!

- the OCP is not a universal principle; neither for tone nor for non-tonal phonology
- there are surface counterexamples against the OCP and anti-antigemination processes

## Segmental OCP as non-blocker: Estonian

in 'strong' forms, unaspirated C's are deleted intervocally

(6) *C-deletion in Estonian*

tegu 'deed' (nom) teo 'deed' (gen)

C-deletion applies even if the surrounding vowels are identical

(7) *C-deletion in Estonian and the OCP*

lugu 'story' (nom) loo 'story' (gen)  
sugu 'tribe' (nom) soo 'tribe' (gen)

## Anti-antigemination: Koya

In Koya, a final V is deleted if flanking C's are identical

(8) *Koya vowel deletion*

Underlying	Surface	Gloss
na:ki ka:va:li	na:kka:va:li	'to me it is necessary'
a:ru ru:pa:yku	a:rru:pa:yku	'6 rupees'
verka:ɖi digte	verka:ɖ digte	'the cat got down'

## Underlying identical C's: Chuckchi

(9) *Chuckchi vowel alternation*

Abs. Sg.	Abs. Pl.	Gloss
miməl	miml-ət	'water'
wiwər	wiwri-t	'board'

Final and initial C-clusters in Chuckchi are split up by V-epenthesis

(10) *Chuckchi vowel alternation*

ekək	ekke-t	'son'
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The alternation in (11) follows if underlyingly, the stem is /ekk/

## The first steps of the OCP: summary

Leben (1973)	morpheme-structure constraint for tone
Goldsmith (1976)	sceptical about the OCP as universal principle for tone
Odden (1986)	not universal for tone
McCarthy (1986)	holds for underlying&derived representations
	universal for segments
Odden (1988)	not universal for segments

## The OCP as OT constraint

## Myers (1997): The OCP in OT

- a principle with different effects
  - actively triggers various repairs
  - blocks expected operations
- no general inviolable principle (and neither an on/off-parameter)

## Shona I: OCP triggers H-deletion

- (11) *Meeussen's rule*
- a. [i][banga]  
copula-knife  
(it) is a knife  
cf. banga 'knife'
- b. [vá][sekuru]  
2a-grandfather  
grandfather (honorific)  
cf. sékúru 'grandfather'
- c. [ndi-chá][teng-es-a]  
1stsg-future-buy-causative-term  
I will sell  
cf. [ku][têng-és-á] 'to sell'<sup>7</sup>

→ the H-sequence of a H-initial word is lowered after a high-toned clitic

## Constraints I

- (12) a. OCP  
Assign a violation mark for every pair of identical tones associated with adjacent TBU's.
- b. MAX-IO(T)  
Assign a \* for every tone in the input without an output correspondent.
- c. ALIGN-L  
Assign a \* for every PrWd not aligned at its left edge with the left edge of a H.

## Shona I: OT

- (13) *H-deletion*  
Input:  $H_1$   $H_2$   
i banga

Candidates	OCP	MAX-IO (T)	ALIGN-L
a. $H_1$ $H_2$ i banga	*!		*
b. $H_1$ → i banga		*	
c. $H_2$ i banga		*	*!

## Shona II: OCP triggers tone slip

(14) *Tone slip*

- a. *bánga gúrú* cf. *bánga* 'knife', *gúrú* 'big'  
*big knife*
- b. [á-chá][téng-á] cf. [á-chá][véreng-a]  
*3rdsg-future-buy-term 3sg-future-read-term*  
 he/she will buy he/she will read

→ if a H-sequence longer than one syllable precedes another H-sequence, the final syllable of the first sequence is lowered

## Constraints II

- (15) a. ANCHOR-L  
 ~Assign a \* for every syllable that is leftmost in tone span in IP but not in OP.
- b. MAX-IO(A)  
 Assign a \* for every association between tone and TBU in the input without an output correspondent.

## Shona II: OT

(16) *H-deassociation*

(34) Input:  $\begin{matrix} H_1 & H_2 \\ \wedge & \wedge \\ banga & guru \end{matrix}$

Candidates	OCP	ANCHOR-L	MAX-IO (T)	MAX-IO (A)
a. $\begin{matrix} H_1 & H_2 \\ \wedge & \wedge \\ banga & guru \end{matrix}$	*!			
b. $\begin{matrix} H_1 & H_2 \\   & \wedge \\ banga & guru \end{matrix}$				*
c. $\begin{matrix} H_1 & H_2 \\ \wedge &   \\ banga & guru \end{matrix}$		*!		*
d. $\begin{matrix} H_1 \\ \wedge \\ banga & guru \end{matrix}$			*!	

A typo in c!  
 second H  
 associated  
 only with  
 second TBU

## Shona III: OCP triggers tone fusion

(17) *Tone fusion*

- a. [ku]-[mú-téng-és-ér-a]  
*infinitive-object-buy-causative-applied-term*  
 to sell to him/her
- cf. [ku]-[mú-véreng-er-a]  
*infinitive-object-read-applied-term*  
 to read to him/her
- b. [tí-téng-és-é]  
*1stpl/subjunctive-buy-causative-term*  
 we should sell
- cf. [tí-táris-e]  
*1stpl/subjunctive-look-term*  
 we would look

→ if a single H-toned syllable is adjacent to a H-syllable, the H tones fuse  
*In the macrostem*

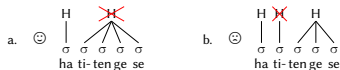
## Shona III: OCP triggers tone fusion

- indeed tone fusion: when the whole macrostem complex is preceded by a H-clitic, the whole sequence becomes low

## (18) Hortative: Meussen's rule

- a. [há][ti-tengese]  
hortative-1stpl/subjunctive-buy-causative-term  
let us sell
- b. [há][ti-tarise]  
hortative-1stpl/subjunctive-look-term  
let us look

## (19)



## Constraints III

## (20) UNIFORMITY-L

Assign a \* for every syllable that is leftmost in tone span in IP but not in OP.

## (20) MAX-IO(A)

Assign a \* for every association between tone and TBU in the input without an output correspondent.

## Shona III: OT

## (21) H-dissociation

Input: H<sub>1</sub> H<sub>2</sub>  
[ti-teng-es-e]

Candidates	OCP	MAX-IO (T)	UNIFORMITY (T)
a.	*!		
b.		*!	
c.			*

## Shona IV: OCP blocks tone spreading

## (22) H-spreading

- a. [i][sáɖza] cf. [sáɖza] 'porridge'  
copula-porridge  
(it) is porridge
- b. [ti-chá][véreng-a] cf. [ku][véreng-a]  
1stpl-future-read-term infinitive-read-term  
we will read to read

→ a H spreads to a toneless  $\sigma$ 's in next morpheme

## (23) No H-spreading

- [i][badzǎ] cf. [badzǎ]  
copula-hoe 'hoe'  
(it) is a hoe

→ spreading blocked if two adjacent H-toned  $\sigma$ 's would result





## Constraints IV

- (24) a. SPECIFY(T)  
Assign a \* for every syllable that is not associated with a tone.
- b. BOUND  
Assign a \* for every pair of successive  $\sigma$ 's in a tone span that are not in different domains.

## Shona IV: OT

(25) *H-spreading*




(28) Input:  $\cdot$  H<sub>1</sub>  
[ticha][verenga]

Candidates	ANCHOR-L	BOUND	SPECIFY (T)	DEP-IO (A)
a. 			***!	
b. 			***	*
c. 		*!	**	**
d. 	*!		***	*

## Shona IV: OT

(26) *H-spreading blocked*

(29) Input: H<sub>1</sub> H<sub>2</sub>  
i - badza

Candidates	OCP	MAX-IO (T)	SPECIFY (T)	DEP-IO (A)
a. 			*	
b. 	*!			*
c. 		*!		**

## Shona: summary

- the OCP actively triggers different repairs
  - H-deletion (Meussen's rule)
  - H-deassociation (Tone slip)
  - H-fusion
- it 'passively' blocks an expected process
  - No spreading to toneless  $\sigma$  if this would result in an OCP-violation



## Kishamba I: the OCP is violable

(27) *H-spread and no downstep*

- a. nwáná 'child'      dúú 'only'      nwáná<sup>1</sup>dúú 'only a child'  
 b. kúji 'dog'      ní 'cop'      ní<sup>1</sup>kúji 'it is a dog'  
 c. á-wá-ghóshó-é-a u-ghoe 'he's making them a rope'  
 d. a-té<sup>1</sup>kóm-á 'he killed (verb focus)' (cf. kukómá 'to kill')

→ adjacent H-tones remain; a downstep is realized inbetween

## Kishamba I: the OCP is violable

these are indeed two different H-tones: contrast to (28) where H spreads to toneless  $\sigma$ 's up to penult and no downstep surfaces

(28) *H-spread and no downstep*


- a. ku-ví-ghóshó-a      cf. ku-ghosho-a  
 to do them (Cl. 8)      to do
- b. ní-té-ghóshó-a  
 I have done (verb-focus)
- c. nyumbú zá-wá-ghánga      cf. za-wa-ghanga  
 house of the doctors      of the doctors




(29) *Adjacent H's vs. spreaded H*

- ia.       b. 

## Kishamba I: OT

(30) *Adjacent H-tones*

Input: 

Candidates	MAX-I O (T)	SPECIFY (T)	OCP
a. 		**!	
b. → 		*	*
c. 	*!	*	

## Kishamba II: the OCP triggers tone fusion

(31) *Adjacent H's and no downstep*

- a. ku-[wá-kómá]      cf. ku-[kómá]  
 infinitive-them-kill      infinitive-kill  
 to kill them      to kill
- b. ní-kí-[chí-kómá]  
 I<sub>sg</sub>-progressive-*it*-kill  
 I was killing it (Cl. 7)
- c. ní[kááŋ-g] nyáma      cf. ku-[kááŋ-g]  
 I<sub>sg</sub>-fry-perfect meat      infinitive-fry-term  
 I fried meat      to fry
- d. [kááŋ-g]  
 fry-term  
 Fry!

→ no downstep separated a H-toned stem and an unstressed object marker

## Kishamba II: OT

different rankings in the macrostem (stem and unstressed affixes) and the phonological word (macrostem and stressed object markers) and fusion in the macrostem

(32) *Tone fusion in the macrostem (diff. ranking from (31)!*)

Input (Macrostem): H<sub>1</sub> H<sub>2</sub>  
 [chi-kom-a]

Candidates	MAX-IO (T)	OCP	UNIFORMITY (T)
a. 		*!	
b. 			*

→ the OCP is active in the macrostem

## Kishamba: summary

- the OCP is violable
- still, it is not completely inactive: it triggers a repair in some contexts

## Versions of the OCP

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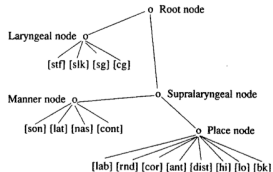
## Versions of the OCP OCP on features

## OCP on features

Given autosegmental phonology and feature-geometric representation of segments, OCP constraints for features can predict non-local OCP effects.

→ non-adjacent segments may have adjacent identical features

(33) *Feature geometry (Clements 1985)*

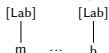


## Prediction of a featural OCP

(34) *Dissimilation in Akkadian (Suzuki 1998)*

- |    |            |            |
|----|------------|------------|
| a. | ma-zuukt   | 'mortar'   |
| b. | ma-škanu-m | 'place'    |
| c. | ma-š?altu  | 'question' |
| d. | na-phar    | 'totality' |
| e. | na-rkabt   | 'chariot'  |
| f. | na-raamu-m | 'favorite' |

No two labials in a word: Prefix-/m/ dissimilates to /n/ if stem contains a labial

(35) *Akkadian and a featural OCP<sub>[LAB]</sub>*

## General prediction of a featural OCP

(Yip 1988, Fukazawa 1999)

A violation of the OCP can be repaired via

- feature change
- deletion
- insertion of a segment with *the opposite* value

## OCP-effects without the OCP

(Ito & Mester 1996, Alderete 1997, Fukazawa 1999)

The OCP is derived from self-conjunction of markedness in some local domains.

(36) \*[[F][F]]<sub>domain x</sub>  
Assign a violation mark for every pair of two instances of F within domain x.

- a specific OCP-constraint is unnecessary
- can predict long-distance OCP effects (since domain is language specific)
- can predict OCP-effects that rely on information on different tiers

## Non-local OCP-effects with self-conjoined constraints

(Alderete 1997)

(37) *Japanese Rendaku*

- |             |          |                   |
|-------------|----------|-------------------|
| ori + kami  | origami  | 'folding paper'   |
| yama + tera | yamadera | 'mountain temple' |

(38) *Lyman's Law*

- |             |          |           |               |
|-------------|----------|-----------|---------------|
| kami + kaze | kamikaze | *kamigaze | 'divine wind' |
| širo + tabi | širotabi | *širodabi | 'white tabi'  |

- Compounding: Initial obstruent of second compound becomes voiced
- Voicing blocked if word already contains another voiced obstruent

→ How to account for such a non-local effect?

(39) \*[[+VOICE, -SONORANT]]<sub>STEM</sub><sup>2</sup>  
Assign a violation mark for every instance of two voiced obstruents in a stem.

## OCP-effects 'across' tiers

(Alderete 1997)

(40) *Length alternations in Oromo*

	BASE		PLURAL
a.	nama	man. person	namo:ta
	farɗ:a	'horse'	farɗ:o:ta
b.	ga:la	'camel'	ga:lota
	ada:m:i	'cactus'	ada:m:ota

- Two adjacent long vowels are impossible.

→ How to account for this ban of two vowels (=segmental tier) both associated with two moras (=moraic tier)?

(41) \*[NoLONGVOWEL]<sub>ADJσ</sub><sup>2</sup>

Assign a violation mark for every instance of two long vowels in adjacent syllables.

## Problem for the OCP as self-conjoined markedness constraints

- implies that only OCP effects for independently marked elements (Suzuki 1998)
- relies on constraint conjunction

## References

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