The OCP: A summary

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The birth of the OCP

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, HL, LHL, L, LH
    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

- 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
The first steps of the OCP

A universal OCP for non-tonal phonology?

Segmental OCP I: lexical restriction

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

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 II: restriction on phonological derivations

(4) **Vowel syncope in Afar**

<table>
<thead>
<tr>
<th>Arabic</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>/sámä/</td>
<td>swamp grass (acc./nom.-gen.)</td>
</tr>
<tr>
<td>šäğära</td>
<td>'scabies'</td>
</tr>
<tr>
<td>däärgä</td>
<td>'watered milk'</td>
</tr>
</tbody>
</table>

- unstressed vowels in peninal position are deleted

(5) **Blocked syncope**

<table>
<thead>
<tr>
<th>Arabic</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>méšäddä</td>
<td>'fruit'</td>
</tr>
<tr>
<td>sabäba</td>
<td>'reason'</td>
</tr>
<tr>
<td>xäär-dä</td>
<td>'he burned'</td>
</tr>
</tbody>
</table>

- vowel syncope is blocked if two adjacent identical C's would result

**Antigemination**

Segmental OCP as non-blocker: Estonian

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

(6) **C-deletion in Estonian**

<table>
<thead>
<tr>
<th>Estonian</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>tegü 'deed' (nom)</td>
<td>teo 'deed' (gen)</td>
</tr>
</tbody>
</table>

C-deletion applies even if the surrounding vowels are identical

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

<table>
<thead>
<tr>
<th>Estonian</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>luggle 'story' (nom)</td>
<td>loo 'story' (gen)</td>
</tr>
<tr>
<td>suggä 'tribe' (nom)</td>
<td>soo 'tribe' (gen)</td>
</tr>
</tbody>
</table>
Anti-antigemination: Koya

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

(8) Koya vowel deletion

<table>
<thead>
<tr>
<th>Underlying</th>
<th>Surface</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>na:k ik a:li</td>
<td>na:kka:la:li</td>
<td>‘to me it is necessary’</td>
</tr>
<tr>
<td>verka:ść digte</td>
<td>verka:ść digte</td>
<td>‘the cat got down’</td>
</tr>
</tbody>
</table>

Underlying identical C’s: Chuckchi

(9) Chukchi vowel alternation

<table>
<thead>
<tr>
<th>Abs. Sg.</th>
<th>Abs. Pl.</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>miməl</td>
<td>miml-ət</td>
<td>‘water’</td>
</tr>
<tr>
<td>wiwər</td>
<td>wiwri-t</td>
<td>‘board’</td>
</tr>
</tbody>
</table>

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

(10) Chukchi vowel alternation

| ekək    | ekke-t   | ‘son’ |

The alternation in (11) follows if underlingly, 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)

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Shona I: OCP triggers H-deletion

(11) **Meeussen's rule**

a. [i][banga]  
   copula-knife
   (it) is a knife
   cf. bangâ ‘knife’

b. [vâ][sêkuru]  
   2a-grandfather
   grandfather (honorific)
   cf. sekJûrû ‘grandfather’

c. [ndi-châ][têng-es-a]  
   lstsg-future-buy-causative-term
   I will sell
   cf. [ku][têng-ês-ã] ‘to sell’

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

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Shona I: OT

(13) **H-deletion**

<table>
<thead>
<tr>
<th>Candidates</th>
<th>OCP</th>
<th>MAX-IO (T)</th>
<th>ALIGN-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Input: \( H_1 \ H_2 \)

\[
\begin{array}{c|cc|c}
\text{Candidates} & \text{OCP} & \text{MAX-IO (T)} & \text{ALIGN-L} \\
\hline
a. & & * & \\
b. & & & * \\
c. & & & * \\
\end{array}
\]

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Shona II: OCP triggers tone slip

(14) **Tone slip**

| a. | bánga gúrú | cf. bángá ‘knife’, gúrú ‘big’ |
| b. | [á-chá][téng-á] | cf. [á-chá][véng-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:

<table>
<thead>
<tr>
<th>H1</th>
<th>H2</th>
</tr>
</thead>
<tbody>
<tr>
<td>banga</td>
<td>guru</td>
</tr>
</tbody>
</table>

A typo in cl second H associated only with second TBU

Shona III: OCP triggers tone fusion

(17) **Tone fusion**

| a. | [k]–[mú-téng-ér-a] | infinitive-object-buy-causative-applied-term |
|    | to sell to him/her |
|    | cf. [k]–[mú-véng-er-a] | infinitive-object-read-applied-term |
|    | to read to him/her |
| b. | [t]-téng-é | lstpl/subjunctive-buy-causative-term |
|    | we should sell |
|    | cf. [t]-táris-e | lstpl/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

\[(18) \quad \text{Hortative: Meussen's rule}\]
\[a. \quad [h_{\text{a}}][t]-\text{tengese}\]
\[\text{hortative-1stpl/subjunctive-buy-causative-term}\]
let us sell

\[b. \quad [h_{\text{a}}][t]-\text{tarise}\]
\[\text{hortative-1stpl/subjunctive-look-term}\]
let us look

\[(19)\]

a. \[\begin{array}{cccccc}
\text{H} & \sigma & \sigma & \sigma & \sigma & \text{se} \\
\text{ti} & \text{ten} & \text{ge} & \text{se} \\
\end{array}\]

b. \[\begin{array}{cccccc}
\text{H} & \sigma & \sigma & \sigma & \sigma & \text{se} \\
\text{ti} & \text{ten} & \text{ge} & \text{se} \\
\end{array}\]

Constraints III

\[(20) \quad \text{UNIFORMITY-L}\]
Assign a * for every syllable that is leftmost in tone span in IP but not in OP.

\[(20) \quad \text{MAX-IO(A)}\]
Assign a * for every association between tone and TBU in the input without an output correspondent.

Shona IV: OCP blocks tone spreading

\[(21) \quad \text{H-deassociation}\]
Input: \(H_1, H_2\)

\[\text{[ti- teng-es-e]}\]

<table>
<thead>
<tr>
<th>Candidates</th>
<th>OCP</th>
<th>MAX-IO ((T))</th>
<th>UNIFORMITY ((T))</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (H_1, H_2)</td>
<td>(\text{[ti teng-es-e]})</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>b. (H_1)</td>
<td>(\text{[ti teng-es-e]})</td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>c. (H_1, H_2)</td>
<td>(\text{[ti teng-es-e]})</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

\[\rightarrow \text{a H spreads to a toneless }\sigma\text{'s in next morpheme}\]

\[(22) \quad \text{H-spreading}\]
\[a. \quad [t][s]\text{adza}\]
\[\text{copula-porridge}\]
\[\text{cf. [sadza] ‘porridge’}\]
\[(it)\text{ is porridge}\]

\[b. \quad [t]-\text{ch}[\text{véreng-a]}\]
\[\text{1stpl/future-read-term}\]
\[\text{infinitive-read-term}\]
\[\text{we will read}\]
\[\text{to read}\]

\[\rightarrow \text{spreading blocked if two adjacent H-toned }\sigma\text{'s would result}\]

\[(23) \quad \text{No H-spreading}\]
\[\text{[t][b]dza}\]
\[\text{copula-hoe}\]
\[\text{‘hoe’}\]
\[(it)\text{ is a hoe}\]
(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 σ’s in a tone span that are not in different domains.

Shona IV: OT

(25) *H*-spreading

\[
\begin{align*}
\text{(28) Input: } & H_1 \\
\text{[ticha]verenga}\end{align*}
\]

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{Candidates} & \text{ANCHOR-L} & \text{BOUND} & \text{SPECIFY (T)} & \text{DEP-IO (A)} \\
\hline
\text{a.} & & & **** & ! \\
\hline
\text{b.} & & & *** & . \\
\hline
\text{c.} & & & * & ** \\
\hline
\text{d.} & & & * & *** . \\
\hline
\end{array}
\]

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 σ if this would result in an OCP-violation
Kishamba I: the OCP is violable

(27) **H-spread and no downstep**

   a. nwáná 'child' du 'only' nwáná du 'only a child'
   b. kúi 'dog' ní 'cop' ní kúi 'it is a dog'
   c. áº-1-wá-ghóshó-é-a u-ghoe 'he's making them a rope'
   d. a-tí-kóm-á 'he killed (verb focus)' (cf. kukómá 'to kill')

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

Kishamba I: OT

(30) **Adjacent H-tones**

   Input:
   
   ![Diagram](image)

<table>
<thead>
<tr>
<th>Candidates</th>
<th>MAX-I O (T)</th>
<th>SPECIFY (T)</th>
<th>OCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>H₁ H₂</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b.</td>
<td>H₁ H₂</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c.</td>
<td>H₁ H₂</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Kishamba II: the OCP triggers tone fusion

(31) **Adjacent H’s and no downstep**

   a. ku-[wí-kómá] cf. ku-[kómá]
      infinitive-them-kill    infinitive-kill
      to kill them
   b. ni-[kí-[chí-kómá]]
      lsarg.-progressive-is-kill
      I was killing it (Cl. 7)
   c. ni[káng-él] nyáma cf. ku-[káng-a]
      lsarg.-fry-perfect      infinitive-fry-term
      I fried meat to fry
   d. [káng-él]
      fry-term
      Fry!

→ no downstep seperated a H-toned stem and an unstressed object marker
The OCP as OT constraint

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): \( H_1 \ H_2 \)

\[ [\text{chi-koma}] \]

<table>
<thead>
<tr>
<th>Candidates</th>
<th>MAX-I G (T)</th>
<th>OCP</th>
<th>UNIFORMITY (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>( H_1 \ H_2 )</td>
<td>(*)</td>
<td>(\cdot)</td>
</tr>
<tr>
<td>b.</td>
<td>( H_1 \ H_2 )</td>
<td>(\cdot)</td>
<td>(\cdot)</td>
</tr>
</tbody>
</table>

→ the OCP is active in the macrostem

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The OCP: A summary

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Kishamba: summary

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

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Versions of the OCP

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)**

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Prediction of a featural OCP

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

- a. ma-zuukt ‘mortar’
- b. ma-Skanu-m ‘place’
- c. ma-S?altu ‘question’
- d. na-p?ar ‘totality’
- e. na-rk?ab ‘chariot’
- f. na-raamu-m ‘favorite’

No two labials in a word: Prefix-\(/m/\) dissimilates to /n/ is stem contains a labial

(35) **Akkadian and a featural OCP**, $^{[\text{Lab}]\ \ \ [\text{Lab}]}$

\[
\begin{array}{c|c|}
\text{m} & \cdots & \text{b} \\
\end{array}
\]

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


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

(36) \*[[F][F]]_{\text{domain } x} \quad \text{Assign a violation mark for every pair of two instances of } F \text{ 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 informations 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 | ‘divine wind’ |
| širo + tabi | širotabi | ‘white trabi’ |

- 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) \*[[+\text{VOICE},-\text{SONORANT}]]_{\text{STEM}} \quad \text{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

<table>
<thead>
<tr>
<th>Base</th>
<th>PLURAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>nama man. person</td>
<td>namo:ta</td>
</tr>
<tr>
<td>fard:a ‘horse’</td>
<td>fard:o:ta</td>
</tr>
<tr>
<td>ga:la ‘camel’</td>
<td>ga:lota</td>
</tr>
<tr>
<td>ada:m:i ‘cactus’</td>
<td>ada:m:o:ta</td>
</tr>
</tbody>
</table>

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) $\text{[NoLongVowel]}_\text{Adj}^2$

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


Leben, William (1973), Suprasegmental Phonology, PhD thesis, MIT.


