Multiple reduplication as non-segmental affixation: a case study from Lushootseed

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July 8, 2016

Leipzig University Workshop Replicative processes in language
July 8, 2016

One view at reduplication: the RED-morpheme
(McCarthy and Prince, 1993, 1995)

Another view at reduplication: non-segmental affixes
(Saba Kirchner, 2007; Bermúdez-Otero, 2012; Bye and Svenonius, 2012)

Main claim
- reduplication is the consequence of non-segmental affixation:
  - multiple reduplication in Lushootseed follows in such a purely phonological account vs. alternatives based on constraints specified for reduplicative morphemes
  - the typology of multiple reduplication follows straightforwardly in a phonological HG account to reduplication

Double reduplication in Lushootseed

Lushootseed reduplication

Coast Salishan language
(Dryer and Haspelmath, 2013)
- empirical base is mainly Urbanczyk (2001), based on Bates et al. (1994)
- theoretical accounts in Broselow (1983); Bates (1986); Urbanczyk (1999, 2001); Fitzpatrick and Nevins (2004); Fitzpatrick (2006), and Inkelas (to appear)

DISTRIBUTIVE: /CVC/-reduplication

- marks pluars, repeated or frequent actions, and distributives
- prefixed /CVC/-reduplicant

DIMINUTIVE I: /CV/-reduplication

- prefixed /CV/-reduplicant with main stress
- often accompanied by weakening/deletion of the stem vowel
1. Why is the distributive only /CV/, not /CVC/?

- prefixed CV-reduplicant
- prefixed CVC-reduplicant
- /Ci/ if base is #CC or #Co
- only the initial C is copied in #CC-contexts (+/i/)
- initial CC but no V is copied in #CC-contexts

2. Why is the vowel in the distributive /i/?

- The distributive 'sees' adjacent (copied) morphemes as its base?
  (Broselow, 1983)

- Claim here: /i/ is phonologically expected for coda-less copied σ

3. Why is the vowel in the distributive /i/?

- phonologically predictable allomorphy: /Ci/ instead of /CV/ for stems starting with /Ca/ or /CC/ (Bates, 1986)

4. Why is the vowel in the distributive /i/?

- only the initial /C/ is copied: */fai-/fj say/
Summary of the empirical facts

**Diminutive**
- prefixed CV-reduplicant
- /CV/ if base is #CC or #Ca
- only the initial C is copied in #CC-contexts (+/i/)
- initial CC but no V is copied in #CC-contexts
- cooccur in both orders: Dist ⇒ Dim and Dim ⇒ Dist
- /CV/ if directly followed by a diminutive and /Ci/ if directly followed by a diminutive /Ci/

**Distributive**
- prefixed CVC-reduplicant
- /Ci/ if base is #CC or #Ca

Harmonic Grammar

- constraints are weighted, not ranked (Smolensky and Legendre, 2006, Legendre et al., 1990)
- predicts gang effects
  (e.g. violating less important Cons2+Cons3 is worse than only violating more important Cons1)

![Table](10)

Basic mechanism: Underspecified root nodes and feature fission

(13) a. Affixation of a radically underspecified segment (McCarthy, 1988)

| Cand1 | Cand2 |
|-------|
| [-cnt]/ ±[cns] | [-cnt]/ ±[cns] |

b. Featural fission to provide missing features

| Cand2 | Cand1 |
|-------|
| [-cnt]/ ±[cns] | [-cnt]/ ±[cns] |

(14) Abbreviated:

```
O + O + O + O + O + O + O + O + O + O + O + O + O + O + O
```

Basic constraints

(17) a. Max[cons]

Assign a violation for every [±cons] feature in the input without an output correspondent.

b. Havs

Assign a violation for every segment without a specification for [±son].

c. Dep[so]

Assign a violation for every [±son] feature in the output without an input correspondent.

d. Int[so]

Assign a violation for every [±son] feature in the input that corresponds to more than one output correspondent.

e. Lin[so]

Assign a violation for every pair of output features [±son] O1 and O2 that correspond to input features [±son] 1 and 2 if O2 precedes O1 but 1 follows 1.

Simple Diminutive Reduplication

(18)

<table>
<thead>
<tr>
<th>O</th>
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</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>[f1] a 2</td>
<td>1</td>
<td>a 3</td>
<td>1</td>
<td>a 4</td>
<td>1</td>
<td>s 1</td>
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<td>H-</td>
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<td>b</td>
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<td>a 3</td>
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</tr>
<tr>
<td>c</td>
<td>[f1] a 2</td>
<td>1</td>
<td>a 3</td>
<td>1</td>
<td>a 4</td>
<td>1</td>
<td>s 1</td>
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<td>H-</td>
<td>-30</td>
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<tr>
<td>d</td>
<td>[f1] a 2</td>
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<td>a 3</td>
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<td>a 4</td>
<td>1</td>
<td>s 1</td>
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<td>e</td>
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<td>a 3</td>
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<td>a 4</td>
<td>1</td>
<td>s 1</td>
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<td>H-</td>
<td>-2</td>
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</table>

Simple Distributive Reduplication

(19)

<table>
<thead>
<tr>
<th>O</th>
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<th>O</th>
<th>H-</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>b 1</td>
<td>a 2</td>
<td>d 1</td>
<td>a 3</td>
<td>1</td>
<td>a 4</td>
<td>1</td>
<td>s 1</td>
<td>1</td>
<td>H-</td>
<td>-2</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>b 1</td>
<td>a 2</td>
<td>d 1</td>
<td>a 3</td>
<td>1</td>
<td>a 4</td>
<td>1</td>
<td>s 1</td>
<td>1</td>
<td>H-</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>b 1</td>
<td>a 2</td>
<td>d 1</td>
<td>a 3</td>
<td>1</td>
<td>a 4</td>
<td>1</td>
<td>s 1</td>
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<td>H-</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>d</td>
<td>b 1</td>
<td>a 2</td>
<td>d 1</td>
<td>a 3</td>
<td>1</td>
<td>a 4</td>
<td>1</td>
<td>s 1</td>
<td>1</td>
<td>H-</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Abbreviated:

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O + O + O + O + O + O + O + O + O + O + O + O + O + O + O + O + O + O
```

Abbreviated:

```
O + O + O + O + O + O + O + O + O + O + O + O + O + O + O + O + O + O
```
Multiple reduplication

**Morph-contiguous copying**

- morpheme contiguity constraint (20) (Landman, 2002)
- contra Struijke (2000): not existential but demands CONTIGUITY for every single output instance
- prefers full morpheme copying

(20) MCnt

Green two output elements O1 and O2 corresponding to input elements I1 and I2 that belong to the same morpheme and I1 directly precedes I2:
Assign “ for every O1 that is not directly followed by O2 and for every O2 that is not directly followed by O1.

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**Simple Distributive reduplication II**

- /V/ between two copied /C/’s copied as well to avoid MCnt-violations
- whole morpheme copying avoids all MCnt-violations but induces too many Lin[so] and Int[so]-violations

(21)

<table>
<thead>
<tr>
<th>b1 a2 d1 a4</th>
<th>MCnt 13</th>
<th>10</th>
<th>Lin 4</th>
<th>Int 1</th>
<th>H-</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. b1 a2 d1 a4</td>
<td>-1</td>
<td>-1</td>
<td>-1</td>
<td>-3</td>
<td>-6</td>
</tr>
</tbody>
</table>

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**Asymmetry 1: Cluster copying in Dist**

- /i/ insertion since vowel copying results in a discontinuous copy:
- a gang effect: Lin[so] and Int[so] together against Dep[so]

(25)

<table>
<thead>
<tr>
<th>q1 t2 a2 y1</th>
<th>MCnt 13</th>
<th>10</th>
<th>Lin 4</th>
<th>Int 1</th>
<th>H-</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. q1 t2 a2 y1</td>
<td>-1</td>
<td>-1</td>
<td>-1</td>
<td>-3</td>
<td>-28</td>
</tr>
</tbody>
</table>

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**Analysis: Interim summary**

**DIMINUTIVE**
- fission of a V to fill O and of a C to create an onset
- fission of C’s to fill O’s and of intervening V to avoid a discontinuous copy
- no /i/-epenthesis: no "PLs/i"-violation if Coda-copying
- no /i/-epenthesis: two initial C’s copied without creating a discontinuous copy

---

**Asymmetry 1: /CV/ vs. /Ci/ in the Diminutive**

- the /i/ is analysed as default segmentism to avoid:
  - a marked syllable containing only a /a/ and no coda (22)
  - a non-local copy across a consonant cluster (s.below)

(22) *PLsi

Assign a violation mark for every i that only dominates place-less segments.
(similar to *PS lesser (Kurita, 2001; Urbanczyk, 1998))

- implies: all rhyme elements are dominated by a µ (shared µ’s, (Hayes, 1989; Sprouse, 1996, Bermúdez-Otero, 2001)) and glottal segments are place-less

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**Asymmetry 2: Default segmentism in the Dim for #CC**

- /i/ is never directly preceded by O
- /i/ is never directly followed by O
- /i/ is analysed as default segmentism to avoid:
  - a marked syllable containing only a /a/ and no coda (22)
  - a non-local copy across a consonant cluster (s.below)

---

**Asymmetry 1: No default segmentism in the Distributive**

(24)

<table>
<thead>
<tr>
<th>b1 a2 d1 a4</th>
<th>MCnt 13</th>
<th>*PLsi</th>
<th>Dep[so]</th>
<th>Lin[so]</th>
<th>Int[so]</th>
<th>H-</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. b1 a2 d1 a4</td>
<td>-1</td>
<td>-1</td>
<td>-1</td>
<td>-3</td>
<td>-61</td>
<td></td>
</tr>
</tbody>
</table>

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**Asymmetry 2: Cluster copying in Dist**

- no V position needs to be filled to begin with: two C’s can be copied without creating a discontinuous copy

(26)

<table>
<thead>
<tr>
<th>i₁ i₂ s₁ s₂ a₁ a₂ y₁</th>
<th>MCnt 13</th>
<th>Dep[so]</th>
<th>Lin[so]</th>
<th>Int[so]</th>
<th>H-</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. i₁ i₂ s₁ i₁ i₂ s₂ a₁ a₂ y₁</td>
<td>-1</td>
<td>-1</td>
<td>-1</td>
<td>-3</td>
<td>-29</td>
</tr>
</tbody>
</table>

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**Analysis: Interim summary**

**DIMINUTIVE**
- fission of a V to fill O and of a C to create an onset
- fission of C’s to fill O’s and of intervening V to avoid a discontinuous copy
- no /i/-epenthesis: no "PLs/i"-violation if Coda-copying
- no /i/-epenthesis: two initial C’s copied without creating a discontinuous copy
Multiple reduplication: **DIM→DIST**

\[
\begin{array}{|c|c|c|c|c|c|c|c|}
\hline
& b_1 & a_2 & d_3 & a_4 & a_5 & \text{MCNT} & \text{PLSp} \\
\hline
\text{a} & b_1 & a_2 & b_1 & d_3 & a_4 & a_5 & -4 & -1 \\
\text{b} & b_1 & a_2 & b_1 & b_1 & d_3 & a_4 & a_5 & -3 & -1 \\
\text{c} & b_1 & a_2 & b_1 & b_1 & b_1 & d_3 & a_4 & a_5 & -2 & -2 \\
\text{d} & b_1 & b_1 & b_1 & b_1 & b_1 & d_3 & a_4 & a_5 & -2 & -1 \\
\text{e} & b_1 & b_1 & b_1 & b_1 & b_1 & b_1 & d_3 & a_4 & a_5 & -4 & -1 \\
\hline
\end{array}
\]

**DIST→DIM: ANALYSIS**

Why is the distributive only /CV/, not /CVC/? (*bi-bi-bodi/*)

1. the second / of the distributive morpheme already provides an onset for the / diminutive morpheme
   - not absence of expected coda-copying but absence of phonologically predictable onset copying

Why is the vowel in the distributive /i/? (*bi-*)

2. since the distributive is coda-less, epenthetic /i/ avoids a µ only dominating place-less segments
   - not copying of the adjacent /i/ in the diminutive but phonologically predictable epenthesis

**Multiple reduplication**

A typology of multiple reduplication

(No) multiple reduplication in Ethio-Semitic (Rose, 1997)

Multiple reduplication:
- reduplication to fill consonantal templates
- frequentative is a reduplicative infix (cf. H.Sande yesterday!)

Tigrinya
- multiple reduplication to allow filling a template and expressing every morpheme

Chaha
- only multiple reduplication if it helps satisfying the template

Amharic
- no multiple reduplication

Multiple reduplication: **DIST→DIM**

\[
\begin{array}{|c|c|c|c|c|c|c|c|}
\hline
& b_1 & a_2 & d_3 & a_4 & a_5 & \text{MCNT} & \text{PLSp} \\
\hline
\text{a} & b_1 & a_2 & d_3 & a_4 & a_5 & -5 & -2 \\
\text{b} & b_1 & a_2 & b_1 & d_3 & a_4 & a_5 & -3 & -1 \\
\text{c} & b_1 & a_2 & b_1 & b_1 & d_3 & a_4 & a_5 & -2 & -2 \\
\text{d} & b_1 & b_1 & b_1 & b_1 & b_1 & d_3 & a_4 & a_5 & -2 & -1 \\
\text{e} & b_1 & b_1 & b_1 & b_1 & b_1 & b_1 & b_1 & d_3 & a_4 & a_5 & -4 & -1 \\
\hline
\end{array}
\]

**Analysis**

Urbanczyk (1999, 2001)
- different RED-morphemes, each with its own correspondence relation (MAX-DIST ≫ NoCODA ≫ MAX-DIM)
- ‘a matter of some delicacy to determine what portion of the output functions as the base for each morpheme’ (Urbanczyk, 1999, 518)
- the base is the string that is adjacent in the output

No multiple reduplication in Nuuchahnulth

- two reduplication-triggering affixes in (29) -a single reduplicant (= a superset of all the effects demanded by the affixes, cf. D.Pulleyblank (yesterday) on the complex pattern)

(29) a. tl’uk-an’ul’apa (Stonham, 2007, 120+121)
   - broad-at.leg[RL-L]-really[RL-L]
   - his legs are really big’
   - tl’u:f’uk’an’tap

b. m’a:as-apap (Stonham, 2004, 172)
   - cold-at.the.wrist[RL]-really[RL-L]
   - he has really cold wrists’
   - m’a:im’a:hasap

- multiple reduplication is avoided if both reduplication-triggering morphemes belong to the same level in various Southern Wakashan varieties (Stonham, 1994, 2004, 2007; Kim, 2003b,a)

Absence of multiple reduplication under a RED-based account I

*RedRed, *DUpDUp
- ‘multiple copies are disallowed’ (Stonham, 2004, 172); ‘against multiple copies’ (Stonham, 2007, 127)
- Identification of multiple copies requires reference to the morphological (input) structure
A typology of multiple reduplication

Absence of multiple reduplication under a RED-based account

Unified indexing and BR-INTEGRITY
- in the presence of multiple RED-morphemes, only one instance of BR-indexes is present: BR-INTEGRITY penalizes segments with multiple BR-correspondents (Buckley, 1997; Rose, 1997).

⇒ How are different reduplicative morphemes distinguished? To, for example, determine their different shape?
⇒ To account for languages with/without multiple reduplication requires an additional MORPHOME expression – but isn’t realization of a RED-morpheme already ensured by FAMR-BR?

The proposed system and multiple reduplication

Possible grammars:

\[
\begin{align*}
L1. & \text{No multiple reduplication} \\
& \begin{array}{c|c|c|c|c}
\text{MAXI} & \text{LinS} & \text{INTS} & \text{MCNT} \\
\hline
& 8 & 4 & 1 & 1 \\
\end{array}
\end{align*}
\]

\[
\begin{align*}
L2. & \text{Multiple Reduplication} \\
& \begin{array}{c|c|c|c|c}
\text{MAXI} & \text{INTS} & \text{MCNT} & \text{LinS} \\
\hline
& 5 & 1 & 1 & 1 \\
\end{array}
\end{align*}
\]

Summary

⇒ a phonological account based on non-linear affixation and fission to fill empty positions predicts the complex pattern of multiple reduplication in Lushootseed
⇒ no abstract RED-morpheme, morpheme-specific shape-requirements or different cycles are necessary
⇒ HG grammar correctly predicts ‘typology’ of (non)multiple reduplication as ‘threshold’ effects: simple reduplication still surfaces but multiple reduplication is avoided (=too many INTS-violations)

References