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

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One view at reduplication: the RED-morpheme

(McCarthy and Prince, 1993, 1995)

(1)

RED - badu	Afx≤σ	NoCoda	Max-BR
a. badu-badu	*!		
b. bad-badu		*!	*
☞ c. ba-badu			**

(2)

μ + $b_1\ a_2^{\mu}\ d_3\ u_4^{\mu}\ p_5\ i_6^{\mu}$	MAXμ	ONS!	INTEGRITY
a. $b_1\ a_2^{\mu}\ d_3\ u_4^{\mu}\ p_5\ i_6^{\mu}$	*!		
b. $a_2^{\mu}\ b_1\ a_2^{\mu}\ d_3\ u_4^{\mu}\ p_5\ i_6^{\mu}$		*!	*
☞ c. $b_1\ a_2^{\mu}\ b_1\ a_2^{\mu}\ d_3\ u_4^{\mu}\ p_5\ i_6^{\mu}$			**

- copying of underlying material as one phonological strategy to fill otherwise empty affixal nodes with material
(=Theory of Minimal Reduplication, Saba Kirchner, 2007, 2010)

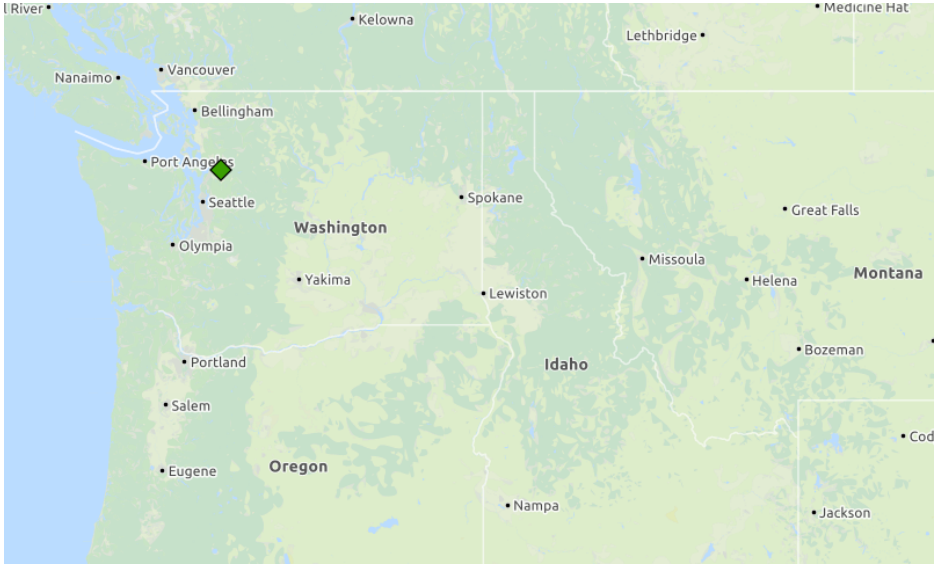
Main claim

- 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 redulication 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

(3)

júbil	'die, starve'	júbjubil	'they are starving'	U:221
gʷədíl	'sit down'	gʷədgʷədíl	'sitting all about'	U:212
bədáʔ	'child'	bədbədáʔ	'children'	U:209
pástəd	'white person'	paspastəd	'many white folk'	U:215
s-ʧ'ást	'branch'	s-ʧ'ástʃ'ast	'branches'	U:211
ʧəgʷás	'wife'	ʧəgʷʧəgʷás	'seeking a woman to marry'	U:211

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

Diminutive I: /CV/-reduplication

(4)

χáhəb	'cry'	χáχahəb	'an infant crying'	U:205
s-túbʃ	'man'	s-tútubʃ	'boy'	U:204
júbil	'die, starve'	júјəbil	'small animal dies'	U:207
s-túləkʷ	'river'	s-tútələkʷ	'creek'	U:204
pástəd	'white person'	pápstəd	'white child'	U:199

- prefixed /CV/-reduplicant with main stress
- often accompanied by weakening/deletion of the stem vowel

Diminutive II: Fixed segmentism

(5)

a.	gʷəd-il	‘sit’	gʷigʷəd-il	‘sit down briefly’	U1:195
	bədáʔ	‘child’	bíbədaʔ	‘young child’	U1:192
	təláw-il	‘run’	títəlaw-il	‘jog, run a little’	U1:203
	tsəláts	‘five’	tsítsəlats	‘five small ones’	U1:193
b.	ƛ̓tɬ’áʔ	‘rock’	ƛ̓íƛ̓tɬ’aʔ	‘stone’	U1:194
	ƛ̓’say’	‘spear’	ƛ̓’iƛ̓’sayʔ	‘toy spear’	U1:194
	ts’kʷ’úsəd	‘walking stick’	ts’íts’kʷ’usəd	‘little walking stick’	U1:193
	qʷɬáyʔ	‘log’	qʷiqʷɬəyʔ	‘stick’	U1:201

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

Distributive vs. Diminutives: Cluster

(6) *Diminutive Reduplication for cluster-initial verbs*

ʧ’say’	‘spear’	ʧ’iʧ’sayʔ	‘toy spear’	U1:194
ʦ’kʷ’úsəd	‘walking stick’	ʦ’íʦ’kʷ’usəd	‘little walking stick’	U1:193

- only the initial /C/ is copied: */ʧsi-ʧ’say’/

(7) *Distributive Reduplication for cluster-initial verbs*

qʷɬáyʔ	‘log’	qʷɬqʷɬáyʔ	‘logs’	U1:217
ʧ’tɬ’áʔ	‘rock’	ʧ’tɬ’ʧ’tɬ’áʔ	‘rocks scattered about’	U1:211

- both initial /C/’s are copied : *qʷɬay-qʷɬayʔ

Summary of the empirical facts so far

Diminutive

- prefixed CV-reduplicant
- /Ci/ if base is #CC or #Cə
- only the initial C is copied in #CC-contexts (+/i/)

Distributive

- prefixed CVC-reduplicant
- initial CC but no V is copied in #CC-contexts

Multiple Reduplication: DIM≫DIST

(8)

bədáʔ	'child'	bíbədbədaʔ	'dolls, litter'	U1:225
s-q^{w}əbáy	'dog'	q^{w}iq^{w}əbq^{w}əbáyʔ-cut	'make self (sound) like a dog'	U1:225
ləx	'light'	líləxləx-ʃad	'flashlight' (lit: 'little flashing light')	U1:225

CV – CVC – stem
Ci – CVC – stem

Multiple Reduplication: DIST≫DIM

(9)

bədáʔ	'child'	bíbibədaʔ	'small children'	U:225
pástəd	'white person'	pápapstəd	'many white children'	U:U226
ʧ'tɬ'aʔ	'rock'	ʧ'íʧ' iʧtɬ'aʔ	'gravel'	U:U226
ləg^{w}əb	'youth'	lílil'g^{w}əb	'little fellows'	U:U226
píʃpis	'cat'	pípipʃpis	'kittens'	U:226
g^{w}ədíl	'sit'	g^{w}íg^{w}ig^{w}ədil	'children sitting'	B8:326

CV – CV – stem
Ci – Ci – stem

Multiple Reduplication: DIST≫DIM

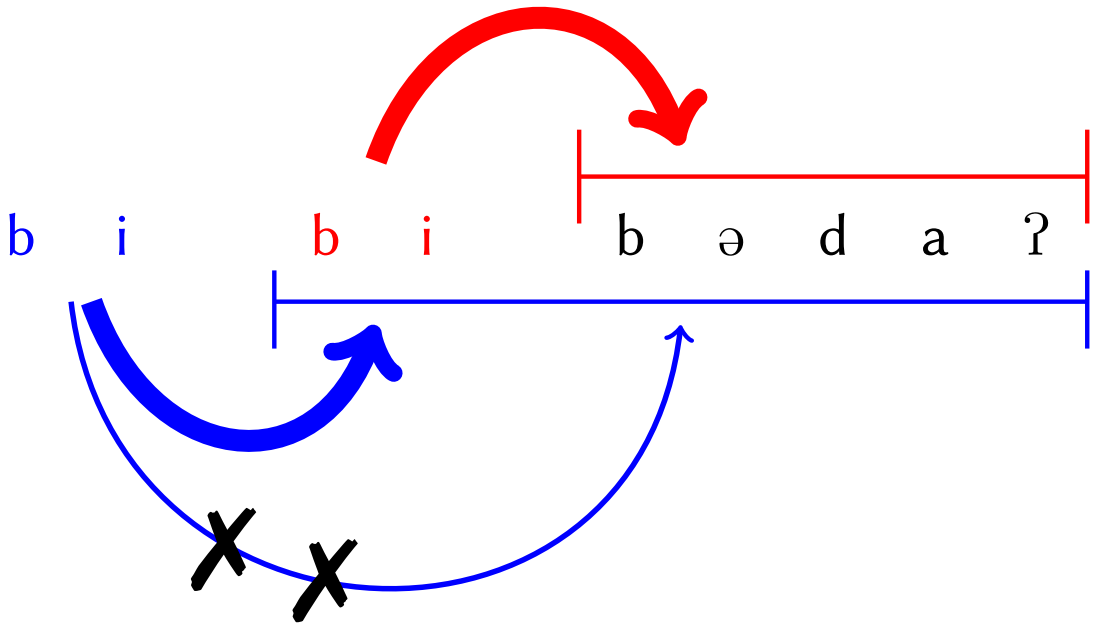
CV – CV – stem
Ci – Ci – stem
bi – bi – bəda?

vs. distributive reduplicants in all other contexts:

1. Why is the distributive only /CV/, not /CVC/?
   */bid-bi-bəda?/ or */bib-bi-bəda?/
2. Why is the vowel in the distributive /i/?
   */bə-bi-bəda?/

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

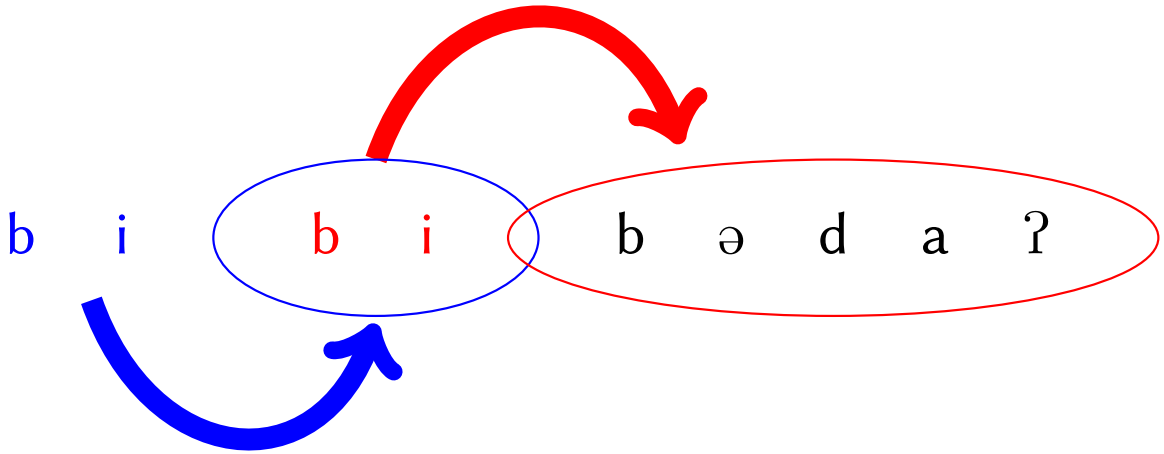
- The distributive 'sees' adjacent (copied) morphemes as its base?
  (Broselow, 1983)



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

1. Why is the distributive only /CV/, not /CVC/?

- Each reduplicative affix = one cycle; reduplication copies only phonemic material uniquely contained in the cycle adjacent to the affix (Broselow, 1983)



- **Claim here: there is no need to copy a coda, only a following C: and this is indeed present**

Summary of the empirical facts

Diminutive

- prefixed CV-reduplicant
- /Ci/ if base is #CC or #Cə
- only the initial C is copied in #CC-contexts (+/i/)

Distributive

- prefixed CVC-reduplicant
- 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/

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)

(10)

	W=	Cons1 5	Cons2 4	Cons3 3	H=
a.	Cand1	-1			-5
b.	Cand2		-1		-4
☞ c.	Cand3			-1	-3
d.	Cand4		-1	-1	-7

- (weights in all following tableaux are tested with OTHelp (Staubs et al., 2010))

Basic mechanism: Fission to fill non-segmental affixes

(11)

IntS
Assign a violation for every segment in the input that corresponds to more than one output segment.

LinS
Assign a violation for every pair of output segments O_1 and O_2 that correspond to input segments I_1 and I_2 iff O_2 precedes O_1 but I_2 follows I_1.

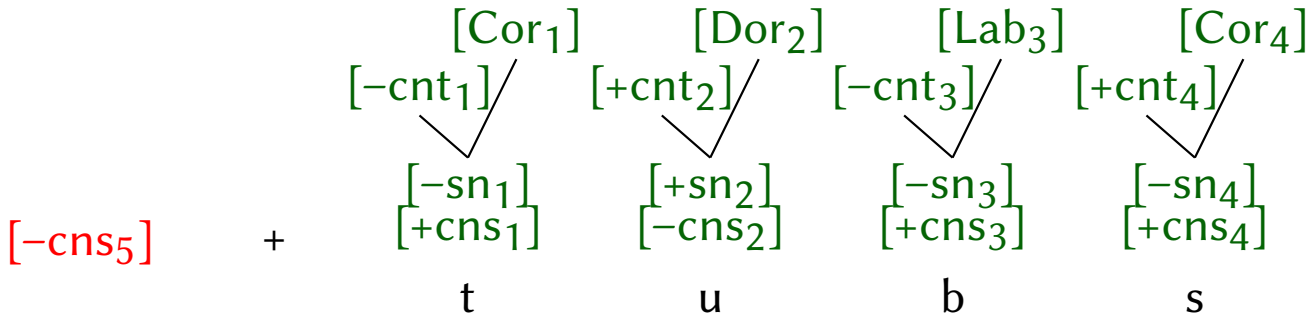
HaveS
Assign * for every μ dominating no segment.

(12)

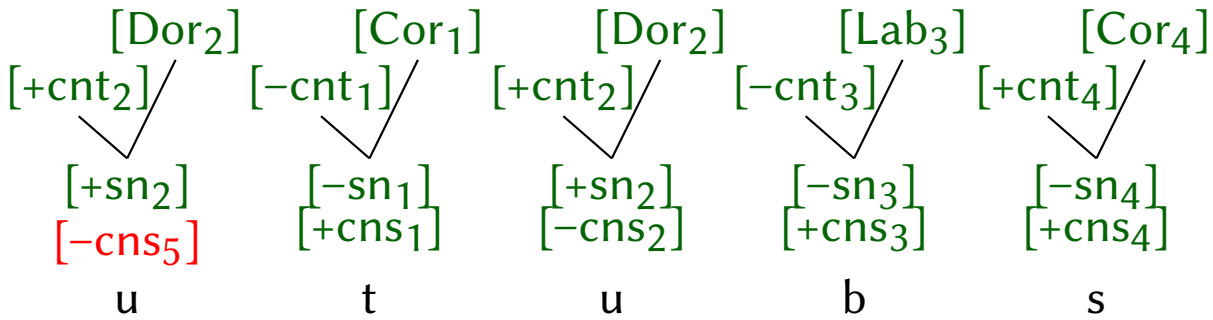
μ + b_1 a_2 d_3 u_4 p_5 i_6	HavS 5	LinS 1	IntS 1	H=
a. μ b_1 a_2 d_3 u_4 p_5 i_6	-1			-5
☞ b. b_1 a_2 b_1 a_2 d_3 u_4 p_5 i_6		1	2	-3

Basic mechanism: Underspecified root nodes and feature fission

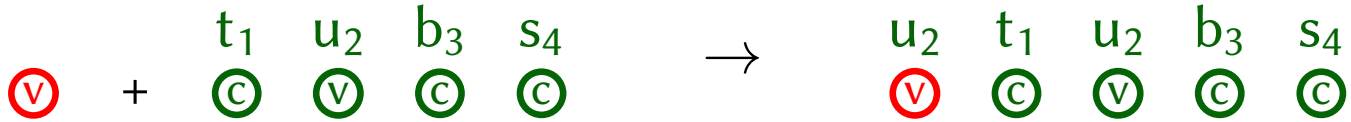
(13) a. *Affixation of a radically underspecified segment (McCarthy, 1988)*



b. *Featural fission to provide missing features*



(14) *Abbreviated:*



Representations for the copying-triggering morphemes

(15) DIM ⟷ Ⓥ

(16) DIST ⟷ Ⓒ Ⓒ

Basic constraints

(17)

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

b. HAV[so]
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] O_1 and O_2 that correspond to input features [±son] I_1 and I_2 iff O_2 precedes O_1 but I_2 follows I_1.

((17-b-e): placeholders for numerous constraints on all feature dimensions but [±cons])

Simple DIMINUTIVE reduplication

(18)

V + tʃ$_1$ a$_2$ l$_3$ ə$_4$ s$_5$ (C V C V C)	ONS! 20	HAV [so] 20	MAX [cns] 20	DEP [so] 10	INT [so] 1	H=
a. tʃ$_1$ a$_2$ l$_3$ ə$_4$ s$_5$ (C V C V C)			-1			-20
b. V tʃ$_1$ a$_2$ l$_3$ ə$_4$ s$_5$ (C V C V C)	-1	-1				-40
c. i V tʃ$_1$ a$_2$ l$_3$ ə$_4$ s$_5$ (C V C V C)	-1			-1		-30
d. a$_2$ V tʃ$_1$ a$_2$ l$_3$ ə$_4$ s$_5$ (C V C V C)	-1				-1	-21
☞ e. tʃ$_1$ a$_2$ tʃ$_1$ a$_2$ l$_3$ ə$_4$ s$_5$ (C V C V C V C)					-2	-2

Simple DISTRIBUTIVE reduplication I

(19)

C C + b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ (C V C V C)	ONS! 20	HAV [so] 20	MAX [cns] 20	DEP [so] 10	INT [so] 1	H=
a. b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ (C V C V C)			-2			-40
b. b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ C C C V C V C		-2				-40
c. ʔ i ʔ b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ C V C C V C V C				-3		-30
☞ d. b$_1$ ə$_2$ d$_3$ b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ C V C C V C V C					-3	-3

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
Given two output elements O_1 and O_2 corresponding to input elements I_1 and I_2 that belong to the same morpheme and I_1 directly precedes I_2:
Assign * for every O_1 that is not directly followed by O_2 and for every O_2 that is not directly preceded by O_1.

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)

C C + b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ (C V C V C)	MCNT 13	DEP [so] 10	LIN [so] 4	INT [so] 1	H=
☞ d. b$_1$ ə$_2$ d$_3$ b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ (C V C C V C V C)	-1		-3	-3	-28
e. b$_1$ d$_3$ b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ (C C C V C V C)	-3		-2	-2	-49
f. b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ (C V C V C C V C V C)			-10	-5	-45

Asymmetry 1: /CV/ vs. /Ci/ in the DIMINUTIVE

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

(Urbanczyk, 2001)

(22) *PLsμ
Assign a violation mark for every μ that only dominates placeless segments.
(similar to *Pl-lessσ (Kurisu, 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

Asymmetry 1: Default segmentism in the DIMINUTIVE for #Cə

(23)

Ⓥ + Ⓒ b$_1$ Ⓥ ə$_2$ Ⓒ d$_3$ Ⓥ a$_4$ Ⓒ ʔ$_5$	MCNT 13	*PLsμ 10	DEP [so] 10	INT [so] 1	H=
a. Ⓒ b$_1$ Ⓥ ə$_2$ Ⓒ b$_1$ Ⓥ ə$_2$ Ⓒ d$_3$ Ⓥ a$_4$ Ⓒ ʔ$_5$	-1	-2		-2	-35
☞ b. Ⓒ b$_1$ Ⓥ i Ⓒ b$_1$ Ⓥ ə$_2$ Ⓒ d$_3$ Ⓥ a$_4$ Ⓒ ʔ$_5$	-1	-1	-1	-1	-34

- (no repair for underlying place-less rhymes: higher-ranked faithfulness constraints against insertion of place for underlying segments)

Asymmetry 1: No default segmentism in the DISTRIBUTIVE

(24)

C C + b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ (C V C V C)	MCNT 13	*PLsμ 10	DEP [so] 10	INT [so] 1	H=
☞ a. b$_1$ ə$_2$ d$_3$ b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ (C V C C V C V C)	-1	-1		-3	-26
b. b$_1$ i d$_3$ b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ (C V C C V C V C)	-3	-1	-1	-2	-61

- realization of /i/ results in a discontiguous copy violating MCNT
- in fact: there is no need to avoid a copied /ə/ since *PLsμ is never violated if a non-glottal coda is copied as well

Asymmetry 2: Default segmentism in the DIM for #CC

(25)

Ⓥ + q1 ɬ2 a3 y4 Ⓥ Ⓒ Ⓒ Ⓥ Ⓒ	MCNT 13	DEP [so] 10	LIN [so] 4	INT [so] 1	H=
a. q1 ɬ2 a3 q1 ɬ2 a3 y4 Ⓒ Ⓒ Ⓥ Ⓒ Ⓒ Ⓥ Ⓒ	-1		-3	-3	-28
b. q1 a3 q1 ɬ2 a3 y4 Ⓒ Ⓥ Ⓒ Ⓒ Ⓥ Ⓒ	-3		-2	-2	-49
☞ c. q1 i q1 ɬ2 a3 y4 Ⓒ Ⓥ Ⓒ Ⓒ Ⓥ Ⓒ	-1	-1		-1	-24

- /i/ insertion since vowel copying results in a discontiguous copy:
  - → **a gang effect:** LIN[so] and INT[so] together against DEP[so]

Asymmetry 2: Cluster copying in DIST

(26)

C C + tʃ'$_1$ s$_2$ a$_3$ y'$_4$ C C V C	MCNT 13	DEP [so] 10	LIN [so] 4	INT [so] 1	H=
☞ a. tʃ'$_1$ s$_2$ tʃ'$_1$ s$_2$ a$_3$ y'$_4$ C C C C V C	-1		-1	-2	-19
b. tʃ'$_1$ s$_2$ i tʃ'$_1$ s$_2$ a$_3$ y'$_4$ C C V C C V C	-1	-1	-1	-2	-29
c. tʃ'$_1$ s$_2$ a$_3$ tʃ'$_1$ s$_2$ a$_3$ y'$_4$ C C V C C V C	-1		-3	-3	-28
d. tʃ'$_1$ i s$_2$ tʃ'$_1$ s$_2$ a$_3$ y'$_4$ C V C C C V C	-3	-1	-1	-2	-55

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

Analysis: Interim summary

Diminutive

- fission of a V to fill Ⓥ and of a C to create an onset

(cf. Bates and Carlson (1998) on Spokane)

- /i/-epenthesis to avoid an open /ə/-σ
- /i/-epenthesis to avoid a discontiguous copy for #CC-bases

Diminutive

- fission of C's to fill Ⓒ's and of intervening V to avoid a discontiguous copy
- no /i/-epenthesis: no *PLsμ-violation if coda-copying
- no /i/-epenthesis: two initial C's copied without creating a discontiguous copy

Multiple reduplication: DIM≫DIST

(27)

	V + C C + C V C V C	MCNT 13	*PLsμ 10	DEP [so] 10	LIN [so] 4	INT [so] 1	H=
a.	b1 ə2 b1 d3 b1 ə2 d3 a4 ʔ5 C V C C C V C V C	-4	-1		-4	-3	-81
b.	b1 ə2 b1 b1 b1 ə2 d3 a4 ʔ5 C V C C C V C V C	-3	-1		-3	-2	-63
c.	b1 ə2 b1 ə2 d3 b1 ə2 d3 a4 ʔ5 C V C V C C V C V C	-2	-2		-5	-3	-69
☞ d.	b1 i b1 ə2 d3 b1 ə2 d3 a4 ʔ5 C V C V C C V C V C	-2	-1	-1	-3	-3	-61
e.	b1 i b1 i d3 b1 ə2 d3 a4 ʔ5 C V C V C C V C V C	-4	-1	-2	-2	-2	-92

Multiple reduplication: DIST≫DIM

(28)

C C + V + C V C V C (b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$)	MCNT 13	*PLSμ 10	DEP [so] 10	LIN [so] 4	INT [so] 1	H=
a. b$_1$ d$_3$ ə$_2$ b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ — C C V C V C V C	-5	-2		-4	-3	-104
b. b$_1$ ə$_2$ d$_3$ ə$_2$ b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ — C V C V C V C V C	-3	-3		-5	-3	-92
c. b$_1$ i d$_3$ i b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ — C V C V C V C V C	-3	-1	-2	-2	-2	-79
☞ d. b$_1$ i b$_1$ i b$_1$ ə$_2$ d$_3$ a$_4$ ʔ$_5$ — C V C V C V C V C	-2	-1	-2		-1	-57

DIST≫DIM: Analysis

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

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/? (/bə-bi-bəda?/)*

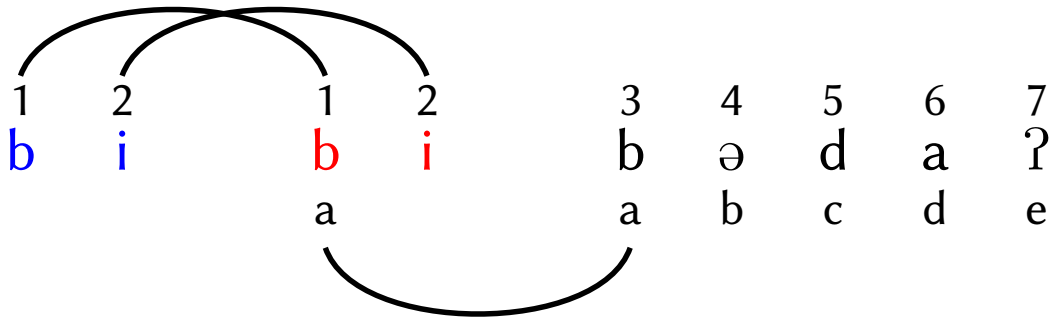
2. since the distributive is coda-less, epenthetic-/i/ avoids a μ only dominating place-less segments

➙ **not copying of the adjacent /i/ in the diminutive but phonologically predictable epenthesis**

An alternative account to Lushootseed: RED

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



A typology of multiple reduplication

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. tɬ’uk-an’uɬ-apa (Stonham, 2007, 120+121)
broad-at.leg[R+L]-really[RL+L]
‘his legs are really big’
tɬ’u:tɬ’u:k^{w}an’ɬap

b. m’aɬ-’as-apa
cold-at.the.wrist[RL]-really[RL+L]
‘he has really cold wrists’
m’a:m’a:ɬʔasap

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

(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

No multiple reduplication in Manam (Buckley, 1997)

- foot-based reduplication in Manam: *salaga-laga*
- if final two syllables of base are identical, reduplication is partial: *ragogo-go*, **ragogo-gogo*
- analysis in Buckley (1997): RED is part of the lexical entry of those words and multiple reduplication is avoided

Absence of multiple reduplication under a RED-based account I

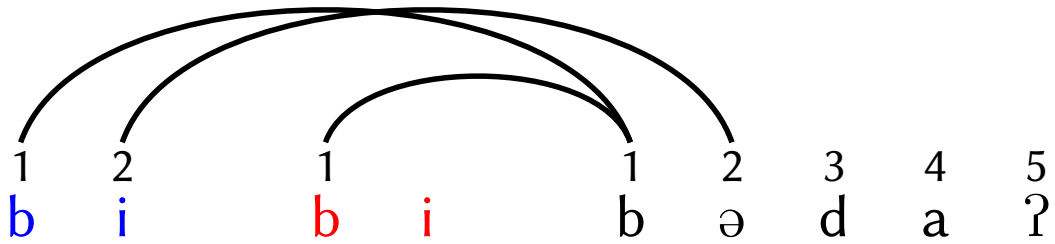
*RedRed, *DupDup

- ❧ 'multiple copies are disallowed' (Stonham, 2004, 172); 'against multiple copies' (Stonham, 2007, 127)
- ➙ Identification of multiple copies requires reference to the morphological (input) structure

Absence of multiple reduplication under a RED-based account II

Unified indexation 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 MorphExpression – but isn't realization of a RED-morpheme already ensured by Faith-BR?

The proposed system and multiple reduplication

A base and two reduplication-triggering affixes:

(30)

μ + μ + μ μ b$_1$ a$_2$ d$_3$ u$_4$	MCnt	LinS	IntS	Maxμ
a. μ μ μ b$_1$ a$_2$ b$_1$ a$_2$ d$_3$ u$_4$	-1	-1	-2	-1
b. μ μ μ μ b$_1$ a$_2$ b$_1$ a$_2$ b$_1$ a$_2$ d$_3$ u$_4$	-2	-2	-2	

The proposed system and multiple reduplication

Possible grammars:

(31)

Simple Reduplication and …
μ μ μ μ b_1 a_2 b_1 a_2 d_3 u_4 p_5 i_6

L1. No multiple reduplication				
μ μ μ b_1 a_2 b_1 a_2 d_3 u_4	Maxμ 8	LinS 4	IntS 1	MCnt 1
L2. Multiple Reduplication				
μ μ μ μ b_1 a_2 b_1 a_2 b_1 a_2 d_3 u_4	Maxμ 5	IntS 1	MCnt 1	LinS 1

Conclusion

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-requierements 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 Integ-violations)

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