Non-iterative Iterative Reduplication

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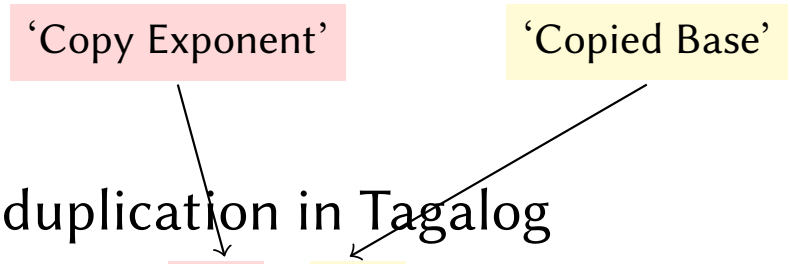
(Slides available at https://evazimmermann.com/talks.html)

Multiple Reduplication = Iterative Reduplication?



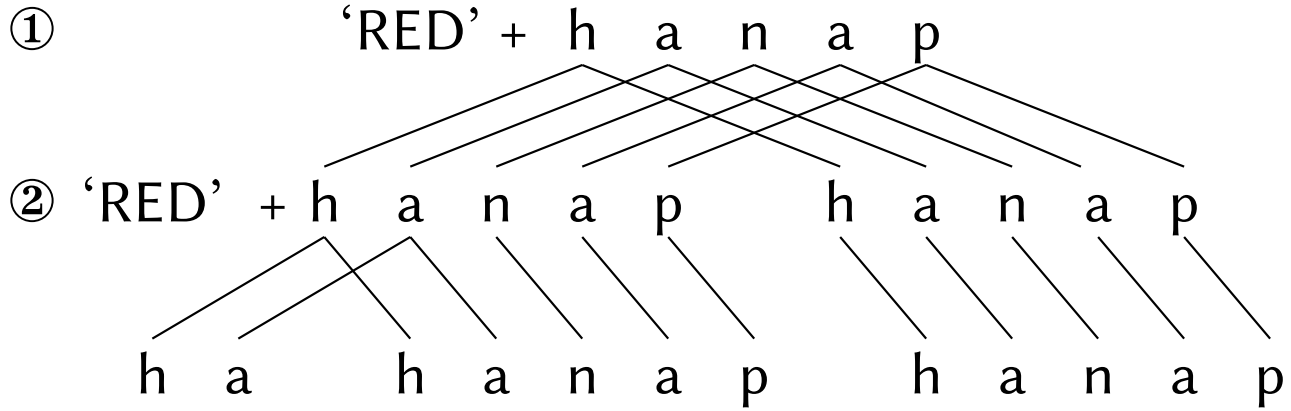
(1) Reduplication in Tagalog (Mattes, 2007, 126)

a. nag- du ∼ du man siya bulan ∼ bulan
BEG.AV-IPFV∼DEM.DIST 3.SG.AF PL∼month
'S/he goes there every month'

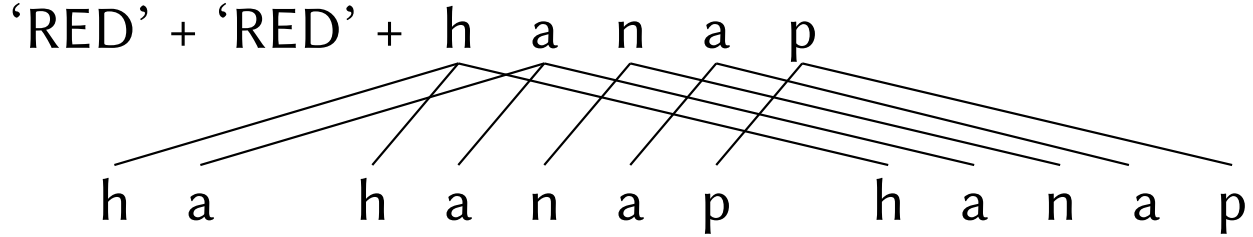
b. ini an ha ∼ hanap ∼ hanap -on
DEM.PROX PB IPFV∼PL∼look.for-UG
'here (they are) continuously searching'

Multiple Reduplication = Iterative Reduplication?

(2) Cyclic: Iterative application of copying

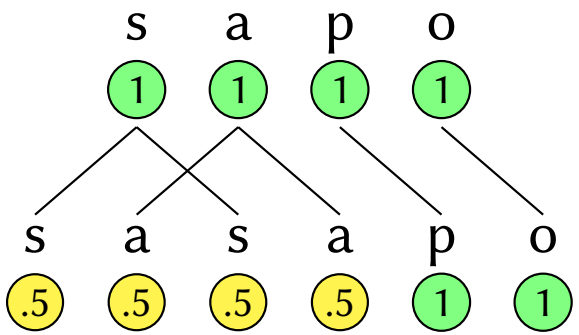


(3) Non-cyclic: One application of copying

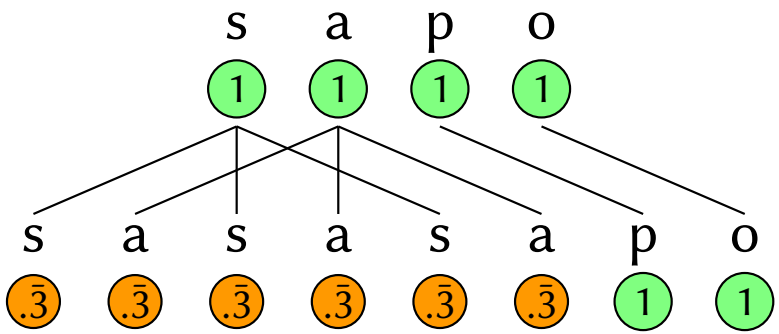


Main Claim

1. Copying in the phonology is **distribution of underlying activity**.



2. Multiple reduplication is **simultaneous distribution of activity**.



Plan

1. The Proposal in a Nutshell

2. Empirical Evidence: The Copying-Weakening Correlation

3. Copying as Weakening: Theoretical Modeling

4. Non-iterative Distribution of Activity

5. Discussion and Conclusion

1. The Proposal in a Nutshell

Gradient Symbolic Representation (Smolensky and Goldrick, 2016; Rosen, 2016)

- symbols in a linguistic representation can have **different activities**
- in the following, all output activity is 1
- different activities result in **gradient faithfulness violations**
  - weakly active elements are easier to delete than 'normal' segments
  - it is costly to realize weakly active elements

(4)

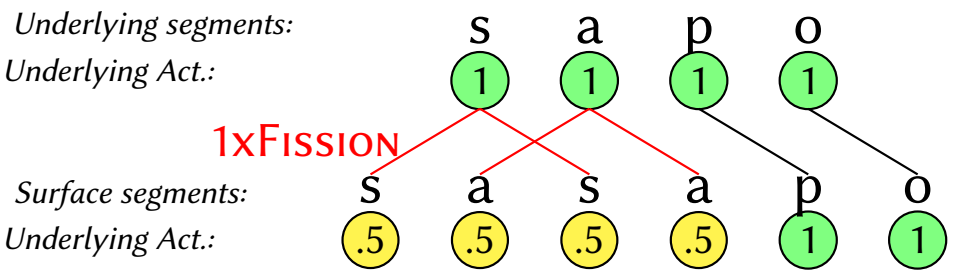
b a t – p (1 1 1 .5)	*CC	Max	Dep
a. b a t p (1 1 1 .5) +.5	-1		-0.5
☞ b. b a t p (1 1 1 .5) −.5		-0.5	
c. b a t p (1 1 1 .5) −1 +.5		-1	-0.5

X ='deleted' elements that are not realized (=zero activity)

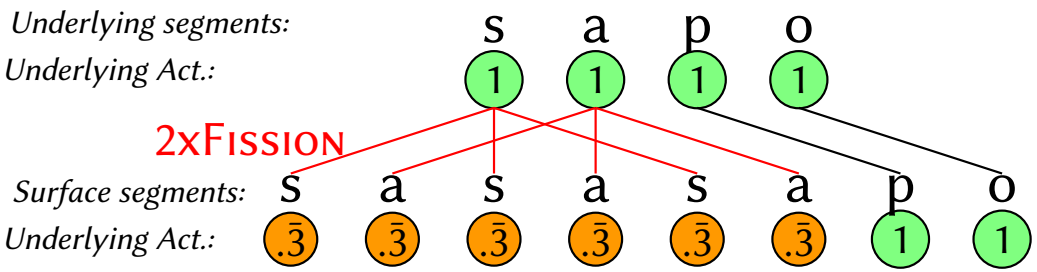
Proposal: Fission is Distribution of Activity

(5) GEN restriction on fission
Input element S_1 with activity A corresponds to x output elements S_1 with underlying activity A/x.

(6) Copying weakens **symmetrically**



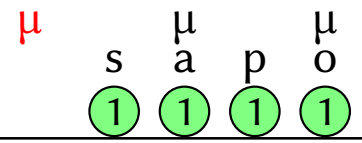
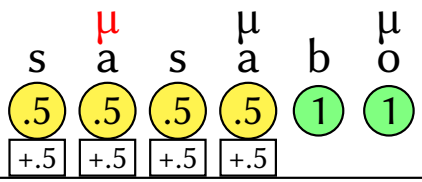
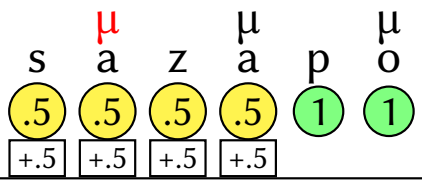
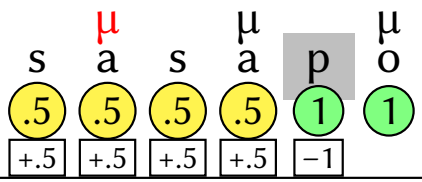
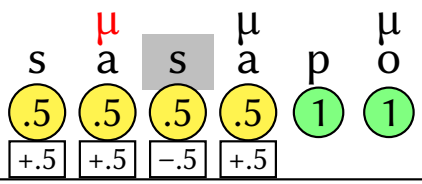
(7) **More copying = more weakening**



Prediction: Weakening = Phonological Reduction

- elements that are weakened by copying are more prone to phonological reduction (=reduction, feature change)

(8)

		IDENT	MAX	
				
a.		-1		Change of a non-copied C
b.		-0.5		Change of a non-copied C
c.			-1	Deletion of a non-copied C
☞ d.			-0.5	Deletion of a copied C

2. Empirical Evidence: The Copying-Weakening Correlation

The Copying-Weakening Correlation

(9) *The Copying-Weakening-Correlation (=CWC)*
Every copy operation weakens all the elements involved in the copying.

A. copying weakens **symmetrically**

- ➙ reduction for the copy-exponent, the copied base, or both

B. **more copying implies more weakening**

- ➙ different thresholds: reduction only for copied elements, reduction only for elements that are copied twice,...

A. Copying symmetrically weakens all elements

(10) a. Reduction in the copy-exponent*

☐ + sapo ✧ sə ∼ sa po

(McCarthy and Prince, 1995; Becker and Flack Potts, 2011)

e.g. Gitksan, Shuswap, Sanskrit…

b. Reduction in the the copied base

☐ + sapo ✧ sa ∼ sə po

(Shaw and Howe, 1999; Struijke, 2000)

e.g. Tohono O'odham, Heiltsuk, Lushootseed,…

c. Reduction in both copy-exponent and copied base

☐ + sapo ✧ sə ∼ sə po

(Struijke, 2000)

e.g. Kwakwala, Hausa, Tagalog,…

*'TETU in the reduplicant'=one main argument for correspondence-theory (McCarthy and Prince, 1995)

B. More copying implies more weakening: Complete avoidance in Kyuquot (Rose, 1981)

(11) Suffix-triggered reduplication

/tɬuk-ʼas/	tɬuː ∼tɬukʼʷas	‘He has wide wrists’	p.312
/mitxʷ-ʃi(tɬ)-apa/	miː ∼miːtxʃitɬap	‘He turned too much’	p.325
/ʔu-ħwʼaɬ-apa/	ʔuː ∼ʔuːħwʼaɬap	‘He used it too much’	p.340

(12) Multiple reduplication-triggers: One copy-exponent

/mʼaɬ-ʼas-apa/	mʼaː ∼ mʼaː ɬʔasap	‘He has really cold wrists’
	* mʼaː ∼ mʼaː ∼ mʼaː ɬʔasap	
/tɬʼuk-aːnʼuɬ-apa/	tɬʼuː ∼ tɬʼuː kʷanʼɬap	‘His legs are really big’
/pumaɬ-suɬ-apa/	puː c∼ puː maɬ-suɬ-ap	‘He has really itchy eyes’

- a pattern that can be found in basically all Southern Wakashan languages (e.g. Stonham, 1994, 2004; Davidson, 2002; Kim, 2003*b*)

B. More copying implies more weakening: Reduction in Sikaiana (Donner, 2012)

(13) Repetitive reduplication (Donner, 2012, 23+24)

a. *Bisyllabic repetitive reduplication*

sopo	sopo ~ sopo	‘jump’
sepu	sepu ~ sepu	‘dive’
motu	motu ~ motu	‘snap’

b. *CV/C-reduplication in the plural*

sopo	s ~ so po	so ~ so po	‘jump’
sepu	s ~ se pu	se ~ se pu	‘dive’
moe	m ~ mo e	mo ~ mo e	‘sleep’

c. *Obligatory C-reduplication if both are combined*

sopo	sopo ~ s ~ so po	* sopo ~ so ~ so po	‘jump’
sepu	sepu ~ s ~ se pu	* sepu ~ so ~ se pu	‘dive’

Summary: The Copying-Weakening Correlation

(14)

	No Reduplication	1 x Reduplication	2 x Reduplication	
Lg 1	Reduction*			e.g. Palauan
Lg 2	No Reduction	Reduction*		e.g. Lushootseed
Lg 3	No Reduction		Reduction*	e.g. Sikaiana
Lg 4	No Reduction			e.g. Papapana

*in copy-exponent and/or copied base

3. Copying as Weakening: Theoretical Modeling

Copying as Weakening: Background Assumptions

Fission is distribution of activity

- all phonological elements have an underlying activity (=GSR)
- reduplication results from fission=equal distribution of underlying activity

1. Reduplication Results from Prosodic Affixation
2. Harmonic Grammar
3. Containment

1. Reduplication Results from Prosodic Affixation

(Marantz, 1982; Pulleyblank, 2009; Saba Kirchner, 2010, 2013*a*,*b*)

- reduplicative morphemes contain **segmentally empty prosodic nodes** that are filled with 'copied' elements
- copying is **fission** of segments violating (15)
  (Spaelti, 1997; Struijke, 2000; Gafos, 2003; Nelson, 2003)

(15) INT$_S$: Assign -1 violation to every pair of output segments that correspond to the same input segment.

(16)

μ μ | s_1 i_2 l'_3	μ>V	DEP$_S$	*V:	INT$_S$
a. μ μ | s_1 i_2 l'_3	*!			
☞ b. μ μ | | s_1 i_2 s_1 i_2 l'_3				**

2. Harmonic Grammar (Legendre et al., 1990; Potts et al., 2010)

- constraints are **weighted**, not ranked

(17) Toy Example: Weighted Constraints

Input	C1 100	C2 60	C3 50	*Harmony Score*
☞ a. Output candidate 1	-1			-100
b. Output candidate 2		-1	-1	-110
c. Output candidate 3		-2		-120

3. Containment (Prince and Smolensky, 1993/2004)

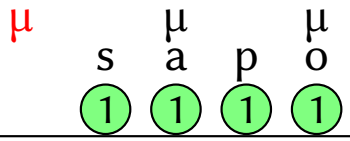
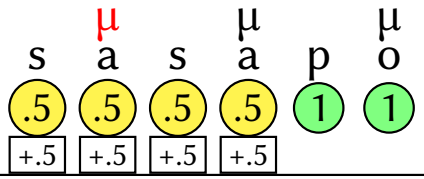
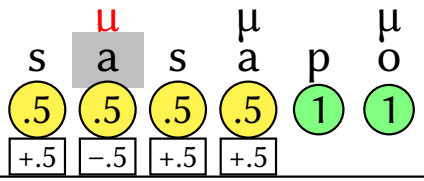
- no literal deletion; elements with **zero activity** remain unrealized
- non-realized elements can be enough to fill prosodic nodes
  (Trommer, 2011; Trommer and Zimmermann, 2014; Zimmermann, 2017)

(18) μ>V:
Assign -1 violation for every μ that does not dominate a vowel.

(19) $\boxed{\mu>V}_P$:
Assign -1 violation for every μ that does not dominate a **phonetically interpreted** vowel.

3. Containment (Prince and Smolensky, 1993/2004)

(20) Copying and deletion of copied elements

	μ>V	Dep	Max	μ>V P	Ints	
	500	100	20	20	10	
a. 	-1			-1		-520
b. 		-2			-2	-220
☞ c. 	○	-1.5	-0.5	-1	-2	-200

Prediction 1: Thresholds for Symmetric Reduction

(21)

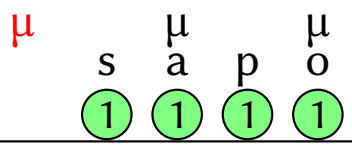
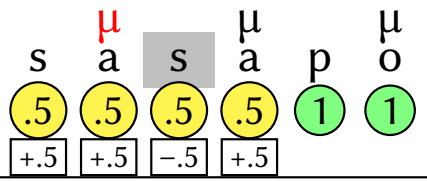
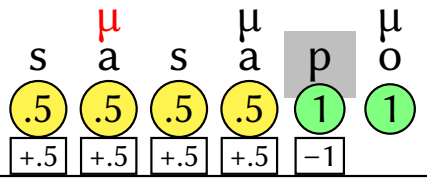
Weaker
=Less protected by MAX, IDENT
=More penalized by DEP

	No Reduplication	1 x Reduplication	2 x Reduplication	
Lg 1	Reduction*			e.g. Palauan
Lg 2	No Reduction	Reduction*		e.g. Lushootseed
Lg 3	No Reduction		Reduction*	e.g. Sikaiana
Lg 4	No Reduction			e.g. Papapana

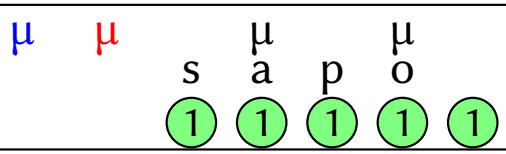
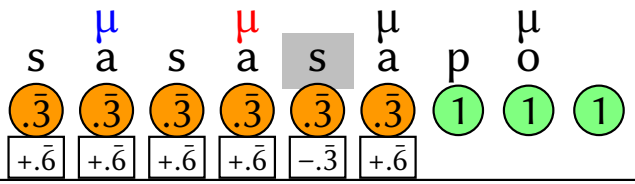
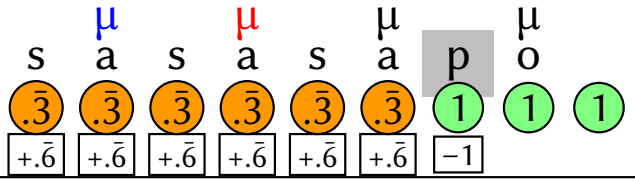
*in copy-exponent and/or copied base

Thresholds: More Copying = More Reduction

(22) Deletion: Cheaper for copied element

		Max
		
☞ a.		-0.5
b.		-1

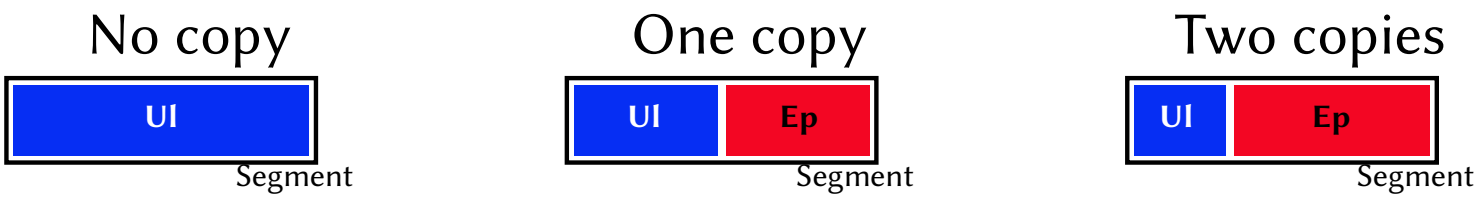
(23) Deletion: Even cheaper for multiply copied element

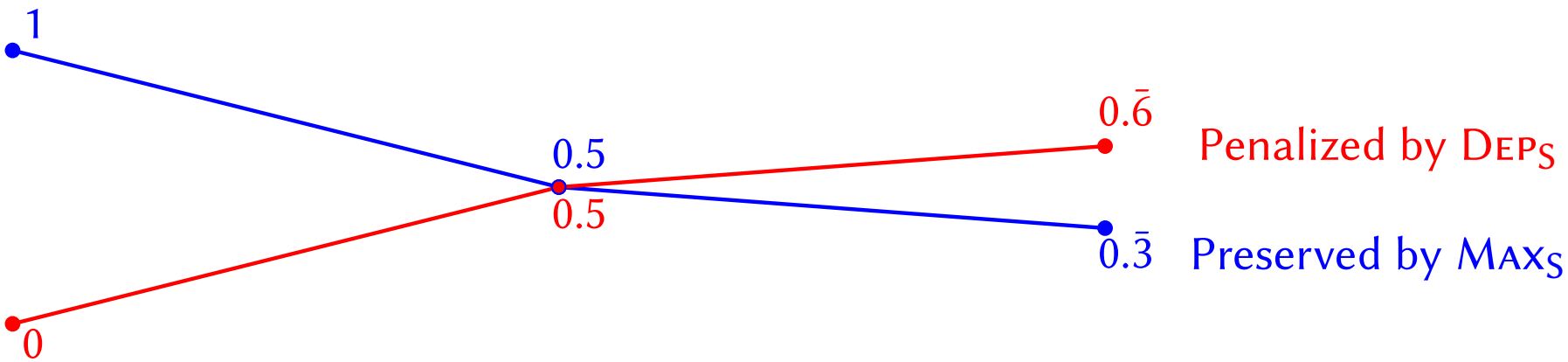
		Max
		
☞ a.		-0.$\bar{3}$
b.		-1

Prediction 2: It Costly to Realize Copied Elements

- realizing copied elements implies adding of activity whereas deleting them does violate MAX$_S$ only partially

(24) Being copied: Decreasing the chances of surfacing





- predicts avoidance of copied elements just because they are copied

Lushootseed example: Reduction Only for Copied Vowels

Pattern

- vowels are reduced to /ə/ (=loss of all place features) if they are copied

(25) a. *UnstrV:
Assign -1 violation for every unstressed full V (=place features).

b. Id-V:
For ever input vowel with activity I, assign -I violations if the corresponding output vowel has a different place feature specification.

Lushootseed example: Reduction Only for Copied Vowels

(26) a. Id-V ≫ *UnstrV

b. *UnstrV ≫ -0.5xId-V

(27) Reduction in the copied base

	Id-V	*UnstrV	Dep	
	40	30	10	
a.		-2	-2	-80
b.	-1	-1	-2	-90
☞ c.	-0.5	-1	-2	-70

Sikaiana example: Reduction Only for Multiply Copied Vowels

Pattern

- syncope for the monosyllabic copy-exponent is
  - optional for single reduplication (so∼sopo / s∼sopo) and
  - obligatory for multiple reduplication (sopo∼s∼sopo)

- an instance where copied elements are avoided simply because they are copied

Sikaiana: Optional Syncope for Single Reduplication (monosyllabic)

(28) $\boxed{\mu{>}V}_P$ + 0.5xMax ~ 0.5xDep

	σ>V P	Dep	Max	μ>V P	
μ μ μ s o p o 1 1 1 1	100	36	20	8	
☞ a. μ μ μ s o ~ s o p o .5 .5 .5 .5 1 1 +.5 +.5 +.5 +.5		-2			-72
☞ b. μ μ μ s o ~ s o p o .5 .5 .5 .5 1 1 +.5 −.5 +.5 +.5		-1.5	-0.5	-1	-72

*Simplification of the optionality that can be modeled in, e.g. MaxEnt (Johnson, 2002; Goldwater and Johnson, 2003; Wilson, 2006).

Sikaiana: Syncope in Multiple Reduplication Contexts

(29) $0.\bar{6}$xDep + $\text{OCP}_C \gg$ $0.\bar{3}$xMax

	σ σ / μ / s o p o	σ>V P	Dep	Max	μ>V P	
	1 1 1 1	100	36	20	8	
a.	σ σ σ σ σ / μ μ μ μ μ / s o p o∼s o∼s o p o		-5.$\bar{9}$			-215.$\bar{9}$
	.$\bar{3}$.$\bar{3}$ .5 .5 .$\bar{3}$.$\bar{3}$.$\bar{3}$.$\bar{3}$ .5 .5					
	+.$\bar{6}$ +.$\bar{6}$ +.5 +.5 +.$\bar{6}$ +.$\bar{6}$ +.$\bar{6}$ +.$\bar{6}$ +.5 +.5					
☞ b.	σ σ σ σ / μ μ μ μ / s o p o∼s o∼s o p o		-5.$\bar{3}$	-0.$\bar{3}$	-1	-206.$\bar{6}$
	.$\bar{3}$.$\bar{3}$ .5 .5 .$\bar{3}$.$\bar{3}$.$\bar{3}$.$\bar{3}$ .5 .5					
	+.$\bar{6}$ +.$\bar{6}$ +.5 +.5 +.$\bar{6}$ −.$\bar{3}$ +.$\bar{6}$ +.$\bar{6}$ +.5 +.5					

Additional Details: Reduction restricted to one vowel?

- copy-exponent deletion since copied V's are preferably avoided
  - copied elements **filling affixed μ: can be deleted** (=lower weight of $\boxed{\mu > V}_P$)
  - copied elements filling affixed σ*: never deleted (=high weight of $\boxed{\sigma > V}_P$)
- and the penult stressed V is never deleted (=positional faithfulness)

*Or those already prosodified/dominated by a σ in the input.

Additional Details: No Syncope for Single Reduplication (bisyllabic)

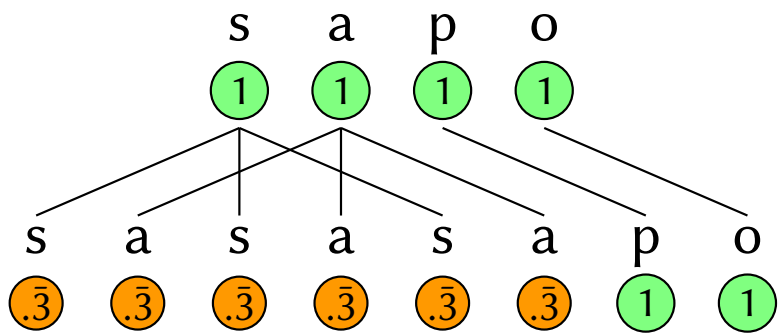
(30) $\boxed{\sigma\text{>}V}_P + 0.5\text{x}\textsc{Max} \gg 0.5\text{x}\textsc{Dep}$

	$\boxed{\sigma\text{>}V}_P$	Dep	Max	$\boxed{\mu\text{>}V}_P$	
σ σ σ σ s o p o 1 1 1 1	100	36	20	8	
☞ a. σ σ σ σ s o p o∼s o p o .5 .5 .5 .5 .5 .5 .5 .5 +.5 +.5 +.5 +.5 +.5 +.5 +.5 +.5		-4			-144
b. σ σ σ σ s o p o∼s o p o .5 .5 .5 .5 .5 .5 .5 .5 +.5 +.5 +.5 -.5 +.5 +.5 +.5 +.5	-1	-3.5	-0.5		-236

4. Non-iterative Distribution of Activity

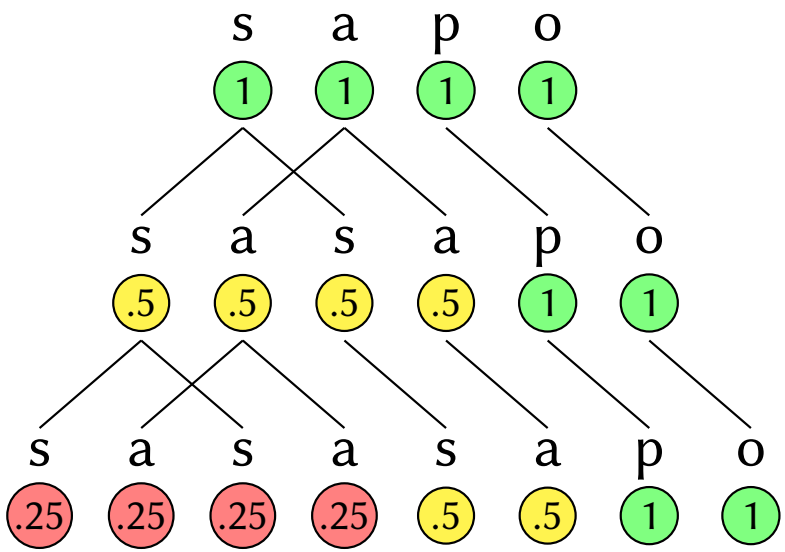
Iterative vs. non-iterative distribution of activity

(31) Non-iterative distribution of activity



➙ **symmetric** weakening to $0.\bar{3}$

(32) Iterative distribution of activity



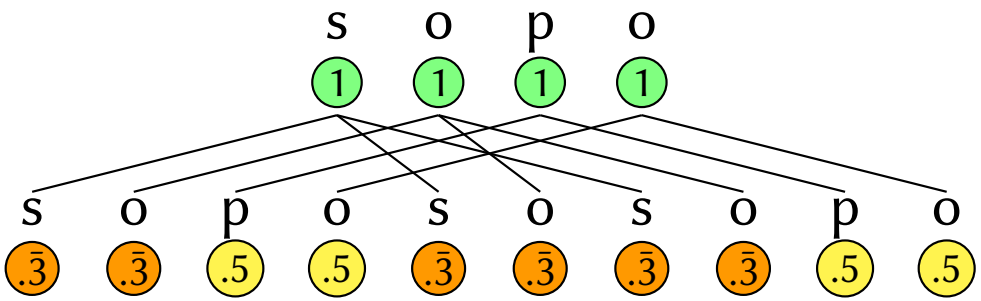
➙ **asymmetric** weakening to $0.25 + 0.5$

Iterative vs. non-iterative distribution of activity: Sikaiana

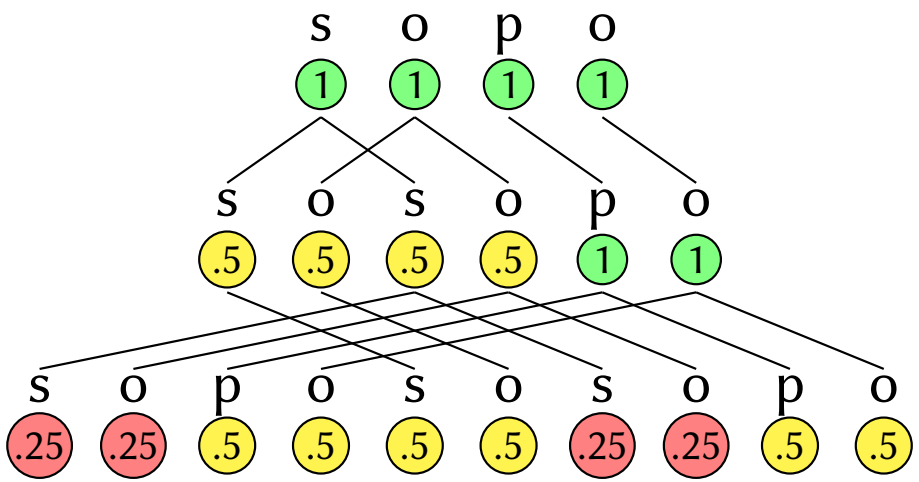
/σσ + μ + sopo/ –> sopo ∼ s o ∼ sopo

➟ the outermost bisyllabic copy-exponent copies the stem (not the adjacent string)

(33) Non-iterative multiple copying

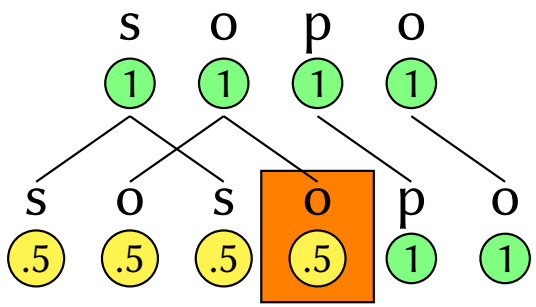


(34) Iterative multiple copying

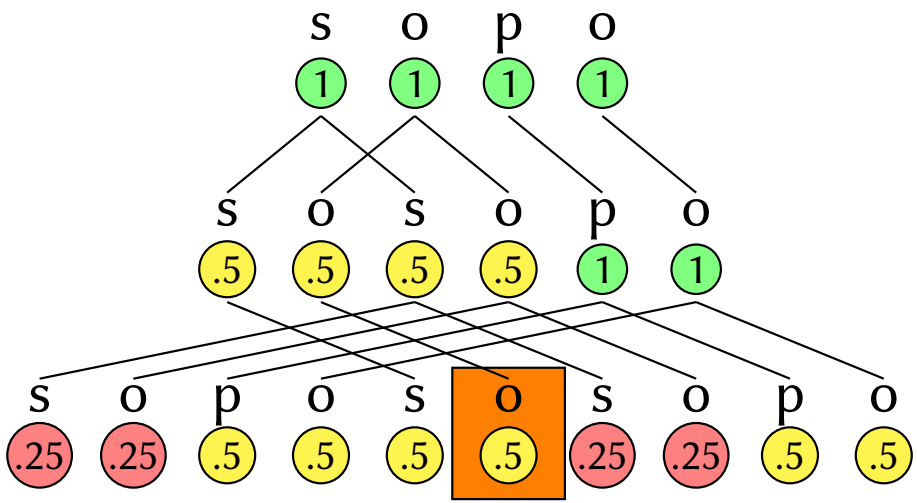


Iterative Copying and Reduction: Wrong Prediction

(35) Single copying: Optional reduction of 0.5-segment



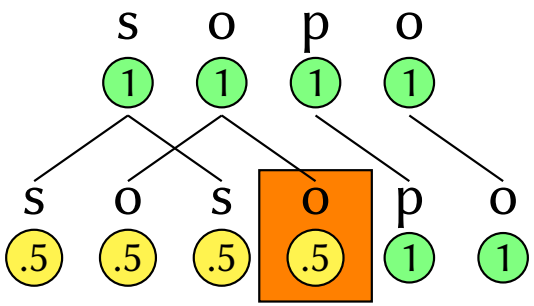
(36) Multiply copying: Obligatory reduction of a 0.5-segment



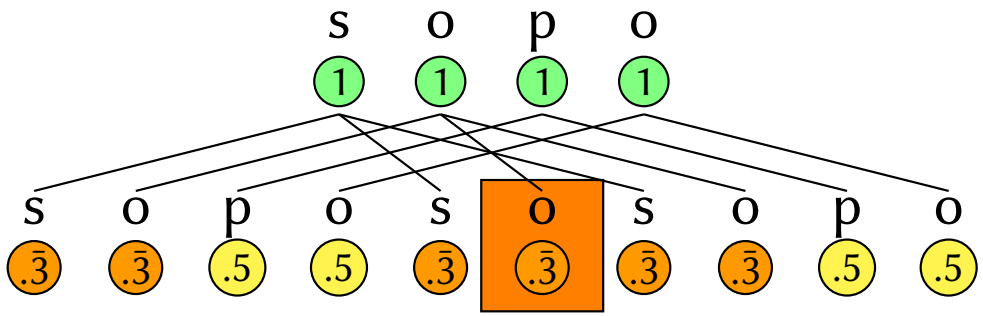
☹ multiple copying does not further weaken the segment affected by reduction

Non-iterative Copying and Reduction: Correct Prediction

(37) Single copying: Optional reduction of 0.5-segment



(38) Multiply copying: Obligatory reduction of a 0.$\bar{3}$-segment

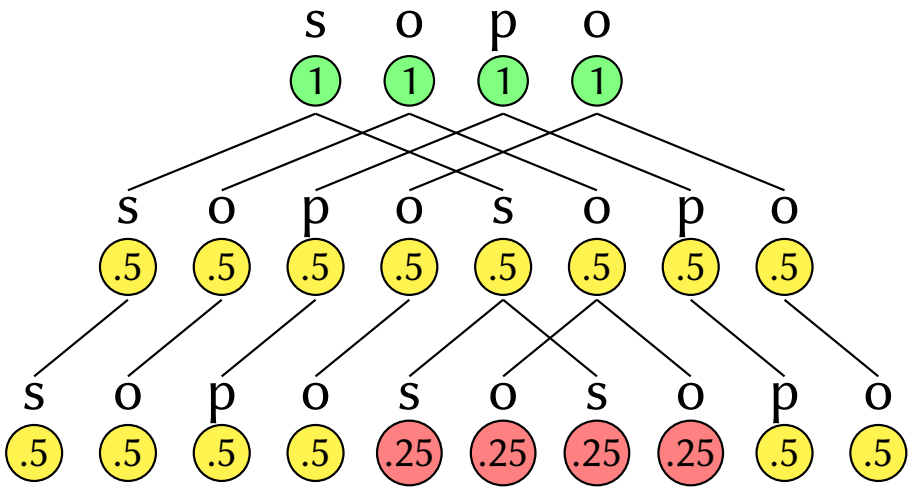


☺ multiple copying further weakens the segment affected by reduction

A Possible Solution: Infixation

(39) [<PL_{μ}> [$\text{REP}_{\sigma\sigma}$– stem]]

(40) Iterative copying and infixation of the plural agreement marker



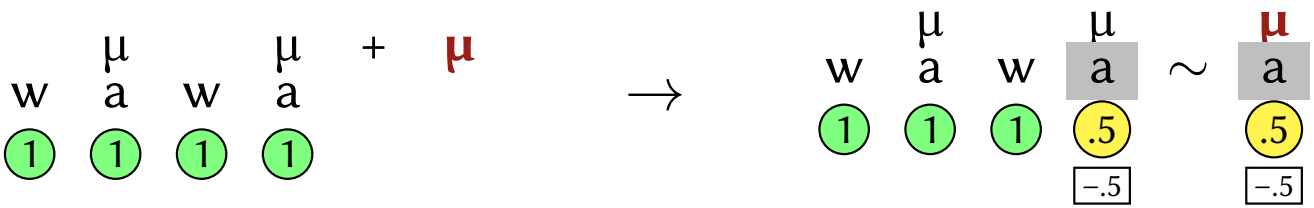
➞ 'counter-cyclic interfixation – the worst of the worst'
(Gereon Müller, this morning)

5. Discussion and Conclusion

Further Prediction

- **Complete reduction** in copy-exponent and copied base (e.g. Sikaiana'/Ahousaht')?
  - systematically attested as **subtraction** of prosodically defined portions to express morphological category
    (e.g. Dressler, 2000; Arndt-Lappe and Alber, 2012; Zimmermann, 2017)
  - e.g. Aymara accusative /wawa + Acc/ –> [waw]
    (Briggs, 1976; Hardman, 2001; Coler, 2010)

(41) Aymara subtraction as 'reduplication'



Conclusion

- the Copying-Weakening Correlation is evidence for redefining fission as **distribution of underlying activity** and for adopting a phonological account to reduplication

- multiple reduplication contexts must in principle allow for **simultanous multiple copying** to predict that all copied elements are **symmetrically weakened by every copy operation**

  - vs. a cyclic model where every reduplicative morpheme=1 cycle
  - vs. an inherently iterative model as Serial Template Satisfaction in HS (McCarthy et al., 2012)

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Max and Dep and GSR

(42) a. Dep : For every pair of corresponding input output elements with underlying activity I and an output activity O where I<O: Assign -(O-I) violations.

b. Max : For every pair of corresponding input output elements with underlying activity I and an output activity O where I>O: Assign -(I-O) violations.

Further Predictions 2-4

- If output elements can have weak activity and thus violate markedness gradiently (cf. Zimmermann (2018*a*,*c*,*b*); vs. Smolensky and Goldrick (2016); Rosen (2016)), copy-exponents and copied bases are predicted to **tolerate more marked structure**
  - e.g. marked structures in copy-exponent in Oowekyala (Howe, 2000)
  - e.g. copy-exponents as exceptional non-undergoers in Mojeño Trinitario (Rose, 2014; Marquardt, 2018)
- Weakening not only implies reduction but also being an easier target for **other phonological processes** (e.g. assimilation)
- The same typology is expected for **phonotactic copying** (Kawahara, 2007; Kitto and de Lacy, 1999)

Further Prediction 5

- **Phonetic differences** between elements with different (underlying) activity?
  - gradient phonetic effects are well-attested: e.g. subphonemic gradience in word-final devoicing, nasal place assimilation, flapping (e.g. Braver, 2013), vowel harmony is gradient; gets weaker the farther it spreads (McCollum, 2018),...
  - optional deletion in Sikaiana single reduplication might in fact be a phonetic effect rather than optional phonological deletion (and optional variation between /$C_1V_1{\sim}C_1V_1$.../ and /$C_1{\sim}C_1V_1$.../ is well-attested in Austronesian, e.g. Hoava (Davis, 2003; Blevins, 2005) or Doku (Unger, 2018))

A. C-Reduction in the Copy Exponent: Gitksan (Brown, 2008)

- fixed segmentism reduplication with /i/ (and /a/ next to gutturals)

(43) Plural reduplication (Brown, 2008, 147+148)

dzap	dz i p ∼ dz a p	'make, do'
dulpx^{w}	d i l ∼ d u l px^{w}	'to be short'
ʔisx^{w}	ʔ a s ∼ ʔ i s x^{w}	'stink, smell'

- deaffricativization, deglottalization (+predictable voicing), and depalatalization in the copy-exponent

(44) Plural reduplication and C-reduction (Brown, 2008, 147+148)

m'ats	m i s ∼ m' a ts	'to hit, strike'	ts	→	s
t'u:ts'x^{w}	d i s ∼ t' u: ts' x^{w}	'be black'	X'	→	X
maʃx^{w}	m i s ∼ m a ʃ x^{w}	'white'	ʃ	→	s
iʃxw	a s ∼i ʃ xw	'stink, smell'			

A. C-Reduction in the Copy Exponent: Gitksan

(45) Plural reduplication and C-reduction (Brown, 2008, 147+148)

m'ats	m i s ∼ m' a ts	'to hit, strike'	ts	→	s
t'u:ts'x^{w}	d i s ∼ t' u: ts' x^{w}	'be black'	X'	→	X
maʃx^{w}	m i s ∼ m a ʃ x^{w}	'white'	ʃ	→	s
iʃxw	a s ∼i ʃ xw	'stink, smell'			

- no such reduction outside of reduplication contexts

(46) Preservation of glottalization and affricates (Brown, 2008, 127)

ɬi–ts'aqt	'the tip of it' (+DEF-prefix)/
si–ts'aq'	'dig, gather clams' (+INTR-prefix)/

B. V-Reduction in the Copied Base: Lushootseed

(Broselow, 1983; Bates et al., 1994; Urbanczyk, 2001)

- alternation between fixed vowel reduplication /Ci–/ and /CV–/

(47) Diminutive Reduplication (Urbanczyk, 2001, 195-207)

a. *Fixed V in copy-exponent*

dúːkʷ	'knife'	d íː d uːkʷ	'small knife'
gʷədíl	'sit'	gʷ íː gʷ ədil	'sit down briefly'

b. *V-Reduction without fixed V*

júbil	'die, starve'	jú ~ jə bil	'small animal dies'
s–túləkʷ	'river'	s– tú ~ tə ləkʷ	'creek'

c. *V-Deletion without fixed V*

pástəd	'white person'	pá ~ p stəd	'white child'
ʔúsil	'dive'	ʔú ~ ʔ sil	'shallow dive'

C. Reduction in Copy Exponent and Copied Base: Kwak'wala

(Boas, 1947; Kalmar, 2003; Saba Kirchner, 2010)

- suffixation of /m'uːt/ 'refuse, useless' accompanied by reduplication

(48) Reduction in the copied base (Saba Kirchner, 2010, 177-80)

a.	səl	'drill'	səl ~ sə muːt	'left after drilling'
	kən	'scoop up'	kən ~ kə muːt	'left after scooping up'
b.	k'aːp	'(mouse) gnaw'	k'aː ~ k'əp m'uːt	'gnawings of mouse'
	tiːɬ	'bait'	tiː ~ təɬ m'uːt	'remains of bait'

(49) Reduction in the copy exponent (Saba Kirchner, 2010, 176-79)

a.	məndz	'cut kindling wood	mə ~ mən dzəmuːt	'left after cutting kindling woods'
	c'əm'	'melt'	c'ə ~ c'əm' əm'uːt	'left after melting'
b.	q^{w}'aːl'	'scorch'	q^{w}'ə ~ q^{w}'aːl' əmuːt	'embers'
	saːq^{w}'	'peel bark'	sə ~ saːq^{w}' əmuːt	'left after peeling bark'

C. Reduction in Copy Exponent and Copied Base: Kwak'wala

- reduction avoids stress clashes (*HH) and builds unmarked iambic feet LH, LL, H (H=Vː or sonorant coda) (Struijke, 2000; Saba Kirchner, 2010)

(50)

	e.g.	*expected			surface	
		H	H	H	LH	H
a.	səl	(səl)	(səl)	(muːt)	(sə . səl)	(muːt)
		H	H	H	LH	H
b.	k'aːp	(k'aːp)	(k'aːp)	(muːt)	(k'ə . k'aːp	(muːt)
		H	H	LH	LH	LH
c.	məndz	(mən)	(mən)	(dzə.muːt)	(mə . mən)	(dzə.muːt)

- these repairs are bound to copy exponents and copied bases

(51)

surface			*repair	
H	H	H	LH	LH
(tsʼóː)	(lʼàm)	(yʼàː)	(tsʼə.lʼàm)	(yʼə.yʼàː)

Avoidance of Multiply Copied Segments: Sikaiana

- in Sikaiana multiply-copied segments are so weak that they are only tolerated under affix-syllables*, not affix-moras
- that **only vowels are deleted**, not consonants: only $\textsc{Dep}_V$ is important and $\textsc{Max}_V$ less important enough; the weighting for $\textsc{Dep}_C$ and $\textsc{Max}_C$ is different

Footnote: This is an instance of 'anti-anti-gemination'
(Odden, 1988; Bakovic, 2005; Rose, 2000)

- attested in other Austronesian languages (e.g. Nukuoro, Carroll and Soulik, 1973)
- could alternatively triggered by an OCP that is violated by C_1VC_1 but not by C_1C_1 (=a geminate), cf. Rose (2000)

*And within the stem that is already prosodified prior to affix concatenation.

Sikaiana, tested with the Maxent Grammar Tool (Hayes, 2009)

Weights

MAX$_C$: 39.510925583659265
MAX$_V$: 17.130320954981542
DEP$_C$: 0.0
DEP$_V$: 17.143113638603637
μ>V P: 0.0
σ>V P: 3.62370715560716 63
CONT: 5.91793226522023

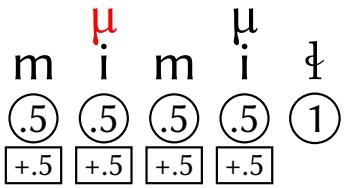
Probabilities

σ+ sopo
so∼sopo: 0.9998680938615468 ☜
sop<o>∼sopo: 7.225023388204955E-5
so<po>∼sopo: 1.9017384152256463E-13
<sopo>∼sopo: 4.995851293881543E-21
μ+ sopo
so∼sopo: 0.49773317757419294 ☜
s<o>∼sopo: 0.5009270527781152 ☜
<so>∼sopo: 4.900172127756463E-7
o∼sopo: 0.0013392796304789309
σ+ μ+ sopo
sopo∼so∼sopo: 0.0020702788740010795
sopo∼s<o>∼sopo: 0.995297845849349 ☜
sopo∼<so>∼sopo: 0.0026318752766498273

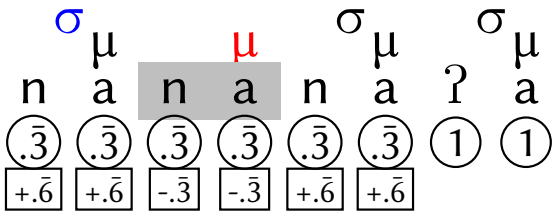
Avoidance of Multiply Copied Segments: Ahousaht Nuuchahnulth

- we see the expected deletion of **all multiply copied elements** (under certain affix nodes): $\textsc{Dep}_C$/$\textsc{Dep}_V$ and $\textsc{Max}_C$/$\textsc{Max}_V$ have same weight

(52) a. No Deletion under affixed μ: Single copying



b. Deletion under affixed μ: Multiple copying



Contiguous Morpheme Copying

(53) MCont

For every pair of 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.

- a non-existential version demanding **contiguous linear order for all instances of an element** and hence subsumes (54-a+b)

(54) Contiguity (McCarthy and Prince, 1995, 123)
I-Contig ('No skipping')
The portion of S_1 standing in correspondence forms a contiguous string.
O-Contig ('No intrusion')
The portion of S_2 standing in correspondence forms a contiguous string.

Contiguous Morpheme Copying

	σ>V P	MCont	Dep	Max	Int	
	100	50	36	20	5	
☞ a.			-4		-4	-164
b.		-3	-2		-2	-232
c.		-1	-3		-3	-173

Laryngeal Reduction in Copy-Exponent and Copied Base: Tagalog

- 'Contractions of this type never occur in non-reduplicated bases such as /daʔán/ 'road' or /buIhok/ 'hair', nor (as already noted) do they occur in reduplicated disyllables that do not contain a laryngeal consonant between like vowels' (Blust, 2007, 7)

(55) Reduplication in Tagalog (Blust, 2007, 7)

búhos	'pouring'	b-al-usbós	'grain spilled from package'
laʔáb	'spreading flame'	l-ag-abláb	'noisy conflagration'
laʔás	'cracked'	laslás	'ripped'
láhad	'opening of the hand'	ladlád	'opened'
sáhaŋ	'potency'	saŋsáŋ ∼ sansáŋ	'strong agreeable odor'
súhol	'bribe'	sulsól	'instigation to do evil'
suʔóŋ	'advance against odds'	suŋsóŋ	'go against wind'
tahán	'cessation'	tantán	'cessation'

V shortening in Copy-Exponent and Copied Base: Hausa

(56) Adjectival reduplication (Inkelas and Zoll, 2005, 87)

gishiriː	'salt'	gishiri-gishiri	'salty'
búhuː	'sack'	búhu-búhu	'sacklike'
gáːriː	'flour'	gáːri-gáːri	'powdry'