Toward a Typology of Compensatory Reduplication

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1. Introduction

Recent work shows that purely phonologically-driven reduplication is possible, that is, reduplication may take place with no obvious semantic import or serve only a secondary role in a morphological construction (e.g., Bissell 2002, Goad 2001, Inkelas 2005; Inkelas & Zoll 2005, Kawu 2000, Nelson 2003, Rose 1997, Smith 1998, Yu 2003, Zuraw 2002). We refer to this type of reduplication as ***Compensatory Reduplication*** **(CR)** to highlight the fact that phonological duplication is invoked only to compensate for potential inadequacies of the output.[1] Inkelas & Zoll (2005) summarize the differences between CR and morphological reduplication as follows:

(1)

Compensatory Reduplication[2]	**Morphological reduplication**
• Serves a phonological purpose	• Serves a morphological purpose
• Is phonologically local	• Is not necessarily phonological local
• Involves single phonological segments	• Involves morphological constituents
• Is driven by phonological identity imperative	• Is not driven by phonological identity imperative

One of the main goals of this paper is to reexamine CR's characteristics stated in (1). The paper begins with a survey of the typology of CR in Section 2, cataloguing the range of phonological motivations for CR. We demonstrate that CR is not necessarily phonologically local (at least not without additional qualifications) and it may involve more than a single segment. Section 3 introduces a general framework of handling CR. The conclusion appears in Section 4.

2. Compensatory Reduplication: A Preliminary Typology

This section presents some preliminary results of a typological survey of CR[3]. Two types of CR are identified: syllable-well-formedness-driven CR and template-driven CR.

2.1 Syllable-well-formedness-driven CR

Syllable-well-formedness-driven CR duplicates phonological material for the purpose of satisfying phonotactic demands. For example, in Spokane, an Interior Salish language spoken in northeastern Washington state, the repetitive form of a verb is formed by infixing *-e-* after the initial consonant of the root (2)a. When a verb begins with only a single consonant, the repetitive *-e-* is preceded by a copy of the first root consonant (2)b (Bates & Carlson 1998: 104-105).

(2) a. ɬɛ̲k'^{w}pm'ín' < ɬ-e-k'^{w}-p-min 'pitchfork' **√ɬk'^{w}**; REP-pierce,spear-INCH-INSTR
sm'e̲l'k'^{w}éy'eʔ <s-m-e-lk'^{w}-eyeʔ 'shadow' **√milk'^{w}**; NOM-REP-solid,whole-seem

[1] We refrain from using the term 'phonological reduplication' since its interpretation differs depending on the framework of reduplication under discussion. Thus, the term 'compensatory reduplication' is designed to be theory-neutral.
[2] Inkelas & Zoll actually calls this 'Phonology Copying'.
[3] Karabay (2004) argues that CR may be induced by edge-alignment competition as well, though alternative non-CR treatments have been proposed as well (Yu 1998, Kelepir 1999, Wedel 2000).

 Proceedings of the 24th West Coast Conference on Formal Linguistics, ed. John Alderete et al., 397-405. Somerville, MA: Cascadilla Proceedings Project.

	p’**a**x̣^{w}úty’eʔ < p’-e-x̣^{w}ú-t-eyeʔ	‘acting old (pet word)’ **√p’x̣^{w}u**; REP-old-DUR-seem
	snp**a**táx̣^{w}m’n’ < s-n-p-e-táx̣^{w}-mn	‘spittoon’ **√ptáx̣^{w}**; NOM-in-REP-spit-INSTR
b.	**č’e**č**’**íp’š < **č’**e-**č**íp’-š	‘scissors, shears’ < REP-pinch,clamp-PLURAL
	k^{w}ek**^{w}**íl’eʔ <**k^{w}**e-**k^{w}**il-eʔ	‘pet name for any red domesticated animal’ REP-red-thing
	n**l’a**l**’**óʕ’^{w}eʔ < n-**l**e-**l**oʕ’^{w}-eʔ	‘wore a loose dress without a belt’ in-REP-fit together-thing
	n’an**’**áq’šn’ <**n**a-**n**aq’-šin	‘smelly feet’ REP-smell-feet
	ɬaɬóq’^{w}qn’ < **ɬ**a-**ɬ**oq’^{w}-qin	‘term of endearment for a bald head’ REP-bare-head

In Hausa, Chadic language, Class 5 plural is formed by infixing the vocalic plural morpheme between the root-final consonant cluster (3)a (Newman 2000: 443-444). However, when the root ends in a single consonant, the final consonant is duplicated (3)b.

(3)			root	singular	plural	gloss
	a.	CVC_iC_j	gurb	gurbìi	guràabuu	‘hollow place’
			kurm	kurmìi	kuràamuu	‘copse, jungle’
			turk	turkèe	turàakuu	‘tethering post’
			giyɓ	giiɓìi	giyàaɓuu	‘tooth gap’
			miyk	miikìi	miyàakuu	‘ulcer’
	b.	CVC	gaɓ	gaɓàa	gaɓàaɓuu	‘joint, limb’
			ƙaf	ƙafàa	ƙafàafuu	‘foot’
			tsuw	tsuwèe	tsuwàawuu	‘testicle’
			guy	gwiiwàa	gwiyaayuu	‘knee’

While CR provides an onset consonant in both Spokane and Hausa, albeit for different motivations, syllable codas might be introduced by CR as well. For example, in Washo, a Hokan language spoken in several townships near the California-Nevada border southeast of Lake Tahoe, stressed syllables must be heavy. Vowel length contrasts only in the stressed syllable. When the tonic vowel is short (4)b, the post-tonic sibilants, sonorants and ejectives are lengthened intervocalically even though geminates are not contrastive in Washo (Yu To appear). No such lengthening is observed after a stressed long vowel (4)a.

(4)	a.	**SINGLETONS AFTER A LONG STRESSED VOWEL**	b.	**GEMINATES AFTER A SHORT STRESSED VOWEL**
		yá:**s**aʔ [já:**s**aʔ] ‘again’		yásaŋi [jás**:**aŋi] ‘it’s hot’
		wá:**š**iw [wá:**ʃ**iw] ‘Washo’		dášaŋ [tá**ʃ**:aŋ] ‘blood’
		bá:**m**uš [pá:**m**uʃ] ‘muskrat’		dámuʔ [tá**m**:uʔ] ‘skirt’
		ʔá:**n**i [ʔá:**n**i] ‘red ant’		tániw [t^{h}á**n**:iw] ‘Miwok’
		k’á:**ŋ**i [k’á:**ŋ**i] ‘it’s roaring’		káŋa [k^{h}á**ŋ**:a] ‘cave’
		wá:**l**aš [wá:**l**aʃ] ‘bread’		šálaʔ [ʃá**l**:a] ‘pitch’
		p’á:**w**a [p’á:**w**a] ‘in the valley’		dáwal [tá**w**:al] ‘buckberry’
		dimlá:**y**aʔ [timlá:**j**aʔ] ‘my wife’		ʔáyɨs [ʔá**j**:ɨs] ‘antelope’

No comparable lengthening is observed for the post-tonic plain stops (i.e. voiceless unaspirated), however. Short stressed vowels are lengthened before an intervocalic plain stop instead, thus neutralizing the vowel length contrast.

(5)		
	l**e:**duŋ ‘like me’	*l-* First person, *-**í-*** Pronoun stem, *-duŋ* ‘like’
	ʔ**í:**daʔ ‘he said …’	*ʔ-* Third Person, ***íd*** ‘to say’, *-aʔ* Aorist
	w**í:**diw ‘these (pl.)’	*wi-* Near Demonstrative Stem, *-di* Dem. Formative, *-w* Personal Plural

CR may duplicate vocalic materials as well. For example, the Mayan language Kekchi employs copy-vowel epenthesis as a mechanism to avoid word-internal clusters (Hall 2003; Campbell 1974).

(6)	a.			b.		
	nin-kwiq'-**i**-b'	'I bend it'		kwiq'-**i**-b'aːnk	'to bend'
	nin-k'ox-**o**-b'	'I begin it'		k'ox-**o**-b'aːnk	'to begin'
	nin-pec-**e**-b'	'I sit on the ground'		pec-**e**-b'aːnk	'to sit on the ground'
	nin-atʃ'-**a**-b'	'I loosen it'		atʃ'-**a**-b'aːnk	'to loosen'
	nin-hup-**u**-b'	'I turn it over'		hup-**u**-b'aːnk	'to turn over'

As noted above, Inkelas & Zoll (2005) observe that CR generally only involves single segments. However, a notable exception is found in Cantonese. Loanwords that begin with certain C+liquid cluster are borrowed into Cantonese with a copy of the rhyme of the syllable inserted to break up the onset cluster.

(7)	'break'	[pʰ**ɪk**˥ lɪkˉ]	'straight'	[siː t**ɪk**˩ lɪkˉ]
	'clutch'	[k**ɪk**˩ lɪkˉ tsi]	'blood'	[p**ʌt**˩ lʌtˉ]

Certain sesqui-syllabic forms may also be expanded by duplicating the rhyme of the final syllable.

(8)	Gloss	Sesqui-syllable	Full form
	'corner'	[kəlɔkˉ]	[k**ɔk**˥ lɔkˉ]
	'armpit'	[kəlɑkˉ taj]	[k**ɑk**˩ lɑkˉ taj]
	'everything'	[ham bəlɑŋ]	[ham b**ɑŋ** lɑŋ]

A summary of the various CR-triggering factors and the relevant languages exemplifying the patterns are given in (9). The actual size of the duplicated material varies depending on the nature of the repair.

(9)

CR-triggering factors	**Examples**
The need for an onset (onset duplication)	Yoruba (Kawu 2000), Spokane (Bates and Carlson 1998, Inkelas 2005), Anxiang Mandarin (Da 1996, Feng 2002), Tzeltal (Nelson 2003)
Stress-to-Weight Principle	Washo (Yu To appear)
No final cluster (vowel duplication)	Welsh, Kekchi (Hall 2003), Ponapean (Rehg 1981:70, 92)[4]
No onset cluster (rhyme duplication)	Cantonese loanword adaptation

The next section focuses on the other type of CR, namely, template-driven CR.

2.2 Template-driven CR

Template-driven CR duplicates phonological materials for the purpose of satisfying output templatic requirements. For example, while a triliteral root maps onto a CVCVC template completely (10)a, when a biliteral root is mapped onto the same template, the final consonant is duplicated ((10)b; Rose 1997).

(10) Tigrinya perfective stem formation (Rose 1997)

		Root	Perfective stem
a.	triliteral	sbr	säbär-ä
b.	biliteral	zl	zä**l**ä**l**
		nd	nä**d**ä**d**

[4] See Kitto & de Lacy 1999 for a comprehensive discussion of copy vowel epenthesis

Similarly, in Hausa, the base of Class 6 plural formation must be a heavy syllable (Newman 1972). CVC roots are insufficient to serve as the base since they are only monomoraic. Such roots are made heavy by duplicating the root-final consonant (11)d.

(11)			root	singular	plural	gloss
	a.	CVVC	jaak	jàakíi	jáakúnàa	'donkey'
			goor	gòoráa	góorúnàa	'gourd'
			kees	kéesòo	kéesúnàa	'matting'
	b.	CVC_iC_j	barg	bàrgóo	bárgúnàa	'blanket'
			darn	dàrníi	dárnúkàa	'fence'
			karf	kàrfúu	kárfúnàa	'belt'
	c.	CVC_iC_i	g^wagg	$g^wággòo$	$g^wággúnàa$	'baboon'
	d.	CVC	ba**k**	bà**k**áa	bá**kk**únàa	'bow'
			da**m**	dá**m**ìi	dá**mm**únàa	'bundle'
			ci**k**	cí**k**ìi	cí**kk**únàa	'stomach'

Thus far, we have only encountered template-driven CR that calls for the duplication of a single segment. However, examples of template-driven CR that targets more than a single segment are not uncommon. For example, the so-called Homeric infix, *-ma-*, in English must be lodged after a disyllabic foot and before some additional syllables (12).

(12)	a.	ˈσσ˛σ	ˈσσ-ma-˛σ	c.	˛σσˈσσ	˛σσ-ma-ˈσσ
		saxophone	saxo-ma-phone		Mississippi	Missi-ma-ssippi
		telephone	tele-ma-phone		Alabama	Ala-ma-bama
		wonderful	wonder-ma-ful		dialectic	dia-ma-lectic
	b.	ˈσσ˛σσ	ˈσσ-ma-˛σσ	d.	˛σσˈσσσ	˛σσ-ma-ˈσσσ
		feudalism	feuda-ma-lism		hippopotamus	hippo-ma-potamus
		secretary	secre-ma-tary		hypothermia	hypo-ma-thermia
		territory	terri-ma-tory		Michaelangelo	Micha-ma-langelo

When the input form is too small (i.e. disyllabic words), however, the final syllable of the word may be duplicated ((13); Yu 2003, 2004).[5]

(13)	oboe	oba-ma-boe	washing	washa-ma-shing
	opus	opa-ma-pus	water	wata-ma-ter
	music	musa-ma-sic	listen	lisa-ma-sten
	piggy	piga-ma-gy	aura	aura-ma-ra
	table	taba-ma-ble	tuba	tuba-ma-ba

Another example of syllable-duplication effect in template-driven CR is found in Kinande, a Niger-Congo language. Kinande reduplication is disyllabic (Mutaka & Hyman 1990, Downing 1999).

(14)	a.	o.ku-gulu	'leg'	o.ku-gulu.gulu
	b.	o.mu-góngò	'back'	o.mu-góngo.góngò
	c.	o.kú-boko	'arm'	o.kú-bokó.boko
	d.	a.ká-húkà	'insect'	a.ká-húká.húkà
	e.	o.mú-kalị̀	'woman'	o.mú-kalị.kalị̀
	f.	o.mu-longò	'village'	o.mu-longo.longò
	g.	o.mu-síkaa	'girl'	o.mu-síka.síkaa

When the stem is smaller than two syllables, however, the stem is duplicated twice in the reduplicant.

[5] Only a subset of the data is presented here. For a more detailed discussion and analysis, see Yu 2003, 2004.

(15)	a.	e.n-daa	'belly'	e.n-da.n-da.n-daa
	b.	e.n-dee	'cow'	e.n-de.n-de.n-dee
	c.	é.m-bwa	'dog'	é.m-bwá.m-bwá.m-bwa
	d.	e.n-dwa	'wedding'	e.n-dwa.n-dwa.n-dwa
	e.	e.∅-swa	'cabbage'	e.swa.swa.swa

While CR is a possible strategy of template-satisfaction, it is not always necessary. For example, in SiSwati, another Niger-Congo language, verbal reduplication is also disyllabic (16)a. However, unlike Kinande, when the stem is smaller than two syllables, an epenthetic *-yi-* fills the second syllable of the reduplicative 'template' ((16)b; Downing 1999, Kiyomi & Davis 1992).

(16)	a.	-bóna	-boná-bona	'see'
		-bonísa	-boni-bonísa	'show'
		-bonísana	-boni-bonísana	'show each other'
	b.	-phá	-phayí-pha	'give'
		-wa	-wayi-wa	'fall'

To summarize, the various CR-triggering factors and the relevant languages exemplifying the patterns are given in (17). The actual size of the duplicated material varies depending on the nature of the repair.

(17) **Template-driven CR**

Foot	Yoruba ideophones (Nelson 2003), Kinande (Mutaka & Hyman 1990), Tzotzil (Nelson 2003) Ethio-Semitic (Rose 1997), English (Yu 2004), Child language (Goad 2001)
(Heavy) syllable	Hausa class 5 plural formation, Yuhup (Walker 2002)

In this section, we lay out a preliminary typology of CR. We show that CR always serves a phonological purpose, be it for phonotactic or templatic reasons. However, it does not target only single segments (e.g., Cantonese, English and Kinande). More curious is the fact that, as illustrated by the Cantonese loanword adaptation and English Homeric infixation cases, CR may involve non-local duplication. In the next section, we lay out a general framework on how to capture the general properties of CR.

3. A General Theory of Compensatory Reduplication

Any treatment of CR must consist of three major components: (i) some CR-triggering factor; (ii) specification of the direction of duplication; (iii) some way to prevent compensation by default segmental epenthesis. Within a constraint-based framework like Optimality Theory, the CR-triggering factors may come from templatic well-formedness constraints (e.g., prosodic minimality, output templatic constraints, phonological subcategorization requirement) or syllable-well-formedness constraints (e.g., ONSET, Stress-to-Weight Principle, *COMPLEX etc.). When such a constraint is ranked above the relevant FAITH constraints (e.g., DEP, INTEGRITY), phonological compensation or expansion obtains. Default segmental insertion is blocked in favor of CR when DEP_{IO} outranks INTEGRITY. The second component (i.e. direction of duplication) presents the most vexing problem for any theory of CR since the traditional B(ase)-R(eduplicant)-ANCHOR analysis does not apply here due to the lack of the abstract morpheme, RED, in the input or the output. In this paper, we advocate the view that directionality can be handled using directional surface correspondence constraints (cf. Hansson 2001, Rose & Walker 2004). All three components of the theory are independently motivated. The complete constraint schema is as follows:

(18) CR-triggering constraint, $SCORRI_{L/R}$, DEP_{IO} >> INTEGRITY

In what follows, we provide two short illustrations to exemplify how this framework works. The first illustration comes from Cantonese.

3.1 Cantonese Loanword Cluster Adaptation

Recall that Cantonese borrows words with initial C+liquid clusters by duplicating the rhyme of the syllable following the cluster. We assume that the CR-triggering factor is *COMPLEX, which penalizes any complex onset consonant clusters in the output. Violations of *COMPLEX are repaired by CR rather than by default segment insertion, such as schwa insertion (19)b, since DEP_{IO}, which penalizes the presence of any epenthetic segment in the output, dominates INTEGRITY, which penalizes any segment that has multiple exponents on the surface.

(19)

	blood	*COMPLEX	DEP_{IO}	INTEGRITY
a.	plʌt˥	*!		
b.	pəlʌt˥		*!	
☞c.	pʌt˥ lʌt˥			**

Direction of correspondence does not matter in this case since the input is monosyllabic (i.e. only one possible source of rhyme material for the purpose of duplication). Thus, both (20)a & b are consistent with the data.[6] However, as illustrated in (20), the predicted winning candidates are actually (20)c & d since these candidates have less duplicated materials than the supposed winners. Specifically, both (20)c & d do not duplicate the final consonant of the root, thus incurring less violations of INTEGRITY than the supposed winners.

(20)

	blood	*COMPLEX	DEP_{IO}	INTEGRITY
☞a.	$pʌ_{iC}t˥_{iC}$ $lʌ_it˥_i$			*!*
☞b.	$pʌ_it˥_i$ $lʌ_{iC}t˥_{iC}$			*!*
💣c.	$pʌ_{iC}$ $lʌ_it˥_i$			*
💣d.	$pʌ_it˥_i$ $lʌ_{iC}$			*

We propose that candidates such as (20)c & d are suboptimal since they violate what we called the principle of *Surface Correspondence Percolation*, as stated in (21). It basically says that if a substring of a syllable stands in surface correspondence with another substring belong to another syllable in the output, then every subpart of the respective syllables must stand in correspondence as well.

(21) Surface Correspondence Percolation (Yu 2003, 2004)
'If syllable σ_i contains a segment S_i that is in surface correspondence with segment S_j in syllable σ_j, all segments in syllable σ_i must be in correspondence with segments in syllable σ_j.'

This idea is implemented using the constraints in (22). The more important of the two, at least for the present purpose, is R-ANCHOR-σ, which ensures that coda must stand in surface correspondence when the nuclei are in correspondence.

(22) L- $ANCHOR_{\sigma}$ (Yu 2003, 2004)
'The initial position of two syllables in a surface correspondence relationship must correspond.'
R- $ANCHOR_{\sigma}$ (Yu 2003, 2004)
'The final position of two syllables in a surface correspondence relationship must correspond.'

Surface Correspondence Percolation is essentially the mechanism that motivates duplication involving more than a single segment. As illustrated in (23), candidates (23)c & d fatally violate R- $ANCHOR_{\sigma}$ and lose in the evaluation.

[6] Duplicated materials are co-indexed with their source and are indicated with the subscript 'C'.

(23)

blood	R- ANCHOR $_{\sigma}$	L- ANCHOR $_{\sigma}$	INTEGRITY
☞a. $p\Lambda_{iC}t\widetilde{}_{iC}\ l\Lambda_i t\widetilde{}_i$		*	**
☞b. $p\Lambda_i t\widetilde{}_i\ l\Lambda_{iC}t\widetilde{}_{iC}$		*	**
c. $p\Lambda_{iC}\ l\Lambda_i t\widetilde{}_i$	*!	*	*
d. $p\Lambda_i t\widetilde{}_i\ l\Lambda_{iC}$	*!	*	*

The next illustration builds on an analysis for the English Homeric infix presented in Yu 2003, 2004.

3.2 English Homeric Infixation

Recall that the Homeric infix must lodge after a disyllabic foot and before some additional syllable.

(24) ALIGN (L, *ma*, R, $FT_{\sigma\sigma}$) a.k.a. L-ALIGN
'Align the left edge of *-ma-* to the right edge of a disyllabic foot.'

ALIGN (R, *ma*, L, σ) a.k.a. R-ALIGN
'Align the right edge of *-ma-* to the left edge of a syllable.'

(25) Evaluation of /telephone, ma/

(ˈtɛlə)(ˌfoʊn), mə	L- ALIGN	R- ALIGN
a. ☞(ˈtɛlə)-mə-(ˌfoʊn)		
b. (ˈtɛ.-mə-)lə(ˌfoʊn)	*!	
c. (ˈtɛlə)(ˌfoʊn)-mə		*!

When the root is disyllabic, it may expand to accommodate the infix via CR. Constraints on Prosodic Alignment are thus the CR-triggers.

(26) Evaluation of /tuba, ma/

ˈt^{h}ubə, mə	L-ALIGN	R-ALIGN
a. ☞ (ˈt^{h}ubə)-mə-bə		
b. (ˈt^{h}ubə)-mə		*!
c. (ˈt^{h}u-mə)-bə	*!	

Like before, expansion is accomplished via CR rather than via default segment epenthesis since DEP_{IO} dominates INTEGRITY.

(27)

$t^hub_i ə_j$, mə	DEP_{IO}	INTEGRITY
☞a. $(t^hu.b_i ə_j)$-mə-$b_i ə_j$		**
b. $(t^hu.ʔə)$-mə-$b_i ə_j$	*!*	

However, unlike the case of Cantonese, the direction of duplication matters. Consider the evaluation in (28). The duplicated materials must originate from the last syllable, rather than the first (e.g., *tu<u>ba</u>-ma-ba*, never **tu<u>ta</u>-ma-ba*).

(28)

$t^h{}_x u_z b_i ə_j$, mə	DEP_{IO}	INTEGRITY
☞a. $(t^h{}_x u_z.b_i ə_j)$-mə-$b_i ə_j$		**
💣b. $(t^h{}_x u_z.t_x ə_z)$-mə-$b_i ə_j$		**

As mentioned earlier, the traditional B(ase)-R(eduplicant)-Correspondence Theory of reduplication assumes that the direction of copying is regulated by ANCHOR constraints. Since duplication in Homeric infixation is phonologically-driven, BR-anchoring relation cannot be established since there is no morpheme, RED, in the input to begin with. The framework of Directional Output Segmental

Correspondence offers a compelling solution, however. The idea behind this approach is that output identical segments stand in correspondence (Hansson 2001, Rose & Walker 2001). The effect of a constraint like (29) is that the copied material must come from the syllable after, rather than the one before the infix (30).

(29) Correspondence-S_iS_j ($SCORRI_L$) (cf. Hansson 2001, Rose & Walker 2004)
'If S_i is a segment in the output and S_j a correspondent of S_i in the output, S_j must precede S_i in the sequence of segments in the output (j > i).'

(30)

	$^{l}C_1V_1C_2V_2$, mə	$SCORRI_L$
☞a.	($^{l}C_1V_1C_{2C}V_{2C}$)-mə-C_2V_2	
b.	($^{l}C_1V_1C_{1C}V_{1C}$)-mə-C_2V_2	*!

Output segmental correspondence alone is not sufficient, however. For example, (31)a & c both satisfy the $SCORRI_L$ constraint, but the duplicated materials of candidate (31)c appear word-initially, rather than in the pre-infix position.

(31)

	$^{l}C_1V_1C_2V_2$, mə	$SCORRI_L$
☞a.	($^{l}C_1V_1C_{2C}V_{2C}$)-mə-C_2V_2	
b.	($^{l}C_1V_1C_2V_2$)-mə-$C_{2C}V_{2C}$	*!
💣c.	($^{l}C_{1C}V_{1C}C_1V_1$)-mə-C_2V_2	

One possible solution is to appeal to the notion of STRONG-ANCHOR (Ussishkin 1999). The idea behind STRONG-ANCHOR is that relations between STRONG-ANCHOR-ed segments must be unique. That is, no segments regulated by STRONG-ANCHOR can have exponents elsewhere in the output. While STRONG-ANCHOR mimics the effect of INTEGRITY, it is more restrictive than INTEGRITY as it localizes the ban on segmental fission. Given a constraint like (32), the previously problematic candidate (33)c is duly eliminated.

(32) Strong-ANCHOR-L (Ussishkin 1999)
$\forall x, y, [(x = Edge(S_1, L)) \& (x \Re y)] \rightarrow [y = Edge(S_2, L)]$
'No internal correspondence of input-left-edge element'

(33)

	$^{l}C_1V_1C_2V_2$, mə	$SCORRI_L$	S- ANCHOR -L
☞a.	($^{l}C_1V_1C_{2C}V_{2C}$)-mə-C_2V_2		
b.	($^{l}C_1V_1C_2V_2$)-mə-$C_{2C}V_{2C}$	*!	
c.	($^{l}C_{1C}V_{1C}C_1V_1$)-mə-C_2V_2		*!

In sum, this section demonstrates that, while motivations for CR vary, the mechanism for handling CR is uniform. However, unlike previous BR-Correspondence treatments of CR which stipulate the presence of a RED morpheme (e.g., Gafos 1998, Zuraw 2002), no such stipulation is needed when surface-segmental correspondence is recognized.

4. Conclusion

This paper offers a preliminary survey of the typology of CR and illustrates a general theory that accounts for the formal properties of CR. We show that CR may be triggered by templatic or phonotactic reasons. The size of the CR varies depending on the nature of the repair. The location of CR also varies depending on the nature of the repair. Duplicated materials tend to come from the immediate, local, environment, but not always. The direction of duplication varies, though sometime it might not matter. The recurrence of CR thus argues against the notion that reduplication is restricted to the domain of morphology (Prince 1987, Kawahara 2004).

Before closing, it should be stressed that many aspects of CR remain to be elucidated. For example, it remains an open question whether the locality condition holds between the source and the duplicated materials. Non-local CR seems to exist (e.g., English *-ma-* infixation and Cantonese loanword adaptation), but alternative interpretations might be available. The issue of generality deserves further investigation as well. That is, should we expect default segmental epenthesis as a repair strategy when CR is active in the language? Finally, does the surface correspondence approach to CR predict the types of over- and under-application scenarios symptomatic of BR-correspondence models of morphological reduplication (McCarthy & Prince 1995)? Answers to these questions represent a crucial and necessary first-step toward a meaningful comparison between phonological and morphological reduplications. Such a comparison is ultimately needed in order to evaluate the validity of any general theory of reduplication.

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