Avoiding Multiple Reduplication without INTEGRITY

Gloria Mellesmoen and Suzanne Urbanczyk

1. Introduction

Multiple reduplication (MR) is marked cross-linguistically, but relatively common across the Salish language family. Zimmermann (to appear) proposes three cross-linguistic MR patterns: (i) **Faithful:** MR is tolerated and surfaces as expected, (ii) **Subtracting:** MR is allowed only with restrictions on reduplicant size, and (iii) **Avoidance:** MR is completely absent. In this paper, we expand the typology and describe a fourth approach to MR attested in Hul'q'umi'num' (Central Salish): **Variable MR**.

In languages with Variable MR, MR may occur, but MR is blocked if other (non-reduplicative) allomorphs can be recruited to express the same meaning. Variable MR raises theoretical challenges and implications for models of reduplication. It is not enough to appeal to constraints on reduplicant size or shape to account for the failure of reduplication to occur. Furthermore, Variable MR cannot be treated as a subtype of avoidance MR, it represents a distinct fourth pattern within the typology of MR (as proposed by Zimmermann, to appear). As we will show, Variable MR in Hul'q'umi'num' arises from a restriction on copying in GEN, in which only binary mappings can occur between input and output segments; crucially, GEN only allows forms where one segment in the input corresponds to at most two segments in output.

We begin by giving an overview of the Variable MR pattern in Hul'q'umi'num' and the theoretical assumptions for our proposal. First, in Hul'q'umi'num' reduplication is used to indicate the imperfective, plural, and the diminutive form of verbs, as indicated in (1). All examples given in this paper are either from Hukari (1978) or Hukari and Peter (1995).

(1) a. **łá**~łək̓ʷ
IPFV~fly
'flying' (Hukari 1978:163)

b. **θəx̣**~θə́x̣-ət
PL-push-CTR
'pushing them' (Hukari 1978:189)

c. **k̓ʷiʔ**-k̓ʷéɬ-t
DIM~pour-CTR
'pouring it (DIM)' (Hukari 1978:194)

Second, the reduplicative morphemes shown in (1) may co-occur, such that multiple reduplication is attested in Hul'q'umi'num', as indicated in (2).

(2) a. ɬə~**łá**<ʔ>~łək̓ʷ
DIM~**IPFV**<DIM>~fly
'flying (DIM)' (Hukari 1978:196)

b. t̓ə~**t̓í**<ʔ>~t̓əl-əm
DIM~**IPFV**~<DIM>~sing-MD
'singing (DIM)' (Hukari 1978:196)

* Gloria Mellesmoen, University of British Columbia, gloria.mellesmoen@ubc.ca. Suzanne Urbanczyk, University of Victoria, urbansu@uvic.ca. We would like to thank audiences at WCCFL 37/38 and the Salish Working Group for helpful input. We are also grateful to the elders who have shared their knowledge of Hul'q'umi'num' with us, and Tom Hukari and Donna Gerdts for sharing electronic versions of the *Cowichan Dictionary* with us.

 Proceedings of the 37th West Coast Conference on Formal Linguistics, ed. D. K. E. Reisinger and Marianne Huijsmans, 169-178. Somerville, MA: Cascadilla Proceedings Project.

Third, though MR is permitted in Hul'q'umi'num', some combinations of MR do not occur. When verbs are marked as imperfective, diminutive, and plural, they do not undergo MR. There are two allomorphs of the plural: reduplication (as in 1b) and an infix. As illustrated by *pəliʔpáqʷt* in (3) below, the plural *-l-* infix occurs in forms where MR might be expected, rather than reduplication *(*piʔpəqʷpáqʷt)*, despite reduplication being the preferred allomorph in the verbal domain (Hukari 1978).

(3) p<əl>i<ʔ>~p<á>qʷ-t
DIM<PL><DIM>~break<IPFV>-CTR
'breaking (DIM PL)' (Hukari 1978:196)

We propose that MR is banned by a binarity restriction on GEN: one input segment can maximally correspond to two output segments. When MR **does** occur, it is because reduplication occurs in different strata. We focus on three types of reduplication in Hul'q'umi'num' that occur on verbs: the imperfective, plural, and diminutive. While each of these functions may be associated with reduplication in isolation, the imperfective and plural also have non-reduplicative allomorphs. As we argue in this paper, the range of patterns follow from a few theoretical assumptions, in addition to the Binarity restriction on GEN.

2. Theoretical approach to Variable MR in Hul'q'umi'num'

We are adopting a phonological approach to reduplication, in which the reduplicative morpheme is a segmentally empty prosodic unit (e.g., σ or μ), that is filled by segmental fission of an input segment to multiple output segments. This general approach has been referred to as Minimal Reduplication (Saba Kirchner 2010, 2013), and Generalized Non-Linear Affixation (Bermúdez-Otero 2012; Bye & Svenonius 2012; Zimmermann 2013, 2017). INTEGRITY is the key faithfulness constraint that is violated by segmental fission (McCarthy & Prince 1999).

(4) INTEGRITY No element of the input has multiple correspondents in the output.

Reduplication (or fission) is compelled in order to fill the empty prosodic unit and satisfy the constraint *FLOAT, which bans unaffiliated prosodic units (Saba Kirchner 2013:232).

(5) *FLOAT $\forall p \in O$, where p is a prosodic unit: $\exists s$, where s is a segment, and p dominates s.

The restriction on MR is due to a binarity restriction on GEN, as stated below.

(6) *Binarity Restriction on GEN:* an element in the input can correspond to a maximum of two elements in the output

As noted above, this makes a strong prediction regarding potential MR patterns: if there are multiple reduplications, they must occur at different strata. In terms of models of morphology, we will be adopting a Stratal OT approach, focusing on a stem-level and a word-level (Kiparsky 2010, 2015; Bermúdez-Otero 2012). The input to the stem-level is a set of morphemes (from the lexicon), and the input to the word-level is the output of the stem-level (crucially after stem-level phonology is assessed). Our analysis assumes the strata in (7) for Hul'q'umi'num' reduplication.

(7) Stem-level = imperfective
Word-level = plural, diminutive

The next section presents the analytic details for Hul'q'umi'num' in which imperfective is a stem-level affix, while plural and diminutive are word-level affixes. Section 4 provides an analysis of the variable MR pattern, showing that nothing new needs to be added, other than the binarity restriction. A final section discusses the theoretical implications this analysis has for other approaches to reduplication, paying particular attention to the predictions of various models.

3. Analysis of Hul'q'umi'num' reduplication

3.1. Imperfective (stem-level)

The imperfective aspect is expressed by a wide range of non-concatenative allomorphs and may be realized with: CV- reduplication (8a), ablaut (8b), metathesis (8c), a glottal stop infix (8d), and sonorant aspiration (8e), among other stem modifications, all of which are accompanied by resonant glottalization The primary exponent of the imperfective is underlined in (8).

(8)		**Perfective**		**Imperfective**	
	a.	ṫíləm	'to sing'	ṯí-ṫələm̓	'singing'
	b.	łəp̓t̓$^{\theta}$t	'slurp it'	łép̓t̓$^{\theta}$t	'slurping it'
	c.	pq^{w}át	'break it (substance)'	páqʷt	'breaking it'
	d.	hésəm	'sneeze'	hé?səm̓	'sneezing'
	e.	ləc̓ət	'fill it'	hə́lc̓t	'filling it'

Following Urbanczyk's (1998) analysis of the 'continuative' in the Upriver Halkomelem dialect, and others on a cognate 'actual' morpheme in Straits (Stonham 1990; Bye & Svenonius 2012), we assume the IPFV is a mora /μ/ (cf. Zimmermann 2013, 2017 on the cognate pattern in Upriver Halkomelem). We also assume that IPFV is attached first, at the stem-level (see Hukari 1978 for a discussion and evidence regarding which non-concatenative morpheme is attached first). There are two key reasons to support the claim that the imperfective is a stem-level process: there is an interaction with a morphophonological process (vowel-lowering) and a difference in constraint ranking between stem-level and word-level strata.

In Hul'q'umi'num' there is a morphophonological process in which /e/ lowers to [a] with some suffixes (as in 9b). Notice that when the imperfective is added, the lowered vowel /a/ is reduplicated, suggesting that it occurs at the same level. We assume that the consonant and vowel are copied, and that unstressed vowel reduction occurs at the word-level, which results in the imperfective reflexive form in the right column of (9b).

(9)		**Perfective**		**Imperfective**	
	a.	lémət	'look at s.th.'	lél̓əm̓ət	'looking at s.th.'
	b.	láməθət	'look at self'	lál̓əm̓əθət	'looking at self'

Sharing the complete analysis for each allomorph would require more space and discussion than is possible in the current paper, so we only present a tableau and constraints for patterns relevant to the MR analysis (see Mellesmoen & Urbanczyk 2020 for more details). In undertaking this analysis, we make the following standard assumptions about Central Salish languages: schwa lacks a mora (Shaw et al. 1999), and coda consonants are moraic (Blake 2000). The basic idea is that the mora is filled by reduplication when possible, but filled by other allomorphs (such as the glottal stop infix or ablaut) when reduplication would produce a phonologically marked wordform. The following tableau shows the ranking needed to ensure reduplication (which results in a violation of INTEGRITY), is preferred over infixing (which would result in a violation of DEP-C).

(10)

/μ-ṫ$_{i}$í$_{j}$ləm/	*FLOAT	DEP-C	INTEGRITY
a. μ ṫ$_{i}$í$_{j}$ləm̓	*!		
b. ☞ ṫ$_{i}$í$_{j}$ṫ$_{i}$ə$_{j}$ləm̓			**
c. ṫ$_{i}$í$_{j}$?ləm̓		*!	

Candidate (10a) is ruled out because the mora remains floating, without association to any segmental content. Candidate (10b) is selected as optimal because it fills the mora by incurring two INTEGRITY violations — one for the consonant and one for the vowel, as indicated with coindexing.[1] Candidate (10c), with the glottal stop infix, is ruled out because it violates DEP-C, which bans epenthetic consonants.

3.2. Diminutive (word-level)

Turning now to the word level, we present key aspects of the analysis, first of the diminutive, then the plural. In the verbal domain, diminutive reduplication is realized with either C_1ə- (11a) or C_1i-reduplication (11b), and is accompanied by a glottal stop infix, as seen below. Diminutive marking on verbs does not occur with perfective aspect,[2] so is accompanied with imperfective morphology, and comes out of the stem level. Notice that the base of DIM-IPFV matches the IPFV form.

(11)

		Imperfective		**Diminutive Imperfective**	
a.	C_1ə-	łáłəkʲʷ	'flying'	łəłáʔłəkʲʷ	'flying (DIM)'
		łéłəqəm̓	'whispering'	łəłéʔłəqəm̓	'whispering (DIM)'
b.	C_1i-	kʲʷélt	'pouring it'	kʲʷiʔkʲʷélt	'pouring it (DIM)'
		ƛ̓épx̣t	'sprinkling it'	ƛ̓iʔƛ̓épx̣t	'sprinkling it (DIM)'
		hál̓c̓t	'filling it'	hiʔhál̓c̓t	'filling it (DIM)'

We assume that the diminutive morpheme involves two exponents: an affixed syllable and a glottal stop, which may surface in a position that is discontinuous from copied material, as shown in (11a). A crucial difference between the stem and word-level phonology is that, while there is no evidence to split INTEGRITY into two components at the stem-level, INTEGRITY must be relativized to Consonants and Vowels at the word-level, as in (12). We find no evidence of vowel copying in word-level reduplication, and this turns out to be an important component of our analysis.

(12) a. INTEGRITY-V: No input vowel has multiple correspondents in the output
b. INTEGRITY-C: No input consonant has multiple correspondents in the output

MAX, like *FLOAT, must be highly ranked because both parts of the diminutive (reduplication and the glottal stop) always surface. Pervasive unstressed vowel reduction follows from a constraint against unstressed full vowels, as was briefly mentioned in the analysis of the imperfective.

(13) *V̆: Do not have an unstressed full vowel

The following tableau illustrates that the optimal candidate (14b) has a C_1ə- reduplicant and the glottal infix located after the stressed vowel. We are abstracting away from the location of the glottal infix, due to space considerations, but note that it follows from phonotactic constraints.

(14)

DIM{σ+ʔ} + łáłəkʲʷ	*FLOAT	MAX	INT-V	*V̆	DEP	INT-C
a. łiłáʔłəkʲʷ				*!	*	*
b. ☞ łəłáʔłəkʲʷ					*	*
c. łałáʔłəkʲʷ			*!	*		*

[1] Note that a regular process of vowel reduction is also observed in (10b).
[2] Many thanks to Donna Gerdts for pointing this out.

The choice of a C_1i- reduplicant with [i] (rather than schwa) with some forms is due to the location of the glottal infix as it cannot be infixed internal to the imperfective stem. Many of the forms that do not infix the glottal stop inside the imperfective begin with CVCC sequences. We derive an epenthetic [i] due to a wide-spread constraint against schwa-glottal stop in coda position that is active throughout the Salish language family (see Bessell & Czaykowska-Higgins 1993).

(15) *əʔ]$_\sigma$ Schwa is not permitted before a glottal stop that is in a coda

This constraint also plays a role in determining the correct allomorph for the imperfective. As can be seen below, the candidate with C_1ə- reduplication (16e) violates the high-ranking constraint in (15).

(16)

DIM{σ+ʔ} + k̓ʷéɬt	*FLOAT	MAX	*əʔ]$_\sigma$	INT-V	*V̆	DEP	INT-C
a. k̓ʷik̓ʷéɬt		*!			*	*	*
b. ☞ k̓ʷiʔk̓ʷéɬt					*	*	*
c. k̓ʷeʔk̓ʷéɬt				*!	*		*
d. σ k̓ʷéɬt	*!	*					
e. k̓ʷəʔk̓ʷéɬt			*!			*	*

The vowel [i] is a default that is consistent with other patterns in Salish phonology when schwa does not occur. As can be seen above, the optimal candidate (16b) violates the constraint against unstressed full vowels, under pressure from *əʔ]$_\sigma$. This tableau also establishes that INTEGRITY-V is undominated in the word-domain. Note that candidates (16b) and (16c) both have unstressed full vowels. If INTEGRITY-V were not active, then the optimal form would copy the stem vowel, as in (16c). Having presented our analysis of the diminutive reduplication, we now turn our attention to the plural.

3.3. Plural (word-level)

Verb plurality can be marked by C_1əC_2- reduplication (affixation of σ_μ) (17a) or an infixed *-l-* (with schwa epenthesis) (17b).

(17)

	Singular		**Plural**	
a.	t̓íləm	‘to sing’	t̓əl-t̓íləm	‘they sing’
	lémət	‘to look at s.th.’	ləm-lémət	‘to look at them’
	ʔíməš	‘walk’	ʔəm-ʔíməš	‘walking around’
	mə́q̓ət	‘to swallow s.th.’	məq̓-mə́q̓ət	‘swallowing PL’
	sə́t̓q̓t	‘disturb’	sət-sə́t̓q̓t	‘disturb (repeatedly)’
	k̓ʷɬét	‘pour it (liquid)’	k̓ʷəɬ-k̓ʷə́ɬt	‘pour out things’
b.	ném̓	‘go’	nélə́m̓	‘they go’
	k̓ʷés	‘hot (get hot)’	k̓ʷél̓əs	‘hot, warm weather’
	técəl	‘arrive, reach’	té l̓əcəl	‘arrive PL’

We treat C_1əC_2- reduplication as the default realization of the plural and analyse the choice of allomorph using preferential allomorph selection (Mascaró 2007). In this approach, PRIORITY is satisfied by a candidate that selects the preferred allomorph (σ_μ), while a candidate that selects the lower ranked allomorph (*-l-*) incurs a violation under PRIORITY, meaning PRIORITY >> INTEGRITY-C. Recall that

schwa is assumed not to be moraic, while coda consonants are moraic, so a $C_1əC_2$- reduplicant is treated as a monomoraic syllable. Note also that schwa is epenthetic in (18a), not a reduced copy of the stem vowel.

(18)

PL{$σ_{μ1}$, -l-$_2$} + ṫíləm	PRIORITY	INTEGRITY-C
a. ☞ ṫəl$_1$ṫíləm		**
b. ṫíl$_2$ələm	*!	

The high ranking of *FLOAT means that both the syllable (and its mora) must be associated with segmental content in the output (see 19b and 19d). The ranking of INT-V >> INT-C at the word level (established in the discussion of the diminutive) correctly predicts reduplication of C_2 (see 19a), rather than the vowel (see 19c), each of which would be a light syllable. We leave out the *ə?]$_σ$ constraint to save space.

(19)

PL{$σ_{μ1}$, -l-$_2$} + ṫíləm	*FLOAT	MAX	INT-V	PRIORITY	*V̆	DEP	INT-C
a. ☞ ṫəl$_1$ṫíləm						*	**
b. $μ_1$ ṫəṫíləm	*!					*	*
c. ṫi$_1$ṫíləm			*!		*		*
d. $σ_{μ1}$ ṫíləm	*!						
e. ṫíl$_2$ələm				*!		*	

The only way to fill the monomoraic prosodic template is to copy a coda consonant. Recall that schwa is not moraic, so candidate (20b) does not fill the template. This is the pattern, regardless of whether or not the stem has a full vowel (as above) or a schwa (which is non-moraic), as shown in (20).

(20)

PL{$σ_{μ1}$, -l-$_2$} + məq̇ət	*FLOAT	MAX	INT-V	PRIORITY	*V̆	DEP	INT-C
a. ☞ məq̇$_1$məq̇ət						*	**
b. $μ_1$ məməq̇ət	*!					*	*
c. mi$_1$məq̇ət					*!	*	*
d. məl$_2$əq̇ət				*!		*	
e. $σ_{μ1}$ məq̇ət	*!						
f. məq̇ət$_2$		*!		*			

Candidate (20f) is ruled out by MAX, because the input allomorph /-l-$_2$/ has not been parsed in the output. We now turn to the two patterns of variable MR, both of which occur with the plural morpheme.

4. Variable Multiple Reduplication

4.1. Imperfective plural

When IPFV and PL occur together (shaded cells in 21), only one copy occurs, even when MR would be predicted on the basis of their forms in isolation. Compare the imperfective singular form and the plural perfective forms, which each have a different reduplicant. We find *t̓íl̓t̓ələm̓* rather than **t̓əlt̓íl̓t̓ələm̓*, which would be expected in MR, given the assumptions about reduplication we have explained thus far. When the imperfective does not begin with an open syllable, the $C_1əC_2$- allomorph is realized, as in (21b).

(21)

		Perfective		**Imperfective**	
a.	SG	t̓íləm	'to sing'	t̓ít̓ələm̓	'singing'
	PL	t̓əlt̓íləm	'they sing'	t̓íl̓t̓ələm̓	'they are singing'
b.	SG	pqʷát	'break it'	páqʷt	'breaking it'
	PL	pəqʷpə́qʷət	'break them'	pəqʷpáqʷt	'breaking them'

The established constraint rankings will choose the optimal candidate (22a), without multiple reduplication, when plural and imperfective morphemes co-occur, as the following tableau establishes.

(22)

PL{$\sigma_{\mu1}$, -l-$_2$} + t̓íl̓t̓ələm̓	*FLOAT	INT-V	PRIORITY	*V̆	DEP	INT-C
a. ☞ t̓íl$_1$t̓ələm̓						*
b. μ_1 t̓íl̓t̓ələm̓	*!					
c. t̓əl$_1$t̓íl̓t̓ələm̓					*!	**
d. t̓əl$_1$t̓íl̓t̓ələm̓					*!	**
e. t̓íl$_2$ət̓ələm̓			*!		*	
f. t̓əl$_1$t̓íl̓t̓ələm̓					*!	**

Notice that the appearance of 'coalescence' of PL-IPFV follows from the constraint rankings established thus far. Nothing new needs to be added to the analysis to achieve this result. If the second consonant of the imperfective stem can be recruited to fill the mora of the plural, it will be copied. No further copying of segments is required, or compelled by other constraints.

This has the appearance of being an instance of Avoidance MR in Zimmermann's (to appear) typology, but cannot be analyzed as such. In Zimmermann's analysis of Avoidance MR in Nuuchahnulth (Southern Wakashan), two input prosodic units /μ_1 + μ_2/ are fused into one [$\mu_{1,2}$] in the output. There are a couple of reasons why this type of approach cannot account for the Hul'q'umi'num' PL-IPFV forms. First, the two morphemes are realized in different strata, so the input to the plural (at the word level) includes the IPFV stem, with the mora already filled. Even if one were to assume that both morphemes are realized in the same stratum with two empty prosodic units in the input, the question would arise as to why the PL would be fused with IPFV in the stems in (22a), but not in (22b), where the expected $C_1əC_2$- allomorph is realized. The realization of the plural varies, and this depends on what the imperfective form is and by how INT-C violations can be minimized in number. Because the second consonant of the root (C_2) can be recruited to fill the mora in (22), there is no need to copy a full syllable. When this is not possible, due to phonotactic patterns of the base, then a full syllable is copied.

We now illustrate how reduplication of the full syllable also follows from the constraint rankings established thus far. In these cases, the first and the second consonants are copied, because the stem already begins with a closed syllable (with a moraic coda consonant).

(23)

PL{σμ1,-l-2} + θéx̣t	*FLOAT	INT-V	PRIORITY	*V̆	DEP	INT-C
☞a. θəx̣1θéx̣t					*	**
b. θe1θéx̣t		*!		*		*
c. μ1 θəθéx̣t	*!				*	*
d. σμ1 θéx̣t	*!					
e. θél2əx̣t			*!		*	

With the analysis for one pattern of Variable MR established, we now turn to words which could potentially surface with all three reduplicative morphemes (imperfective, diminutive, and plural).

4.2. Imperfective diminutive plural

When all three of the morphemes (diminutive, plural, and imperfective) co-occur, triple MR is not observed. The plural *-l-* infix is selected, rather than the predicted $C_1əC_2$- reduplicant *(*piʔpəqʷpaqʷt)*, as shown below.

(24)

	Diminutive-Imperfective		Diminutive-Imperfective-Plural	
a.	łiʔłəłə́nəm̓	'weaving (DIM)'	łəliʔłəłə́nəm̓	'weaving (DIM-PL)'
b.	piʔpaqʷt	'breaking it (DIM)'	pəliʔpaqʷt	'breaking them (DIM)'

Given the analytic assumptions made regarding allomorph selection, the expected form is predicted to involve MR, as indicated with the frowning face in (25c). This candidate is possible if GEN can create candidate forms that have more than two output correspondents for one input segment. Notice that the actual form (25a) is ruled out because it doesn't have the preferred allomorph.

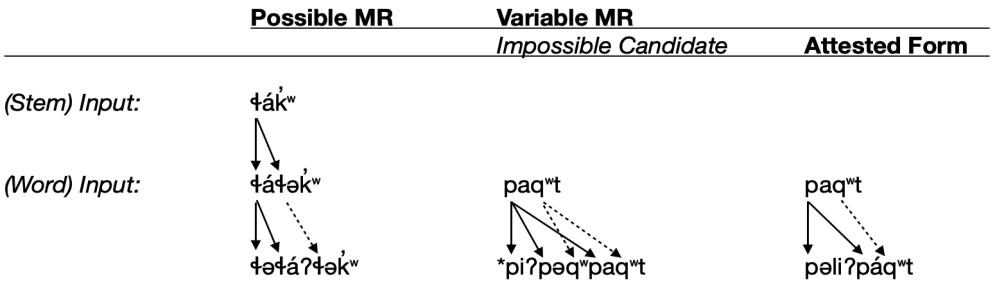
(25)

PL{σμ1, -l-2} + DIM{σ+ʔ} + paqʷt	*FLOAT	INT-V	PRIORITY	*V̆	DEP	INT-C
a. pəl2iʔpáqʷt			*!	*	**	*
b. σμ piʔpáqʷt	*!			*	*	*
c. ☹ piʔpəqʷpáqʷt				*	**	***
d. pəl2aʔpáqʷt		*!		*	*	*

But, with the proposed constraint on GEN mentioned at the beginning of this paper, **piʔpəqʷpaqʷt* is not a possible candidate. Our proposal is repeated below.

(26) Binarity Restriction on GEN: an element in the input can correspond to a maximum of two output elements.

The following figure illustrates how MR is achieved (1st column) as well as the impossible candidate, that would not be produced by GEN, given our proposal (2nd column). The final column indicates the candidate that is produced by GEN in which Variable MR occurs.



Given our proposal, that GEN can only emit candidates with a maximally binary mapping between input and output, no candidates can be emitted with multiple reduplications at the word level. This results in the correct candidate being selected as optimal, as illustrated below.

(27)

PL{σμ1, -l-2} + DIM{σ+ʔ} + paqʷt	*FLOAT	INT-V	PRIORITY	*V̆	DEP	INT-C
a. ☞ pəl2iʔpáqʷt			*	*	**	*
b. σμ1 piʔpáqʷt	*!			*	*	*

Notice that the optimal candidate selects the infix, in violation of PRIORITY. The failure to have any exponent of the plural here (27b) is due to the high ranking of *FLOAT.

5. Discussion and implications

By restricting how copying occurs — only allowing ONE fission of a segment — MR is predicted to be impossible within the same stratum. This prediction is borne out by examining cases of MR, such as those found in Interior Salish languages (Broselow 1983), the Central Salish language Lushootseed (Broselow 1983; Urbanczyk 2006; Zimmermann to appear), Nuuchahnulth (Wakashan; Stonham 2007), and Fox (Algonquian; Zimmermann to appear).

A further prediction is that MR is possible in the same stratum, but only if the reduplicative morphemes target different parts of the word, so that each reduplicative process copies different segments of the word.

Finally, variable MR has strong implications for theories of reduplication. We note that, regardless of the model of reduplication or how copying occurs, unless one assumes a phonological approach, constrained by binary mapping, every model predicts that there could potentially be as many reduplicative morphemes in the output, as specified in the input. In Base-Reduplicant Correspondence Theory (McCarthy & Prince 1999), each reduplicative morpheme RED in the input would instantiate its own Correspondence relation, so an unlimited number of reduplicants is predicted. In Harmonic Template Satisfaction (McCarthy et al. 2012), each reduplicative morpheme is represented by an empty prosodic unit in the input. COPY functions can occur for each prosodic unit at each stage, so an unlimited number of reduplications is predicted. In Morphological Doubling Theory (Inkelas & Zoll 2006) each reduplicative morpheme is represented as a Stem, analogous to compounding. The prediction here is that languages with compounds of more than three can have more than two reduplications. And finally, in the phonological approach we assume here, Generalized Non-Linear Affixation/Minimal Reduplication (Bermúdez-Otero 2012; Saba Kirchner 2013; Zimmermann 2017), each reduplicative morpheme is represented by a prosodic unit, with its phonological content determined by violating INTEGRITY. There is nothing to constrain a 1:3 or 1:4 correspondent relation, so triple or quadruple reduplication in one stratum is predicted, but not attested.

To sum up, the Variable MR patterns in Hul'q'umi'num' not only expand the typology of possible MR, they also provide important evidence for understanding how phonological and morphological

theories handle not only reduplication, but also the attested MR patterns. Our proposal that there is a binarity restriction on GEN allows us to analyse the pattern and correctly constrain our phonological grammar to not over-generate MR candidates.

References

Bermúdez-Otero, Ricardo. (2012). The architecture of the grammar and division of labor in exponence. In Jochen Trommer (ed.), *The morphology and phonology of exponence*. Oxford, UK: Oxford University Press.

Bessell, Nicola, & Ewa Czaykowska-Higgins. (1993). The phonetics and phonology of postvelar consonants in Moses-Columbia Salish (Nxaʔamxcin). *Toronto Working Papers in Linguistics, CLA Proceedings*, 35–48.

Blake, Susan. (2000). *On the Distribution and representation of schwa in Sliammon (Salish).* Doctoral dissertation, University of British Columbia. Vancouver, BC.

Broselow, Ellen. (1983). Salish double reduplications: Subjacency in morphology. *Natural Language and Linguistic Theory 1*: 317–346.

Bye, Patrik, & Peter Svenonius. (2012). Non-concatenative morphology as epiphenomenon. In Jochen Trommer (ed.), *The morphology and phonology of exponence*. Oxford, UK: Oxford University Press.

Gerdts, Donna, & Adam Werle. (2014). Halkomelem clitic types. *Morphology 24*: 245–281.

Hukari, Tom. (1977) Resonant devoicing in Cowichan. *Canadian Journal of Linguistics 22*: 47–61.

Hukari, Tom. (1978). Halkomelem nonsegmental morphology. *Proceedings of ICSNL 13:* 157–209.

Hukari, Tom, & Ruby Peter. (1995). *Cowichan dictionary*. Duncan, BC: Cowichan Tribes.

Inkelas, Sharon, & Cheryl Zoll. (2006). *Reduplication: Doubling in Morphology.* Cambridge, UK: Cambridge University Press.

Kiparsky, Paul. (2010). Reduplication in stratal OT. *Reality exploration and discovery: pattern interaction in language & life. (Festschrift for KP Mohanan)*, 125–141.

Kiparsky, Paul. (2015). Stratal OT: A synopsis and FAQs. *Capturing phonological shades within and across languages*, *2*, 1–45.

Mascaró, Joan. (2007). External allomorphy and lexical representation. *Linguistic Inquiry, 38*(4), 715–735.

Mellesmoen, Gloria, & Suzanne Urbanczyk. (2020). Mora affixation and Halkomelem imperfective allomorphy. In. D. K. E. Reisinger et al. (eds.), *Papers of ICSNL 55*: 238–256.

McCarthy, John., Wendell Kimper, & Kevin Mullin. (2012). Reduplication in Harmonic Serialism. *Morphology 22*: 173–232.

McCarthy, John, & Alan Prince. (1999). Faithfulness and Identity in Prosodic Morphology. In René Kager, Harry van der Hulst, & Wim Zonneveld (eds.), *The Prosody-Morphology Interface*. Cambridge, UK: Cambridge University Press.

Saba Kirchner, Jesse. (2010). *Minimal reduplication*. Doctoral dissertation, University of California. Santa Cruz, CA.

Saba Kirchner, Jesse. (2013). Minimal reduplication and reduplicative exponence. *Morphology 23*: 227–243.

Shaw, Patricia, Susan Blake, Jill Campbell, & Codie Sheperd. (1999). Stress in hən̓q̓əmin̓əm̓ (Musqueam) Salish. *Workshop on the Structure and Constituency of the Languages of the Americas 4*: 131–164.

Stonham, John. (1990). *Current issues in morphological theory*. Doctoral dissertation, Stanford University. Standford, CA.

Stonham, John. (2007). Nuuchanulth double reduplication and Stratal Optimality Theory. *Canadian Journal of Linguistics 52*: 105–130.

Urbanczyk, Suzanne. (1998). Segment doubling and INTEGRITY violation. *West Coast Conference on Formal Linguistics 17*, University of British Columbia. Vancouver, BC. March.

Urbanczyk, Suzanne. (2006). Reduplicative form and the root-affix asymmetry. *Natural Language and Linguistic Theory 24*(1): 179–240.

Zimmermann, Eva. (2013). Non-concatenative allomorphy is generalized prosodic affixation: The case of Upriver Halkomelem. *Lingua 134*: 1–26.

Zimmermann, Eva. (2017). *Morphological length and defective morphemes*. Oxford, UK: Oxford University Press.

Zimmermann, Eva. (to appear). Two is too much. . . in the phonology! A Phonological Account of Avoidance and Subtraction in Multiple Reduplication. *The Linguistic Review*.

Proceedings of the 37th West Coast Conference on Formal Linguistics

edited by D. K. E. Reisinger
and Marianne Huijsmans

Cascadilla Proceedings Project Somerville, MA 2021

ISBN 978-1-57473-477-5 hardback

Ordering information

Orders for the printed edition are handled by Cascadilla Press.
To place an order, go to www.lingref.com or contact:

Cascadilla Press, P.O. Box 440355, Somerville, MA 02144, USA
phone: 1-617-776-2370, fax: 1-617-776-2271, sales@cascadilla.com

Web access and citation information

This entire proceedings can also be viewed on the web at www.lingref.com. Each paper has a unique document # which can be added to citations to facilitate access. The document # should not replace the full citation.

This paper can be cited as:

Mellesmoen, Gloria and Suzanne Urbanczyk. 2021. Avoiding Multiple Reduplication without INTEGRITY. In *Proceedings of the 37th West Coast Conference on Formal Linguistics*, ed. D. K. E. Reisinger and Marianne Huijsmans, 169-178. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #3527.