A reanalysis of CV- Reduplication in Comox-Sliammon

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Previous descriptions of Comox-Sliammon (ʔayʔaǰuθəm) list three types of CV reduplication: imperfective, plural, and diminutive (Watanabe 2003). Though the proposed reduplicant is a CV prefix across all three types of reduplication, the processes are not homophonous. The root vowel is argued to be retained in imperfective reduplication, but deleted in diminutive and plural reduplication (Watanabe 2003). The prefixing CV- analysis requires positing that input-reduplicant faithfulness is more valued by the grammar than input-base and base-reduplicant correspondence, which is undesirable under Base-Reduplicant Correspondence theory (McCarthy & Prince 1995). In this paper, I argue that the difference between imperfective, plural, and diminutive reduplicative processes arises from two sources: (1) the morphological domain to which they attach, and (2) whether a particular ranking of alignment constraints within a specific domain favours reduplicant or root material at the left edge. Descriptively, the imperfective reduplicant is truly a prefix, while the plural and diminutive reduplicants are realized as infixes. In order to account for the different affixal positions (infix or prefix), a Stratal OT approach is adopted (Kiparsky 2008), whereby infixation is motivated by ALIGNL$_{Rt}$, which is ranked above ALIGNL$_{Red}$ at the stem-level and prefixation is preferred by the opposite ranking (ALIGNL$_{Red}$ >> ALIGNL$_{Rt}$) at the word-level. Reanalysing "root vowel deleting" CV reduplicants as infixes avoids theoretical issues and is more consistent with the Comox-Sliammon grammar.
Keywords: reduplication; Salish; Comox-Sliammon; diminutive; plural; imperfective; Stratal Optimality Theory, infixes

1 Introduction

Reduplication is found in each of the twenty-three Salish languages with varying degrees of productivity. C_1 reduplication, or the copying of an initial consonant, is a relatively common process across the family can (in form) be traced back to Proto-Salish with relative ease and is generally associated with a "diminutive" function (Kroeber 1999). An additional plural C_1 reduplication also has echoes across the Salish language family, though it is lexicalized in many languages. For example, a variant of C_1a- reduplication is used to mark collective plurals in Lushootseed (Bates, Hess, & Hilbert 1994), but only occurs with a small number of entries in the dictionary. Similarly, van Eijk (1981) documents a handful of C_1

plural forms in Lillooet, though C_1C_2 reduplication is the standard (and more productive) marker of plurality. In contrast to these languages, Watanabe (2003:376-384) documents C_1 plural reduplication in Comox-Sliammon with a wide number of roots.[1]

A third type of C_1 reduplication is found in Central Salish, marking a diversion from the rest of the language family; Kroeber (1999) describes an additional type of C_1 reduplication that serves an aspectual function and is distinct from the historically robust diminutive pattern. Following Watanabe (2003) and other previous work on Comox-Sliammon, I adopt the term "imperfective" here, though there may be a more (or just as) precise semantic label.[2] Comox-Sliammon (ʔayʔaǰuθəm) has a highly productive reduplication system that includes diminutive and plural C_1 reduplication, alongside the imperfective. This paper provides a constraint-based phonological analysis that accounts for all three types of C_1 reduplication.

2 Background

2.1 Basic facts about Comox-Sliammon phonology

Comox-Sliammon (ʔayʔaǰuθəm) is a Central Salish language traditionally spoken by the Tla'amin, K'ómoks, Homalco, and Klahoose communities in British Columbia. In 2018, First Peoples Cultural Council (FPCC) reported approximately 47 L1 speakers. The data used in this paper largely comes from Watanabe (2003), but is supplemented by original fieldwork where relevant.

Comox-Sliammon has distinctive phonological patterns that set it apart from other Salish languages. For example, it has lost all non-root material at the right edge of the word under influence from the neighbouring Wakashan language Kw'akwala (Kinkade 1996). The only remaining prefixes are reduplicative ones, meaning that many of the hallmark Salish prefixes, such as the nominalizer *s-*, are absent (Blake 2000). These facts, combined with a ban on complex onsets clusters and preference for bimoraic feet, limit the size and frequency of consonant clusters in the language (Watanabe 2003).[3] In addition to

[1] A major restriction on its distribution appears to be aspectual; C_1 reduplication is documented almost exclusively with stative predicates.

[2] The exact function of aspectual reduplication in Central Salish may be language-specific and is better understood in certain languages. For example, Bar-el (2008) conducts a series of semantic tests to support using the term "progressive" for the cognate reduplicative process in Squamish. In other cases (for other languages), the evidence behind an author using a certain label is less transparent and this complicates cross-Salish comparison based on previous description alone. Even the descriptions of Comox-Sliammon give varying labels for the function of C_1 aspectual reduplication, including imperfective (Harris 1981; Kroeber 1988; Watanabe 1994; Blake 2000; Watanabe 2003), progressive (Hagège 1981; Blake 1992), and continuous/repeated action (Harris 1981).

[3] As coda consonants are moraic in the language (see Blake 2000),

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this, placement of stress falls on the initial syllable in both reduplicated and non-reduplicated words (Blake 2000).

2.2 Previous analysis of "CV-" reduplication in Comox-Sliammon

Previous descriptions of Comox-Sliammon describe three types of "C_1V-" reduplication: diminutive, imperfective, and plural (Davis 1971; Blake 2000; Watanabe 2003). These are shown in (1) for *k̓əp-* 'to cut', which is a "weak" root because it surfaces with /ə/, and (2) for *ǰuθ-* 'to push', which is a "strong" root because it has a full vowel in its underlying form. Phonemic transcriptions are given in the North American Phonetic Alphabet (NAPA) notation.[4]

(1)	k̓əp	'to cut'	*Diminutive*	**ḱək̓**pt	'cut a little'
			Plural	**ḱək̓**pit	'all cut up'
			Imperfective	**ḱək̓**ptas	'she is cutting it'
(2)	ǰuθ-	'to push'	*Diminutive*	**ǰu**yθut	'nudge'
			Plural	**ǰu**yθut	'push over and over'
			Imperfective	**ǰu**ǰuθut	'pushing'

The reduplicants in (1) and (2) are bolded following the "CV-" prefix analysis given in the literature. Accordingly, one must posit that a C_1V reduplicant is prefixed and the root vowel is deleted in plural and diminutive reduplication.

Considering the data alone, there is unexplained homophony between plural and diminutive reduplication, to the exclusion of imperfective reduplication. If all three processes are analysed as instances of "C_1V-" reduplication, it is not evident why identical phonological behaviour would not be observed across all three or, alternatively, why each type of reduplication would not have its own form. The analysis in this paper provides an alternate account of C_1 reduplication. I argue that C_1 reduplication occurs at either a stem or word level and that the homophony between the plural and diminutive reduplicative processes arises from the two occurring earlier in the derivation and surfacing as infixes, rather than prefixes.

[4] The alternation between /ǰ/ and /y/ in (2) is a regular alternation; voiced "obstruents" only occur in an onset position (see Blake 1992; Blake 2000).

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3 Infixing C_1 reduplication

3.1 Parallel between plural and diminutive C_1 reduplication

Plural and diminutive C_1 reduplication are often homophonous in Comox-Sliammon. As an example, each of the forms in (3) is C_1 reduplicated and the form is ambiguous in meaning. In each case, the plural and diminutive C_1 reduplicated forms are homophonous.

(3) a. kʷikʷɬit ‘they are spilled’ ‘it is spilled a little bit’

b. x̣ix̣mus ‘scratched all over the face’ ‘a little scratch on the face’

As the plural C_1 and imperfective C_1 reduplicative processes occur frequently on the same roots (verbs), I will provide plural C_1 examples under the assumption that this analysis can be straightforwardly extended to parallel diminutive forms.

3.2 Analysis of plural C_1 reduplication

Plural C_1 reduplication is shown in (4) with strong CVC roots in data from Watanabe (2003). Following the traditional “CV-“ analysis, the reduplicant (bolded) is considered to be a CV prefix and the root vowel is deleted.

(4) a. **ʔa**ʔmut ‘they are all home’ ʔamut ‘be home’

b. **hu**hǰigis ‘they were all dressed up’ huǰigis ‘she is dressed up’

c. **ƛ́u**ƛ̓x̣ʷit ‘everybody is crying’ ƛ̓ux̣ʷit he is crying’

d. **mi**mq̓šiṅ. ‘have both feet in water’ miq̓šin ‘have foot in water’

The data and assumptions in (4) raise concerns for both theory and the grammar of the language. There are three types of correspondence that are relevant: input-base, input-reduplicant, and base-reduplicant. Faithfulness constraints evaluating input-base correspondence are argued to be universally ranked above base-reduplicant ones (McCarthy & Prince 1995). An input-reduplicant correspondence relationship was only stipulated to account for a small set of patterns that are not otherwise accounted for, such as distributive reduplication in Klamath (McCarthy & Prince 1995). As shown in Table 1, the only type of faithfulness that accounts for the reduplicant vowel under a “CV-” analysis is between input and reduplicant.

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Table 1. Types of correspondence in Base-Reduplicant Correspondence Theory

Type		**Correspondence**	**Vowel Faithful?**
↕ Input-Output	Input ↔ Base	ʔamut ↔ ʔmut	No
	Input ↔ Reduplicant	ʔamut ↔ ʔa	Yes
↔ Output-Output	Reduplicant ↔ Base	ʔa ↔ ʔmut	No

While it is possible that Comox-Sliammon may make use of a marked input-reduplicant correspondence relationship, like it has been proposed for Klamath, root vowel deletion is also problematic for the grammar of the language. Epenthesis is often preferred as a repair strategy to avoid hiatus or clusters where non-affixal content is concerned (Blake 2000). Taken together, the deletion of a root vowel in plural and diminutive C_1 reduplication is highly marked cross-linguistically and within the language. Adopting a C_1 infix analysis resolves the Input-Reduplicant >> Base-Reduplicant and Input-Reduplicant >> Input-Base Correspondence issues in the "root vowel deletion" cases, and it also addresses the highly marked deletion of root content. The data in (5) shows this reanalysis, with bolding used to indicate the infixed position of the reduplicant. No root vowel deletion is posited in (5).

(5)	a.	ʔa**ʔ**mut	'they are all home'	ʔamut	'be home'
	b.	hu**h**ǰigis	'they were all dressed up'	huǰigis	'she is dressed up'
	c.	ƛ̓uƛ̓x̣ʷit	'everybody is crying'	ƛ̓ux̣ʷit	'he is crying'
	d.	mi**m**q̓šin̓.	'have both feet in water'	miq̓šin	'have foot in water'

I give a constraint-based analysis assuming a combination of alignment, general faithfulness, and markedness constraints (McCarthy & Prince, 1995). The basic faithfulness constraint is MAX, which penalizes deletion.

MAX: All segments in the input have a correspondent in the output. Assign a violation mark for every segment in the input that does not have a correspondent in the output.

I adopt a gradient alignment constraint to motivate infixation, ALIGN-L_{Red}, following Riggle's (2006) approach to Pima. The misalignment of the right edge of reduplicant to the left edge of a word means that this constraint will always be violated when reduplication occurs. This constraint limits reduplicant size, while a constraint MAX-M ensures that reduplication occurs every time a reduplicative morpheme is in the input. The result is that a bare consonant is generally optimal.

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ALIGN(Red, R, Wd, L) (ALIGN-L_{Red}): The right edge of every reduplicant should align with the left edge of a word. Assign a violation mark for every segment between the right edge of a reduplicant and the left edge of the word.

MAX-M(ORPHEME) All morphemes in the input must have a correspondent in the output (Yu 2017).

In order for infixation to occur, ALIGN-L_{Red} must be ranked below another alignment constraint, ALIGN-L_{Rt}, which penalizes candidates that do not have alignment between the left edge of a word and a root.

ALIGN(Wd, L, Rt, L) (ALIGN-L_{Rt}): The left edge of every word should align with the left edge of a root. Assign a violation mark for every left edge of word that is not aligned with the left edge of a root.

The tableau in (6) shows the ranking of these constraints, demonstrating that the infixed candidate (6c) is predicted over the prefixed one (6d). The candidates with a vowel in the reduplicant (6a) and (6b) are ruled out under ALIGN-L_{Rt} and ALIGN-L_{Red}, respectively. The candidate (6e) that satisfies the alignment constraints fatally violates MAX-M because there is no reduplicant in the output.

(6)

	RED + ʔamut	MAX	MAX-M	ALIGN-L_{Rt}	ALIGN-L_{Red}
	a. **ʔa**ʔamut			*!	**
	b. ʔa**ʔa**mut				****!
☞	c. ʔa**ʔ**mut				***
	d. **ʔa**ʔmut	*!		*!	**
	e. ʔamut		*!		

The ranking in (7) predicts infixation in plural and diminutive C_1 reduplication.

(7) MAX-M, MAX, AlignL_{Rt} >> AlignL_{Red}

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4 Prefixing C_1 reduplication

Imperfective C_1 reduplication patterns differently than plural and diminutive C_1 reduplication. As shown for the strong roots in (8) from Watanabe (2003), there is a copy of the full vowel in the (bolded) reduplicant.[5]

(8)	a.	**ʔa**ʔaq̇at	‘be chasing him’	ʔaq̇at	‘chase him’
	b.	**gu**guhum	‘be barking’	guhum	‘bark’
	c.	**θa**θapiš	‘be bathing it’	θapiš	‘take a bath’
	d.	**ǰi**ǰiχim	‘be falling apart’	ǰiχim	‘fall apart’
	e.	**ya**yałat	‘be calling him’	yałat	‘call him’

The constraints and ranking introduced in the previous section do not predict the attested candidates. There is a ranking paradox; ALIGNL$_{Rt}$ must be above ALIGNL$_{Red}$ to predict the diminutive and the plural C_1 pattern, but ALIGNL$_{Rt}$ must be below ALIGNL$_{Red}$ to predict the imperfective C_1 forms. With the constraint ranking established in (7), ALIGNL$_{Rt}$ >> ALIGNL$_{Red}$, the predicted imperfective form would have an infix, as in (9), and be parallel to the plural form. However, if the alignment constraints are reversed, as in (10), the attested candidate (10b), with the reduplicant as a prefix, wins.[6]

(9)

	RED + ʔaq̇at	MAX	MAX-M	ALIGN-L$_{Rt}$	ALIGN-L$_{Red}$
☹	a. ʔa**ʔa**q̇at				****!
☹	b. **ʔa**ʔaq̇at			*!	**
☞	c. ʔa**ʔ**q̇at				***
	d. **ʔa**ʔq̇at	*!		*!	**
	e. ʔaq̇at		*!		

[5] For length restrictions, weak root patterns are set aside. These are as shown in (1) with the root *kəp-* ‘to cut’ and homophony is observed across all three types of reduplication. A complete analysis would also integrate sonority constraints to account for cluster patterns.

[6] Constraints against complex onsets are assumed to be high ranked in the grammar, following Blake (2000). This prevents a candidate with a single consonant reduplicant, like **ʔ**ʔaq̇at, from winning.

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(10)	RED + ʔaq̓at	MAX	MAX-M	ALIGN-L_{Red}	ALIGN-L_{Rt}
	a. ʔa**ʔa**q̓at			****!	
☞	b. **ʔa**ʔaq̓at			**	*
	c. ʔa**ʔ**q̓at			***!	

5 Stem and word level reduplication

Adopting different levels (or strata) in the style of lexical phonology (Mohanan 1982; Kiparsky 1985) offers a solution for the divergent patterns found between types of C_1. Specifically, using Stratal OT instead of a parallel model of OT allows for constraints to be ranked differently at the stem and word level (Kiparsky 2008). This allows for the derivation of different C_1 reduplication patterns.

The infixed pattern is associated with the ranking in (11), while the prefixed one is associated with (12). I propose that diminutive and plural reduplication occur at an earlier point in the derivation than imperfective reduplication. In this respect, diminutive and plural C_1 reduplication are *Level 1* processes and imperfective reduplication is a *Level 2* process, where the numbering corresponds to the sequence of evaluation. The *Level 1* processes correspond to a Salish equivalent of a morphological stem domain, while the *Level 2* processes correspond to a word domain, following previous terminology in Stratal OT (Kiparsky 2008).[7]

(11) MAX-M, MAX, $AlignL_{Root}$ >> $AlignL_{Red}$ *Level 1*

(12) MAX-M, MAX >> $AlignL_{Red}$ >> $AlignL_{Root}$ *Level 2*

There are desirable additional consequences of this analysis as well: imperfectivity is inflectional, while the diminutivity and plurality are ostensibly closer to the root.[8] Though this analysis seeks to account for patterns in

[7] There has been work on phonological and morphological domains in Salish by Czaykowska-Higgins (1993). It is not clear if these domains line up neatly with the Stratal OT literature, which draws evidence from other languages.

[8] Further evidence for this analysis comes from patterns observed when plural ablaut and C_1 reduplication co-occur. When ablaut is combined with imperfective reduplication in the form *kʷakʷatigan* ‘they are passing by’, the ablauted vowel (/a/) is doubled (singular imperfective form = kʷəkʷtigan ‘it is passing by’). In contrast, the ablauted vowel is not copied in the plural form xʷaxʷsawus ‘dark eyes’. This is predicted if imperfective reduplication is posited to occur at a later stratum than the processes of plural reduplication and ablaut (which is stem-internal), such that a stem that undergoes ablaut

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phonology and morphology of C_1 reduplication, further refinement may lead to testable predictions regarding the semantics of imperfective, plural, and diminutive reduplication.

6 Conclusion

Consistent with previous descriptions, imperfective reduplication in Comox-Sliammon can be analysed as a prefix. However, diminutive and plural reduplicative processes are better described as infixal. Thus, the C_1 reduplicative processes in Comox-Sliammon can descriptively be divided by position: prefixing and infixing. These positions are motivated by having two alignment constraints (Align-L_{Red} and Align-L_{Rt}) ranked differently at a stem and word level. Plural and diminutive C_1 reduplicants are aligned as infixes into the root, while imperfective C_1 reduplicants are prefixes and attach at the edge of a word. Differentiating between stem-level diminutive and plural C_1 (infix) and word-level imperfective C_1 (prefix) reduplicative processes provides more descriptive power and generates more testable hypotheses regarding the structure of the language.

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will behave parallel to one with a full vowel at the word level when imperfective reduplication occurs.

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