A Preliminary Analysis of Reduplication in Lushootseed: A Prosodic Approach

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1.Introduction

The phenomenon of reduplication in Lushootseed has been the subject of analysis in several papers. The approach used has been, for the most part, of a Marantzian nature. While this model is useful in accounting for some forms of the reduplication, it has difficulty accounting for all forms.

It is the purpose of this paper to propose a preliminary analysis of the forms of reduplication using the framework of Prosodic Morphology (PM) proposed by McCarthy and Prince (1986).

I will begin with a brief description of the phenomenon of reduplication in Lushootseed accompanied by a discussion of pertinent phonological rules, the syllable and mora, as well as stress assignment in the language. My analysis utilizes the basic notions of PM to account for the four basic forms of reduplication in the language, CVC, CV, VC, and V.

2. Seven Types of Reduplication

Hess and Hilbert (1976:159) state that there are seven types of reduplication in Lushootseed. These are the diminutive, distributive, out-of-control (O/C), counting, isolative, augmentive, and the collective. The distributive generally takes the form of CVC preceding the first CVC of the stem.

(1)	g"ədil	'sit down'	g"ədg"ədil	'sitting all about'
	čəg"as	'wife'	čəg"čəg"as	'seeking woman to marry'
	saq̓"	'fly'	saq̓"saq̓"	'flying all over'
	yubil	'starve'	yubyubil	'everywhere people are starving'

The diminutive and the collective take the form CV preceding the first CVC of the stem. In the case of the diminutive CV (2) can appear also as Ci (3), CV? and Ci? (4).

(2)	stubš	'man'	stutubš	'boy'
(3)	təlawil	'run'	titəlawil	'jog'
	g"ədil	'sit down'	g"ig"ədil	'sit-down-briefly'
(4)	talə	'money'	ta?talə	'small amount of money'
	buus	'four'	bi?buus	'four little items'

In addition, the CV of the collective always appears as Ca.

(5)	sduuk"	'knife'	sdaduuk"	'knives'
	sax"əb	'jump, run'	sasax"əb	'many run away'
	saq̓"	'fly'	sasaq̓"	'flocks fly away'

O/C (6), counting (7), and the isolative (8), all take the form of VC which appears to be infixed after the first CVC of the stem.

(6)	g"ədil	'sit down'	g"ədədil	'sitting for lack of something else to do'
	saq̓"	'fly'	saq̓"aq̓"	'(birds) just wheeling (in the sky)'
	sax"əb	'jump, run'	sax"ax"əb	'scurrying about ineffectively'

	yubil	'starve'	yububil	'tired, rundown, not too well'
(7)	ʔulub	'ten'	ʔululub	'ten people'
	x̌"əl	'nine'	x̌"ələl	'nine people'
	ċuk"s	'seven'	ċuk"uk"s	'seven people'
(8)	cədiɬ	'that one'	cədədiɬ	's/he alone'
	dibəɬ	'we, us'	dibibəɬ	'just us'
	g"ələpu	'you folks'	g"ələlapu	'only you folks'
	sɬadəyʔ	'woman'	sɬadadəyʔ	'solitary woman'
	daẏ	'especially'	daẏaẏ	'alone'
	d^{z}ix"	'first'	d^{z}ix"ix"	'even more so'

The final form is the doubling of the first V of the stem in the augmentive.

(9)	čəg"as	'wife'	čaag"əs	'wives'
	čačas	'child'	čaačas	'still a child'
	k"ələq	'other things'	k"aaləq	'other people'
	siʔab	'noble person'	siiʔab	'noble people'

The seven types of reduplication are expressed essentially by four basic forms: CVC, CV, VC, an V.

2.1 Phonological Rules

It has been proposed in Bates (1986) that there are no underlying schwas in Lushootseed. Apparently, all surface schwas are predictable in all cases given the following rules:

A) a -> ə / $\underline{\quad}$ [-stress]

(Independently motivated)

B) Ø -> ə / [C__Cx [stem]

Condition: where x does not contain V.
(Lexical rule)

C) Ø -> ə - to prevent violations of the sonority hierarchy.
Considering these rules, the following roots will have the underlying form CC:

(10)	k̓"əɬ	'spill'
	sc̓əkʷ	'worm, bug'
	šəg"ɬ	'road'
	st̓əkʷab	'log'
	łəq"	'wet'

The possibility of an underlying CC root will arise later in my discussion of CV reduplication.

Bates also proposed two additional rules which are pertinent in an analysis of reduplication: epenthesis and ? epenthesis. i epenthesis is stated as follows:

$$\emptyset \rightarrow i \,/\, \overset{|}{\underset{|}{V^{1}}} \quad \text{- where } V^{1} \text{ is an unassociated slot.}$$

Obviously, this analysis is tailored for a Marantzian analysis. However, it can be easily adapted to

PM approach:

Ø -> i / nucleus - where the nucleus is left unassociated.
|
—

The segmental reference needs merely to be translated into a syllabic one.

The other phonological rule which Bates proposes is the ʔ epenthesis rule which is post-lexical. ʔ closes a syllable bearing main stress in the utterance - this includes sentential stress. Both of these rules will become important in the analysis of CV reduplication.

The last phonological rule accounts for glottalization of resonants in CVC reduplication:

l w y -> [+glottal] / [Dist. reduplication]
[+coda]

Now that the phonological rules which are pertinent to reduplication in Lushootseed have been discussed, I will proceed with a brief discussion of the nature of the syllable.

2.2 The Syllable

The syllable in Lushootseed can take five forms: CCVC (CC & VC underlyingly), CV, CVC (where some cases are CC underlyingly), CVVC, and CVCC. Broselow (1983:337) states that words in Salish languages are traditionally analysed as being built on a base consisting of either CC or CVC, historically speaking. Examples of the CC form can be found in (10). This form is also apparent in the longer CCVC stems such as dčúʔ where CC and VC are resyllabified. Bates (1986) analyses these forms as a stem based on a CC root.

(11)	čx̌aʔ	'stone'	dᶻɬíxʷ	'creek'
	dčuʔ	'one'	qʷcab	'slip'

It is also important not to confuse forms, such as stubš with a CCVC syllable. *S* is of a prefixal nature rendering this form as a stem built from a basic CVCC syllable. The language prefers the CVC formation of the syllable given the ʔ epenthesis in the case of CC roots, and ʔ epenthesis which closes a syllable; both result in a CVC form. Indeed, there are a plethora of examples of the CVC form in the language:

(12)	k̓ʷid	'how many'
	ɬup	'morning'
	q̓il	'salmon's return to streams and rivers'
	q̓ix̌ʷ	'located upstream'
	šiqʷ	'hat'
	šuɬ	'see, look'
	tib	'strong'

CVVC appears to be valid syllable shape given that it is contrasted with its corresponding CVC form. Consider the following minimal pair:

s	duukʷ	'knife'
	dukʷ	'unsatisfactory'

Clearly in this case, VV is distinctive in the language. Therefore, it is possible to assume a CVVC syllable which is apparent in the following examples:

(13)	s-paak	'bear'
	ɬaax̌	'plate, platter'
	luuʔ	'hole'
	haac	'horse clam'

The following are examples of the CVCC syllable shape:

(14)	x̌əlč	'sea, saltwater, ocean'
	ludxʷ	'happen to hear about it'
	čəlp	'twist'
	bəlkʷ	'return'

CV is also an legitimate syllable structure in the language. Consider the following examples:

(15)	ʔu	? part.	ti	'the particular one'
	ʔə	'of,by'	qa	'alot'
	ʔa	'there exists'	λa	'go to'
	ʔi	'yes'	kʷi	'the/a'

In addition this form occurs in prefixes in the language.

Therefore, it can be posited that the basic syllable shape of Lushootseed is CVC considering historical bases and the phenomena of ə and ʔ epenthesis which create this form. The additional syllabic shapes are then CV, CVVC, CCVC, and CVCC.

2.3 The Mora

I have argued for a CVVC syllable shape in the language, and this argument can be extended to include the existence of mora. It is clear from the minimal pairs that VV is distinctive from V, so each V of VV must constitute a distinct syllabic unit which I will consider a mora.

There is further evidence of this if we consider the diminutive reduplicative process. In this process the reduplication of the stem vowels is altered by the existence of VV resulting in the epenthesis of i:

(16)	buus	->		bibuus
	buus	->	*	bubuus

Compare this to the following diminutive reduplication of a stem containing single V:

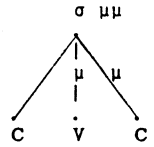
(17) súq̓ʷaʔ -> súsuq̓ʷaʔ

Clearly, the VV sequence of the former example conditions a phonological process, and therefore must

contain a distinct syllabic form. In light of this evidence, I propose a moraic structure in Lushootseed.

Given a moraic structure, it is necessary to elaborate on the proposed syllable shapes, CC, CVC, and CVVC. CVC will be bimoraic assuming that the coda constitutes a mora, so the syllable would look as follows:

(18)

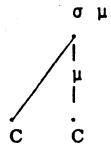


I have already assumed that there is a core syllable in the language necessarily consisting of CV in light of forms, such as those examples in 15. In forms where there appears to be a structure consisting of CV & CVC the core syllable would be monomoraic:

(19)

The CVC construction would account for the CC syllable at surface level given the schwa epenthesis rule. However, underlyingly, CC would be a monomoraic structure whose coda is assigned a mora:

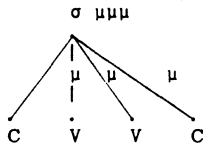
(20)



This is a somewhat controversial proposal, as it has been stated that you cannot have a syllable without a nucleus, although CC is a justifiable historical constituent. However, if the coda of a syllable can be considered a mora - as seen in McCarthy and Prince (1986), I feel it is plausible to consider CC a light syllable. In addition, this form never occurs on the surface, unless it has been affixed, such as dčúʔ where -úʔ is affixed to dč - dč would be syllabified as the onset for the syllable, or it has undergone epenthesis. It appears then that the CC underlying syllable is necessary for the analysis of reduplication.

The final syllable shape, CVVC I will consider to be a super heavy syllable containing three moras as proposed by Hayes (1989). It would then have the following structure:

(21)



2.4 The Foot

The foot in this language appears to be trochaic in nature. Heavy syllables in initial position a highly desirable, if we consider the ʔ epenthesis rule which creates a heavy syllable. It can be said th that it is a quantity insensitive language.

2.5 Stress

Stress in Lushootseed is, for the most part, phonologically conditioned and is, therefore, predict ble. Van Eijk states that stress falls on the first strong syllable of the word. The vowels, a, i, and mark the syllable strong, and ə marks it weak. Apparently, the syllable can be both of a CV or a CV shape considering túbš and qáʔqadaʔ respectively.

Having reviewed the data and discussed the relevant phonological and syllabic concerns of the lar guage, I will briefly outline the method before continuing with my analysis.

3. Methodology

The mechanics that I use here to account for reduplication in Lushootseed are based upon th approach proposed by McCarthy and Prince (1986). It is essentially a template representation syste which endeavors to account for various allomorphs by means of a shape-invariant. There are no refe ences to segments.

The prosodic categories that I will refer to are the mora, light syllable, core syllable, superheav syllable, heavy syllable, and the prosodic word. These units establish both the template and the base The total segmental melody of this base is then copied. This base or reduplicative domain is then asso ciated by the template according to edge-in reprosodization. Prefixes reprosodize before the domain and suffixes after it. The template must be satisfied, and any unassociated segments are delete through Stray Erasure.

The boundaries between the template and the base can be either transparent allowing the Univer sal Onset Principle to operate or opaque blocking the same. In addition, any segments outside of th basic syllable shape will be considered extrametrical and any syllables will be considered extrasyllabic.

4. The Base

I propose that the base is prosodically circumscribed and is applicable to all forms of reduplication Essentially, the reduplicated morphemes attach themselves to the first syllable of the word. There appears to be no cases in the language where more than one syllable is reduplicated (see section 2) This is most evident in the cases of multiple reduplication where the monosyllabic template redupli cates only information of the first syllable of the stem regardless of whether it is previously redupli cated material or base material. Consider the following:

(22)	d^{z}ələləd^{z}əlus	'look over shoulder repeatedly'
	bíbədbəda?	'dolls'
	bíbíbəda?	'young progeny'

The second and third are examples of combinations of the diminutive and the distributive forms. In the second the diminutive is a reduplicated form of the first syllable of the stem which includes distributive reduplication. Clearly, the base is the first syllable of the word.

In the third the distributive reduplicates the stem including the diminutive form. Again, this is an example of the reduplication of the first syllable of the stem although, perhaps, not as immediately apparent. I refer the reader to my discussion of the distributive.

The initial exemplifies suffixation (to be discussed later) of the O/C form to the first syllable created by distributive reduplication. Although it is a case of differing affixation, the affix is clearly attached to the initial syllable. Therefore, I assume that the base of reduplication will always be the initial syllable of the word.

5. CVC Reduplication

The CVC form represents the distributive type of reduplication repeating the first CVC of the stem. It has been analysed using a segmental approach (Broselow 1983:319). The melody associates with the skeleton. And then, affixation takes place, so the CVC prefix is attached at the skeletal level. The complete melody is then copied and association between it and CVC occurs. However, this is phoneme driven, so the first C of the melody associates with the first C of the prefix. This continues until from left to right until the melodic constituent can no longer find a skeletal counterpart with which to associate.

(23)

```
C V C V C
| | | | |
g" ə d i l
```

Affixation:

```
C V C + C V C V C
        | | | | |
        g" ə d i l
```

Copy:

```
C V C   + C V C V C
          | | | | |
g" ə d i l g" ə d i l
```

Associate:

```
C V C   + C V C V C
| | |     | | | | |
g" ə d i l g" ə d i l
```

Delete:

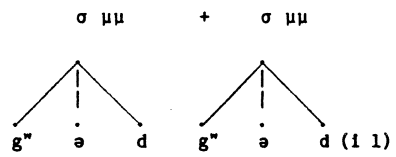
```
C V C   + C V C V C
| | |     | | | | |
g" ə d     g" ə d i l
```

g"ədg"ədil '(people) sitting about'

This approach appears to account for this form of reduplication quite satisfactorily. However, it is also possible to account for it using a PM framework.

The template for this form of reduplication is the heavy syllable which is prefixed to the first syllable of the stem which is heavy. The template is clearly prefixed and not infixed considering previous analyses of this form in addition to the case of multiple reduplication. In this phenomenon the template reduplicates the first heavy syllable of the stem which is comprised of the diminutive and the base.[1] It is clearly a case of prefixation. In addition, the boundary in most cases appears to be opaque, that is it blocks the application of the Universal Onset Principle. Consider the reduplication of the same example used in the segmental approach using PM:

(24)



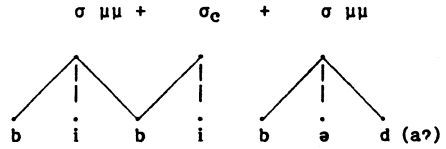
g"ədg"ədil

'(people) sitting about'

The base has been defined as the first syllable of the stem which is g"əd in this case. *il* are elements outside of the circumscribed base and are thus not involved in the copying process. The template, here defined as a heavy syllable is attached to the left edge of the base. Only g"əd is copied. As this is a template driven system the heavy syllable looks to satisfy itself in the melodic tier. Here, g" satisfies the onset of the template and əd satisfy its two moras. It is at this point that glottalization occurs to the relevant codas.

There are cases, however, when it is desirable to have the boundary transparent. For example, the CVC reduplication of a stem containing a reduplicated prefix and base. Consider the following:

(25)



bibibəda?

'small children'

With the transparent boundary the heavy syllable template can satisfy its coda in *b*, the onset of the following core syllable. In addition, there are a small number of high frequency words which appear to drop the first C of the base in the CVC form of reduplication:

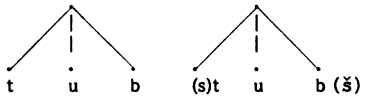
(26)	stubš	'boy'	stububš	'men'
	ʔalš	'cross-sex sibling'	ʔalalš	'cross-sex siblings'

[1] I refer the reader to Broselow (1983) for a complete discussion of this phenomenon.

ʔibac 'grandchild' ʔibibac 'grandchildren'

Proposing an opaque boundary for these cases would create an incorrect form:

(27) σ μμ + σ μμ



* stubtubš

'men'

It is clear from this example that in order to create the correct distributive form for stubš, it is necessary to propose an alternate approach. For example, these lexical items could take the VC form of reduplication which I discuss in section 7, or it is possible that they undergo a phonological operation which removes the C of the stem. I will leave this small group of variants the object of further research.

In the previous example *s* must be considered outside of the heavy syllable base, as it is in a segmental analyses (Bates). However, if we consider it to be extrametrical, it must still be copied and is thus available as a potential onset for the template. Therefore, it is necessary to stipulate that non-reduplicative prefixes are outside the operation.

Therefore, it is possible to account for CVC reduplication using a templatic approach. This approach enables a single template to account for two allomorphs of the CVC reduplication. However, stipulations are necessary to account for these variations and for the prefixal *s*.

6. CV Reduplication

As I mentioned earlier, this form of reduplication expresses the diminutive and the collective. The diminutive assumes one of four different allomorphs, CV, CVʔ, Ci, and Ciʔ which attach to the first syllable of the stem (Bates). Given the epenthesis rules of i and ʔ the form can be reduced to CV.

In a segmental approach the CV prefix would be attached to the skeletal tier of the base. The entire base would be copied, and then the melodic tier would be associated with the skeletal tier of the prefix.

(28)

```
C V C V C
| | | | |
s u q̇" a ʔ
```

Affixation:

```
C V + C V C V C
       | | | | |
       s u q̇" a ʔ
```


Copying:

```
C V      + C V C V C
           | | | | |
s u q̇" a ʔ  s u q̇" a ʔ
```

Association:

```
C V      + C V C V C
| |        | | | | |
s u q̇" a ʔ  s u q̇" a ʔ
```

Deletion:

```
C V      + C V C V C
| |        | | | | |
s u        s u q̇" a ʔ
```

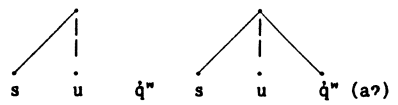
susuq̇"aʔ 'little younger brother'

The segmental approach appears to adequately account for this form of reduplication. Even in cases o nonvocalic bases and association blocking which I will address shortly, this method appears to be effec tive. I refer the reader to Bates (1986) for an in depth look at a Marantzian analysis of these phenom na. It is possible, however, to account for this form of reduplication using a PM approach equally e effectively.

The prefixation of the heavy syllable proposed in the last section accompanied by a transparen boundary would generate an incorrect form, namely *suq̇"suq̇→aʔ, in the case of the diminutive. There fore, an additional template is necessary.

I propose a core syllable template to account for this form which would be attached to the lef edge of the first syllable of the stem being either superheavy, heavy or light. The boundary is opaqu Consider the following example:

(29) σ_c + σ μμ



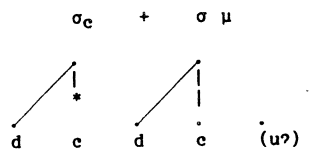
susuq̇"aʔ

'little younger brother'

The heavy syllable base circumscribes suq̇" leaving aʔ outside the operation. The core syllable temp late is then attached to the left edge of the base and suq̇→ is copied. The onset of the core syllable sat isfies itself in *s* and the nucleus in *u* leaving q̇" to be removed by stray erasure. Again, the boundar must be opaque to prevent the onset of the base from picking up the q̇" of the copy.

However, copying would lead to complications in the case of the diminutive using a CC base at th underlying level. Take for example the following:

(30)



Empty nucleus triggers i epenthesis: * -> i.

dcu? → dɪdcu?

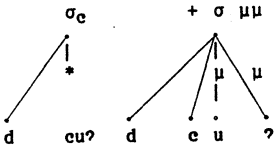
'one' 'one small thing'

The base is a light syllable given that we can consider CC such. The template is a core syllable that attaches to the left edge of the base, the onset of which is satisfied in *d* of the copy. However, the nucleus is left unsatisfied, thereby triggering the i epenthesis rule. *i* replaces the empty nucleus resulting in the appropriate formation of reduplication.

Given that underlying CC is, in fact, CəC as proposed by Bagemihl's paper, an incorrect form would result. The first heavy syllable, dəc would be copied and the core syllable template would be satisfied in the melody. The Syncope rule that Bagemihl proposes would delink the nucleic mora of the stem producing * dədcu?. It is then apparent that CC is, in fact, the underlying form for this analysis.

Given the surface syllable form of dcu?, the core syllable template would still generate the correct form with an additional stipulation, that of discontinuous association.

(31)



Empty nucleus triggers i epenthesis: * -> i.

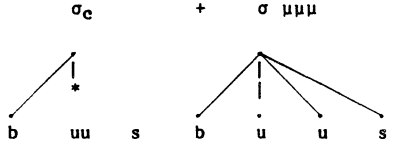
dɪdcu?

'one small thing'

The core syllable is attached to the left most edge of the base which is copied in full. The template satisfies its onset in d, but when it comes to its nucleus the association process fails as the next constituent of the melody is C. Because this is discontinuous association, the process terminates at this point instead of continuing on be satisfied in the following *u*.

In addition to the CC base, the superheavy base also triggers i epenthesis. Consider the following example:

(32)



Empty nucleus triggers i epenthesis: * -> i.

bɪbuus

'four small items'

Like the previous example the nucleus is left empty, but not because there was no vocalic element to copy. Clements (1985) states that the transfer must preserve the true moraic structure of the original. The nucleus of the base is bimoraic, but that of the core syllable is monomoraic. Therefore, the association is blocked, and the nucleus slot remains empty triggering i epenthesis.

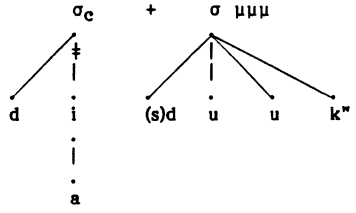
The collective type which assumes the same form as the diminutive poses an additional problem. The form is indeed CV, but the V is always realized as *a*. There appear to be two potential solutions to this dilemna.

Firstly, preassociation could be assumed where V is always associated with prespecified *a*. Although McCarthy and Prince (1986) to argue against prespecification, they do admit that it is necessary in limited cases (1986:87). Secondly, a templatic melody /a/ could be proposed that would be associated with the nucleus delinking the reduplicated vowel. Essentially, both approaches are able to deal with the occurrence of *a* in the collective. However, the templatic melody approach has the advantage of maintaining the original moraic structure, thereby avoiding an ordering of the processes. Therefore, I propose the latter and remain in keeping with the philosophy of PM.

At first glance, it appears that a templatic melody could also account for the epenthetic *i* in the case of the diminutive. However, in this case there is no vowel to be overwritten and then delinked. Therefore, the templatic melody will only account for the *a* of the collective.

I propose the /a/ templatic melody in addition to the core syllable template of the diminutive which attaches to the left of the first syllable of the stem.

(33)



sduuk" → sdaduuk"

'knife' -> 'knives'

The reduplicative process works the same as in the previous example (33). The association of the

nucleus is blocked, thus triggering i epenthesis. The templatic melody is then applied which overwrites and then delinks the epenthetic *i*.

In the case of a nucleus already associated with α it appears to be somewhat redundant to overwrite and delink an α with an α. While this may be somewhat inelegant, it does not impede the effectiveness of the analysis.

7. VC Reduplication

The O/C, isolative, and counting types of reduplication take this form as I have mentioned in prior discussion. It has been treated as an infix using a Clements' and Marantzian framework as pointed out in Davis (1988). However, both approaches fail in accurately accounting for this form.

Davis argues that Clements' method can only account for this form of reduplication given ad hoc stipulations (1988:309). As well, the Marantzian analysis cannot account for it given that it is phoneme driven system.

(34)

```
C V C C
| | | |
č u k" s
```

Affixation:

```
C V C + V C + C
| | |         |
č u k"        s
```

Copying:

```
C V C + V C + C
| | |       |
č u k" č u k" s  s
```

Association:

```
C V C + V C     + C
| | |   |       |
č u k"   č u k" s  s
```

Deletion:

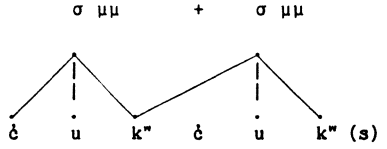
```
C V C + V C     + C
| | |   |       |
č u k"   č       s
```

čuk"s → * čuk"čs 'seven' -> 'seven people'

Clearly, there are difficulties with this type of association. The first C of the copy looks for its associate at the skeletal level and finding it prevents the association of the vowel to V given this would cause a crossing of association lines which is in violation of a basic premise of the model. In answer to this Davis proposes a template driven association within the Marantzian model.

This is clearly a case where the PM approach is better suited to account for this form of reduplication being a template driven system by nature. Instead of a case of infixation, I propose that it instead a case of suffixation of a heavy syllable to the first syllable of the stem. The boundary transparent.

(35)



čuk"uk"s

'seven people'

The base has been defined as the first syllable, čuk" to which the heavy syllable template attached at the rightmost edge. Only the heavy syllable is copied, and association takes place. However, since the boundary is transparent, the onset satisfies itself in the k" of the base, and the remainder of the syllable is also satisfied in the uk"s of the copy producing the correct result.

As is apparent from this example, the PM approach can easily account for this form of reduplication without proposing any ad hoc stipulations on the direction of association. In addition, the same template proposed for the CVC form of reduplication can be used being suffixed instead of prefixed the base.

8. V Reduplication

The final type of reduplication is the augmentive which takes the form of a reduplicated V of the first V of the stem. If the V is a ə, then α replaces the ə and is reduplicated.

A Marantzian analysis would propose a V template which is infixed to the first CV of the stem. The stem is copied, and the melodic tier associates with the skeletal one.

(36)

```
C V C V C
| | | | |
č a č a s
```

Affixation:

```
C V + V + C V C
| |       | | |
č a       č a s
```

Copying:

```
C V + V +   C V C
| |         | | |
č a  čačas  č a s
```

Association:

```
C V + V +   C V C
| |   |     | | |
č a  čačas  č a s
```

Deletion:

```
C V + V +   C V C
| |   |     | | |
č a   a     č a s
```

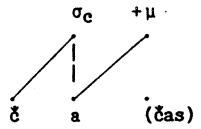
čačas → čaačas 'child' -> 'still a child'

Assuming a left to right direction of association, the first C of the melody cannot be associated so it is left. The V of the melody finds its associate in the V of the skeleton thus satisfying the template leaving all unassociated elements to delete through Stray Erasure.

For the cases of α replacing the ə, it is necessary to remember that there are no underlying schwas in the language. Thus, these forms are actually CC stems which undergo ə epenthesis. In this case it would be necessary to propose a preassociated α in the template. The segmental approach can therefore adequately account for this form of reduplication. A PM approach is equally able to account for it.

A mora template is suffixed to the first core syllable of the base. And, spreading instead of copying provides the melody in which the template is satisfied.

(37)



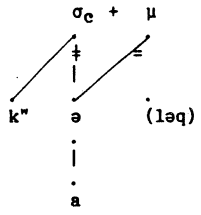
čačas → čaačas

'child' -> 'still a child'

Here, the α of the core syllable spreads to satisfy the moraic template producing the correct result.

In the case of a CC stem, I propose that the epenthetic ə is overwritten by an α of a templatic melody. In addition, this reduplicative process would occur closer to the surface level after ə epenthesis. Consider the following example:

(38)



k"ələq → k"aaləq

'other things' -> 'other people'

The vowel spreads to satisfy the mora as in the previous example; however, it is overwritten by the templatic melody which results in the ə being delinked. The α spreads as well to satisfy the moraic template. Considering these examples, it is apparent that the PM approach is able to adequately account for this form of reduplication.

9. Conclusion

I have attempted to show that PM can adequately account for all forms of reduplication in Lushootseed. The heavy syllable template can account for both the CVC and the VC forms attaching to the first syllable of the word. Specification of opaqueness of the boundary ensures that in certain cases the onset of the template is satisfied by the melodic coda of the base. In addition, a templatic melody provides the necessary vowel in apparent circumstances of prespecification which occurs in both the V and the CV forms. A core syllable template is proposed in the case of a CV form and a mora in the V form. In the latter spreading replaces copying to ensure the correct form.

Although I have not not discussed it in any detail, it is apparent that cycles are necessary to account for forms, such as those of multiple reduplication. It is beyond the scope of this paper to explain the nature of these cycles, and I refer the reader to Broselow (1983) for one cyclic analysis of multiple reduplication in Lushootseed.

With the exception of the VC form it is not apparent that PM provides a simpler approach to reduplication. It is clear that it can account for the phenomena effectively using different mechanisms from a segmental approach. However, in the case of the VC form, it clearly offers a solution to the difficulty of association without necessitating stipulations.

References

Bagemihl, B. *Syllable Structure in Bella Coola.* Unpublished manuscript, University of British Columbia, B.C.

Bates, D. (1986). *An Analysis of Lushootseed Reduplication.* Unpublished manuscript, University of Washington, WA.

Broselow, E. (1983). "Salish Double Reduplications: Subjacency in Morphology". *Natural Language and Linguistic Theory 1*, 318-346.

_____. & McCarthy, J. (1983). "A Theory of Internal Reduplication". *The Linguistic Review 3*, 25-88.

Clements, G.N. (1985). "Redo Reduplication: the Problem of Transfer in Nonlinear Morphology". *Cornell Working Papers in Linguistics 7*, 1-36.

Davis, S. (1988). "On the Nature of Internal Reduplication". *Theoretical Morphology*, 305-323.

van Eijk, J.P. *CVC Reduplication in Salish.* Unpublished manuscript, University of Victoria, B.C.

_____. *A Theory of Copying Features.* Unpublished Manuscript, University of Victoria, B.C.

Hayes, B. (1989). "Compensatory Lengthening in Moraic Morphology". *Linguistic Inquiry* 20, 253-306.

Hess, T. (1977). "Lushootseed Dialects". *Anthropological Linguistics*, 403-419.

_____. & Hilbert, V. (1976). *Lushootseed I and II.* Seattle: Daybreak Star Press, United Indians of All Tribes Foundation.

Kaisse, E.M. *On the Conjunctive Application of Mirror Image Rules.* Unpublished manuscript, University of Washington, WA.

Marantz, A. (1982). "Re Reduplication". *Linguistic Inquiry 13*, 435-482.

McCarthy, J. (1981). "A Prosodic Theory of Nonconcatenative Morphology". *Linguistic Inquiry 12*, 373-418.

_____. & Prince, A. *Prosodic Morphology.* Unpublished manuscript, University of Massachusetts, Amherst. & Brandeis University.

_____. (1990). "Foot and Word in Prosodic Morphology: The Arabic Broken Plural". *Natural Language and Linguistic Theory 8*, 209-283.