Reduplication in Lushootseed: A Prosodic Analysis

by

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Abstract

In Lushootseed, a Coast Salish language, reduplication is a very productive process of word formation. There exist seven different types of reduplication which take four forms.

The diversity of reduplication in this language creates problems in proposing a generalization to account for the process. A minimal set of templates must account for four different forms. Endeavoring to provide such a generalization is an important contribution to the study of language, as universals lend valuable insight into the nature of Salish languages and indeed, of all languages.

Such a universal is possible using a prosodic framework proposed by McCarthy and Prince (1986). The theory of Prosodic Morphology is a template representation system that attempts to account for various allomorphs by means of a shape-invariant that is prosodic in nature.

Utilizing this framework, I propose in this paper an analysis of reduplication in Lushootseed. Essentially, all four forms can be accounted for with a small set of templates of varying prosodic weights.

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Contents

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Victoria, B.C. Sandra P. Kirkham

March 27, 1992.

Dedication

This thesis
is in
dedication to Fenner.

Chapter 1

Introduction

As an introduction I will briefly describe the objectives of my analysis, before continuing with a review of the previous analyses of reduplication in Lushootseed in the second section. In this section I will also discuss the effectiveness of these approaches. The final section provides a brief outline of the thesis.

1.1 Introduction

In Lushootseed, a Coast Salish language, reduplication is a very productive word-formation process. The manifestation of the process is highly varied, as there are seven different types of reduplication which take four forms.

The diversity of reduplication in this language creates problems in proposing a generalization to account for the process. A minimal set of templates must account for four different forms. Endeavoring to provide such a generalization is an important contribution to the study of language, as universals lend valuable insight into the nature of Salish languages and indeed, of all languages.

Such a universal is possible using a prosodic framework proposed by McCarthy and Prince (1986). The theory of Prosodic Morphology is a template representation system that attempts to account for various allomorphs by means of a shape-invariant that is prosodic in nature, thereby avoiding any reference to segments.

Utilizing this prosodic framework, I propose in this paper an analysis of reduplication in Lushootseed. Essentially, all four forms can be accounted for

with a small set of templates of varying prosodic weights.

1.2 Previous Analyses

Previously, the analyses of reduplication in Lushootseed have been of two philosophies, descriptive and generative. The descriptive approach is adopted by Hess and Hilbert (1976) who provide an analysis that describes the physical properties of this process of word formation. The analyses of Davis (1988), Broselow (1983), and Bates (1986) are generative in nature, as they attempt to capture the underlying system of the language process.

According to Hess and Hilbert, reduplication in Lushootseed has seven different types which are semantically distinct. They are the distributive, diminutive, collective, isolative, augmentive, counting and out-of-control. The phonemic form of each type is described including possible alternations and their environments.

This analysis has been very useful in understanding the characteristics of reduplication, thus providing the foundation of my analysis. However, being descriptive by nature, it does not provide an account of the actual system of the process.

In answer to this, Davis, Broselow and Bates propose a segmental template attempting to provide a generalization of reduplication. Davis' analysis provides a solution to the problems of VC reduplication in Lushootseed. VC includes the isolative, counting and out-of-control reduplicative types. In this form the second and third sounds of the stem are echoed and follows the third sound of the stem. čuk^{w}s 'seven' becomes čuk^{w}uk^{w}s 'seven people' in the case of the counting type of VC reduplication. He notes that the segmental framework proposed by Broselow and McCarthy (1983) fails when applied to this form of word-formation. Consider Figure 1.1. where the incorrect form * čuk^{w}čs

is generated by R→L association. Changing the direction of association also does not produce the correct form; * čuk^{w}uss results. Therefore, to produce the

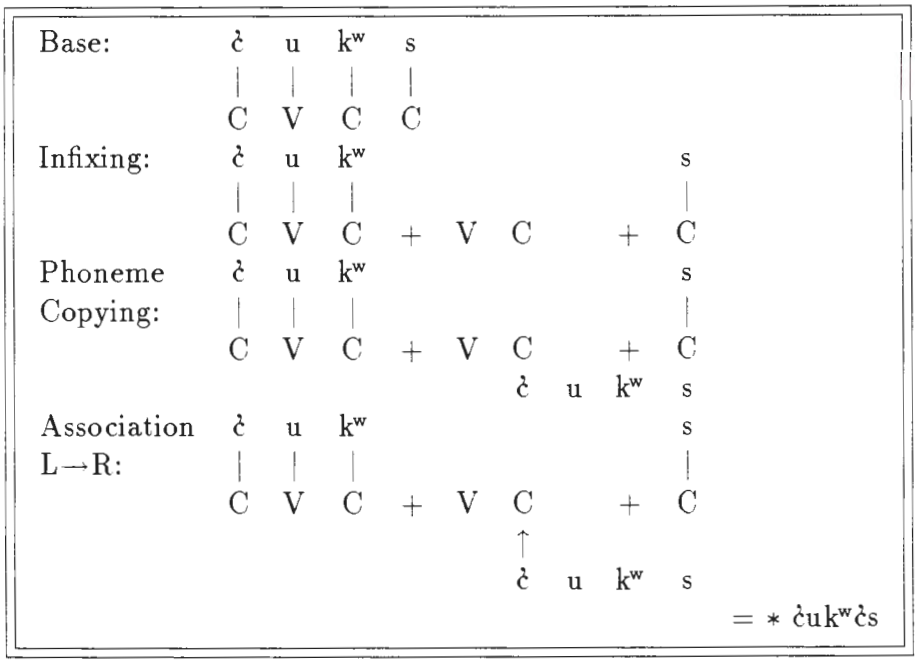


Figure 1.1: Segmental Framework

desired result, Broselow and McCarthy stipulate that in this case association starts with the first vowel of the copy. Davis criticises the framework on account of such a stipulation.

Davis also criticises the framework proposed by Clements (1985). In Clements' framework reduplication is a case of nonconcatenative word-formation where an affix is adjoined parallel to the base. He presents a theory where relevant phonological properties of the base are transferred to reduplicative affixes before their sequencing. His concept of transfer ensures that the phonological qualities of the base are preserved in the transfer process by means of a condition on association. [1] Figure 1.2 shows an analysis utilizing the Clements' framework.

[1]This is derived from Clements' directions for transfer and conditions on association (1985:pp.11,12).

Transfer the melody of the base to the associated portion of the affix.

The -VC- infix is adjoined parallel to the CV tier of the base and the V's and

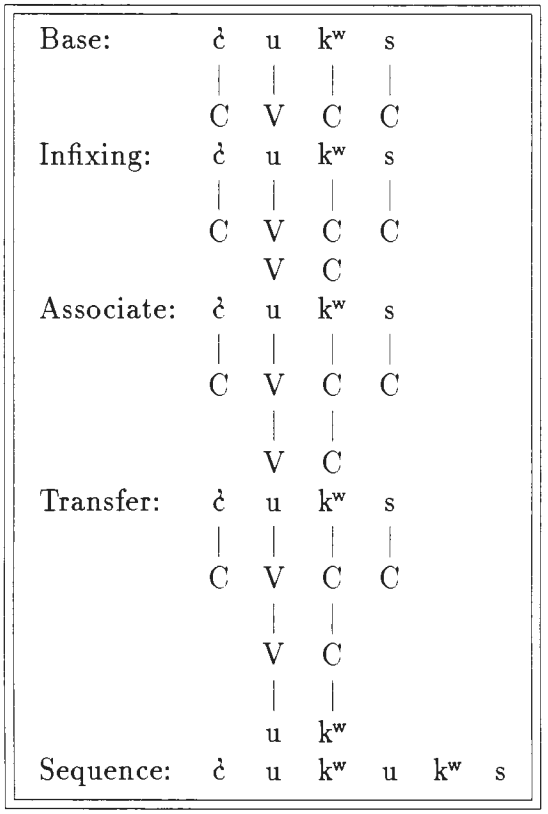


Figure 1.2: Clements' Framework

C's are associated with their respective counterparts on the adjacent CV tiers. The melody *u* and *k*^{w} is transferred to the associated portion of the affix and sequencing produces the correct form čuk^{w}uk^{w}s.

As Davis points out, Clements' framework can adequately account for the

Association:

1. link V's to V's pairwise in the direction of mapping, skipping no eligible V.
   Condition: If V_j, V_k are adjacent elements of the affix, their associates *a* (V_j), *a* (V_k) of the base are also adjacent.
2. link C's to C's pairwise in the direction of mapping, skipping no eligible C's.

This condition ensures that the vocalic quality of the original is preserved, i.e. a VV sequence remains VV in the copy and is not split.

VC form of reduplication. However, Clements' approach fails in other cases, such as in Hausa, a Chadic language which uses interfixes (empty morphemes which are placed between a stem and a suffix) to describe the reduplicative affix (Davis:1988).

For example, consider the form baakunaa 'mouth'. Clements' framework is unable to generate the correct reduplicative form baakunkunaa 'mouths'. The interfix *unk* is affixed between the stem *baak* and the suffix *unaa*. However, the *k* of the melody cannot be associated with the final C of the template without a violation of the general well-formedness condition preventing the crossing of association lines. Observe Figure 1.3.

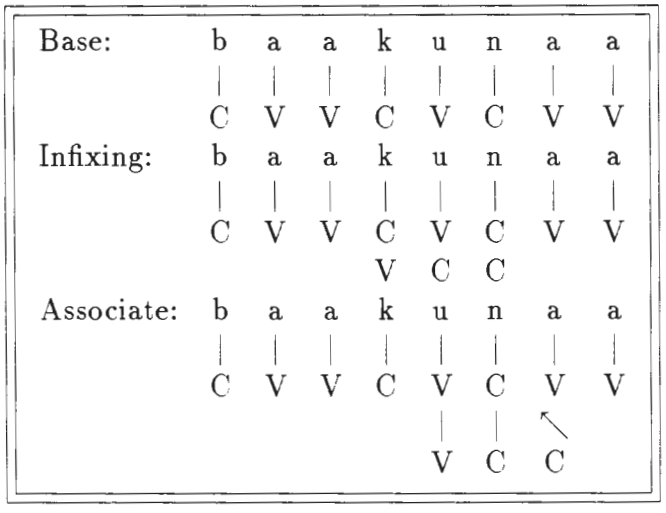


Figure 1.3: Clements' Framework

Davis states that his analysis is able to account for this form of reduplication by integrating autosegmental spreading into his framework. The *k* of the stem spreads to satisfy the final C of the VCC template leaving the *un* of the copy to be associated by the template without any difficulty of crossed association lines. The correct abridged derivation of baakunkunaa results in Figure 1.4. Having discounted the frameworks of Broselow and McCarthy and Clements, Davis proposes a tailored version of the segmental approach. Davis is concerned with

Association L→R:	b	a	a	k						u	n	a	a
	|	|	|	·	→	→	→	·		|	|	|	|
	C	V	V	C	+	V	C	C	+	V	C	V	V
						↓	↓						
		b	a	a	k	u	n	a	a				

Figure 1.4: Davis' Framework

only the one form of reduplication, VC which he argues is a form of infixation. He proposes a template driven segmental system that eliminates the required stipulations of previous approaches. In addition to Lushootseed he attempts to account for similar cases in Washo—a Hokan language and Taklema—a Penutian language, thus providing support for his template driven approach.

The following Figure 1.5 is Davis' derivation of ċuk^{w}uk^{w}s. It is a straight-

Base:	ċ	u	k^{w}	s					
	|	|	|	|					
	C	V	C	C					
Infixing:	ċ	u	k^{w}					s	
	|	|	|					|	
	C	V	C	+	V	C	+	C	
Phoneme	ċ	u	k^{w}					s	
Melody	|	|	|					|	
Copying:	C	V	C	+	V	C	+	C	
				ċ	u	k^{w}		s	
Association	ċ	u	k^{w}					s	
L→R:	|	|	|					|	
	C	V	C	+	V	C	+	C	
					↓	↓			
				ċ	u	k^{w}		s	
									= ċuk^{w}uk^{w}s

Figure 1.5: Davis' Framework

forward segmental analysis. The infix -VC- is inserted followed by the copying of the phoneme melody *ċuk^{w}s*. Association, being template driven, first links

the V of the template with the *u* of the melody, thereby preventing the *ċ* of the melody associating with the C of the template consequently avoiding the incorrect form * ċukʷċs given that association lines are not able to cross. The C of the template would then associate with the *kʷ* of the melody creating the correct ċukʷukʷs. This example demonstrates that Davis' segmental approach is able to account for the VC form of reduplication.

While a template driven segmental framework is able to account for the VC form, it fails when applied to the CV form. The CV form includes the collective and the diminutive types of reduplication. Essentially, the first and second sounds are echoed preceding the stem, i.e. stubʃ 'man' becomes stutubʃ 'boy', the initial *s* and the final ʃ being outside of the domain of reduplication. In Figure 1.6. Davis' segmental framework is applied to dʤ̇u? 'one' in an attempt to derive the diminutive CV form of didʤ̇u? 'one small thing', where the lack of a second vowel in the base creates an alternate surface form. The C of the

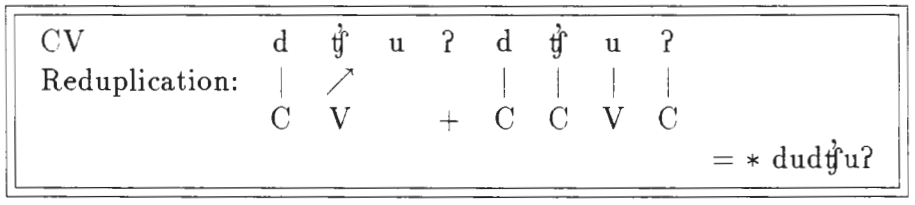


Figure 1.6: Davis' Framework

template associates with *d* of the melody and the following V of the template associates with the next vowel of the melody being *u*. Therefore, the incorrect form of * dudʤ̇u? is generated. Without proposing stipulations for this derivation—essentially, what Davis wants to avoid in his analysis, the template driven segmental approach fails to account for the CV form.

The diminutive type of the CV form of reduplication is the object of an analysis proposed by Bates (1986). Like Davis she works within a segmental framework. Essentially, her account of the CV diminutive follows the framework

set out by Marantz (1982) as does Broselow's (1983). However, Broselow extends her analysis to include the CVC form of the distributive type of reduplication, as well as the phenomenon of multiple reduplication in Lushootseed.

Both Broselow and Bates can generate the correct reduplicated CV form of suq̓ʷaʔ 'younger brother' deriving susuq̓ʷaʔ 'little younger brother' by means of a standard segmental analysis. However, in order to account for the apparent allomorphs of the diminutive which are Ciʔ, Ci, CV and CVʔ, the two analyses vary considerably.

Assuming that the underlying representation of the diminutive is CV, Broselow proposes that the *i* and the ʔ of the allomorphs are preassociated with the CV template of this type of reduplication. She also accounts for cases where the stem vowel is either a schwa or is absent by means of a stem vowel weakening rule. The rule reduces the stem vowel in the environment of diminutive reduplication to ə or ∅ if the stem is lexically marked. Stems with initial consonant clusters pose additional complications to the analysis. A stipulation of continuous association, a convention which ensures that the copied melody is scanned, phoneme by phoneme, for possible associations, in addition to the mechanisms already provided for in the segmental framework provide for the correct derivation.

Broselow states that this treatment of reduplication is superior to previous transformational accounts, such as that in Figure 1.7. According to Broselow, a

$\underbrace{C(V)C}$	X					
1	2	→	1	1	2	(paspastəd, qʷɬqʷɬay)

Figure 1.7: Transformational Rule

transformation rule such as this captures only one particular rule in the language and not a feature of the reduplicative process. While this may, in fact, be the case, Broselow's analysis appears to be somewhat stipulative considering the

specifications of preassociation, continuous association and vowel reduction.

Bates avoids the stipulation of preassociation to account for the allomorphs of the diminutive by proposing a phonological rule of *i*-epenthesis and a ʔ-insertion rule. *i*-epenthesis also avoids the the stipulation of continuous association and the vowel reduction rule in cases of stems with initial consonant clusters. Consider the abridged derivation in Figure 1.8. Here, association is phoneme driven,

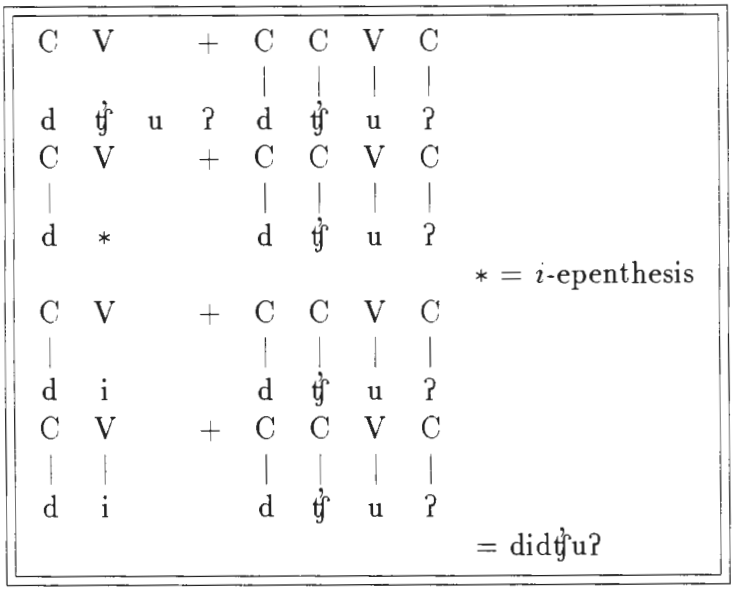


Figure 1.8: Bates' Framework

therefore the ʧ of the melody cannot find its corresponding segment in the template and association is terminated. This in turn triggers *i*-epenthesis as the nucleus of the template is left unsatisfied. *i* is inserted and association again occurs producing the correct derivation didʧuʔ .

Bates is also able to correctly derive the diminutive in cases where the stem vowel is long, buus 'four' becomes bibuus 'four small items'. By incorporating Clement's theory of transfer and his condition on such, see Footnote 1.1, she is able to derive the correct form. The length of *u* in the base must be preserved in the copy according to Clements' condition on transfer. Therefore, *uu* must appear in the copy. However, the vowel length of the template is V and not

VV, therefore the V of the template is blocked from associating with the *uu* of the copied melody. The nucleus of the template is then left empty triggering *i*-epenthesis, thereby correctly generating bibuus.

Bates' approach is clearly less stipulative than Broselow's, but does not address other forms of reduplication. Considering that both approaches are phoneme driven as was Broselow and McCarthy's, they are not able to account for the VC form as we have previously seen in Figure 1.1.

The generative analyses thus far appear to be unable to account for all four forms of reduplication in Lushootseed. Davis can account for the VC form but not CV, while Bates and Broselow are able to generate the latter form in addition to CVC but not VC, leaving the augmentive type unaccounted for.

All of these analyses are segmental in nature relying on the specification of C's and V's in their templates. Having to make such a specification eliminates the possibility of proposing one form of template for all forms of reduplication in the language.

In addition, the segmental approach requires additional stipulations to the analysis to generate the correct derivations. Take for example the incorrect diminutive derivation of * dudʧuʔ using Davis' framework. The analysis fails because the template specifies it must correspond to a C and V in the melody producing the incorrect result.

A segmental template must also account for a varied number of surface shapes. Consider McCarthy and Prince's example in Figure 1.9. The prefix

basa	ag-BAS-basa	'be reading'
adal	ag-AD-adal	'be studying'
takder	ag-TAK-takder	'be standing'
trabaho	ag-TRAB-trabaho	'be working'

Figure 1.9: Ilokano—a Phillipine language

for reduplication must be CCVC in order to account for the maximal size of constituents. However, the problem arises in accounting for the excess material in the template when it is applied to cases like adal. If we prefix the CCVC template to the base *adal*, the *a* associates with the V and the *d* with the final C given a phonemically driven segmental framework. This leaves the initial CC of the template unassociated requiring some sort of stipulation deleting unassociated templatic constituents. The result is quite inelegant.

A minimal set of templates that are free of specifications, either consonantal or vocalic and that avoid a specific number of constituents could then account for the varied reduplicative forms. Therefore, I propose a prosodic analysis which appeals to the notion of syllable instead of to the notion of segment to account for reduplication in Lushootseed.

1.3 Outline

The outline of my analysis will be as follows: Chapter 2 will review the data and describe the phenomenon of reduplication in Lushootseed. An explanation of the basic mechanisms and a summary of the framework of Prosodic Morphology follows in the next chapter and in Chapter 4 I analyse each form of reduplication in turn using the prosodic framework. I conclude in the final chapter with a synthesis of the analysis and a discussion of the implications for further research.

Chapter 2

Data

In the previous chapter I established the necessity for a prosodic analysis. Let us now consider the object of the analysis, Lushootseed reduplication. I will first place the language in its cultural context before describing the data. Seven types of reduplication will be reviewed, the distributive, diminutive, collective, out-of-control, counting, isolative and the augmentive. Following this, I will argue for three basic prosodic constituents in the language, the light syllable, heavy syllable and the superheavy syllable including the mora.

2.1 Lushootseed

Lushootseed is an American Indian language that is a coastal member of the Salish family. It is spoken in the area of Puget Sound, Washington, and is sometimes referred to by its place name, Puget Sound Salish. The language area extends from the Skagit valley of the Northwest Washington southward to the Puyallup and Nisqually drainages.

The most well-known varieties of Lushootseed include Skagit, Snohomish, Snoqualmie, Suquamish, Duwamish, Muckleshoot, Puyallup, Nisqually and Sahewamish. These varieties are divided into two groups: Skagit and Snohomish comprising Northern Lushootseed and the remainder Southern Lushootseed. The distinguishing factor is stress. In the north stress falls on the second stem vowel, and in the south it falls on the first. It is the northern group with which I am concerned in this analysis.

2.2 Reduplication

Reduplication is a morphological process of word formation that can be quite productive in some languages and is indeed so in Lushootseed considering multiple reduplications. Essentially, a new word is derived by echoing a part of the stem and affixing this echoed portion to the stem. In Lushootseed up to the first three sounds of the root are repeated. Neither prefixes nor suffixes are available for reduplication.

2.2.1 Distributive

Hess and Hilbert (1976:159) state that there are seven types of reduplication in Lushootseed. Forms that reflect frequency, repetition and the distribution of acts or items, known as the distributive, are distinguished by the repetition of the first three segments of the stem. This may be either a root exemplifying a standard root shape in Salish languages or a stem if other word-formation rules have been applied to the root. The morpheme occurs in a prefixal position, as seen in Figure 2.1.

gʷədil	'sit down'	gʷədgʷədil	'sitting all about'
ʧəgʷas	'wife'	ʧəgʷʧəgʷas	'seeking woman to marry'
saqʷ	'fly'	saqʷsaqʷ	'flying all over'
yubil	'starve'	yubyubil	'everywhere people are starving'

Figure 2.1: Distributive

There are a small number of variants of this form that Hess and Hilbert have described as high frequency. One form of these reduces the template to the second and third segment which appears to be infixed between the initial segment of the word and those remaining. Consider Figure 2.2.

In some cases, the morpheme is reduced to only the initial segment. A schwa separates the reduplicative consonant from that of the root; see Figure 2.3.

stubʃ	'man'	stububʃ	'men'
ʔalʃ	'cross sibling'	ʔalalʃ	'cross siblings'
ʔibac	'grandchild'	ʔibibac	'grandchildren'

Figure 2.2: High-frequency Forms

dᶻədis	'tooth'	dᶻədᶻadis	'teeth'
sɬadəyʔ	'woman'	sɬəɬadəyʔ	'women'
syaʔyaʔ	'friend'	syəyaʔyaʔ	'friends'

Figure 2.3: High-frequency Forms

A phonological process also occurs with this form of reduplication, that of glottalization. When the last segment of the morpheme is a glide or a non-velar lateral, it becomes glottalized in a reduplicative environment. Examples of the glottalized distibutive forms can be found in Figure 2.4.

saliʔ	'two'	salsaliʔ	'two by two'
təlawil	'run'	təlˈtəlawil	'running here & there'
stuləkʷ	'river'	stulˈtuləkʷ	'rivers'

Figure 2.4: Glottalization

2.2.2 Diminutive

The morpheme that marks smallness and diminished action, the diminutive, is comprised of an echo of the two initial segments of the root that occurs in prefixal position, as I have described earlier in Section 1.2. There also exist two allomorphs of this form: a repetition of the first segment of the root plus the vowel *i* and that of the first segment plus *i* and ʔ, as seen in Figure 2.5.

stubʃ	'man'	stutubʃ	'boy'
təlawil	'run'	titəlawil	'jog'
gʷədil	'sit down'	gʷigʷədil	'sit-down-briefly'
talə	'money'	taʔtalə	'small amount of money'
buus	'four'	biʔbuus	'four little items'

Figure 2.5: Diminutive

2.2.3 Collective

Representing homogeneous collection, the collective form appears to repeat the initial segment with the addition of the vowel *a* in the reduplicative morpheme. This occurs in prefixal position. Note Figure 2.6.

sduukʷ	'knife'	sdaduukʷ	'knives'
saxʷəb	'jump, run'	sasaxʷəb	'many run away'
saqʲʷ	'fly'	sasaqʲʷ	'flocks fly away'

Figure 2.6: Collective

2.2.4 Out-of-control

Languid states that are random, ineffective or inconclusive, or, in other words, things that are out-of-control, are signified by the morpheme that echoes the second and third segments of the root. This morpheme follows the third segment. Observe Figure 2.7.

gʷədil	'sit down'	gʷədədil	'sitting for lack of something else to do'
saqʲʷ	'fly'	saqʲʷaqʲʷ	'(birds) just wheeling (in the sky)'
saxʷəb	'jump, run'	saxʷaxʷəb	'scurrying about ineffectively'
yubil	'starve'	yububil	'tired, rundown, not too well'

Figure 2.7: Out-of-control

2.2.5 Counting

As we have seen in Section 1.2, čukʷs reduplicates as čukʷukʷs which creates a form that expresses the counting of people. Counting assumes the same form as the out-of-control type does. The second and third segments are repeated and this morpheme follows the root, as seen in Figure 2.8.

ʔulub	'ten'	ʔululub	'ten people'
χʷəl	'nine'	χʷələl	'nine people'
čukʷs	'seven'	čukʷukʷs	'seven people'

Figure 2.8: Counting

2.2.6 Isolative

Taking the same form as both the counting and the out-of-control types of reduplication is the morpheme which signifies a particular or individual concept often referring to people, known as the isolative. Examine Figure 2.9.

cədiɬ	'that one'	cədədiɬ	's/he alone'
dibəɬ	'we, us'	dibibəɬ	'just us'
gʷəlapu	'you folks'	gʷələlapu	'only you folks'
sɬadəyʔ	'woman'	sɬadadəyʔ	'solitary woman'
daẏ	'especially'	daẏaẏ	'alone'
dᶻixʷ	'first'	dᶻixʷixʷ	'even more so'

Figure 2.9: Isolative

2.2.7 Augmentive

The final type of reduplication takes the shape of an echo of the vowel of the root. If this vowel is a schwa, then the vowel *a* replaces the ə and is then doubled. This morpheme acts as an intensifier of the root and is called the augmentive. Consider the following Figure 2.10.

ʧəg^{w}as	'wife'	ʧaag^{w}əs	'wives'
ʧaʧas	'child'	ʧaaʧas	'still a child'
k^{w}ələq	'other things'	k^{w}aaləq	'other people'
siʔab	'noble person'	siiʔab	'noble people'

Figure 2.10: Augmentive

Reviewing these seven types, it becomes apparent that reduplication uses only four distinct forms to express seven different concepts. The distributive repeats the first three segments in prefixal position, the diminutive and the collective both echo the first two segments in prefixal position, the out-of-control, counting and isolative varieties all take an infixed morpheme that repeats the second and third segment and the augmentive doubles the vowel.

2.2.8 Multiple Reduplication

Basically, this describes the phenomenon of reduplication in Lushootseed with the exception of multiple reduplication. Briefly, some of the forms of reduplication can be combined. In Figure 2.11 are examples of combinations of the

dᶻəlus	'to look over one's shoulder'
dᶻələldᶻəlus	'to look over one's shoulder repeatedly'
saqʾ^{w}	'fly'
saqʾ^{w}aqʾ^{w}saqʾ^{w}	'(birds) wheeling in different regions of the sky'

Figure 2.11: Multiple Reduplication

distributive and the out-of-control types of reduplication. These are only a few examples of multiple reduplication and as I am primarily concerned with instances of singular reduplication, I will refer the reader to Hess (1976) or Broselow (1983) for a more thorough account.

2.3 The Prosodic Constituents of Lushootseed

The framework that I have chosen to account for reduplication depends on a prosodic description of the language. It is therefore necessary to provide a discussion of the prosodic constituents of Lushootseed.

2.3.1 The Light Syllable

The first prosodic constituent that I will discuss is the minimal syllable. A syllable consisting of a vowel preceded by an optional consonant is quite established in the area of syllabification studies, as noted in McCarthy and Prince (1986). In Lushootseed this form, otherwise known as a core syllable, is quite common. We find many words comprised of the core syllable; observe Figure 2.12. The

ʔu	'interrogative particle'	ti	'the particular one'
ʔə	'of,by'	qa	'alot'
ʔa	'there exists'	χ̓a	'go to'
ʔi	'yes'	kʷi	'the, a'

Figure 2.12: Light Syllable Roots

core syllable then consists of a consonant and a vowel as there appears to be no optionality of onsets in this language. [1] Affixes also take this form among others, as seen in Figure 2.13. Considering the consonant vowel structure apparent

gʷə-	'element of doubt'
χi-	'colour term'
tu-	past time marker

Figure 2.13: Prefixes

in the prefixes above as well as in the previous words, it can be postulated that

[1] It is also interesting to note that a minimal word in the language consists of this prosodic structure.

there is in fact a core syllable in Lushootseed. However, the prosodic structure must be analysed further as the framework proposed by McCarthy and Prince appeals to the notion of the mora.

2.3.2 The Mora

In Lushootseed the mora is a part of the prosodic structure. This is evident if we consider the contrast apparent between a vowel and its lengthened counterpart. In addition, morae appear to condition the reduplicative process.

The distinction between a single vowel and its lengthened counterpart occurs in Lushootseed. [2] This is evident considering Figure 2.14., a small set of minimal pairs in the language as presented in Hess & Hilbert (1976). The distinction

sduuk^{w}	'knife'
duk^{w}	'unsatisfactory'

Figure 2.14: Minimal Pair

between a vowel and its lengthened counterpart is expressed in the semantics. The additional weight of one mora creates a change in meaning.

In considering the diminutive process, we discover two patterns of reduplication. Reduplicated roots with short vowels varies from those with long vowels. If we consider a case where the vowel is of normal length like suq̓^{w}a?, the reduplicated form is as expected, the first and second sounds are echoed, susuq̓^{w}a?. However, in the case of a lengthened vowel in a form such as buus, only the initial sound is echoed which is followed by an epenthetic *i* resulting in bibuus.

This variation suggests that there is, in fact, an additional prosodic level below the syllable which affects the language process, and I propose that this

[2] It has been suggested that the lengthened vowel in these forms alternates with the form of Vhə and V?. However, there still appears to be a distinction made between a single vowel and its lengthened counterpart. I will therefore assume that the CVVC syllable is a justifiable constituent.

is moraic. Let us consider a non-moraic analysis of diminutive reduplication using the latter example. The segmental template would be CV which would be attached to the base being CVVC. Association of melody and the skeleton of the base is unproblematic. However, an incorrect derivation results when the template associates with the melody of the copy. C picks up the *b* and V picks up the *u* creating the form * bubuus. Clearly, to generate the correct form, we must consider the quality of the vowel in the base.

A preassociated *i* in the template would generate the correct form, however this would result in two templates being required to account for the diminutive, C*i* and CV. This approach then becomes too stipulative.

Clements (1985) proposed a condition regarding reduplication and vowel quality, see Footnote 1.1. He states that a transfer must preserve the vocalic quality of the structure of the original. This condition appeals to the structure of the base but does not attempt to describe it. In a prosodic analysis, the mora can provide the means of describing this structure. One vowel constitutes a mora, therefore the lengthened counterpart would be bimoraic.

Given the vowel quality condition, a prosodic analysis that appeals to the notion of the mora would generate the correct form of the diminutive of buus. The vowel structure of the base would be bimoraic and this quality would have to appear in the transfer. However, the template for the diminutive must be monomoraic considering that this form of reduplication only copies one vowel. The association of the melody to the template is therefore blocked as the weight of the template and that of the melody are incongruent. This blocking causes a form of *i*-epenthesis which I will discuss in the analysis of diminutive reduplication in chapter 4. Therefore, the correct form bibuus is generated.

Considering the additional weight of a lengthened vowel conditioning the diminutive derivation and the contrast evident in the minimal pair, I propose that the mora exists in Lushootseed.

Having established the existence of a moraic structure, the core syllable can be analysed at this prosodic level. The core syllable would be considered light consisting of only one mora.

A diagram of a typical core syllable in Lushootseed would then appear as in Figure 2.15.

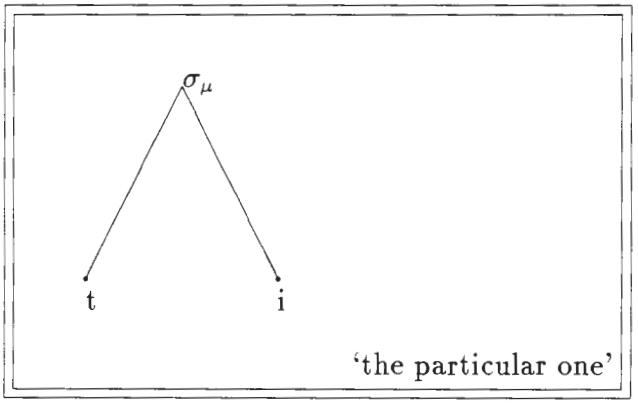


Figure 2.15: Light Syllable

2.3.3 The Heavy Syllable

I have made a distinction here between a light and a heavy syllable, which requires further discussion. Such a distinction would suggest that a language is quantity sensitive (QS), a quantitative relation between two members. According to Hayes (1985), a heavy syllable is always foot-final in QS systems. This is indeed the case in Lushootseed. Consider Figure 2.16. The heavy syllable al-

χicil	'angry'
cəbab	'second'
ʤəsəd	'foot'

Figure 2.16: Foot Final Heavy Syllable

ways falls foot final, thus χi·cil but not χic·il, cə·bab but not cəb·ab and ʤə·səd but not ʤəs·əd. The foot is iambic and consequently distinguishes between a

light and a heavy syllable.

The syllable takes a melody in the form of consonant, vowel and consonant. Historically speaking, both this form and that of two consonants provide the base for words in Salish according to Broselow (1983:337). There are many words that exemplify this syllable. Considering these examples in Figure 2.17 in addition

k̓ʷid	'how many'
ɬup	'morning'
q̓il	'salmon's return to streams and rivers'
q̓ixʷ	'located upstream'
ʃiqʷ	'hat'
ʃuɬ	'see, look'
tib	'strong'

Figure 2.17: Heavy Syllable Roots

to the historical evidence, it is is quite clear that the melody of consonant, vowel and consonant constitutes a licit syllable structure in the language. The syllable would be heavy consisting of two morae. The vowel of the melody would constitute the first mora and the coda the second.

The following Figure 2.18. is a model of a heavy syllable.

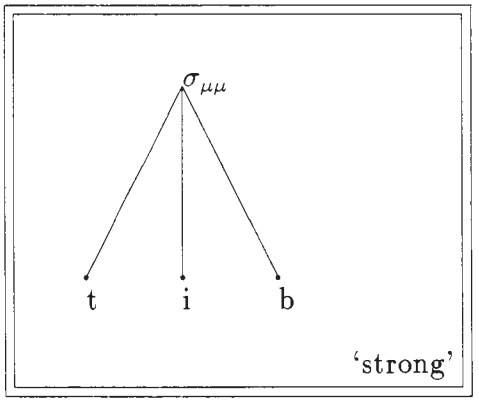


Figure 2.18: Heavy Syllable

On the surface level, the following words in Figure 2.19. could be analysed

as being comprised of one heavy syllable, the vowel and the final consonant of the melody each being one mora.

k̓ʷəɬ	'spill'
bək̓ʷ	'all'
ɬəqʷ	'wet'

Figure 2.19: Surface Heavy Syllable Roots

It is possible, however, to analyse these forms at the underlying level. At this level they would be light syllables whose codas constitute the morae.

Evidence of this syllable shape is found in cases of affixation as in Figure 2.20. Here, the light syllable, *dt̓ʃ̓* undergoes the affixation of *u?* creating the form

dt̓ʃ̓(Stem)	+	-u?(Suffix)	=	dt̓ʃ̓u?

Figure 2.20: Dual Consonant Form

dt̓ʃ̓u?. The light syllable and the suffix would then be resyllabified resulting in a heavy syllable.

The schwa of the CəC forms would be the result of an epenthesis rule which would be applied to the light syllable to create the surface form. Bates (1986) proposes a schwa epenthesis rule that is lexical; see Figure 2.21. The rule inserts a schwa after the initial consonant of a melody in a stem form where it is followed by another consonant which occurs before a non-vocalic variable. The fact that

$\emptyset$	$\rightarrow$	ə	/	$[C\_Cx_{[stem]}$ *Condition*: where x does not contain V.

Figure 2.21: ə-Epenthesis rule (Lexical)

CC is considered a historical base for the language by Salishanists provides motivation for such a rule. It helps to establish the conditioning environment for such a process.

In addition, the reduplicative process also provides motivation. Given derived forms like dʧ̓u?, it becomes evident that there could not be an underlying schwa in such cases assuming that reduplication occurs at this level. In the case of diminutive where the initial light syllable of the root is reduplicated, the first consonant of the melody *d* and the first vowel ə would be echoed given that the root was of the form dəʧ̓. * dədʧ̓u? would be incorrectly derived instead of the correct form didʧ̓u?.

Therefore, epenthesis appears to be a motivated process in the language. The existence of a light syllable whose melody consists of two consonants is consequently implied.

While at first this appeared to be a somewhat controversial proposal, for it has been stated that a syllable must have a nucleus, it is a plausible approach considering the following: firstly, the form is a justifiable historical constituent. Secondly, the reduplicative process suggests that there is no underlying schwa, rather it is epenthetic. Lastly, if the final consonant of a melody can be considered a mora, as seen in McCarthy and Prince (1986), then the final consonant of this form should also be considered one. In light of these factors, the dual consonant appears to be a viable prosodic constituent of the language, a light syllable.

The CC syllable is integral to the analysis of the syllable comprised of consonant, consonant, vowel and consonant at an underlying level. At the surface level it appears to be monosyllabic and bimoraic. The initial consonant cluster satisfies the onset of the the syllable and the vowel and the coda each constituting one mora. This is evident in the monosyllabic roots following in Figure 2.22. However, these forms appear to trigger epenthesis when they are reduplicated for the diminutive; see Figure 2.23.

This suggests that there must be a particular quality inherent in this syllable. I propose that this quality is apparent at the underlying level.

tɬ'χ'a?	'stone'	dᶻɬix^{w}	'creek'
dtɬ'u?	'one'	q^{w}cab	'slip'

Figure 2.22: Light Syllable and Suffix Resyllabified

tɬ'itɬ'χ'a?	'pebble'
dit'u?	'one small thing'
dᶻidᶻɬix^{w}	'small creek'

Figure 2.23: Reduplicated CC Syllables

The initial consonant consonant sequence would constitute a light syllable as previously described in keeping with Bates' (1986) proposal. The suffixal morpheme would be subsequently attached. After suffixation occurs, the derivation would be resyllabified, becoming a heavy syllable. The process of reduplication would occur before that of suffixation.

Another form of the heavy syllable which occurs in the language takes consonant, vowel, consonant and consonant as its melody. The monosyllabic words in Figure 2.24. support the existence of such a syllable. There appears to be

χ^{w}əltɬ'	'saltwater'
tɬ'əlp	'twist'
bəlk^{w}	'return'

Figure 2.24: Heavy Syllable Roots

no benefit in considering the additional consonant as an additional mora. Consonant clusters are often considered one unit as is the case when they occur in onset position. This can also apply to consonant clusters in the coda position. Therefore, this syllable is considered heavy, the vowel and the consonant cluster of the melody each being one mora. The syllable would be modelled as in Figure 2.25.

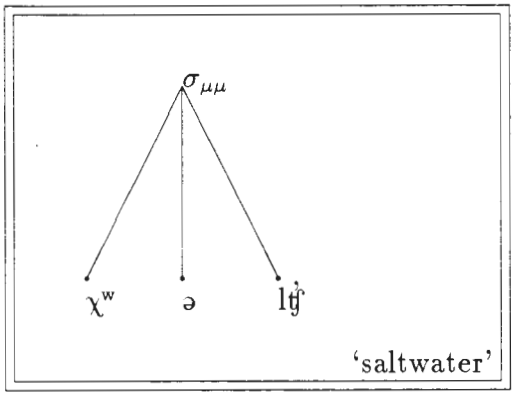


Figure 2.25: Heavy Syllable

2.3.4 The Superheavy Syllable

In addition to the light and heavy syllable in Lushootseed, a superheavy syllable appears to exist. The superheavy syllable has been considered a prosodic constituent in the work of Hayes (1989) and indeed appears to exist in Lushootseed. This is evident considering the minimal pairs which I presented in my argument for the existence of a mora. As we have seen a form such as dukʷ exemplifies a heavy syllable. However, the additional mora evident in sduukʷ distinguishes a superheavy syllable.

The melody of the superheavy syllable then consists of consonant, vowel, vowel and consonant as reflected in the monosyllabic words in Figure 2.26. As

ɬaaχ	'plate, platter'
luuʔ	'hole'
haac	'horse clam'

Figure 2.26: CVVC Roots

I have argued, the superheavy syllable consists of three mora and would be modelled as in Figure 2.27. In conclusion, the syllabic inventory of Lushootseed can be described as having three basic constituents: the light syllable including the core syllable, the heavy syllable and the superheavy syllable including the

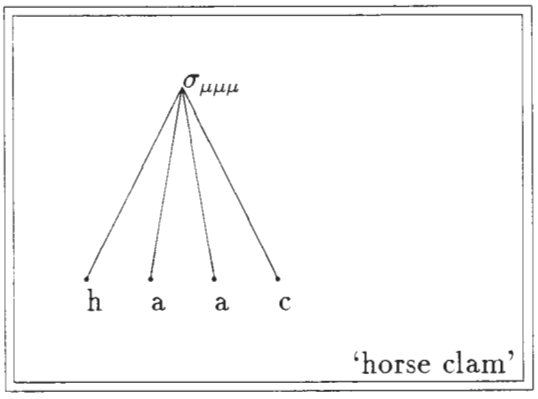


Figure 2.27: Superheavy Syllable

mora. These three are able to account for the various segmental configurations of syllables, such as CC, CV, CVC, CVCC and CVVC.

Chapter 3

The Framework

The framework which I have chosen to account for reduplication in Lushootseed is Prosodic Morphology proposed by McCarthy and Prince (1986). It is essentially a template representation system which endeavors to account for various allomorphs by means of a shape-invariant. There are no references to segments.

I believe that this approach can adequately account for reduplication in this language. Because of the prosodic nature of this approach, a quite general account of reduplication is possible. In this chapter I will first contextualize the theory of Prosodic Morphology (PM) and continue with a brief description of the basic tenets and mechanisms of the framework.

3.1 Prosodic Morphology in Context

Before I describe the workings of PM, let me place the approach in a historical context. SPE, a major introduction to Generative Phonology, adopted some of the theories developed by its predecessor, the classical phonemic theory. Namely, these theories included the basic assumption that there is a requirement for a phonetic representation. This representation would be in strings of segments that abstracted away the linguistically irrelevant properties of speech. In order to account for the regularities in phonetic representations, a more abstract representation was proposed, i.e. a phonemic or underlying representation. Morphological information was required by phonological rules and notation such as the juncture symbols, + and #, were devised.

SPE broke away from the assumption in classical phonemics that there were three levels of representation in phonological theory, the phonetic, the phonemic, and the morphophonemic. Instead, SPE proposed two levels, the phonetic and the systemic (morphophonemic). As well, SPE endeavored to understand the nature of sound systems in natural language, and developed rule systems that dealt with extrinsic and intrinsic rule ordering, cyclic and non-cyclic rules, iterative application, etc.

As Generative Phonology progressed there was greater emphasis given to the nature of phonological representations, which should be stated rather than be assumed. This was in contrast to an emphasis on the input or output of the aforementioned rule systems. A division in theory was the result, that of linear versus non-linear phonology.

In linear phonology sound segments are arranged in a linear fashion upon which operate phonological rules. Whereas, non-linear phonology attempts to account for suprasegmental as well as subsegmental phenomena. Segments are organized according to a hierarchy that does not exclude other modules of the grammar and emphasis is given to the interaction between modules.

Examples of non-linear phonology include Metrical Phonology—developed from the proposals of Kahn and Liberman (see Halle and Vergnaud 1978, McCarthy 1979, and Hayes 1980, etc.), Autosegmental Phonology—developed from the proposals of Williams (1971), Leben (1973), and Goldsmith (1976). Syllable based phonology—proposed by Kahn (1976), CV Phonology—proposed by Clements and Keyser (1983) and Templatic Morphology—proposed by Marantz (1982).

It is to this area of phonology that PM belongs. Distinctive features provide the distinction between tiers which replace linear arrangements of sounds. Tiers, linked by rules of association, are both universal and language specific. A universal tier could be prosodic, skeletal or melodic.

Having placed this approach within a context, I will proceed with a description of the basic mechanics of the theory. As I have mentioned previously, nonlinear phonology places emphasis on the interaction between modules of grammar. PM focuses on the interaction between phonology and morphology, more particularly, on the character of phonological structure and its consequences for morphology.

3.2 The Foundation

McCarthy and Prince propose three theses as the central principles of their approach. These are as follows:

1. **Prosodic Morphology Hypothesis:**
   Templates are defined in terms of authentic units of prosody: mora (μ), syllable (σ), foot (F), prosodic word (W), and so on.
2. **Template Satisfaction Condition:**
   Satisfaction of templatic constraints is obligatory and is determined by the principles of prosody, both universal and language-specific.
3. **Prosodic Circumscription of Domains:**
   The domain to which morphological operations apply may be circumscribed by prosodic criteria as well as by the more familiar morphological ones. In particular, the *minimal word* within a domain may be selected as the locus of morphological transformation in lieu of the whole domain.

The first two theses, Prosodic Morphology Hypotheses and the Template Satisfaction Condition, rely on a notion of Templatic Morphology. Essentially, a template is a phonological configuration of morphemes. Many of today's theories describe this configuration in terms of segments with prosodic annotation in some cases, such as the CV theories of McCarthy (1981) and Marantz (1982). Although Kaye and Lowenstamm (1984) do not appeal to characterized segments in their templatic theories, they do rely on the counting of segments.

PM, as well, acknowledges a count and assumes the standard notion that a count may run 'up to two'. However, it is prosodic units that are counted and

not segments. These units can adequately account for many forms. For example, the syllable can refer to any licit syllable of the language whether it be CV, CVC, CVCC, CCVC, and so on. The set, σ_c and σ, represents each manifestation of the syllable in the language. McCarthy and Prince (1986:4) provide a persuasive argument for prosodic units in examining data from Ilokano, which I have reviewed in my introductory chapter. As I have mentioned a segmental approach would need to count out the maximal monosyllable, CCVC. Therefore, this approach must account for a number of unassociated slots in the template. And as McCarthy and Prince (1986) have noted, unassociated slots have the potential to influence phonology and morphology. PM assumes that empty templatic slots do not exist, which is the basic notion of the Template Satisfaction Condition stated previously. This condition specifies that it is obligatory that each templatic slot is satisfied; there can be no left over elements.

In addition, a prosodic constituent is able to unite the various allomorphs of reduplication in this language. In this case, a syllable can account for all the reduplicated forms in this example.

The importance of the syllable in accounting for phonological processes has been recognized in Kahn's work (1980). McCarthy and Prince expand on this notion with the claim that there is no language process dependent on the number of segments in a form. In PM the syllable refers to one of the prosodic categories. The categories employed by PM are as follows; observe Figure 3.1. Phonological theory recognizes the categories of Wd and σ, while it is stress

'prosodic word'	Wd	'foot'	F
'syllable'	σ	'core syllable'	σ_c
'light syllable'	σ_μ	'heavy syllable'	$\sigma_{\mu\mu}$

Figure 3.1: PM Categories

theory that employs F, $\sigma\mu$, and $\sigma\mu\mu$. σ_c is central to studies of syllablification

proper. McCarthy and Prince propose that the minimal version of these categories deserve attention, as they can, in some cases, accord a special status. Thus, Wd_{min} would consist of a licit foot including minimal foot, σ_{min} would consist of a core syllable and F_{min} would consist of a heavy syllable.

If we consider the internal structure of the syllable, we find that the rhyme is not the fundamental constituent according to McCarthy and Prince following Clements and Keyser (1983). The fundamental constituent appears to be the mora which can be defined as a subelement of the phonetic syllable which functions as a prosodic unit. The notion of a mora allows for a more simplified syllable structure, as in Figure 3.3., than the syllable in Figure 3.2.

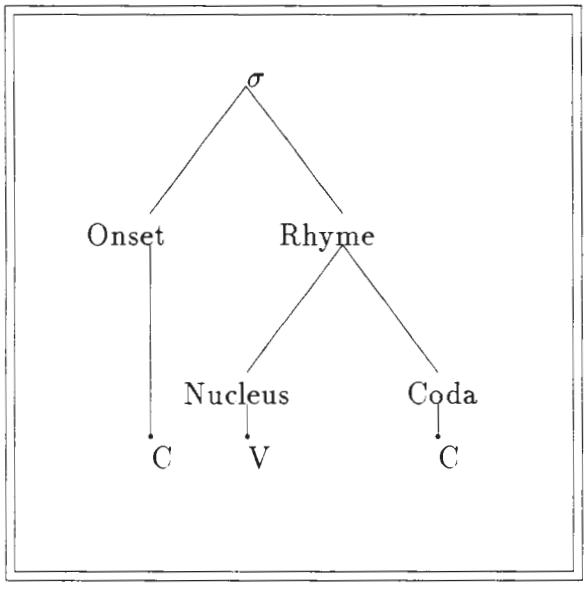


Figure 3.2: Hierarchical Syllable Structure

3.3 Foot

McCarthy and Prince's notion differs somewhat from the familiar one, in that it recognizes the $F_{\mu\mu}$. This notion is based on the work of McCarthy (1979), Prince (1980) and Hayes (1985).

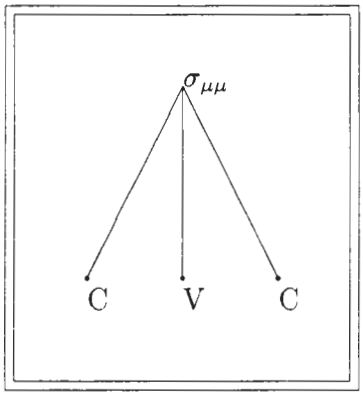


Figure 3.3: Prosodic Syllable Structure

The foot is maximally binary and divides into two basic types: the balanced foot where both members are of equal weight and the assymetrical foot where the first member has a lesser weight than the second one. This foot is described as quantitatively iambic as in QS systems the heavy syllable is always foot final. QS systems include three variations as seen in Figure 3.4. The form, balanced foot,

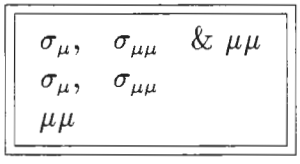


Figure 3.4: QS Systems

can be described as quantitatively insensitive (QI) given the trochaic default which specifies if two members are equal the latter will be weak, thus creating a trochaic foot. This instance is found in QI systems where there is no distinction of quantity.

The final thesis that requires explanation is the prosodic circumscription of the base. Essentially, it is a method of parsing out the domain where a phonological rule applies. This domain is described in terms of the Wd_{min} of the language. The rest of the form remains invariant and is equated with an extrametrical constituent which is situated at an edge. This approach has con-

siderable ramification for the processes of infixation which essentially become reduced to prefixation or suffixation. In McCarthy and Prince (1990), a formalized system for this thesis is introduced. Although it is intended to provide a more precise and mathematical account of the method, I feel it unnecessarily complicates the issue for the purposes of this paper. It would be interesting, however, to test their formalism on other processes and data. It is also important to note that this domain can be defined morphologically and prosodically. That is, a stem can constitute a Wd_{min} as well as a σ or μ.

3.4 Tiers

In addition to the prosodic tier which refers to σ, μ and F, and the melodic tier which refers to the actual language constituent, McCarthy and Prince entertain the notion of a skeletal tier as I have previously mentioned. Its function is to mediate between the prosodic structure and the melody level. It consists of V and C slots and is constrained by prosodic structure. See for example the following tree in Figure 3.5 exemplifying the three tiers of PM.

Figure 3.5: Tiers

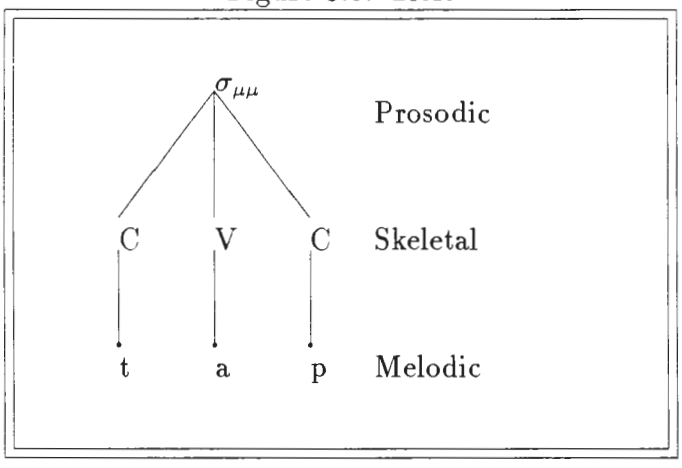


Figure 3.6: Three Tiers of PM

3.5 Mapping Principles

Now that we have discussed the nature of the template and the domain upon which an operation can take place, it is necessary to discuss how copying and mapping occur within the framework of this theory.

Copying follows the assumption of Marantz (1982) where in reduplication, the complete segmental melody of the process domain is copied. The location of this copy, however, is a new plane—in keeping with Broselow and McCarthy (1983).

Having copied the melody, this level must be associated with the template. PM suggests that association is directional. That is, left to right for prefixes, right to left for suffixes and free choice for root and pattern systems. Basically, affixation takes place at the edge of the domain, thus the term used by McCarthy and Prince, 'edge-in re-prosodization'.

The mapping of the template and the copy must be continuous with the exception of satisfying the σ_c template. In other words, when mapping a template and copy from the edge in, no melodic elements of the copy can be skipped unless the template is σ_c.

Not only does the mapping occur from the edge in and is continuous but from which level does one associate the other? The skeletal level comes into play at this point as this is the source of mapping. The copied melody is reprosodized edge-in by the affixal skeleton.

3.6 Spreading and Copying

Copying is not the only method available in PM for the provision of a melodic tier. Spreading offers an alternative. This is apparent if we consider an aorist root of Sanskrit which reduplicates as follows:

arpam → ar pI pam

If copying occurred, the incorrect form would result as seen in Figure 3.7.

arpam → * ar pa pam

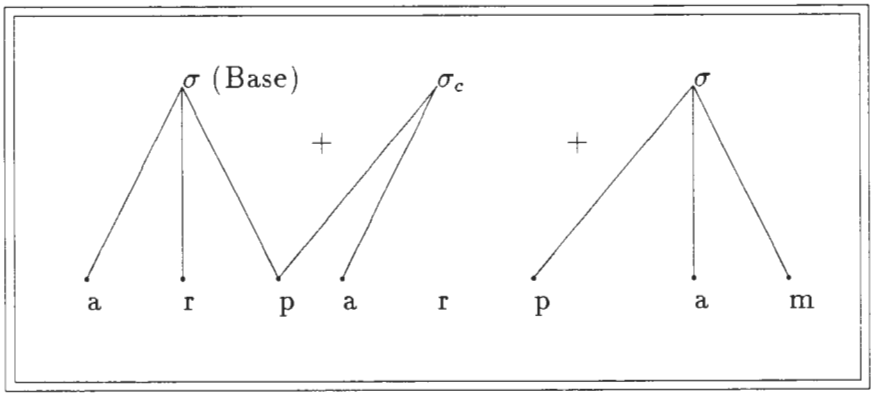


Figure 3.7: Copying

Instead, spreading satisfies the template; see Figure 3.8. *p* spreads to the C

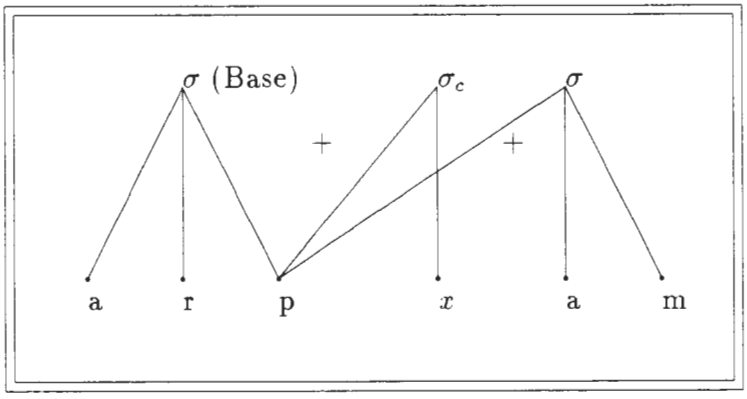


Figure 3.8: Spreading

of the σ_c skeleton and the C of the σ and I-epenthesis fills x. The licit form arpIpam results.

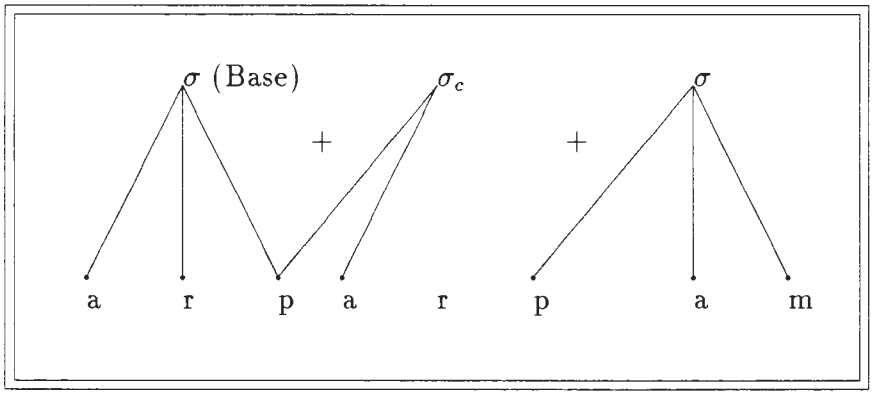
Spreading also accounts for cases of gemination. In Mokilese, before a V initial suffix, a single C is geminated:

did C e → didde

arpam → ar pI pam

If copying occurred, the incorrect form would result as seen in Figure 3.7.

arpam → * ar pa pam



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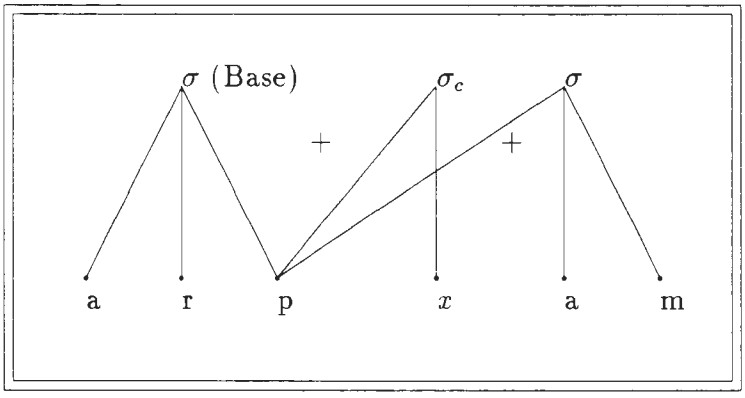

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did C e → didde

Again, spreading of *d* fills the skeletal C of the affixed σ. As in the case of these examples, the spreading of phonemic material instead of copying is necessary to generate the correct forms.

3.7 Crossing of Association Lines

Within this framework, it becomes necessary to stray from the well established rule that prevents the crossing of association lines. The mapping process of reduplication is synchronous rather than linear. Therefore, the notion of crossing is non-existent, as the template satisfies itself in the melodic tier and does not step through the individual constituents.

In the case of spreading it may appear that association lines cross as the affixal template appears to be linearly ordered on the same tier with the skeleton. However, it is rather a case where the melodical elements are dually linked with the template and the base. I refer the reader to McCarthy and Prince (1986) for a discussion of the principles underlying this theory.

3.8 Boundaries

The spreading of phonemic material is dependent on the notion of transparent and opaque boundaries. In order for a skeleton to map a melodic element via spreading or copying. It must be able to cross the boundary between the domain and the template. Through a stipulation of transparency this becomes possible, see the Sanskrit aorist form in Section 3.6 for an example of this. Conversely, opaqueness prevents the skeletal element from mapping an onset from the copied melodic tier.

A basic principle has been assumed up to this point, one that is potentially universal in lexical syllabification:

> A syllable will take an onset whenever it can.

This principle provides the motivation behind transparency and spreading, as the skeleton will search for a melodic element to satisfy the onset position crossing boundaries and looking into the neighboring melodic constituent.

Within the framework of McCarthy and Prince the onset principle has two applications. The presence or absence of gemination provides the distinction between them. In Lushootseed, as in many Salish languages, gemination is not common, therefore I will assume the non-geminating form of the onset principle unless otherwise stated.

3.9 Stray Erasure

After the template has mapped the appropriate melodic constituents of the copy, the convention of stray erasure is employed. This ensures that any unassociated elements of the copy remaining after the mapping process are deleted.

3.10 Melodic Overwriting

Up to this point, I have essentially explained the basic apparatus of the PM framework. Only one element still requires discussion, that of McCarthy and Prince's opinion of prespecification. This is a mechanism proposed by McCarthy (1981) and Marantz (1982). Templatic morphemes would consist of invariant melodic constituents in a skeletal theory referring to segments.

McCarthy and Prince (1986) argue that in light of Echo words in English, such as *fibre shmibre, table shmable, book shmook*, melodic invariances found in reduplication cannot be reduced to prespecification. The problem is found in the generalization of the template for forms that reduplicate whole words. There is no way of representing a template that can assume unlimited variations of C's and V's in segmental terms. The word is considered a prosodic constituent in their framework, therefore a template of *Word* can be proposed for echo words

and a templatic melody of *schm* ensures that the initial consonant of the copy assumes the prescribed melodic elements; see Figure 3.9. McCarthy and Prince do comment, however, that there are some cases where the prespecification of a mora rather than a V slot may be necessary.

As an alternative, they propose melodic overwriting to account for cases of invariants. According to McCarthy and Prince, templates and not melodies supply the invariant prosody. The invariant is autonomous and constitutes a melodic entity on a unique autosegmental plane. The difference in association of this template with the melodic tier is that it is a *feature changing* association that overwrites the original melodic material copied from the base. Thus, in the echo word *table shmable*, shm overwrites *t* as in Figure 3.8. The templatic

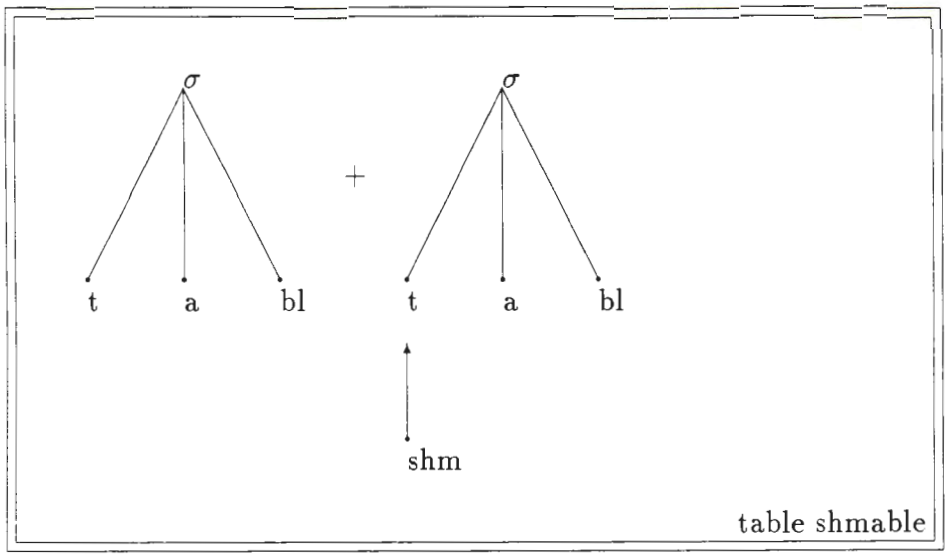

Figure 3.9: Echo Words

melody *shm* associates with the skeletal onset of the σ template and the *t* is subsequently delinked.

In summary, PM is a non-linear theory of Generative Phonology which employs the notion of prosodic constituents in lieu of segments. A base which can be circumscribed either prosodically or morphologically is established leav-

ing the remaining constituents as extrametrical. The appropriate template is then chosen to account for a language process and the familiar method of copying is employed or, in some cases, spreading. In the former case, association occurs synchronously from the edge-in ensuring that the prosodic template is completely satisfied.

McCarthy and Prince provide a convincing argument in their (1986) paper for the ability of PM to account for some apparently difficult forms of reduplication. It is for this reason that I chose this approach as a framework to account for reduplication in Lushootseed.

Chapter 4

The Analysis

Having established the foundations for my analysis with a description of both the data and the framework, I will now pursue the analysis. Firstly, I will argue for a syllabic base for reduplication. Secondly, I will consider each form of reduplication, CVC, CV, VC and V in turn applying the prosodic framework to each in order to derive the correct forms.

4.1 The Base

Reduplication isolates a portion or the whole of a stem that becomes both the site and the substance of the copying process. The base or the prosodic unit which is available for reduplication in Lushootseed is prosodically circumscribed as a monosyllable and non-reduplicative prefixes remain outside the operation.

Essentially, the reduplicated morphemes attach themselves to the first syllable of the stem. There appear to be no cases in the language where more than one syllable is reduplicated. This is most evident in the cases of multiple reduplication where the monosyllabic template reduplicates only information of the first syllable of the stem regardless of whether it is previously reduplicated material or root material.

For example, dᶻələldᶻalus 'to look over the shoulder repeatedly' is a case where a distributive form is derived from the root dᶻəlus and the out-of-control type is then created from the distributive derivation.

Distributive reduplication repeats the first three sounds of the stem resulting

in dᶻəldᶻəlus. Subsequently, out-of-control reduplication occurs. However, the root is no longer the domain of reduplication. If the second and third sounds of the root are copied and are suffixed to the initial three sounds of the derivation then an incorrect form results, namely * dᶻəldᶻələlus.

Instead, the domain of reduplication becomes the initial syllable of the distributive derivation. If we then copy the second and the third sounds of this syllable and suffix them to the same, we attain the correct form dᶻələldᶻəlus. Therefore, the domain for reduplication is the initial syllable of the base, whether it be a root or a derivation.

4.2 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), see Figure 4.1. 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 the CVC template occurs. This is phoneme driven, so the first C of the melody associates with the first C of the prefix. This continues from left to right until the melodic constituent can no longer find a skeletal counterpart with which to associate. This approach appears to account for this form of reduplication quite satisfactorily. However, it is also possible to account for this 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. It is clearly a case of prefixation and not infixation. This is evident considering the distributive derivations of a small set of high frequency words such as sɬadəyʔ 'woman'.

High frequency reduces the template to an echo of the first sound accompanied by the weakened vowel ə . If affixation was suffixal an incorrect form would

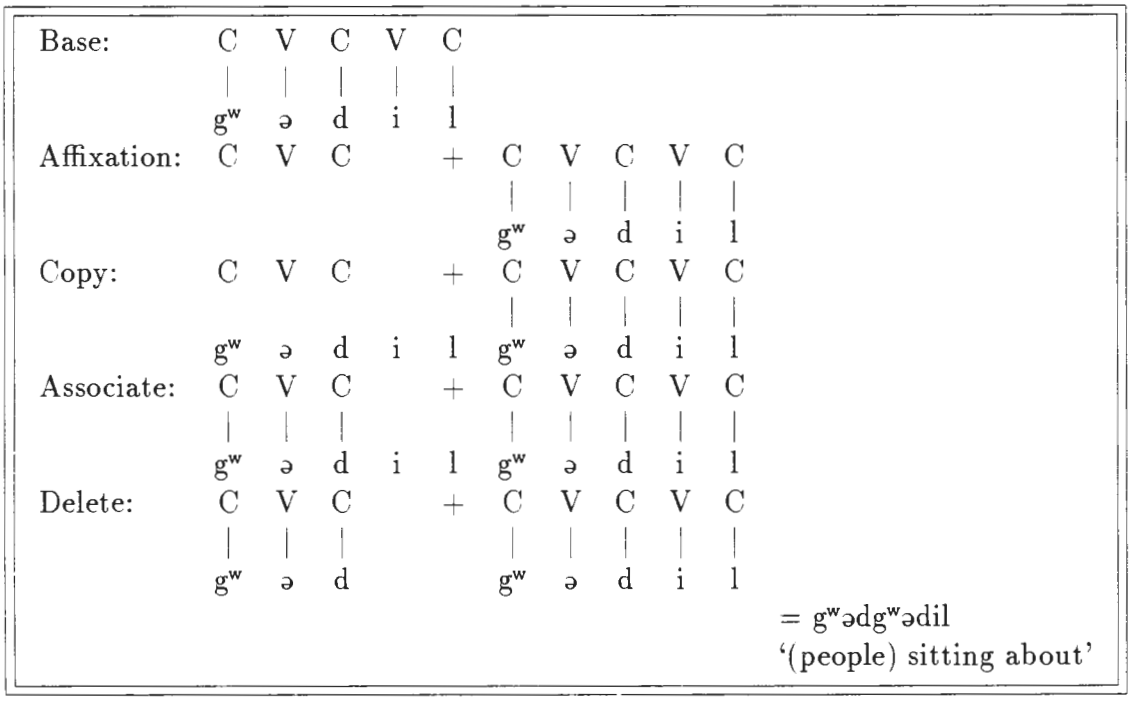

Figure 4.1: Segmental Analysis of the Distributive

be generated. Stress would fall on the first syllable containing a strong vowel creating:

* s-ɬádɬəy?

However, when the template is prefixed, the licit form correctly stressed results:

s-ɬəɬádəy?

We can therefore assume that the template must be prefixed to the base.

The boundary between the template and the base appears to be opaque, that is, it blocks the application of the onset principle discussed in section 3.7. If the boundary were transparent, the derivation would be ill-formed as the base could look into the melody of the template for its onset. * gʷəddədil would result. Therefore, it is necessary the boundary be opaque to prevent such formations.

A PM analysis of gʷədgʷədil would appear as in Figure 4.2. The base has been

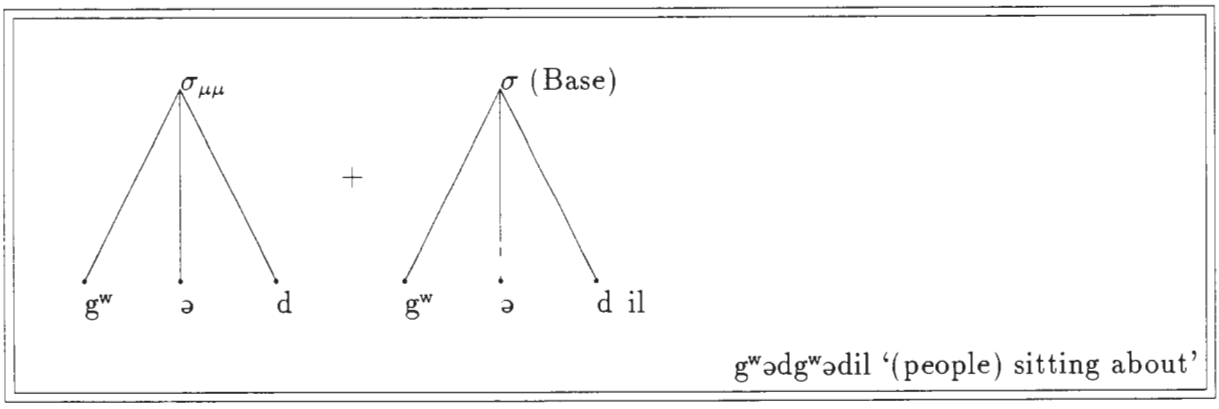

Figure 4.2: Prosodic Analysis of the Distributive

defined as the first syllable of the stem which in this case is *gʷəd*. The remaining elements are 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 *gʷəd* is copied. As this is a template driven system, the heavy syllable looks to satisfy itself in the melodic tier. Here, *gʷ* satisfies the onset of the template and *əd* satisfy its two morae.

This process of distributive reduplication provides an environment for glottalization in the language. In Lushootseed the non-nasal resonants associated with the coda of the template syllable become [+ glottal] during distributive reduplication. For example, sali? 'two' reduplicates as salsali? 'two by two' in the distributive. The *l* of the copied melody becomes [+ glottal] being in the coda position of the template, thereby creating the correct derivation sal̀sali?.

There are cases when it is desirable to have the same boundary transparent. For example, the distributive reduplication of a stem containing a reduplicated prefix and base. Consider the derivation for '(birds) wheeling in different directions in the sky' in Figure 4.3. Given a transparent boundary, the heavy syllable template seeking an onset locates *q̇ʷ*, the coda of the preceding heavy syllable and associates with it given the universal onset rule. However, this application of the rule is non-geminating, thereby inhibiting the incorrect derivation *

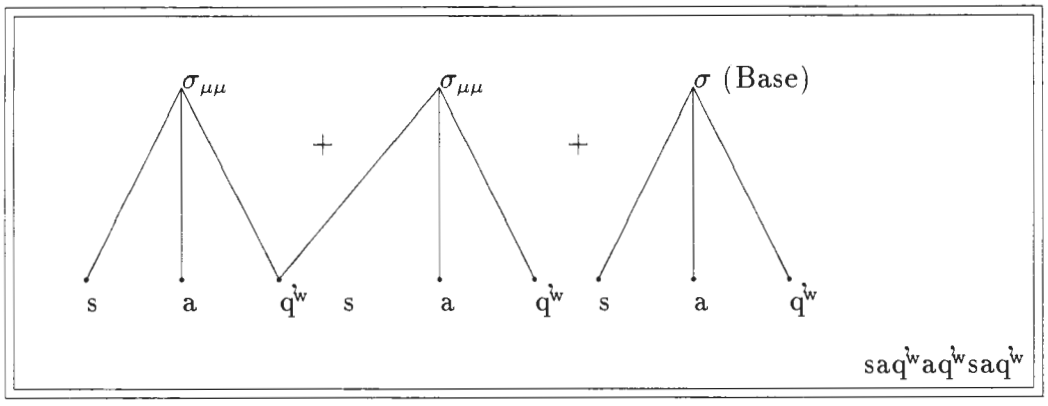

Figure 4.3: Transparent Boundary in Multiple Reduplication

saqʷqʷaqʷsaqʷ.

Transparency could also account for a small set of words which appear to have alternating forms in the diminutive. In this case the onset of the base is deleted; see Figure 2.2. Proposing an opaque boundary for these cases would create an incorrect form as in Figure 4.4. In the original form stubʃ both the

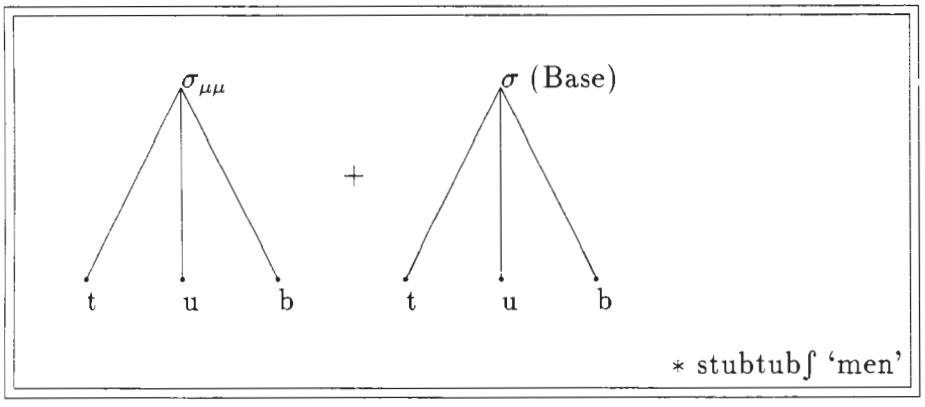

Figure 4.4: Opaque Boundary

initial *s* and the final ʃ are not part of the root and therefore, are not available for the reduplication process. However, if we consider it to be extrametrical, it must still be copied and is thus available as a potential onset for the template.

The first syllable of the root becomes the base *tub* which is copied. The template is a heavy syllable which is prefixed to this base and as the boundary

is opaque, the template associates with the melody as we have seen previously, whereby the first melodic constituent available for association is the *t*.

It is clear from this example that in order to create the correct distributive form for stubʃ, 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 4.4, or it is possible that they undergo a phonological operation which removes the C of the base after the reduplication process.

However, it is possible to account for this alternation of the form by simply specifying that the boundary is transparent and that the non-geminating application of the universal onset principle applies; note Figure 4.5. The template would be the heavy syllable prefix used for the diminutive. Therefore, in the distributive derivation of stubʃ the correct form would result. The onset of the base looks for the first available consonant in the melody, which in this case is *b* of the copy. Although *b* is dually associated, gemination does not occur and the correct derivation stububʃ results. Therefore, with the stipulation of a

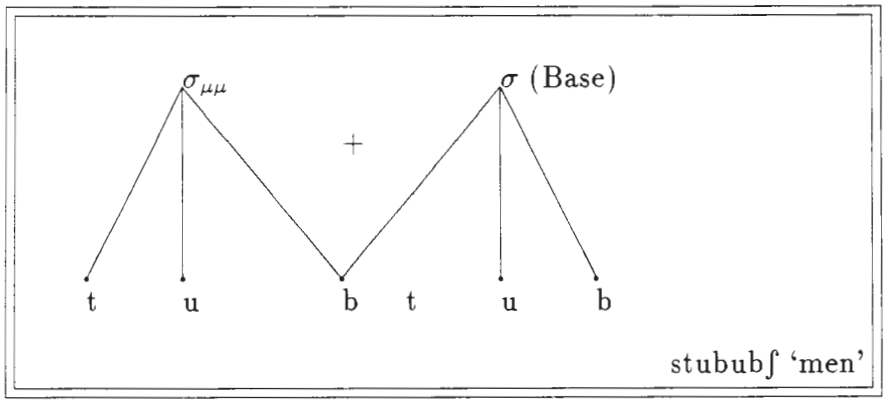

Figure 4.5: Transparent Boundary

transparent boundary this small class of high frequency words can be accounted for in the distributive.

The problem with such an analysis, however, lies in such a stipulation. McCarthy and Prince (1986) suggest that rules of affixation differ according to the

specifications of an opaque or a transparent boundary. This implies that it is the affix itself, in this case the distributive heavy syllable prefix, which triggers opacity.

However, if we assume the analysis of a transparent boundary for this class, there must be some feature of these words which triggers transparency. Perhaps, it is a case of lexical marking which overrides the opacity determined by the distributive affix. It is not possible at this point to posit the nature of opacity, as to date there have yet been no solutions to this largely debated problem.

There is also an additional set of high frequency words in the distributive that appears to have undergone mora deletion. For example, sɬadəy? becomes sɬəɬadəy?. The two morae *a* and *d* of the heavy syllable ɬad are deleted leaving a consonant cluster ɬɬ which triggers schwa epenthesis. See Figure 2.3 for such examples.

In these cases, it appears that a phonological operation applies after reduplication which simplifies the initial syllable of the derivation. Thus, the distributive heavy syllable template, rather than an additional template—which would be highly stipulative, would still apply for this class of words.

To summarize the PM analysis of CVC reduplication, a heavy syllable template is prefixed to the base where the affixal boundary is opaque except in the case of some high frequency words. In addition, it is necessary to use the non-geminating application of the universal onset principle. The PM approach is not only able to account for this form of reduplication equally as effectively as a segmental approach, but it also able to account for the alternate form of the diminutive. The same template applies and only a specification of transparency is needed. Therefore, a more generalized account is possible using the PM approach.

4.3 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, CV?, C*i*, and C*i*? which attach to the first syllable of the stem (Bates:1986).

A CV morpheme can account for all of these allomorphs. In the case of C*i*? and CV? the ? is inserted. This is the result of a post-lexical rule which closes an open syllable bearing the main stress of an utterance as proposed in Bates. The prespecified *i* of C*i* and C*i*? can be account for by an *i*-epenthesis rule that Bates (1986) has also proposed. The *i* is inserted wherever there is an unassociated vowel slot in reduplication. Therefore, given the ?-insertion rule and the *i*-epenthesis rule, a morpheme of one consonant and one vowel accounts for the four forms of the diminutive.

As was the case with distributive reduplication, a segmental approach appears to be able to adequately account for the data as seen in Figure 4.6. In this approach the CV prefix would attach itself 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. The correct diminutive form susuq$^{\dot{w}}$a? is derived using the segmental approach. Even in cases of non-vocalic bases and association blocking which I will address shortly, this method appears to be effective. I refer the reader to Bates (1986) for an in depth look at a segmental analysis of these phenomena. It is possible, however, to account for this form of reduplication using a PM approach equally as effectively.

It is obvious that an additional template is necessary to account for the diminutive and the collective, as the prefixation of a heavy syllable to the base would generate an incorrect form, * suq$^{\dot{w}}$suq$^{\dot{w}}$ given an opaque boundary and * suq$^{\dot{w}}$uq$^{\dot{w}}$ given a transparent boundary. Therefore, an additional template is necessary, this being the core syllable.

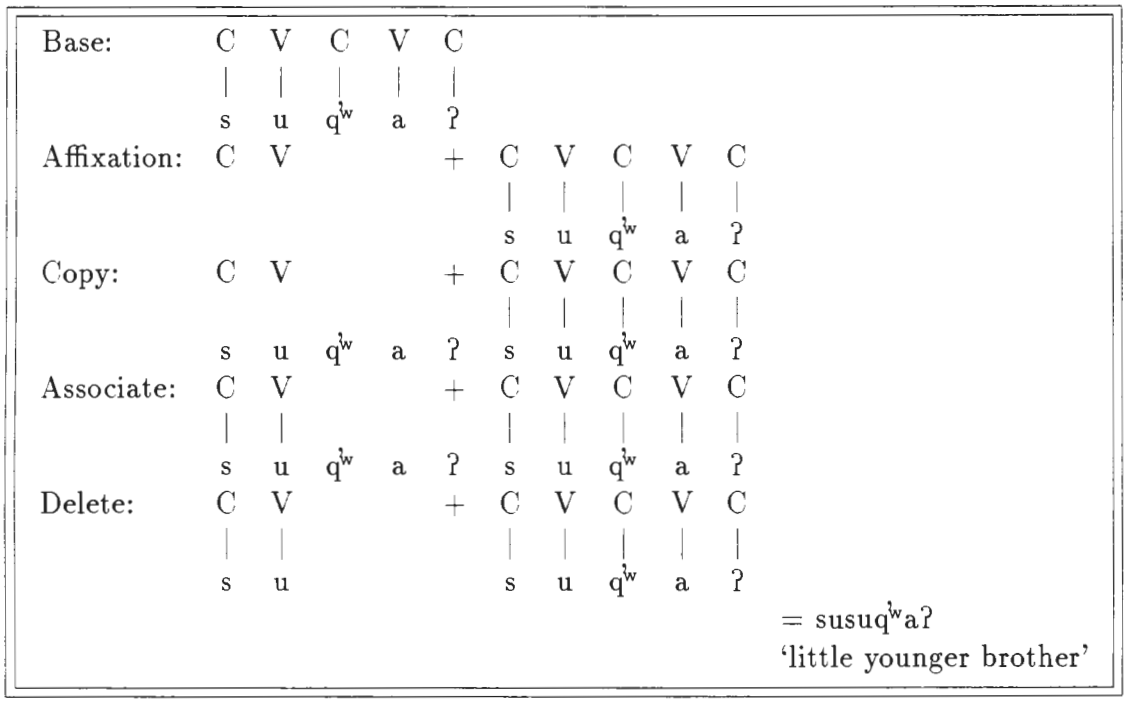

Figure 4.6: Segmental Analysis of the Diminutive

As is the case for the distributive, the template is prefixed to the base. This is apparent if we consider a derivation of multiple reduplication where the diminutive is derived from a base which is a the initial syllable of a distributive derivation. The root is bəda? 'child' from which the distributive bədbəda? 'children' is derived. The diminutive core syllable template is then prefixed to the base deriving bibədbəda? and not suffixed to it as * bədbibəda? would result.

The boundary is opaque as a transparent boundary would incorrectly generate * suq̓ʷuq̓ʷaʔ. Given transparency, the base syllable *suq̓ʷ* would be able to access the melody of the copy *suq̓ʷ* for its onset *q̓ʷ* leaving the *s* of the base melody unassociated. Therefore, the boundary must be opaque. Consider Figure 4.7. In this analysis the heavy syllable base circumscribes suq̓ʷ leaving a ʔ outside of the operation. After the core syllable template has been prefixed to the base, *suq̓ʷ* is then copied. The onset of the core syllable associates with *s* of the melody and the nucleus associates with *u*. However, the opaque boundary

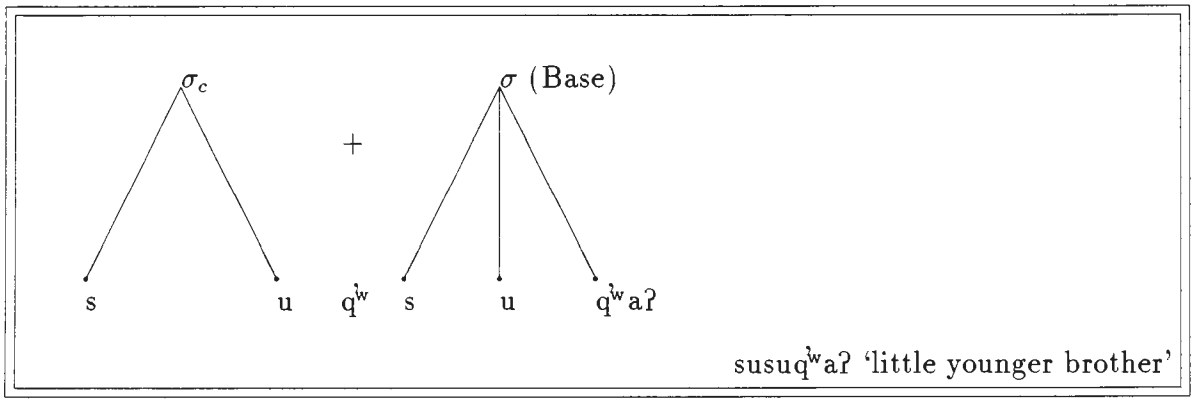

Figure 4.7: Prosodic Analysis of the Diminutive

prevents the $q^{\dot{w}}$ of the copy from being picked up as the onset of the base. According to stray erasure, the $q^{\dot{w}}$, being unassociated, is then deleted leaving the correct derivation susuq$^{\dot{w}}$a?. Given this example, diminutive reduplication can be effectively accounted for using a PM approach.

This approach is also able to account for a particularly interesting case of diminutive reduplication that involves a CC base, where dʧ̓u? 'one' becomes didʧ̓u? 'one small thing'. Essentially, only an *i*-epenthesis rule need be added to the previous analysis to account for such forms. It is necessary to assume, however, that diminutive reduplication occurs before the resyllabification of the light syllable CC and the suffix. Consider the reduplication of dʧ̓u? in Figure 4.8. The base for this form of reduplication is the initial syllable which in this case is CC. Prefixed to this is the core syllable template and the boundary remains opaque. Association occurs after the light syllable is copied. The core syllable picks up the *d* of the melody but when it looks for its obligatory nucleus, association is halted as there is none to be found in the melody. This condition of an empty nucleus appears to trigger the epenthesis of *i*.

Bates (1986) proposed in her segmental analysis of diminutive reduplication that the empty nucleus triggers *i*-epenthesis. The rule which she has proposed appears as in Figure 4.9. Such a rule can be easily expressed in prosodic terms

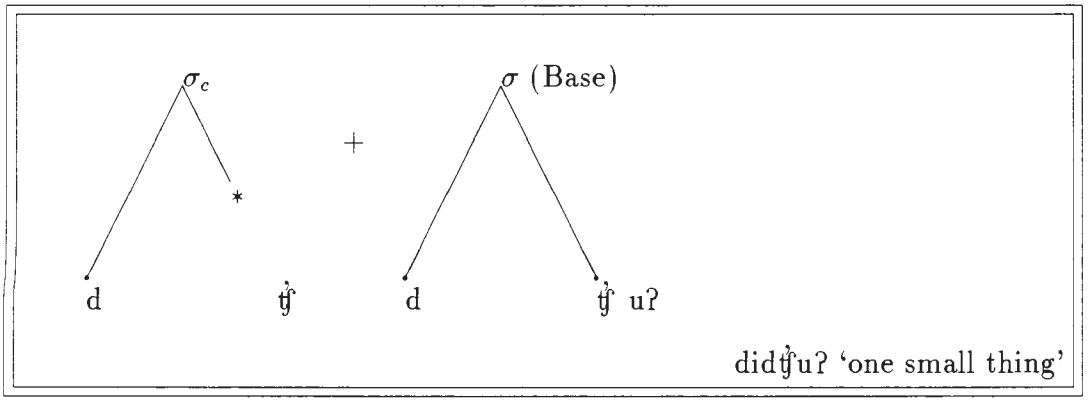

Figure 4.8: Presyllabification Diminutive Reduplication

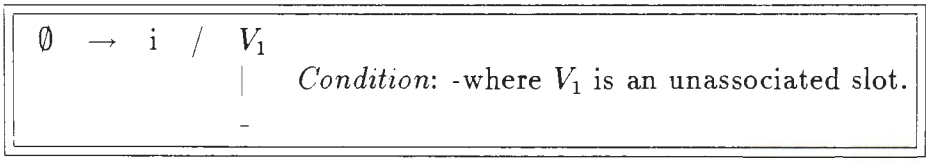

Figure 4.9: *i*-Epenthesis Rule

as in Figure 4.10. This rule then inserts an *i* into the empty nucleus of the core

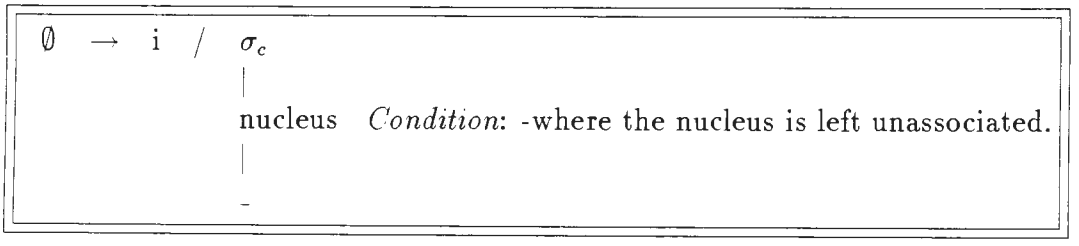

Figure 4.10: Prosodic *i*-Epenthesis Rule

syllable thereby correctly deriving didʧu?.

Given the surface syllable form of dʧu?, the core syllable template would still generate the correct form given that association is discontinuous. During the mapping process of template to copy, association would be discontinued when the template fails to locate a respective element in the melody as no melodic elements of the copy can be skipped. Consider Figure 4.11. 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

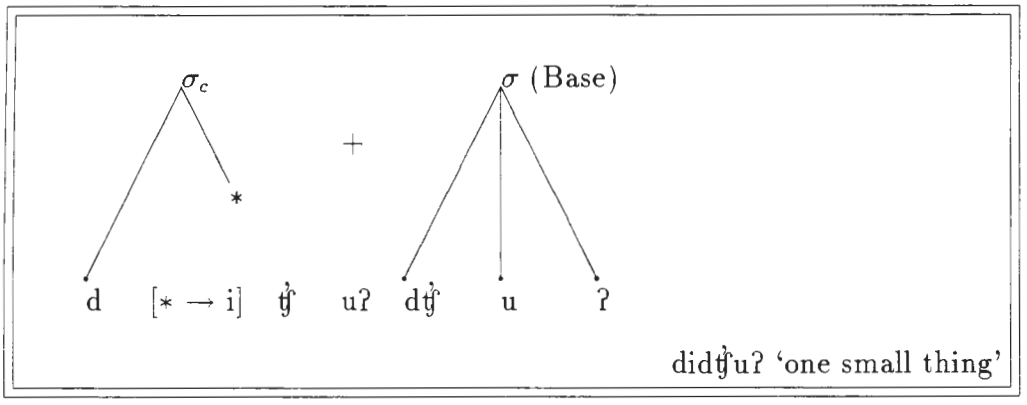

Figure 4.11: Postsyllabification Diminutive Reduplication

fails as the next constituent of the melody is C. Because this is discontinuous association, the process terminates at this point thereby preventing the nucleus from associating with the *u*. The result is the correct form didʧu?.

In addition to the CC base, the superheavy base also triggers *i*-epenthesis. Consider the following in Figure 4.12. Like the previous example the nucleus

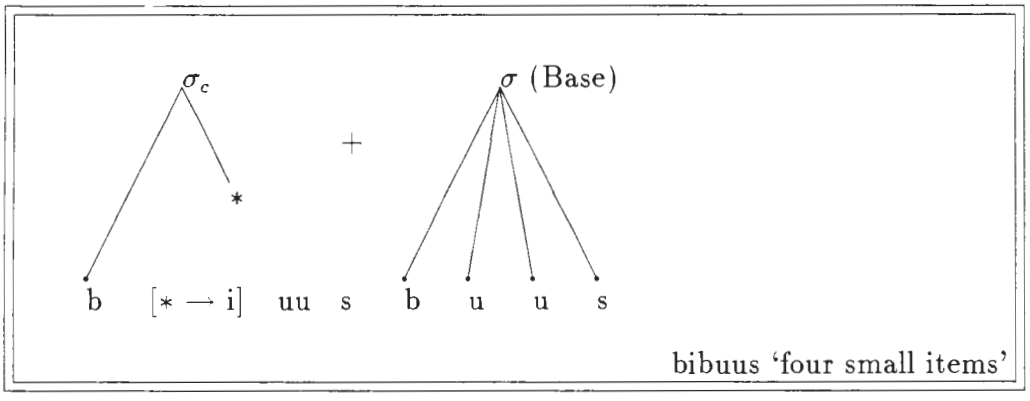

Figure 4.12: Superheavy Base

is left empty, but not because there was no vocalic element to copy. As we have seen earlier, the transfer, the process of copying phonemic material to the template, must preserve the true vocalic quality of the original according to Clements. 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 for this dilemma.

Firstly, preassociation could be assumed where V is always associated with prespecified *a*. Although McCarthy and Prince (1986) argue against prespecification, they do admit that it is necessary in limited cases (1986:87). Secondly, their device of 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 account for only the *a* of the collective.

I propose the /a/ templatic melody in addition to the core syllable template of the diminutive which prefixes to the base as seen in Figure 4.13. The reduplicative process works the same as in the previous example. Association occurs after the base is copied. The core syllable takes *d* as its onset but the association process is halted when the core syllable fails to locate the vowel for its nucleus. Thus, *i*-epenthesis is triggered. The templatic melody is then applied which overwrites and then delinks the epenthetic *i*. The correct derivation sdaduuk^{w} results.

Given McCarthy and Prince's definition of melodic overwriting discussed in Section 3.7, there must be a vocalic element, epenthetic *i* in this case, in the copy. Melodic overwriting is a type of feature changing association between the

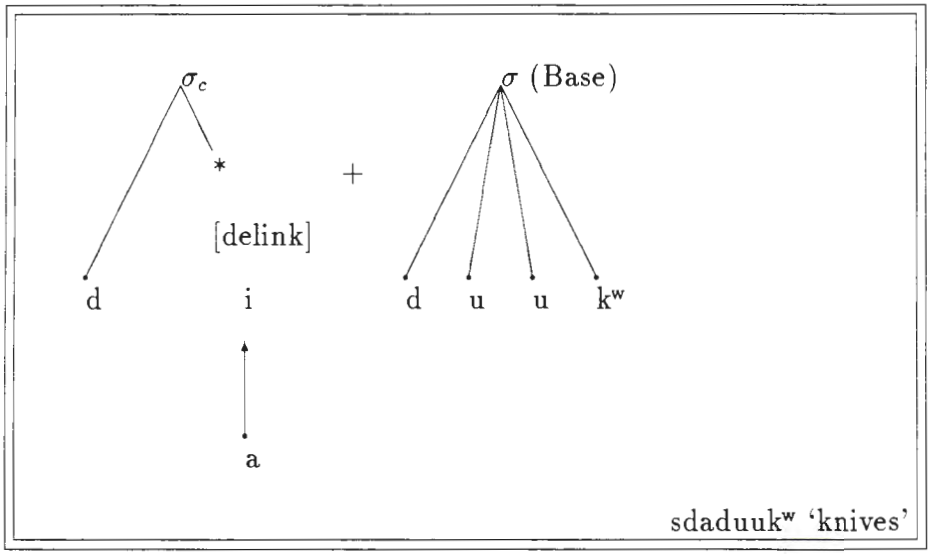

Figure 4.13: /A/ Templatic Melody

melodic tier and the melodic template /a/, therefore there must be an element for the melodic template to change.

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

In reviewing the previous examples, it becomes apparent that a PM approach can account for diminutive and collective reduplication in Lushootseed. One template which is prefixed to the base is necessary to account for both of these forms. Only an *i*-epenthesis rule for cases where there is an empty nucleus and an *a* templatic melody for the collective need be added to the analysis to generate the correct form.

4.4 VC Reduplication

The out-of-control, isolative, and counting types of reduplication take the form of VC, as I have mentioned in prior discussion. As we have seen in Chapter 1, Davis has analysed this form using a segmental approach arguing that both

Clements and Broselow and McCarthy's frameworks are ineffective in accounting for this form.

Davis states that although Clements' approach is able to account for cases of reduplicative infixation in Lushootseed, it fails when applied to cases of plural reduplication, such as those found in Hausa where autosegmental spreading is necessary.

A segmental approach, such as that proposed by Broselow and McCarthy, fails to account for this form of reduplication on account of it being a phoneme driven system. In answer to this Davis proposed a template driven association within the segmental model, but by doing so the analysis becomes stipulative.

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 is case of suffixation of a heavy syllable to the first syllable of the stem. The boundary is transparent which allows the non-geminating application of the onset rule to apply. This can be seen in Figure 4.14.

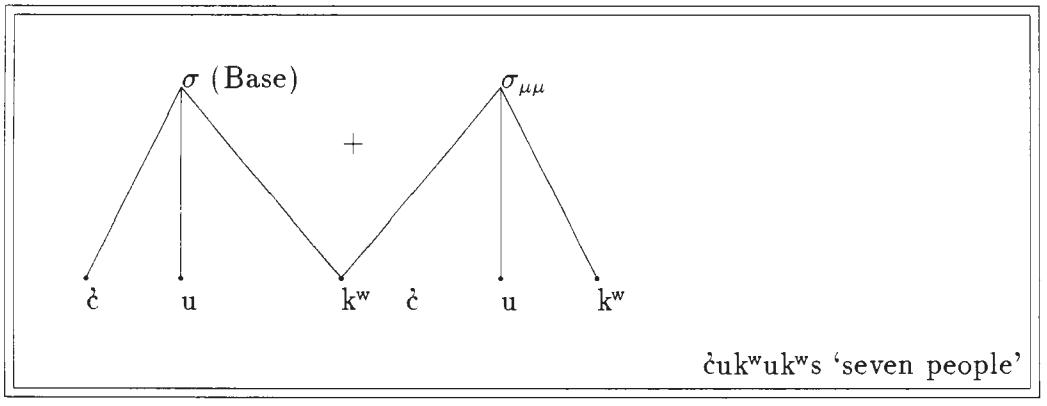

Figure 4.14: Heavy Syllable Suffixation

The base has been defined as the first syllable *c̓ukʷ* to which the heavy syllable template is suffixed. The base is then copied, and association takes place. An opaque boundary would incorrectly generate * c̓ukʷc̓ukʷs, therefore

the boundary must be transparent. Thereby, the onset of the template can associate with the k^w of the base, k^w being the first available consonant in the melody. The remaining two morae associate with *u* and k^w of the copied melody. ċuk^{w}uk^{w}s is the resulting correct derivation of counting reduplication.

Clearly, with the PM approach the correct form of out-of-control, isolative and counting reduplication can be attained without the kind of stipulations necessary in a segmental approach. The same template used to account for the distributive reduplication is suffixed to the base with the specification of a transparent boundary generating the correct derivation.

4.5 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 *a* replaces it and is reduplicated.

A segmental analysis of the augmentive 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 as seen in Figure 4.15. 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 with the V of the skeleton thus satisfying the template leaving all unassociated elements to delete through Stray Erasure. Where the root vowel is not *a*, it is necessary to propose a preassociated *a* in the template. Although a segmental approach can adequately account for this form of reduplication, PM is able to account for it without the copying of the base.

In a PM approach, a single mora template is suffixed to the first core syllable of the base. It is clearly a case of suffixation and not of prefixation as the incorrect form would result. As a prefixed template, there would not be a

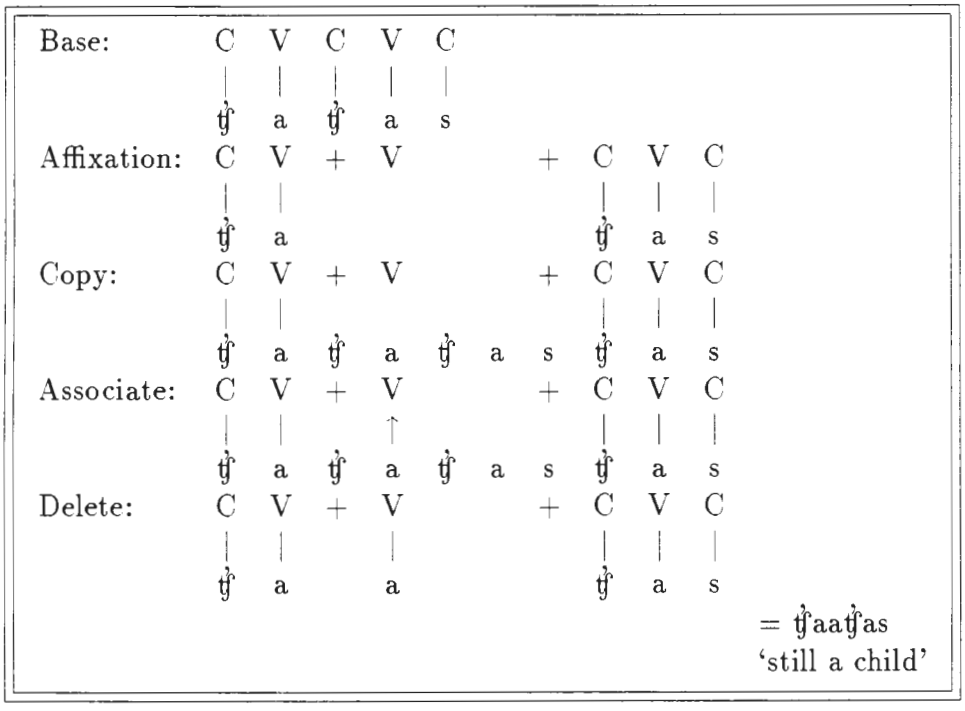

Figure 4.15: Segmental Analysis on the Augmentive

melody with which to associate resulting in a non-reduplicated form. Spreading instead of copying provides the melody for the augmentive template; see Figure 4.16. The base is then ʧa and the moraic template associates with *a* of this core syllable by means of spreading. The result is ʧaaʧas which is a correct derivation of the augmentive.

In the case of a CC stem, I propose that the epenthetic ə is overwritten by an *a* of a templatic melody. In addition, this reduplicative process would occur closer to the surface level after ə-epenthesis. Consider Figure 4.17.

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. [1] The *a* then spreads to satisfy the moraic template.

PM provides then a very efficient account of the augmentive by avoiding the

[1] As in the case of the collective, the ə is a necessary element in the melody that the melodic template overwrites.

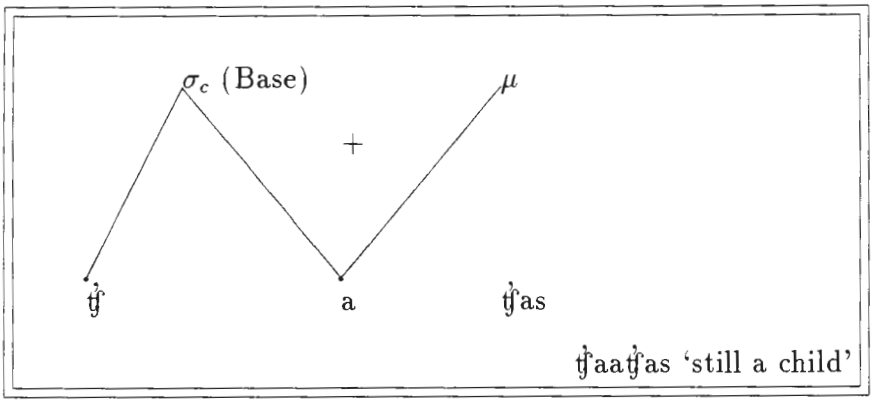

Figure 4.16: Prosodic Analysis of the Augmentive

copying of the base which is circumscribed as the initial core syllable. A single mora constitutes the template.

We have looked at four differing forms of reduplication in Lushootseed whose segmental templates are CVC, CV, VC, and V. A segmental approach appears to be able to account for CVC, CV and V reduplication, but fails in its attempts to account for VC reduplication without imposing stipulations of the direction of association upon the theory.

However, the PM approach can easily account for VC and CVC types of reduplication using only one template, the heavy syllable. Only a specification of boundary transparency and type of affixation distinguishes these two forms from one another. CV types are also easily accounted for by means of a core syllable template. Only one additional template is needed to account for the V forms of reduplication in which case copying of the base is unnecessary. PM is then able to account for all forms of reduplication in Lushootseed using only three templates, thereby being more effective in generalizing the language process of reduplication in this language.

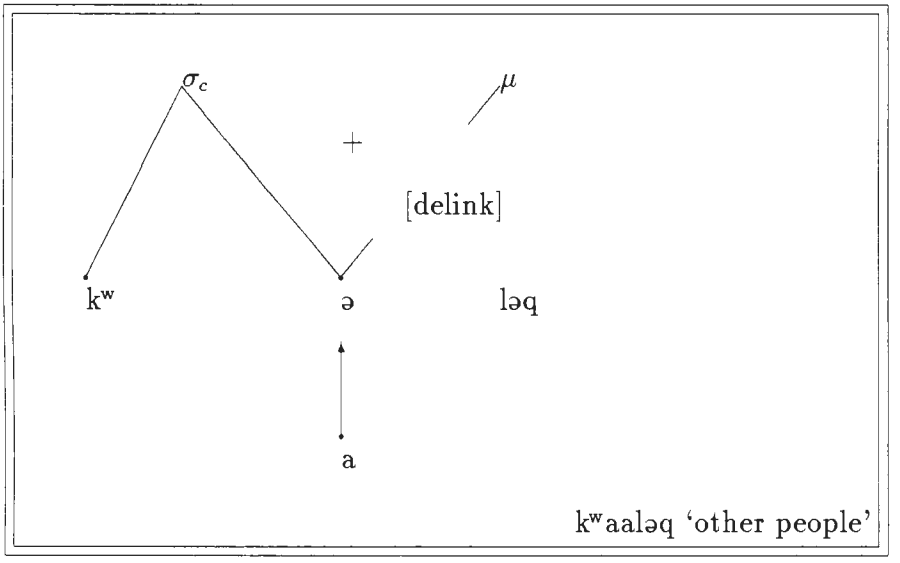

Figure 4.17: CC Stem Augmentive Reduplication

Chapter 5

Conclusion

The four forms of reduplication in Lushootseed have now been analysed in prosodic terms. I will provide an overview of this analysis before discussing the implications this analysis has for further research and then conclude the paper.

5.1 Overview

Syllable templates can account for the four forms of reduplication in Lushootseed CVC, CV, VC and V. The base for the process is the initial syllable of the root. The type of affixation of the template and the nature of the boundary are dependent on the form of reduplication.

The template for the first form, CVC is the heavy syllable. This is prefixed to the base with the boundary of affixation being opaque. It is a straightforward analysis that generates the correct form of the distributive type of reduplication. In addition, with the specification of a transparent boundary certain cases, where high frequency alters the surface structure of the derivation, are accounted for by the same template. Previous segmental analyses, such as Broselow's, have not been successful in deriving these forms from the same distributive template, although they are successful in generating this particular form of reduplication.

A core syllable constitutes the template for the second form, CV. Like in CVC reduplication the template is prefixed to the base and the boundary is opaque. Uncomplicated cases of the diminutive are easily derived using this syllable template. As I have previously noted the diminutive can also be derived

using a segmental template, such as the one proposed by Bates and Broselow. However, the prosodic method, like that proposed by Bates, avoids the stipulations necessitated by Broselow's approach in cases of long root vowels and stem-initial consonant clusters.

Where the root vowel is long, the copy is ensured to have the same quality of the original assuming Clements' theory of transfer. Consequently, the association process is blocked, for the vocalic requirements of the template can find no correspondent in the melody, thereby triggering *i*-epenthesis.

Much the same process occurs in cases of stem initial consonant clusters. However, here the base for the reduplication process is the consonant cluster which contains no vocalic elements. Association is therefore blocked.

By incorporating the mechanism of templatic overwriting, the same approach can account for the collective type of reduplication. Broselow and Bates do not account for this type in their analyses. While it may be possible in a segmental approach by stipulating a preassociated *a*, the prosodic approach is preferable as it maintains the original moraic structure.

Although both frameworks are template driven, a prosodic analysis is able to account for the CV form where Davis' fails. Bates is able to derive this form, but her theory does not extend beyond the diminutive type to include the collective or the other forms of reduplication.

The third form of reduplication assumes the same template as that for the CVC form, the heavy syllable. However, in this case the mode of attachment is suffixation where the boundary is designated as being transparent. The non-geminating application of the universal onset principle ensures that base syllable onset associates with the correct melodic constituent producing the correct derivation.

A prosodic analysis provides an uncomplicated solution to a problematic form of reduplication. Most segmental analyses fail in accounting for the VC

form with the exception of Davis who stipulates that his framework is template driven. However, by doing so his approach is unable to account for the other forms of reduplication in Lushootseed.

The final form is the V form of the augmentive type of reduplication. A mora template is suffixed to the base. However, copying does not provide the melody for the template. The phonemic properties of the base spread to the template and the template associates with those its shape requires. As with the collective, templatic overwriting is employed to create the correct derivation. It is then well within the means of a prosodic framework to account for a form of reduplication that has not yet been addressed.

5.2 Synopsis

In summary, a syllable designated as either heavy, core or mora constitutes the templates for reduplication. This template is suffixed or prefixed—infixation does not occur—to the base which is always the initial syllable of the word where opacity is specified. In cases where a specific phoneme is always associated with the template, templatic overwriting is placed into effect.

5.3 Implications for Further Research

While researching this topic, some extensions of this analysis became apparent. A prosodic account of multiple reduplication in Lushootseed, the integration of such an account into a model of Lexical Phonology and the application of the framework to other members of the Salish language family are potential topics that follow from this analysis.

Firstly, given that the framework can account for the four different forms of reduplication in Lushootseed, it is plausible to assume that it has the capabilities of correctly deriving cases of multiple reduplication. I touched on this briefly in

my discussion of the CVC form of reduplication, but an in-depth analysis should produce interesting results.

As we have seen with the derivation of saqʷaqʷsaqʷ, a prosodic analysis can potentially account for this very productive process of multiple reduplication. Broselow proposes an analysis that is segmental in nature which, as I have pointed out, cannot account for all forms of reduplication in the language without becoming too stipulative. Her theory incorporates the syntactic notion of subjacency evident in her statement that reduplication copies only the portion of the word that is contained in a subjacent cycle. Although reduplication is a part of an ordered cycle in a model, such as Lexical Phonology, a basic premise of the prosodic framework is its synchronous approach to reduplication. This would rule out any appeal to cycles within the framework. With further research and analysis, I believe that a prosodic framework would prove a viable means of accounting for multiple reduplication.

Secondly, an integration of a prosodic analysis of reduplication and other languages processes dependent on prosody into a model of lexical phonology would produce a very efficient means of accounting for language phenomena in Lushootseed. This could easily extend to analyses of other languages. In addition, such an approach could account for the interaction between components of the grammar.

In my analysis it has become apparent that reduplication must interact with phonological rules, such as *i*-epenthesis and resyllabification processes as in the diminutive derivation of words such as dʒ̓u?. As well, reduplication and stress rules considering ?-insertion are closely related.

Therefore, given that there is a symbiotic relationship between reduplication and other language processes, it can be assumed that a prosodic analysis of reduplication could be easily integrated into a phonological method that provides a formal account for the relationships between language processes, such

as Lexical Phonology. The combination of the two theories would constitute a very effective and elegant framework with which to account for all modules of Lushootseed grammar.

Thirdly, valuable information on the nature of Salish could be gained if this approach was applied to the various members of this language group. Comparisons of reduplication processes could then be made leading to the formulation of generalizations and distinctive features which could prove insightful for historical studies.

5.4 Conclusion

It has been the purpose of this thesis to test the ability of a framework based on that proposed by McCarthy and Prince that appeals to the notion of the prosodic constituent rather than to that of the segmental to account for reduplication in Lushootseed. The framework was able to provide templates and the apparatus needed to derive the varied forms that this language process assumes and was able to do so without the need of the same stipulations found in other analyses. Without relying on stipulations necessary to generate correct forms in segmental analyses, the prosodic approach more closely reaches the linguistic ideal of a universal accounting for a specific language process.

Bibliography

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

2. Bagemihl, B. (1991). 'Syllable Structure in Bella Coola'. *Linguistic Inquiry* **22**, 589-646.

3. Bates, D. (1986). *An Analysis of Lushootseed Reduplication.* Unpublished ms., University of Washington, Wa.

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

5. Broselow, E. & McCarthy, J. (1983). 'A Theory of Internal Reduplication'. *The Linguistic Review* **3**, 25-88.

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

7. Clements, G.N. & Keyser, S.J. (1983). *CV Phonology: A Generative Theory of the Syllable.* Cambridge, Ma.: MIT Press.

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

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

10. van Eijk, J.P. *A Theory of Copying Features.* Unpublished ms., University of Victoria, B.C.

11. Goldsmith, J. (1976). 'An Overview of Autosegmental Phonology'. *Linguistic Analysis* **2**, 23-68.

12. Haeberlin, H.K. (1974). 'Distribution of the Salish Substantival [Lexical] Suffixes'. In M. Terry Thompson (ed.). *Anthropological Linguistics* **16**, pp. 219-350.

13. Haeberlin, H.K. (1918). 'Types of Reduplication in Salish Dialects'. *International Journal of American Linguistics* **1**, 154-174.

14. Halle, M. & Vergnaud, J.R. (1978). *Metrical Structures in Phonology.* Unpublished ms., MIT, Ma.

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

16. Hayes, B. (1985). 'Iambic and Trochaic Rhythm in Stress Rules'. In M. Niepokuj, M. van Clay, V. Nikiforidou & D. Feder (eds.). *Proceedings of the Berkeley Linguistics Society* **11**, pp. 429-446.

17. Hayes, B. (1980). *A Metrical Theory of Stress Rules.* Ph.D. dissertation, MIT, Ma. Bloomington, In.: Indiana University Linguistics Club.

18. Hess, T.M. (1977). 'Lushootseed Dialects'. *Anthropological Linguistics* **19**, 403-419.

19. Hess, T.M. (1966). 'Snohomish [Lushootseed] Chameleon Morphology'. *International Journal of American Linguistics* **32**, 350-356.

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

21. Kahn, D. (1980). *Syllable-Based Generalizations in English Phonology.* New York & London: Garland Publishing, Inc.

22. Kahn, D. (1976). *Syllable-Based Generalizations in English Phonology.* Bloomington, In.: Indiana University Linguistics Club.

23. Kaisse, E.M. *On the Conjunctive Application of Mirror Image Rules.* Unpublished ms., University of Washington, Wa.

24. Kaye, J. & Lowenstamm, J. (1984). 'De la Syllabicité'. In F. Dell, D. Hirst & J.R. Vergnaud (eds.). *Forme Sonore du Langage.* Paris: Hermann.

25. Kirkham, S.P. (1992). 'Lushootseed Reduplication and Prosodic Morphology: The Heavy Syllable Template'. Presented at *Linguistic Colloquium*, University of Victoria, B.C.

26. Kirkham, S.P. (1991a). 'A Preliminary Analysis of Reduplication in Lushootseed: A Prosodic Approach'. *Papers for the 26th International Conference on Salish and Neighbouring Languages*, 241-257.

27. Kirkham, S.P. (1991b). *A Preliminary Analysis of Reduplication in Lushootseed: A Prosodic Approach I.* Unpublished ms., University of Victoria, B.C.

28. Kirkham, S.P. (1990). *An Overview of Lexical Phonology.* Unpublished ms., University of Victoria, B.C.

29. Leben, W. (1973). *Suprasegmental Phonology.* Ph.D. dissertation, MIT, Ma.

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

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

32. McCarthy, J. (1979). *Formal Problems in Semitic Phonology and Morphology.* Ph.D. dissertation, MIT. Cambridge, Ma.: Garland Publishing.

33. McCarthy, J. & Prince, A. (1990). 'Foot and Word in Prosodic Morphology: The Arabic Broken Plural'. *Natural Language and Linguistic Theory* **8**, 209-283.

34. McCarthy, J. & Prince, A. (1986). *Prosodic Morphology.* Unpublished ms., University of Massachusetts, Amherst & Brandeis University.

35. Mohanan, K.P. (1986). *The Theory of Lexical Phonology.* Dordrecht: D. Reidel Publishing Co.

36. Prince, A. (1980). 'A Metrical Theory of Estonian Quantity'. *Linguistic Inquiry* **11**, 511-562.

37. Rose, S. (1976). *Lenition and Glottalization.* M.A. Thesis, University of Victoria, B.C.

38. Tweddell, C.E. (1950). 'The Snoqualmie-Duwamish Dialects of Puget Sound Coast Salish: An Outline of Phonemics and Morphology'. *University of Washington Publications in Anthropology* **12**, 1-78.

39. Uda, C. (1991). *An Overview of Prosodic Morphology.* Unpublished ms., University of Victoria, B.C.

40. Williams, E. (1971). 'Underlying Tone in Margi and Igbo'. *Linguistic Inquiry* **7**, 463-484.

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(1991)."A GPSG Analysis of Case Agreement in German". *Working Papers of the Linguistics Circle, 10 (1)*, 27-38.

(1991)."A Preliminary Analysis of Reduplication in Lushootseed: A Prosodic Approach". *Papers for the 26th International Conference on Salish & Neighbouring Languages*, 241-257.

(1991).*A Structuralist Approach to Literature.* Paper presented at the 7th Annual Northwest Linguistics Conference, Victoria, B.C.

(1990)."The Universality of Legends?". *Working Papers of the Linguistics Circle, 9 (1)*, 119-127.

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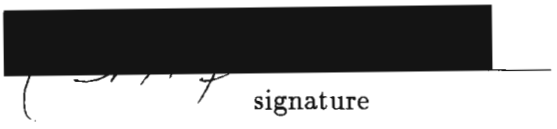

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