CHAPTER 3.

SUFFIXAL BARE-CONSONANT REDUPLICATION

3.1. Introduction

In this chapter, I present cases of suffixal bare-consonant reduplication. In these cases, the reduplicant surfaces as a C or CC sequence in order to maintain alignment properties of other suffixes in the form. The first case language that I discuss is Coushatta, a Muskogean language spoken in Louisiana. The second case that I discuss is in reference to dialects of Yokuts, a Penutian language spoken in California.

3.2. Coushatta Plural Reduplication

The formation of plurals among stative verbs in Coushatta[27], a Muskogean language, is marked by a phenomenon called simple punctual reduplication (Kimball 1988, 1991). According to Kimball, in punctually reduplicated forms, the verb root is suffixed by a CV reduplicant which is composed of a copy of the initial onset of the root and the vowel /o/, with a few exceptions. I argue that although there are three different patterns evident, all are part of the same phenomenon: a combination of minimal reduplication (which provides a consonant), and the addition of the suffix *o* (which provides a vowel). Since the reduplicant is a single consonant, I include it among the reduplicative phenomena known as bare-C reduplication.

[27] This language is also known as Koasati.

The first case is one in which the reduplicant is always a copy of the initial onset. I refer to this case as the *C-initial* case. The reduplicant is followed by the morpheme *o*, which is a plural morpheme, and an infinitive suffix.[28] The data below illustrate this:

(132) Consonant-Initial Punctual Reduplication

cofók-RED-o+n to be angled +classifier+infinitive	+an	cofok**c**ó:nan
lapát-RED-o+k to be narrow+classifier+infinitive	+in	lapat**l**ó:kin
lahás-RED-o ‘to be light in weight'+classifier+infinitive	+p +in	tahas**t**ó:pin
łimíh-RED-o+k 'to be smooth'+classifier+infinitive	+on	łimihłó:kin[29]
tonóh-RED-o+k 'to be round' +classifier+infinitive	+in	tonoh**t**ó:kin

(Kimball 1988: 436)

The length of the vowel in the morpheme *o* in the forms shown above is entirely predictable by a phenomenon in infinitive forms where the nucleus of the penultimate syllable is lengthened in order to provide a heavy syllable in this position (Kimball 1991: 295, 393).

Another case is one in which the copied portion of the reduplicant is the nearest available onset, when the root is vowel-initial, the *V-initial* cases. Presently, the available

[28] It is not clear as to why the vowel in each of the infinitive suffixes is not consistent across the paradigm, but it may vary with the classification of the verb.
[29]The vowel difference in the infinitive suffix for this particular form is unexplained, but will not bear on the present analysis.

data on this case is extremely limited, as punctual reduplication is no longer productive among most speakers[30]. The following form illustrates:

(133) Vowel-Initial Punctual Reduplication

alót-RED-o+k	+an	alotló:kan
'to be full'	+classifier+infinitive	

(Kimball 1998: 436)

Finally, there is a rare case in which the two leftmost syllables form a VC.CVC pattern. In such cases, a form /ho/ is infixed after the initial heavy syllable; I will refer to this case as the *initial-heavy* case. The forms in (134) illustrate:

(134) VC-Initial Punctual Reduplication (Kimball 1988: 436)

akłát-RED-o +l	+in	akhołátlin	*akłatholin, *akłatkolin, etc.
'to be oversize'	+classifier+infinitive		
okcáy-RED-o+y	+an	okhocáyyan	
'to be alive'	+classifier+infinitive		
okcák-RED-o+k	+on	okhocákkon	
'to be blue'	+classifier+infinitive		

These last forms perform the same function as the C-initial and V-initial cases, but without apparent reduplication.[31] It will be my position that this case is also punctual reduplication, and is the result of the same constraint-ranking as that for the C-initial and vowel initial cases.

[30] This phenomenon is no longer productive in Coushatta. Only a few older speakers still use reduplication in such forms.(Hendricks, field notes)

[31] It should be noted that the morpheme *o* is not lengthened in these forms, since it is not in penultimate position.

In this chapter, I assume that the fixed segment [o] is a plural morpheme that is necessary in addition to the reduplicant in order to provide the precise semantic meaning. This assumption is based upon work from Hendricks (1997), which gives arguments that the fixed segment /o/ is a separate morpheme, and not the emergence of an unmarked segment in Coushatta (a la McCarthy & Prince 1995).

Briefly, there is evidence that the /o/ can be found in other contexts as a plural morpheme. Also, roots that can be argued to have an inherent plural specification, such as *mislin* 'to blink', are pluralized by reduplication without the /o/ morpheme (cf. *mis**mih**lin*, **mis**m**ohlin*, **mis**m**o:lin*, etc.). Finally, there is evidence to support the argument that Coushatta favors consonant deletion over epenthesis in resolving structural problems, such as illicit consonant clusters, suggesting the [o] is not simply epenthetic.

In section 3.2.1, I present an account of the reduplicant in the C-initial and V-initial cases. This analysis accounts for the placement of the reduplicant, the edge-matching between the reduplicant and the root, and the single-consonant shape of the reduplicant In section 3.2.2, I show how this analysis can be extended to account for the initial-heavy forms.

Under the compression model, an important implication of this analysis is that it is not dependent upon a templatic constraint for the reduplicant. This obviates the need for a conception of a "hidden" prosodic structure of the reduplicant that never appears on the surface. Instead, the reduplicant surfaces as a single consonant in order to maintain maximal satisfaction of the alignment of the reduplicant and alignment of other morphemes in the form.

3.2.1. C-Initial and V-Initial Cases

3.2.1.1. Placement of the Reduplicant

In this section, I present an account of the placement of the reduplicant in the C-initial and vowel-initial cases. In these cases, the reduplicant appears to the right of the root and to the left of the plural morpheme *o*. Taking the first observation, this can be accounted for by the ranking of leftward alignment of the root (ALIGN-Root-L) over leftward alignment of the reduplicant (ALIGN-RED-L). The following tableau illustrates for the form *tahasto:pin* 'to be light in weight (pl.)' (for convenience, I do not consider the classifier and infinitive suffix, as they do not play a role):

(135) ALIGN-Root-L >> ALIGN-RED-L

/tahas, RED, o/	ALIGN-Root-L	ALIGN-RED-L
☞ a. tahas-**t**-o		tahas
b. **t**-tahas-o	t!	

As tableau (135) shows, the reduplicant must be placed to the right of the root, as in candidate (a), in order to satisfy ALIGN-Root-L, at the expense of violations of ALIGN-RED-L. Candidate (b), in which the reduplicant is placed to the left of the root, satisfies ALIGN-RED-L, but incurs a fatal violation of the highly-ranked ALIGN-Root-L, and is therefore eliminated.

In the C-initial and V-initial cases, the reduplicant always appears to the right of the root, and the reduplicant does not infix in order to better satisfy ALIGN-RED-L. This suggests that a constraint that ensures the contiguous nature of the root is never violated.

However, as one may note from the data in (134), which illustrate the initial-heavy cases, the reduplicant infixes to the root. Therefore, there must be some other constraint, which allows infixation. The basis of this constraint can be observed by the following diagram:

(136) Sites for Reduplication

(a) [tahas]to:pin
(b) [alot]lo:kan
(c) [ak]hołatlin

In the diagrams in (136), it can be seen that in the C-initial and V-initial forms, the reduplicant is attached to a light syllable-heavy syllable sequence, while the reduplicant is attached to a heavy syllable in the initial-heavy forms. In all three cases, the reduplicant appears to be aligned to an iambic foot.

In order to show that the reduplicant is indeed aligned to an iambic foot, I provide a brief motivation of foot structure in these Coushatta forms. As discussed previously, there is a phenomenon in indicative forms whereby the penultimate syllable must be accented (Kimball 1991). If the penultimate syllable is a CVC syllable, then no alteration takes place, and the penultimate syllable is accented. However, if the penultimate syllable does not have a coda, then the vowel surfaces as lengthened and accented.

Such a phenomenon shows that the accented penultimate syllable must be a heavy syllable. The following diagram shows a variety of possible foot structures for *tahastó:pin*, based upon penultimate stress of a heavy syllable:

(137) Possible Foot Structures

(a) (tahas)(tó:)(pin)

(b) (ta)(has)(tó:)(pin)

(c) ta(has)(tó:)(pin)

Of the possible foot structures in (137), only (137)(a) fully parses the form without allowing degenerate feet. The structure in (137)(a) is based upon an iambic foot type. I therefore propose that Coushatta foot structure is based on an exhaustive parsing into iambic feet.

Such an analysis requires the interaction of three constraints: one that requires that foot be of an iambic type, one that requires that all syllables be parsed into feet, and one that requires that indicative forms contain a heavy penultimate syllable. These three constraints are defined informally below:

(138) FOOTTYPE=IAMBIC (after Prince & Smolensky 1993)

Feet must be of an iambic type.

(139) PARSE-σ

All syllables must be parsed into feet.

(140) HEAVY PENULT[32]

Indicative forms must have a heavy penultimate syllable.

I assume that HEAVY-PENULT is undominated, as all indicative forms contain a heavy penultimate syllable. The following tableaux illustrate the interaction of the above constraints on *tahasto:pin*, *alotlo:kan*, and *akhoɬatlin*:

[32] The precise definition of HEAVY PENULT is beyond the scope of this dissertation, but this will serve as an informal definition that accounts for the facts.

(141) C-Initial:

	HEAVY-PENULT	FTTYPE=IAMBIC	PARSE-σ
☞a. (tahas)(to:)(pin)			
b. ta(has)(to:)(pin)			*!
c. (ta)(has)(to:)(pin)		*!	

(142) V-Initial:

	HEAVY-PENULT	FTTYPE=IAMBIC	PARSE-σ
☞a. (a lot)(lo:)(kan)			
b. a(lot)(lo:)(kan)			*!
c. (a)(lot)(lo:)(kan)		*!	

(143) Initial-Heavy:

	HEAVY-PENULT	FTTYPE=IAMBIC	PARSE-σ
☞a. (ak)ho(ɬat)(lin)			*
b. (akho)(ɬat)(lin)		*!	
c. (ak)(ho)(ɬat)(lin)		*!	

As tableaux (141) and (142) show, candidates in which the form is not parsed into iambic feet either violate PARSE-σ (candidate (b)) or FTTYPE=IAMBIC (candidate (c)).

In tableau (143), one can observe that FTTYPE=IAMBIC must be ranked above PARSE-σ. Candidates (b) and (c), in which the form is exhaustively parsed into feet, violate FTTYPE=IAMBIC by containing either a (HL) foot or a (L) foot, both of which are not iambic. The only possible parsing is found in candidate (a), in which a syllable is not parsed into a foot. The above analysis shows that the reduplicant is always attached to an iambic foot.

In chapter 1, I discussed various definitions of the base of affixation. One definition of the base (given in (32)) is the phonological material to which the affix is attached (McCarthy & Prince 1993a). Since the reduplicant is always attached to an iambic foot, then the base for affixation may be defined as an iambic foot. However, such a definition of the base for affixation would not be consistent with the definition of the base as "the output of the input stem" (McCarthy & Prince 1995), if the input stem is defined as all material that is not the reduplicant. However, as discussed in Bird & Hendricks (in prep), the base must sometimes be defined at the output level, not the input level. Based on this definition of the base, the base can be defined as an output iambic foot.[33]

Therefore, I propose that the base for reduplication in Coushatta is an iambic foot. In order for the right edge to be defined correctly, it is necessary for the reduplicant to be aligned to an iambic foot. This can be captured by the following constraint:

(144) ALIGN-RED-Iamb

Align (RED, L, Iamb, R)[34]
Align the left edge of the reduplicant to the right edge of an iambic foot.

A constraint that ensures that output morphemes be contiguous strings (O-CONTIG, defined in (95)), must be ranked low, so that the initial-heavy case can infix. The following tableau illustrates:

[33] Urbanczyk (1996) also proposes that the base can be defined on the output level through emergence of the unmarked. Under this proposal, the base is determined by choosing the best base-reduplicant relationship that satisfies structural constraints of the language.
[34] There will have to be a comparable constraint for the plural morpheme *o*, as it also infixes.

(145) ALIGN-RED-Iamb

	ALIGN-RED-Iamb	ALIGN-Root-L	ALIGN-RED-L	O-CONTIG
☞ a. tahas-**t**o-pin				
b. ta-**t**o-haspin	σ!		tahas	**
☞c. ok-**h**o-cayyan			ok	**
d. okcay-**h**o-yan			okc!ay	

As tableau (145) shows, candidate (a) is the correct optimal form for the C-initial case. Candidate (b) is eliminated by ALIGN-RED-Iamb, and O-CONTIG plays no role. Candidate (c) is the correct optimal form for an initial-heavy case, so that the reduplicant is infixed to the leftmost iamb, at the expense of violations of O-CONTIG. Candidate (d) shows that the base for reduplication must be the leftmost iamb, as iambs further to the right are eliminated by violations of ALIGN-RED-L. In subsequent tableaux for C-initial and V-initial forms, I do not include O-CONTIG or ALIGN-RED-Iamb, but will only consider candidates that do not infix.

In order to account for the placement of the reduplicant with respect to the plural morpheme *o*, I propose that reduplicant alignment be ranked higher than a comparable constraint for the plural morpheme (ALIGN-*o*-L). The following tableau illustrates:

(146) ALIGN-Root-L >> ALIGN-RED-L >> ALIGN-*o*-L

/tahas, RED, o/	ALIGN-Root-L	ALIGN-RED-L	ALIGN-o-L
☞ a. tahas-**t**-o		tahas	tahast
b. tahas-o-**t**		tahaso!	tahas

In tableau (146), candidate (a), in which the reduplicant appears to the left of the plural morpheme, is chosen over candidate (b), which incurs a fatal violation of ALIGN-RED-L.

3.2.1.2. Edge-Matching of the Reduplicant

In this section, I provide an account for the edge-matching of the reduplicant in the C-initial cases. In the C-initial case, the reduplicant matches the leftmost segment of the root. In the V-initial case, the reduplicant matches the leftmost consonant of the root, not the leftmost segment of the root

As discussed in previous chapters, edge-matching is accounted for by the ANCHOR schema of constraints. In the case of the consonant-initial reduplicants, the left edge of the reduplicant matches the left edge of the root. Based on this, the appropriate parametrization of ANCHOR is LEFT-ANCHOR$_{BR}$. According to McCarthy & Prince, "the Base and Reduplicant are strictly adjacent" (1993a: 62). Therefore, since the reduplicant is attached to the root, the base can be identified as the root. The following tableau illustrates (I mark the base and reduplicant with square brackets):

(147) LEFT-ANCHOR$_{BR}$

/tahas, RED, o/	ALIGN-Root-L	ALIGN-RED-L	ALIGN-o-L	LEFT-ANCHOR$_{BR}$
☞ a. [tahas]$_B$-[**t**]$_R$-o		tahas	tahast	
b. [tahas]$_B$-[**s**]$_R$-o		tahas	tahass	*!

In tableau (147), candidate (a) is chosen as optimal, as the reduplicant matches the left edge of the base, which is the root. Candidate (b) is eliminated, as the reduplicant matches the right edge of the base.

However, in the case of a V-initial root, this constraint ranking does not choose the correct optimal form. The left edge of the root does not match the reduplicant in this pattern. The following tableau illustrates for *alotlo:kan* ‘to be full (pl.)’:

(148) Vowel-Initial Roots

/alot, RED, o/	ALIGN-Root-L	ALIGN-RED-L	ALIGN-o-L	LEFT-ANCHOR$_{BR}$
☞ a. [alot]$_B$-[**l**]$_R$-o		alot	alotl	*!
❽ b. [alot]$_B$-[**a**]$_R$-o		alot	alota	

As tableau (148) shows, the incorrect candidate (b) is chosen as optimal, as it satisfies LEFT-ANCHOR$_{BR}$. Candidate (a) is eliminated, as it does not satisfy LEFT-ANCHOR$_{BR}$.

In order to eliminate candidate (b), this configuration must be ruled out. As Kimball (1991) shows, adjacent vowels are not permitted in Coushatta forms. According to Kimball, "metathesis and vowel deletion eliminate vowel clusters," (Kimball 1991:35) but when such process are not available, clusters arise, which are "separated by a glottal stop, although occasionally, a glide transition can be heard." (ibid.)

This being the case, one may say that there is a general prohibition against VV sequences in Coushatta. I propose that a constraint which disallows this is ONSET (discussed in section 2.3). With this constraint ranked above LEFT-ANCHOR$_{BR}$, a candidate such as (148)(b) is eliminated in favor of a candidate which does not anchor the left edge. The following tableau illustrates:

(149) ONSET >> LEFT-ANCHOR$_{BR}$

/alot, RED, o/	ALIGN-Root-L	ALIGN-RED-L	ALIGN-o-L	ONSET	LEFT-ANCHOR$_{BR}$
☞ a. [alot]$_B$-[**l**]$_R$-o		a lot	alotl	*	*
b. [alot]$_B$-[**a**]$_R$-o		a lot	alota	**!	
❽ c. [alot]$_B$-[**t**]$_R$-o		a lot	alott	*	*

As tableau (149) shows, candidate (b), which satisfies LEFT-ANCHOR$_{BR}$, is eliminated by the fatal violation of ONSET. However, both candidates (a) and (c) are then equally viable

as optimal candidates, since neither satisfy LEFT-ANCHOR$_{BR}$, but both violate ONSET once (since the root is V-initial, there will always be at least one violation of ONSET).

Therefore, it remains to find a way to account for anchoring the reduplicant to the root in the consonant-initial cases, but matching the reduplicant to the leftmost consonant in the vowel-initial cases. I propose that the distinction between candidates such as (149)(a) and (149)(c) are based on the differing structural roles between the corresponding segments of the reduplicant and base. For example, in candidate (149)(a), the reduplicant, which is an onset itself, corresponds to a onset in the base. However, in (149)(c), the reduplicant corresponds to a coda in the base, not an onset.

Since candidate (149) is not the true surface candidate, then the corresponding segments between the base and the reduplicant of the optimal candidate must have the same structural roles. This can be captured by the following constraint:

(150) STROLE$_{BR}$ (after McCarthy & Prince (1993a, 1995))

IDENT$_{BR}$[Structural Role]
Corresponding segments must have the same structural role.

This constraint is satisfied, as long as corresponding segments have the same structural prosodic role. For example, if a segment in one string is an onset, the corresponding segment in the other string must also be an onset. By placing this constraint into the hierarchy, it is clear that the candidate which reduplicates the leftmost consonant is chosen as optimal. At this point, the ranking of STROLE$_{BR}$ is not crucial. The following tableau illustrates (I leave out ALIGN-Root-L, and do not consider candidates that violate this constraint.):

(151) STROLE$_{BR}$

/alot, RED, o/	ALIGN-RED-L	ALIGN-o-L	ONSET	LEFT-ANCHOR$_{BR}$	STROLE$_{BR}$
☞ a. [alot]$_B$-[**l**]$_R$-o	a lot	alotl	*	*	
b. [alot]$_B$-[**a**]$_R$-o	a lot	alota	**!		
c. [alot]$_B$-[**t**]$_R$-o	a lot	alott	*	*	*!

As tableau (151) shows, candidate (c), in which the coda of the base is copied, is eliminated, as corresponding segments do not have the same structural role. Candidate (a) is then chosen, as it maintains the structural roles between the corresponding segments of the base and reduplicant. Therefore, the edge-matching between the reduplicant and the root is accounted for in the C-initial cases. In the next section, I present an account of the shape of the reduplicant in the C- and V-initial cases.

3.2.1.3. Shape of the Reduplicant

As this dissertation has shown, the shape of bare-consonant reduplicants can be accounted for by the interaction of alignment between the root and the reduplicant itself. The reduplicant surfaces minimally, in order to maximally satisfy this alignment. This holds true for Coushatta, as well. However, in Coushatta, the interaction is between not just the root and the reduplicant, but the root, the reduplicant, and the following suffix *o*. The following tableau illustrates for C-initial roots:

(152) Shape of the Reduplicant: C-Initial

/tahas, RED, o/	AL-Root-L	AL-RED-L	ALIGN-o-L	ONS	L-ANCH BR	ST ROLE BR
☞ a. $[\text{tahas}]_B$-$[\underline{\textbf{t}}]_R$-o		tahas	tahast			
b. $[\text{tahas}]_B$-$[\underline{\textbf{ta}}]_R$-o		tahas	tahasta!	*		
c. $[\text{tahas}]_B$-$[\underline{\textbf{tah}}]_R$-o		tahas	tahasta!h			
d. $[\text{tahas}]_B$-$[\underline{\textbf{tahas}}]_R$-o		tahas	tahasta!has			

In tableau (152), candidate (a) is chosen as the optimal form for the input /tahas, RED, o/. Candidates (b-d) show that any attempt to copy more of the base into the reduplicant results in fatal violations of ALIGN-o-L. The following tableau illustrates for V-initial roots:

(153) Shape of the Reduplicant: V-Initial

/alot, RED, o/	AL-Root-L	AL-RED-L	ALIGN-o-L	ONS	L-ANCH BR	ST ROLE BR
e. $[\text{alot}]_B$-$[\underline{\textbf{a}}]_R$-o		alot	alota	**!		
f. $[\text{alot}]_B$-$[\underline{\textbf{al}}]_R$-o		alot	alotal!	*		
g. $[\text{alot}]_B$-$[\underline{\textbf{alot}}]_R$-o		alot	alotal!ot	*		
☞ h. $[\text{alot}]_B$-$[\underline{\textbf{l}}]_R$-o		alot	alotl	*	*	

In tableau (153), Candidate (h) is chosen as the optimal form for the input /alot, RED, o/. Candidate (e) shows that reduplicating only the initial vowel results in an ONSET violation. Candidate (f) and (g) show that it is possible to offset that ONSET violation by copying more of the base, but such forms incur fatal violations of ALIGN-o-L. Candidate (h) satisfies ONSET while maximally satisfying ALIGN-o-L, even at the expense of a violation of LEFT-ANCHOR$_{BR}$, showing that LEFT-ANCHOR$_{BR}$ must be ranked below ONSET.

3.2.1.4. Summary

In the previous sections, I provided an account of the reduplicant in the C-initial cases, both consonant-initial and vowel-initial. The placement of the reduplicant is accounted for the by the relative rankings of root alignment, reduplicant alignment, and the alignment of the plural morpheme *o*. The edge-matching is accounted for by the interaction of ONSET, LEFT-ANCHOR$_{BR}$, and STROLE$_{BR}$. The shape of the reduplicant is accounted for by the maximal satisfaction of the alignment constraints, as is the thesis for this dissertation. The current constraint ranking is the following:

(154) O-CONTIG >> ALIGN-Root-L >> ALIGN-RED-L >> ALIGN-o-L >> ONSET >> LEFT-ANCHOR$_{BR}$, STROLE$_{BR}$

In section 3.2.2, I show that this analysis can be extended minimally to provide an account of the initial-heavy cases.

3.2.2. The Initial-Heavy Cases

In this section, I extend the analysis given in section 3.2.1 to the initial-heavy cases. For the reader's convenience, I reproduce the initial-heavy cases in (155)

(155) Initial-heavy Forms[35]

akłát +l +in ak**ho**łátlin
'to be oversize'+classifier+infinitive

okcáy +y +an ok**ho**cáyyan
'to be alive'+classifier+infinitive

okcák +k +on ok**ho**cákkon
'to be blue'+classifier+infinitive

It should be stated here that the forms in (155) are still considered to be part of the paradigm of punctual reduplication, as presented in Kimball (1991). However, these forms are distinct in that there is no actual copying. Theoretically, it is possible that the C-initial cases and the initial-heavy forms are both examples of the suffixation of a repetitive morpheme that either reduplicate or not, depending upon the constraints in the tableau. I follow this line of argument in chapter 5, but at this time, I still consider the initial-heavy cases to be examples of incomplete reduplication.

As stated above, it is my intention in this section to show that the initial-heavy cases can be accounted for by extension of the ranking given for the C-initial cases. To begin this, I present the evaluation of a form such as *akhołátlin* 'to be oversize (pl.). under the current ranking (I include O-CONTIG and ALIGN-RED-Iamb in this tableau):

[35] It should be noted that all of the initial-heavy forms are vowel-initial. I have found no roots in Coushatta of the form CVC.CVC.

(156) Initial-Heavy Forms I

/akłat, RED, o/	AL-RED-Iamb	AL-RED-L	AL-o-L	ONS	L-ANCH BR	ST ROLE BR	O-CON TIG
a. $[akłat]_B$-$[\underline{\mathbf{k}}]_R$-o		akłat!	akłata	*	*	*	
b. $[ak]_B$-$[\underline{\mathbf{a}}]_R$-o-łat		ak	aka	**!			*
c. $[ak]_B$-$[\underline{\mathbf{k}}]_R$-o-łat		ak	akk	*	*	*!	*
☞ d. $[ak]_B$-$[\underline{\mathbf{h}}]_R$-o-łat		ak	akh	*	*		*
e. $[ak]_B$-$[\underline{\mathbf{ah}}]_R$-o-łat	*!	ak	akah	*	*		**
f. $[ak]_B$-$[\underline{\mathbf{ak}}]_R$-o-łat	*!	ak	akak	*			**

In tableau (156), candidate (a) is eliminated, because it incurs 5 violations of ALIGN-RED-L, since it is not aligned as far to the left as competing candidates. Candidate (b) is eliminated, because it incurs a fatal violation of ONSET, even though it satisfies LEFT-ANCHOR$_{BR}$. Candidate (c) is eliminated, because it violates both LEFT-ANCHOR$_{BR}$ and STROLE$_{BR}$. Candidates (e) and (f) are eliminated, because they both violate ALIGN-RED-Iamb.

This brings the discussion to candidate (156)(d). According to tableau (156), candidate (156)(d) satisfies STROLE$_{BR}$, allowing it to be chosen as optimal over other competing candidates. This is possible, as the [h] does not correspond to the reduplicant. As discussed in Chapter 1, reduplicants must have a distinct exponent (by the constraints EXPONENCE and MORPHDIS). If the reduplicant that satisfies that exponent corresponds to a segment in the base, then that reduplicant incurs violations of LEFT-ANCHOR$_{BR}$ and STROLE$_{BR}$. The constraint that regulates the correspondence between reduplicant and base is MAX$_{BR}$, which ensures that every segment of the base have a corresponding segment in the reduplicant. If it is more important that corresponding segments have

identical structural roles than it is for the base and reduplicant to have corresponding segments at all, then a candidate in which the reduplicant surfaces with a segment that does not correspond to the base at all can be chosen as optimal. Therefore, MAX_{BR} must be ranked below STROLE_{BR}. The following tableau illustrates:

(157) Reduplication without Correspondence

/akłat, RED, o/	AL-Iamb	AL-RED-L	AL-o-L	ONS	L-ANCH BR	ST ROLE BR	MAX BR
☞ a. $[a_1k_2]_B$-$[\underline{\mathbf{h}}_3]_R$-o-łat		ak	akh	*	*		**
b. $[a_1k_2]_B$-$[\underline{\mathbf{k}}_2]_R$-o-łat		ak	akk	*	*	*!	*

In tableau (157), candidate (a) is chosen as optimal, because this candidate satisfies STROLE_{BR} by including a segment in the reduplicant that does not correspond to any of the segments in the base. Since there are no corresponding segments, STROLE_{BR} is vacuously satisfied. Therefore, the lack of a copied segment in the reduplicant, as well as the presence of an epenthetic segment, is accounted for in the initial-heavy forms.

However, for this to be established, it is necessary to be sure that this move does not affect the analyses of the C-initial and V-initial cases. The following tableau shows the evaluation of the C-initial and V-initial cases under this ranking:

(158) Copied Case Revisited

/tahas, RED, o/	AL-Iamb	AL-RED-L	AL-o-L	ONS	L-ANCH BR	ST ROLE BR	MAX_{BR}
☞ a. $[tahas]_B$-$[\underline{t}]_R$-o		tahas	tahast				ahas
b. $[tahas]_B$-$[\underline{h}]_R$-o		tahas	tahash				tahas!
/alot, RED, o/							
☞ c. $[alot]_B$-$[\underline{l}]_R$-o		alot	alotl	*	*		aot
d. $[alot]_B$-$[\underline{h}]_R$-o		alot	aloth	*	*		alot!

.Tableau (158) shows that the C-initial and V-initial cases are still accounted for. It will always be better to satisfy $STROLE_{BR}$ by corresponding segments than by a non-corresponding segment.

Therefore, all cases can be accounted for by the same constraint ranking. The primary revision made in section 3.2.2 is the determination that a "reduplicant" that does not correspond to anything at all in the base can be chosen as optimal, as competing candidates with copied segments violate a number of structural and faithfulness constraints. The initial-heavy cases are instances in which corresponding segments cannot satisfy the structural role requirements, and therefore, the "reduplicant" surfaces with a non-copied, non-corresponding segment.

3.2.3. Summary: Coushatta Punctual Reduplication

In section 3.2, I have provided an account of the pattern of reduplication in Coushatta, known as punctual reduplication. This analysis, consistent with the type of analysis in this dissertation, does not require the use of a prosodic template to account for the single-consonant shape of the reduplicant, but instead allows this shape to result from

the interaction between alignment of the reduplicant and alignment with other morphemes in the form. The analysis accounts both for the C-initial cases, in which a single consonant is copied, and for the initial-heavy forms, in which a segment [h] satisfies exponence of RED without copy.

3.3. Yokuts Reduplicated Roots

Newman (1944) presents the following reduplicated verb stems in dialects of Yokuts, a language spoken in California:

(159) CVCi Reduplication

giy′i-**gy**-	‘touch repeatedly’
kɔyi-**ky**-	‘butt repeatedly’
mik′i-**mk′**-	‘swallow repeatedly’
ʔut′u-**ʔt′**-	‘steal repeatedly’
ʔili-**ʔl**-	‘fan repeatedly’
lagi-**lg**-	‘stay over night repeatedly’

(160) CVCV: Reduplication

giy′eː-**gy**-	‘touch repeatedly’
kɔyɔː-**ky**-	‘butt repeatedly’
mik′eː-**mk′**-	‘swallow repeatedly’
ʔut′oː-**ʔt′**-	‘steal repeatedly’
ʔileː-**ʔl**-	‘fan repeatedly’
laga-**lg**-	‘stay over night repeatedly’

Each of these types of reduplicated stems, which are used to indicated repetition of action, are used in the presence of certain subsets of affixes. The reduplicant, boldfaced in the data in (159) and (160), is of the form CC, a pattern that I include in the set of bare-C reduplication. In the following sections, I present analyses for each of the two types of

reduplicated stems in (159) and (160). In section 3.3.2, I present the analysis for the reduplication of the CVCi type, shown in (159). In section 3.3.3, I present the analysis for the reduplication of the CVCV: type, shown in (160).

The analyses that I propose for these two types of reduplication, in keeping with the thesis of this dissertation, account for the shape of the reduplicant without the use of a prosodic template. This is beneficial in the case of Yokuts because of the inability for this reduplicant to be circumscribed by a single prosodic unit. The reduplicant is of the shape CC, which could be thought of as a syllable that has an onset and a consonantal nucleus, similar to the minor syllable analysis of Semai, given in 2.2. However, as diagram (161) shows, the reduplicant does not surface as a single syllable. Instead, when the root is augmented by an obligatory suffix, the reduplicant surfaces as the coda of one syllable, and the onset of the following syllable.

(161) Surface prosody of the reduplicant

gi.y′i**g.y**iʃ.ta

As (161) shows, the reduplicant does not surface as a single prosodic unit, but part of two separate prosodic units. Therefore, it is impossible to have a single prosodic unit that can serve as a template for reduplication. The analysis in the following sections avoids this problem.

McCarthy & Prince (1986, 1993a) notes a similar problem in the discussion of the reduplication of vowel-initial forms. For example, in Orokaiva, verbal reduplication can be illustrated as the reduplication of a light syllable (***wa***-*waeke* ‘shut’). However, in

vowel-initial forms, the reduplicant cannot be circumscribed by a light syllable (***uh***-*uhuke*). The following figure illustrates:

(162) Orokaiva Vowel-Initial Reduplication

σ σ
u. h u.hu.ke

As the figure in (162) shows, the reduplicant is the nucleus of one syllable and the onset of the following syllable.

In order to solve such problems, McCarthy & Prince (1986, 1993a) propose that the template is not satisfied in order to ensure that all syllables have onsets (ONSET). The following tableau illustrates, if a template RED=σ is proposed:

(163) Failure of Template Satisfaction

	ONSET	RED=σ
a. **u**.-u.hu.ke	*!	
☞ b. **u.h**-u.hu.ke		*

As tableau (163) shows, the template constraint RED=σ is violated in order to satisfy ONSET. Therefore, candidate (b) is chosen as optimal.

However, these are not the only candidates under consideration. When larger candidates are considered, the constraint ranking in (163) chooses multiple optimal candidates:

(164) Failure of Template Satisfaction II

	ONSET	RED=σ
a. **u**.-u.hu.ke	*!	
☞ b. **u.h**-u.hu.ke		*
c. **u.hu**.-u.hu.ke	*!	*
❽ d. **u.hu.k**-u.hu.ke		*
e. **u.hu.ke**.-u.hu.ke	*!	*

As tableau (164) shows, candidates (b) and (d) are both chosen as optimal, since they both violate RED=σ in order to satisfy ONSET. In fact, candidate (d) is more faithful to the root, and would therefore be chosen as optimal, if faithfulness is added to the ranking. Therefore, if the template is violated, there must still be some way to choose the optimal form. As discussed in 1.2.4, a number of options have been proposed to account for minimal reduplication.[36]

Yokuts reduplication illustrates a case in which the reduplicant never surfaces as a prosodic unit. Therefore, there is no possible prosodic template. As a result, the shape of the reduplicant must be determined by constraints other than template constraints. The compression model allows the minimal reduplicant to be chosen. In the following sections, the analysis of Yokuts reduplication uses the compression to account for the shape of a reduplicant that does not satisfy a prosodic template.

3.3.1. Background on Yokuts Roots

In order to analyze these reduplicated forms properly, it is necessary to make a few statements about the morphological breakdown in these forms. Doing so will make

[36] See Downing (1997) for further discussion of the misalignment of onsetless syllables.

it possible to make a strong hypothesis regarding the exact nature of the relationship between the reduplicant and the root. This relationship is crucial in accounting for the placement and edge-matching of the reduplicant. In this section, I motivate that Yokuts reduplication requires a root of the form CVC with an epenthetic vowel inserted between the root and the reduplicant.

At first, based upon the surface forms, one might assume that the breakdown is that given in (165), for *giyʹigyiʃta*:

(165) Morphological Breakdown of Yokuts Reduplicated Roots I

giyʹi-**gy**-iʃta
Root-Reduplicant-Indirective

However, this would give the impression that the input for this form would be /giyʹi, RED, iʃta/. This is not the case, as the surface forms have undergone epenthesis, to eliminate consonant clusters. Therefore, the correct input would be /giyʹ, RED, iʃta/, where the root is /giyʹ/, not /giyʹi/.

This characterization of the root is based upon proposals put forth by Kuroda (1967) for Yokuts and Archangeli (1983, 1991) for Yowlumne, also known as Yawelmani, (a dialect of Yokuts). Such verbs as those used above are of the type of roots in Yokuts that are known as biconsonantal[37].

[37] According to Wertheim (1999), triconsonantal roots also reduplicate. Such forms are like the following: *watʃat-watʃat-win* 'stay tipped over'. I only account for biconsonantal reduplication in this section, leaving analysis of triconsonantal roots for further research. However, it may be that total reduplication is the result of the interaction of constraints against tautosyllabic consonant clusters and the requirement that the repetitive form begin with a light syllable (see the rest of 3.3 for further discussion of biconsonantal roots). Total reduplication would allow both constraints to be satisfied, while avoiding epenthesis.

According to Kuroda (1967), when biconsonantal verb roots concatenated with a large set of suffixes are observed, verb roots tend to fall into three types. These three types of roots can be observed by the following data, where verb roots are in the passive aorist form (166) and aorist form (167):

(166) Passive Aorist Forms (Kuroda 1967):

xatit	'eat'
ṣaapit	'burn'
panat	'arrive'

(167) Aorist Forms (Kuroda 1967):

xathin	'eat'
ṣaphin	'burn'
panaahin	'arrive'

In looking at the aorist forms, one can observe that the aorist morpheme must be *hin*, since it is the only material common to all the listed forms.[38] By extension, then, the root of *xatit* is *xat*. In looking at the passive aorist forms, if the root is *xat*, then the passive aorist may be hypothesized to be *it*. The first verb root type can then be represented as CVC, while the second verb form appears to alternate between CVC and CVVC. The third verb form appears to take only an allomorph *t* of the passive aorist. The shape of this verb form alternates between CVCV and CVCVV, where the vowels are identical.

Archangeli (1983, 1984) expands upon the three verb types, providing a consistent prosodic identity for each of the types illustrated in (166) and (167). The three verb types have the following prosodic templates:

(168) Templates in Yokuts Roots (Archangeli 1983)

xat	σ	xathin	'shouted'
xat	σ	xatit	'shouted'
ṣaap	$\sigma_{\mu\mu}$	ṣaphin	'burn'
ṣaap	$\sigma_{\mu\mu}$	ṣaapit	'burn'
panaa	$\sigma_{\mu}\sigma_{\mu\mu}$	panaahin	'arrive'
panaa	$\sigma_{\mu}\sigma_{\mu\mu}$	panat	'arrive'

Each biconsonantal root has one of these underlying prosodic templates. The CVC shape of c′omhun can be explained by allowing codas to be moraic. Since the second consonant of the verb root appears in a coda position, it satisfies the bimoraic requirement of the verb root template. These underlying templates are seen on the surface when the root occurs with certain affixes such as the aorist and passive aorist (shown above).

These templates can be overridden if an affix or other morphological process requires a different template. As shown in Archangeli (1983), the suffix -*(?)aa* 'continuative' requires a CVVC template for the root when it is attached to that root. This can be seen by the following data:

[38] When the verb root has a high round vowel, the aorist surfaces as hun. This is accounted for by assimilation of the feature [round] among high vowels.

(169) Continuative CVVC Template (Archangeli 1983: 372)

caw	σ	cawhin	caaw′aahin
c′uum	$\sigma_{\mu\mu}$	c′omhun	c′oom′aahin
hoyoo	$\sigma_{\mu}\sigma_{\mu\mu}$	hoyoohin	hooy′oohin

As shown by the data in (169), each of the forms with the continuative surface with a CVVC template, regardless of the form with which they surface with the aorist suffix that allows the default template to surface. For example, the root *caw* 'shout' surfaces as CVC with the aorist suffix alone (*cawhin*), but surfaces as CVVC if the suffix *–(?)aa* is attached. The same holds true for the other two forms, which surface as CVVC, whether or not they have the default template $\sigma_{\mu\mu}$ or $\sigma_{\mu}\sigma_{\mu\mu}$.

If one accepts that the aorist suffix allows the root to which it is attached to surface with its default template, then the aorist form of a particular root acts as a test for the default template of a root. With this in mind, observe the aorist form of the root *lag* 'spend the night' compared with the reduplicated form with *-iʃta*:

(170) Comparative Forms of *lag* 'spend the night' (Archangeli 1983; Newman 1944)

lagaahin
lagilgiʃta

As the forms in (170) show, the default template for *lag* 'spend the night' is $\sigma_{\mu}\sigma_{\mu\mu}$, since it surfaces with that template in the aorist form. However, in the reduplicated form, the root surfaces with a CVCi.

The segment [i] is consistent with the epenthetic segment motivated by Kuroda (1967). Proposing epenthesis in Yokuts accounts for the allomorphy found in the passive

aorist forms. As shown in (166), the passive aorist alternates between *it*/*t*, depending upon the root. Kuroda (1967) proposes that the underlying form of the passive aorist is *t*, and the vowel is epenthetic.

What motivates the insertion of epenthetic material is the prohibition of consonant clusters in Yokuts. The following analysis provides a framework to account for the epenthetic vowel. The succeeding sections will build a reduplicative analysis upon this framework. As stated above, the epenthetic vowel surfaces in order to avoid illicit consonant clusters, specifically tautosyllabic consonant clusters. If this is the case, then it must be the case that a constraint against tautosyllabic consonant clusters (*CC) must be ranked above a constraint barring the insertion of material (DEP_{IO}). Also, since material is not deleted to avoid clusters, a constraint barring the deletion of material (MAX_{IO}) must be ranked above DEP_{IO}. The following tableau illustrates for *gopit* 'take care of an infant (aorist)':

(171) Epenthesis in Yokuts Roots

/gop, t/	MAX_{IO}	*CC	DEP_{IO}
☞ a. gopit			*
b. gopt		*!	
c. got	*!		

As tableau (171) shows, candidate (a) is chosen as optimal, as it satisfies *CC, even at the expense of a violation of DEPIO. Candidates (b) shows that an attempt to avoid inserting

material incurs a violation of *CC. Candidate (c) shows that an attempt to avoid consonant clusters by deletion of material results in a violation of MAX_{IO}.[39]

Based on this evidence, I assume that CVCi reduplication requires a CVC template, while CVCV: reduplication requires a bisyllabic iambic foot ($\sigma_{\mu}\sigma_{\mu\mu}$) An analysis of how the choice of template occurs is beyond the scope of this current work, but I will make these assumptions in order to facilitate the discussion of reduplication. Upon this assumption, the verb roots for the data in (159) for CVCi roots are the following:

(172) giy′ mik′ ?il
kɔy ?ut′ lag

It is this characterization of the root that I assume throughout the rest of section 3.3.

3.3.2. CVCi Reduplication

In reduplication of the CVCi type , the data are of the form C_1VC_2i-$\underline{C_1}\underline{C_2}$. Such reduplicated roots are used along with the following suffixes:

(173) Suffixes used with CVCi reduplicated roots[40]:

-iʃta (Gashowu, Choynimni)	indirective
-iwis (Yowlumne)	reflexive or reciprocal verbal noun
-iwʃa (Gashowu, Choynimni)	reflexive or reciprocal

Therefore, there are three generalizations that can be made about CVCi reduplication that must be accounted for:

[39] This analysis is very much in line with work in Yokuts in Archangeli & Suzuki (1997).
[40] The initial vowel in these suffixes may be an epenthetic vowel. In the following discussion, I do not account for the presence or absence of these vowels, as they do not play a role in the proposed analysis.

(174) Generalizations for CVCi:

(a) The reduplicant is a suffix.

(b) The left edge of the reduplicant matches the leftmost consonant of the root, and the right edge of the reduplicant matches the rightmost consonant of the root.[41]

(c) The reduplicant is of the shape CC.

The next sections present the analyses to account for the three generalizations in (174). In section 3.3.2.1, I account for the placement of the reduplicant. In section 3.3.2.2, I account for the edge-matching of the reduplicant. In section 3.3.2.3, I account for the CC shape of the reduplicant. The account of the shape of the reduplicant uses the compression model, as shown throughout this dissertation. The reduplicant surfaces as only two consonants to ensure the maximal satisfaction of competing alignment constraints, and it surfaces as at least two consonants in order to ensure satisfaction of anchoring at both the left and right edges.

3.3.2.1. Placement of the Reduplicant

The data show that the reduplicant is a suffix to the root. As a suffix, it is placed to the right of the verb root. As discussed in earlier analyses, the ordering of morphemes can be characterized by the ranking of alignment constraints. In bare reduplicated roots, the relevant constraints are the alignment of the root (ALIGN-Root-L)[42] and the alignment

[41] The variation between [y] and [y′] is due to a positional restriction on glottalized semivowels in Yokuts (Newman 1944). The segment [y′] never surfaces when following a consonant.
[42] This constraint is defined as Align (Root, L, Word, L).

of the reduplicant (ALIGN-RED-L)[43]. As before, I assume leftward alignment for convenience.

By ranking ALIGN-Root-L above ALIGN-RED-L, the optimal candidate is one in which the reduplicant is placed to the right of the root, so that leftward alignment of the root is maximally satisfied. The following tableau illustrates this interaction (at this point, for convenience, I do not consider competing epenthesis candidates, as I am only concerned with morpheme placement):

(175) ALIGN-Root-L >> ALIGN-RED-L

/giyʹ, RED/	ALIGN-Root-L	ALIGN-RED-L
☞a. giyʹi-**gy**		giyʹ
b. **gy**-giyʹ	g!y	

In (175), candidate (a) is chosen as optimal, as the reduplicant is placed to the right, allowing satisfaction of ALIGN-Root-L. As long as CONTIG is high-ranked, intrusion of material is prohibited, and (a) is the only way to ensure satisfaction of ALIGN-Root-L. Therefore, by this ranking, the reduplicant surfaces as a suffix.

As shown in (173), reduplicated roots do not occur in isolation, but with following suffixes. The placement of such suffixes must also be accounted for in the constraint ranking. Since these sufffixes appear to the right of the reduplicant, I propose that a left alignment constraint specified for such suffixes must be ranked below ALIGN-Root-L and ALIGN-RED-L. This constraint would be defined as the following for the morpheme iʃta:

[43] This constraint is defined as Align (RED, L, Word, L).

(176) ALIGN-iʃta-L
Align (iʃta, L, Word, L)
Align the left edge of the morpheme iʃta to left edge of the word.

The following tableau illustrates for the form giy′i**gy**iʃta:

(177) Alignment of Indirective

/giy′, RED, iʃta/	ALIGN-Root-L	ALIGN-RED-L	ALIGN-iʃta-L
☞a. giy′i-**gy**-iʃta		giy′i	giy′igy
b.iʃta-giy′i-**gy**	i!ʃta	iʃtagiy′i	

As (177) shows, the ranking of a constraint such as ALIGN-iʃta-L below ALIGN-Root-L and ALIGN-RED-L assure that the morpheme surfaces as a suffix. A candidate such as (b), where the affix is prefixed to the root, is eliminated by the fatal violations of ALIGN-Root-L.

3.3.2.2. Edge-Matching of the Reduplicant

In this section, I discuss the matching of the edges between the root and the reduplicant. It is clear that both the left and right edges of the reduplicant match one of the consonants of the base, but none of the vowels are copied. If one assumes the base-affix adjacency principle, as espoused by McCarthy & Prince (1993), and discussed in 1.3.1 , then the right edge of the base for reduplication is the edge at which the left edge of the reduplicant is aligned, as shown below:

(178) Base-Affix Adjacency

Base][RED

By that principle, the base for affixation is directly adjacent to the affix. The following shows the characterization of the base for Yokuts, taking this assumption:

(179) $_{B}$[gi.y′i]$_{BR}$[**g.y**]$_{R}$iʃ.ta

If one assumes that LEFT-ANCHOR$_{BR}$ and RIGHT-ANCHOR$_{BR}$ are in effect, then the left edge-matching is accounted for, but the right edge-matching is not accounted for, as the right edge of the base is a vowel, and the right edge of the reduplicant is a consonant. The following tableau illustrates:

(180) Base-Reduplicant Anchoring

/giy′, RED, iʃta/	LEFT-ANCHOR$_{BR}$	RIGHT-ANCHOR$_{BR}$
☞a. [giy′i]$_{BR}$[**gy**]-iʃta		*!
❽ b. [giy′i]$_{BR}$[**gi**]-iʃta		

As tableau (180) shows, the incorrect candidate (b) is chosen as optimal, as it matches both edges of the base[44]. Candidate (a), which is the correct surface candidate, is eliminated by a violation of RIGHT-ANCHOR$_{BR}$.

So, if the reduplicant does not match the base, then how does one determine the edge-matching of the right edge of the reduplicant? I propose that the reduplicant does not correspond to an output base, but to the input. As the Full Model of Correspondence Theory (McCarthy & Prince 1995) proposes, reduplicants may correspond to input stems.

[44] Candidate (b) would also violate ONSET, if one assumes an underlying /iʃta/. If one assumes that the [i] is epenthetic and surfaces to break up consonant clusters, then a possible candidate is [[giy′i]$_{BR}$[**gi**]-ʃta], which would not violate ONSET, but still satisfy base-reduplicant anchoring.

As defined by (McCarthy & Prince 1995), such stems are "morphologically-defined input construct[s]". I take this to mean that the input stem is some domain of the input to which a reduplicant corresponds. This is analogous to a definition of a base as some domain of the output to which a reduplicant corresponds.

Since, as discussed in 3.2.1.1, bases may be defined as subunits of the output, one may analogously propose that stems may be defined as subunits of the input. Under such a proposal, one may assume that the stem can be defined as the input root. In 3.3.1, I motivated that Yokuts roots are of a CVC shape. Therefore, one can see that the edges of the reduplicant match the edges of the input root in Yokuts. In this case, the formulation of anchoring is not LEFT/RIGHT-ANCHOR$_{BR}$, but the following:

(181) LEFT/RIGHT-ANCHOR$_{IR}$

Every segment at the left/right edge of the input stem must have a corresponding segment at the left/right edge of the reduplicant.

In this instance, the input stem is defined as the input root.

The following tableau illustrates the interaction of LEFT-ANCHOR$_{IR}$ and RIGHT-ANCHOR$_{IR}$ in the evaluation of Yokuts reduplicated roots, where the reduplicant must correspond to the input root. (I assume a two-segment shape of the reduplicant, and do not consider candidates that include more material):

(182) Base as a Morphological Entity

/giy′, RED, iʃta/	L-ANCH$_{IR}$	R-ANCH$_{IR}$
☞a. [giy′]$_B$i$_R$[**gy**]-iʃta		
b. [giy′]$_B$i$_R$[**gi**]-iʃta		*!

As shown in (182), candidate (a), the correct surface candidate, is chosen as optimal, as it satisfies both anchoring. Candidate (b) shows that a candidate that anchors to the epenthetic segment violates RIGHT-ANCHOR$_{IR}$.

Therefore the identity of the segments in the reduplicant is accounted for by the interaction of LEFT-ANCHOR$_{IR}$ and RIGHT-ANCHOR$_{IR}$ on an input stem. However, this account is dependent upon an assumption of a two-segment shape of the reduplicant. In the next section, I provide an account of the CC shape of the reduplicant in Yokuts roots.

3.3.2.3. Shape of the Reduplicant

Under the compression model, the size of a bare-C reduplicant is the result of interactions between the placement of the reduplicant and the placement of other morphemes in the form. If this is to be borne out, then the CC shape of the reduplicant should fall out naturally from the alignment constraints already present. The tableau in (183) illustrates the effect of the current constraint ranking, if competing reduplicant shape candidates are considered. I include LEFT-ANCHOR$_{IR}$ and RIGHT-ANCHOR$_{IR}$, placing them in a highly-ranked position. Also, I once again consider competing epenthesis candidates, ranking the constraints from (171) (MAX$_{IO}$, *CC, DEP$_{IO}$) above the current constraints (however, I leave out ALIGN-Root-L, as there are no successful candidates that violate that constraint):

(183) Shape of the Reduplicant:

/giy′, RED, iʃta/	MAX IO	*CC	DEP IO	L-ANC IR	R-ANC IR	AL-RED -L	AL-iʃta -L
☞a. gi.y′i-[**g.y**]-iʃ.ta			*!			giy′i	giy′igy
b. gi.y′i-[**g**].-iʃ.ta			*!		*	giy′i	giy′ig
c. gi.y′i.-[**y′**]-iʃ.ta			*!	*		giy′i	giy′iy
d. gi.y′i-[**gi.y′**]-iʃ.ta			*!			giy′i	giy′igiy
❽ e. giy′.-[**gi.y′**]-iʃ.ta						giy′	giy′giy
f. giy′.-[**gy**]-iʃ.ta		*!				giy′	giy′gy
g. gi-[**g.y**]-iʃ.ta	*!					gi	gigy
h. giy′.-[**g**]-iʃ.ta					*!	giy′	giy′g

As tableau (183) shows, candidate (e) is incorrectly chosen as optimal. This candidate reduplicates the entire base, obviating the need for epenthesis to avoid consonant clusters, thus satisfying all of the epenthesis constraints. Candidate (a), which is the optimal form, is eliminated, along with candidates (b-d), as they violate DEP$_{IO}$, by epenthesizing. Candidate (e) shows that avoiding a DEP$_{IO}$ violation by not reduplicating the entire base, but not epenthesizing, incurs a fatal violation of *CC. Candidate (f) shows that avoiding a DEP$_{IO}$ violation by deletion in the root incurs a violation of MAX$_{IO}$. Candidates (e) and (f) also show that MAX$_{IO}$ and *CC must be ranked above the alignment constraints, as these candidates incur the fewest violations of both alignment constraints. Candidate (h) also avoids a DEPIO violation, this time by under-reduplication, which then incurs a fatal violation of RIGHT-ANCHOR$_{IR}$. It should be noted that all single-consonant reduplicants

incur a violation of either anchoring constraint. This becomes crucial in determining shape.

In order to select the correct candidate, it is necessary to eliminate candidates like (183)(e). One move that must be made is to assume that DEP$_{IO}$ is ranked low, in order for the correct candidate to be chosen. In tableau (184), I rank DEP$_{IO}$ lowest, which still places it below *CC, which is crucial (I leave out MAX$_{IO}$ as it is no longer crucial):

(184) Low Ranking of DEP$_{IO}$

/giyʹ, RED, iʃta/	*CC	L-ANCH$_{IR}$	R-ANCH$_{IR}$	AL-RED-L	AL-iʃta-L	DEP$_{IO}$
☞a. giyʹi-[gy]-iʃta				giyʹi!	giyʹigy	*
b. giyʹi-[g]-iʃta			*!	giyʹi	giyʹig	*
c. giyʹi-[y]-iʃta		*!		giyʹi	giyʹiy	*
d. giyʹi-[giy]-iʃta				giyʹi!	giyʹigiy	*
❽ e. giyʹ-[giy]-iʃta				giyʹ	giyʹgiy	

At this point, there is no particular improvement, other than that the correct surface candidate is no longer eliminated by DEP$_{IO}$. Candidates (a) and (d) are both eliminated by fatal violations of ALIGN-RED-L, while candidate (e) is still chosen as optimal. Candidates (b) and (c) are eliminated by fatal violations of the anchoring constraints, indicating that it is necessary that the reduplicant be at least CC, similar to the Semai case, discussed in 2.2.

How, then to eliminate the overreduplicated candidate, in favor of a candidate which epenthesizes? Observing the candidates from a prosodic standpoint, one can see

that the overreduplicated candidate forces the initial syllable in the word to be a CVC syllable, as shown in (185):

(185) Initial Syllable Structure

a. **gi**.y′ig.yiʃ.ta
b. **giy′**.gi.yiʃ.ta

If codas are moraic, then one can assume that the structure in (a) has an initial light syllable, while the structure in (b) has an initial heavy syllable.

There is evidence to assume that codas are moraic in Yokuts. As discussed earlier, a verb root with a $\sigma_{\mu\mu}$ template surfaces as CVC, if the second consonant surfaces as a coda (*saapit* vs. *saphin*). This indicates that codas are moraic and can satisfy the heavy syllable template. Therefore, a light-heavy distinction can be made between CV and CVC syllables. Therefore, if the overreduplicated candidate has an initial heavy syllable and the correct surface candidate has an initial light syllable, then one can eliminate the overreduplicated candidate by proposing a constraint that ensures that the initial syllable of such roots have a light syllable.[45] This constraint can be formulated as the following:

(186) ALIGN-REP-σ_μ

Align (Repetitive, L, σ_μ, L)
Align the left edge of a repetitive form to the left edge of a light syllable.

This constraint is violated if the left edge of a word that is marked as repetitive does not align to an initial light syllable. In this way, the correct surface candidate can be chosen

[45] For further elaboration of this approach, see Archangeli & Hendricks (in prep.)

over an over-reduplicated candidate. Tableau (187) illustrates (I leave out *CC, as it is no longer crucial):

(187) Alignment to a Light Syllable

/giyʹ, RED, iʃta/	L-ANCHIR	R-ANCHIR	ALIGN-REP-σ_μ	AL-RED-L	AL-iʃta-L	DEPIO
☞a. gi.yʹi-[**g.y**]-iʃ.ta				giyʹi	giyʹigy	*
b. gi.yʹi.-[**gi.y**]-iʃ.ta				giyʹi	giyʹigiy!	*
c. giyʹ.-[**gi.y**]-iʃ.ta			σ!σ	giyʹ	giyʹgiy	

As tableau (187) shows, candidate (c), the overreduplicated candidate, is eliminated, as it is not aligned to a light syllable. Candidate (b) satisfies ALIGN-REP-σ_μ, but incurs a fatal violation of ALIGN-iʃta-L. Therefore, candidate (a), the correct candidate, is chosen as optimal.

3.3.3. Iambic Reduplication

In this section, I provide an account for the CVCV: pattern of reduplication. In this data, the reduplicant also surfaces as a CC reduplicant. This pattern of reduplicant is accounted for quite simply by the analysis given thus far. The only difference is that this type of reduplication, used with the suffixes given in (189), requires that the root be an iamb. The data is reproduced below, for the reader's convenience:

(188) CVCV: Reduplication

giy′e-**gy**-	‘touch repeatedly’
kɔyɔ-**ky**-	‘butt repeatedly’
mik′e-**mk′**-	‘swallow repeatedly’
ʔut′o-**ʔt′**-	‘steal repeatedly’
ʔile-**ʔl**-	‘fan repeatedly’
laga-**lg**-	‘stay over night repeatedly’

This type of reduplication is only used with the following suffixes:

(189) Suffixes Requiring CVCV: Reduplication:

aʃ (Gashowu, Choynimni)	durative aorist
e:l (Yowlumne) / il′ (Gashowu)	consequent adjunctive
itʃ (Gashowu, Choynimni)	agentive

The determination of the template for this pattern is beyond the scope of this dissertation, and I leave it to other work (see Archangeli & Hendricks (in prep)). Putting such considerations aside, the optimal candidate is chosen from the combination of anchoring and alignment, as shown for CVCi reduplication in section 3.3.2.

The following tableau illustrates how the present analysis accounts for CVCV: reduplication in the same way as for CVCi reduplication:

(190) Evaluation of CVCV: Reduplication

/giyʹ, RED, aʃ/	L-ANCHIR	R-ANCHIR	ALIGN-REP-σ_μ	AL-RED-L	AL-*aʃ*-L	DEPIO
☞a. [giyʹe]$_{BR}$[**gy**]-aʃ[46]				giyʹe:	giyʹe:gy	
b. [giyʹe]$_{BR}$[**g**]-aʃ		*!		giyʹe:	giyʹe:g	
c. [giyʹe]$_{BR}$[**y**]-aʃ	*!			giyʹe:	giyʹe:y	
d. [giyʹe:]$_{BR}$[**giy**]-aʃ				giyʹe:	giyʹe:giy!	

As tableau (190) shows, candidate (a), which is the correct surface form giyʹe:**gy-**, is chosen as optimal. Candidate (b) eliminated by a fatal violation of RIGHT-ANCHOR$_{IR}$, even though it incurs fewer violations of ALIGN-*aʃ*-L than (a). Candidate (c) incurs a violation of LEFT-ANCHOR$_{BR}$, although it also incurs fewer violations of ALIGN-*aʃ*-L than (a). Candidate (d) over-reduplicates, satisfying the consonantal identity constraints, but incurs a fatal violation of ALIGN-*aʃ*-L.

3.3.4. Yokuts Reduplicated Roots: Summary

As shown above, with minimal adjustment, the size of the reduplicant is determined without requiring a reduplicative template. The placement of the reduplicant is determined by the relative rankings of alignment for each of the morphemes in the form. The copied consonants of the root are determined by anchoring the reduplicant with the input root, rather than the base. The shape of the reduplicant is determined by the alignment constraints of the morphemes, as well as an alignment constraint which

ensures that the reduplicated root is aligned to a light syllable at the left edge. This same analysis works both for the CVCi pattern of reduplication and the CVCV: pattern of reduplication.

This analysis is advantageous for two reasons. The reduplicant surfaces as a CC sequence, which is not a prosodic unit, and therefore, is impossible to characterize by a prosodic template in a language which tolerates no syllable-internal consonant clusters. The second reason is that the reduplicant surfaces as a CC sequence in which the first consonant is the coda of one syllable, while the second consonant is the onset of the following syllable. Therefore, the reduplicant sequence spans two syllables, but is not fully either syllable. Again, this is impossible to characterize with a prosodic template.

Another reason that this analysis is appealing is that the analysis requires alignment constraints that make crucial reference to the prosodic shape of roots (ALIGN-REP-σ_μ). One of the key properties of Yokuts morphology is the theory that the shape of roots is determined by the mapping of root material to a prosodic template. The use of ALIGN-REP-σ_μ shows that these facts can be accounted for without the use of a template constraint which directly determines the prosodic shape of the root. Instead, only the alignment of one edge to a particular prosodic category is necessary to account for the facts.

---

[46] The surfacing of the vowel [e] rather than [i] is beyond the scope of this work, however, see Archangeli & Suzuki (1997) for further study of this phenomenon.

3.4. Suffixal Reduplication: Conclusion

In this chapter, I have provided cases of bare-consonant reduplication in which the reduplicant surfaces as a suffix to a root. Both types of bare-C reduplication are difficult, if not impossible, to account for by a prosodic template. In the case of Coushatta, the reduplicant surfaces as an onset, which is not a prosodic unit. In the case of Yokuts, the reduplicant surfaces as a CC sequence that splits between two syllables.

Under the compression model, I show that the reduplicant surfaces minimally in order to allow maximal satisfaction of a leftward alignment constraint for the root, and a leftward alignment constraint for a following suffix. Since this maximal satisfaction requires that both the root and the following suffix be as close to the left as possible, the reduplicant is effectively "squeezed" between the two morphemes, resulting in a minimal reduplicant.

Also, one should note that the Yokuts reduplicant surfaces as a unit that crosses a syllable boundary. This being the case, the reduplicant is not even part of a single prosodic unit. Such reduplicants cannot be accounted for by a prosodic template. The next chapter provides data illustrating more of such cases. This data, from Secwepemc, a Salishan language, and Hopi, a Uto-Aztecan language, shows that the proposal made in this dissertation can account for these types of reduplicative patterns, as well.