CHAPTER 1

INTRODUCTION TO POSITIONAL ANCHORING

1.1 Introduction

One of the central findings of prosodic morphology is that it is necessary to refer to edges and stressed syllables in order to account for the behavior of reduplication, truncation, and infixation. In this dissertation, I further note that left and right edges demonstrate an asymmetry cross-linguistically that is not witnessed in fixed-segment affixation. Whereas suffixing appears to be the unmarked mode with fixed-segment affixes (Hawkins & Cutler 1988, e.g.), reduplicative affixes typically appear before the related base. In other words, we find comparatively few instances of right edge correspondence in so-called suffixing reduplication, for example in hypothetical *badupi*$_{6}$-*pi*$_{6}$. A wide survey of the literature (including the main sources Key (1965), Moravcsik (1978), Marantz (1982), McCarthy & Prince (1996), and Weeda 1992)) suggests that left edge preservation of the base in these processes is notably more prevalent (31 right edge vs. 64 left edge cases in Key and Moravcsik's reduplication examples; 5 right edge vs. 15 left edge cases in Weeda's templatic truncation examples).[1] Right edge preservation however is not only undeniably less common; I argue here that all cases that seem to involve targeting of the right edge are only apparent counter-examples to the proposed asymmetry. When taken as a group, it becomes striking that right edge copying can be

[1] The number for right edge cases given is a worst-case scenario for the proposed theory, as it includes any example that the author characterized as copying right edge material. However examination of Appendix A, which lists all cases of right edge copying in these studies that are not addressed in the text of this dissertation, will show that several of these cases appear to be templatic, and thus not even reduplication, *per se*. In Weeda's right edge cases, each was qualified as "uncertain", "few examples and idiosyncratic", or else "tentative".

contingent on some other process, e.g. targeting of the stressed syllable. The position advanced here is thus that "suffixing" reduplication can only occur by accident, when other constraints conspire to leave final position as the best position for the reduplicative morpheme. Cases of truncation to right edge base material are taken to be similarly contingent on other factors. Motivation for a left edge bias is argued to fall naturally from the theory of Positional Faithfulness (Beckman 1998).

This proposal of underlying asymmetry goes against the common assumption in the literature that association of reduplicative or truncating morphemes to a related base can begin at either the left or the right edge, as prescribed by the grammar (Marantz 1982, McCarthy & Prince 1996, Weeda 1992). Examples showing left and right edge correspondence between the base and the reduplicative morpheme (RED) or the truncating morpheme follow.

(1) Left edge examples: Reduplication

a. Tohono O'odham (Papago) plural (Moravcsik 1978)

kuna	kuu-kuna	'husband'[2]
paga	paa-paga	'hole'

b. Gokana gerundive (Hyman 1982)

dɔ	dɔ-dɔ̀	'fall'
darà	da-darà	'pick up'
pɪ̈iga	pi-pɪ̈ìgà	'try'

[2] In most examples, the orthography used is the one found in the sources cited in examples. Phonetic interpretation is included where necessary for the discussion. Transcription is modified in some cases, where I have substituted a more common symbol, or standardized in the case of multiple sources for the same language. Tone markings have been left out in some examples when it is not central to the problem under discussion.

c. Agta plural (Moravcsik 1978)

takki	tak-takki	‘leg’
uffu	uf-uffu	‘thigh’

(2) Left edge examples: Truncation

a. French (Weeda 1992, Scullen 1993)

sympathique	sympa	‘nice’
adolescent	ado	‘adolescent’
faculté	fac	‘university’

b. Japanese loan word truncation (Itô 1988, Weeda 1992)

anauNsa	ana	‘announcer’
anaakisto	ana	‘anarchist’
konekushoN	kone	‘connection’

c. Swedish nicknames (plus *-is* suffixation) (Weeda 1992:121)

alkoholist	alkis	‘alcoholic’
da:ghem	da:gis	‘day care center’
laboratori:um	labbis	‘lab’

(3) Right edge examples: Reduplication

a. Siriono continuative (Key 1965)

erasi	erasi-rasi	‘he is sick’
ečisia	ečisia-sia	‘he cuts’
ea^{n}du	ea^{n}du-a^{n}du	‘he listens’

b. Karuk derived intensive verb (Marantz 1982)

tasĩr	tasin-sĩr[3]	‘to brush/ to brush (repeatedly)’
parak	parak-rak	‘to separate with a wedge/ to split logs with wedges’

[3] *r̃* is a morpho-phoneme that nasalizes to *n* before a consonant.

c. Yoruba ideophones (Awoyale 1989)

rogodo	rogodo-<u>do</u>	‘being very round and small’
gègèrè	gègèrè-<u>rè</u> (~gègèrè-<u>gè</u>)	‘being very stout and bulky’

(4) Right edge examples: Truncation

a. Catalan hypocoristics (Cabré & Kenstowicz 1995)

Ambros	Bros
Salvador	Vador
Elizenda	Zenda
Margalida	Lida

b. Madurese (Stevens 1968, McCarthy & Prince 1996)

duwaʔ	waʔ	‘two’
enghi	ghi	‘yes’
uriŋ	riŋ	‘person’

c. English

magazine	zine
parents	rents
pizza	za

Although examples such as these seem to demonstrate symmetry in the grammar, a cross-linguistic study of right edge cases in particular reveals a hidden dependency. The characterization of these cases as demonstrating a right edge bias is shown to be superficial; right edge association is merely a side effect of another independent process. Often, a right edge target is attributed to a right edge stress system.[4] In other cases, I argue that what we see is not morphological reduplication, but rather augmentation to fit a template. Apparent counter-examples will be the focus of Chapter 4.

[4] The only alternative to right edge targeting considered seriously here is stress, however it is certainly possible that other qualities that are characteristic of “privilege” in the relevant sense (e.g. final syllable vowel length, cf. Barnes 2000) could force parasitic right edge reduplication or truncation.

As mentioned above, the asymmetry in reduplication and truncation is argued to fall from the theory of Positional Faithfulness (Beckman 1998). Beckman showed that positions that were either "acoustically prominent" (stressed) or "psycholinguistically prominent" (morpheme-initial, part of the root) could be singled out by specialized Positional Faithfulness constraints (e.g. FAITH ONSET, FAITH(root), etc.). The constraints coexist with the general faithfulness constraints that target all segments equally. The theory of Positional Faithfulness was developed to account for the preservation of contrasts in privileged positions while contrasts may be neutralized in non-privileged positions.

In reduplication, the relevant kind of faithfulness constraint is one that requires correspondence between the targeted position in the base and the segment standing in the same position in the reduplicant.[5] McCarthy & Prince (1993a, 1995a,b) call this constraint ANCHOR:

(5) LEFT-ANCHOR (Base, Reduplicant): The left edge of the reduplicant corresponds to the left edge of the base.

In the literature, it is assumed that the left and right edge are each the subject of an independent anchoring constraint. In line with the research in Positional Faithfulness, I argue against the common assumption that a RIGHT-ANCHOR constraint exists in the grammar. Rather, the observed asymmetry is due to an asymmetry in the constraints themselves. Thus, whereas the left edge can be targeted outright, the right edge cannot. I call this proposal "Positional Anchoring".

[5] Given the parallel nature of reduplication and truncation, all claims that refer to one should be taken to hold of the other unless explicitly noted.

1.2 Positional Anchoring

ANCHOR constraints (McCarthy & Prince 1993a, 1995a,b) are used to determine which edge of the base of reduplication will be in correspondence with the reduplicative morpheme, as in (5) above.

I assume that, rather than positing mirror anchoring constraints in the grammar, only the left edge can be targeted. Under the Positional Anchoring view, anchoring then targets only "privileged" positions.

(6) Positional Anchoring:
a. Anchoring can target the *initial* position (important for root access).
b. Anchoring can target a *stressed* position (acoustically prominent).
c. The right edge does not qualify as a target for anchoring.

This theory of partial reduplication exclusively singles out these privileged positions, in the same way that other Positional Faithfulness constraints are relativized to apply to only such targets.

The base-reduplicant faithfulness constraint that targets stressed syllables is the following:[6]

(7) MAX-σ́ (Base, Reduplicant): Each segment in the main stressed syllable of the base must have a correspondent in the reduplicant.

The chart below is idealized according to the constraints above, (namely LEFT-ANCHOR and MAX-σ́). It shows what is actively targeted for copying.

[6] Later (Chapter 4), I argue that this faithfulness constraint targets the main stressed *rhyme*.

(8) Anchoring can cause copying of material in the following combinations:

Copying of the:		*reduplication*	*(templatic) truncation*
Left edge	with initial stress:	Diyari **<u>tʲilpa</u>-tʲílpa**rku 'catfish'	Hungarian **érš**ebɛt/**érši** hypocoristic
	without initial main stress:	Tagalog **<u>da</u>-da**lawá 'only two'	French **karo**lín/**karó** hypocoristic
Right edge	with final stress:	Manam mala**bóm-<u>boŋ</u>** 'flying fox'	Catalan səl**βəðó/βəðó** hypocoristic
	without final stress:	see Appendix B	see Appendix C
Stressed syllable	not necessarily at edge:	Samoan ga-**<u>lu</u>-lúe** 'work' non-erg. pl.	English rə**bɛ́kə/bɛ́ki** hypocoristic

What this system rules out is explicit targeting of an unstressed right edge. For example:

(9) a. Reduplication: σ́σσ → *σ́σσ$_3$-σ$_3$, mámbodin → *mámbodin-din
b. Truncation example: σ́σ$_2$σ$_3$ → *σ$_2$σ$_3$, Cánada → *Náda

That is, the Positional Anchoring Hypothesis rules out: a) reduplication of non-positional ("non-prominent") material, and b) truncation of more prominent material.

An additional constraint that enforces locality is needed in any analysis of reduplication:

(10) LOCALITY: The copied portion of the base and the corresponding reduplicant must be adjacent (cf. Marantz 1982, Yip 1988, McCarthy & Prince 1993b, 1995a, Urbanczyk 1996, 2000, Hogoboom 2002, Riggle 2002).[7]

In the following formalization of locality, violations are assigned for each segment that intervenes between base and reduplicant such that the segment in question is not itself copied: [8]

[7] Locality is of course trivially irrelevant in the case of truncation.

(11) Let A = <a_1, … a_{r1}, … a_{rk}, … a_n> be a string of the language L, where $r_1 \geq 1$ and $r_k \leq n$. (Intuitively, a_{r1}, … a_{rk} is a subsequence of A that occurs *somewhere* in A).

LOCALITY (formal): If A′ is an expression in which a_{r1}, … a_{rk} is a reduplicant, then A′ = < a_1, … a_{r1}, … a_{rk}, a_{r1}, … a_{rk}, … a_n >.

If B is an expression in which a_{r1}, … a_{rk} is reduplicated *not* in accordance with LOCALITY, then B must have the form:

B= < a_1, … $\underbrace{a_{r1}, \ldots a_{rk}}_{\textit{Base}}$, $\underbrace{a_{e1}, \ldots a_{ej}}_{\textit{extra}}$, $\underbrace{a_{r1}, \ldots a_{rk}}_{\textit{RED}}$, … a_n >

OR

B= < a_1, … $\underbrace{a_{r1}, \ldots a_{rk}}_{\textit{RED}}$, $\underbrace{a_{e1}, \ldots a_{ej}}_{\textit{extra}}$, $\underbrace{a_{r1}, \ldots a_{rk}}_{\textit{Base}}$, … a_n >

This definition of locality and its violation will apply regardless of whether copying is motivated by morphological reduplication or by some other means, e.g. augmentation.

1.3 RED placement

How is RED positioned in the output? Marantz (1982), building off of McCarthy (1979), proposed that the RED morpheme is merely a segmentally empty affix that is attached to the left or right edge of a stem in the same manner as fixed-segment affixes. Marantz observed that transformation rules were too powerful, capable of expressing rules not found in any language. A striking example is illustrated with the "mirror-image" reduplication rule below (Marantz's (3)):

(12) a. $C_1V_1C_2V_2 + V_2C_2V_1C_1$
b. CVCV
1 2 3 4 → 4, 3, 2, 1, 1, 2, 3, 4

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[8] Thanks to Kent Johnson for help with this formalization.

In order to rule out the over-generation of reduplication systems caused by transformation rules, Marantz proposes that reduplication is simply affixation. Thus, just like fixed-segment affixation, it is the result of affixation of a C-V skeletal morpheme to a stem. The only difference is the lack of pre-specification of segmental content. In reduplication, the C-V morpheme associates with a copy of the stem's phonemic melody. McCarthy & Prince (1996) further propose that reduplicative affixes must be selected from the units of prosody; they could not be any arbitrary conglomeration of Cs and Vs.

The analysis here takes a different tack. RED morphemes are not placed at one edge or the other, but rather they appear there by default, to satisfy anchoring, as well as locality. This goes against the standard method of placing RED via alignment constraints, with RED being aligned to one edge of the stem or the other:

(13) Alignment of affixes (McCarthy & Prince 1993a:24)

a. Prefix: ALIGN (*affix*, L, *stem*, L).
b. Suffix: ALIGN (*affix*, R, *stem*, R).

The asymmetric approach derives the well-known tendency for reduplicants to occur to the left of roots, even in languages that allow no fixed-segment prefixes (e.g. Turkish). Under this theory, reduplicative morphemes are positioned by locality and anchoring alone. Turkish then shows the ideal state; this distribution of affixes is not merely a coincidence.

For the sake of this dissertation, I assume that fixed segment affixes are placed by alignment constraints such as the ones in (13). However, this leaves the link between left anchoring of the root and the preference for suffixing of fixed segment affixes to be elusive. Perhaps a better solution lies in the adoption of the theory of Horwood (2002),

which offers a proposal in which affixes are ordered by (violable) precedence requirements given in the input. As pointed out by Alan Prince (p.c.), Horwood's theory also may entail that RED is not explicitly placed, as its segments would share indices with the base, and thus in Horwood's theory not fall under any precedence requirement. Rather, as with the proposed system, the position of RED would be left to other constraints in the grammar.

Section 1.3.1 reviews the theory-internal benefits to these assumptions regarding RED-placement. The independent advantages to this theory are outlined in §§1.3.2-1.3.5.

1.3.1 ALIGN RIGHT plus locality

Doing away with constraints that explicitly align RED to one edge of the stem or the other eliminates the typological prediction that locality would ever be systematically violated to satisfy ANCHOR and RED-alignment. (15) shows that if LOCALITY were ranked low enough, both ANCHOR and an opposite edge alignment constraint would be satisfied by a viable candidate (15d).

(14) a. IO-CONTIGUITY: Output corresponds to a contiguous substring of the base.
b. ALIGN-RIGHT (RED, Stem): RED is rightmost in the stem.

(15) Typology (not a tableau)

	LEFT-ANCHOR	IO-CONTIGUITY	ALIGN-R (RED, Stem)	LOCALITY
a. badupi-pi	*			
b. badu-pi-pi		*	**	
c. ba-badupi			******	
d. badupi-ba				****

If no alignment constraint however were in fact working against the asymmetric anchoring constraint, then the LOCALITY-violating candidate is harmonically bounded, as shown in (16).

(16) Primacy of left edge copying

	LEFT-ANCHOR	IO-CONTIGUITY	LOCALITY
a. ×badupi-pi	*		
b. ×badu-pi-pi		*	
c. ba-badupi			
d. ×badupi-ba			****

This is not to say that we never see winning candidates that look like (16a,b,d). However if we do, then some additional constraint (e.g. MAX-σ́) or set of constraints (see the next sub-section) are necessarily at work.

1.3.2 Marantz's Generalization

So-called "wrong side" reduplication is typically taken to be a marked universal option. Marantz (1982:447) claims, "In the unmarked case, reduplicating prefixes associate with their melodies from left to right, reduplicating suffixes from right to left". He also notes that in marked instances, association can begin from the opposite edge of the base to which the reduplicative morpheme is affixed. I draw together all of the possible examples of this marked phenomenon known to me. For each case, I offer evidence that the wrong side placement of the reduplicative morpheme is an epiphenomenon, and thus not required by the grammar to explicitly violate Marantz's Generalization. Examples of purported violations follow (the reduplicant is underlined; the portion of the base in correspondence with the reduplicant is in bold):

(17) Wrong side prefixing

a. Madurese plural (Stevens 1968, McCarthy & Prince 1996)

/neat/	ỹãt-nẽ**ỹãt**	‘intentions’
/moa/	w̃ã-mõ**w̃ã**	‘faces’

b. Ulu Muar Malay (Hendon 1966)

putɪh	tɪh-pu**tɪh**	‘no matter how white’
on**to?**	to?-on**to?**	‘without making any sound’

c. Indonesian reflexive (adds prefix *meN-* as well; Uhrbach 1987, Sneddon 1996:104)

pukul	pukul-me**mukul**	‘hit’
tikam	tikam-me**nikam**	‘stab’

d. Nancowry (Radhakrishnan 1981)

rom	ʔum-r**om**	‘flesh of fruit/to eat pandarus fruit’
ŋiak	ʔuk-ŋ**iak**	‘binding/to bind’

(18) Wrong side suffixing

a. Chukchee singular absolutive (Krause 1980)

/piŋe/	**piŋ**e-piŋ	‘falling snow’
/jilʔe/	**jil**ʔe-jil	‘gopher’

b. Yoruba ideophones (Awoyale 1974, 1989, 2000)

gègèrè	**gè**gèrè-gè	‘of being very stout and bulky’
pepere	**pe**pere-pe	‘of being very cute and robust’

c. Tzeltal repeated action (adds suffix *-u* as well; Berlin 1963)

b’ah	**b’**ah-b’u	‘to strike with a hammer’
t’aš	**t’**aš-t’u	‘to strike with open hand’

d. Tillamook plural or continuative (Reichard 1959)

tq	dæš q̲-tə**q**-ən	‘break/they tried to break it’
æš	š̲-á**š**-un	‘hold/he is holding it’

Descriptively, all cases of course violate the generalization. However, the question is whether wrong side reduplication can be directly flouted by a grammar. I suggest that all of the discovered cases that superficially exhibit this behavior submit to alternative, independently motivated analyses.

The alternative explanations for the apparent violations fall into three sub-groups. The first is a group that exhibits undue sensitivity to the make-up of the base.

1.3.2.1 Base sensitivity

In these cases, the reduplicant exhibits sensitivity to the base that would go unexplained if the pattern merely involved blind affixation of the reduplicative morpheme to the opposite edge of the base to which association/correspondence was anchored (Nancowry, Chukchee, Yoruba, Tzeltal). In all of these cases, if wrong-side reduplication were the primary objective of the pattern, then the issues highlighted here should not matter. Suggestions are made in each case regarding the direction of the correct analysis; when a more thorough account is offered later in the dissertation, the relevant section is indicated.

The first example comes from Nancowry, repeated below:

(19) Nancowry (Radhakrishnan 1981, Alderete et al. 1999, Nelson 2000)

rom	ʔum̲-r**om**	‘flesh of fruit/to eat pandarus fruit’
ŋiak	ʔuk̲-ŋ**iak**	‘binding/to bind’

Reduplication only occurs when the base is monosyllabic:

(20) Monosyllabic roots: ʔVC$_n$-CV́C$_n$ (e.g. *ʔit-sút*)
Disyllabic roots: *ʔVC$_n$-σCV́C$_n$ (e.g. **ʔin-siʔún*)

Nelson (2000) argues that this is really a case of *stressed rhyme* reduplication, not wrong-side reduplication. The rhymes are adjacent at the level of the rhyme, and in this sense copying is local. This case is discussed further in Chapter 4.

The next set of examples comes from Chukchee.

(21) Chukchee (Krause 1980, Marantz 1982)

/piŋe/	**piŋ**e-piŋ	'falling snow'
/jilʔe/	**jil**ʔe-jil	'gopher'

Reduplication only occurs with a relatively small subset of the possible root shapes: CVC, (C)VCV, (C)VCC, and (C)VCCV. Reduplication is never found in roots of the following shapes: CVV, CVVC, CCVC, CVCVC, CVVCV, VCCVC, etc. The shapes that do undergo the reduplication are "uniquely those bases whose morpheme-final sequences would be predicted to undergo the word-final phonological mutations of final vowel reduction and/or schwa apocope and/or final epenthesis if left unaffixed". (Krause 1980:157). Krause himself characterizes the pattern as "not so much morphological as it is phonologically protective in nature" p. 157.

The Yoruba examples have not yet been presented in the literature as potential wrong-side cases; the data follow:

(22) Yoruba ideophones (Awoyale 1974, 1989, 2000)

gègèrè	**gè**gèrè-gè	‘of being very stout and bulky’
pepere	**pe**pere-pe	‘of being very cute and robust’

The shape of ideophones that appear to undergo wrong-side reduplication is quite restricted (penultimate onset is always *r*; the first two syllables are always identical). Also, the outcome is always four syllables. It is important to note the impossibility of wrong-side reduplication in other forms: *pogodo-do (*pogodo-po)* ‘being completely used up’ *; fágádá-dá (*fágádá-fá)* ‘being totally wiped off’. In Chapter 4, I argue that the Yoruba case in fact involves no reduplicative morpheme, but rather copying to fulfill an imposed template.

The final two cases in this category are marginal, but are included for the sake of completeness. The first is Tzeltal:

(23) Tzeltal (Berlin 1963, McCarthy & Prince 1996)

b’ah	**b’**ah-b’u	‘to strike with a hammer’
t’aš	**t’**aš-t’u	‘to strike with open hand’

McCarthy & Prince (p. 74) suggest that this “is a case of total root reduplication in which material other than the initial consonant is fixed (prespecified)”. Alternatively, it could be fixed segment suffixing with spreading of the onset to fill this slot.

The last case is Tillamook:

(24) Tillamook plural or continuative (Reichard 1959)

tq	dæš q-tə**q**-ən	‘break/they tried to break it’
æš	š-ā**š**-un	‘hold/he is holding it’

Root size in this Northwest Coast language is so restrictive that no other consonant appears to be available to form a non-geminating C- reduplicant. Of this pattern, McCarthy & Prince aptly say it "is so poorly described and inconsistent that a number of plausible alternatives (like cluster simplification) simply cannot be tested".

1.3.2.2 Deletion

The second subgroup consists of Madurese and the related language Ulu Muar Malay.

(25) Madurese and Ulu Muar Malay

a. Madurese plural (Stevens 1968, McCarthy & Prince 1996)

/neat/	ỹãt-nẽ**ỹãt**	'intentions'
/moa/	w̃ã-mõ**w̃ã**	'faces'

b. Ulu Muar Malay (Hendon 1966)

putɪh	tɪh-pu**tɪh**	'no matter how white'
ontoʔ	toʔ-on**toʔ**	'without making any sound'

In these cases, wrong side reduplication results from the regular application of deletion that occurs to the first syllable of a compound, e.g. *tuzhuʔ*, *zhuʔ-ənpul* 'pinky' ('finger' + 'pinky'). The deletion is also found in word shortenings; of these, Hendon says "The shorter alternant occurs optionally when the word does not bear stress in these cases". Of course, a wrong side reduplication analysis and a first syllable deletion analysis diverge in the case of bases larger than two syllables. However, any word larger than two

syllables that I found to undergo this process contained an infix, such as *-ar-*, e.g. *dus-garadus*, thus preserving the ambiguity; no data firmly prove or disprove either approach.

Given the lack of extreme cases in *any* examples of wrong side reduplication (e.g. hypothetical *pik-mambodupik*), I assume that this gap is further evidence in favor of dependence of the type suggested here. That is, such a long-distance wrong-side example is impossible when wrong-side reduplication is strictly an epiphenomenon (and no independent process compels it).

1.3.2.3 Total reduplication followed by affixation

In Indonesian, prefixation of transitivity-emphasizing *meN-* to the base of reduplication occurs after total reduplication of the root morpheme.

(26) Indonesian reflexive (adds prefix *meN-* as well; Uhrbach 1987, Sneddon 1996:104)

pukul	pukul-me**mukul**	'hit'
tikam	tikam-me**nikam**	'stab'

These examples are shown to contrast with ones like *meŋ-urut-urut*, 'stroke repeatedly', in which the action is non-reciprocal. This pattern requires more investigation; Uhrbach (1987) observes that all related languages that exhibit the *pukul-me**mukul*** type of reduplication also have a pattern with total reduplication where the prefix occurs initially. Tentatively, I suggest that in these examples, the input consists of a form that has already undergone total reduplication. Thus, the relevant correspondence constraints are not between base and reduplicant, but rather between outputs.

(27) Constraints:

*NC̥: A voiceless consonant must not follow a nasal. (Pater 1996)
IDENT-OO: Corresponding segments in the output base and the affixed form must agree in nasality (cf. Benua 1997).
ALIGN (məN, R, root, L): *məN-* must prefix to the root.

(28) (Root is italicized)

[pukul-*pukul*], məN	*NC̥	ALIGN (*məN*, R, root, L)	IDENT-OO
a. ☞pukul-mə*mukul*			*
b. pukul-məN*pukul*	*!		
c. məmukul-*mukul*		*!	**
d. mukul-mə*mukul*			**!
e. pukul-*pukul*-məN		*!	

The issue of adjacency is thus moot, as it was satisfied at the time of reduplication.

If the restriction that no wrong side reduplication *per se* exists is indeed correct typologically, then it eliminates a large class of sources of locality violations, that is, violations of an adjacency requirement between base and reduplicant, namely the class predicted to be impossible in this theory. The remaining non-local cases are a subset of ones where the onset is simplified (e.g. *stambh/ta-stámbh-a* Sanskrit perfect full grade 'leap' (Steriade 1988)), or where foot structure restrictions imposed on the derived form shapes the word (e.g. West Tarangan *tarpuran*, (Moore 1996)). These are forced by markedness concerns that, if given priority, have no other choice but to oblige non-adjacency of the base and reduplicant. Shaw (1987) examines additional cases (Nisgha and Ewe). If the claim that wrong edges cannot be actively used to violate Marantz's Generalization is correct, and the generalization is only surface-false in cases where an

independent requirement causes the contravention, then the typological expectations are beneficially minimized under the proposed theory.

1.3.3 Anticipated gap

A gap that is anticipated in the current theory is borne out. Whereas there are numerous examples of languages where reduplicants anchor to the left edge of an optimal prosodic word (Manam, Siriono, Nakanai, Samoan, etc.) there are no examples of reduplication that appear to the *right* of an optimized base, e.g. hypothetical **[síwa]-<u>wa</u>-nak*.

(29) Affixing to minimal prosodic word

	Fixed segment	Reduplicative
Prefix/left-anchored	English (McCawley 1978) [Càli]-**fuckin**-[fórnia]$_{PrWd}$	Nakanai (Spaelti 1997) ka-**go**[góve]$_{PrWd}$
Suffix/ no right-anchored	Ulwa (M&P 1993a,b) [siwá]$_{PrWd}$-**ka**-nak	

Only the proposed theory can account for this gap, as it is impossible to formulate the requirement that RED suffix to the main stress foot using only left anchoring and locality. That is, RED could obviously not right anchor to the base in the proposed theory, and I assume that material following the main-stressed foot is not a valid base. Base construction is discussed in detail in Chapter 2.

1.3.4 Internal reduplication

Retracting the option for RED to be positioned by an alignment constraint derives the result that reduplication behaves as an "internal" affix, attracted to the stem even

when it must be ordered after other affixes (Carrier-Duncan 1984). That is, positional faithfulness to the root will draw the affix inward, regardless of when it is added in the word formation process.

The table in (31) illustrates the typology predicted in a system in which RED may be independently aligned; a new constraint needed is defined in (30):

(30) RED≤Root: The reduplicant must copy material from the root. Violated when non-root material appears in the reduplicant. (McCarthy & Prince 1993, Urbanczyk 2000).

(31) (not a tableau)

/badupi, mu, RED/	ALIGN-LEFT (RED, Stem)	ALIGN-LEFT (mu, Stem)	RED≤Root	L-ANCHOR
a. mu-mu-badupi		**	**	
b. mu-ba-badupi	**			
c. ba-mu-badupi		**		*

(32) a. Forced copying of non-root material
ALIGN-L (RED, Stem) >> {ALIGN-L mu, RED ≤ Root} and
L-ANCHOR >> RED ≤ Root

b. Local copying of root material
ALIGN-L mu >> ALIGN-L (RED, Stem) or
RED ≤ Root, L-ANCHOR >> ALIGN-L (RED, Stem)

c. Non-local copying across fixed segment affix
ALIGN-L (RED, Stem), RED ≤ Root >> ALIGN-L mu, L-ANCHOR

The combined effect of ALIGN-RED and the constraint RED ≤ Root (McCarthy & Prince 1993, Urbanczyk 2000), which requires the reduplicant to copy material from the root, leads to the undesirable potential optima whereby the reduplicant can copy a prefix (32a), or the reduplicant can be separated from the stem by an intervening fixed segment affix

(32c). (33) shows that in the proposed system, no alignment constraint can pull the RED morpheme away from root material.

(33) RED is root-adjacent

/badupi, mu, RED/	ALIGN-L mu	"LOCALITY"	L-ANCHOR
a.✗ ba-mu-badupi	**	**	*
b. mu-ba-badupi			
c. ✗mu-mu-badupi	**		

The only constraints acting on these forms are reduplicative anchoring constraints, alignment of fixed segment affixes, and LOCALITY. When RED is present, it must copy adjacent root material. The other candidates are harmonically bounded, as indicated by '✗'.

This prediction in its strong form is largely correct. Apparent exceptions where affixal material is nonetheless copied are discussed in Chapter 2, §2.2.3.

1.3.5 Affix mobility

Under Positional Anchoring, RED placement is open to the possibility of being determined by constraints on the structure of the whole output. The reduplicant need not appear in the same position relative to the base; i.e., it need not always be a "prefix". An example of the type of affix mobility predicted by the theory can be found in Lakhota. Compare: *čoka-ka* vs. *ksa-ksapa*. This pattern will be looked at in detail in Chapter 4.

1.4 Extensions: asymmetry and Positional Faithfulness

The noted asymmetry in fact extends to further cases, all involving Positional Faithfulness.

1.4.1 Fixed segment affix placement

Even fixed segment affixation is governed by Positional Faithfulness. As Hawkins & Cutler (1988) claim, suffixation is the universally unmarked mode of (fixed segment) affixation. They explain this preference by stressing the processing advantages of early access of the root. This is another way of saying that output-output anchoring of the left edge of the affixed form to the root drives suffixation.

Positional Anchoring thus offers a solution to a longstanding puzzle: why is most reduplication "prefixing", when fixed-segment affixation has such a clear bias toward suffixing? The answer is that in both cases, early access to the root morpheme drives left edge placement of material identified with the root. What is special about reduplication is that, unlike fixed segment affixation, placing this affix initially does not hamper (or only minimally impairs) root access, while offering early introduction of the reduplicative morpheme. Thus early access of both the root and the morphological information carried by RED is uniquely possible.

Both systems of affix placement are skewed in order to allow early lexical access of the root morpheme. Hawkins and Cutler (1988) show lexical access to contribute to the suffixing preference for fixed segment morphemes. Root access is not less important in reduplication. However, since left edge copying does not hamper root access (or only minimally does), prefixing reduplication allows for both immediate access of the root, as well as the earliest possible processing of the RED morpheme "for free". Reduplicative morphemes are positioned by the combined effects of constraints that anchor base-reduplicant correspondence at a given point within the base and locality (i.e. base-

reduplicant adjacency). The constraints placing fixed segment morphemes should likewise reflect the bias toward having root-identifiable material appear first in the word. The alignment constraints used here do not achieve this goal. I set the suffixing preference for fixed segment affixes aside, noting the direction in which research on this topic should follow.

1.4.2 Augmentative epenthesis

As far as I know, it has not yet been observed that augmentative epenthesis displays a parallel asymmetry: all other things being equal, epenthesis to satisfy a minimal prosodic size will occur at the right edge, (in order to left-anchor the root, with heightened initial faithfulness). A well-known example comes from Axininca Campa *naTA*, **TAna* (McCarthy & Prince 1993a).[9] The following less-familiar cases also involve right edge epenthesis:

(34) Southern Sierra Miwok CVCVC-imposing suffix: *-kuH* (Sloan 1992)

/wyks/	wykUs-kuH	‘to go/someone evidently went’
/loːt/	lotUʔ-kuH	‘to catch, to grasp, to grab/capture’

(35) Mexican Spanish *-(s)ito/a*[10] diminutive suffix (Crowhurst 1992)

a. Stem > 2σ

la čamaka	čamakita	‘girl’
el molačo	molačito	‘toothless one’

[9] Mohawk (Piggott 1995), Shona (Myers 1987**)** and Iraqi Arabic (Broselow 1982) appear on the surface to offer examples of problematic left edge epenthesis, but these cases can be plausibly analyzed as prefixes that appear only when needed to satisfy a prosodic minimality requirement.

[10] The suffix is *a*- or *o*-final, depending on the gender of the stem. /s/ deletes when the base is C-final.

b. Stem = 1σ

la bos	bosEsita	'voice'
el pan	panEsito	'bread'

The location of epenthesis at the right edge in all cases is due to asymmetric left edge faithfulness.

1.4.3 Subtractive morphology

Subtractive morphology exhibits an analogous asymmetry: all unambiguous cases involve *deletion* at the right edge, suggesting that heightened faithfulness to the left edge of the root inhibits left edge deletion (Horwood 2001).[11]

(36) Koasati plural formation

ataká:-li-n	aták♦-li-n	'to hang something'
pitáf-li-n	pit♦♦-li-n	'to slice up the middle'
albití:-li-n	albít♦-li-n	'to place on top of'

Here, we see deletion at the right edge, also due to asymmetric left edge faithfulness.

1.4.4 V_1 deletion in hiatus context

In addition, Casali (1997:496) notes that at the boundary between two lexical words, elision is always of the *first* vowel in a …V+V… context.

[11] Horwood does cite languages that purportedly involve left edge deletion, (which his system predicts to be possible), but these all involve either cases of "scant" evidence, or else a possible alternative analysis of *morpheme* deletion (in which case the location of the deletion at the right edge would be a mere coincidence). Horwood's theory can be amended to prevent the prediction of left edge deletion by allowing transderivational anti-faithfulness to apply only to general (i.e. not positional) faithfulness constraints.

(37) Etsako word-final vowel deletion

/dɛ akpa/	d♦akpa	'buy a cup'
/ukpo ɛnodɛ/	ukp♦ɛnodɛ	'yesterday's cloth'

Casali attributes this to a word-initial faithfulness constraint.

1.4.5 Markedness drives right edge reference

Some processes do seem to require right edge reference; the proposal is not in fact that right edge reference is never possible. The right edge appears to be a necessary factor in determining placement in (most likely, among other processes): tone association, stress assignment, and fixed segment affixation. These however are governed by *markedness* constraints. Thus, not surprisingly, the reduplication pattern falls in line with other Positional Faithfulness cases. The asymmetry applies to all and only cases that are affected by Positional Faithfulness.[12]

These right edge markedness constraints however can be the source of a type of prominence that will ultimately lead to right edge copying. For example, a right aligned stress-assigning constraint, e.g. ALIGN-R (Head-foot, Prosodic Word), which would place the main stressed foot at the right edge when highly ranked, will be the source of parasitic right edge copying when the reduplicant is sensitive to stress.

[12] A significant and puzzling exception to this tentative markedness/positional faithfulness division is the behavior of alignment constraints (which are considered to be markedness constraints at heart, as they penalize output structures) in syntax. Grimshaw (2001) notes that even head-final languages can be accounted for using only left edge sensitive alignment constraints such as SPEC-LEFT and HEAD-LEFT.

1.5 Conclusion

This dissertation explores the observed asymmetry with respect to edge association in reduplication and truncation. The left edge bias is argued to fall out from the theory of Positional Anchoring, which is developed from the general theory of Positional Faithfulness.

Besides explaining merely the preponderance of left edge examples cross-linguistically, accounting for the asymmetry at the level of the constraints themselves in this way leads to other more subtle positive results. The correct predictions of this approach are summarized here:

(38) List of correct predictions

- Reduplicants or truncated morphemes which do exhibit right edge correspondence with the base must be somehow compelled (§1.3.1).
- Violation of Marantz's Generalization cannot be required merely in order to satisfy RED-alignment constraints (§1.3.2).
- Suffixation of a RED morpheme to an optimal prosodic word cannot be required in the current system, and is indeed unattested (§1.3.3).
- All other things being equal, prefixing reduplication does not appear to the left of fixed segment prefixes (§1.3.4).
- A system may allow RED to alternate between the left and right edges of a stem, as dictated by other constraints in the language (§1.3.5).

In addition to these results, there are other encouraging predictions that are made by similarly extending the left edge bias to other domains that require faithfulness across representations:

(39) Extensions of the proposal

- The well-known preference for suffixing of fixed segment affixes is explained (§1.4.1).
- Augmentative epenthesis is predicted to occur at the right edge, all other things being equal (§1.4.2).
- Deletion in subtractive morphology is predicted to occur at the right edge (§1.4.3).
- V_1 deletion in a hiatus context will target the first vowel in a …V + V… context. (§1.4.4).

These findings also lead to the tentative hypothesis that only markedness constraints can explicitly refer to the right edge.

The following chapters of the dissertation further develop the theory of positional anchoring, motivating a typology of reduplication based on positional base-reduplicant faithfulness constraints. Chapter 2 explores the variations of left edge reduplication encountered cross-linguistically. Whereas most reduplicants target the left edge of the stem, some patterns copy material that is merely *close* to the left edge. I define the sense of 'close' needed in these contexts, and develop a system that will generate all and only the desired patterns. Chapter 3 examines a group of cases in which right edge copying appears to be contingent on left edge copying. Moreover, the relevant constituent targeted in all of these cases is the head foot of the base. The constraint proposed is called EDGE-ANCHOR; it targets these head foot edge segments simultaneously. Chapter 4 is devoted to addressing apparent counter-examples. These cases are shown either to fall from constraints unrelated to right edge reference, (as with stressed syllable copying, which would only target the right edge indirectly in the case of final stress), or else from an

illusion of reduplication. Some cases that have been labeled as reduplicative in the literature show evidence of being augmentative, thus not due to an input RED morpheme at all. The group of right edge effects that fall from the proposed left edge faithfulness is also discussed in this chapter.

Appendix A: Apparent Right-Anchoring cases

The following are examples of apparent cases of right anchoring that are not discussed in the dissertation. Although any one could be extremely damaging to the proposal if no alternative account is both possible and reasonable, I note that in those cases I was able to pursue further, an alternative explanation was at least plausible. It is my position that further investigation of any one of these cases along the lines of the proposal will yield insight into what is really driving the right edge copying in these cases. When possible, the most likely line of analysis is suggested. The languages are organized by the source from which they came.

I. Marantz (1982)

(40) Karuk[13] derived intensive verb

parak	'to separate with a wedge'	parak-rak	'to split logs with wedges'
tasĩr	'to brush'	tasin-sĩr[14]	'to brush (repeatedly)'

Remarks: Marantz presents this as a case of suffixing reduplication. However, Macaulay (1993) provides additional data, as well as a convincing analysis that Karuk actually

[13] Marantz refers to this language as "Karok", but Macaulay (1993) explains that "Karuk" is the more faithful pronunciation, apparently preferred by the Karuk community.
[14] *r̃* is a morpho-phoneme that nasalizes to *n* before a consonant.

exhibits *root* reduplication. The verb stem has more internal structure that was originally attributed it in the source of Marantz's data (Bright 1957).

II. Key 1965

Key (1965:101) explains that a large portion of his data was acquired through verbal exchange between colleagues and friends. I have made an effort here to seek additional information regarding these patterns, where possible.

(41) Chinanteco (Key 1965:90)

a. "To distinguish plural subject from singular. This function, in another analysis, is defined as length of vowel; here, it is analyzed as reduplication of final V of root, in construction with tone features":

hu^{4}uʔu^{2} 'I fold' → huu^{42}uʔu^{24} 'we (excl. fold)'; hu^{4}uʔu^{24} 'you(sg. fold)'; huu^{42}uʔ^{4} 'you(pl. fold)'

ni^{4}iʔi^{2} 'I sprinkle' → nii^{42}iʔi^{24} 'we (excl.) sprinkle';ni^{4}:iʔi^{24} 'you(sg. sprinkle)';nii^{42}iʔi^{4} 'you(pl. sprinkle)'

b. Reduplication and multiples of reduplication for final consonant, with tone and glottal involved in unanalyzed circumstances. (This is further involved with pluralization):

hm^{4} 'blood' → hmʔm^{4} 'your blood' → hmmmʔ$^{2-4}$ 'your (pl.) blood' → hmm$^{2-3}$ 'liquid, water, blood' → hmmm$^{1-2}$ 'my water' → hmmm^{123}ʔm^{4} 'our (exclusive) water, blood'

Remarks: These patterns appear to be cases of spreading to satisfy a template that applies to the output, rather than evidence of a right-aligned reduplicative morpheme.

(42) Yawelmani

Continuative formed by "reduplication of final VC of proclitic to a limited root, *wiyi*. Multiple reduplication occurs to show continuous or persistent action":

simwiyi 'drizzle' → simimimwiyi 'keep drizzling'
*t'abwiyi → t'abababwiyi 'makes fluttering sounds'
*'unwiyi → 'unununwiyi 'shiver'

Remarks: Alan Prince (p.c.) points out that this looks like Cupeño in reverse, i.e. possibly templatic (cf. Crowhurst 1994).

(43) Cayuvava

"Reduplication of CV of a predicative root with substantive-indicating affixes" (not right edge?):

iraˈtɔ-tɔ̲-kɔ	'the serving of food'
riˈhæ-hæ̲-bæ	'lightning'
kiraˈsi-si̲-bi	'the jumping'

Remarks: According to Key (1967)'s characterization of stress (assigned to every third syllable, counting right to left), these examples suggest a stressed syllable analysis. However, this may be hasty; the fixed-segment suffix present in each of these examples leads to the desired placement of stress. More research on this pattern is needed.

(44) Baure (Bolivia)

a. "Reduplication of final stem syllable (or infix?) with stress sometimes shifted to the reduplicated syllables":

raβérèc̈in 'is far' → raβere-́ré-c̈in 'is very far'
roetobɨko 'is sweet'→ roetobɨ-bɨ-ko 'is very sweet'

b. 'Augmented volume or increased amount of same quality as named, distinct from plurality, is found…reduplication of stem-final syllable':

ndori 'my friend' → ndori-ri 'my very good friend'

c. Reduplication of the last CV of a basic stem to which final word formatives are suffixed:

čopórik̈in 'round' → čopóri-ri-k̈in 'very round'
etóbiyar̈in 'sweet' → etóbĭ-bĭ-yar̈in 'very sweet'

Remarks: More information is needed regarding stress in this language.

(45) Salish

a. "Activator, in which RED indicates state of *something becoming* or *taking on the quality*" indicated by the morpheme involved, is found with reduplication of CV or VC of root, with other unidentified changes nonpertinent to reduplication :

tog 'straight' → tgo'-go 'it became straight'
moko 'swell' → es-mko-ko-mi 'it swells up, becomes swollen'
pin 'full' → pin-in 'becomes full'

b. "Diminutive, young and plural simultaneously. The patterns of this somewhat complex combination may be generally indicated as: reduplication of final V of root with glottal (') intervening = *young*; reduplication of final root syllable and voiceless quality of V in the original syllable, plus above pattern for *young*, plus voiceless quality of final V of the word = *diminutive + young*: R of the initial syllable of the root plus all the features described in the *diminutive + young* category = *plural*'.

qoē's̥p 'buffalo' → qos̥ē'et 'young buffalo' → qosepE-pē-'Et 'small young buffalo' → qosqos'pE'pēt 'several small, young buffaloes

kl̥ōtn'ē' 'mouse' → kl̥otE'ne'Et 'small young mouse' → kl̥otkl̥otnE'nē'Et
'several small young mice'

Remarks: Roots in Salish are typically monosyllabic, and thus reduplicative patterns copying root material are severely limited.

(46) Mundurucú (Brazil) (Key 1965:93)
"The act of possessing has been found in the phonemic shape of reduplication of final syllable of noun possessed. (Tone is omitted in illustrations.)":

ñūn 'I' + kobɛ 'canoe' → ñūn kobɛ-bɛ-ʔ 'I have a canoe'
rarɪk 'bow' → rarɪg-rɪk 'have a bow'
xõ 'pet' → xõ-xo 'have a pet'

(47) Tonkawa

a. "Reduplication of final VC of stem, with substitution of any non-voiceless, syllable-final C by /ʔ/ with some loss of V lengths":

naᵊton[15] 'mountain' → naᵊto-ʔo-n range of mountains'
ʔoᵊn 'blood (vein)' →ʔoᵊ -ʔo-n 'blood (veins)'

b. RED as infix in stem-final CVC in which ʔV is inserted before the final C:

hosas 'young (sing.)' > hosa-ʔa-s 'young (refer to plural noun)'
henox 'pretty (sing.)' > heno-ʔo-x 'pretty (in agreement with plural noun)'

(48) Comanche

a. "Reduplication of final CV to indicate subject plural, in substantive stem compounds of root plus locative":

tabeʔikahpetu '(it,he) towards sun' → tabeʔikahpetu-tu '(they) towards sun'

[15] I am not sure that the raised symbol is a schwa; it must be something to indicate V length, though.

b. Possessive, agreeing in number with the subject possessing, not with the noun possessed, is found as R of final V of pronominal root (appears to be lengthening):

p̈i ‘his’ p̈ii ‘their’

c. Subject pluralization: R of final V of pronominal root plus additional suffixes pertinent to the R function (also appears to be lengthening):

su̇ïkiseʔ ‘he’ su̇ïikiseʔ ‘they’

Remarks: Key cited a colleague for these data. Charnee (1993:73) lists *-pehtu* as the locative postposition meaning ‘to, toward’, but this reduplication process is not mentioned in either her work or in Robinson & Armagost (1990). And while it is true that third person pronouns (b,c) have long final (always second) vowels (Robinson & Armagost 1990), it is not clear that this is due to productive reduplication.

(49) Abyssinian

Augmentative is found in the following linguistic shape: RED as infixed CV before final C of a stem-final CVC.

tiniš ‘small’ > tini-<u>ni</u>-š ‘very small’
tilik ‘big’ > tili-<u>li</u>-k ‘very big’

(50) Aztec

“Complete reduplication of CV word final (CVC) syllable”:

swa ‘girl’ + pil ‘child’ > swapipil ‘girls’
tagat ‘man’ + c̈in ‘honorific’ > tagacic̈in ‘men, honorable’ (with loss of length on one V)
kal- ‘house’ + c̈in ‘honorific, endeared’ > kalcic̈in ‘dear honorific house’

Remarks: This appears to be *prefixing* reduplication, to the second morpheme/suffix.

(51) Hopi

Reduplication of root-final CV: multiple or repetitive action, or progressive action

ʔewi	‘a flame occurs’	ʔewíwità ‘flickering flames’
soma	‘ties it’	sósòMta ‘is tying’

Remarks: Regarding stress, Kalectaca (1978) gives the following rules: a) in words with one or two syllables, stress the first syllable.; b) in words with more than two syllables, accent the first if it is heavy (i.e. closed or long vowel), otherwise, stress the second syllable. There are in fact no data with reduplication in which the first syllable is heavy. Additional forms from Albert & Shaul (1985:4), although unmarked for stress, are thus consistent with a stressed-syllable analysis (as all roots are CVCV), obviating reference to the right edge in this case.

III. Moravcsik 1978

There is some overlap between Moravcsik and Key; the patterns not yet mentioned are:

(52) Marshallese

kagir	‘belt’	kagir-gir	‘wear a belt’
takin	‘socks’	takin-kin	‘wear socks’

Remark: Zewen (1977:40) says of reduplicated morphemes of this type that they “always carry the stress on the first element of the iteration”. Thus, the possibility of a successful analysis of this pattern as *stressed syllable* reduplication is high.

(53) Hausa

suna ‘name’ → sunanaki ‘names’

Remarks: This appears to be part of a complicated system; more study is needed.

Appendix B: Chamorro reduplication

Chamorro (Topping 1973, Klein 1997), which is well documented, remains a troubling potential counter-example. This language has a productive pattern of intensifying reduplication in which the final *CV* in a stem appears to be targeted for copying:

(54) Intensive reduplication

a. dánkolo	dánkolo-lo	‘big/very big’
b. buníta	buníta-ta	‘pretty/very pretty’
c. ñálang	ñála-la-ng	‘hungry/very hungry’
d. métgot	métgo-go-t	‘strong/very strong’

Secondary stress is not reported in reduplicated forms. Bound roots reduplicate in the same way: *nǽta-ta* ‘hollow/not deep’; **nǽta*.

Although in reduplication stress remains on the same vowel that bears stress in the non-reduplicated form, all fixed-segment suffixes cause stress shift to the default, penultimate position.

(55) Default stress penultimate

nána	‘mother’	naná+hu	‘my mother’
gúmaʔ	‘house’	gùmaʔ+níha	‘their house’

In lexically stressed words, antepenultimate stress is possible. However, stress shifts to penultimate position once again upon fixed-segment suffixation.

(56) Lexical antepenultimate stress

dánkolo	'big'	dànkoló+ña	'bigger'
éŋŋuluʔ	'to peep'	in+èŋŋuluʔ+níha	'their peeping'

Reduplicated forms exhibit otherwise rare antepenultimate word stress (and *pre-antepenultimate* word stress in *dánkolo-lo*, which is otherwise limited to words including stress-attracting prefixes (Chung 1983)).

I propose a tentative solution in which, although no secondary stress is reported for reduplicated forms, it could happen in a word where two syllables preceded the main stressed syllable (e.g. postulated **bù-buníta*). Therein lies the problem for an initial reduplicant; a HEAD-MATCH$_{BR}$ violation would result. The constraints requiring penultimate stress, (here, a cover constraint 'PENULTIMATE') would be dominated by HEAD-MATCH.

(57) HEAD-MATCH: If μ_1 is stressed and $\mu_1 \Re \mu_2$, then μ_2 must also be stressed. (Pater 1995, Alderete 1996, McCarthy 2000)

(58) HEAD-MATCH >> {'PENULTIMATE', LEFT-ANCHOR}

/ RED, bunita/	HEAD-MATCH$_{BR}$	'PENULTIMATE'	L-ANCHOR
a. ☞ buníta-ta		*	*
b. bù-buníta	*!		

If correct, a HEAD-MATCH account would explain the failure of left anchored candidates like **ña-ñálang* as well.[16] Alternatives like **dán-ko-kolo* could be explained by contiguity; there are no data offered with antepenultimate lexical stress that are C-final, the reduplicant of which would be undetermined in this system. However, it is not clear whether any such forms exist in the language.

If this suggestion is in fact right, it would illustrate a case where no base-reduplicant anchoring occurred. This would broaden the typology of reduplication; reduplicants could both actively target privileged positions, as well as passively avoid violating a constraint, without targeting anything in particular. Further research is needed to see whether other cases involve merely this avoidant behavior in RED selection.

Appendix C: English truncation to right edge

Data from English on the surface in fact seem to challenge this generalization.[17]

(59) English right edge preserving truncation

za	'pizza'
rents	'parents'
zine	'magazine'
burbs	'suburbs'
shmen	'freshmen'
nads	'gonads'
shrooms	'mushrooms'
tard	'retard'
gator	'alligator'
Nam	'Vietnam (War)'

[16] See Klein (1997) for an account in which faithfulness to lexical stress plays an active role in determining the optimal candidate.

[17] Thanks to Alan Prince and Nancy Hall for reminding me of these type of examples; *za* and *shmen* were in fact new to me.

As Nancy Hall (p.c.) points out, several of these words fall in the domain of "adolescent language", and are less than transparent to the unfamiliar native English speaker. Other examples are recognizable from 1960's counter-culture. Indeed, the examples do seem to flout the conventional left edge preserving rule found generally in the language, e.g. *condominium* → *condo*; *facsimile* → *fax*, etc. (Weeda 1992). The cases in (59) then can convincingly be considered intentionally masked, part of a secret language using an unnatural system to preserve its covert nature. Moreover, the right edge preserving English truncation process does not seem to be productive (in contrast with the much more widely attested left anchored pattern, e.g. *dorm (< dormitory), ad (< advertisement)*, etc.) And finally, the phonological correspondence with the base is idiosyncratic; note in particular the pronunciation of [zɑ], the truncated form for *pizza*; in the full word, the syllable is unstressed, and the vowel is schwa. This example clearly draws from the orthography, and is far from a regular, productive pattern. For these reasons, I do not consider the case a genuine counter-example.