Marshallese Reduplication
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1. INTRODUCTION

The purposes of this paper are to describe Marshallese patterns of reduplication and to account for these patterns using Optimality Theory (OT). I will first provide a brief explanation of Marshallese phonology and syllable structure in order to describe Marshallese reduplication patterns. Following this description, reduplication will be analyzed using Correspondence Theory, a model of reduplication within OT.

2. MARSHALLESE PHONOLOGY

According to Bender (1968), Marshallese has four vowel phonemes, transcribed as *i,ə, e* and *a*. These four phonemes contrast only in height. Hale (2000) further clarifies that these four vowels are lexically specified as [+high, +ATR], [+ high, -ATR], [-high, +ATR], and   [-high, -ATR], while the features of [back] and [round] are determined by the consonant environment. Marshallese consonants are divided into three groups: velarized- consisting of [b, m, t, n, k, ʔ, l, r, h]-, palatalized- [p, ḿ, j, ń ,1, d, y]- and labialized- [ƙ, ʔ, ǹ,1, r̀, w]. In the environment of velarized consonants, the four vowel phonemes have the features [+back,   -round]; for palatalized, [-back, +round]; and for labialized, [+back, +round].

In my analysis of Marshallese reduplication, I have adopted the transcription system introduced by Abo, et al (1976), which uses the symbols *i, e, e,* and *a* for the four phonemes.

2.1 SYLLABLE STRUCTURE

Marshallese syllable structure is typically CVC or CV. However, Marshallese does not tolerate a vowel in either word initial or word final position. In order to account for words that appear to be CV# and #VC, Bender (1971) classifies vowel initial or vowel final words as CV{*y, h,* w} or {*y, h,* w}VC. Thus CV syllables can only occur initially or medially in multisyllabic words.

In examining syllable structure, McClintock (1999) explains that, in Marshallese, only final consonants carry prosodic weight. For example:

(1)   /yentah/
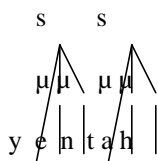
Since all Marshallese words end in either a consonant or a glide and since word-final consonants are constrained, McClintock concludes that Marshallese has a syllable constraint against "super-heavy" syllables. This constraint can also account for the structure of what appears to be long vowels.[1] According to Bender (1968), there are no true long vowels in Marshallese. Instead syllables that appear to have a CV:C structure are analyzed as having a $CV_1\{y, w, h\}V_1C$ structure. Thus this two syllable analysis of words with long vowels does not violate the constraint against "super-heavy" syllables.

In addition to the syllable weight constraint, Marshallese does not tolerate complex onsets or codas. This may appear to be in conflict with words in which the underlying representation begins with consonant geminates. However the two dialects of Marshallese resolve this constraint in different ways. The Ratak Chain inserts a vowel between the two consonants, while the Ralik Chain adds a vowel before the double consonants (Bender 1969). In the Ralik Chain, a [y] is also added before the vowel.

Table 1. (from Suh (1996))

UR	Gloss	Ralik	Ratak
/ddek/	'to grow'	yeddek	dedek
/jjed/	'to look up'	yejjed	jejed
/ppey/	'sandbank'	yeppey	pepey

According to this analysis, words with a UR containing initial consonant geminates become multisyllabic words. In the Ralik chain, the first consonant becomes the coda of the initial syllable, eliminating the complex onset.

3. MARSHALLESE REDUPLICATION [2]

Bender (1971) identifies three types of Marshallese reduplication: final reduplication, in which the final syllable of a word is reduplicated, initial reduplication, in which the initial syllable is reduplicated, and doubling, in which the initial letter of a syllable is reduplicated. Goodenough (1963) explains that Chuukese doubling results from the reduplication of the entire syllable and then subsequent vowel deletion. If this is the case, then doubling appears to be initial reduplication coupled with a constraint that requires deletion. Due to insufficient Marshallese data to support this claim, I will assume that doubling is reduplication of the initial consonant only.

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[1] Please note that long vowels only occur medially in Marshallese.
[2] The data on Marshallese reduplication that are analyzed in sections 3 and 4 were collected from numerous sources including Abo, et al (1976), Bender (1969), (1971) & (1973), Harrison (1973), Pagotto (1992) and Zewen (1977). The data are by no means a complete listing of Marshallese reduplicants. Rather they are a representative sampling of reduplicated forms.

Further in my discussion of reduplication, I will adopt the terms full reduplication, right/left edge reduplication, and doubling in keeping with current theory.

Marshallese reduplication occurs for a variety of morphosemantic reasons. The primary functions of reduplication are 1) the derivation of verbs from nouns, 2) the derivation of intransitive verbs from their transitive counterparts, 3) the formation of postpositional forms of stative verbs, 4) the formation of 'distributive' verbs and 5) the formation of special forms of numbers (Bender (1971)). These five functions do not correspond to particular types of reduplication. The correspondence between function and type will be discussed in sections 3.1-3.4 and in section 4. However, in this section a description of the different morphosemantic functions of reduplication will be discussed. [3]

As with other Micronesian languages, Marshallese has paired transitive/intransitive verb forms. Bender (1971) claims that the intransitive is derived from the transitive form through final reduplication or doubling and deletion. For example, the derivation of the transitive verb is classified as:

(2)   stem: mijit
        loss of final C: miji
        reduplication: miji-miji
        apocope: mij-mij
        surface form: mijmij

Thus according to Bender's model the transitive form is the underlying representation (UR). However, Abo, et al (1976) list the intransitive forms as the UR and claim that the transitive form is derived from the intransitive. A third possibility is that there is an UR from which both the transitive and intransitive are derived. According to the third possibility, the UR would consist of /mij/ which is reduplicated in the intransitive form as *mijmij* and given a transitive suffix in the transitive form as *mijit*. At this time I do not have enough data to determine which possibility is correct. This determination is extremely important in that it affects the classification of reduplication. For example, Bender's interpretation would suppose that left edge reduplication is occurring, while the third possibility would support full reduplication. However In this paper, I will adopt the third possibility given the fact that there appear to be groups of transitive suffixes: *-ey, -ij, -it, -ik, -ek*, etc. It is possible that these forms are phonologically determined, and I hope to pursue this possibility in future research. There is also evidence for the third possibility in the stative verb *bile?* 'surprised.' In addition to the stative

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[3] The derivation of verbs from nouns requires little explanation beyond specifying that the verb is a reduplicated form of the noun and that this process involves right edge or full reduplication. Therefore this process will not be discussed further.

form, this verb can appear in the transitive form *kabile?ey* and in the intransitive form *kabile?le?*. (Note that the transitive and intransitive forms appear with the causative prefix *ka-*.) This example shows that a UR which is neither the transitive nor intransitive is possible.

In the analysis of intransitive reduplication, the concept of stative verbs was introduced. These verbs are labeled stative because they describe the state of something. They appear to function adjectivally but combine with subject markers and function as verbs, as in the following example:

(3) E- kka? jaje ne am.
  3RD S-sharp knife your by you.
  Your knife is sharp.

   (from Abo, et al (1976))

The classification of these words as verbs or adjectives is beyond the scope of this paper, but Good (1985) and Willson (2001) have classified these sentences as equational sentences, claiming that these sentences lack verbs. This debate might be best resolved by Harrison (1973), who confirms that there is no evidence in Micronesian languages to support the existence of the two lexically distinct categories verbs and adjectives. Whatever the classification, these stative verbs are reduplicated when used to modify nouns:

(4) Letok jaje kka?kẹ? ne.
  Give me knife sharp by you.
  Give me the sharp knife (by you).

Reduplication may also occur with distributive forms of verbs. In Marshallese, a distributive form of the verb signifies a general spreading out, distribution, or intensification of an action:

(5) /bar/ 'rocks along the shore' barbar 'full of rocks along the shore'
  /jegaw/ 'odor of fish'   jjegawgaw 'permeated with fish odor'
  /piyaw/ 'chilly'   ppiyawyew 'sensitive to chills'

As these examples show, right edge reduplication can occur with or without doubling when the distributive is formed.

Finally reduplication can be used to form special verbs from numbers. These verbs have the meaning 'to count by…' These forms are derived through doubling.

It should be noted that the morphosemantic function can affect the type of reduplication that occurs. This is shown in the derivation of the word *lĩkej* 'to tie.' This word has an intransitive from which uses right edge reduplication and a distributive form which uses left edge reduplication.

(6)   Base   Intransitive   Distributive
         /ɫikej/   1eklek   1iƙlikej

Even though a close tie between type of reduplication and morphosemantic function is possible for *ɫiƙ*, a tie

cannot be established for most reduplicated words.

3.1 FULL REDUPLICATION[4]

      In Marshallese, full reduplication typically occurs when the stem consists of one syllable. Full

reduplication occurs for the morphosemantic functions of the formation of the distributive, the derivation of a

verb from a noun, the derivation of intransitive verbs, and the formation of the stative forms of postpositional

verbs.

Table 3. Distributive full reduplication

/bar/	'rocks along the shore'	barbar	'full of rocks along the shore'
/bat/	'hill'	batbat	'full of hills'
/beq/	'sand'	beqbeq	'full of sand'
/det/	'sunshine'	detdet	'full of sunshine'
/diy/	'bone'	diydiy	'boney
/re?/	'hear'	re?re?	'hear well'
/teḷ/	'mountain'	teḷteḷ	'full of mountains'

Table 4. Noun to verb full reduplication

/hat/	'hat'	hathat	'wear a hat'
/kal/	'loincloth'	kalkal	'wear a loincloth'
/ket/	'call of a turnstone (bird)'	ketket	'to make the call of a turnstone
/maj/	'glasses'	majmaj	'wear glasses'
/?ir/	'sound of groaning'	?ir?ir	'to groan/grunt'
/ti?/	'sound of hitting or chopping'	ti?ti?	'to make a *ti?* sound'
/wah/	'canoe'	wahwah	'go by canoe'
/waj/	'watch'	wajwaj	'wear a watch'
/wit/	'flower'	witwit	'wear a flower'

Table 5. Stative full reduplication

| bat | 'slow' | batbet | 'slow' |

Table 6. Intransitive full reduplication

/bin/	'to count'	benben	'count'
/biw/	'to tie'	biwbiw	'to tie a knot'
/dam/	'to lick'	damdem	'to lick'
/dan/	'to water'	dandan	'to water'
/dap/	'to hold'	dapdep	'to hold on'

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[4] A full listing of reduplication is given in the appendix.

/day/	'to wrap around'	daydey	'to twist & pull hair'
/har/	'to pull out'	harhar	'to pull out
/jal/	'to roll up'	jaljel̩	'to roll up'
/jar/	'to take out'	jarjar	'to take out'
/jaw/	'to splash water on'	jawjew	'to splash water'
/jȩk/	'to chop'	jȩkjȩk	'to chop'
/kan/	'to stretch'	kankan	'to be taut'
/lik/	'to tie'	leklek	'to tie up'
/mij/	'to cut'	mijmij	'to cut'
/new/	'to pound'	newnew	'to pound'
/ʔar/	'to bite'	ʔarʔar	'to be feeding'
/paw/	'to bind'	pawpew	'to coil up'
/per/	'to doubt'	perper	'to doubt'
/rak/	'to clean an area'	rahreh	'to clean up'
/raq/	'to scratch'	raqreq	'to scoop up'
/tay/	'to wind up'	taytey	'to wind/roll up'
/yat/	'to smell'	yatyat	'to smell'
/yat/	'to pack'	yatyet	'to pack'
/yaw/	'to lash'	yawyew	'to lash with sennit'

Many of the above examples show instances of *a* raising in the reduplicant, such as in *batbet* and *jaljel*. Bender (1973) explains that *a* raising occurs when *a* is found between *i* in the base and reduplicant. When a [-high, -ATR] vowel is found between two [+high, +ATR] vowels, it raises to a [-high, +ATR] vowel. In order for this analysis to be accurate, intransitives verbs must derived from transitives, since *i* is found in what I have labeled the transitive ending. Bender gives the following derivation for *a* raising.

(7)

stem:	dayit	rakij	tayik
loss of final C:	dayi	raki	tayi
reduplication:	dayi-dayi	raki-raki	tayi-tayi
assimilation:	dayi-deyi	raki-reki	tayi-teyi
apocope:	day-dey	rak-rek	tay-tey
(C reduction):		rah-reh	
surface form:	daydey	rahreh	tay-tey

While this interpretation can account for many of the instances of *a* raising in table 6, it cannot account for *a* raising in which the transitive forms lack *i*. Additionally, it does not account for forms in which raising is expected to occur but doesn't. I therefore reject Bender's interpretation, even though I cannot currently account for the phonological process of *a* raising.

3.2 RIGHT EDGE REDUPLICATION

Right edge reduplication occurs when the stem has more than one syllable and can be found in conjunction with any of the five grammatical functions, with the exception of the formation of numbers.

Table 7. Distributive right edge reduplication.

/haddimej/	'feeble'	haddimejmej	'very feeble'

Table 8. Noun to verb right edge reduplication

/bahat/	'smoke'	bahathat	'to smoke'
/jehet/	'shirt'	jehethet	'to wear a shirt'
/jeqen/	'walking stick'	jeqenqen	'to use walking stick'
/jeweb/	'soap'	jewebweb	'to be soapy'
/jiwij/	'shoes'	jiwijwij	'to wear shoes'
/ka?ir/	'belt'	ka?ir?ir	'to wear a belt'
/kawaj/	'blanket'	kawajwej	'to use a blanket'
/kewel/	'hair'	kewelwel	'to be hairy'
/riyi?/	'ring'	riyi?yi?	'to wear a ring'
/takin/	'socks'	takinkin	'to wear socks'

Table 9. Postpositional right edge reduplication

/deyaw/	deyawyew	'pretty'
/kawat/	kawatwet	'be a thief'
/kileb/	kilebleb	'big/corpulent'
/kka?/	kka?ke?	'sharp'
/mayan/	mayanyan	'smart'
/mekaj/	mekajkej	'fast'
/merah/	merahrah	'lightweight'
/meram/	meramrem	'light'
/metal/	metaltel	'smooth'
/meyaw/	meyawyew	'bitter'
/mman/	mmanmen	'good'
/nnaw/	nnawnew	'tasty'
/peran/	peranren	'brave'
/piwal/	piwalwel	'smelly,cowardly'
/piyaw/	piyawyew	'be chilly'
/riyab/	riyabyeb	'be a liar'
/rran/	rranran	'dirty'

Table 9. Right edge reduplication for intransitive verbs.

/hatiy/	'to smoke'	hatiytiy	'to smoke fish or copra'
/kabile?/	'to cause surprise'	kabwile?le?	'to cause surprise'
/kaleher/	'to drive in the ground'	kalehleh	'upside down'
/yiley/	'to string'	yileyley	'to string'

3.3 LEFT EDGE REDUPLICATION

Instances of left edge reduplication are rare but possible. The following two examples from Bender

(1971) show examples of left edge reduplication.

Table 10. Left edge reduplication

| /li̧kej/ | 'to tie' | li̧kli̧kej | 'to tie' |
| /yetal/ | 'to go' | yetyetal | 'to walk' |

The first example of *li̧kli̧kej* is the distributive. However if it is reduplicated for distributive purposes using the perfective form *lȩkjak*, the reduplicant is *lȩklȩkjakjak* meaning 'always tied up.' Although *yetal* is listed as reduplication by Bender, Abo (1976) does not show a reduplicative relationship between these forms.

3.4 DOUBLING

Doubling consists of the reduplication of a syllable initial consonant.

Table 11. Intransitive verb doubling

/jibir/	'to hug'	jjibir	'to hug'
/kal/	'to build'	kkal	'to build'
/kin/	'to invent'	kken	'to invent'
/kir/	'to call'	kkir	'to call'
/liw/	'to scold'	lliw	'to be angry'
/pik/	'to look for'	ppek	'to look for'
/qin/	'to extinguish'	qqin	'to extinguish'
/tal/	'to reach for'	ttal	'to grope'

Doubling can also be used to derive a verb from a number. When this occurs, the causative prefix *ka-* is added to the stem and the initial or medial consonant of the stem is doubled.

Table 12. Number doubling

/jiliw/	'three'	kajjilliw	'count by threes'
/jiljinew/	'six'	kajjiljinew	'count by sixes'
/jiwen/	'one'	kajjew	'count by ones'
/lalem/	'five'	kallallem	'count by fives'
/riwew/	'two'	karriwwew	'count by twos'
/yeman/	'four'	kayamman	'count by fours'

However, many distributive verbs use both doubling and right edge reduplication.

Table 13. Distributive right edge reduplication and doubling

/bahwew/	'chicken'	bbahwewwew	'full of chickens
/bariw/	'crab'	bbariwriw	'full of crab'
/dekak/	'stone'	ddekaykey	'full of rocks'
/diylah/	'nail'	ddiylahlah	'have many nails'
/jekab/	'checkered'	jjekabkab	'checkered all over'
/je?aw/	'odor of fish'	jje?aw?aw	'permeated with fish odor'
/jewek/	'ashamed'	jjewekwek	'easily ashamed'
/kabwile?/	'to cause surprise'	kabbwile?le?	'cause great surprise'
/karjin/	'kerosene'	kkarjinjin	'smell of kerosene'
/kejak/	'be funny'	kkejakjle?k	'make jokes'

/kewnah/	'sneak away'	kkewnahnah	'habitually sneak away'
/kewpay/	'coat'	kkewpaypay	'habitually wear'
/kewtak/	'rise'	kkewtaktak	'continually rise'
/kidiw/	'dog'	kkidiwdiw	'full of dogs'
/kijdrik/	'rat'	kkijdrikdrik	'full of rats'
/kilab/	'club'	kkilablab	'go drinking at a club'
/kilmeyej/	'black'	kkilmeyejyej	'black and overcast'
/kiwij/	'cat'	kkiwijwij	'full of cats'
/nej/	'snapping sound'	nnejnej	'snapping sound'
/ʔaj/	'fragrant'	ʔʔajʔleʔj	'pervasively fragrant'
/ʔertak/	'snore'	ʔʔertaktak	'habitually snore
/pakew/	'shark'	pakewkew	'full of sharks'
/paniq/	'to pile up'	ppaniqniq	'to pile carelessly'
/piyaw/	'chilly'	ppiyawyew	'sensitive to chills'
/piyik/	'pig'	ppiyikyik	'full of pigs'
/rawal/	'return'	rrawalwel	'rotate, resolve'
/reʔ/	'hear'	rreʔreʔ	'able to hear will'

4. ANALYSIS

Correspondence Theory, a model within OT, provides a model of reduplication. Developed by McCarthy and Prince (1995), CT employs OT principles, which state that Universal Grammar contains a set of violable and ranked constraints. These constraints are ranked differently from language to language, and these differences in ranking between languages are what accounts for the differences between languages. The constraints that are important to CT involve the relationship between the stem and base, the base and reduplicant and the stem and reduplicant. However McCarthy and Prince (1995) claims that the relationship between the stem and the reduplicant play a subsidiary role and is therefore excluded from their basic model of reduplication ((8) below). The correspondence between the stem and the base is known as identity, and the term faithfulness refers to the correspondence between the base and the reduplicant.

(8)   Basic Model
        Input: /Af $_{RED}$ +   Stem/
                                        ?? I-O Faithfulness
        Output: R   ?   B
                          B-R Identity
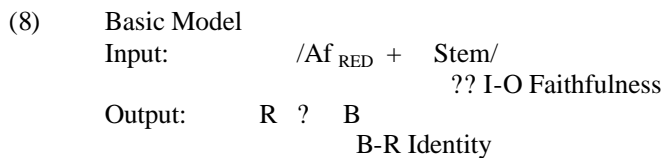
Prince and Smolensky (1993) explain that faithfulness constraints require that the output and the input be as close as possible, while identity constraints require that the base and reduplicant be as close as possible. Please note that this model shows the reduplicant as a prefix; a suffix may also be possible for reduplication.

According to this model, the stem is the word which will be reduplicated, R is the reduplicant and B is the base. A simple explanation of the base is that the stem and the base is the "same" only the stem is part of the

input and the base is in the output. While these two concepts may appear to be the same, some reduplicated forms show that the segments change between the stem and the base.

Implied in (8) are a number of constraints which will be used in the analysis of Marshallese reduplication. These constraints relate to the faithfulness between the input and output and the faithfulness between the base and the reduplicant.

(9)   MAX-BR
            Every segment of the base has a correspondent in the reduplicant.

        MAX-IO
            Every segment of the input has a correspondent in the output.

        IDENT-BR
            Reduplicant correspondents of a base [?F] segment are also [?F].

        IDENT-IO
            Output correspondents of an input [?F] segment are also [?F].

        (From McCarthy and Prince (1995)).

There are other reduplication constraints not implied in (8) that related to Marshallese reduplication. These two constraints are:

(10)   ALIGN-RED-RIGHT
            Align the left edge of the reduplicant to the right edge of the base.

        ALIGN-RED-LEFT
            Align the right edge of the reduplicant to the left edge of the base.

4.1 FULL REDUPLICATION

According the McCarthy and Prince (1995), only full reduplication satisfies MAX-BR, since only full reduplication has complete correspondence of segments between the base and reduplicant. However, *a* raising violates the faithfulness between the base and reduplicant. Thus the phonological constraint which causes *a* raising needs to be ranked higher than IDENT-BR for full reduplication.

(11) MAX-BR, *A* RAISING >>IDENT-BR

/ bat + RED/	MAX-BR	*A* RAISING	IDENT-BR
☞ (i) bat-bet			*
(ii) bat-bat		*!	

Since *a* raising is ranked higher than IDENT-BR, (i) wins out over (ii) even though there are the same number of violations in both possibilities. MAX-BR has been ranked equal to *a* raising since there is no evidence to support a higher ranking.

4.2 RIGHT & LEFT EDGE REDUPLICATION

In this section, right and left edge reduplication will be discussed together as the ranking of constraints for both types of reduplication are similar. Both types of reduplication violate MAX-BR since the entire stem is not reduplicated. Since full reduplication can only occur for a stem with one syllable and since all the examples of right and left edge reduplication are mutlisyllabic, it appears that only one syllable can be reduplicated. As discussed in McClintock (1999), only the nucleus and coda of a syllable carry prosodic weight. Thus syllables may contain either one or two mora. A review of the reduplication data from sections 3.2 and 3.3 show that right and left reduplicants appear to have a CVC structure and are therefore bimoraic. Because of this data, I posit a constraint which states that the reduplicant is bimoraic. This constraint outranks MAX-BR.

(12) R= sμμ >> MAX-BR , *A* RAISING >>IDENT-BR

/kawaj+ RED/	R= s$_{\mu\mu}$	MAX-BR	*A* RAISING	IDENT-BR
(i) kawajkawaj	*!		*	
(ii) kawajkawej	*!			*
☞ (iii) kawajwej		*		*
(iv) kawajwaj		*	*!	

This analysis does not account for stems with word initial consonant geminates in which the reduplicant has a CVC structures instead of a CCVC. Since the onset of a syllable does not bear prosodic weight, the constraint R= sμμ would not restrict the reduplication of the consonant geminates, as in table 14,

Table 14. Right edge reduplication with initial consonant geminates

/kka?/	kka?ke?	'sharp'
/mman/	mmanmen	'good'
/nnaw/	nnawnew	'tasty'
/rran/	rranran	'dirty'

The answer to this puzzle is found in a phonological constraint against word initial geminates as discussed in section 2.1. The UR in table 14 are realized phonologically as the forms in table 15.

Table 15. Dialectic phonological realizations of word initial consonant geminates

UR	Gloss	Ralik	Ratak
/kka?/	'sharp'	yekka?	keka?
/mman/	'good'	yemman	meman
/nnaw/	'tasty'	yennaw	nenaw
/rran/	'dirty'	yerran	reran

I propose that when the reduplicated forms or table 14 are phonologically realized they do not have a word initial consonant geminate, as in *yekka?ka?* in the Ralik chain and *keka?ka?* in the Ratak chain. Therefore the initial consonant in the UR is not reduplicated because it will become part of the first syllable in the phonological form.

Right and left edge reduplication have the same ordering of constraints with the exception of ALIGN. This constraint determines the position of the reduplicant in relation to the base. For example, in right edge reduplication:

(13)   Align-RED-Right: Align the left edge of the reduplicant with the right edge of the base.

/ deyaw + RED/	R= s$_{\mu\mu}$	MAX-BR	*A* RAISING	IDENT-BR	Align-RED-Right
(i) deyawdeyaw	*!		*		
(ii) deyawdeyew	*!			*	
(iii) deydeyawyaw	*!		*		*
(iv) deydeyewyaw	*!			*	*
(v) deyawyaw		*	*!		
☞ (vi) deyawyew		*		*	

(14) Align-RED-Left aligns the right edge of the reduplicant with the left edge of the base.

/ yetal + RED/	R= s$_{\mu\mu}$	MAX-BR	*A* RAISING	IDENT-BR	Align-RED-Left
(i) yetalyetal	*!				
(ii) yetyetaltal	*!				*
☞ (iii) yetyetal		*			

The constraint ALIGN does not out rank any of the other constraints, but I have included it on the right end of the table for convenience.

Having purported a model for reduplication which does not allow multisyllabic reduplicant, I should note that there are two examples of full reduplication in multi-syllabic words.

Table 16. Full reduplication for multisyllabic words

| /bijin/ | 'crowd of' | bijinbijin | 'crowd of crowd of' |
| /kiyyeh/ | 'now' | kiyyehkiyyeh | 'immediately' |

These data would appear to destroy the possibility of the R= s$_{\mu\mu}$ constraint. Given the scarcity of instances of multisyllabic word full reduplication, it is possible that these two words are special instances where full reduplication is allowed. Further data collection and research needs to be done to verify this possibility.

4.3 DOUBLING

In order to account for doubling, a constraint must be proposed which accounts for the fact that only the onset of a syllable is copied. This constraint would outrank both MAX-BR and R= s$_{\mu\mu}$. I have labeled this

proposed constraint as No-NC, to show that the reduplicant is made up of the onset of the syllable and lacks a

nucleus and coda. This for doubling:

(15)   No-NC >> R= s$_{\mu\mu}$ >> MAX-BR , *A* RAISING >>IDENT-BR

/RED + kal/	No-NC	R= s$_{\mu\mu}$	MAX-BR	*A* RAISING	IDENT-BR
(i) kalkal	*!				
☞ (ii) kkal		*	*		

It should be noted that in many of the forms of the distributive, both doubling and right edge reduplication occur.

In these instances, I assume that two different reduplication are occurring, since the ordering of constraints for

these types are different.

5. CONCLUSION

For Marshallese reduplication, I have attempted to provide a ranking of constraints which accounts for

all types of reduplication. I have this provided the following ranking of constraints for Marshallese

reduplication.

Ranking of constraints for full and right/left edge reduplication:

R= s$\mu\mu$ >> MAX-BR , *A* RAISING >>IDENT-BR

Ranking of constraints for doubling:

No-NC >>R= s$\mu\mu$ >> MAX-BR , *A* RAISING >>IDENT-BR

Appendix

BASE	REDUPLICANT	TYPE	SOURCE	FUNCTION
bahat 'smoke'	bahathat 'to smoke'	Right edge	Bender 1971	noun to verb
bahwew 'chicken'	bbahwewwew 'full of chickens	Doubling & Right	Bender 1969	distributive
bar 'rocks along the shore'	barbar 'full of rocks'	Full reduplication	Bender 1969	distributive
bariw 'crab'	bbariwriw 'full of crab'	Doubling & Right	Bender 1969	distributive
bat 'hill'	batbat 'hill'	Full reduplication	Bender 1969	distributive
bat 'slow'	batbet 'slow'	Full reduplication	Bender 1971	postpositional
beq 'sand'	beqbeq 'full of sand'	Full reduplication	Bender 1969	distributive
bijin 'crowd of'	bijinbijin 'crowd of crowd of'	Full reduplication	Zewen 1977	distributive
bin 'count'	benben 'count'	Full reduplication	Bender 1971	intransitive
biw 'tie.'	biwbiw 'tie a knot'	Full reduplication	Pagotto 1992	intransitive
dam 'lick'	damdem 'lick'	Full reduplication	Bender 1973	intransitive
dan 'water'	dandan 'water'	Full reduplication	Pagotto 1992	intransitive
dap 'hold'	dapdep ' hold on'	Full reduplication	Bender 1973	intransitive
day 'wrap around'	daydey 'twist & pull hair'	Full reduplication	Bender 1973	intransitive
dekay 'stone'	dekaykey 'full of rocks'	Doubling & Right	Bender 1969	distributive
det 'sunshine'	detdet full of sunshine'	Full reduplication	Bender 1969	distributive
deyaw 'pretty'	deyawyew	Right edge	Bender 1973	postpositional
diy 'bone'	diydiy 'boney	Full reduplication	Harrison 1973	

diylah 'nail'	ddiylahlah 'have many nails'	Doubling & Right	Bender 1973	distributive
?aj 'fragrant'	??aj?ej 'pervasively fragrant'	Doubling & Right	Bender 1973	distributive
?ar 'bite' trans	?ar?ar 'be feeding'	Full reduplication	Bender 1973	intransitive
?ertak 'snore'	??ertaktak 'habitually snore	Doubling & Right	Bender 1973	distributive
haddimej 'feeble'	haddimejmej	Right edge	Abo 1976	distributive
har 'to pull out'	harhar 'to pull out'	Full reduplication	Zewen 1977	intransitive
hat 'hat'	hathat 'wear a hat'	Full reduplication	Bender 1969	noun to verb
hatiy 'to smoke'	hatiytiy 'to smoke fish'	Right edge	Zewen 1977	intransitive
jar 'to take out'	jarjar 'to take out'	Full reduplication	Zewen 1977	intransitive
jaw 'splash water'	jawjew 'splash water'	Full reduplication	Bender 1973	intransitive
je?aw 'odor of fish'	jje?aw?aw 'permeated with fish odor'	Doubling & Right	Bender 1973	distributive
jehet 'shirt'	jehethet 'wear a shirt'	Right edge	Bender 1969	noun to verb
jek 'chop' trans	jekjek 'chop' intrans	Full reduplication	Bender 1971	intransitive
jekab 'checkered'	jjekabkab 'checkered all over'	Doubling & Right	Bender 1973	distributive
jel 'to roll up'	jeljel 'to roll up'	Full reduplication	Zewen 1977	intransitive
jeq 'land (flying animal)'	jeqjeq 'mosquito (one who lands)'	Full reduplication	Zewen 1977	verb to noun
jeqen 'walking-stick'	jeqenqen 'have a walking-stick	Right edge	Zewen 1977	noun to verb
jeweb 'soap'	jewebweb 'be soapy'	Right edge	Bender 1971	noun to verb
jewek 'shame'	jjewekwek	Doubling & Right	Abo 1976	distributive
jibir 'to hug'	jjibir 'to hug'	Doubling	Harrison 1973	intransitive
jiliw 'three'	kajjilliw 'count by threes'	Doubling	Bender 1971	number
jiljinew 'six'	kajjiljinew	Doubling	Bender 1971	number
jiwen 'one'	kajjew 'count by ones'	Doubling	Bender 1971	number
jiwij 'shoes'	jiwijwij 'wear shoes'	Right edge	Bender 1969	noun to verb
kabile? 'cause surprise'	kabwile?le? 'cause surprise'	Right edge	Bender 1969	intransitive
kabwile?le?	kabbwile?le? 'cause great surprise'	Doubling & Right	Bender 1969	distributive
kal 'loincloth'	kalkal 'wear a loincloth'	Full reduplication	Zewen 1977	noun to verb
kaleher 'drive in the ground'	kalehleh 'upside down	Right edge	Bender 1973	intransitive
kal 'build'	kkal 'build' intra	Doubling	Bender 1971	intransitive
kan 'stretch'	kankan 'be taut'	Full reduplication	Bender 1973	intransitive
ka?ir 'belt'	ka?ir?ir 'wear a belt'	Right edge	Bender 1969	noun to verb
karjin 'kerosene'	kkarjinjin 'smell of …'	Doubling & Right	Bender 1971	distributive
kawaj 'blanket'	kawajwej 'use a blanket'	Right edge	Bender 1969	noun to verb
kawat 'be a thief'	kawatwet	Right edge	Bender 1973	postpositional
kawaj 'use a blanket'	kawajwej 'use a blanket	Full reduplication	Bender 1973	intransitive
kejak 'be funny'	kkejakjek 'make jokes'	Doubling & Right	Bender 1973	distributive
ken 'invent'	kken 'invent'	Doubling	Pagotto 1992	intransitive
ket 'call of a turnstone (bird)'	ketket 'turnstone	Full reduplication	Zewen 1977	noun to verb
kewel 'hair'	kewelwel 'hairy'	Right edge	Harrison 1973	distributive
kewnah 'sneak away'	kkewnahnah 'habitually so'	Doubling & Right	Bender 1973	distributive
kewpay 'coat'	kkewpaypay' habitually wear'	Doubling & Right	Bender 1973	distributive
kewtak 'rise'	kkewtaktak 'continually rise'	Doubling & Right	Bender 1973	distributive
kidiw 'dog'	kkidiwdiw 'full of dogs'	Doubling & Right	Bender 1969	distributive
kijdik 'rat'	kkijdikdik 'full of rats'	Doubling & Right	Bender 1969	distributive
kilab 'club'	kkilablab 'go drinking at a …'	Doubling & Right	Bender 1971	distributive

kileb 'big/corpulent'	kilebleb 'to be very big'	Right edge	Zewen 1977	postpositional
kilmeyej 'black'	kkilmeyejyej 'black and overcast'	Doubling & Right	Harrison 1973	distributive
kin 'to invent'	kken 'to invent'	Doubling	Harrison 1973	intransitive
kir 'call s.o.'	kkir 'call'	Doubling	Pagotto 1992	intransitive
kiwij 'cat'	kkiwijwij 'full of cats'	Doubling & Right	Bender 1969	distributive
kiyyeh 'now'	kiyyehkiyyeh 'immediately'	Full reduplication	Zewen 1977	distributive
kka? 'sharp'	kka?ke?	Right edge	Bender 1973	postpositional
ļekjak 'tied' perf	ļeklekjakjak 'always tied up'	Right edge	Bender 1971	distributive
ļik 'tie'	ļekļek 'tie' intrans	Full reduplication	Bender 1971	intransitive
lalem 'five'	kallallem	Doubling	Bender 1971	number
liw 'to scold'	lliw 'angry'	Doubling	Harrison 1973	intransitive
maj 'glasses'	majmaj 'wear glasses'	Full reduplication	Bender 1969	noun to verb
mayan 'smart'	mayanyan	Right edge	Bender 1973	postpositional
mekaj 'fast'	mekajkej	Right edge	Bender 1973	postpositional
merah 'lightweight'	merahrah	Right edge	Bender 1973	postpositional
meram 'light'	meramrem	Right edge	Bender 1973	postpositional
meray 'dry'	merayey	Right edge	Bender 1973	postpositional
metal 'smooth'	metaltel	Right edge	Bender 1973	postpositional
meyaw 'bitter'	meyawyew	Right edge	Bender 1973	postpositional
mijit 'cut'	mijmij 'cut'	Full reduplication	Bender 1971	intransitive
mman 'good	mmanmen	Right edge	Bender 1973	postpositional
nejjey 'snap sound'	nnejnej 'snap'	Doubling & Right	Pagotto 1992	distributive
new 'to pound'	newnew 'to pound'	Full reduplication	Zewen 1977	intransitive
ni? 'to be tiny'	ni?ni? 'tiny one'	Full reduplication	Zewen 1977	verb to noun
nnaw 'tasty'	nnawnew	Right edge	Bender 1973	postpositional
?ir 'sound of groaning'	?ir?ir 'to groan/grunt'	Full reduplication	Zewen 1977	noun to verb
pik 'look for s'	ppek 'look for'	Doubling	Pagotto 1992	intransitive
pakew 'shark'	ppakewkew 'full of sharks'	Doubling & Right	Bender 1969	distributive
paniq 'to pile up'	ppaniqniq 'to pile carelessly'	Doubling & Right	Harrison 1973	distributive
paw 'bind'	pawpew 'coil up'	Full reduplication	Bender 1973	intransitive
peran 'brave'	peranren	Right edge	Bender 1973	postpositional
per 'doubt s.'	perper 'doubt s'	Full reduplication	Pagotto 1992	intransitive
pik 'look for'	ppek 'look for'	Doubling	Bender 1971	intransitive
piwal 'smelly,cowardly'	piwalwel	Right edge	Bender 1973	postpositional
piyaw 'chilly'	ppiyawyew 'sensitive to chills'	Doubling & Right	Bender 1973	distributive
piyik 'pig'	ppiyikyik 'full of pigs'	Doubling & Right	Bender 1969	distributive
qin 'to extinguish'	qqin 'to extinguish'	Doubling	Harrison 1973	intransitive
rak 'clean an area'	rahreh 'clean up'	Full reduplication	Bender 1973	intransitive
raq 'scratch' trans	raqreq 'scoop up'	Full reduplication	Bender 1973	intransitive
rawal 'return'	rrawalwel 'rotate, resolve'	Doubling & Right	Bender 1973	distributive
re? 'hear'	rre?re? 'able to hear well'	Doubling & Right	Bender 1969	distributive
riwew 'two'	karriwwew 'count by twos'	Doubling	Bender 1971	number
riyab 'be a liar'	riyabyeb	Right edge	Bender 1973	postpositional
riyi? 'ring'	riyi?yi? 'wear a ring'	Right edge	Bender 1969	noun to verb
rran 'dirty	rranran 'very dirty'	Right edge	Bender 1973	postpositional
takin 'socks'	takinkin 'wear socks'	Right edge	Bender 1969	noun to verb
tal 'reach for' tra	ttal 'grope' intrans	Doubling	Bender 1973	intransitive
tay 'wind up' tran	taytey 'wind/roll up'	Full reduplication	Bender 1973	intransitive

tel 'mountain	teltel 'full of mountains	Full reduplication	Bender 1969	distributive
ti? 'sound of hitting or chopping'	ti?ti? 'to make ti?'	Full reduplication	Zewen 1977	noun to verb
wah 'canoe'	wahwah 'go by canoe'	Full reduplication	Bender 1971	noun to verb
waj 'watch'	wajwaj 'wear a watch'	Full reduplication	Bender 1969	noun to verb
wit 'flower'	witwit 'wear a flower'	Full reduplication	Bender 1969	noun to verb
yat 'smell s.'	yatyat 'smell s.'	Full reduplication	Pagotto 1992	intransitive
yat 'pack something'	yatyet 'pack'	Full reduplication	Bender 1973	intransitive
yawit 'lash' trans	yawyew 'lash with sennit'	Full reduplication	Bender 1973	intransitive
yejey 'build s.t.'	yejyej 'build'	Full reduplication	Pagotto 1992	intransitive
yeman 'four'	kayamman 'count by fours'	Doubling	Bender 1971	number
yetal 'go'	yetyetal 'walk'	Left edge	Bender 1971	
yileyek 'string s'	yileyley 'string'	Right edge	Pagotto 1992	intransitive

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