Edge Reduplication and Anchoring in Correspondence Theory
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1. Introduction

The expressive form of bisyllabic verbs in Temiar (Benjamin 1976), an Austroasiatic language of the Malay Peninsula, is indicated by partial reduplication. Unlike other typical partial reduplication patterns where the reduplicated segments are continuous ones of the stem, the expressive reduplicative pattern in Temiar is $C_1\varepsilon C_3$-$C_1VC_2VC_3$ (skipping C_2 of the base) as in (1).[1] Here, reduplication is prefixing and the first and the last segments of the root are copied in the reduplicant. The vowel in the reduplicant is prespecified with /ɛ/.

(1)	root	reduplication	gloss
	rəwēg	rɛg-rəwēg	'to stand conspicuously upright'
	bəguy	bɛy-bəguy	'to waft (smoke)'

This type of reduplication is an example of discontinuous reduplication since the phonemes of the reduplicant are not continuous ones of the stem. It is a challenge to analyze discontinuous reduplication in the templatic approaches proposed in Marantz (1982) and McCarthy and Prince (1986).

Marantz (1982) argues that a reduplicative morpheme consists of a specified CV-template affixed onto the CV-tier that lacks phonemic content. The phonemes of the stem are copied and then they associate to the template. Typically, the association between the copied phonemes and the template is one-to-one left-to-right for prefixing reduplication and right-to-left for suffixing reduplication. The Temiar data in (1) is problematic in the CV-template analysis because it involves "phoneme skipping" which is prohibited in the theory. Based on the template CVC (with a prespecified vowel), the left-to-right association and the right-to-left association will produce the incorrect forms as shown in (2a) and (2b) respectively.

(2) a. *rɛw-rəwēg
b. *wɛg-rəwēg

The correct forms in (1) cannot be derived in this account. The prosodic template approach in McCarthy and Prince (1986) does not fare better than the CV-template analysis because they do not crucially allow segment skipping in the course of template mapping. The same incorrect forms that are derived in the CV-template analysis will also be produced in the prosodic template approach. Thus, discontinuous reduplication is problematic in the template and segment mapping analysis.

The purpose of this paper is to examine cases of discontinuous reduplication such as those occurring in Temiar, Nakanai and Umpila in Correspondence Theory (McCarthy and Prince 1995), which is based on the framework of Optimality

Theory (Prince and Smolensky 1993). It will be argued that the reduplicative pattern in (1) can be explained by a reranking of constraints that are at work in normal reduplication where the reduplicant reflects a contiguous string of phonemes of the base. The analysis in terms of constraint ranking supports the factorial typology of reduplication in Correspondence Theory.

The paper is organized as follows. In section 2, Correspondence Theory is introduced along with the definitions of the major constraints that play a crucial role in the analysis. In section 3 the Temiar data as well as data from Nakanai and Umpila are analyzed. In section 4, the need for alignment constraints in Correspondence Theory is discussed. In section 5, implications of the analyses are discussed. Section 6 concludes the paper.

2. Correspondence Theory

In Correspondence Theory, there are constraints on identity between the base and the reduplicant as well as on identity between input and output. The notion of Correspondence is formalized in (3).

(3) Correspondence

Given two strings S_1 and S_2, *correspondence* is a relation R from the elements of S_1 to those S_2. Segments $\alpha \in S1$ and $\beta \in S2$ are referred to as *correspondents* of one another when $\alpha R \beta$.

(S_1 and S_2 may be an input string and an output string respectively, or a base and a reduplicant respectively.)

Since the correspondence between input and output as well as base and reduplicant are evaluated in parallel in the framework of OT, constraints for correspondence between input and output are separate from those between base and reduplicant. Also, they can be ranked separately. Some of the major constraints from Correspondence Theory which are employed throughout the paper are:

(4) MAX-BR[2]

Every segment of the base has a correspondent in the reduplicant.

MAX-BR requires total reduplication. If this constraint is violated, reduplication will be partial. In discontinuous reduplication, this constraint is always violated at the expense of other related constraints for partial reduplication.

(5) DEP-BR

Every segment of the reduplicant has a correspondent in the base.

DEP-BR prohibits fixed default segment(s) in the reduplicant. DEP-BR is violated when a prespecified segment appears in the reduplicant since the prespecified segment is not part of the base.

(6) IDENT-BR (F)

Correspondent segments in S_1 and S_2 have identical values for feature [F].

IDENT-BR is violated when the segment in the reduplicant has a different feature value than the corresponding segment in the base.

(7) CONTIGUITY

The phonemes of the reduplicant should be contiguous in the base.

a. I-CONTIG ("No skipping")

The portion of S_1 standing in correspondence forms a contiguous string.

Domain (R) is a single contiguous string in S_1.

b. O-CONTIG ("No intrusion")

The portion of S_2 standing in correspondence forms a contiguous string.

Range (R) is a single contiguous string in S_2.

CONTIGUITY is violated when the base segment string is skipped in the reduplicant or a segment intrudes in the reduplicant separating the base segment string. In discontinuous reduplication, CONTIGUITY is always violated due to I-CONTIG. In the case of reduplication with a prespecified segment in the middle of a reduplicant, O-CONTIG would be violated. In typical continuous partial reduplication, however, CONTIGUITY is always satisfied although MAX-BR is violated.

(8) ANCHOR

L-ANCHOR:	The left peripheral element of the R corresponds to the left peripheral element in the B.
R-ANCHOR:	The right peripheral element of the R corresponds to the right peripheral element in the B.

In typical prefixing reduplication, the left edge element of the reduplicant corresponds to the left edge element of the base; in typical suffixing reduplication, the right edge element of the reduplicant corresponds to the right edge element of the base. In normal continuous partial reduplication, only one edge element (either left or right) need be anchored. It will be shown, however, that in discontinuous reduplication, both ANCHOR (left and right) must be ranked high.[3]

Other constraints such as LINEARITY, UNIFORMITY and INTEGRITY are not specified here but it is assumed that these are not violated in the discussion of reduplicative patterns analyzed in the paper. In the next section, I analyze discontinuous reduplication in Correspondence Theory.

3. Analysis of Discontinuous Reduplication

In this section, I analyze discontinuous reduplication in three different languages; Temiar, Nakanai, and Umpila.[4]

3.1 Temiar reduplication

Consider the Temiar data in (1) which is shown again in (9)

(9)	root	reduplication	gloss
	rəwēg	rɛg-rəwēg	'to stand conspicuously upright'
	bəguy	bɛy-bəguy	'to waft (smoke)'

For the analysis in Correspondence Theory, it has to be assumed that the constraint R=σ (the reduplicant is a syllable) is undominated and higher ranked than MAX-BR since the reduplicant in Temiar is always a syllable in partial (not full) reduplication. If MAX-BR is undominated, the result is always full reduplication. Whether the reduplicant syllable is light or heavy does not need to be specified since it can be determined by other relevant constraints. Since the right peripheral element in the base appears in the right edge of the reduplicant, we must assume that R-ANCHOR is highly ranked.[5] In addition, L-ANCHOR must also be highly ranked to guarantee the appearance of the left element in the base in the reduplicant.

In typical continuous partial reduplication, only one anchoring constraint (either L-ANCHOR for prefixing or R-ANCHOR for suffixing) need be ranked high. In the discontinuous edge element reduplication in Temiar, however, both anchoring constraints must be ranked high. Thus, ANCHOR is the crucial constraint that ensures the correspondence of peripheral elements of the base in the reduplicant.

It is important to note that the two anchoring constraints (L-ANCHOR and R-ANCHOR) must dominate CONTIGUITY. In continuous reduplication, CONTIGUITY is always ranked higher than one of the anchoring constraints since this constraint filters out any discontinuous candidates. In discontinuous reduplication, however, CONTIGUITY must be dominated by both L-ANCHOR and R-ANCHOR. This constraint ranking is crucial in the analysis of the data under consideration in this paper.

The appearance of coda consonants in reduplication is accounted for by low-ranking NO-CODA. (McCarthy and Prince 1993, 1994)

(10) NO-CODA
 $*C]_\sigma$
 "Syllables may not have codas"

In Temiar, NO-CODA is ranked below both MAX-IO and MAX-BR so coda consonants will appear in a reduplicant as well as in other output strings. Specifically, the high-ranking R-ANCHOR compels a violation of NO-CODA in the reduplicant. Thus, the appearance of a coda consonant in the reduplication is not blocked. The overall ranking for the constraints under discussion is in (11).

(11) R=σ » MAX-BR, L-ANCHOR, R-ANCHOR » CONTIGUITY, NO-CODA.

The constraint tableau in (12) exemplifies the selection of the correct output with the properly ranked constraints.[6]

(12) Temiar expressive reduplication

/RED-rəwēg/	R=σ	MAX-BR	L-ANCHOR	R-ANCHOR	CONT.	NO-CODA
a. rɛ-rəwēg		****!		*		*
b. rɛw-rəwēg		***		*!	*	**
c. wɛg-rəwēg		***	*!		*	**
d.√ rɛg-rəwēg		***			***	**

Candidate (a) violates Max-BR fatally. Candidate (b) satisfies L-ANCHOR but violates R-ANCHOR. Candidate (c) satisfies R-ANCHOR at the expense of L-ANCHOR. Candidate (d) meets both L-ANCHOR and R-ANCHOR although it violates the non-fatal CONTIGUITY more than other candidates. Thus, candidate (d) is selected as the optimal output. It is crucial that both L-ANCHOR and R-ANCHOR are ranked higher than CONTIGUITY in Temiar reduplication.[7]

3.2 Nakanai

A similar instance of the reduplicative pattern is observed in Nakanai, an Austronesian language of Papua New Guinea as discussed by Williams 1984. Examples are provided in (13).[8]

(13)	root	reduplication	gloss
	mota	ma-mota	'vines'
	sile	se-sile	'tearing'
	sio	so-sio	'carrying on ceremonial litter'
	biso	bo-biso	'members of the Biso group'

According to Johnston (1980) from which Williams cites the data, the canonical syllable structure is of the form (C)V. The reduplicative pattern in (13) is slightly different from the one in Temiar in that there is no prespecified vowel in the reduplicant. Since the base syllable ends in a vowel and no prespecified vowel exists in the reduplicant, the final vowel in the base is anchored in the reduplicant. The same constraints and ranking used in Temiar, excluding NO-CODA, should select optimal candidates in Nakanai as in (14). Since the canonical syllable structure does not have a coda, NO-CODA must be undominated even for MAX-IO.

(14) Nakanai reduplication

/RED-mota/	NO-CODA	R=σ	MAX-BR	L-ANCHOR	R-ANCHOR	CONT.
a. mo-mota			**		*!	
b. mot-mota	*!		*		*	
c. ta-mota			**	*!		
d. √ ma-mota			**			**

Candiate (a) violates the fatal R-ANCHOR although it satisfies CONTIGUITY. Candidate (b) is out due to the violation of the undominated NO-CODA. Candidate (c) violates the fatal L-ANCHOR. The optimal candidate (d) satisfies both L-ANCHOR and R-ANCHOR but violates CONTIGUITY. Again, CONTIGUITY is crucially ranked lower than both L-ANCHOR and R-ANCHOR.

3.3 Umpila progressive reduplication

Another instance of discontiunous reduplication is found in Umpila, an Australian language of the Cape York (Harris and O'Grady 1976). In this language, the first and last segment of the stem reduplicates as a suffix as in (15).[9]

(15)	root	reduplication	gloss
	maka	maka-l-ma	'die'
	puuya	puuya-l-pa	'blow'
	puŋka	puŋka-l-pa	'fall'
	tuki	tuku-l-ti	'track up'
	paaʔi	paaʔa-l-pi	'stand'

The pattern is similar to Nakanai reduplication in that the first and the last segments of the base appear in the reduplicant. A difference is that reduplication is a suffix instead of a prefix. How to express this difference will be discussed in the next section. Ignoring the vowel change and /l/-insertion in the reduplication for now, I provide the following tableau for candidate evaluation. In Umpila, NO-CODA is high-ranked only with regard to constraints for reduplication. Generally, it is low ranked and a coda may appear in the base, but it cannot appear in the reduplicant due to the following ranking: MAX-IO » NO-CODA » MAX-BR.[10] This ranking results in an instance of the emergence of the unmarked as discussed in McCarthy and Prince (1994).

(16) Umpila reduplication

/puŋka-l-RED/	NO-CODA	R=σ	MAX-BR	L-ANCHOR	R-ANCHOR	CONT.
a. puŋka-l-pu	**		***		*!	
b. puŋka-l-puŋ	***!		**		*	
c. puŋka-l-ka	**		***	*!		
d.√ puŋka-l-pa	**		***			**

The best candidate is (d) which does not violate either of the anchoring constraints at the expense of CONTIGUITY. Other candidates fatally violate high-ranking constraints NO-CODA, L-ANCHOR or R-ANCHOR.

4. Alignment Constraints vs. ANCHOR

So far I have assumed that the ordering of morphemes between base and reduplicant is already specified implicitly in the input. Now I discuss how prefixing and suffixing of the reduplicant morpheme is expressed in Correspondence Theory. In Correspondence Theory, L-ANCHOR implies the prefixing of a reduplicant morpheme to the base. It only requires anchoring of the left element in prefixing reduplication. It does not compel anchoring of the right element. The reverse implication can be made for R-ANCHOR. R-ANCHOR implies the suffixing of a reduplicative morpheme. Thus, normally in partial reduplication the anchoring constraints would subsume a constraint regarding the alignment of a reduplicant. Since ANCHOR can properly express what alignment can do, McCarthy and Prince do away with alignment in reduplication except for cases of 'infixing'. It is assumed in McCarthy and Prince (1995) that prefixing and suffixing is expressed by high-ranking L-ANCHOR or R-ANCHOR. The question of whether morphemes are linearly ordered with respect to one another in the input has not yet been examined (McCarthy p.c.).

A problem emerges when we consider data (9) and (15). Since L-ANCHOR and R-ANCHOR are ranked the same in the hierarchy, we cannot be certain whether the reduplicative morpheme will be affixed as a prefix or a suffix. Yet, in Temiar, it is a prefix whereas it is a suffix in Umpila. We may want to rank L-ANCHOR higher than R-ANCHOR for prefixing and rank R-ANCHOR higher than L-ANCHOR for suffixing. This analysis runs into another problem. Since L-ANCHOR is only for prefixing, it does not need to be satisfied in suffixing reduplication. In other words, the left edge of a suffixing reduplicant does not need to refer to the satisfaction of L-ANCHOR. By the same token, R-ANCHOR need not be satisfied in prefixing reduplication. This is what is expected by ANCHOR in Correspondence Theory. This is not the case in the discontinuous reduplication shown above. Both anchoring constraints must be met regardless of the affixal status. Thus, we need a mechanism that will guarantee the proper position of the affix in the output.

It has been claimed by Meek and Hendricks (1996) that alignment constraints are needed separate from anchoring constraints based on reduplicative patterns in Nancowry and Koasati. It is shown that the reduplicative pattern in Nancowry in (17) must be analyzed by assuming that alignment constraints are needed as well as ANCHOR.

(17) Nancowry reduplication[11]

root	reduplication	gloss
yak	ʔuk-yak	'to conceive'
cat	ʔit-cat	'to jump'

Since reduplication is prefixing and the right edge of the reduplicant corresponds to the final base consonant, Meek and Hendricks claim that an analysis without alignment constraints will produce two optimal candidates as shown in (18).

(18) Nancowry reduplication

/yak/	R-ANCHOR	L-ANCHOR
a. ʔuk$_R$] [$_B$yak		*!
b. √ yak$_B$] [$_R$ʔuk		
c. √ yuʔ$_R$] [$_B$yak		
d. yak$_B$] [$_R$yuʔ	*!	

Candidate (b), which has a suffixing reduplicant, meets R-ANCHOR. Since the reduplication is suffixing, L-ANCHOR is not relevant. The prefixing reduplication in (c) satisfies L-ANCHOR, but R-ANCHOR is irrelevant in evaluation. Thus, Meek and Hendricks claim that alignment constraints are necessary as well as ANCHOR.

If we adopt alignment constraints, prefixation in Temiar and Nakanai will be determined by high-ranking ALIGN-L-RED in (19). The alignment constraint must rank above the anchoring constraints. Suffixation in Umpila is determined by high-ranking ALIGN-R-RED in (20).

(19) ALIGN-L
ALIGN (RED, R, Base, L)
"The right edge of a reduplicant is aligned with the left edge of a base"
(20) ALIGN-R
ALIGN (RED, L, Base, R)
"The left edge of a reduplicant is aligned with the right edge of a base"

Adopting this alignment constraint, I note that these constraints are presumed in the tableaux; ALIGN-L in Temiar and Nakanai and ALIGN-R in Umpila. Since the main focus of this paper is not about the placement of reduplicative affixes, I do not show alignment constraints in the tableaux. However, I discuss the necessity of alignment constraints briefly.

In fact, these alignment constraints are needed in a nontypical reduplicative pattern occurring in Madurese (Stevens 1985). The reduplicative morpheme is prefixed to the base, but the last syllable of the base appears as shown in (21).

(21) Madurese reduplication

root	reduplication	gloss
barampan	pan-barampan	'several'
oba	ba-oba	'change'

The left edge of the base is not anchored in the reduplicant, although it is predicted given that L-ANCHOR is at work since L-Anchor presumes prefixing in Correspondence Theory. Thus, we do need alignment constraints (ALIGN-L in this case) as well as R-ANCHOR.[12]

I have argued for the necessity of alignment constraints in reduplication as well as ANCHOR. Although ANCHOR seems sufficient enough in continuous reduplication, we need alignment constraints to provide the proper order between base and reduplicant as evidenced by the discontinuous reduplication discussed above. Since alignment constraints provide the surface order between base and reduplicant, ANCHOR can be evaluated regardless of whether the reduplicant is a prefix or a suffix since it is free of its role to ensure the linear order of the reduplicant against the base.

So far, I have shown that the discontinuous reduplication in Temiar, Nakanai, and Umpila can be accounted for by the crucial constraint ranking of ANCHOR » CONTIGUITY.

5. Implication

One interesting implication that emerges from my posited optimality-theoretic analysis of discontinuous reduplication is the prediction that discontinuous reduplication must always involve edge elements. To see this, first consider continuous prefixing reduplication such as $C_1V_1C_2$-$C_1V_1C_2V_2C_3$. The constraint ranking in (22) selects the optimal form, ignoring low-ranking NO-CODA.

(22) Constraint ranking for partial continuous reduplication
CONTIGUITY, L-ANCHOR » R-ANCHOR

The constraint ranking in discontinuous reduplication is in (23) as we have seen in the above analysis.

(23) Constraint ranking for partial discontinuous reduplication
L-ANCHOR, R-ANCHOR » CONTIGUITY

Hypothetically there can be other partial discontinuous reduplication patterns. Two of these are shown in (24)

(24) Hypothetically possible discontinuous reduplication

a. $C_1V_1C_3$-$\underline{C_1}\underline{V_1}C_2V_2\underline{C_3}V_3C_4$

b. $C_2V_2C_3$-$C_1V_1\underline{C_2V_2C_3}V_3C_4$

Since form (24a) involves noncontinuity of segments and R-ANCHOR is not satisfied, the logical constraint ranking should be (25a). Also, form (24b) should have the constraint ranking in (25b) since CONTIGUITY is met at the expense of anchoring constraints.

(25) a. L-ANCHOR » CONTIGUITY » R-ANCHOR

b. CONTIGUITY » L-ANCHOR, R-ANCHOR

However, the hypothetical forms in (24a) cannot be chosen by the constraint ranking in (25a) because (25a) will always pick $C_1V_1C_2$-$C_1V_1C_2V_2C_3V_3C_4$ as the optimal form since CONTIGUITY eliminates any reduplication output forms that are not contiguous as shown in (26).

(26) Constraint ranking of (25a)

RED-$C_1V_1C_2V_2C_3V_3C_4$	L-ANCHOR	CONTIGUITY	R-ANCHOR
a. √ $C_1V_1C_2$-$C_1V_1C_2V_2C_3V_3C_4$			*
b. $C_1V_1C_3$-$C_1V_1C_2V_2C_3V_3C_4$		*!	*
c. $C_1V_1C_4$-$C_1V_1C_2V_2C_3V_3C_4$		*!	

When R-ANCHOR dominates CONTIGUITY, the opitmal output will be (26c).

The constraint ranking in (25b) will pick either $C_1V_1C_2$-$C_1V_1C_2V_2C_3V_3C_4$ or $C_3V_3C_4$-$C_1V_1C_2V_2C_3V_3C_4$ as the optimal form due to the higher ranking CONTIGUITY as shown in (27).

(27) Constraint ranking of (25b)

RED-$C_1V_1C_2V_2C_3V_3C_4$	CONTIGUITY	L-ANCHOR	R-ANCHOR
a. √ $C_1V_1C_2$-$C_1V_1C_2V_2C_3V_3C_4$			*
b. √ $C_3V_3C_4$-$C_1V_1C_2V_2C_3V_3C_4$		*	
c. $C_2V_2C_3$-$C_1V_1C_2V_2C_3V_3C_4$		*	*!

The crucial point is that the reduplicants always contain an edge element. Thus, the form in (24b) which does not contain an edge element cannot be optimal. The discontinuous reduplicative patterns in (24) cannot be selected by any reranking among the three constraints. Thus, the appearance of edge segments in discontinuous reduplication is not something special but a simple by-product of proper constraint ranking between ANCHOR and CONTIGUITY. That discontinuous reduplication patterns involving non-edge elements do not ever seem to occur is correctly predicted by OT.

6. Conclusion

I have shown in this paper that discontinuous reduplication in Temiar, Nakanai, and Umpila can be accounted for in Correspondence Theory by the constraint ranking of L-ANCHOR and R-ANCHOR » CONTIGUITY. Since ANCHOR and CONTIGUITY are the basic constraints in normal continuous reduplication, it is theoretically advantageous to use the same constraints with a different ranking instead of evoking a new constraint specifically for discontinuous reduplication. It was further shown in this paper that both alignment constraints and anchoring constraints are needed in the analyses of discontinuous reduplication. I have also shown that the appearance of edge elements in discontinous reduplication is just a natural result of the constraint ranking rather than a special characteristic of discontinuous reduplication.

Notes

* I wish to thank Stuart Davis for his extremely helpful comments and criticisms of this paper. I alone am responsible for any errors.

[1]Only two examples of the expressive reduplication are listed in Benjamin. He notes, however, that this pattern is very productive. In the data, [ē] is a long vowel.

[2]Since this paper deals with correspodence between base and reduplicant, I do not list constraints for correspondence between input and output. It is assumed in the paper that those constraints that compel the correspondence between input and output are ranked higher than those for base and reduplicant and are always satisfied in the evaluation, unless otherwise indicated.

[3]Although L-ANCHOR is relevant only for prefixing and R-ANCHOR only for suffixing, I assume that both are needed regardless whether reduplication is a prefix or a suffix. A discussion of this matter is provided in section 3.3.

[4]Reduplication in these languages has been analyzed in Davis (1986) in a derivational approach along the lines of Marantz (1982) that makes use of both phoneme copying and phoneme spreading.

[5]If the base ended in vowel, we would expect to see the optimal candidate with the vowel anchored to the right edge of the reduplicant. The situation does not occur in Temiar since this type of reduplication occurs only with a CVCVC base.

[6]Throughout this paper, I assume that the appearance of the specified vowel in reduplication is achieved by undominated constraints which I do not deal with. Since the main focus of the paper is on discontinuous reduplication rather than how to analyze the prespecified vowel, I do not specifically deal with the prespecified vowel. Gafos (1995) shows that the prespecified vowel is present in RED and the appearance of the vowel is controlled by relevant constraints.

[7]Semai expressive reduplication (Diffloth 1976) is very similar to Temiar except that it does not have the prespecified vowel in the reduplicant (ct-cʔɛt). The reduplicant is called a minor syllable. This reduplication can be analyzed in the same manner as Temiar expressive reduplication.

[8]Williams notes that the reduplication pattern in (13) is one of several reduplication patterns which is conditioned by the featural shapes of the base. The pattern in (13) occurs only when the first vowel is [-low] and the second vowel is [-high] in the base. Other patterns are not discussed in this paper.

[9]It is shown in Harris and O'Grady (1976) that the pattern in (15) is one of the several reduplication patterns of L-conjugation verbs. Other types of reduplication are not explored in this paper. See Levin (1985) for analysis of all types of reduplication in Umpila.

[10]The last two data in (15) exhibit the featural change of the base final vowels when a reduplicative morpheme is affixed. When we assume the correspondence relationship between the base and reduplicant, we would expect correspondece of the base-final vowel in reduplication. The data show, however, that root vowels, not the base final vowel, appear in reduplication. This could be a case where the correpondence between Input and Reduplicant is considered. The analysis of Input-Reduplicant Faithfulness is not in the scope of this paper. I simply use MAX-BR instead of MAX-IR in this case without further explanation. The crucial point is that ANCHOR must be ranked higher than CONTIGUITY in discontinuous reduplication. Also see McCarthy and Prince (1995) for Input-Reduplicant correspondence in detail.

[11]The reduplicant is prespecified with a glottal onset and a high vowel [I], which alternates between [i] and [u] depending on the place feature of the final consonant.

[12]The proper form of the reduplicant in Madurese is forced by R=σ, ALIGN-L, CONTIGUITY, ONSET, R-ANCHOR » L-ANCHOR. I do not detail this here.

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