Locality Requirements in Reduplication: SYLLABLEPROXIMITY-BR*

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1 Overview

Several languages show phenomena of order-disrupting reduplication, in which the linear order expected on the basis of related forms does not surface faithfully in the reduplicated form, and the Reduplicant is minimal and atemplatic. Take, for instance, the basic pattern of plural reduplication in Pima (Uto-Aztecan: Arizona): in this pattern, the initial consonant of the non-reduplicated form occurs twice in the reduplicated form, once in the onset and once in the coda of the initial syllable (Riggle 2004, 2006). The second occurrence of the consonant interrupts the string of elements as that string occurs in the input; therefore, the output Base string is not faithful to its corresponding Input string. In (1), the input string /mavit/, as evinced by the non-reduplicated form [ma.vit], is not preserved faithfully in the reduplicated form [mam.vit].

(1) /mavit/ 'lion', [ma.vit] 'lion (sg.)' → [mam.vit] 'lion (pl.)'

If the reduplicated form in (1) is parsed as in (2), then the Base [ma … vit] is not a contiguous string, violating O-CONTIGUITY. If it is parsed as in (3), then the Base [amvit] does not faithfully preserve the linear order in the input string /mavit/, violating LINEARITY (see McCarthy and Prince 1995 for these constraints). Some higher-ranked constraint is needed to prevent these order-preserving constraints from being satisfied.

(2) $[ma]_B[m]_R.[vit]_B$
(3) $[m]_R[am.vit]_B$

I propose that order-disrupting reduplication is compelled by the constraint SYLLABLEPROXIMITY-BR (abbreviated throughout as SYLLPROX-BR). SYLLPROX-BR demands that elements in correspondence between the Reduplicant and the Base must be contained within the same syllable, or, equivalently, dominated by the same syllable node (e.g., the corresponding [m]s in (1)). Ranking SYLLPROX-BR over order-preserving constraints causes elements to be rearranged in order to get the correspondents in the same syllable. Since most languages limit the amount of material that can appear in one syllable, the Reduplicant and Base correspondents must be small enough to occupy the same syllable. Therefore SYLLPROX-BR accounts for both the minimality of the Reduplicant and the disruption of the input order.

The accounts given previously of order-disrupting reduplication use separate constraints to account for the minimality and the position of the Reduplicant (Fitzgerald 1999, 2000; Struijke 2000; Riggle 2004, 2006). In this type of account, minimality is enforced by an economy constraint, which penalizes the appearance of phonological structure in the output. The position of the material in the reduplicated form is regulated by other constraints, such as LOCALITY (Nelson 2003) or ANCHOR-V_1 (Riggle 2006). Using

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separate constraints to regulate the minimality and the position of the Reduplicant expands the typology of order-disrupting reduplication well beyond currently attested phenomena, predicting variably local and long-distance copying. The SYLLPROX-BR account fits the attested data more closely, and makes the strong empirical prediction that all order-disrupting reduplication be local.

This paper is organized as follows: in §2, I lay out the order-disrupting reduplication data from the Austronesian language Saisiyat that I use to illustrate my analysis. In §3, I present my proposal to account for order-disrupting reduplication using SYLLPROX-BR. In §4, I develop an analysis of the Saisiyat data using the SYLLPROX-BR account. In §5, I contrast the typological predictions of the SYLLPROX-BR account and an alternative account, and show that SYLLPROX-BR fits the attested data better. I conclude this paper in §6.

2 Data

I illustrate my proposal with a pattern of order-disrupting reduplication found in the endangered language Saisiyat (Austronesian: Taiwan). Order-disrupting reduplication is found when one of the Progressive morphemes occurs in conjunction with the Agent Focus infix /om/ (variously realized as [om], [əm], and [øm]). This pattern was first observed in Zeitoun and Wu (forthcoming); my own fieldwork has confirmed this pattern. In Progressive reduplication, only the first consonant of the root is copied, and the second occurrence of this consonant occupies the coda of the initial syllable. This consonant splits the Agent Focus infix, separating the vowel of the infix [o]/[ə]/[ø] from the consonant [m] (4-9) ((4-6) from personal fieldwork, (7-9) from Zeitoun and Wu forthcoming).

	Root	Agent Focus (unreduplicated)	Progressive (reduplicated) Morphological Structure	Syllabic Structure
(4)	/ka:at/ ‘write’	[k-o.m-a:.at]	[**k**-o-**k**-m-a:at]	[**k**o**k**.ma:.at]
(5)	/siʔæl/ ‘eat’	[s-o.m-i.ʔæl]	[**s**-o-**s**-m-iʔæl]	[**s**o**s**.mi.ʔæl]
(6)	/tørøʔ/ ‘drip’	[t-o.m-ø.røʔ]	[**t**-o-**t**-m-ørøʔ]	[**t**o**t**.mø.røʔ]
(7)	/kitaʔ/ ‘see’	[k-o.m-i.taʔ]	[**k**-o-**k**-m-itaʔ]	[**k**o**k**.mi.taʔ]
(8)	/rəmə/ ‘dye’	[r-ə.m-ə.mə]	[**r**-ə-**r**-m-əmə]	[**r**ə**r**.mə.mə]
(9)	/ħaŋiħ/ ‘cry’	[ħ-ø.m-a.ŋiħ]	[**ħ**-ø-**ħ**-m-aŋiħ]	[**ħ**ø**ħ**.ma.ŋiħ]

However, if the root begins in two consonants, then there is no room for a corresponding consonant in the coda of the initial syllable, since Saisiyat allows neither complex onsets nor complex codas. Instead, either a CV- sequence is reduplicated ((10), from Zeitoun and Wu), or a suppletive portmanteau morpheme [ka-] ‘AF+Prog’ is inserted ((11-12), from personal fieldwork). This appears to be a case of inter-speaker variation (i.e., Zeitoun and Wu only show the pattern in (10), while I could only elicit the pattern in (11-12)).

	Root	Agent Focus (unreduplicated)	Progressive (reduplicated) Morphological Structure	Syllabic Structure
(10)	/ʂβət/ ‘beat’	[ʂ-om-.βət]	[**ʂo**-**ʂ-o**m-βət]	[**ʂo**.**ʂo**m.βət]
(11)	/ʂβət/ ‘beat’	[ʂ-om-.βət]	[**ka**-ʂβət]	[**ka**ʂ.βət]
(12)	/ħlal/ ‘dance’	[ħ-øm-.lal]	[**ka**-ħlal]	[**ka**ħ.lal]

I give the following generalization of the two different patterns: in the Agent Focus (unreduplicated) form, if the root begins in one consonant, the [m] of the AF infix [om] occurs in the onset of the second syllable, so that the initial syllable is open. In the Progressive (reduplicated) form, the second occurrence of the root-initial consonant is in the coda of the initial syllable, which closes it and splits the AF infix into two parts, [o] and [m]. If the root begins in two consonants, the [m] of the AF infix [om] occurs in the coda of the initial syllable in the unreduplicated form, so that that syllable is closed. In the reduplicated form, therefore, the second occurrence of the root-initial consonant cannot appear in this position: either the vowel [o] of the AF infix is also reduplicated, so that this consonant appears in the onset of the second syllable, or a suppletive prefix [ka-] is used instead of both reduplication and the [om] infix, in which case

the root-initial consonants surfaces in the coda of the initial syllable.

3 Proposal

The major phenomenon to be accounted for in the data above is why the second occurrence of the root-initial consonant splits the AF infix [om], e.g., why the the second [s] in [**s**-o-**s**-m-iʔæl] 'be eating-AF' separates the [o] and the [m] of the infix. This splitting violates O-CONTIGUITY, which demands that an output string corresponding to a contiguous input string (i.e., a morpheme, e.g., /om/) is itself contiguous. In basic pattern above (4-9), exemplified by [**s**-o-**s**-m-iʔæl], the output string [o…m] is not contiguous.

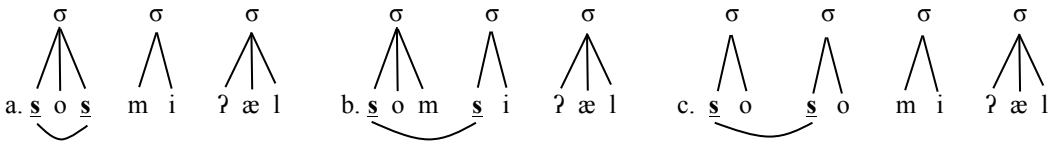
(13) O-CONTIGUITY: The output string standing in correspondence with a contiguous input string is itself contiguous (adapted from McCarthy and Prince 1995)

Several other possible output candidates do not split the morpheme [om] and thus better satisfy O-CONTIGUITY, e.g., [**s**-om-**s**iʔæl] or [**so**-**s-o**m-iʔæl]. The surface output [**s**-o-**s**-m-iʔæl] must therefore be less marked in some respect than these challengers, so that it can do better on some constraint(s) dominating O-CONTIGUITY. I propose that [**s**-o-**s**-m-iʔæl] is less marked in the proximity of the correspondents to one another, specifically their occurrence within the same syllable. I formulate the constraint SYLLABLE PROXIMITY-BR (abbreviated as SYLLPROX-BR) to capture this demand on proximity.

(14) SYLLABLEPROXIMITY-BR: Every element in the Reduplicant must be dominated by the same syllable node as its correspondent in the Base.

The winning outputs in the basic, order-disrupting pattern of Progressive Reduplication all obey SYLLPROX-BR: the corresponding consonants, e.g., the [s]s in (15a), are in the same, initial syllable. In order to get both correspondents in the same syllable, the infix [om] must be split. Challengers that do not split the infix [om], e.g., (15b-c), must place the correspondent [s]s in different syllables, violating SYLLPROX-BR.

(15)



Satisfies SYLLPROX-BR Violates SYLLPROX-BR Violates SYLLPROX-BR

Ranking SYLLPROX-BR over O-CONTIGUITY forces the infix [om] to be split in order to accommodate both correspondents in the initial syllable. I propose that, in general, order-disrupting reduplication results when SYLLPROX-BR outranks a Faithfulness constraint on order-preservation, causing output elements to be rearranged to get the correspondents in the same syllable, e.g., Pima [**ma**v**m**.vit] (from (1)), which does not faithfully preserve the input string /mavit/. The specific order-preservation constraint violated in order-disrupting reduplication depends on the language. Because the correspondents must be in the same syllable, the copied material has to be small enough that two such elements fit into one syllable. SYLLPROX-BR thus accounts for the minimality of the Reduplicant in these patterns as well as the order disruption.

SYLLPROX-BR is similar to other constraints demanding that corresponding elements be close to one another, such as LOCALITY (Nelson 2003) and PROXIMITY (Kennedy 2005), among others (see Odden 1994, Suzuki 1998, Rose 2000, Zuraw 2002, Lunden 2004, and Rose and Walker 2004 for other examples). Unlike many of these constraints, SYLLPROX-BR is not string-based: it does not evaluate the distance between correspondents, but rather whether or not they are contained in the same syllable, i.e., the locus of violation is finite, rather than potentially infinite. SYLLPROX-BR is thus a categorical constraint (McCarthy 2003): corresponding elements are either dominated by the same syllable node or not. SYLLPROX-BR does not distinguish between levels of proximity, as do string-based constraints. In §5, I show how this property of SYLLPROX-BR avoids undesirable effects generated by string-based constraints.

4 Analysis: Saisiyat

This section develops an analysis of the pattern of Progressive Reduplication in Saisiyat using the constraint SYLLPROX-BR. The crucial ranking of SYLLPROX-BR over O-CONTIGUITY accounts for the order-disruption in this reduplicative pattern: elements are rearranged so that the Base-Reduplicant correspondents occupy the same syllable, even though it disrupts the output contiguity of both of the two phonologically contentful input morphemes. The crucial ranking of SYLLPROX-BR over BR-MAX accounts for the minimality of the Reduplicant in this pattern: only as much material as can fit in the initial syllable with its correspondent is copied, which in the case of Saisiyat is only a single consonant. The interaction of other constraints with SYLLPROX-BR determines the behavior of roots that cannot fit the basic pattern due to the undominated phonotactic constraint *COMPLEX. Two different strategies to satisfy *COMPLEX are attested; I show that these stem from two different rankings of the constraints.

4.1 *Basic Pattern: Order Disruption* In the default pattern of Progressive Reduplication shown in §2, the root-initial consonant occurs twice, in both the onset and the coda of the initial syllable (16).[1]

(16) /RED,om,siʔæl/ → [**s**-o-**s**-.m-i.ʔæl]

[**s**-o-**s**-.m-i.ʔæl] obeys SYLLPROX-BR: both corresponding [s]s are dominated by the same (initial) syllable. To get both correspondents in the desired proximity, the second corresponding [s] surfaces in between the vowel [o] and consonant [m] of the AF infix [om]. Breaking up this infix violates O-CONTIGUITY once, as the contiguous input string /om/ corresponds to the non-contiguous output string [o…m]. O-CONTIGUITY is already violated by the infix itself, as the contiguous input string of the root /siʔæl/ corresponds to the non-contiguous output string [s…iʔæl]. This holds no matter which corresponding [s] constitutes the Reduplicant and which belongs to the root, i.e., in both parses (14-15). I remain agnostic to the parsing of the reduplicated form; both parses have the same violation profiles in the tableaux below.[2]

(17) $[\mathbf{s}]_R[\text{o-}\mathbf{s}\text{-.m-i.ʔæl}]_B$
(18) $[\mathbf{s}\text{-o}]_B[\mathbf{s}]_R[\text{m-i.ʔæl}]_B$

An obvious challenger to (16) is [**s**-om-.**s**i.ʔæl], which does not violate O-CONTIGUITY at all: both the AF infix [om] and the root [siʔæl] form contiguous strings. Unfortunately for this candidate, the corresponding [s]s surface in different syllables, which violates SYLLPROX-BR. The crucial ranking of SyllProx-BR above O-CONTIGUITY chooses the winner [**s**-o-**s**-.m-i.ʔæl] over this challenger.

Table 1. Order-Disruption: SYLLPROX-BR >> O-CONTIGUITY

/RED,om,siʔæl/	SYLLPROX-BR	O-CONTIGUITY
→ [**s**-o-**s**-.m-i.ʔæl]		**
[**s**-om-.**s**i.ʔæl]	*!	

This ranking also eliminates the challenger [**so**-.**s-o**m-i.ʔæl], which copies more material than the winner so as not to split up the infix and thereby avoid an extra violation of O-CONTIGUITY. [**so**-.**s-o**m-i.ʔæl] violates SYLLPROX-BR twice as the members of both the corresponding pairs ([s] and [o]) occupy different syllables. Because [**so**-.**s-o**m-i.ʔæl] copies more material than the winner [**s**-o-**s**-.m-i.ʔæl], it does

[1] I assume that the position of the infix is constant throughout, i.e., the vowel [o] of the AF infix must occur as the vowel of the initial syllable after an onset root consonant. The position of this infix is due to other constraint rankings (see, e.g, McCarthy and Prince 1993 for infixation of the cognate morpheme /um/ in Tagalog).

[2] The choice between parses (14-15) comes down to the relative ranking of ANCHOR-L(Stem,PWd), which demands that the left edges of the Stem and the word coincide, and ANCHOR-L(RED,PWd), which demands that the left edges of the Reduplicant and the word coincide. If ANCHOR-L(RED,PWd) dominates ANCHOR-L(Stem,PWd), then the parse with the prefixal Reduplicant wins (14); if ANCHOR-L(Stem,PWd) dominates ANCHOR-L(RED,PWd), then the parse with the infixal Reduplicant wins (15).

better on BR-MAX; therefore, SYLLPROX-BR must also outrank BR-MAX to eliminate this challenger.

(19) BR-MAX: Every element in the Base has a correspondent in the Reduplicant.

Table 2. Minimality: SYLLPROX-BR >> BR-MAX

/RED,om,siʔæl/	SYLLPROX-BR	BR-MAX
→ [**s**-o-**s**-.m-i.ʔæl]		omiʔæl
[**so**-.**s-o**m-i.ʔæl]	**!	miʔæl

The challenging candidate [**m**-o**m**-.si.ʔæl] manages to obey both O-CONTIGUITY (no morphemes are split up) and SYLLPROX-BR (the corresponding [m]s occupy the same syllable). However, [**m**-o**m**-.si.ʔæl] copies from the infix [om], not the root [siʔæl]. This violates a strong cross-linguistic preference for Reduplicants to copy from roots, not affixes, which I formulate as BR-MAX_{ROOT}.

(20) BR-MAX_{ROOT} : Every root-affiliated element in the Base has a correspondent in the Reduplicant.

In [**s**-o-**s**-.m-i.ʔæl], the Reduplicant copies a root segment [s], while [**m**-o**m**-.si.ʔæl] does not. Ranking BR-MAX_{ROOT} above O-CONTIGUITY picks [**s**-o-**s**-.m-i.ʔæl] over [**m**-o**m**-.si.ʔæl].

Table 3. Root-Copy Preference: BR-MAX_{ROOT} >> O-CONTIGUITY

/RED,om,siʔæl/	BR-MAX_{ROOT}	O-CONTIGUITY
→ [**s**-o-**s**-.m-i.ʔæl]	iʔæl	**
[**m**-o**m**-.si.ʔæl]	siʔæl	

SYLLPROX-BR must dominate BR-MAX_{ROOT} to eliminate the challenger [**si**-.**s**-o.m-**i**.ʔæl], which copies more root material than the winner [**s**-o-**s**-.m-i.ʔæl] ([si] vs. [s]). [**si**-.**s**-o.m-**i**.ʔæl] violates SYLLPROX-BR twice, once for each corresponding pair ([s] and [i]).

Table 4. Minimality: SYLLPROX-BR >> BR-MAXROOT

/RED,om,siʔæl/	SYLLPROX-BR	BR-MAX_{ROOT}
→ [**s**-o-**s**-.m-i.ʔæl]		iʔæl
[**si**-.**s**-o.m-**i**.ʔæl]	**!	ʔæl

The tableaux above eliminate all relevant challengers (so far) to the winning candidate [**s**-o-**s**-.m-i.ʔæl]. The following partial ranking accounts for the basic pattern of order-disrupting reduplication in Saisiyat:

(21) SYLLPROX-BR >> BR-MAX_{ROOT} >> O-CONTIGUITY
SYLLPROX-BR >> BR-MAX

4.2 *Exceptional Pattern 1: CV- Reduplication* I now turn to the exceptional behavior of roots beginning in two consonants. As shown in §2, these roots exhibit two different patterns, varying according to speaker. I show that these two patterns result from two different grammars (i.e., rankings of the relevant constraints). In the first pattern, both the root-initial consonant and the infix-initial vowel are reduplicated, forming a CV sequence (22).

(22) [**ʂo**-.**ʂ-o**m-.βət]

[**ʂo**-.**ʂ-o**m-.βət] violates SYLLPROX-BR twice: both members of the corresponding pairs ([ʂ] and [o]) are in different syllables. However, challengers satisfying SYLLPROX-BR by only reduplicating the root-initial [ʂ] violate a constraint against complex margins, *COMPLEX, as in the basic pattern discussed above. The second correspondent [ʂ], the infix consonant [m], and the root consonant [β] cannot all fit into two margin slots (syllable coda and onset) without forming a complex margin, as in [**ʂ**-o-**ʂ**-.m-βət] or [**ʂ**-o-**ʂ**-m-

.βət]. Ranking *COMPLEX above SYLLPROX-BR eliminates these challengers in favor of the winner.[3]

Table 5. CV- Reduplication instead of Complex Margins: *COMPLEX >> SYLLPROX-BR

/RED,om,ʂβət/	*COMPLEX	SYLLPROX-BR
→ [**ʂo**-.**ʂ-o**m-.βət]		**
[ʂ-o-ʂ-.m-βət]	*!	
[ʂ-o-ʂ-m-.βət]	*!	

Epenthesizing a vowel [ə] in the second syllable of the word can eliminate the violations of SYLLPROX-BR ([**ʂ**-o-**ʂ**-.m-əβət], with both [ʂ]s in the same syllable) or at least reduce them ([**ʂ**-om-.**ʂ**ə.βət], with only one violation for [ʂ]). [ə] is the default epenthetic vowel in Saisiyat, used to prevent complex margins and thus favoring, e.g., (23) over (24).[4]

(23) /ʂβət,ən/ -> [ʂə.βə.t-ən]
(24) /ʂβət,ən/ -> *[ʂβə.t-ən]

Ranking DEP over SYLLPROX-BR likewise chooses [**ʂo**-.**ʂ-o**m-.βət] over challengers that epenthesize [ə].

Table 6. CV-Reduplication instead of Epenthesis: DEP >> SYLLPROX-BR

/RED,om,ʂβət/	DEP	SYLLPROX-BR
→ [**ʂo**-.**ʂ-o**m-.βət]		**
[**ʂ**-o-**ʂ**-.m-əβət]	*!	
[**ʂ**-om-.**ʂ**ə.βət]	*!	*

Reduplicating a root vowel into the second syllable of the word also has the effect of "pushing" the two corresponding [ʂ]s into the same syllable, as in [**ʂ**-o-**ʂ**-.m-**ə**-β**ə**t]. This challenger only accrues one violation of SYLLPROX-BR, for the corresponding [ə]s. However, [**ʂ**-o-**ʂ**-.m-**ə**-β**ə**t] achieves this at the cost of splitting the Reduplicant into two pieces, [ʂ] and [ə]. It seems reasonable that this is a marked structure, since it is rare cross-linguistically (if attested at all). I formulate the constraint R-CONTIGUITY to penalize splitting the Reduplicant.

(25) R-CONTIGUITY: the Reduplicant must form a contiguous string

Ranking R-CONTIGUITY over SYLLPROX-BR eliminates the challenger [**ʂ**-o-**ʂ**-.m-**ə**-β**ə**t] in favor of the winner.

Table 7. CV-Reduplication instead of Reduplicant Splitting: R-CONTIGUITY >> SYLLPROX-BR

/RED,om,ʂβət/	R-CONTIGUITY	SYLLPROX-BR
→ [**ʂo**-.**ʂ-o**m-.βət]		**
[**ʂ**-o-**ʂ**-.m-**ə**-β**ə**t]	*!	*

R-CONTIGUITY also penalizes challengers to the basic pattern such as [**s**-o-**s**-.m-iʔ.-**l**-æ**l**], which satisfies BR-MAX and BR-MAX_{ROOT} better than [**s**-o-**s**-.m-iʔ.æl] by reduplicating multiple elements inside a word, but still does not violate SYLLPROX-BR or *COMPLEX. In [**s**-o-**s**-.m-iʔ.-**l**-æ**l**], each of the two pieces of the Reduplicant, [s] and [l], are in the same syllable as their respective Base correspondents; however, the Reduplicant itself [s…l] is not contiguous. Ranking R-CONTIGUITY over BR-MAX and BR-MAX_{ROOT} eliminates such multiply-copying challengers.

Table 8. No Multiple Copy: R-CONTIGUITY >> BR-$MAX_{(ROOT)}$

[3] In fact, *COMPLEX is likely undominated in Saisiyat, as it is completely surface-true (i.e., there are no complex margins in Saisiyat).
[4] This shows that *COMPLEX must dominate DEP, as [ə] is epenthesized to prevent complex margins

/RED,om,siʔæl/	R-CONTIGUITY	BR-MAX($_{ROOT}$)
→ [**s**-o-**s**-.m-iʔ.æl]		(om)iʔæl
[**s**-o-**s**-.m-iʔ.-**l**-æ**l**]	*!	(om)iʔæ

The above tableaux establish the following partial rankings to account for one of the two exceptional patterns of the Progressive in Saisiyat (CV- Reduplication).

(26) *COMPLEX >> DEP >> SYLLPROX-BR
R-CONTIGUITY >> SYLLPROX-BR

4.3 *Exceptional Pattern 2: Suppletion* In the second non-basic pattern of the Progressive, neither the Reduplicative morpheme nor the Agent Focus infix surface. Instead, a suppletive prefix [ka-] appears to signify their meanings (27).

(27) [ka-ʂ.βət]

[ka-] has various functions in Saisiyat, most commonly that of nominalizing non-Agent Focus verbs. [ka-] is "borrowed" here to express the abstract morphemes 'Progressive' and 'Agent Focus', instead of their typical exponent morphs, /RED/ and /om/. This constitutes a violation of the correspondence between abstract morphemes with syntactic or semantic content and their exponent morphs with phonological content (see, e.g., Wolf 2008). Without getting into the details such a morphological mismatch entails, I roughly formulate the constraint MORPH to penalize such mismatches.

(28) MORPH: An abstract morpheme must be expressed by the proper exponent morph.

[ka-ʂ.βət] violates MORPH, but vacuously satisfies SYLLPROX-BR, as there are no elements in BR-correspondence for SYLLPROX-BR to apply to. Depending on the relative ranking of MORPH and SYLLPROX-BR, either the first exceptional pattern (CV- Reduplication) or the second (Suppletion) surfaces.

Table 9. CV- Reduplication preferred when MORPH >> SYLLPROX-BR

/RED,om,ʂβət/	MORPH	SYLLPROX-BR
→ [**ʂo**-.**ʂ-o**m-.βət]		**
[ka-ʂ.βət]	*!	

Table 10. Suppletion preferred when SYLLPROX-BR >> MORPH

/RED,om,ʂβət/	SYLLPROX-BR	MORPH
→ [ka-ʂ.βət]		*
[**ʂo**-.**ʂ-o**m-.βət]	**!	

In this pattern, *COMPLEX and DEP must dominate MORPH in order to eliminate all the non-suppletive challengers above that satisfy SYLLPROX-BR: [**ʂ**-o-**ʂ**-.m-βət], [**ʂ**-o-**ʂ**-m-.βət], and [**ʂ**-o-**ʂ**-.m-ə.βət]. No ranking argument can be made for R-CONTIGUITY, as [**ʂ**-o-**ʂ**-.m-**ə**-.β**ə**t] is eliminated by SYLLPROX-BR, which it violates once for the corresponding [ə]s. The following partial rankings account for the second exceptional pattern of the Progressive in Saisiyat (Suppletion).

(29) *COMPLEX >> DEP >> MORPH
SYLLPROX-BR >> MORPH

For both of the exceptional patterns, MORPH must be ranked high enough so that in the basic pattern, the winner [**s**-o-**s**-.m-iʔ.æl] (with both the Reduplicant and the Agent Focus infix surfacing) is chosen over a suppletive challenger [ka-.si.ʔæl]. MORPH must dominate BR-MAX, BR-MAX$_{ROOT}$, and O-CONTIGUITY, all of which the suppletive candidate satisfies and the order-disrupting candidate violates, in order to pick the correct winner [**s**-o-**s**-.m-iʔ.æl] over the challenger [ka-.si.ʔæl].

4.4 *Summary* I have established three different rankings of constraints above to account for the three patterns of the Progressive observed in Saisiyat. The first ranking accounts for the basic pattern (order-disrupting reduplication), common to all speakers of Saisiyat.

Table 11. Master Tableau 1 (Order-Disrupting Reduplication: [**s**-o-**s**-.m-i.ʔæl])

Input	Winner	Loser	SYLL PROX-BR	MORPH	R-CONTIG	BR-MAX ROOT	O-CONTIG
/RED, om, siʔæl/	[**s**-o-**s**-.m-i.ʔæl]	[**s**-om-.**s**i.ʔæl]	W				L
		[**si**-.**s**-o.m-**i**.ʔæl]	W			L	L
		[ka-.si.ʔæl]		W		L	L
		[**s**-o-**s**-.m-iʔ.-**l**-æ**l**]			W	L	W
		[**m**-o**m**-.si.ʔæl]				W	L

The second ranking accounts for the first exceptional pattern (CV- reduplication) produced by some Saisiyat speakers (Zeitoun and Wu forthcoming). Combined with the first ranking (adapting the latter so that R-CONTIGUITY and MORPH dominate SYLLPROX-BR), this composes the grammar of one variety of Saisiyat.

Table 12. Master Tableau 2 (CV- Reduplication: [**ʂo**-.**ʂ-o**m-.βət])

Input	Winner	Loser	*COMPLEX	R-CONTIG	MORPH	DEP	SYLL PROX-BR
/RED, om, ʂβət/	[**ʂo**-.**ʂ-o**m-.βət]	[**ʂ**-o-**ʂ**-.m-βət]	W				L
		[**ʂ**-o-**ʂ**-m-.βət]	W				L
		[**ʂ**-o-**ʂ**-.m-**ə**-β**ə**t]		W			L
		[ka-ʂ.βət]			W		L
		[**ʂ**-o-**ʂ**-.m-əβət]				W	L
		[**ʂ**-om-.**ʂ**ə.βət]				W	L

The third ranking accounts for the second exceptional pattern (suppletion) produced by other speakers of Saisiyat (personal fieldwork). Combined with the first ranking (adapting the latter so that SYLLPROX-BR dominates MORPH), this composes the grammar of another variety of Saisiyat.

Table 13. Master Tableau 3 (Suppletion: [ka-ʂ.βət])

Input	Winner	Loser	*COMPLEX	SYLLPROX-BR	DEP	MORPH
/RED,om,ʂβət/	[ka-ʂ.βət]	[**ʂ**-o-**ʂ**-.m-βət]	W			L
		[**ʂ**-o-**ʂ**-m-.βət]	W			L
		[**ʂ**-om-.**ʂ**ə.βət]		W	W	L
		[**ʂ**-o-**ʂ**-.m-**ə**-β**ə**t]		W		L
		[**ʂo**-.**ʂ-o**m-.βət]		W		L
		[**ʂ**-o-**ʂ**-.m-əβət]			W	L

5 Typological Comparison

The SYLLPROX-BR account of order-disrupting reduplication developed above is not the only possible analysis of this phenomenon. Alternative accounts are possible for such patterns of reduplication, as have been proposed by, e.g., Fitzgerald (1999, 2000) for Tohono O'odham, Struijke (2000) for Lushootseed, and Riggle (2004, 2006) for Pima. These accounts, while quite different from one another, all rely on a mechanism of syncope or general economy (e.g., members of the *STRUC family (Zoll 1994), such as *SYLL), to restrict the size of the reduplicated output, thus generating minimality. Size restriction alone

cannot account for the Saisiyat pattern: the position of the second corresponding consonant must be motivated, i.e., the splitting of the infix [om] by the second [s] in [**s**-o-**s**-.m-i.ʔæl].[5] To favor [**s**-o-**s**-.m-i.ʔæl] over [**s**-om-.**s**i.ʔæl], another constraint or set of constraints must dominate O-CONTIGUITY.[6] Riggle (2006) ranks ANCHOR-V_1, requiring a stem vowel to be the first vowel of the word, above a constraint demanding the Reduplicant be a prefix (i.e., ANCHOR-L-RED). In Riggle's account, ANCHOR-L-RED is evaluated gradiently, which causes the Reduplicant to be infixed immediately after the initial vowel, i.e., as close to the left edge as it can be.[7] In order not to add an extra syllable, the Reduplicant can only consist of a single consonant (e.g., a CV Reduplicant, such as in [**s-o**-.**so**-.m-i.ʔæl] will be eliminated by the size-restrictor).

Even without using Riggle's extension of ANCHOR to elements that are not strictly at boundaries, it is possible to account for the position of the second corresponding consonant with string-based LOCALITY (e.g., Nelson 2003). String-based LOCALITY demands that as little material as possible intervene between elements in correspondence, i.e., that they should be as close together as possible. LOCALITY drives the correspondents toward each other, favoring [**s**-o-**s**-.m-i.ʔæl], in which the [s]s are one segment away from each other, over [**s**-om-.**s**i.ʔæl], in which they are two segments away. I term this general alternative to SYLLPROX-BR the Economy + Position account. I show such an account below, using *SYLL (Zoll 1994) as the Economy constraint and string-based LOCALITY as the Position constraint. The specific constraint or set of constraints used to account for economy and position does not affect the argument below.

Table 14. Economy: *SYLL >> BR-MAX, O-CONTIGUITY

/RED,om,siʔæl/	*SYLL	BR-MAX	O-CONTIGUITY
→ [**s**-o-**s**-.m-i.ʔæl]	***	omiʔæl	**
[**so**-.**s-o**m-i.ʔæl]	****!	miʔæl	*

Table 15. Position: LOCALITY >> O-CONTIGUITY

/RED,om,siʔæl/	LOCALITY	O-CONTIGUITY
→ [**s**-o-**s**-.m-i.ʔæl]	*	**
[**s**-om-.**s**i.ʔæl]	**!	

The Economy + Position account does in fact provide an analysis of Saisiyat Progressive Reduplication, and for order-disrupting reduplication in general: Economy (*SYLL) limits the copied material to a minimum, and Position (LOCALITY) keeps the corresponding material close together. However, using separate constraints to regulate the size and the position of the copied material allows for the possibility of different rankings of these individual constraints. The range of different rankings possible with two separate constraints expands the typology of order-disrupting reduplication well beyond currently attested phenomena.

If a constraint on phonotactics, such as a Positional Markedness constraint, is ranked above position-regulating constraints but below the economy constraint, then the closest available unmarked element is copied, no matter how far away that element may be. Thus, order-disruption occurs throughout, due to the high-ranked economy constraint, but material copied into the Reduplicant is selected to obtain an unmarked structure. The least marked material in the whole form is copied regardless of its distance from the Reduplicant, because Markedness dominates the position-regulating constraint. Across different forms, the source of copying is inconsistent: the correspondents are sometimes local, sometimes long-distance. Such

[5] Under an account like Fitzgerald's (1999, 2000) or Struijke's (2000), the winning output would actually be parsed as [**s**o]$_R$[**s**-.m-i.ʔæl]$_B$, with syncope of the infix vowel [o] in the Base. The input infix vowel /o/ appears in the Reduplicant to satisfy Existential Faithfulness, which only demands that every input element have some output correspondent. I do not consider this analysis for Saisiyat for several reasons, e.g., the general lack of syncope in Saisiyat, including in other reduplicative forms, as well as the theoretical liabilities with Existential Faithfulness pointed out in Riggle (2006).

[6] Riggle (2006) redefines O-CONTIGUITY so that is does not penalize morpheme splitting, so that [**s**-om.-**s**i.ʔæl] is not more harmonic than [**s**-o-**s**-.m-iʔæl] on O-CONTIGUITY. Another constraint is still needed to favor [**s**-o-**s**-.m-iʔæl] over [**s**-om.-**s**i.ʔæl].

[7] Riggle (2006) does not consider the possibility that the Reduplicant is actually the onset of the initial syllable, and that the coda of the initial syllable belongs to the root, as in the parse [**s**]$_R$[o-**s**-.m-iʔæl]$_B$. In this case, the non-order-disrupting challenger [**s**]$_R$[om.-**s**i.ʔæl]$_B$ could be eliminated by gradiently evaluated ANCHOR-ROOT-L (which would demand the [s] of the Root to be as close to possible to the left edge of the word).

an inconsistent source of copying has not been attested.

I illustrate this pathology with the Positional Markedness constraint SON-CODA, which penalizes obstruents in coda position. I assume a pattern similar to Saisiyat, in which the initial root consonant is copied, with the second correspondent occurring in the coda of the initial syllable (30).

(30) /RED,nadigus/ → [**n**a-**n**-.di.gus]

This pattern requires ranking the Economy (*SYLL) and Position (LOCALITY) constraints above the relevant order-preservation constraint; assuming the parsing with an infixed Reduplicant, this constraint is O-CONTIGUITY. Ranking *SYLL above O-CONTIGUITY eliminates CV-Reduplicants, e.g., [**na**-**na**digus]; ranking LOCALITY above O-CONTIGUITY prevents Reduplicants from copying distant elements, e.g., [na-**s**-digu**s**]. The combination of *SYLL and LOCALITY forces the Reduplicant to copy minimally from the closest available segment.

Since *SYLL and LOCALITY are two separate constraints, another constraint can be ranked in between them, as in the ranking *SYLL >> SON-CODA >> LOCALITY. This ranking predicts the following unattested pattern, in which the source of copying is inconsistent across words. If *SYLL dominates SON-CODA, order-disruption results even when an obstruent is reduplicated and fills in the coda of the initial syllable. In (31), even though [**b**a-**b**-digus] accrues an extra violation of SON-CODA for placing the Reduplicant [b] in the coda, it does not add another syllable, satisfying higher-ranked *SYLL.

(31) /RED,badigus/ → [**b**a-**b**-.di.gus]

No sonorant segment is available to satisfy SON-CODA, so low-ranking LOCALITY favors (31) over, e.g., [ba-**s**-digu**s**]. As above, ranking *SYLL above O-CONTIGUITY limits the Reduplicant to a single-consonant, eliminating [**ba**-**ba**digus]. However, since SON-CODA dominates LOCALITY, then a sonorant is reduplicated whenever possible to fill in the coda position, no matter how far away the Reduplicant and its Base correspondent are. In (32), the final segment [n] is copied into the coda of [ba-**n**-.di.gu**n**] to avoid a violation of SON-CODA, even though it is the farthest segment from the location of the Reduplicant (assuming the position of the Reduplicant is fixed by a constraint demanding it be tropic to the left edge).

(32) /RED,badigun/ → [ba-**n**-.di.gu**n**]

SON-CODA favors (32) over the challenger [ba-b-digun], which is more harmonic on LOCALITY. Again, high-ranked *SYLL eliminates [**ba**-**ba**digun], which also does not violate SON-CODA. As a result of the ranking Economy >> Markedness >> Position, the source of copy is inconsistent between different forms, which is not attested in any language.[8]

Having separate Economy and Position constraints predicts such a language. In the SYLLPROX-BR account, only one constraint, SYLLPROX-BR, is needed to enforce both Reduplicant minimality and order-disruption. Therefore the above type of ranking, where a phonotactic constraint like SON-CODA is ranked between the position-regulating constraint LOCALITY and the economy constraint *SYLL, is impossible. Either SYLLPROX-BR dominates the Markedness constraint, and local order-disruption appears throughout, or the Markedness constraint dominates SYLLPROX-BR, and order-disruption only occurs when it results in an unmarked structure. In both of these grammars, the source of copy is consistent throughout all forms: the Base correspondent of the Reduplicant is always the initial consonant. An order-disrupting candidate like [ba-**n**-digu**n**] with a non-local source of copy is harmonically bounded by a non-order-disrupting candidate like [**ba**-**ba**digun] with a local source of copy: [ba-**n**-digu**n**] violates SYLLPROX-BR as much as [**ba**-**ba**digun], so the low-ranked order-preserving constraint O-CONTIGUITY can eliminate it. The following table shows the typologies predicted by SYLLPROX-BR account and the Economy + Position account.

[8] Riggle's (2006) account of Pima explicitly specifies the source of copy with positionally faithful BR-MAX constraints, such as BR-MAX-O_1, which demands that the initial onset have a Reduplicant correspondent. However, the same pathology results if the positional Markedness constraint SON-CODA dominates BR-MAX-O_1: the initial onset will be copied if it can provide an unmarked coda for the initial syllable. If it cannot do so, as with /badigun/, dominant SON-CODA will pick a sonorant arbitrarily far away as the source of copy.

Table 16. Predicted Typologies: *SYLLPROX-BR versus Economy + Position

Inputs: /nadigus/, /badigus/, /badigun/	SYLLPROX-BR Account	Economy + Position Account
[**na**-**na**digus], [**ba**-**ba**digus], [**ba**-**ba**digun] (no order-disruption)	Predicted	Predicted
[**n**a-**n**-digus], [**ba**-**ba**digus], [**ba**-**ba**digun] (order-disruption except when marked)	Predicted	Predicted
[**n**a-**n**-digus], [**b**a-**b**-digus], [**b**a-**b**-digun] (order-disruption throughout: consistent source of copy, no long-distance copying)	Predicted	Predicted
[**n**a-**n**-digus], [**b**a-**b**-digus], [ba-**n**-digu**n**] (order-disruption: inconsistent source of copy, long-distance copying possible)	**Not Predicted**	**!!! Predicted**

The Economy + Position account predicts the existence of order-disrupting reduplication with an inconsistent and possibly long-distance source of copy, which the SYLLPROX-BR account does not.[9] In the SYLLPROX-BR account, the reduplicated form cannot "search" arbitrarily far away to copy an unmarked element: either an element in the same syllable is copied, or no order-disruption results at all. Thus the SYLLPROX-BR account makes the strong prediction that all order-disrupting reduplication is local, i.e., the Base and Reduplicant correspondents in order-disrupting reduplication must be within the same syllable.[10]

6 Conclusion

In this paper I have developed an account of order-disrupting patterns of reduplication found in various unrelated languages, in which the input linear order of elements is not faithfully preserved in the reduplicated form. I have accounted for these patterns by ranking a constraint demanding that corresponding elements be dominated by the same syllable node, SYLLPROX-BR, above a constraint on order preservation, such as O-CONTIGUITY. SYLLPROX-BR captures both the minimality of copied material and its position; an alternative account that uses constraints on syllable economy and string-based locality, respectively, to capture these properties, predicts languages in which the source of copy is inconsistent. SYLLPROX-BR avoids this pathology and makes the strong prediction that order-disrupting reduplication is local.

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[9] The constraints used in the Economy + Locality account have other theoretical liabilities. Gouskova (2003) argues that economy constraints generate many other problematic effects, and are undesirable. McCarthy (2003) shows that all gradient constraints, such as string-based locality, have such liabilities. The problem pointed out by both Gouskova and McCarthy lies in the ability to count a potentially infinite number of elements to evaluate candidates.

[10] It is possible (even probable) that there are other types of order-disrupting reduplication that do not rely on the crucial domination of order-preserving constraints by SYLLPROX-BR. Whatever constraint is responsible for order-disruption will decide whether locality is a necessary ingredient. Assuming this constraint is categorical and a separate economy constraint does not factor in, an inconsistent source of copy is probably ruled out, as with the SYLLPROX-BR account.

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