When Vowel Deletion Blurs Reduplication in Mojeño Trinitario

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This paper discusses the process of verbal reduplication in the Trinitario dialect of Mojeňo, an Arawak language spoken in the Bolivian lowlands. Trinitario displays partial reduplication of the verb root. Reduplication of the final syllable of the root expresses repetition or attenuation of the event expressed by the verb. This paper revises the analysis of Trinitario reduplication patterns as presented in Gill (1957), in light of additional first-hand data and the recent identification of a prosodic vowel deletion rule. It points to a phonologically-conditioned allomorph of the basic reduplication pattern and to a second reduplication pattern implying a double copy of the final syllable of the root. The major interest of the Trinitario data is to demonstrate the great complexity of the morphology-prosody interface. The regular processes of vowel deletion and compensatory lengthening indeed affect the base only after the copy is derived, which results in a surface pattern where the copy and the base do not look alike.

1 Introduction

This paper discusses the process of reduplication in the Trinitario dialect of Mojeňo, an Arawak language spoken in the Bolivian lowlands. Trinitario displays partial reduplication of the verb root, expressing repetition or attenuation of the event expressed by the verb.

The Mojeňo language (also called Moxo) consists of 4 dialects: Trinitario, Ignaciano, Loretano and Javeriano. The total Mojo population is over 32,000, with around 3,220 speakers of Trinitario and Ignaciano (Crevels and Muysken 2009). Trinitario and Ignaciano are endangered dialects, while Javeriano is moribund with approximately five speakers with varying levels of proficiency. Loretano is extinct. There is a grammar of the Mojeňo language as spoken in the 17th century, which is a very valuable tool (Marbán 1701). There is no linguistic description of Javeriano and Loretano. Both Ignaciano and Trinitario have been previously described (Olza Zubiri, et al. 2002 and Gill 1957, respectively). These

two dialects are, in general, very similar except for the pervasive vowel deletion process affecting Trinitario (Rose 2008; 2011; to appear).

In this paper, I revise the analysis of Trinitario reduplication patterns as presented in Gill (1957, 117–118), in light of the prosodic vowel deletion rule. The analysis presented in this paper is based on both the author's field data and examples given in Gill's presentation of reduplication. The field data on Trinitario was collected by the author in Trinidad and San Lorenzo de Moxos between 2005 and 2010. The resulting database consists of 30 texts consisting of approximately 2,000 sentences. Several hundred elicited sentences were added to this database. This data and Gill's work generally concur on major patterns but complement each other as far as minor patterns are concerned. This will be discussed later. All examples, mine and Gill's, are phonologically transcribed using IPA.[1]

After some background information on Trinitario (section 2), the functions of reduplication are presented (section 3). The remainder of the paper analyzes the details of the phonological patterns of reduplication (section 4). It first shows the basic pattern of reduplication. The influence of reduplication on stem morphology, the effect of vowel deletion, and minimality constraints are then investigated. Finally, a second pattern of reduplication is presented, where double-copy occurs. The analysis presented in this paper allows for a revision of Gill's analysis. The analysis suggested in this paper is more coherent with the overall system of the language insofar as it provides a single analysis of both stem and affix allomorphy and multiple reduplication processes. Section 5 concludes with a discussion of the ramifications of this analysis for theoretical debates concerning the morphology-prosody interface and for the typology of reduplication.

2   Background Information on Mojeño Trinitario

2.1   *Phonology*
The phoneme inventory of Mojeño Trinitario is presented in the following two tables.

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1   My corpus is transcribed in the official alphabet (Fabricano et al. 2003), which differs from the one used by Gill. Since this paper deals with phonology, IPA is used.

TABLE 1   *Consonants*

	Bilabial	Alveolar	Palatal	Velar	Glottal
stops	p	t	(c)	k	ʔ
nasals	m	n	ɲ		
fricatives	β	s	ç	x	
affricates		ts	tʃ		
approximants and tap	w	ɾ	j		

TABLE 2   *Vowels*

	Front vowels	Central vowels	Back vowels
high	i, i:		u, u:
mid	e, e:	ə̃e, ə̃e:	o, o:
low		a, a:	

Trinitario syllable structure is either of the (C)(C)V(C) type or of the (C)(C)V: type. Complex onsets and null onsets are only found word-initially. Heavy syllables (with a coda or a long vowel) are only found word-internally.

Stress normally falls on the penultimate syllable. Only a minority of CVCVCV roots are stressed on the antepenultimate syllable. Most instances of suffixation do not alter the principle of stress placement, that is to say stress automatically shifts to the right, to the penultimate syllable. Stress placement will be discussed in sections 2.3 and 4.1.

Roots generally consist of at least two syllables, to which prefixes and suffixes are added. Very few grammatical words consist of only one syllable (see section 4.4 for a discussion of minimality requirements).

2.2   *Vowel Deletion*
In this paper, "word" refers to the prosodic unit which serves as the domain of stress, vowel deletion, and morphophonological rules. In Trinitario, vowel deletion is quasi-systematic on stems of three syllables or more.[2] It generally

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2   Some irregularly-stressed roots resist vowel deletion. The initial vowel of disyllabic roots is not deleted when the root is word-initial.

affects the first vowel of a prosodic word, and then every odd-numbered vowel to the right, except the final one. If the first syllable of a word is a member of a subset of person prefixes (*ma-*, *ɲi-*, *ta-* or *na-*), the vowel of this syllable is maintained and is transparent to the vowel deletion process. Vowel deletion then affects every odd-numbered syllable to its right, except the final syllable.[3]

$$CV_1.CV_2.CV_3.CV_4.CV_{FIN}$$
$$\quad\downarrow\qquad\downarrow$$
$$\quad\varnothing\qquad\varnothing\qquad\qquad\quad \textit{vowel deletion}$$
$$C\quad CV_2\quad C\quad CV_4\quad CV_{FIN}$$

$$CCV_2\ C.CV_4\ .CV_{FIN}\qquad \textit{resyllabification}$$
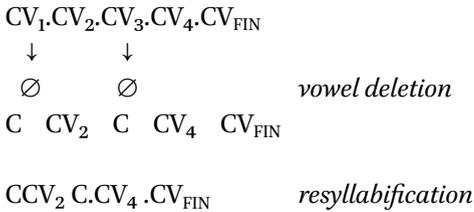
FIGURE 1   *Rhythmic vowel deletion*

This process is probably the result of historically rhythmic stress on every even-numbered syllable. In the synchronic system, stress normally falls on the penultimate syllable of the word. There are a few lexical exceptions to this rule, and certain suffixes lie outside the stress domain, i.e. they are extrametrical.

As a result of vowel deletion, almost all roots and affixes have two forms. According to their position within the prosodic word, they lose different vowels.[4] Examples are given in Table 3.

TABLE 3   *Vowel deletion in Trinitario*

Underlying representation[5]	Surface representation	Translation
pokure	*'pkure*	canoe
su-pokure	*'spokre*	her canoe
nu-tʃokojo	*'ntʃokjo*	I am close
nu-ko-tʃokojo	*nkotʃ 'kojo*	I got close
ti-ko-xuma	*'tkoxma*	he/she/it is sick
ti-a-koxuma	*tak'xuma*	may he/she/it be sick

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3   When *ma-* is prefixed to a root with initial /e/ or /i/, this sequence is realized as /mwe/.

4   Gill does not mention vowel deletion. In his work, there are two different classes of roots calling for different allomorphs of the suffixes. Once suffixed, roots change class and take different suffix allomorphs. Moreover, prefixes themselves also condition the root allomorphy.

5   V represents an unspecified underlying vowel.

In certain contexts, vowel deletion conditions compensatory vowel lengthening. Certain consonants, such as /r/, are not permitted in coda position. Vowel deletion strands the underlying consonant preceding this vowel. If this consonant is not permitted in coda position, it is deleted and the preceding vowel is lengthened. This process is schematized in figure 2 and exemplified with the sequence /riro/ realized /ri:/ in /poriropa/ 'needle' (segments in parentheses are not directly relevant here). Table 4 illustrates cases where a vowel following /r/ is dropped. This shows that /r/ is deleted and a process of compensatory lengthening occurs.

$$
\begin{array}{llll}
 & & CV_1rV_2 & (po)riro(pa) \\
1) & V_2 \rightarrow \varnothing & CV_1r & (p)rir(pa) \quad \textit{vowel deletion} \\
2) & r \rightarrow \varnothing & & \qquad\qquad\quad \textit{consonant deletion} \\
 & V_1 \rightarrow V_1{:} & CV{:} & (p)ri{:}(pa) \quad \textit{compensatory lengthening}
\end{array}
$$
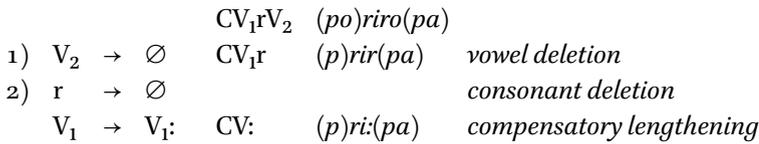
FIGURE 2   *Compensatory lengthening in Trinitario*

TABLE 4   *Compensatory lengthening in Trinitario*

Underlying representation	Surface representation	Translation
poriropa	*'pri:pa*	needle
su-poriropa	*spo:'ropa*	her needle
nu-xuru-ko-riʔi	*nxu:'ko: ʔi*	I grow
nu-korVto-ko-riʔi	*nko:tok'riʔi*	I grab

It is important to note that vowel deletion and long vowels are a recent development of Trinitario. They are not found in 17th century Mojeño (Marbán 1701) nor in the Ignaciano dialect (Olza Zubiri et al., 2002).

2.3   *The Morphological Structure of the Verb*

Mojeño Trinitario is a polysynthetic language. The verb morphology is rich both at the derivational level (stem-internal) and at the inflectional level (stem-external). As a consequence, the verb structure is morphologically complex (Figure 3), with many prefixes and suffixes. The root itself generally consists of two or three syllables.

S-IRR-|CAU-root~RED-CLF/N-PLURAC-ACT/CAU/APL|-IRR-O/MID-PL-TAM-RPT-D

Reduplication occurs in the slot indicated in figure 3 above. The stem, delimited by the central box in figure 3, contains one prefix slot and several suffix slots. The presence of reduplication affects two of these suffix slots, CLF and ACT, in a manner that will be specified later on. These two suffix slots are now presented.

The active suffix (*-ko ~ -ʧo ~ -ʔo*) is used to mark active stems. Table 5 illustrates the behavior of the active suffix with respect to the two different classes of active stems. Active verbs of the major class always carry this suffix, e.g. *xaɲo-ko*. Active verbs of the minor class (all with root-final /o/, e.g. *xikpo*) obligatorily take the active suffix only when carrying a stem-internal suffix, like the *-ri*. Otherwise, when carrying no suffix or a stem-external suffix (such as *-nu*, 1st singular object), they do not take the active suffix.

TABLE 5   *The active suffix on the two classes of active stems*

Root	With no suffix	With external-stem suffix	With internal-stem suffix
xaɲo	*n-'xaɲo-ko*	*c-xaɲo-k(o)-nu*	*c-xaɲo-ri-ko*
'watch'	'I watch'	'he/she/it watches me'	'he/she/it always watches'
xikpo	*n-'xikpo*	*c-xikpo-nu*	*c-xikpo-ri-ko*
'answer'	'I answer'	'he/she/it answers me'	'he/she/it always answers'

Second, some classifiers are found within the verb stem. On stative or active intransitive verbs, they refer to the subject, as shown in (1) and (2) respectively. On transitive verbs, they refer to the object as shown in (3).

(1)   *eto*   *'cxitumo.*[6]
       eto   *ti-'xitu-mo*
       PRO3NH 3-thin-CLF:thin.flexible
       'It is thin (for example, some fabric).'

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(2) *tewarasko*
     ti-ewara-si-ko
     3-break-CLF:round-ACT
     'It broke (for example, a round stone).'

(3) *njerepareko*   *'motexi*
     nu-jere-pa-re-ko   *'motexi*
     1SG-carry-CLF:grain-PLURAC-ACT earth
     'I am carrying earth.'

Stem-internal suffixes (RED, classifiers and pluractional) share several proper-
ties. First, they make the active suffix obligatory on the active verbs (Compare
(4) and (5)). Second, stress normally falls on the penultimate syllable of the
Trinitario word (6). However, RED and classifiers are normally excluded from
the stress domain. When the penultimate syllable of the word is a classifier or
RED, stress therefore falls on the antepenultimate (7).[7] Stress can fall on a clas-
sifier (9) only on irregular stems with antepenultimate stress such as (8). Third,
stem-internal suffixes are not affected by vowel deletion, as illustrated in (10)
where the /e/ or the classifier *-me* is expected to be deleted.[8]

(4) *'nomo*
     nu-omo
     1SG-carry
     'I am carrying it.'

(5) *nomxiko*
     nu-omo-xi-ko
     1SG-carry-CLF:bulk-ACT
     'I am carrying it (vegetal, clothing …).'

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   form, the third one represents the gloss, and the last one represents the free translation. The
   pervasive vowel deletion process (section 4.3) and the high number of morphophonologi-
   cal rules make the line with underlying forms necessary to recognize morphemes from one
   example to the other.
7 Stress is not systematically noted in this paper.
8 Only classifiers with an /i/ vowel are prone to vowel deletion.

(6)   *'cu:na*
      ti-urina
      3-be.beautiful
      'It is beautiful.'

(7)   *cu:'napaʔi*
      ti-urina-paʔi
      3-be.beautiful-CLF:ground
      'The ground is clean.'

(8)   *n' juwako*
      nu-juwa-ko
      1-grind-ACT
      'I grind.'

(9)   *njuwa'meko*
      nu-juwa-me-ko
      1-grind-CLF:flat.hard-ACT
      'I grind slices of dry meat.'

(10) *ttuprimeko*
      ti-tupuri-me-ko
      3-middle-CLF:flat.hard-ACT
      'in the middle of something flat and hard (a bank or a back, for example)'

3   The Functions of Reduplication

Verb reduplication in Trinitario is a purely morphological process that does not influence the syntactic structure of the clause.[9] It never affects the argument structure of the verb, whether it is transitive or intransitive, active or not. It is purely derivational, modifying the meaning of each verb root in a regular way. In this section, the functions of reduplication as defined by Gill are presented with some additional commentary. Reduplication conveys an attenuative or frequentative meaning in Trinitario (Gill 1957, 217).

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9 Olza Zubiri, et al. (2002) mention that reduplication additionally occurs on nouns, adjectives (analyzed as verbs in my work), question words, and quantifiers in the Ignaciano dialect. Concerning the Trinitario dialect, this observation is not mentioned in Gill's (1957) work. I found reduplication of these categories to be very marginal in my corpus.

3.1   *Attenuation*

Reduplication may attenuate the meaning of the verb, with either a de-intensifying or an approximative reading. In my corpus, this sense is most often found with stative predicates like the verb *ixre* 'be hot' in (11) and the adjective *riko* 'rich' in (12). It can, however, also be found on active verbs such as *sopo* 'believe' (13) and *it(u)-ko* 'know/learn' (14).

(11)   *tixrerexi*
       ti-ixVre~re-xi
       3-be.hot~RED-CLF:bulk
       'It is warm (medium hot).'

(12)   *rikkoko?o*[10]
       riko~koko-?o
       rich~RED2[11]-ACT
       'He is sort of rich.'

(13)   *psoppoxkonu*
       pi-sopo~po-xi-ko-nu
       2SG-believe~RED-CLF:bulk-ACT-1SG
       'You half-believe me.'

(14)   *mamuire   'mwettutupiko   to   βetʃxiriːwo*
       ma-muire 'ma-itu~tutu-pi-ko   to   βi-etʃxiriːwo
       3M-too   3M-know~RED2-CLF:long.flexible-ACT   ART.NH 1PL-language
       'He too knows a bit our language.'

3.2   *Repetition: Event-Internal Plurality*

The second meaning of reduplication in Mojeño is repetition. In my corpus, the repetitive meaning is found mostly on active verbs.

(15)   *najus'titixiko*
       na-jusVti~ti-xi-ko
       3PL-cut~RED-CLF:bulk-ACT
       'They chopped it.'

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10   The initial vowel of disyllabic roots is not deleted when it is word-initial.
11   The double-copy pattern of reduplication shown in this example is discussed in section 4.5.

(16) *ene taeβiβik'riʔi*   *to*   *tektikwo.*
      ene ta-eβi~βi-ko-riʔi   *to*   *tektikwo*
      and 3NH-swing~RED-ACT-ASS ART.NH wind
      'The wind makes it (a scarecrow) move.'

Reduplication with a repetitive meaning does not entail argument plurality. Examples (15) and (16) show singular subjects and singular objects with reduplicated verbs. In fact, Trinitario reduplication denotes exclusively a repetitive action within the same event frame (event-internal plurality (Cusic 1981)). It does not express the repetition of the same event at different times, with empty intervals (event-external plurality). Therefore, reduplication more specifically expresses aspect rather than verbal plurality, also called pluractionality (Newman 1990, Corbett 2000). Pluractional markers express the plurality of participants, time and/or location. In fact, a distinct pluractional marker exists in Trinitario, distinct from reduplication: the *-ri* suffix and its allomorphs. It most often turns the action into an activity (à la Vendler 1967), as illustrated in the example below. The pluractional verb can either affect a plurality of objects at a specific time, or be extended in time with either a durative or a habitual reading.

(17) *ma   pijaeni*   *'mwetko*   *tiprux'riko*
      ma   pi-ija-ini   *'ma-it-ko*   *ti-iprux-ri-ko*
      ART.M 2SG-father-PAS 3M-know-ACT 3-cure-PLURAC-ACT
      'Your late father knew how to cure (people).'

3.3   *Attenuation and Repetition*
Gill states that both meanings, attenuation and repetition, can be combined in a single example, as in (18) (Gill 1957, 217). My corpus does not illustrate this. However, the translation of the reduplication process is never self-evident. The determination of the core meaning of each occurrence of reduplication is not an easy task.

(18) *esu   tkox'mamaxi.*
      esu   ti-ko-xuma~ma-xi
      PRO.F 3-VZ-sickness~RED-CLF:bulk
      'She is sickly (not real sick but is often rather sick).' (Gill 1957, 217)

The two meanings conveyed by reduplication, attenuation and repetition, seem a priori divergent. Attenuation expresses a lesser degree, while repetition expresses a greater number of realizations of the event. Nevertheless, they both express a dilution of the boundaries of the event expressed by the verb: 'sickly'

is a less clearly defined state than 'sick,' and 'chop' is a less clearly bounded event than 'cut' (being less punctual in that case).[12] Attenuation and repetition are typical meanings of reduplication (Rubino 2005, 19).

4   The Forms of Reduplication

This section investigates the forms of Trinitario verbal reduplication, i.e. its phonological structure and its morphological status. The item (generally a root) used as a model for reduplication is called the *base* of reduplication in this paper. The item resulting from reduplication is called the *copy*.

The Trinitario reduplication process copies the last syllable of the verbal root. The copy immediately follows the root, as illustrated in (19) and (20). The copy is part of the verbal stem, as schematized in Figure 4.

(19)   *tmopkukuʔi'ritʃʔo*
       ti-mopVku~ku-ʔi-ritʃoʔo
       3-be.dark~RED-CLF:atmosphere-still
       'It is still half dark.'

(20)   *tema'rereko*[13]
       ti-ema're~re-ko
       3-be.lightning~RED-ACT
       'There is a sequence of lightning.'

CAU-root~RED-CLF/N-PLURAC-ACT/CAU/APL

FIGURE 4   *Mojeño verbal stem structure*

The remainder of this section first discusses the position and status of the copy (4.1) and discusses its combination with the classifier *-xi* (4.2). In section 4.3, I

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12   For some discussion about these apparently divergent though related meanings of redu-
      plication, the reader could refer to Queixalós (2002), who discusses this under the term of
      "distensivité."

13   I cannot explain why this root is not affected by vowel deletion. An anonymous reviewer
      suggests that the unexpected failure of the /a/ to delete in (20) may be due to its being a
      low vowel, which would by virtue of its greater sonority be less likely to delete than high
      or mid vowels (see note 8). This still needs to be checked in a larger corpus.

discuss the effect of vowel deletion on the basic pattern of reduplication. The issue of reduplication of monosyllabic roots is discussed in section 4.4. Finally, a second pattern of reduplication is presented (4.5).

4.1   *The Copy as a Stem-Internal Suffix*

Since the root-final syllable and its copy are identical, there are logically two possible analyses: the copy either follows the base or is infixed before the final syllable. The first analysis is more economical since the copy would be considered a suffix immediately adjacent to the root rather than an infix for which a slot within the root would be added. This analysis is supported by the morphology of reduplicated stems. The copy shows a behavior typical of stem-internal suffixes (see 2.3). First, it causes the active suffix to be obligatory on all active stems, just as stem-internal suffixes do. This is the case with the verbs *amo* 'swell up' and *soko* 'defecate,' which do not take the active suffix in the absence of a stem-internal suffix. In (21), the presence of the active suffix *-ko* can only be attributed to the reduplication process. In (22), it can be attributed to the classifier *-xi* 'bulk' as well. See also example (5) where the active suffix is induced by a classifier on a non-reduplicated root.

(21)   *βjammoʔojore*
       βi-amo~mo-ʔo-jore
       1PL-swell.up~RED-ACT-FUT
       'We are going to swell up.'

(22)   *tsokkox'kojre*
       ti-soko~ko-xi-ko-jore
       3-defecate~RED-CLF:bulk-ACT-FUT
       '(S)he has diarrhea.'

Second, on regular roots, the copy is transparent for stress. The position of stress is calculated as if the copy were absent (23). Like other stem-internal suffixes, the copy can be stressed on irregularly stressed roots, like *kémtone* in (24).

(23)   *tema'rereko*[14]
       ti-ema're~re-ko
       3-be.lightning~RED-ACT
       'There is a sequence of lightnings.'

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14   I cannot explain why this root is not affected by vowel deletion.

(24) *nkemton'nekpo*
      nu-ko-emotone~ne-ko-po
      1SG-VZ-work~RED-ACT-PERF
      'I worked there and there.'

Third, the copy always conserves its vowel. Thus, in example (25), the first and third vowels are deleted. The fifth vowel, while expected to be deleted, is maintained because it is the vowel of the copy. We will return to this below.

(25) *tixrerexi*
      ti-ixVre~re-xi
      3-be.hot~RED-CLF:bulk
      'It is warm (medium hot).'

These three properties of the copy argue strongly that it is a stem-internal suffix.

4.2   *Reduplication and -xi*

The reduplicated stem is very frequently followed by the classifier *-xi ~ -x* 'bulk,' inserted after the copy (and before the active suffix on active verbs). It is not obligatory, but most occurrences of reduplication show it, as in (26) and (27).

(26) *tkox'mamaxi*
      ti-ko-xuma~ma-xi
      3-VZ-sickness~RED-CLF:bulk
      '(S)he is sickly.'

(27) *najus'titixiko*
      na-jusV'ti~ti-xi-ko
      3PL-cut~RED-CLF:bulk-ACT
      'They chopped it.'

-xi ~ -x is one of the classifiers described in 2.3. Its semantics are not easy to define. Gill offers the following definition: "*-xi* denotes usually bulky soft objects (grass, leaves, small branches, fresh meat, any cloth material, pillow; also mud, garbage; also clouds)" (Gill 1957, 84). Examples are given below.

(28) *nsu:xiko*
      nu-suCV-xi-ko
      1SG-fry-CLF:bulk-ACT
      'I fry (fresh meat).' (Gill 1957, 84)

(29) *nko?tʃaxi*   (Gill 1957, 84)
     nu-ko?Vtʃa-xi
     1SG-be.dirty-CLF:bulk
     'I am dirty (my clothes).'

The use of *-xi* along with reduplication departs from Gill's definition given above. In some examples, like the ones below, there is no bulky object it could refer to in an obvious way.

(30) *esu   seno 'somuire   cu:'nanaxi*
     esu   seno 'su-omuire ti-uri'na~na-xi
     PRO3F lady 3F-also   3-be.beautiful~RED-CLF:bulk
     'This lady is also beautiful.'

(31) *mwestataxiko*   *to*   *wije*
     ma-esta~ta-xi-ko   *to*   *wije*
     3M-whisp~RED-CLF:bulk-ACT ART.NH ox
     'He often hits the ox.' (Gill 1957, 218)

For this reason, Gill considers *-xi* to be "part of the reduplication morpheme," but still considers it an object classifier in some examples, specifically when it retains its full meaning. I consider it a morpheme separate from the copy. On the morphological level, it fills the classifier slot like other classifiers do (see (32) and (33)). Moreover, there are no examples of a reduplicated stem with *-xi* that combines with some other classifier.

(32) *tixreremo*
     ti-ixre~re-mo
     3-be.hot~RED-CLF:flat.flexible
     'It is medium hot (of something flat and flexible, like a pancake).' (elicited)

(33) *ɲeβe'roroçe?o*
     ɲi-eβe'ro~ro-çe-?o
     3M-lick~RED-CLF:bone-ACT
     'He licked the bones.'

Yet the meaning of the *-xi* classifier on reduplicated verbal roots is often bleached. Its use has become generalized in such a way that it resembles the *fixed segmentism* that occurs with reduplication in some languages. Alderete, et al. (1999) distinguish two types of fixed segmentism: *phonological fixed seg-*

mentism occurs when the presence of a default segment is phonologically motivated, and *morphological fixed segmentism* occurs when an affix is attached to the base concomitant with reduplication. The Trinitario -*xi* could be analyzed as a type of optional morphological fixed segmentism since it is not phonologically motivated.

4.3   *Taking Vowel Deletion into Account*

A surface variant of the basic reduplication pattern occurs in Trinitario. This is not explained in Gill's work. The process of vowel deletion may have the effect of deleting the final vowel of the root in the reduplicated form of the verb, as illustrated in (34) and (35). This occurs if the root-final vowel is in an odd-numbered syllable of the underlying structure of the word. Since the copy is suffixed to the root (consonant-final in those cases), reduplication surfaces in these cases as a sequence of two identical consonants. As a result, the identity between the copy and the base is not transparent in the phonological output.

(34) *viammoʔojre*
    vi-amo~mo-ʔo-jore
    1PL-swell~RED-ACT-FUT
    'We are going to swell.'

(35) *tjuxpanniko*
    ti-juxVpani~ni-ko
    3-ask.favor~RED-ACT
    '(S)he keeps asking for favors.'

This allomorphy does not constitute a different reduplication pattern. The alternation is predictable. This sequence of identical consonants cannot be analyzed as simple consonant reduplication. (36a) exemplifies the syllabic reduplication pattern on the root *sopo* 'believe.' /po/ is copied, and vowel deletion normally affects the first, third, and fifth syllables of the word. The root-final /o/ is deleted, being the third vowel of the word. As a result, the two /p/ consonants are adjacent. The sequence of identical consonants is created by the deletion of the vowel between the two successive consonants in the root-final syllable and the copy, these two being similar due to the reduplication process. (36b) illustrates the single-consonant reduplication analysis, applied to the same root. If /p/ only was doubled, the initial /i/, the root-final /o/ and the /o/ of -*ko* should be deleted, since vowel deletion affects the vowels of odd-numbered syllables within the word. The resulting phonological output is incorrect.

(36a) *psoppoxkonu*
      pi-sopo~po-xi-ko-nu
      2SG-believe~RED-CLF:bulk-ACT-1SG
      'You half-believe me.'

(36b) **psoppxiknu*
      *pi-sopo⟨~p⟩-xi-ko-nu
      2SG-believe~RED-CLF:bulk-ACT-1SG
      'You half-believe me.'

Vowel deletion can also lead to compensatory lengthening in reduplicated stems if the stranded consonant is not allowed in coda position. This is the case with /r/ in (37) and /w/ in (38).

(37) *matʃaːreˈpuekpo*   **matʃarrepuekpo*
      ma-ˈtʃare~re-pue-ko-po
      3M-pull.up~RED-CLF:ground-ACT-PERF
      'He pulled them up.'

(38) *tçiːˈwoxi*   **tçiwˈwoxi*
      ti-çiwo~wo-xi
      3-rain~RED-CLF:bulk
      'rainy season (it rains repeatedly)'

When a reduplicated stem undergoes both vowel deletion and compensatory lengthening, the base and the copy appear distinct at the surface level (compare /tʃaː/ and /re/ in (37) and /çiː/ and /wo/ in (38)).

4.4   *Reduplication and Monosyllabic Roots*
In one example, the reduplicated syllable is arguably the last syllable of the stem, rather than the last syllable of the root. The parsing of this form is discussed a bit further below.

(39) *βnikkoxko*
      βi-ni-ko~ko-xi-ko
      1PL-eat-ACT~RED-CLF:bulk-ACT
      'We eat often.'

The root *ni* 'eat' is one of the few monosyllabic verbal roots. There are some external reasons to believe that the base *niko* is composed of the root *ni* 'to eat,'

and the active suffix *-ko* (40). For example, *-ru* is a nominalizing suffix which regularly replaces the active suffix on active verbs. On the verb 'to eat,' *-ko* is replaced by *-ru* (41). Moreover, example (42) shows that a classifier can be inserted between *ni* and *-ko*.

(40) *nniko*
      nu-ni-ko
      1SG-eat-ACT
      'I eat.'

(41) *to*   *naniru*
      to   *na-ni-ru*
      ART.NH 3PL-eat-PAT.NZ
      'their food'

(42) *tanitʃeko*   *to*   *juku*
      ta-ni-tʃe-ko   *to*   *juku*
      3NH-eat-CLF:flat.bounded-ACT ART.NH fire
      'The fire burnt the board.' (elicited)

In (39), it is thus the active suffix rather than the final syllable of the root that is reduplicated. This suffix is considered part of the reduplicative base. This can be explained via the minimality restrictions. Within the Theory of Prosodic Morphology, McCarthy and Prince (1995, 321–325) state that a "prosodic word" must contain at least one foot, i.e. two moras or syllables, according to whether the language is quantity-sensitive or not. Spring (1990, 140–163, cited in McCarthy and Prince 2001) studied reduplication in Axininca Campa, an Arawak language of Peru. She proposes that the base of reduplication is a prosodic word. Since all prosodic words must be bimoraic in this language, monomoraic bases must be augmented for reduplication to apply. Considering this, a possible analysis of example (39) is that there is a constraint in Trinitario on the size of the base: it must be bisyllabic or bimoraic. Reduplication cannot affect the monosyllabic root *ni* in a regular way because it is subminimal. The suffix following the root is included in the base in order to make it bisyllabic. Then, reduplication copies the final syllable of the base in a regular fashion, but this base-final syllable happens to be a suffix. The copy is immediately followed by the classifier *-xi* and an additional active suffix. This suggests that the original active suffix following the root was reanalyzed as part of the base in the reduplication process.

An elicitation session conducted to collect additional examples of monosyllabic (and monomoraic) root reduplication did not produce any reduplicated form for the roots *no* 'put' and *ße* 'take.' However, the monosyllabic root *tse* 'to be ready' was found to be reduplicable without any sensitivity to minimality. The question of base minimality therefore remains open.

(43) *ntsetsekwo*[15]
      nu-tse~tse-ko-wo
      1SG-be.ready~RED-ACT-MID
      'I am almost ready.' (elicited)

Gill claims that in Trinitario, "on words of only one or two syllables AND on Initial Subjunctive words [a class of stative roots which mark the irrealis with a prefix rather than a suffix] the last syllable of the stem or word itself is repeated." (Gill 1957, 218). He then provides five examples. In my view, only the example repeated in (39) and discussed above constitutes a possible counterexample to the fact that reduplication affects the last syllable of the root. I suggested that it could be explained via minimality constraints. The four other examples concern the trisyllabic derived root *kó-tʃitʃa* 'to have children' and the bisyllabic active roots *ero* 'to drink,' *sopo* 'to believe,' and *u:na* 'to be good.'[16] In all four of these, the last syllable of the root is normally reduplicated.

4.5 *The Double-Copy Pattern*
In some examples, such as (44), (45) and (46), reduplication results in a surface form where apparently, the final consonant of the root is doubled and the root is followed by a copy of the final syllable. In my analysis, the root-final syllable is copied twice while deleting the root-final vowel (…C)VC∅~CVCV. This constitutes a second pattern of reduplication which could be labeled *double-copy* or *triplication*, and I have glossed it as 'RED2.'

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15   There is no interest in analyzing this example as a case of full reduplication since full reduplication would then be restricted to monosyllabic verbs which show reduplication of the root. It is much more economical to explain this copy of the root as a monosyllabic reduplication of the final (and here, unique) syllable of the root. There is no pattern of full reduplication in Mojeño Trinitario.

16   There are good arguments to synchronically consider *u:na* a bisyllabic root resulting from the lexicalization of *uri* 'good' and the human classifier *-na*.

(44) *Ɂtum'memexi*
      Ɂtume~meme-xi
      valiant~RED2-CLF:bulk
      'He is always ready.'[17] (Gill 1957, 217)

(45) *mamuire   'mwettutupiko   to   βetʃxiri:wo*
      ma-omuire ma-it(u)~tutu-pi-ko   to   βi-etʃxiri:wo
      3M-also   3M-know~RED2-CLF:long.flexible-ACT ART.NH 1PL-language
      'He too knows a bit of our language.'

(46) *eɲi   rikkokoɁo*
      eɲi   riko~koko-Ɂo
      PRO.M rich~RED2-ACT
      'He is sort of rich.' (elicited)

This type of reduplication was first identified by Gill (1957). However, Gill
does not consider it a second pattern of reduplication. His analysis refers
to the basic reduplication pattern, i.e. a unique copy of the root-final sylla-
ble, with additional morphophonemic changes in the base (consonant dou-
bling). However, his analysis predicts incorrect vowel deletion. (47a) illustrates
the double-copy analysis and correctly predicts that the initial /i/, the root-
final /u/ and the /o/ of -*ko* are deleted. The last vowel of the double-copy is
unaffected by vowel deletion but is transparent. As shown in 2.2, this prop-
erty is shared with other stem-internal suffixes, such as classifiers. (47b) illus-
trates the analysis of single-consonant reduplication. It shows that were the
final consonant of the root *itu* 'learn' doubled, the initial /i/, the root-final
/u/, and the /i/ of -*pi* would be deleted, being the first, third and fifth vow-
els of the underlying structure of the word. The resulting phonological out-
put is incorrect. One must therefore reject the consonant doubling analy-
sis.[18]

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17   I elicited this translation for the reduplicated form given in Gill (1957). The root means 'to
      be valiant, to be strong, to be motivated.'
18   Apart from the application of vowel deletion, there are other problems with this analysis.
      First, there is no obvious explanation for consonant doubling. As we have shown in 4.3,
      examples of apparent consonant doubling can be better explained by vowel deletion, a
      process pervasive in the language. Second, this analysis links consonant doubling with
      an additional copy of the root-final syllable. We have shown that the so-called consonant
      doubling can occur without an additional copy.

(47a) *esu   sittutupik'ripo   to*
      esu   su-itu~tutu-pi-ko-ripo   to
      PRO.3F 3F-learn~RED2-CLF:long.flexible-ACT-already ART.NH
      βetʃxiriːwo
      βi-etʃxiriːwo.
      1PL-language
      'She is learning our language bit by bit.'

(47b) **sitttupkoripo*
      *su-itu⟨~t⟩~tu-pi-ko-ripo
      3F-learn~RED~RED-CLF:long.flexible-ACT-already
      'She is learning a language bit by bit.'

It remains an open question as to whether the double-copy is an allomorph of the basic reduplication pattern when it is applied to roots with final vowel deletion or whether it constitutes an independent pattern with its own meaning. In the pair of examples below, (49) differs from (48) both in the pattern of reduplication used and in the presence of an additional prefix: (48) uses the basic reduplication pattern, while (49) uses the double-copy pattern.

(48) *tkox'mamaxi*
      ti-ko-xuma~ma-xi
      3-VZ-sickness~RED-CLF:bulk
      'He is always sick.' (elicited)

(49) *wo   takxum'mamaxi*
      wo   ti-a-ko-xuma~mama-xi
      NEG 3-IRR-VZ-sickness~RED2-CLF:bulk
      'He is not always sick.' (elicited)

The comparison of these two examples supports the idea that the second reduplication pattern is related to vowel deletion. In (48), where the root-final vowel V_4 is not deleted, basic reduplication is used. In (49), where the presence of an additional prefix triggers deletion of the root-final vowel V_5, reduplication occurs with a double-copy. The relationship between double-copy and root-final vowel deletion is also supported by the lack of a double-copy pattern in the Ignaciano dialect. Ignaciano does not undergo vowel deletion.

   This double-copy pattern occurs on roots where the final vowel is in the third or fifth syllable of the underlying structure of the word, i.e. in the same

context where vowel deletion occurs on basic reduplication, as presented in 4.3. One possible explanation for this pattern is that the presence of a second copy is used to compensate for the loss of similarity between the base and the copy due to vowel deletion. The second copy recreates a sequence of two identical syllables. Surface level opacity would thus feed morphological doubling, and the use of the double-copy pattern would be due to the prosodic environment.

Both the basic pattern with a unique copy of the last syllable and the double-copy pattern can occur on some roots, with a slightly different meaning. This alternative between the two reduplication patterns is not productive.[19]

(50) *βjammoʔo*
　　　βi-amo~mo-ʔo
　　　1PL-swell.up~RED-ACT
　　　'We are swollen up (in a body-part).' (elicited)

(51) *βjam'momoʔo*
　　　βi-amo~momo-ʔo
　　　1PL-swell.up~RED2-ACT
　　　'We are swollen up (all over).' (elicited)

(52) *sittupko*
　　　su-itu~tu-pi-ko
　　　3F-learn~RED-CLF:long.flexible-ACT
　　　'She is learning (a language) a little.' (elicited)

(53) *esu　　sittutupik'ripo　　　　　　　　　　　　　　to*
　　　esu　　su-itu~tutu-pi-ko-ripo　　　　　　　　　　to
　　　PRO.3F　3F-learn~RED2-CLF:long.flexible-ACT-already　ART.NH
　　　βetʃxiri:wo.
　　　βi-etʃxiri:wo
　　　1PL-language
　　　'She is learning our language bit by bit.'

19　Speakers accepted neither the double-copy on the roots *kemtone* and *soko* (illustrated in (24) and (22) with the basic reduplication pattern), nor the basic pattern of reduplication on the roots *riko* and *ʔtume* (illustrated in (46) and (44) with double-copy).

(54) *βkotʃittʃaxi*[20]
      βi-ko-tʃitʃa~tʃa-xi
      1PL-VZ-children~RED-CLF:bulk
      'We have many children.' (Gill 1957, 217)

(55) *tkotʃittʃatʃaxi*
      ti-ko-tʃitʃa~tʃatʃa-xi
      3-VZ-children~RED2-CLF:bulk
      'He has many children with various women.' (elicited)

In the examples above, the two phonological patterns (basic and double-copy) seem to convey different degrees in the reduplication meaning. They do not individually correspond with the two major semantic functions of Trinitario reduplication discussed in section 3 (attenuation and repetition).[21] It rather seems that the double-copy pattern can be used to intensify the meaning of reduplication, whether attenuation as in (50) and (51) or repetition, as in (52) and (53). This suggests that the double-copy is not an allomorph of the basic reduplication pattern. A similar correlation between multiple copy and intensification of the meaning of reduplication is attested elsewhere. For example, in Tigre (Semitic, Erytrea), reduplication conveys attenuation. The number of copies goes from one to three. The greater the number of copies, the more attenuated the meaning of the verb is (S. Rose 2003, 113). It remains an open question as to whether the double-copy could be found independently of root-final vowel deletion.

5   Conclusion

This paper describes verbal reduplication in Trinitario. At the semantic level, partial reduplication of the verb conveys either an attenuative or a repetitive meaning. At the morphological level, the copy is a derivational suffix internal to the stem. At the phonological level, Trinitario reduplication involves copying the root-final syllable, with a possible double-copy of the same syllable. The base may be altered by vowel deletion and compensatory lengthening.

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20   /tʃ/ is realized as /t/ before another /tʃ/.

21   In Tupi-Guarani languages, each phonological template expresses a different meaning (Rose 2005, 2007).

With the help of a new Trinitario corpus and better knowledge of the phonological evolution of this dialect, a better understanding of the reduplication process was reached. This paper put forward two new analyses. First, Trinitario contains a phonologically-conditioned allomorph of the basic reduplication pattern, previously described by Gill (1957), that surfaces as consonant doubling. Second, there is a second reduplication pattern, where two copies of the root-final syllable occur and the root-final vowel is deleted. These patterns are explained as recent historical developments resulting from the pervasive vowel deletion process in the Trinitario dialect. Taking vowel deletion into account in the analysis here lets us explain the surface variants of various reduplication patterns in a manner that coheres better with the general prosodic system of the language.

At the theoretical level, data on reduplication have nourished debates on the morphology-prosody interface. Among others, reduplication in the Arawak language Axininca Campa has triggered recent developments in prosodic morphology within Optimality Theory (McCarthy and Prince 1993; 2001). Without entering this theoretical topic, the Trinitario data demonstrate the great complexity of the morphology-prosody interface. First, the reduplication morpheme (the copy) is defined in prosodic terms (one or two syllables). Second, the base is defined morphologically (as the root) and prosodically (possibly as a "minimal word"). Finally, the prosodic process of vowel deletion applies only after reduplication. The form of the copy is determined by the underlying form of the base, before any prosodic operation applies.

At the typological level, the fact that Trinitario displays partial reduplication (copying part of an element), but no full reduplication, is a clear counterexample to the hypothesis that "all languages that have partial reduplication also have total reduplication" (Moravcsik 1978, 328; Rubino 2005, 12). Another interesting aspect of Trinitario reduplication is that the regular processes of vowel deletion and compensatory lengthening result in a surface pattern where the copy and the base do not look alike. Differences between the base and the copy are usually attributed to phonological processes affecting the copy (Rubino 2005, 17). In Trinitario, it is the base that is altered by the vowel deletion and other prosodic rules, making the normally transparent phonological identity between base and copy opaque.

Acknowledgments

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Abbreviations

ACT	active	O	object
APL	applicative	PAS	past
ART	article	PAT.NZ	patient nominalizer
CAU	causative	PL	plural
CLF	classifier	PLURAC	pluractional
COP	copula	PRO	pronoun
D	discourse marker	RED	reduplication
F	feminine (singular)	RED2	double reduplication
FUT	future	RPT	reportative
IRR	irrealis	S	subject
M	masculine (singular)	SG	singular
MID	middle	TAM	Tense-Aspect-Mood
N	(incorporated) noun	VZ	verbalizer
NH	non-human		