

Chapter 13

Some Problems with Prosodic Accounts of Reduplication

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1. The Exceptional Nature of Reduplication and Past Solutions

Several characteristics of reduplication in Tagalog make it appear to be unlike affixation. Most notably, the material added by a reduplication rule must be copied from its stem. Moreover, in some cases it appears that the reduplicated material cannot be attached at the point where the morphological conditions for its attachment are met. For example, although a word formation rule (WFR) might involve adding both a regular affix and reduplicated material, reduplication must occur later in the derivation. Furthermore, the delayed reduplication process very often has the effect of inserting material inside affixes added on earlier cycles. In contrast, regular affixes attach to the outer edges of the stem. Finally, each of the three types of reduplication in Tagalog appears in several different WFRs, each time with a different meaning.

Since reduplication rules are alone in exhibiting all these characteristics, I have proposed (Carrier (1979)) that reduplication is not affixation and that therefore our characterization of affixation need not be loosened to accommodate it. The process of reduplication is split into two operations. Certain WFRs assign a feature [+reduplication], often in addition to adding an affix. This feature later triggers a copying rule that belongs to a special class of rules forming a terminal subcomponent of the lexicon. All of the surprising characteristics noted above are properties of the copying rule, not of the feature-assigning WFR. The copying rule is formulated as a string-dependent transformation and so can copy material from the stem. The triggering feature, like an affix, is attached to the outer bracket of the stem. But because the copying rule is triggered much later, reduplication appears to be separated from its morphological context and to intrude material deep inside other affixes.

Prosodic Accounts

In order to have a prosodic account (1979, 1981) has proposed that affixes are represented as phonemes (CV) temporal segments (Marantz (1982) and others). A proposal to formulate affixation rules that link elements of the stem to the stem's phonemes affixes on their stem. Reduplication seen to endow morphology with a WFR that reverses the formal apparatus of affixation rules is independent.

In this paper, I will argue that the analysis above, in order to account for the prosodic analysis of reduplication, presents the problem of how to account for it. Section 2.2 presents refinements, the prosodic dependency of one affix on the remaining affixes. I originally formulated a prosodic model, that of Marantz's prosodic model, that does not reemerge in a different way suggesting that reduplication is not affixation.

2. The Stem Dependency

2.1 The Transformational Account

Reduplication rules copy segmental material from the stem. They copy segmental material from the stem depending on the stem's structure of either syllable structure or morpheme structure. Carrier (1979) claimed (Carrier (1979)) that reduplication is not affixation.

In order to handle discontinuous morphemes in Arabic, McCarthy (1979, 1981) has proposed that distinct morphemes or classes of morphemes are represented on separate tiers and are linked to consonantal-vowel (CV) template tiers by autosegmental principles of association. Marantz (1982) and McCarthy (1981) have extended the prosodic template proposal to formulate reduplication in Tagalog and other languages as affixation rules that add invariant CV templates. Principles of association link elements of the CV tier to elements on a phonemic tier drawn from the stem's phonemic tier, thus explaining the dependency of reduplicated affixes on their stems for their phonemic content. The prosodic account of reduplication seems preferable because it appears to avoid the need to endow morphological rules with transformational power, a power that permits certain processes that never seem to arise in language (for example, a WFR that reverses all the segments in the stem). Furthermore, much of the formal apparatus used in the prosodic formulation of reduplication rules is independently motivated for Arabic by McCarthy's analysis.

In this paper, I would like to reexamine the cluster of properties outlined above, in order to consider which of them pose problems for even a prosodic analysis that treats reduplication as affixation. Section 2.1 presents the problem of stem dependency and the transformational solution to it. Section 2.2 presents the prosodic account. I show there that even with refinements, the prosodic analysis does not adequately handle the stem dependency of one type of reduplication in Tagalog. Section 3 addresses the remaining exceptional properties of reduplication. These were originally formulated in terms of Aronoff's (1976) model of the lexicon. Marantz's prosodic account of reduplication assumes a quite different lexical model, that of Lieber (1980). I will show that the original problems reemerge in a different guise when translated into Lieber's framework, still suggesting that reduplication is unlike regular affixation.

2. The Stem Dependency of Reduplication Rules

2.1 The Transformational Solution

Reduplication rules do not add affixes of fixed phonological shape; instead, they copy segmental information from the stem. In the case of disyllabic reduplication in Tagalog, even the number of segments copied can vary, depending on the stem. Because what is copied cannot be specified in terms of either syllable structure or morpheme structure of the base, I have claimed (Carrier (1979)) that reduplication rules are transformations that

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of the first syllable of the stem whether it is open as in (9) and (10) or closed as in (11) and (12), preserving the length of the stem vowel. Again, R2 appears in a variety of WFs.

- (9) a. mag + li:nis
'clean'
↓
b. mag + li:nis-li:nis
'clean a little'
- (10) a. mag + walis
'sweep'
↓
b. mag + walis-walis
'sweep a little'
- (11) a. pantay
'level'
↓
b. pantay-pantay
'thoroughly level'
- (12) a. tiñ + an
'watch'
↓
b. tiñnan-tiñ + an
'watch somewhat'

The most troublesome way in which R2 is base-dependent involves whether or not the consonant following the second vowel of the stem is copied. If that consonant is followed by a morpheme boundary, as it is in (9)–(12), it is copied. But if the stem begins with a trisyllabic morpheme, as in (13)–(16), R2 includes only up to the second vowel, even when the following consonant closes the syllable. The final vowel of R2 in such cases is always long, regardless of the length of the corresponding vowel in the original.

- (13) a. tahi:mik
'quiet'
↓
b. tahi:-tahi:mik
'rather quiet'
- (14) a. baluktot
'crooked'
↓
b. balu:-baluktot
'variously bent'
- (15) a. kalansiñ
'jingle of coins'
↓
b. pagka-kala:-kalansiñ
'a jingling of coins'
- (16) a. ?intindiñ
'an understanding'
↓
b. ?inti:-?intindiñ
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nag + pa + sulat
'have someone write'
↓
nag + pa-pa + sulat
'having someone write'

R2 Reduplication is
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Thus, it appears that the CV pattern of R2 can vary; it is CVC(C)V: in (13)–(16) and CVC(C)VC in (9)–(12). The following transformational rule will produce the correct alternative for each of the above cases.

(17)

R2 Reduplication

$$[-\text{seg}] \begin{matrix} C & V & C_0 \\ 1 & 2 & 3 \end{matrix} V(C+)X \rightarrow \begin{matrix} 1 & 2 & 3 \\ & & [+long] \end{matrix} \begin{matrix} 4 & 2 & 3 & 4 & 5 \end{matrix}$$

The formal apparatus needed to formulate lexical transformations such as (4), (8), and (17) is extremely powerful. The fact that such power is not needed for normal affixation led me to propose that these rules are not affixation rules at all, although they are triggered by the features [+RA], [+R1], and [+R2] that can accompany the attachment of affixes. For example, in the formation of occupational nouns illustrated by (5), the feature [+R1] is attached simultaneously with the prefix *mag-*.

(18)

Occupational Noun Formation

$$\left[\begin{matrix} \text{kandilah}_N \\ \text{'candle'} \end{matrix} \right] \rightarrow \left[\begin{matrix} \text{mag} \left[\begin{matrix} \text{kandilah}_N \\ [+R1] \end{matrix} \right]_N \\ \text{'candle vendor'} \end{matrix} \right]$$

[+R1] assigned by rule (18), as well as by several other WFRs, later triggers rule (8). Besides removing transformational processes from WFRs, this analysis involves separating the WFR that triggers reduplication from the copying process itself. The fact that such a separation explains the other surprising characteristics of reduplication, as will be discussed below, is taken as support for this analysis.

2.2 The Prosodic Solution

McCarthy (1981, 1982a) and Marantz (1982) have proposed that lexical transformations are not necessary to handle the base dependency illustrated by reduplication rules. Using a prosodic analysis of morphemes, they formulate reduplication as the affixation of a constant morpheme consisting only of a CV template.

Prosodic morphology depends on the idea that a morpheme is not simply represented as a string of segments. Various aspects of its phonetic shape are extracted and represented on distinct, quasi-hierarchical tiers. In the typical case, a morpheme consists of a morpheme tier that represents its status as a morpheme, a syllable tier, a CV-template tier that describes

Prosodic Account

how its consonant that contains the

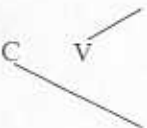
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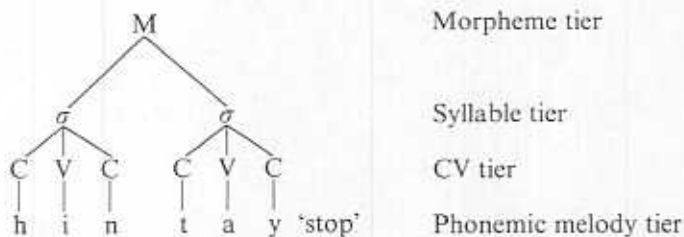
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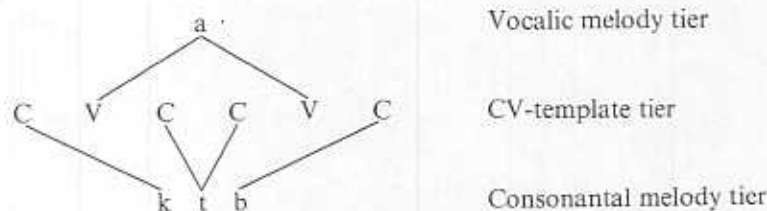
(19)



McCarthy (1979) originally proposed prosodic morphology to handle discontinuous morphemes in Arabic. He showed that for Arabic it is necessary to represent the canonical shape of a word, its root consonants and its array of vowels, each as a separate morpheme on a separate tier. To take an example of McCarthy's (1982a), the word *kittab* contains three discontinuous morphemes. The prosodic template CVCCVC that it exemplifies is "the mark of the second derivational class... Changing the template to CVVCVC yields the third class reciprocal *kaatab*, 'corresponded'" (p. 192). The same consonants and vowels appear in this new form but are mapped onto a new template. The vocalic melody *ia* in *kittab* is the inflectional morpheme signifying perfective aspect/active voice. It can be replaced with the perfective passive morpheme, which consists of the melody *u i*, with no change in the CV template or the consonant melody, to yield *kuttib*. Finally, the consonantal melody *ktb* is the root morpheme 'write'.

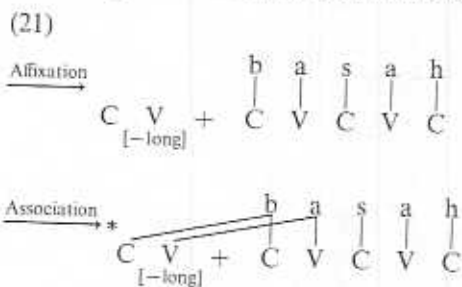
McCarthy solved the problem of how to represent these discontinuous morphemes as follows. Each has its own morpheme tier but is unspecified in the lexicon for one of the other tiers. Conjugation morphemes have a CV-template tier, but no phonemic tier. Tense/mood morphemes have a specified vowel tier but no CV-template tier. Thus, the information on each one of the tiers below is contributed by a distinct morpheme.

(20)

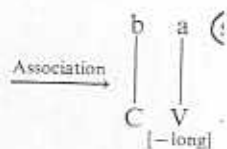
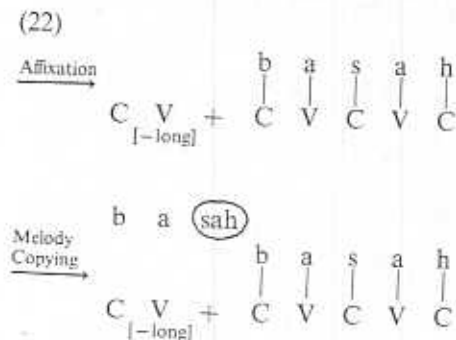


In order to be phonetically realized, each element on the consonant and vowel tiers must be associated with a position on the CV template. This, McCarthy proposed, is accomplished by universal principles borrowed largely from autosegmental phonology.¹

Marantz (1982) and McCarthy (1981, 1982a) handle reduplication as the addition of morphemes that, like the conjugation morphemes in Arabic, are specified only for a CV-template tier. For example, R1 Reduplication is the prefixation of a morpheme that consists solely of the CV-template tier C_[+long] V_[-long]. R1 appears to involve copying because it has no phonemic melody of its own and therefore must borrow one from the stem. But it cannot borrow the melody by simply associating the newly affixed CV template with the phonemic melody of the stem. This would result in lines crossing as shown in (21), a violation of one of the universal principles of association. (Only the tiers that are relevant for the discussion will be represented.)



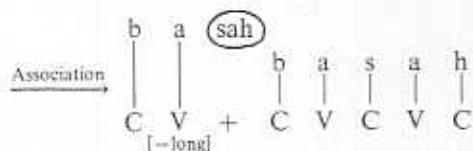
McCarthy (1981, 413–414) therefore proposes that reduplicating morphemes carry a feature [+reduplication] that triggers a rule that copies the phonemic melody of another morpheme. It is the copied melody that is associated with the reduplication CV template. (I will represent the copied melody higher than the melody of the stem as shown in (22).)



Two comments: CV tiers in (22). They associate two segments. The unassociated segment is deleted. It is necessary to associate the CV tier to features that overlie the CV tier in (22) [-long] present in the melody copying.

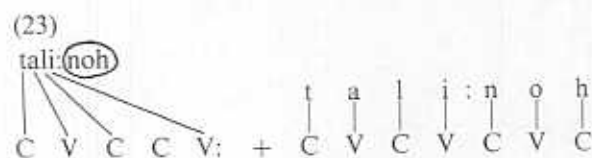
Marantz (1982) considers, including syllable of R2 may be fixed. R2 is CVCC' (14). But if R2 is an fixed entity. Marantz the association rule consonant is realized. T applicable in Arabic leftmost unassociated slot of the CV template [±vocalic], the slot is associated with the second C slot in the association were 'the consonant and the

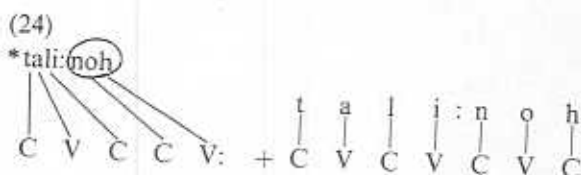




Two comments are in order about the association of the phonemic and CV tiers in (22). There are only enough slots on the CV template of R1 to associate two segments of the copied melody, so the “unassociated melodic elements are deleted or without phonetic effect” (McCarthy (1981, 413)). (The unassociated segments in (22) are circled.) Also, Marantz (1982) notes that it is necessary to allow slots on the prosodic template to be preattached to features that override competing features in the copied melody. Thus, in (22) [–long] preattached to the V slot of R1 overrides vowel length in the melody copied from the original.

Marantz (1982) adds to and modifies some of McCarthy’s association principles in order to accommodate some of the reduplication rules he considers, including R2 reduplication in Tagalog. Recall that the first syllable of R2 may be open or closed, depending on the first syllable of the stem. R2 is CVCCV: in *?inti:-?intindi?* (16) but CVCV: in *balu:-baluktot* (14). But if R2 is an affix like all other affixes, it ought to be specifiable as a fixed entity. Marantz chooses CVCCV: as the R2 morpheme, leaving it to the association rules to determine whether or not the second medial consonant is realized. This leads him to propose two association principles not applicable in Arabic. First, association is “phoneme driven.” That is, if the leftmost unassociated segment of the melody and the leftmost unassociated slot of the CV template of R2 do not match with respect to the feature [\pm vocalic], the slot on the CV template is left unassociated. The phoneme is associated with the leftmost available slot of the appropriate category. In linking R2 to the phonemic melody *tali:noh*, association skips the second C slot in the template, looking for a V slot for *i*, as shown in (23). If association were “template driven,” it would skip the vowel *i* looking for a consonant and the result would be **talno:-tali:noh*, as in (24).

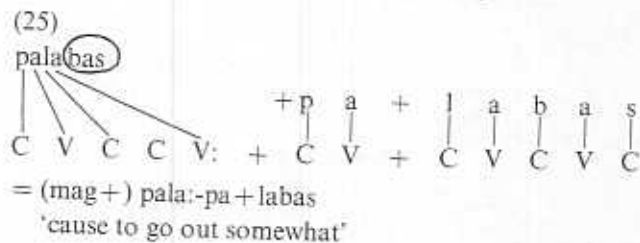




The second convention added by Marantz precludes any many-to-one associations. According to McCarthy's original conventions, each slot on the CV template can be linked to only one phoneme. In addition, in the case of reduplication, each phoneme can be linked to only one slot. Any leftover elements on either tier are not phonetically realized. As a result, the / of *tali: noh* is not spread to the unused C position (**talli: noh*), and therefore that slot is unrealized (cf. Arabic *kittab*).

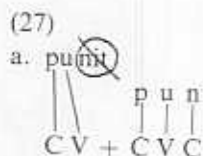
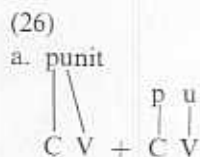
Thus, the variation between instances of R2 that have a medial cluster and those that do not is attributed to principles of association (some of them language particular), not to variations in the shape of the morpheme itself. However, the fact that only some instances of R2 contain a final C cannot be handled in this way. This problem and the prosodic account's solution will be addressed below. First, though, I will point out two features of the universal melody-copying rule and association conventions that Tagalog reduplication helps to make explicit.

First, as suggested by Marantz (1982), the universal copying rule must copy the phonemic melody, not of some morpheme, but of the entire stem to which a reduplicative morpheme is attached. This is shown by cases where the melodic elements associated with the reduplication template originate in two separate morphemes within the stem. For example, in (25), where the first morpheme to the right of R2 contains only one syllable, R2 contains material borrowed from the next syllable over as well, even though this material is from another morpheme.



Tagalog also suggests that the copying and association rules are cyclic and that unassociated segments from the copied melody are deleted before the next cycle. This can be seen from words containing two adjacent reduplication morphemes. Verbs expressing spontaneous or involuntary

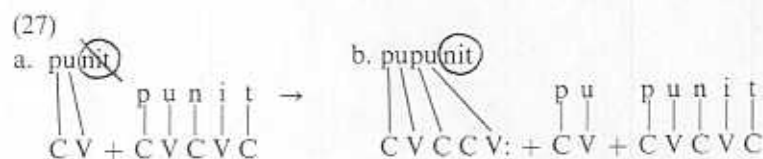
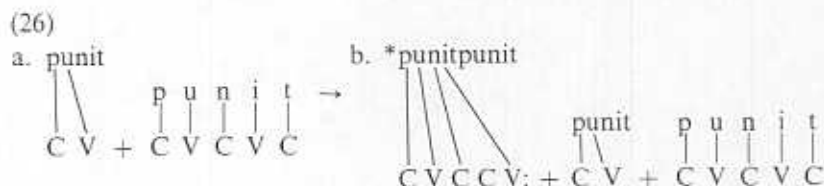
action are formed from verbal stems. For example, the Tagalog verb 'tear spontaneously' is formed from the stem *mag + kar* (argued above, but linked to the template for spontaneous verbs, giving *mag + kar* (*pupu:*) that melody that had to be copied, which, after association with the template, gives *-pu-punit* as in (26). This structure has been analyzed as having been associated with the template, which expressed the fact that



Thus, the entire melodic structure associated with the stem is copied, and the unassociated elements are deleted.

Noting that the Tagalog verb *mag + kar* (1981, 414) proposed for the formation, like the Tagalog verb *mag + kar* but as part of univocalization, and Marantz ascribes this to an intrinsic property constraint. The constraint is maintained only in the case of univocalization involving language constraints on the function

action are formed by prefixing *mag+kaj* and R1 to a certain class of verbal stems. For example, *punit* 'tear' becomes (*mag+kam+*)*pu-punit* 'tear spontaneously'. R1 causes copying of the entire stem's melody, as argued above, but only two elements of the borrowed melody are actually linked to the template of R1, as shown in (26a). Now these involuntary/spontaneous verbs can be intensified by prefixing R2 to the left of R1, giving (*mag+kam+*)*pupu:-pu+punit*. It is clear from the form of R2 (*pupu:-*) that melody copying triggered by R2 does not copy the entire melody that had been copied by R1. This would mean copying *punitpunit*, which, after association, would incorrectly produce **(mag+kam+)puni:-pu-punit* as in (26b). Instead, it must copy only segments from the stem that have been associated with the CV template on earlier cycles. (I have slashed the unassociated portions of the phoneme melody in (27a) to express the fact that they are not available to be copied in (27b).)



Thus, the entire melody of the stem is copied on the cycle during which a reduplicative morpheme is introduced. The copied melody is then associated with the slots on the CV template of the R morpheme, and any unassociated elements are deleted before the next cycle.

Noting that the melody-copying rule is transformational, McCarthy (1981, 414) proposes that it is not specified as a language-particular transformation, like the reduplication rules of Carrier (1979) and Lieber (1980), but as part of universal grammar. The greater restrictiveness that McCarthy and Marantz ascribe to the prosodic analysis is due, therefore, not to any intrinsic property of their account, but to an independently postulated constraint. The claim that the prosodic theory is more restrictive can be maintained only if it is not possible to similarly constrain the account involving language-specific transformations by imposing universal constraints on the functioning of morphological transformations.² Obviously,

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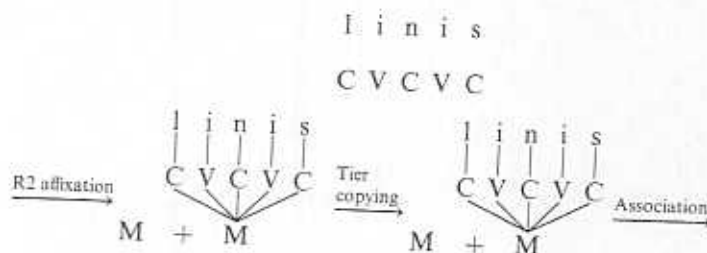
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it is up to the proponent of lexical transformations to find such constraints. I will not attempt to do so here (although Lieber (1980) makes some proposals). Instead, I will show that the prosodic analysis of Tagalog is not descriptively adequate and that it does in any event involve abandoning proposed universal principles that greatly constrain the functioning of morphological rules.

2.3 Unresolved Stem-dependency Problems within the Prosodic Analysis

The prosodic account of reduplication depends crucially on the assumption that a reduplicative affix can always be represented as a fixed canonical shape. However, R2 reduplication presents a problem for such an assumption. R2 may include a copy of the consonant following the second vowel, but only if that consonant is followed by a boundary. To handle such cases, Marantz proposes that R2 has two allomorphs. The allomorph already illustrated above has a CV tier CVCCV:, but lacks a phonemic tier specification. The second allomorph is composed solely of a morpheme tier.³ Since it lacks both a phonemic tier and a CV-template tier, both must be copied from the stem.

(28)



If there is only one universal tier-copying rule triggered by all reduplication morphemes, we must assume that it always copies both the CV-template tier and the phonemic tier of the stem, in order to handle cases such as (28) involving the M-tier allomorph. However, because the CVCCV: allomorph of R2 has its own CV tier, the copied CV tier is overridden.

Cases involving the M-tier allomorph of R2 support the conclusion above that the copying rule copies tiers from the entire stem, not just from the next adjacent morpheme. In *sundin-sund+in*, derived from *sund+in*, the phonemic and CV tiers have been borrowed from the root *sund* and its suffix *-in*.

Thus, R2 has two allomorphs: a CV-tier (CVCCV:) allomorph that attaches to stems beginning with CVC(C)VC [+seg] and an M-tier allomorph

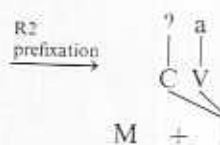
that attaches to the M-tier allomorph in cases where the stem is identical in all respects to the M-tier allomorph template. In fact, the following complex local action are fixed in length in a way that the noun can in turn be

(29)

'abut → 'abi
'to hand' 'a:h
one

R2 Reduplication of the moderate verb cannot be chosen, the stem is followed by a boundary could not happen in the M-tier allomorph: *mag+?abutan-?a.

(30)



3. Additional Problems

Before I discuss it is necessary to make clear that the observed, that of A is a cation has been well developed by Lieber

late the characteristics of reduplication that originally seemed problematic in Aronoff's framework into Lieber's. As we shall see, the exceptional nature of reduplication reemerges in a different form.

In Aronoff's model of the lexicon, productive affixes are not listed as independent lexical entries complete with meanings and syntactic and morphological specifications. They exist by virtue of being introduced in the structural change of WFRs. A WFR specifies the class of words that may serve as its base (input) by referring to their syntactic category, morphological features such as [+linate], and possibly semantic and phonological information. In its output it specifies a phonological change, usually consisting of the addition of an affix,⁶ the meaning of the derived word as a function of the base, and the syntactic category of the derived word. For example, the English suffix *-ness* is introduced by the WFR in (31).

(31)

$$[X_A] \rightarrow [[X_A] \text{ ness}_N]$$

Meaning: 'the quality or fact of being X'

Aronoff proposes the *Word Base Hypothesis* as a constraint on possible WFRs to the effect that only words can be bases to productive WFRs and that the output of every WFR must be a word. The adjacency condition proposed by Siegel (1977) and Allen (1978) further restricts WFRs from involving two elements that are not contained in adjacent cycles. The application of a WFR cannot depend on an affix or feature more than one cycle in. In addition, Aronoff posits a class of readjustment rules called *allomorphy rules* that can look very much like phonological rules except that they apply only to a certain arbitrarily marked class of morphemes in the immediate environment of another arbitrarily marked class of morphemes. For example, *-ceive* becomes *-cept* before the suffixes *-ion* and *-ive*. Aronoff's idea, then, is that phonological processes whose environments and targets are morphologically designated are rules of the lexicon rather than the phonology. This claim explains a property of Tagalog reduplication that appeared problematic in earlier investigations: its interaction with other rules. It seemingly had to be preceded by phonological rules.

For example, Tagalog has a process of Nasal Substitution whereby the final nasal of a prefix is lost and the initial obstruent of the stem is replaced with the homorganic nasal.⁷ Thus, /maŋ + / plus /pulah/ becomes /ma + mulah/ 'turn temporarily red'. If a WFR involving reduplication applies to a form that is subject to Nasal Substitution, the homorganic nasal shows up in both the reduplicated and the original material, although

only the nasal in types of reduplication /maŋ + pulah/.

(32)

- a. RA: ma + mu
'will turn temporarily red'
c. R1: pa + mu
'turning red'

Such forms can reduplicate without reduplication Nasal Substitution ordering, which would give *pa + mu-pul

(33)

- a. /maŋ + /
/ma + /
/ma + mu: -
b. /maŋ + /
/maŋ + pu: -
*/ma + mu: -

Vowel Syncope whereby the vowel suffix. For example R2 Reduplication copies the suffix then copies two syllable second syllable

(34)

- /sunod + in/
/sund + in/
/sundin-sund + in/

Once again these rules follow morphological reduplication is affixation

only the nasal in the copy is adjacent to the prefix. This is true for all three types of reduplication, as shown by (32a-c), all of which are derived from /maŋ + pulah/.

(32)

- | | |
|-----------------------|-------------------------|
| a. RA: ma + mu:-mulah | b. R2: ma + mulah-mulah |
| 'will turn | 'turn somewhat |
| temporarily red' | red temporarily' |
| c. R1: pa + mu-mulah | |
| 'turning temporarily | |
| red' | |

Such forms can be derived if Nasal Substitution applies before all three reduplication rules. Such a derivation is given for (32a) in (33a). However, if reduplication were an affixation rule, or any sort of lexical rule, and Nasal Substitution were a phonological rule, we would expect the opposite ordering, which would give *ma + mu:-pulah (in (33b)), *ma + mulah-pulah, and *pa + mu-pulah.

(33)

- | | | |
|----|---------------------|--------------------|
| a. | /maŋ + pulah/ | |
| | /ma + mulah/ | Nasal Substitution |
| | /ma + mu:- pulah/ | RA |
| b. | /maŋ + pulah/ | |
| | /maŋ + pu: - pulah/ | RA |
| | */ma + mu:- pulah/ | Nasal Substitution |

Vowel Syncope also appears to precede reduplication. This is the process whereby the vowel in the final syllable of verb roots is deleted before a suffix. For example, *sunod* together with +*in* becomes *sund + in* 'obey'. If R2 Reduplication applies to a disyllabic stem that is subject to Syncope, it copies the suffix that triggers Syncope as well. Since R2 Reduplication only copies two syllables, Syncope must apply first, placing the suffix in the second syllable position, as shown in (34).

(34)

- | | | |
|--|--------------------|------------------|
| | /sunod + in/ | |
| | /sund + in/ | Vowel Syncope |
| | /sundin-sund + in/ | R2 Reduplication |

Once again this appears to pose a threat for the claim that all phonological rules follow morphological rules. This problem is independent of whether reduplication is affixation or a special type of lexical transformation.

However, a close inspection of Nasal Substitution and Vowel Syncope reveals that they are allomorphy rules in Aronoff's sense. (Carrier (1979) justifies this in detail.) For example, the prefixes and roots involved in Nasal Substitution cannot be specified in purely phonological terms. Not all /ŋ/-final prefixes and not all obstruent-initial stems participate in the alternation. Thus, the above interactions do not force us to allow morphological rules to follow rules of the phonology.

Lieber (1980) shows cases where morphologically determined variants of the sort that Aronoff would derive through application of allomorphy rules are available to derivational WFRs and compounding. She argues on the basis of these that both the input to Aronoff's allomorphy rules and the output are listed as separate, though partially identical, entries in the permanent lexicon, the repository for all morphemes in the language. No rule derives one from the other, but a morpholexical rule states the relationship between them and denotes which one is the marked variant. For example, both *pulah* and *mulah* are listed as [+NS], meaning that they are members of a pair related by the morpholexical rule of Nasal Substitution. In addition, *pulah* is specified as [-marked NS] and *mulah* as [+marked NS]. Parallel to all entries in the permanent lexicon, the entry for *mulah* also specifies that it means 'turns red', that it is a verb, and that it belongs to a particular conjugation class. The entry for *pulah* is identical except for its phonological representation and the specification [-marked NS].

This different treatment of allomorphy is accompanied by a different view of word formation. Affixes are listed in the permanent lexicon, differing from stems only in that they subcategorize other morphemes. Both *ma+* and *may+* are listed as [+subject topic],⁸ [+verb]. *Ma+* subcategorizes [+marked NS] stems of the appropriate conjugation class. *May+* subcategorizes stems of the appropriate conjugation that are either [-marked NS] or [-NS].

The lexical structure subcomponent constructs complex words from elements listed in the permanent lexicon. Lexical structure rules build unlabeled binary branching trees. Morphemes are inserted into these trees according to their subcategorization and diacritic features. *Ma+* will be inserted only into the left branch whose right branch contains a verb stem that is both of the appropriate conjugation class and [+marked NS]. Lieber adapts Siegel and Allen's adjacency condition on WFRs as a condition on morpheme subcategorization. No subcategorization condition can hold between two morphological elements that are not contained in adjacent cycles.

The syntactic determined inde through princip percolate up the percolate up to stem. The suffix affix is unspecific percolates from category, so the of the whole wo on.

Percolation is insertion results feature specifica inserted into the the word will be

The meaning construction thr ings of the comp ents and working of words are sepa that a word mig phemes have be subcategorizatio

3.1 The Separati

One surprising cl Aronovian fram Given such a fram apply at the point application are m *may+* and R1 t *-ba:yan* 'citizen' parts of the same intermediate wor derived. In fact, * R1 cannot be ad Nasal Substitutio tion before R1 is

The syntactic and morphological properties of the derived word are determined independently of the insertion of morphemes into lexical trees through principles by which the features of the individual morphemes percolate up the binary branching tree. In general, the features of the affix percolate up to become features of the node dominating the affix and its stem. The suffix *+in* is [+verb], [+object topic], so *sund+in* is also. If an affix is unspecified for a crucial feature, by convention the relevant feature percolates from the stem. The English prefix *counter+* has no syntactic category, so the category of its stem percolates up to become the category of the whole word in *counterproductive*, *counteract*, *counterculture*, and so on.

Percolation is important in handling certain cases where morpheme insertion results in a partial word. A pluperfect verb in Latin requires a feature specification for person and number. If no person/number suffix is inserted into the lexical tree, the crucial features will not percolate up, and the word will be incomplete.

The meaning of a derived word is also determined independently of its construction through principles of interpretation that combine the meanings of the component morphemes, starting with the innermost constituents and working out. The view that the rules that determine the meanings of words are separate from those that build them leaves open the possibility that a word might be structurally well formed in the sense that its morphemes have been inserted into binary trees in accordance with their subcategorization features, yet still be semantically deviant (e.g., *unkill*).

3.1 The Separation of Reduplication from Its Morphological Context

One surprising characteristic of reduplication was first described within an Aronovian framework, complete with allomorphy rules (Carrier (1979)). Given such a framework, it appears that reduplication rules cannot always apply at the point in the derivation of a word where the conditions for their application are met. Occupational nouns in Tagalog are formed by adding *man+* and R1 to either a noun or verb root. For example, *man+ba-ba:yan* 'citizen' is derived from *bayan* 'country'. Both are inseparable parts of the same WF in the sense that adding either alone does not form an intermediate word from which the occupational noun might be plausibly derived. In fact, **babayan* and **mambayan* are not words. Yet *man+* and R1 cannot be added simultaneously, because in forms that are subject to Nasal Substitution, for example (35), *man+* must trigger Nasal Substitution before R1 is added.

(35)

/maj + sayaw/	<i>maj</i> + Prefixation
/ma + nayaw/	Nasal Substitution
/ma + na-nayaw/	R1 Reduplication

'dancer'

Furthermore, when R1 finally is added, it goes between two already concatenated morphemes, a fact that makes it very unlike usual morphemes.⁹

The addition of R1 must be delayed until after *maj* + prefixation regardless of whether "R1 addition" means the prefixation of a prosodic CV template or the operation of a copying transformation. However, because the transformational account claims that copying is not affixation but is triggered by a feature after all affixation, it predicts that this kind of delay in the application of copying should be possible. *Maj* + is prefixed and the root is marked [+R1] simultaneously, producing a word that is fully formed from the point of view of its morphemic content: *maj* + *sayaw*_[+R1]

'dancer'. Since the triggered R1 copying is not affixation, it is not problematic that it applies later and that it adds material inside an already constructed word. On the other hand, if R1 is a normal affix, we should expect it to attach simultaneously with its companion affix.

Under a morpholexical account of Nasal Substitution, the problem of delayed reduplication might seem to disappear, taking with it the above argument for the feature-plus-transformation (F/T) solution. As Marantz (1982) points out, since both the marked and the unmarked stem variants *nayaw* and *sayaw* are listed in the lexicon, *ma* + and R1 could in fact be prefixed simultaneously to *nayaw*. But R1 still looks strange as a morpheme. *Ma* + and R1 must be prevented from prefixing to *sayaw* to produce **ma* + *sa-sayaw*. Yet R1 prefixes to *sayaw* in other forms, for example *pag* + *sa-sayaw* 'dancing'. (The fact that R1 is indiscriminate with respect to morpholexical variants is in itself surprising.) R1 occurs before a marked stem variant only when it is preceded by a prefix that requires the marked variant. So it is clear that *ma* + selects *nayaw* as though R1 did not intervene between them. If R1 were a morpheme like any other, we would expect it to bear its own diacritics, determining both what stem variants it can prefix to and what affixes can prefix to it.

Assuming instead that R1 is prefixed separately first and that *ma* +, which subcategorizes R1, is then prefixed raises problems as well. First, it involves generating *sa-sayaw* and *na-nayaw*, both of which are nonwords. Their nonoccurrence is unlike the nonoccurrence of pluperfect verbs in Latin that lack person/number affixes. R1 and *ma* + have no semantic or

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(36)

a. b.

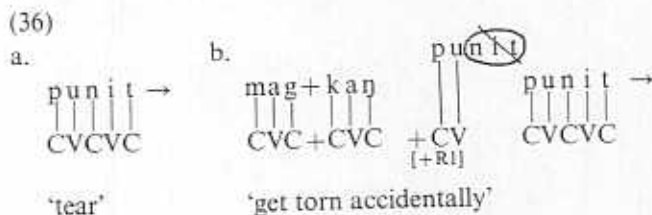
p u n i t →
| | | | |
C V C V C

'tear'

morphological properties that can be independently motivated, so it is not clear what features could have failed to percolate. Furthermore, since R1 prefixes to *sayaw* as well as *nayaw*, what is to keep *ma+* from prefixing to *sa-sayaw* to produce **ma+sa-sayaw*? The relevant generalization would have to be that in forming occupational nouns, *ma+* subcategories R1, which has in turn prefixed to a [+marked NS] stem. But such a subcategorization would violate Subjacency.

It might be proposed that R1 is diacritically neutral and therefore requires that the diacritics of its stem percolate up to the node dominating it and its stem. Thus, *na-nayaw* becomes [+marked NS] and *sa-sayaw* becomes [-marked NS], and no violation of Subjacency would be necessary to block **ma+sa-sayaw*. But this would be a radical extension of Lieber's stem percolation convention. In all of Lieber's cases where a percolated feature originates from the stem rather than an affix, the affix is neutral with respect to some crucial feature. For example, since all words must have a syntactic category and the English prefix *counter-* does not, the syntactic category of the stem of *counter-* percolates. However, there is no comparable motivation for claiming that the node dominating *na-nayaw* or *sa-sayaw* must be specified for [\pm marked NS]. Such unmotivated use of forced percolation would allow for many cases of subcategorization relations between widely separated morphemes that would otherwise be ruled out by Subjacency. We would be suspicious, then, if reduplicative morphemes were the only ones that required it.

A similar problem arises with a prosodic formulation of the intensive accidental verbs in (27), repeated in (36). Involuntary verbs are formed by adding *kaj+* and R1 to a verbal stem, as in (36b). The new stem takes the subject topic inflection *mag+*. These involuntary verbs are intensified by adding R2 to the left of R1, as in (36c).



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3.2 The Delayed Application of Reduplication

If Reduplication is affixation, the ordering of reduplication rules with respect to other affixation is in some cases paradoxical. Consider the derivation of a moderative verb such as (39a), which is derived by R2 reduplicating the root in (38a).

- (38)
- | | |
|-----------|---------------|
| a. li:nis | b. mag+li:nis |
| 'clean' | c. li:nis+in |

- (39)
- | | |
|------------------|----------------------|
| a. li:nis-li:nis | b. mag+li:nis-li:nis |
| 'clean somewhat' | c. li:nis-li:nis+in |

The R2 reduplicated stem takes a complete array of inflectional affixes. Thus, it seems reasonable to assume that rather than applying to each inflected form of the verb separately, R2 applies to the root stem *li:nis*. That R2 does not attach to inflected stems is supported by the fact that the adjective-forming prefix *pa+* attaches to uninflected R2 verb stems to form moderative adjectives. For example, *pa+lahuk-lahok* 'joining in once in a while' is derived from the uninflected verb stem *lahuk-lahok* 'join in once in a whole', which inflected would be *l+um+ahuk-lahok*. Moreover, R2 commonly applies to bare roots in other forms, for example *buha:-buhaghag* 'rather porous' from *buhaghag* 'porous'. The simplest assumption, then, is that R2 attaches to uninflected stems. Paradoxically, though, R2 copies an inflectional suffix if that suffix falls into the second syllable of the stem through application of Syncope. The paradox arises whether syncope is handled as an allomorphy process or as a morpholexical relation. Even if *sund* is listed as a morpholexical variant of *sunod*, prefixing R2 to it in its uninflected form will give *sund-sund*, which when inflected would give the nonoccurring **sund-sund+in* instead of the correct *sundin-sund+in*.

It is not possible to resolve the paradox by claiming instead that R2 does attach to inflected forms.¹⁰ First, to allow R2 to prefix to the inflected *mag+linis* would be to allow a morpheme to intrude between two already concatenated ones. Second, R2 must not attach to verbs whose inflectional affix is an infix, because the infix is not copied. The moderative verb derived from *s+um+unod* 'obey' is *s+um+unud-sunod*, not **sumu:-s+um+unod*.¹¹ Finally, R2 cannot be prefixed to forms with inflectional suffixes whose roots are not monosyllabic due to syncope. If R2 were prefixed to the inflected form *linis+in*, the M-tier allomorph would be

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-kaj+ punit
[+R1]
[+R2]

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b is derived from it by
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required. But this should produce **linisin-linis + in*, as argued above. The solution we are left with is suspicious indeed: R2 attaches to uninflected roots, except when the root is a monosyllabic syncopated one.

Under the F/T analysis, the paradox disappears. [+R2] can be said to always attach to an uninflected stem. However, the triggered copying rule applies after inflection.

3.3 The Nondescriptness of Reduplication

The final problem with treating Tagalog reduplication as affixation is that reduplicated material never seems to have semantic, syntactic, or morphological properties of its own. Often, reduplicated material must be accompanied by other affixes and therefore cannot be said to have a meaning on its own; recall, for example, R1 in accidental result verbs in (27). Also, although there are only three types of reduplication in Tagalog—R1, RA, and R2—each shows up in several WFRs and therefore, unlike a normal affix, cannot be pinned down as having its own meaning or syntactic properties. Tagalog has many homophonous but distinct morphemes of the standard sort (e.g., verbal inflection *mag+* and occupational noun *mag+*), so it might be tempting to propose that there are many homophonous yet distinct reduplicative affixes. However, as I will show, this is not plausible.

I will illustrate the multiple uses of a single type of reduplication with RA. One of its functions is to mark tense and aspect in verbs. RA is attached to the verbal stem, where by “verbal stem” I mean the one to which the inflectional topic-marking (TM) affixes are attached (see note 8). *Bigay* is the inflectional stem for both (40) and (41), so *bi* is reduplicated in both cases. (In the examples, each TM affix is italicized and the first CV of its stem to be copied is circled.)

(40)
mag + (bi)gay → *mag* + bi:-bigay
 ‘give’ ‘will give’

(41)
 (bi)gy-an → bi:-bigy + an
 ‘give’ ‘will give’

Certain verbs, for example (42), contain more than one TM affix, so they have more than one stem to which RA can attach. A TM affix itself can be reduplicated only if it is the leftmost element of another TM affix’s inflectional stem. Thus, the alternative future forms (42a–c) arise:

(42)
ma + ?i + pag +
bigay }
 ‘happen to be }
 given’

Both the prosodic and the fact that RA is a word, a problem Carrier (1979)).

As it turns out, certain causative stems, the complex derivational stems adding the derivational affix *ka* to new causative *ka* + *pa* + *ginig* ‘cause to tremble’ each such causative stem by applying RA to

(43)
 a. *ma* + *ginig* → *mag* + *ginig*
 ‘tremble’

(44)
 a. *mag* + *hina* → *mag* + *hina*

Causative adjectives and verbal stems in (44)

(45)
 a. (?i +)ka + pag +
 ‘cause to become weak’

It is clear that the stems varied for tense and aspect such as adjectives is marked by RA that marks the stem because the mor

, as argued above. The affix attaches to uninflected material.

[+R2] can be said to be triggered copying rule

ion as affixation is that the affix is morpho-syntactic, or morpho-syntactic material must be attached to the root. It is said to have a meaning similar to causative verbs in (27). Also, in Tagalog—R1, RA, therefore, unlike a normal affix, it has a meaning or syntactic function distinct from the root. In Tagalog, there are many homophones, as I will show, this is

of reduplication with aspect in verbs. RA is the affix "I mean the one to which the affix is attached (see note 8). In Tagalog, so *bi* is reduplicated in the root and the first CV of

- (42)
- | | | | |
|----------------------|-----------------------------|---|-----------------------------|
| ma + ?i + pag + | a. ma + (?i) + pag + bigay | → | ma + ?i: - ?i + pag + bigay |
| bigay | b. ma + ?i + (pa) g + bigay | → | ma + ?i + pa: - pag + bigay |
| 'happen to be given' | c. ma + ?i + pag + (bi) gay | → | ma + ?i + pag + bi: - bigay |
| | | | 'will happen to be given' |

Both the prosodic affix analysis and the F/T analysis will have to allow for the fact that RA has alternative locations but can only occur once in a word, a problem that I will not address here (but see Lieber (1980) and Carrier (1979)).

As it turns out, RA is not exclusively an aspectual marker. It appears in certain causative adjectives that are not inflected for aspect at all. Consider the complex derivation of these adjectives. Causative verbs are formed by adding the derivational prefix *ka* to a verb inflected with a TM affix. The new causative *ka* stem itself takes the inflectional prefix *?i-*. Thus, *?i + ka + pa + ?inig* 'cause to tremble' is derived from *ma + ?inig* 'tremble'. Because each such causative verb contains two inflectional affixes, there are two alternative stems to which RA can attach. (43c) and (43d) are both derived by applying RA to (43b).

- (43)
- | | | | |
|---------------|---|-------------------------|--|
| a. ma + ?inig | → | b. ?i + ka + pa + ?inig | { c. ?i + ka: - ka + pa + ?inig }
{ d. ?i + ka + pa + ?i: - ?inig } |
| 'tremble' | | 'cause to tremble' | |

- (44)
- | | | | |
|---------------|---|------------------------|--|
| a. may + hina | → | b. ?i + ka + pa + hina | { c. ?i + ka: - ka + pa + hina }
{ d. ?i + ka + pa + hi: - hina } |
| | | 'cause to become weak' | |

Causative adjectives are formed by prefixing *na+* and RA to the *ka+* verbal stems in (43b) and (44b) without their inflectional prefix *?i+*.

- (45)
- | | | |
|--------------------------|---|--|
| a. (?i +)ka + pa + hina | → | { b. na + ka: - ka + pa + hina }
{ c. na + ka + pa + hi: - hina } |
| 'cause to become weak' | | |

It is clear that these are adjectives and not verbs, because they cannot be varied for tense and aspect and they do not have gerund forms. Thus, RA in such adjectives is not an aspectual marker at all. Yet it seems to be the same RA that marks aspect in verbs and not merely a "homophonous" affix, because the morphological conditions for its attachment are identical to

one TM affix, so they are not the same TM affix itself can be different from other TM affix's inflectional affixes arise:

those for the attachment of aspectual RA. In the adjectives, RA has alternative positions that mirror those of the verb exactly: it can prefix to either of the two inner verb stems, as shown by the occurrence of both (45b) and (45c). If RA is a morpheme, it is a strange one in that its meaning is dependent on the WF it occurs in. It marks aspect in verbs, but when combined with *na+* it forms causative adjectives. In yet a third WF it forms recent perfective verbs in conjunction with *ka+* (e.g., *ka+pag+luto-luto?*/*ka+pa-pag+luto?* 'have just cooked' from *mag+luto?* 'cook'). RA cannot be treated as a meaningless morpheme similar to *ject* (*project, inject, reject*) in English. Such meaningless morphemes are not productive, and even if new words are coined from them, their meanings are not predictable (*??transject*). RA, on the other hand, appears in productive WFs that have regular semantics.

R1 and R2 also both occur in several WFs with different meanings. For example, R2 can convey intensive activity, moderate activity, or extreme recentness in action, depending on its morphological context. It is clear that it is the same R2 in each of these cases. The canonical shape of both of its "allomorphs" and the conditions for choosing between them is repeated in each of these WFs. Furthermore, R2 always attaches to a particular type of root (a point too complex to demonstrate adequately here). So if reduplication is affixation, there are only three reduplicative morphemes, each of which occurs in several WFs and therefore has no meaning.

All three reduplicative morphemes would also be syntactically neutral. As Lieber points out (1980, 161), they never in themselves change syntactic category. For example, R2 attaches to nouns, verbs, and adjectives, carrying over their categories to the derived word:

(46)

- | | | | |
|----------|------------------------------|---|------------------------------------|
| a. Noun: | <i>?intindij</i> | → | <i>?inti-?intindij</i> |
| | 'an understanding' | | 'several small understandings' |
| b. Verb: | (<i>mag+</i>) <i>walis</i> | → | (<i>mag+</i>) <i>walis-walis</i> |
| | 'sweep' | | 'sweep a little' |
| c. Adj: | <i>tahi:mik</i> | → | <i>tahi-tahi:mik</i> |
| | 'quiet' | | 'rather quiet' |

There are bona fide affixes that are syntactically neutral (e.g., English *counter-*), but why should all three Tagalog reduplicative affixes be?

Finally, all three reduplicative affixes would be diacritically neutral. Unlike ordinary affixes, they attach to either member of a morpholexical pair. Additionally, as the discussion of (35) and (36) shows, reduplicative

material is invisible left of reduplicated alternative to its right.

Under the F/T phemes are not retransformations, e on stems in many no independent list syntactic category ments for consider lexical transformation

4. Conclusion

The prosodic form to handle the stem nisms needed ind cannot adequately Tagalog. A pros forms or fails to g plicated material above goes unexp than phonemic tie tactic, and morpho cative affixation wi In one case, a re ordering relation v affixes would inter where words are co apart. In a lexical abandoning the Si ment of reduplicat

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 meanings are not pre-
 rs in productive WFs

ifferent meanings. For
 te activity, or extreme
 cal context. It is clear
 onical shape of both of
 tween them is repeated
 hes to a particular type
 ately here). So if redu-
 tive morphemes, each
 io meaning.

± syntactically neutral.
 themselves change syn-
 , verbs, and adjectives,

understandings?
 walis

neutral (e.g., English
 icative affixes be?
 e diacritically neutral.
 ber of a morphological
 6) shows, reduplicative

material is invisible to morphemes that flank it. An affix immediately to the left of reduplicated material can subcategorize a particular morphological alternative to its right, as though the reduplicated material were not there at all.

Under the F/T analysis, of course, the same three nondescript morphemes are not repeated in WF after WF. Instead, there are three lexical transformations, each one of which is triggered by a feature that can occur on stems in many WFs. Being properties of stems, such features can have no independent listing in the lexicon and therefore can have no meaning, syntactic category, or diacritics. Lieber (1980) gives basically these arguments for considering Umlaut in German as well as Reduplication to be lexical transformations.

4. Conclusion

The prosodic formulation of reduplication is appealing because it appears to handle the stem dependency of reduplication using constrained mechanisms needed independently. However, as I have attempted to show, it cannot adequately handle the stem dependency of R2 reduplication in Tagalog. A prosodic treatment of R2 either generates nonoccurring forms or fails to generate actual forms. Furthermore, the fact that reduplicated material differs from normal affixes in the several ways shown above goes unexplained. Reduplicative morphemes would lack far more than phonemic tiers; they would be completely devoid of semantic, syntactic, and morphological features as well. Also, the interaction of reduplicative affixation with other morphological processes would be exceptional. In one case, a reduplication affixation rule would have a paradoxical ordering relation with another affixation rule. In other cases, reduplicative affixes would intervene between companion morphemes. In a framework where words are constructed by WFRs, this would require splitting WFRs apart. In a lexical structure theory of word construction, it could require abandoning the Subjacency Condition. In fact, then, an affixation treatment of reduplication involves a weakening of morphological theory.

While transformationally formulated reduplication rules are extremely powerful, that power is needed to handle R2 reduplication in Tagalog. However, if such power is reserved for a special subclass of lexical rules and is not available to the word-building subcomponent, the result is a unified explanation for all the characteristics that make reduplication unlike ordinary affixation.

Notes

It might seem redundant to thank the person whom this volume honors and one of the editors. But Morris Halle and Mark Aronoff encouraged me to start working on the problem of reduplication several years ago and have continued their dialogues with me. This paper is in large part a result of those dialogues.

1. See McCarthy (this volume) and references there for full discussion of these principles.
2. McCarthy (1982a) observes that phonological metathesis rules and metathesis rules involved in certain language games require transformational power but notes that there are constraints on metathesis rules. Perhaps there are yet undiscovered and unformalized constraints on transformational copying rules with some natural perceptual basis as well. For example, one possibility might be a principle whereby the output of a lexical rule must bear an easily recognizable relationship to its input.
3. Marantz points out that there are languages that reduplicate entire morphemes, regardless of their phonetic shape, so this possibility must be allowed in any event. Syllable reduplication also exists. Marantz cites David Nash's work on Yidin^y. Languages with this type of reduplication add a morpheme consisting of a morpheme tier and a syllable tier, the other tiers being copied from the stem.
4. It is not possible to save the allomorph solution by saying that the special allomorph is not an M-tier allomorph but a syllable-tier allomorph consisting of two syllable slots (see note 3):



In the only known case of syllable reduplication, that of Yidin^y, the segments copied from the stem retain their syllabification (see Marantz (1982)). Thus, if R2 consisted of a two-syllable syllabic tier, the reduplicated material would mirror the first two syllables of the stem exactly. This is not the case. In *li:nis-li:nis+in* the root-final *s* is syllabified with the third syllable, and therefore we would expect **li:ni-li:nis+in*. Of course *s* is syllabified with the third syllable only through resyllabification triggered by suffixation, so if resyllabification were postcyclic, the syllable allomorph solution might work. It would be revealing to compare this Tagalog case with cases in Yidin^y involving derived syllabification.

5. The following might also be seen to be a problem. Usually the choice between two allomorphs is dictated by a cooccurring morpheme adjacent to the phonological difference between them. For example, the phonological difference between the allomorph *pulah* and its marked variant *mulah* is at the left edge. Not surprisingly, then, a class of prefixes rather than suffixes is marked to take the nonbasic allomorph *mulah*. On the other hand, the difference between *talikod* and its allomorph *talikd* is at the right end; therefore, the nonbasic allomorph is chosen by suffixes. This makes sense, given that allomorphy usually has originated as phonological rules. If R2 is a prefix, it is strange that the choice between its allomorphs is dependent on a phonological property at the opposite side of the stem. Perhaps all

this criticism amount but that the alternative objection is that w between the two a selection of the M- 6. Because he assures Aronoff (1976) as transformations. T ident existence. Sinc not attached by lex 7. Carrier (1979) ju 8. Topic-marking (grammatical or sent sentence.

9. Infixes are only (Carrier (1979)) thi epenthesized with phology do not allo infix metathesis. Ins template of a word, the deeply intruded in a specific positio be linearly defined true for RA Redupl Arabic, are interspe 10. In discussing the such words have al argued for alternati but the meaning of tion concerning th un[[happy]er]. But t *Unhappier* means 'i Lieber's, where wor tion, rebracketing is subcomponent of t hand seems to me to interpreted by any l both of the lexical ordering paradox t fixation of R2 prec another considerat give R2[[sund]in]. I the ordering parad rebracketing to occ realized as *sund*. Fo involves reversing t

this criticism amounts to is saying that most allomorphy originated as phonology but that the alternation between the two variants of R2 did not. But a further objection is that when the stem is *sund+in*, the property relevant to the choice between the two allomorphs is not even in the subjacent morpheme and thus selection of the M-tier allomorph violates the adjacency condition.

6. Because he assumed that reduplication had to be formulated transformationally, Aronoff (1976) assumed that all WFRs, including affixation rules, were in fact transformations. This makes it all the more necessary that affixes have no independent existence. Since I claim that reduplication is not affixation, and that affixes are not attached by lexical transformations, this is no longer a necessary result.

7. Carrier (1979) justifies this formulation of the rule.

8. Topic-marking (TM) affixes are inflectional affixes that register on the verb the grammatical or semantic function of the nominal that is marked as the topic of the sentence.

9. Infixes are only an apparent exception to this generalization. I have argued (Carrier (1979)) that infixes are first added to the outside of the stem and then epenthesized with the first consonant of the stem. Prosodic accounts of morphology do not allow transformational morphological rules such as this proposed infix metathesis. Instead, infixes are preattached to specific slots inside the prosodic template of a word. But even in the prosodic account, the infixes are different from the deeply intruded cases of reduplication referred to above. Infixes always wind up in a specific position on the prosodic template, but there is no fixed position that can be linearly defined on the prosodic template for reduplication. This is especially true for RA Reduplication. Furthermore, infixes, like discontinuous morphemes in Arabic, are interspersed with the phonemic content of another morpheme.

10. In discussing the problem posed by *sundin-sundin*, Marantz (1982) suggests that such words have alternative bracketings. He points out that David Pesetsky has argued for alternative bracketings in cases where affixation requires one bracketing but the meaning of the word depends on the opposite bracketing. A generalization concerning the English suffix *+er* requires that it attach before *un+in* [*un*[[happy]er]]. But the meaning of the word is reflected by the opposite bracketing. *Unhappier* means 'more unhappy', not 'not more happy'. In a system such as Lieber's, where word semantics are determined independently of word construction, rebracketing is a readjustment of structure established by the lexical structure subcomponent of the lexicon for the benefit of a later system of rules. The case at hand seems to me to be quite different. The issue is not how the bracketing is to be interpreted by any later set of rules, but how it reflects the order in which two rules, both of the lexical subcomponent, have applied. The problem is that there is an ordering paradox between these two rules. One consideration requires that prefixation of R2 precede suffixation of *+in*, which would produce [R2[sund]]in. But another consideration requires that *+in* suffixation precede R2 prefixation to give R2[[sund]in]. Rebracketing [R2[sund]]in to give R2[[sund]in] will not solve the ordering paradox, since both affixes must be already present in order for rebracketing to occur. But if this is true, R2 will have already have been incorrectly realized as *sund*. For this reason, the only solution I spell out above is one that involves reversing the order of R2 prefixation and *+in* suffixation. In any event,

if *+in* is present in order for R2 to copy its phonemic melody, it is not clear how a prosodic account incorporating the M-tier solution will avoid generating **li: nisi-li: nis+in*.

11. If infixes are first prefixed and later metathesized into the stem, as I have argued (see note 9), this argument is invalid.

Chapter 14

Continuant Spr Basque, Catalan

At the level of description does not depend on observational level choices at the description level which they are embedded in.¹

Consider, for example, the alternant [g] ~ [ɣ] of Catalan

(1)

There exists a singular structural change [

Once this assumption is involved in determining

Another set of alternants to word-final devoicing as a separate generalization presents some similarities. cannot be adequate process.

Factors that permit a different approach. The process seem to exist in the context of a more particular paper—Basque, Catalan, even within Catalan or another, to Vulgar Latin (see Gulsoy