Reduplication & Verbal Morphology in Tagalog
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1. Describing Tagalog aspectual reduplication
   1.2. Reduplicating first CV of a verbal root yields [+imperfective] form.² (aka future, ‘contemplated,’ ‘unrealized’)
   1.3. Combines with voice/topic marker –um-, to create present³ Examples modified from Rackowski (1999: 4):
      1.3.1. Root: bili ‘buy’
      1.3.2. Future: bibili ‘will buy’
      1.3.3. Present: bumibili ‘is/are buying’
   1.4. Rackowski: RED can optionally attach to any head within vP, that is, lower than the topic marker which is in either AspectP (in the case of actor topic) or a slightly higher VoiceP (other types of topic). Topic markers, from Rackowski (to appear):
      1.4.1. Accusative = verb complement = -in
      1.4.2. Nominative = external argument = -um-
      1.4.3. Oblique (benefactive) = high applicative = ?i-
      1.4.4. Dative = low applicative = -an
   1.6. In the future (‘I will be able to have him buy (something)’), reduplication can attach to one of multiple sites. Examples below from my own elicitation (agreeing with the judgments presented by Rackowski):
      1.6.1. *mama?ipabili (ko)
      1.6.2. ?? ma?i?ipabili
      1.6.3. ma?ipabibili
      1.6.4. ma?ipabibili
   1.7. Refining the analysis:
      1.7.1. Benefactive topic marker can reduplicate (e.g. 1.5.2) when another affix precedes the topic marker.
      1.7.2. Reduplication of pag-, which Rackowski analyzes as a vP transitivity head, is always degraded or illicit, even when a higher vP head (represented here by the telicity marker ka) can be reduplicated:

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¹ First and foremost, thank you to informant Jeff Leopando for being most patient with my repeated questions about strange and complicated verb forms. Thanks also go to Diane Massam, Cedric Boeckx, Morris Halle, and Bert Vaux for helpful comments during the writing of this paper. All faults are of course mine alone.
² Only the first C of a CCV syllable reduplicates, as in (4d) tra --> ta-tra.
³ This is true only for the actor topic voice. We will discuss other voices later.
1.7.3. *mamakapagpahintay (ko) ’(I) will be able to be the one to make another wait for me’
1.7.4. makakapagpahintay
1.7.5. *makapapagpahintay
1.7.6. makapagpapahintay
1.7.7. makapagpahihintay

1.8. Lisa Travis (in prep.) summarizes Carrier (1979): “In Carrier’s account, each syllable is an independent morpheme so that the bisyllabic prefixes in Tagalog are also bimorphemic. Further, reduplication must have one morpheme to its left” (in prep., 73).  

1.9. Travis’s modification: not all morphemes must be monosyllables; magsi- (optional plural agreement) is bisyllabic but monomorphemic. But my informant can reduplicate si in forms beginning with magsi:
   1.9.1. *mamagsipagtrabahoh ‘(some people) will work together’
   1.9.2. magsisipagtrabahoh
   1.9.3. *magsipapagtrabahoh
   1.9.4. magsipagtatrabahoh

1.10. Either the speaker is sensitive to the number of syllables, not morphemes, to the left of the reduplication, or magsi is bimorphemic.

1.11. Possible evidence against syllabic account: 1.5.2 with the second syllable reduplicated is highly degraded. Or maybe this is because reduplicating a topic marker is normally disallowed independent of its position, perhaps owing to its position outside of vP (cf. Rackowski 1999: 2).

2. **A new analysis of optionality**
   2.1. Thus far we have still not explained why pag is not easily reduplicated (e.g., in 1.7.5 and 1.9.3).
   2.2. My proposal: reduplication of pag creates morphological ambiguity.

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4 Though it is not formally noted by Travis, we must stipulate that the first syllable of a root can always reduplicate, even when it is the first syllable in the verbal complex.
2.3. What is *pag*? Travis’s analysis: *pag* takes an intransitive verb and turns it into a causative. Examples below from MacLachlan (1992) by way of Travis (in prep.: 200):

2.3.1. *tumba* ‘X fall down’  
*pagtumba* ‘Y knock X down’
2.3.2. *sabog* ‘X explode’  
*pagsabog* ‘Y scatter X’
2.3.3. *luwas* ‘X go into the city’  
*pagluwas* ‘Y take X into the city’
2.3.4. *sabit* ‘X be suspended’  
*pagsabit* ‘Y hung X’
2.3.5. *sali* ‘X join’  
*pagsali* ‘Y include X’
2.3.6.-------  
*pagluto* ‘Y cook X’
2.3.7. *hiwa* ‘X cut/slice Y’  
*paghiwa* ‘X cut/slice Y’

2.4. Examples in 2.3.2, 2.3.6, and 2.3.7 show the semantics of adding *pag* to a verbal root is not entirely predictable. Some verbs have unpredictable meanings when *pag* is added (2.3.2), some verbs appear *only* with prefixed *pag*, (2.3.6), and some verbs do not change their meanings at all when *pag* is added, (2.3.7). This points to *pag* being a lexical causative “with all its expected idiosyncrasies” (Travis, in prep.: 203).

2.5. A productive causative is also introduced by *pag* (Travis, in prep.: 204ff): by prefixing *pagpa-* onto a verbal stem, even if this stem already contains the lexical causative *pag*. In that case, the lower *pag* (i.e., the lexical causative) is unpronounced. But it is the **higher *pag*** that remains unpronounced in a theme topic form of the verb. Result: an alternation between *papag-* with a theme topic, but *pagpa-* otherwise.

2.6. The *pagpa/papag* alternation complicates reduplication. Since reduplication captures no codas, both *pa* and *pag* reduplicate as *pa*. Logical possibilities for reduplicating combinations of *pa* and *pag*:

2.6.1. *pag* alone: *pa-p*
2.6.2. *pa* alone: *pa-pa*
2.6.3. *papag*: *pa-pa-pa* (*pag* reduplicated)
2.6.4. *pagpa*: *pag-pa-pa* (*pa* reduplicated)
2.6.5. *papag*: *pa-pa-pa* (*pag* reduplicated)
2.6.6. *papag*: *pa-pa-pa* (*pa* reduplicated)

2.7. My informant allows only 2.6.2 and 2.6.4 unhesitatingly. I believe it is not coincidental that only these two sequences are unambiguous with respect to what morphemes are present:

2.8. (2.6.1) could represent reduplication of *pag* or an unreduplicated form with *pa-papag*. (2.6.3) is ambiguous between a construction in which *pagpa* is present with *pag* reduplicated and an illicit *pa-pa-pa* sequence with no reduplication. (2.6.5) and (2.6.6) can only represent *pa-papag*, but they are ambiguous as to whether *pa* or *pag* is reduplicated.

2.9. But none of the forms in (6) are ruled out entirely, perhaps since all of the forms do have at least one licit derivation.

2.10. Now we can explain the four major facts about Tagalog aspectual reduplication:
2.10.1. The first syllable/morpheme can never reduplicate.
2.10.2. Any syllable/morpheme after the first can reduplicate, unless it is a topic marker or pag.
2.10.3. Topic markers cannot reduplicate because they’re outside vP (slightly ameliorated by material in front; maybe an extra vP shell is created).
2.10.4. Pag and pa exhibit exceptional behavior, as described in this section.

3. Significance for phonological theory

3.1. Building on Rackowski’s (1999) analysis, I have argued earlier (Vaux & Samuels, 2004) that the optionality of Tagalog aspectual reduplication constitutes a problem for Optimality Theory (Prince & Smolensky, 1993).

3.2. Two types of optionality (Vaux & Samuels, 2004: 2):
   3.2.1. A word optionally fails to undergo a rule (e.g. some French h-aspiré words)
   3.2.2. A rule applies optionally (e.g. English flapping)

3.3. Two subtypes of 3.2.2:
   3.3.1. Optionality holds over an entire word or phrase
   3.3.2. Optionality is evaluated each time a rule applies

3.4. Two subtypes of 3.3.2:
   3.4.1. It may occur more than once per morpheme with iterative rules
   3.4.2. It may occur more than once per word with cyclic rules

3.5. Rackowski: OT cannot account for the multiple optional sites for reduplication when there are enough morphemes involved to create more than two options for where the reduplication can occur. No possible combination of faithfulness constraints and constraints on the alignment of the reduplicant can capture the optionality. Tableaux below from Rackowski (1999: 26)

3.6. ALIGN(RED, R, ROOT, L) >> FAITH-MS

<table>
<thead>
<tr>
<th>/ma+RED+ ?i+pa+bili/</th>
<th>ALIGN(RED, R, ROOT, L)</th>
<th>FAITH-MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) ma?ipabiibili</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b) ma?ii?ipabili</td>
<td><em>!</em></td>
<td></td>
</tr>
<tr>
<td>c) ma?ipaapabili</td>
<td>*!</td>
<td>*</td>
</tr>
</tbody>
</table>
**Faithfulness to Morphological Structure (Faith-MS):** ‘Morpheme order in the output is identical to morpheme order in the input’

**Alignment of Reduplicant & Root (Align(Red, R, Root, L)):** ‘For all reduplicants, there exists a root such that the right edge of the reduplicant coincides with the left edge of the root’

3.7. No ranking of Align(Red, R, Root, L) and Faith-MS can correctly predict the existence of a form like ma/ipapabili.

3.8. Proposed modifications to classical OT to handle optionality:
underdetermination by constraint set, cophonologies, free ranking, tied constraints, weighted/overlapping constraints, differential constraints, neutralization, different speech registers, etc. (see Vaux & Samuels, 2004: 9 on these and other alternatives). Still, none can account for cases like the Tagalog one, in which there are more than two possible options. This is not just an isolated case; other examples of such phenomena are attested:

3.9. Cockerill (1998): Arabic nicknames are formed using a hypocoristic pattern using a base consonant freely selected from the root:

<table>
<thead>
<tr>
<th>Base</th>
<th>Nicknames</th>
</tr>
</thead>
<tbody>
<tr>
<td>fat a</td>
<td>fuut(a), tuu a, *fuu a</td>
</tr>
<tr>
<td>a urbiini</td>
<td>iir(a), riiba, biina, *biira</td>
</tr>
<tr>
<td>kariima</td>
<td>kiikii, miimii; rimrim, mmir</td>
</tr>
<tr>
<td>salma</td>
<td>suusuu, luuluu, miimii</td>
</tr>
<tr>
<td>adiiga</td>
<td>diidii, giigii</td>
</tr>
</tbody>
</table>

3.10. Another case: s-epenthesis in Dominican Spanish (Núñez Cedeño, 1988):
3.10.1.Ø → s / _s (optional, structure-preserving)

3.11. Underlying form: /abogado/ ‘lawyer’ yields asbogado, abosgado, abogasdo, or abogados, with an /s/ in any available coda position.
4. **Conclusions**

4.1. Overview of aspectual reduplication in Tagalog: optionality of its placement within the verbal complex.

4.2. Complex data led to refining analyses proposed by Carrier (1979), Rackowski (1999), and Travis (to appear).
   
   4.2.1. New analysis that accounts for the unusual behavior of the causative morpheme *pag-*.  

4.3. Implications of optionality in reduplication for Optimality Theory: multiple possible sites of reduplication in Tagalog cannot be generated.

5. **References**


