Reduplication in Optimality Theory: Evidence from Amis

Fang, Zhi-wei and Li, Thai-yen

1. Introduction

Reduplication is one of the principal means of word-formation in Austronesian languages. Despite this, it has received little explanatory attention. This paper aims to discuss reduplication in Amis\(^1\) spoken in Taiwan, and addresses issues of the Optimality Theory (OT, Prince and Smolensky, 1993; McCarthy and Prince, 1995).

As a word formation device which involves phonological processes, reduplication has been a major subject of interest in the domains of both morphology and phonology (Chang, 1997:273). This paper argues that the various reduplicative patterns of Amis are better characterized by re-ranking of universal constraints under OT.

OT relies on the notion of constraint ranking to choose between a theoretically infinite number of possible output forms generated from an input. It is not necessary for an output form to satisfy every constraint; the only stipulation is that it must satisfy the constraints better than any other possible candidate, i.e. it must be optimal. Within this framework, Correspondence Theory (McCarthy and Prince, 1995) is a recent development and has its most well-known applications in reduplication. Therefore, the reduplicative forms in Amis will be carefully examined under the assumptions of this approach.

The rest of this paper is organized as follows. Section II describes that the multiple types of the reduplication in Amis. Section III provides an analysis on different reduplicative patterns through the OT approaches. Section IV summarizes the main explanation presented in this paper and illustrates the schematic interactions of constraint hierarchies.

2. Types of Reduplication in Amis

From a phonological viewpoint, "the special property of reduplication is that the reduplicative affix is not fully specified for segmental content" (Kager, 1999:194). The reduplication patterns in Amis can be classified into two main types. Each type has various patterns with different lexico-semantic functions or distinct phonotactic structures.

2.1 Prefixal Reduplication

Prefixal reduplication denotes a situation where a reduplicative constituent is placed before or in front of the base. This section introduces four types of prefixal reduplication exhibited in Amis. Types I and II involve complete reduplication\(^2\) of the base, while types III and IV involve partial reduplication. The data in this paper come from Huang (1988:31-34) and

\(^1\) Amis is one language of the Austronesian language family, which is spoken in the east plains and coast between Hualian and Taidong in Taiwan, having a population of 140,000. There are five dialects in Amis language: Northern Amis (Nanshi Amis), Central Amis (Haian Amis and Hsiukan Amis), Tavalong-Vataan (Kuangü), Southern Amis (Peinan Amis and Hengchun Amis), and Chengkong-Kuanshan (Wu, 2000:37). This paper is focused on the Central Amis dialect.

\(^2\) Complete reduplication has been defined by Crystal (1987: 90) as "a type of compound in which both elements are the same...". This definition may be successfully applicable to complete reduplication. However, attention should be drawn to the fact that compounding occurs normally at the word level whereas complete reduplication is basically at the morphemic level. The difference, which is mainly theoretical, is still worthy of note.
As for special plurality, this is a type of pluralization which is more specific in that it expresses the concept of a universal semantic feature increased, which in turn is amalgamated with the semantic unit of the base form.  

### Syllable Repetition

In addition to prefixal repetition, there is also a major class of the reduplicated

<table>
<thead>
<tr>
<th>Type</th>
<th>Base</th>
<th>Repetition</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>suni</td>
<td>su-ni-pu-si</td>
<td>‘many teachers’</td>
</tr>
<tr>
<td>Type II</td>
<td>wawa</td>
<td>w-a-wa-si</td>
<td>‘children’</td>
</tr>
<tr>
<td>Type III</td>
<td>sami</td>
<td>s-a-mi-pa-si</td>
<td>‘often’</td>
</tr>
<tr>
<td>Type IV</td>
<td>lona</td>
<td>lo-na-lo-pa-si</td>
<td>‘full of trees’</td>
</tr>
</tbody>
</table>

The theory predicts that the semantic feature increases in intensity if the meaning unit is increased. For example, the feature ‘increased’ is expressed in the form ‘increase in intensity’ if the meaning unit is increased.

### Notes
- Type I: The reduplicated form is used to express plurality, especially when the noun is in direct contact. By contrast, Type II is used when the noun is not in direct contact. In Type III, the reduplicated copies all the last consonant of the base. The initial consonant of the reduplicated form follows the fixed vowel [a], whatever the vowel of the base. The whole form is then elongated with the semantic unit of the base form.
- Type IV: The reduplicated form is used to express special plurality, such as ‘many X’s’, where X is a noun or a pronoun. The reduplicated form follows the fixed vowel [a], whatever the vowel of the base. The whole form is then elongated with the semantic unit of the base form.

### Further Reading
forms in Amis named suffixal reduplication. In this reduplication, one or two syllables are suffixed to the base which may lose its final consonant. The multiple types of suffixal reduplication can be illustrated as below:

5 Type I

<table>
<thead>
<tr>
<th>Base</th>
<th>Reduplication</th>
</tr>
</thead>
<tbody>
<tr>
<td>niaro?</td>
<td>niaro-aro?</td>
</tr>
<tr>
<td>romi?ad</td>
<td>romi?a-mi?ad</td>
</tr>
<tr>
<td>hala fin</td>
<td>hala fi-lafin</td>
</tr>
<tr>
<td>tiliji</td>
<td>tiliji-lijji</td>
</tr>
</tbody>
</table>

'every tribe'  
'every day'    
'very long (time)'  
'to hate extremely'

(6) Type II

<table>
<thead>
<tr>
<th>Base</th>
<th>Reduplication</th>
</tr>
</thead>
<tbody>
<tr>
<td>tan jkuj</td>
<td>tan ku-nkuj</td>
</tr>
<tr>
<td>kah na</td>
<td>kah na-hna</td>
</tr>
<tr>
<td>dan jka</td>
<td>dan ka-nka</td>
</tr>
<tr>
<td>paw li</td>
<td>paw li-wli</td>
</tr>
</tbody>
</table>

'dong-gua piles'  
'many red objects'  
'sesames piles'  
'every bunch of bananas'

(7) Type III

<table>
<thead>
<tr>
<th>Base</th>
<th>Reduplication</th>
</tr>
</thead>
<tbody>
<tr>
<td>tar ak</td>
<td>tar ak-tak</td>
</tr>
<tr>
<td>mar as</td>
<td>mar as-mas</td>
</tr>
<tr>
<td>fal at</td>
<td>fal at-fat</td>
</tr>
</tbody>
</table>

'to fall'  
'to flutter'  
'to flash'  
'look like falling'  
'look like fluttering'  
'look like glittering'

Most of the suffixal reduplication bear the meaning of intensity or plurality. Type I shows that the duplicated part must be disyllabic, thus triggering the base to avoid coda in reduplicated forms. The lexico-semantic function of this reduplication type is generally to convey the degree adverb while the bases are nouns, adjectives or verbs. Secondly, Type II demands that the duplicated part be monosyllabic while the base is disyllabic, and the reduplicant should tolerate the complex onset. As for lexico-semantic properties, this special type of reduplication generally has the plural meaning of nouns. In Type III, the reduplicant is also monosyllabic and undergoes some truncated process. The reduplication forms denoting the adverbial phrases are derivatives of verbal bases. It is obviously that Type I demonstrates that trisyllabic bases have disyllabic reduplicants regardless of their different lexico-semantic function, but Type II and Type III exhibit the absolute correspondence between the form and function through distinct reduplicative processes.

It should be noted that both Type I and Type II may be regarded to infixal reduplication by the rule-based approach. For example, the reduplicant of niaroaro? may be derived from the infix [-aro-] rather than the suffix [-aro?]; the reduplicant of tan jkuj may be derived from the infix [-ku-] rather than the suffix [-kuj]. However, they are viewed as the suffixal reduplication with different phonotactic formation. One the one hand, in Amis grammar, there are few infixes\(^5\) bearing semantic function, and the infixal reduplication is an indefinable derivation by the rule-based approach. On the other hand, the suffixal patterns can be better accounted for than the infixal ones by the constraint-based approach. This argument will be discussed in the following section 3.2.

\(^5\) According to Wu (2000:53-54), there are only two infixes which can be affixed to the stem, one is -um- carrying agent focus of verbs or nouns, another is -in- conveying specific nominal formation.
Correspondence Theory

The basic model of Correspondence Theory is illustrated as follows:

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Correspondence Theory is the part of OT that accounts for the relations between two strings, such as hold between a base and its correspondents.

Given two strings S and S', correspondence is the relation α from the elements of S1 to those of S2. Elements a and b are referred to as correspondents of one another when a/b.

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