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Yami Reduplication[1]

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This study aims to investigate Yami reduplication based on the Morpheme Doubling Theory (MDT). Two major types of reduplication are identified: full and partial reduplication. Under the MDT model, C*a*-reduplication is classified as a subtype of partial reduplication, whereas rightward reduplication is a type of full reduplication. In addition, reduplication can be analyzed either as infixation or prefixation depending on the patterns of morphophonemic alternation. Most reduplication occurs in word stems; however, there are cases that target prefixes.

The core meanings expressed by Yami reduplication can be categorized into three major processes: (1) consecutive: plurality (collectivity, quantification, distributivity, plurality of participants) and repetition/continuation (spatial extension, habituative, progressive, imperfective, locative alternation), (2) cumulative: intensification, comparison, diminution, and (3) non-iconic: attenuation and imitation/fakeness.

Key words: Yami, reduplication, Morpheme Doubling Theory (MDT), patterns, meanings

1. Introduction

There have been a plethora of studies on reduplication in Formosan languages in the past decade (e.g., Chang 1998, Adelaar 2000). With the exception of Saaroa and Kanakanavu, most of the Formosan reduplication patterns have been investigated.

Zeitoun and Wu (2005) have recently initiated a survey of Taiwan Austronesian reduplication patterns. Their effort, albeit extensive in the coverage of Formosan languages, will benefit from including data from Yami, a Batanic branch of the Philippine languages spoken on Orchid Island, thus allowing for a more comprehensive study.

This paper aims to fill the gap by providing an analysis of Yami reduplication based on the data from the authors' collaborative work over a decade. We begin with a brief discussion of the phonology of Yami, followed by a detailed discussion of the two patterns of reduplication: full and partial, which have also been recognized in Formosan (Zeitoun and Wu 2005) and Philippine languages (e.g., Wolff et al. 1991). Next, two analyses based on infixation and prefixation are proposed to account for the

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patterns of reduplication, which may target either stems or prefixes. Finally the core functions of reduplication in Yami are illustrated with examples.

The description of reduplication patterns follows Inkelas and Zoll's Morphological Doubling Theory (MDT) (2005). In this model, reduplication is a morphological construction, which involves semantic identity rather than phonological copying. By adopting this approach, prefixation and infixation can be clearly distinguished and reduplication patterns can be neatly accounted for. In addition, rightward reduplication (Chang 1998) can be treated as a subtype of full reduplication, as suggested by several previous studies (e.g., Li and Tsuchida 2001, Blust 2003, Lee 2005, Zeitoun and Wu 2005).

2. Yami phonology[2]

2.1 Inventory of consonants and vowels

There are twenty consonants (Table 1), four vowels, and four diphthongs (Table 2) in Yami. All the symbols in the tables represent standard Yami orthography[3]. The IPA symbols, whenever different from the orthography, are placed in square brackets.

Table 1. Inventory of Yami consonants

	Labial	Alveolar	Retroflex	Palatal	Velar	Uvular	Glottal
Stop	P, b	t	d		k, g		’ [ʔ]
Fricative	v [v, f]		s [ʂ]			h [ʁ]	
Nasal	m	n			ng [ŋ]		
Liquid		l	r [ɻ]				
Affricate				c [tʃ], j [dʒ]			
Trill		z [ř]					
Glide	w			y			

[2] The details of Yami phonology are treated in Rau and Dong (in press).

[3] The Yami Christian Churches adopted an orthography to translate the New Testament. Li (1992) proposed a different version as a preliminary attempt to standardize the Austronesian language alphabets in Taiwan. The Ministry of Education (MOE) of the Republic of China adopted a standardized version in 2002, based on the authors' proposal, as a guideline for materials development. The Yami orthography adopted in this paper may differ slightly from the most current standardized MOE version of the Yami orthography.

Table 2. Inventory of Yami vowels

	Front	Central	Back
High	i		
Mid		e [ə]	o [ʊ] ~ [u] ~ [o]
Low		a	
Diphthong	ay, aw[4], oy, iw		

2.2 Syllable structure

The canonical syllable structure in Yami is (C)V(C). No consonant clusters are allowed except when the syllable onset contains a glide (CG)V(C)[5], *adoa* [a.dwa] vs. *doa* [dú.a] or when a geminate consonant (C)V(CC)V(C) occurs, e.g., *oppa* 'hen'. The vowels /i/ and /o/ are interpreted respectively as glides /y/ and /w/ in tautological syllables and in roots when /i/ and /o/ are not stressed, e.g., *siam* [syam] 'nine', *ziak* [zyak] 'word, speech', *rios* [ryos] 'bathe', *boak* [bwak] 'split wood', and *koat* [kwat] 'boiling hot'.

2.3 Monosyllabic bound roots undergoing vowel epenthesis in reduplication

There is a type of monosyllabic bound root that undergoes vowel epenthesis in reduplication. It contains consonant clusters in the bound roots that violate the canonical syllable structure, e.g., *-bhes* 'throw a stone at someone'. The bound roots are either prefixed with *a-* in the imperative form, e.g., *a-gcin* 'Go down!' or inserted with the mid central vowel /e/ to derive new words in reduplication, e.g, *b**e**he-b**e**hes-an* (< *-bhes*) 'throw stones at someone'. However, if the root contains a round vowel /o/, the inserted vowel is also /o/ in reduplication, as in *mi-d**o**-dpon-an* (< *-dpon*) 'pile up'. The feature [+round] is observed in the vowel harmony. More examples are illustrated in Table 3.

[4] The nucleus of the diphthongs /ay/ and /aw/ is centralized, raised or monophthongized, beginning in the northern part of the island, Iraralay, and spreading to the east, Iranmilek and Ivalino (Li and Ho 1989, Rau 1995), e.g., *mangay*: [maŋəy] ~ [maŋiy] 'go', *araw*: [aɻəw] ~ [aɻuw] 'sun'. Only a few lexical items on the west coast, Imowrod and Iratay, have been affected by this change, such as *alilikey* 'all very small' and *mangani̱hey* 'scary'. However, this sound change in the north has developed into a chain shift, in that the front vowel /i/ in some lexical items is lowered and diphthongized, e.g, *mi* 'go' becomes [məy].

[5] The postconsonantal onglides should probably be analyzed as moraic, as proposed by Huang (2005) to account for the representation for Isbukun onglides. In other words, the glide is analyzed as part of the nucleus instead of the onset. This issue is beyond the scope of this paper; however, it is definitely worth another phonological study in the future.

Table 3. A-prefixation and vowel insertion in reduplicated forms of monosyllabic roots with consonant clusters

Gloss	Bound form	a-prefixation	Inserted /e/ or /o/ in reduplicated form
throw stone at someone	-bhes	**a**-bhes	b**e**he-b**e**hes-an
pile up	-dpon	**a**-dpon	mi-d**o**-dpon-an[6]
go down	-gcin	**a**-gcin	mi-g**e**-gcin
put aside	-ptad	**a**-ptad	mi-p**e**ta-p**e**tad

Lexicalized reduplication[7], e.g., *dehdeh* 'foreigner', *kadkad* 'scratch an itch', does not undergo any vowel insertion in the root, and will not be discussed any further in this paper[8].

3. Patterns of reduplication

There are two major types of reduplication in Yami: full reduplication and partial reduplication.

3.1 Full reduplication

Full reduplication copies the first two syllables of the base, without the coda if there is one. In the MDT model, full reduplication is reinterpreted as the shape of a daughter node that undergoes truncation to retain only two syllables of the output without the coda. It can be further classified into four types according to its reduplicated syllable structure: 1) CV.CV, 2) CV.CV-, 3) CV.V-, and 4) V.CV-, as illustrated in Table 4.

[6] There is a variation between [e] and [o] in *mi-do-dpon-an* 'pile up', but so far we have not been able to find a counterexample that indicates insertion of [o] is not possible before a bound root with a round vowel.

[7] Lexicalized reduplication refers to a fossilized process of full reduplication of monosyllabic roots.

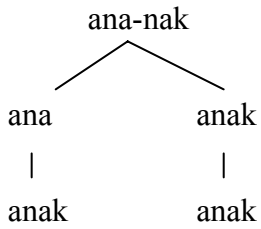
[8] Other examples of lexicalized reduplication include: *bokbok* 'fall over', *bakbak* 'hit', *cikcik* 'smash something (usually a head) with a stone', *desdes* 'rub', *golgol* 'bald', *loslos* 'slide down', *mekmek* 'grind into powder', *nosnos* 'string something together', *pikpik* 'pat', *pagpag* 'typhoon', *royroy* 'pus', *samsam* 'sweep', *sadsad* 'kick', *tedted* 'cut with a two bladed tool', *vivi* 'lip', *wakwak* 'kill', and *zikzik* 'shiver.'.

Table 4. Examples of full reduplication of the base

Syllable type	Examples
CV.CV	*rako-rako* 'bigger', *sozi-sozi* 'anger, fuming', *vato-vato* 'stones, *tapi-tapi* 'planks', *baka-baka* 'cows', *lima-lima* 'hands', *tao-tao* 'people, totem'
CV.CV-	*toko-tokon* 'mountains everywhere', *ciri-ciring* 'language', *zipo-zipos* 'relatives'
CV.V-	*koi-kois* 'pigs', *sao-saolin-in* 'back and forth'
V.CV-	*ananak (ana-anak)*[9] 'children', *avavang (ava-avang)* 'toy boat', *angangayan (anga-angay-an)* 'place one goes regularly', *onewned (one-oned)*[10] 'deep in the heart', *obowbotan (obo-obot-an)* 'place where one defecates', *ineynapo (ina-inapo)* 'ancestors', *ovowvan (ova-ovan)* 'gray hair', *avwavong (avo-avong)* 'shadows'

In the MDT model, the stem *anak* 'child' is first doubled to provide inputs for the two daughters. Daughter 1 undergoes deletion of its coda (NoCoda >> IO-Faith) and the reduplicated mother node also undergoes merger of the two identical vowels in an unstressed syllable to form *ananak* 'children', as illustrated in (1).

(1)



Full reduplication is by no means restricted to duplicating the reduplicant only once. There are examples (e.g., *ma-kato-kato-toing* 'contagious') that demonstrate the possibility of duplicating the reduplicant up to twice. This will be further analyzed as a type of infixing reduplication in 4.1.

[9] One of the identical vowels *a* is deleted.

[10] When two vowels are juxtaposed in reduplication, they are diphthongized as follows:
eo→ ow, ew: *on<u>e-o</u>ned* 'deep in the heart'→ *on<u>ow</u>ned*, *on<u>ew</u>ned*
ao→ ow: *ot<u>a-o</u>ta* 'vomit'→ *ot<u>ow</u>ta*, *ov<u>a-o</u>van* 'gray hair'→ *ov<u>ow</u>van*, *op<u>a-o</u>pag-en* 'pound, hit'→ *op<u>ow</u>pagen*
ai→ ey: *in<u>a-i</u>napo* 'ancestors' → *in<u>ey</u>napo*, *is<u>a-i</u>sana* 'hotels' → *is<u>ey</u>sana*, *il<u>a-i</u>lamdam-en* 'test, sound out'→ *il<u>ey</u>lamdamen*
oa→ wa: *av<u>o-a</u>vong* 'shadows' → *av<u>wa</u>vong*
oo→ ow: *ob<u>o-o</u>bot-an* 'place where one defecates' → *ob<u>ow</u>botan*

3.2 Partial reduplication

Partial reduplication involves the reduplication of the first syllable of the base with or without the coda. In the MDT model, partial reduplication is reinterpreted as the shape of a daughter node that undergoes truncation to retain only one syllable of the output with or without the coda. It can be further classified into four types according to its reduplicated syllable structure：1) CV-, 2) C*a*-, 3) CVC-, and 4) V- , as illustrated in Table 5.

Table 5. Examples of partial reduplication of the base

Syllable type	Examples
CV-	*so-soli* ‘taros’, *to-tozok* ‘fork’
C*a*-	*pa-pira* ‘how many (human beings), *ra-roa* ‘two (human beings)’
CVC-	*kag-kagling* ‘a herd of goats’, *lak-laktat* ‘illness, nasal mucous’, *sey-seyked-an* ‘place where a boat is beached’
V-	*o-oyod-an* ‘plate for fish that women are allowed to eat’, *i-irasan* ‘oar rack’

C*a*-reduplication can be considered a subtype of CV- reduplication, where the vowel of the first syllable of the reduplicated form is changed to /a/, as in *pa-pira* ‘how many (human beings)’ or *ra-roa*[11] ‘two (human beings)’. As discussed in Blust (1998), it usually occurs in numbers to indicate plurality for humans, as shown in (2)[12].

(2) ya pa-pira o ka-kteh mo?
AUX C*a*-RED-many NOM Co-sibling 2S.GEN
ya ra-roa sira kaka a mehakay.
AUX C*a*-RED-two 3P.NOM older.sibling LIN male
‘How many brothers and sisters do you have? I have two older brothers.’

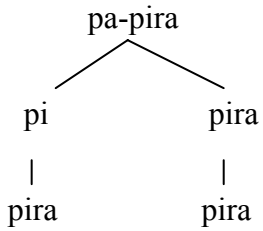
Let us take *pa-pira* ‘how many human beings’ for example. In the MDT analysis, the stem *pira* ‘many’ is first doubled to provide inputs for the two daughters. The cophonology of the first daughter retains the first syllable CV (i.e., *pi*), whereas the

[11] *raroa* is derived from *adoa* ‘two’. /d/ is weakened into /r/ intervocalically, e.g., *adoa*→ *aroa*→ *roa*.

[12] AF: agent focus, AUX: auxiliary, CON: conjunction, EXCL: exclusive, GEN: genitive, IF: instrumental focus, NOM: nominative, LIN: linker, P: plural, RED: reduplication, S: singular, SV: stative verb, 1: first person, 2: second person, 3: third person.

mother node undergoes a change of the vowel of the first syllable from /i/ to /a/ (i.e., *pa-pira*), as illustrated in (3). Under this analysis, C*a*-reduplication is really nothing but a subtype of partial reduplication.

(3)



Partial reduplication, like full reduplication, does not restrict itself to duplicating the reduplicant only once. Examples of double reduplication, such as *ma-te-te-teneng* 'understand even better', will be analyzed further in 4.1. C*a*-reduplication, as a subtype of partial reduplication, is no exception in this regard.

The reduplication of the initial C*a*-syllable in the following examples in (4) is done twice, as in *tey-ra-ra-roa* 'two in a group'. The concept of 'in a group of such and such a number' is expressed by adding *tey-* to the reduplicated stem. More examples are provided in (5)-(6).

(4)

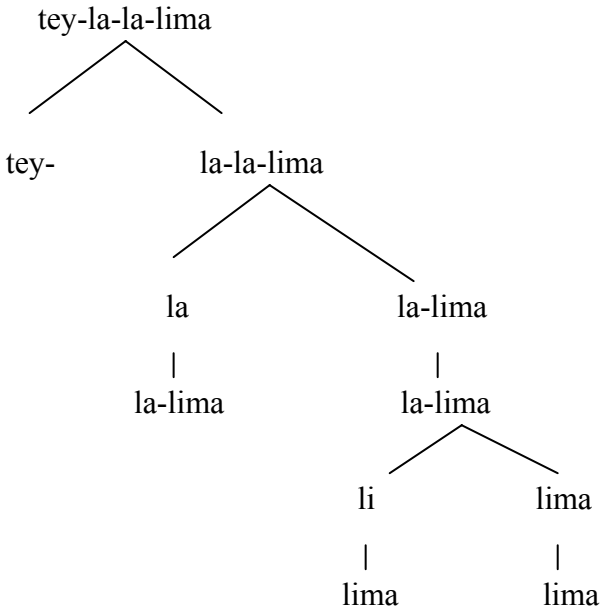
Group of two	Group of three	Group of four	Group of five	Group of six
teyrararoa	*teytatatilo*	*teypapapat*	*teylalalima*	*teynananem*

(5) tey-la-la-lima kamo a somdep.
group-RED-C*a*-five 2P.NOM LIN <AF>enter
'Come in in groups of five.'

(6) namen tey-pa-pa-pito do asa aka mibetbet.
1P.NOM.EXCL group-RED-C*a*-seven LOC one CON fishing.boat
'We have seven people to a fishing boat.'

In the MDT model, *tey-la-la-lima* 'five in a group' is composed of three constructions: truncation, reduplication, and prefixation. The cophonology of the mother node *la-lima* is a change of vowel from /i/ to /a/, as illustrated in (7).

(7)



4. Infixation and prefixation

In the previous section, we discussed the two types of reduplication in terms of the number of syllables involved in reduplication (i.e., partial vs. full). There are also two types of reduplication in terms of the position of the "reduplicant" within the base (root or stem): i.e., infixation vs. prefixation, following Blust's (2003) and Zeitoun and Wu's (2005) definitions. Contrary to Lee's (2005) argument that the paradox of directionality and base-reduplicant locality could be eliminated in the MDT approach, the preservation of infixation and prefixation in our analysis is necessary to account for the Yami data, as discussed in the following paragraphs.

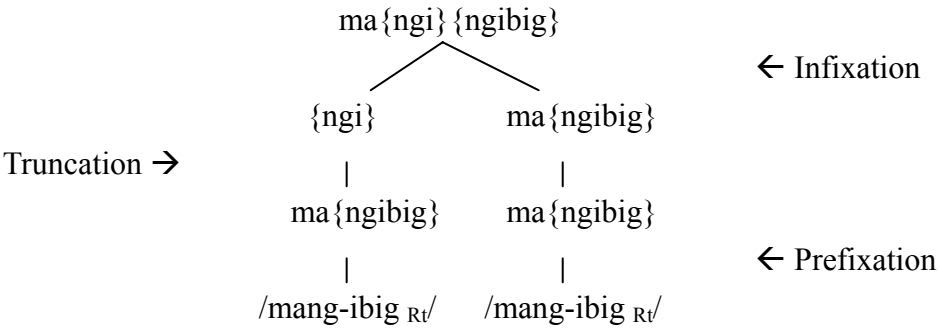
Prefixation is defined as prefixing the reduplicant to the stem, as shown in all the previous examples in (1), (3), and (7), whereas infixing reduplication is defined as infixing the reduplicant between the prefix and the base. Most doubling of stems with prefixes, e.g., *mi-, ma-, maN-, ka-, a-*, can be neatly analyzed as infixation, as discussed in 4.1 and 4.2, but there are other cases involving the prefix *paN-/maN-* that should be either analyzed as prefixation or infixation depending on their morphophonemic alternations, as discussed in 4.3. Although most of the examples of reduplication analyzed in the following sections target the stems, there are also cases of reduplication that target prefixes, which is taken up in 4.4.

4.1 Infixing reduplication: Second syllable reduplication

The second syllable reduplication in Tagalog was convincingly analyzed as

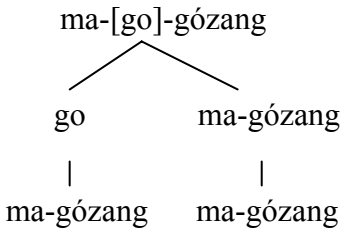
infixation instead of prefixation in the MDT model (Inkelas and Zoll 2005:183-185). The following example (8) *mangingibig* 'suitor' from Inkelas and Zoll (2005:185) serves as a good example. This structure is composed of three independent constructions: prefixation, truncation, and reduplication. This example shows that Tagalog reduplication truncates the word *ma{ngibig}* to the first CV of the Proot, i.e., *{ngi}*, a morphological root plus a preceding prefix-final consonant to serve as a syllable onset, where needed. Thus, doubling of onsets and of nasal fusion in Tagalog reduplication (e.g., *pa-mu-mutul* 'a cutting in quantity', *na-ngi-ngisda* 'is/are going fishing') supports the infixation plus normal application analysis over the prefixation plus backcopying analysis.

(8) Tagalog example (adapted from Inkelas and Zoll 2005)



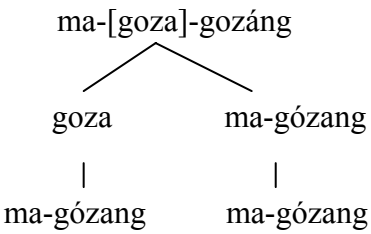
The same analysis can be applied to the Yami data. The following examples involve infixation of the reduplicated stems with intransitive prefixes in Yami. Let us contrast *ma-go-gózang* 'all thin' with *ma-goza-gozáng* 'thinner'. The infixation of partial reduplication indicates collectivity, whereas the infixation of full reduplication indicates comparative degrees[13], as illustrated in (9a) and (9b).

(9a)



[13] Comparatives can also be formed by prefixing *ka-* after full reduplication, e.g. *ka-tava-táva no kois nio.* (very-RED-fat + GEN + pig + 2.P.GEN) 'How fat your pigs are!'

(9b)



A comparison between comparatives and collectivity is illustrated in (10). The stem of comparatives is stressed in the last syllable (e.g., *a-pia-piá* 'better'), whereas the collectivity is stressed in the penultimate syllable (e.g., *a-pi-pía* 'all good'). More examples are provided in (11)-(12).

(10) Comparisons of comparatives with collectivity

Stem	Comparatives	Intensification/Collectivity
apía 'good'	*a-pia-piá* 'better'	*a-pi-pía* 'all good'
matáva 'fat'	*ma-tava-tavá* 'fatter'	*ma-ta-táva* 'all fat'
anáro 'long'	*a-naro-naró* 'longer'	*a-na-náro* 'all long'
masári 'dark'	*ma-sari-sarí* 'darker'	*ma-sa-sári* 'all dark'
malóit 'dirty'	*ma-loi-loít* 'dirtier'	*ma-lo-lóit* 'all dirty'
másngen 'near'	*ma-snge-sngén* 'nearer'	*ma-sé-sngen* 'all near'

(11) ko ma-tava-tava aka ni kaka.
1S.NOM SV-RED-fat CON GEN older.sibling
'I am fatter than my older sister.'

(12) namen ma-ta-táva sira kaka.
1P.NOM.EXCL SV-RED-fat NOM.P older.sibling
'We sisters are all fat.'

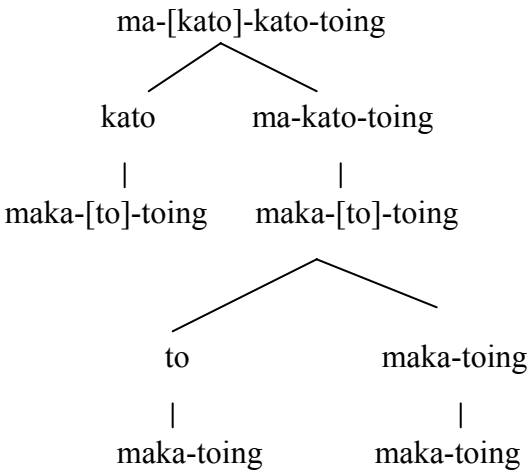
Although most of the examples we have discussed so far involve second syllable reduplication, this does not assume that the prefix before the "reduplicant" is monosyllabic. There are many examples of infixing reduplication in Yami involving prefixes of various shapes and meanings, e.g., *ipi-[zi]-ziak* 'reason to speak', *icia-[ma]-mavakes* 'women as a peer group', *maka-[pi]-pia* 'can improve', *mala-[pe]-pseng* 'smells like something was burned', *mapa-[kza]-kza* 'love to show off', *masi-[zaka]-zakat* 'kill each other', *mika-[za]-zakat* 'died one by one', *mipa-[ra]-rakeh* 'getting older and older', *maci-pa-[ngao]-ngaop* 'gather salt together', *mapaka-[zaka]-zakat* 'pretend to be dead', *mapika-['ing]-'ingn-en*[14] 'cause

[14] *mapika-'ing-'ingn-en* is derived from the root *ingen*. The /e/ of the last syllable is elided in the

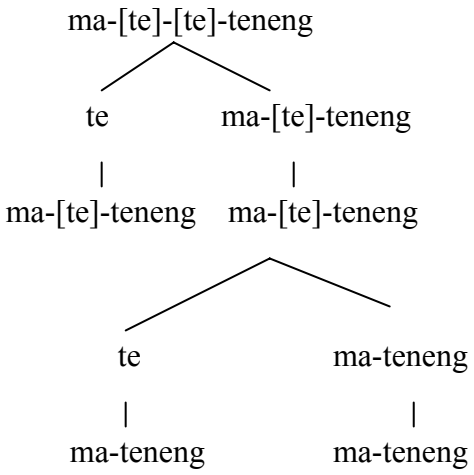
to have aches and pains'. All the above examples can be analyzed as infixing reduplication.

As mentioned in 3.1 and 3.2, reduplication is not restricted to duplicating the reduplicant only once. The phenomenon can be easily accounted for by infixing reduplication in the MDT model. The examples of *ma-kato-kato-toing* 'contagious, spread around' and *ma-te-te-teneng* 'understand even better' are illustrated in (13) and (14), respectively. Example (13) involves a reanalysis of the intermediate mother node from *maka-to-toing* to *ma-kato-toing*. The reduplication that targets prefixes will be discussed in 4.4.

(13)



(14)



4.2 Infixation of the reduplicated stem with *a*-prefix

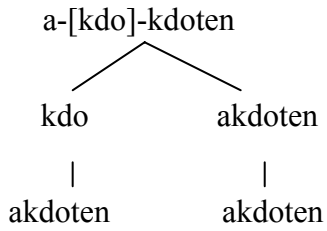
The monosyllabic bound root (See 2.3) is prefixed with a semantically empty

word formation process due to its lack of stress.

morpheme *a-*[15] to form a new stem. The reduplication of the second syllable can be easily analyzed as infixation in the MDT.

For example, *a-[kdo]-kdot-en* 'pinch a little' is derived from the cophonologies of the two daughters with the same stem *a-kdot-en* 'pinch something', as illustrated in (15). The semantically empty stem-forming morpheme *a-* is prefixed to the bound root *-kdot* 'pinch' to form a legitimate syllable structure CV.CVC (*ak.dot*) and suffixed with a transitive morpheme or patient focus *-en*. The first daughter undergoes truncation and retains the first C.CV of the stem. The output of the first daughter is then infixed in the second syllable of the mother node to form *a-[kdo]-kdot-en*. Therefore, the so-called "rightward reduplication" (Chang 1998) is no longer necessary and can be classified as a type of full reduplication.

(15)



The same infixation analysis can be applied to other similar examples, such as *a-[kbe]-kbeng-en* 'press a little', *a-[dka]-dkan-an* 'kiss', *a-[sle]-slet-an* 'lock', and *a-[sde]-sdep-an* 'entrance'.

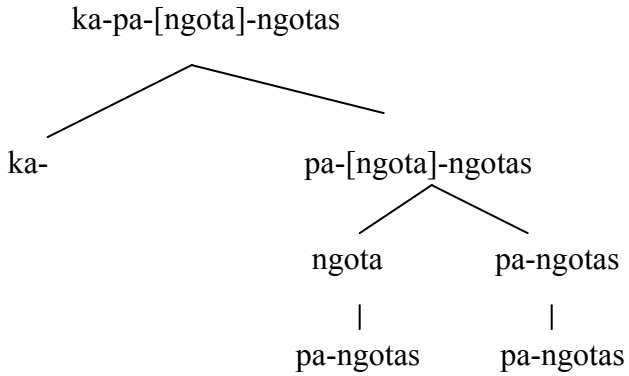
4.3 Infixing vs. prefixing reduplication with *paN-*

Next, we will examine a case of reduplication with the prefix *paN-*[16], which involves both infixation and prefixation, depending on its morphophonemic alternations. There are two ways for *paN-* 'distributed' to be reduplicated and added to the root. It can be first added to the root *kotas* 'pick leaves' to form a new stem *pangotas*. After truncating the prefix and the coda, the first daughter is infixed to the mother node to form *pa-[ngota]-ngotas* 'one keeps picking leaves'. The prefix *ka-* 'then, afterwards' is then added to the mother node to form *ka-pa-ngota-ngotas* 'then one keeps picking leaves', as illustrated in (16).

[15] The semantically empty stem-forming prefix *a-* should be distinguished from the inflectional *a-*, which is the subjunctive form of the derivational prefix *ma-* to form a stative verb.

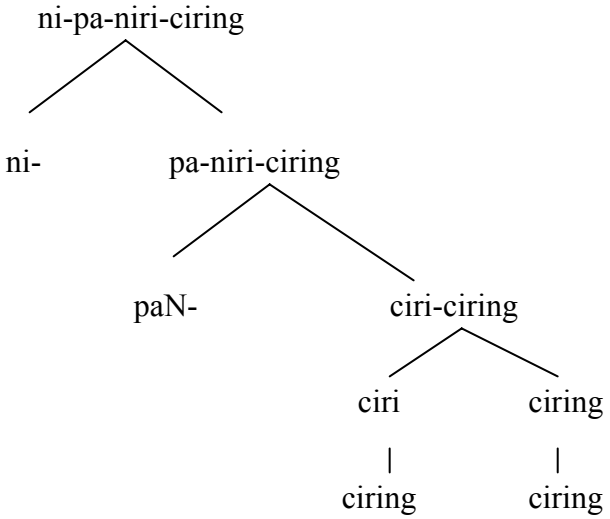
[16] *N-* is an assimilatory nasal, the phonetic feature of which depends on the feature of the following segment.

(16)



However, the second way cannot be analyzed as infixation, but rather as prefixation because the morphophonemic alternation triggered by *N-* does not affect the second daughter. The root *ciring* 'word' is first reduplicated to form the new stem *ciri-ciring* 'words, language'. Then prefix *paN-* is added to *ciri-ciring* to form another new stem *pa-niri-ciring* 'curse'. Then the prefix *ni-* 'perfective' is added to form *ni-pa-niriciring* 'already cursed', as in (17).

(17)



4.4 Reduplication targeting prefixes

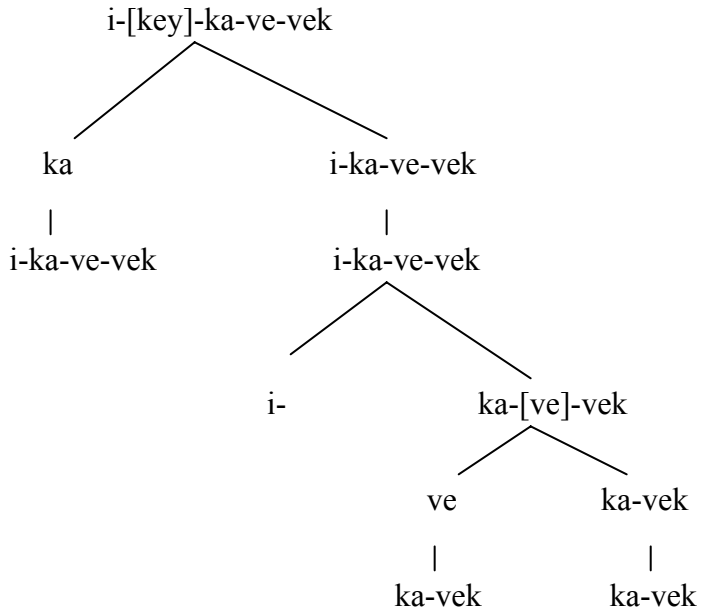
Most of the examples we have discussed so far involve reduplication targeting stems. In the MDT model, reduplication of the prefix can also be neatly analyzed as infixation in Tagalog (e.g., *i-ka-katakbo* 'will cause to run', *i-pa-paglinis* 'will clean for', and *ma-ka-kahalata* 'will notice'). However, examples of reduplication targeting the prefix in Yami can be analyzed either as infixation or prefixation depending on the locality of the prefix. In the following dicussion, we will examine

three cases: (1) infixed reduplicant, (2) reanalyzed prefix plus stem, and (3) prefixed reduplicant.

4.4.1 Infixed reduplicant

In examples such as, *i-[key]-ka-rahet na* 'getting even worse' (*i- 'IF', ka-* 'stative', *rahet* 'bad', *na* '3SGEN'), and *i-[key]-ka-ve-vek* 'to try even harder' (*i- 'IF', ka-* 'stative', *avek/-vek* 'make an effort'), the infixed reduplicant *[key]* undergoes a change of vowel from /a/ to /ey/. An analysis of *i-[key]-ka-ve-vek* 'to try even harder' is provided in (18).

(18)



4.4.2 Reanalyzed prefix + stem

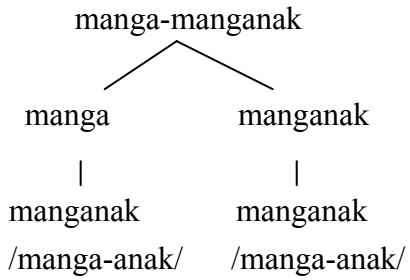
Other examples of infixation targeting the reanalyzed prefix and stem, e.g., *ma-[kato]-kato-toing* 'contagious', *ma-[kawa]-kawalam* 'many people chat together' (*ka-* 'co-', *walam* 'rest'), have been discussed in (13).

4.4.3 Prefixed reduplicant

The rest of the examples, targeting prefixes such as *ni-* 'perfective' in *ni-ni-ahap* 'everything that has been taken away' or *manga-* 'many' in *manga-manga-(a)nak no kakteh* 'cousins' (*manga-* 'many', *anak* 'child', *no* 'GEN', *kakteh* 'cousin'), can be analyzed as prefixation. Example (19) is an illustration of how *managa-manganak* is

analyzed. The cophonologies of the two daughter nodes merge the two identical /a/ vowels to form *manganak*. The first daughter undergoes truncation and retains only the first two syllables of the stem *manga-* before it is prefixed to the mother node to form *manga-manganak*.

(19)



5. Core meanings of reduplication

The core meanings expressed by Yami reduplication, following Moravcsik (1978) and Kiyomi (1995), can be categorized into three major processes: (1) consecutive: plurality (collectivity, quantification, distributivity, plurality of participants), and repetition/continuation (spatial extention, habituative, progressive, imperfective, locative alternation), (2) cumulative: intensification, comparison, diminution, and (3) non-iconic: attenuation, and imitation/fakeness. In Table 6, the reduplicated forms are preceded by roots/stems and followed by the meaning(s) of the reduplication. The nuances of the meaning of the reduplicated form are a combination of reduplication and derivational affixes. In some cases there is overlap between the meanings, so assignment of an example to one class or another is somewhat arbitrary. A list of the derivational affixes occurring in this paper can be found in the appendix.

Table 6. Examples of reduplication

Base (< Root)	Gloss	Reduplication	Gloss	Meaning
manileb (< acileb)	overlook	mang-aci-acileb	1. overlook (a broader area) 2. person who overlooks regularly	1. spatial extension 2. habituative
angsa	fish for old people	mala-a-angsa	1. smell like angsa fish (plural) 2. smell like angsa	1. plurality 2. distributivity

			fish all over	
anig	sorry	mang-ani-anig	show courtesy constantly	repetition/ continuation
pangarilawan (< arilaw)	a heart of compassion	1. mang-ari-arilaw 2. pang-ari-arilaw-an	1. show compassion many times or toward many people 2. compassion	repetition/ continuation
miatot (< atot)	fart	mi-ato-atot	fart repeatedly	repetition/ continuation
mahattaw (<attaw)	float	ma-atta-attaw	Floating	repetition/ continuation
mangavay (<avay)	scold	ma-nga-ngaváy-in	like to scold, scold constantly	repetition/ continuation
avay	scold	mipa-ngava-ngavay	grumbling about, exploding	repetition/ continuation
awat	swim	mi-aw-awat	swimming (with repeated strokes)	repetition/ continuation
mabáyo (<bayo)	stingy	ma-ba-bayo	all stingy	collectivity
mabáyo (<bayo)	stingy	ma-bayo-bayo	stingier	comparison
abo (<bo)	no	mika-bo-bo	disappear one by one	distributivity
máboang (<boang)	get used to	ma-boa-bóang	mingle more easily	comparison
boang	get used to	maka-bóa-boang	sociable, get used to gradually	collectivity
macíglang (<ciglang)	hard, firm	ma-ci-cíglang	all hard, firm	collectivity
micilan (<cilan)	corn, callus	mi-ci-cilan	develop a corn, with a protruding corn	imperfective
cilat	lightning (n.)	mi-ci-cilat	lightning (v.)	repetition/ continuation
cimoy	rain	mi-cimo-cimoy	getting rained on	repetition/ continuation

cimoy	rain	mipa-cimo-cimoy	getting rained on purposefully	repetition/ continuation
micinedkeran (<cinedkeran)	build or own a big boat	mi-ci-cinedkeran	big boat building	repetition/ continuation
cipa	spit	mi-ci-cipa	keep spitting	repetition/ continuation
cipa	spit	ipi-ci-cipa	reason to spit or feel disgusted	repetition/ continuation
mideket (<dket)	stick togther	mi-de-deket	all stick together (three or more)	plurality of participants
mangeb (< eb)	squat inside and look out	ma-nge-ngeb	squatting inside and looking out	progressive
méhma (<'ema)	soft	ma-'e-'éma	all soft	collectivity
macipaganam (<ganam)	join a dance	macipa-gana-ganam	join a dance troup	plurality
gilo	bent	mi-gi-gilo	in a bent shape	imperfective
pitagilo (<gilo, tagilo)	bend something	pi-ta-tagilo-en	cause something to be bent or change shape	imperfective
magozang (< gozang) [1]	thin	ma-goza-gozang	thinner	comparison
mgozang (<gozang)	thin	ma–go-gózang	all thin	collectivity
ingen	hurt, painful	mapa-ley-leyngen	cause someone to have a lot of pain or trouble	intensification
ingen	hurt, painful	mika-'inge-'ingen	become ill one after another, become ill all over	distributivity
ingen	hurt, painful	mapika-'ing-'ingn-en	cause someone to have aches and pains	intensification

ingen	hurt, painful	mapaka-'inge-'ingen-en	pretend to be ill	imitation/ fakeness
itkeh	sleep	ma-'it-'itkeh-en	like to sleep	intensificaton
itkeh	sleep	mika-'it-'itkeh	fall sleep one after another	distributivity
itkeh	sleep	mapaka-'it-'itkeh	pretend to sleep	imitation/ fakeness
izay	badge, emblem	mapaka-iza-izay	pretend to be great and powerful	imitation/ fakeness
kadkad	scratch	mi-ka-kadkad	scratching all over	distributivity
kanen (<kan)	food	maci-ka-kan-en	beg for food	plurality
macipangaop (<kaop)	join in a group to grab	macipa-ngao-ngaop	join in a group to gather salt	repetition/ continuation
makarang (<karang)	tall	ma-ka-kárang	all tall	collectivity
karo	leave	mika-karo-karo	leave one after another	distributivity
mikawaz (<kawaz)	plane (v.)	mi-ki-kawaz [2]	a person who does planing as a job	habituative
macipangayo (<kayo)	join in a group to cut wood	macipa-ngayo-ngayo	join in a group to cut wood regularly	repetition/ continuation
-kcin	hungry	maci-ke-kcin	cry from hunger everywhere	intensification/ distributivity
makeleh (< keleh)	have body odor from the armpit	mala-ke-keleh	smell badly like body odor from the armpit	attenuation
kevet	shrivel, wrinkled	mi-keve-kevet	shrink (into a ball)	imperfective
kezdas	chop down	mi-ke-kezdas	holding a sickle	imperfective
kezen	shrink	mi-keze-kezen	become shrunken	imperfective
akna (<kna)	to fish	mi-kena-kena	to fish from the boat	repetition/ continuation

mákoat (<koat)	burning hot	ma-koa-koat	hotter	comparison
-kza	like	mapa-kza-kza	love to show off	comparison
lagaraw	fish name	maci-la-lagaraw	join a group to fish for lagaraw (pl.)	plurality
malaktat (<laktat)	have a runny nose	mi-la-laktat	blowing one's nose	repetition/ continuation
laktat	snot, disease	maka-la-laktat	cause to have a disease	repetition/ continuation
malavang (<lavang)	white (adj.)	ma-lava-lavang	whiter	comparison
lavang	white color	mika-lava-lavang	to have white spots everywhere	distributivity
lavi	cry	ma-lavi-laví-in	love to cry	intensification
lavi	cry	ka-lavi-laví-in	crybaby	intensification
lavi	cry	mi-lavi-lavi	keep crying	repetition/ continuation
lavi	cry	mika-la-lavi	all cry one after another	distributivity
málaw (<law, alaw)	worry	ma-la-láw-en	get anxious easily	intensification
lektek	fall down	mika-lek-lektek	all fall down one after another	distributivity
likod	back	mi-liko-likod	back to back	plurality of participants
likod	back	maci-li-likod	complain about backaches	intensification
likod	back	mipa-liko-likod	turn one's back on	imperfective
liman	fight to kill	mi-li-liman	have a fist fight	repetition/ continuation
maciliman (<liman)	engage in a fight	maci-li-liman	engage in a group fight	plurality of participants, collectivity

lingay	turn one's head to look	ipi-ling-lingay	take someone sightseeing, reason to go sightseeing	repetition/ continuation
litod	bend	mi-li-litod	on bended knee	imperfective
lovot	gather	mapi-lovo-lovot	assemble	repetition/ continuation
iciamavakes (<mavakes)	as a member of a group of women	icia-ma-mavakes	as members of a group of women	plurality
metdeh	child	icia-me-metdeh	as members of a group of children	plurality
mamiying (<miying)	keep laughing	ma-miyi-miyíng-en	love to laugh	intensification
miying	laugh	mi-kam-kamiying	laugh out loud	intensification
pimoan (<moa)	place to grow something	pi-moa-moa-an	orchard, place to grow various things	repetition/ continuation, location
nangwa	fall over backwards	mika-nang-nangwa	fall over backwards one after another	distributivity
navak (<avak)	middle	macipa-nava-navak	to be located in the middle	imperfective
mangay (<ngay)	go	ma-nga-gay	go regularly	repetition/ continuation
ngebngeb	put the whole mouth in the water to drink	mi-nge-ngebngeb	putting the whole mouth in the water to drink	imperfective
mingina (<ngina)	trade	mi-ngina-ngina	trading	repetition/ continuation
ngina	price	maci-ngina-ngina	go shopping	repetition/ continuation
kanngeten (<nnget)	covered with sweat	ka-nnge-nngét-en	get sweaty easily	intensification

noma	first	macipa-noma-noma	to be ranked high, closer to the front	comparison
malaobot (<obot)	feces smell	mala-o-obot	smell a little like feces	attenuation
mioli (<oli)	go home/return	mi-oli-oli	going back and forth	locative alternation
opta	fall flat	mika-'op-'opta	fall flat on the ground one after another	distributivity
ota	throw up	m–otow–ta (< ma-ota-ota)	throw up (repeatedly)	repetition/ continuation
otab	bubble	mi-ota-otab	bubble up	imperfective
maóya (<oya)	angry	ma-oya-oyá-en	get angry easily	intensification
oya	angry	mi-oya-oya	very angry	intensification
oya	angry	ipi-oya-oya	reason to be very angry	intensification
macipangoyot (<oyot)	engage in lot drawing	macipa-ngoyo-ngoyot	engage in lot drawing (regularly)	repetition/ continuation
paid	fan (v.)	ipi-pai-paid	fan (a tool)	repetition/ continuation
mápaw (<paw)	light (not heavy)	ma-pa-paw	lighter	comparison
pia, apía	good	ka-api-apia-an	a better place	comparison
kapian (< pia)	good	ka-pi-pia-an	a good place (all good)	collectivity, location
makapía (< pia)	do something well	maka-pi-pia	can be improved, all can do well	collectivity
mikaposing (< posing)	to tear	mika-posi-posing	rip to shreds	distributivity, intensification
-pseng	burned rice	mala-pe-pseng	smell a little like something was burned	attenuation

mipetad (< ptad)	fall with a thunk	mi-peta-petad	sit on the floor and kick constantly, throw a tantrum	repetition/ continuation
maráhet (< rahet)	not good	ma-rahe-rahet	worse	comparison
karahetan (< rahet)	a bad place	ka-rahe-rahet-an	a place with thistles, a dangerous place, not as good a condition	comparison, location
rahet	not good	mika-rahe-rahet	make a mess, destruction everywhere	distributivity
manráhet (<rahet)	cause to feel troubled	man-rahe-rahet	love to talk behind one's back (not as good)	comparison
rahet	not good	mapika-rahe-rehet	cause destruction	comparison
rakeh	old	icia-ra-rakeh	as a member of a group of old people	intensification
rakeh	old	mipa-ra-rakeh	getting older and older	intensification
macirakep (< rakep)	wrestle	maci-ra-rakep	engage in group wrestling	plurality of participants
raten	prohibited	mi-ra-raten	sinful, evil	intensification
sakeb	lie down face down	mi-sa-sakeb	lying face down	imperfective
saki	wine	mika-saki-saki	all get drunk, get drunk one after another	distributivity
masaray (< saray)	happy	ma-sa-sáray	all happy	collectivity
misazap (< sazap)	face to face	mi-saza-sazap	face to face (three or more)	plurality of participants
misazap (< sazap)	face to face	mipa-saza-sazap	facing	imperfective
misinmo (< sinmo)	meet, get married	mi-sin-sinmo	meet, get together (three or more)	plurality of participants

mapisinmo (< sinmo)	cause to get together	mapi-sin-sinmo	assemble, prepare	plurality of participants
siring	speak	pa-niri-siring-en	spokesperson, leader	repetition/ continuation, habituative
-snek	shameful	macipa-se-snek	cause to be very ashamed	intensification
soli	bad-tempered, sensitive	ma-soli-solí-in	get emotional easily	intensification
sozi	fierce appearance	mapaka-sozi-sozi	pretend to be fierce	imitation/ fakeness
spi	broken	mika-spi-spi	broken everywhere	distributivity
taci	urine	mi-taci-taci	urinate everywhere, urinate involuntarily	repetition/ continuation
taci	urine	mala-ta-taci	smell a little like urine	attenuation
tagala	with the mouth open	mi-ta-tagala	facing up with the mouth open	imperfective
tana	soil	mi-tana-tana	make pots	plurality/ quantification
mitangay (< tangay)	face each other, put in front	mi-ta-tangay	lying face up	imperfective
pitangtang (< tangtang)	pound	pi-ta-tangtang	tool used to pound, pound on it! (a command)	repetition/ continuation
tangtang	pound	mi-ta-tangtang	forge	repetition/ continuation
tao	person	icia-ta-tao	as a member of a group of human beings	collectivity
tarek	same	mapika-tare-tarek	to classify	repetition/ continuation

matava (< tava)	fat	ma-ta-táva	all fat	collectivity
matava (< tava)	fat	ma-tava-tava	fatter	comparison
tava	fat	maka-ta-tava	cause to be fat	collectivity
teleh	deaf	maka-te-teleh	deafen	collectivity
maténeng (< teneng)	smart	ma-te-téneng	all smart	collectivity
maténeng (< teneng)	smart	ma-tene-teneng	smarter	comparison
tog	upside down	mipa-to-tog	being upside down	imperfective
toing	spread a disease	maka-to-toing	contagious	collectivity
toki	hit with a fist	mi-toki-toki	hitting one another with fists	plurality of participants
toklay	hop on one foot	mapaka-tok-toklay	pretend to be crippled	imitation/ fakeness
mitoknoz (< toknoz)	slam into each other	mi-tok-toknoz	slam into one another (three or more)	plurality of participants
mivahay (< vahay)	reside	mi-va-vahay	having a cave	imperfective
macivahay (< vahay)	live in someone's house	maci-vaha-vahay	get married (to a man)	plurality (of houses)
vait	measure one's power with	maci-vai-vait	engage in power-measuring everywhere or regularly	distributivity, repetition/ continuation
mivalang (< valang)	sunny	mi-vala-valang	sunbathing	imperfective
pamaod (< vaod)	cause to be tied up	pa-ma-maod-an	jail	collectivity, location
mivazay (< vazay)	work (n., v.)	mi-vi-vazay [3]	work regularly, regular work	repetition/ continuation

vekeh	grain, swell	mi-ve-vekeh	lump, swelling	imperfective
vekeh	grain, swell	mika-veke-vekeh	full of lumps all over	distributivity
mivera (< vera)	wash, scrape	mi-vera-vera	wash plates	repetition/ continuation
visang	spread apart two feet	mi-vi-visang	with two feet spread apart	imperfective
vongtot	a smell of rotten food, rancid	mala-vo-vongtot	smell a little like rotten food	attenuation
vota	blind	maka-vo-vota	can cause blindness	collectivity
maciwalam (<walam)	engage in chatting	maci-wa-walam	engage in chatting everywhere	distributivity
wari	younger sibling	ma-wari-warí-in	caring very much for one's younger siblings	intensification
yala	basket	mika-yala-yala	one basket after another	distributivity
miyangay (< yangay)	the same	mi-ya-yángay	all the same	collectivity
miyowyaw (< yowyaw)	play	mi-yo-yowyaw	wander around, to play everywhere	distributivity
mazakat (< zakat)	dead	ma-zaka-zakat	half-dead, to be dead many times	diminution, repetition/ continuation
makazakat (< zakat)	deadly	maka-za-zakat	can cause death	intensification
zakat	kill	masi-zaka-zakat	engage in killing	intensification, plurality of particiapants
zakat	kill	mika-za-zakat	die one after another	distributivity
zakat	kill	mapaka-zaka-zakat	pretend to be dead	imitation/ fakeness
mizavoz (< zavoz)	mix two together	mi-zavo-zavoz	mix more than two together	plurality

kazdan (<-zda)	a place where waves are temporarily high	ka-ze-zda-an	a place where waves are always high	repetition/ continuation, habituative
ziak	speech sound	ipi-zi-ziak	reason to speak	repetition/ continuation
zicik	crack	mika-zici-zicik	become cracked everywhere	distributivity
zingzing	shake	mi-zi-zingzing	shake one's hand or one's leg many times	repetition/ continuation
zipos	relative	ma-zipo-zipós-en	maintain a very good relationship with one's relatives	plurality, intensification
zipos	relative	ka-zipo-zipós-en	have harmony with one's relatives	plurality
mazóay (< zoay)	beautiful	ma-zoa-zoáy-in	like to look beautiful, show off	intensification
zoay	glory, beautiful	mapaka-zoa-zóay	pretend to look beautiful	imitation/ fakeness

[1] /l/ and /z/ are variants, i.e., magolang ~ magozang 'thin'

[2] mikikawaz varies with mikeykawaz 'a person who does planing'.

[3] The infixed reduplicant is vi- instead of va- in mi-vi-vazay 'to work regularly'.

6. Conclusion

This paper has presented data and analysis of Yami reduplication based on the Morpheme Doubling Theory (MDT). We have shown that reduplication is essentially a doubling of identical stems to express iconicity. There are only two types of reduplication in Yami: full reduplication and partial reduplication. In the MDT model, C*a*-reduplication is classified as a subtype of partial reduplication, whereas rightward reduplication is a type of full reduplication.

We have also presented evidence to show that reduplication involving the prefix *paN-* can be analyzed either as infixation or prefixation depending on the patterns of morphophonemic alternations. Although most reduplication occurs in word stems,

there are many cases that target prefixes.

Finally, we have demonstrated that a stem is reduplicated to express several core functions in Yami: plurality, repetition/continuation, intensification, comparison, diminution, attenuation, and imitation/fakeness.

For future studies, an analysis of the relationship between stress shift and reduplication will be necessary. With the detailed data in Table 6 and other data in Rau et al. (2005), this paper has paved a way towards future investigation in that direction.

Appendix

A list of Yami derivational affixes with their meanings

Affix	Gloss
icia-	fellow such and such who share the same features or fate
ikeyka-	even more so
ika-	feel such and such because …
ika-	ordinal number
ipi-	multiple number
ka-	company, as…as, abstract noun
ka-	and then, just now, only
ka-	stative verb prefix reappearing in forming transitive verbs
ka- (reduplicated root)	very
ka- (reduplicated root)	animals named after certain features
ka-…-an	common noun
ma-…-en	love to do such and such
mapaka-	pretend to be such and such
mapi-	do such and such as an occupation
mi-/mala-	kinship relationships in a group of two or three
mika-/mapika-/ipika-	all, gradually, one by one
mala-	taste or look like…
mipa-	getting more and more…
mipipa-	even more…
mapi-/mapa-/pa-…-en/ipa-	causative verbal affixes
ni-	perfective
ni- … na	superlative
noka-	past
noma-	future (remote)
sicia-	present
sima-	future (proximal)
tey-	direction
tey-	very, too
tey-（reduplicated root）	amount allocated to each unit

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達悟語重疊現象

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本研究從「語素重疊理論」角度探討達悟語重疊現象，發現達悟語基本上呈現兩種主要重疊模式：「整體重疊」和「部分重疊」。依此理論，「C*a*-重疊」可歸類爲部分重疊，而「向右重疊」可分析爲整體重疊。其次，重疊現象還可依詞音位變化形式，分成「中綴式重疊」和「前綴式重疊」兩類。大部分重疊現象發生於詞幹，但亦有少數例子發生於詞綴。

達悟語由重疊現象所產生之核心語意，大致可分爲三大類：（一）逐步語意（包括複數、集合、分佈、重複、延續、進行、狀態、習慣、反復），（二）累積語意（包括強化、比較、弱化），和（三）非象形語意：（包括稍微、假裝）。

關鍵詞：達悟語、重疊現象、語素重疊理論、模式、語意