

The so-called reduplication with fixed segmentism in Korean revisited*

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Hyung-Soo Kim. 2005. The so-called reduplication with fixed segmentism in Korean revisited. *Studies in Phonetics, Phonology and Morphology* 11.2. 119-146. This paper reanalyzes the so-called reduplication with fixed segmentism cases in Korean and shows, inter alia, that the fixed segmentism occurring in examples such as, *talkak/talkatak* “rattling” is not of the phonological type as previously claimed but of the morphological type. The arguments for this emendation regarding the type of fixed segment are based on three findings: 1) the suffixes that occur with the fixed segment are affixational in origin; 2) the proposed TETU ranking based on Place Markedness Hierarchy does not really work, due to its inability to choose /t/ over other coronals, while its revision with addition of the Sonority Cline Constraints of Lombardi (2003) results in a ranking paradox; 3) The complementary distribution, cited also as evidence for the phonological nature of the fixed segment is not phonologically conditioned. In addition, I examine the relevant issues in the diagnostics for the reduplicative fixed segmentism given by Alderete et al. (1999) with a detailed comparison of the fixed segmentism types in Nancowry and Korean. Some suggestions for origins of the reduplicative suffixation are given, comparing their explanatory adequacy with that of the Optimality Theory. (Jeonju University)

Keywords: Korean phonology and morphology, reduplication, markedness hierarchy, Optimality Theory, fixed segmentism, TETU, exaptation

1. Introduction

This paper purports to show that the so-called fixed segmentism in Korean reduplication is not of the phonological type as previously claimed but rather of the morphological type, being affixational in origin. There are many issues that have to be addressed to support this claim, including 1) the distinction between the phonological and the morphological type of fixed segmentism and its diagnostics, as proposed by Alderete et al. (1999), 2) the previous analyses, including C-W. Chung (1999) and Y-M. Yu Cho (1999), whose arguments for the phonological fixed segmentism in Korean are based on the concepts of TETU ranking, /t/ as the default consonant in Korean, and the complementary distribution of the conditioning environments between the regular partial suffixing reduplication and the so-called fixed segmentism type, and 3) the patterns of sound symbolism

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reflected by affixation of various suffixes in reduplicated and sound symbolic words. But before we get into the details of these issues, it is perhaps incumbent, as a preliminary background, to present the general outline of research on Korean reduplication, as there have been diverse lines of analysis, reflecting the complexity of the issues involved in reduplication and its sound symbolic patterns in Korean.

We may begin, then, with the following examples of reduplicated and sound symbolic words in Korean, around which the research I am going to summarize is centered:

(1) Data for some sound symbolic and reduplicated words in Korean:¹

a. Partial reduplication with repetition of final CVC:

<u>base</u>	<u>reduplicated form</u>	
culuk	culu-luk	“sound of rain falling”
asak	asa-sak	“crisp”
t’aliŋ	t’ali-liŋ	“ringing”
otok	oto-tok	“with a crunching sound”
ucik	uci-cik	“with a crack”

b. Sound symbolic words extended by suffixes of *-tVK*

<u>base</u>	<u>suffixed form</u>	
talkak	talka-tak	“with a click”
talkaŋ	talka-taŋ	“with a clang”
chalpʰak	chalpʰa-tak	“squelching”
chalkhak	chalkha-tak	“with a snap”
thalphak	thalphā-tak	“with a splash”
walkhak	walkha-tak	“with a jerk”
chəlpəŋ	chəlpə-təŋ	“with a plop”
k’ul’ək	k’ul’ə-tək	“gulping”
ciłphək	ciłphə-tək	“with a squash”
p’ikək	p’ikə-tək	“creaking”
pəlləŋ	pəllə-təŋ	“on one’s back”
chals’ak	chals’a-tak	“with a slap”

c. Sound symbolic words with nonreduplicative suffixation of *-CVK*

<u>base</u>	<u>extended by suffixes</u>	
t’alkil	t’alkilaŋ	"rattling"
t’əlkił	t’əlkiłək	"rattling"
k’omcil	k’omciłak	"budging"
k’umul	k’umulək	"moving slowly"
ulkił	ulkiłak	"colorful"
mancił	manciłak	"fumbling"
məŋkič	məŋkičak	"moping around"
məmus	məmučək	"hesitating"
kəčhił	kəčhičək	"hampering"

¹ Throughout the paper, *C* stands for consonant, *V* for vowels, *K* for velar consonants /k/ and /ŋ/. Thus the suffix *-tVK* abbreviates as many as four suffixes, i.e. *-tak*, *-tək*, *-taŋ*, and *-təŋ*.

k'upus	k'upucəŋ	"rather bent"
mik'in	mik'itəŋ	"slippery"

(1a) is the 'regular' partial suffixing reduplication, which repeats the final CVC, or, depending on your point of view, the final CV (with the final velar consonant of the base extrametrical) of the base. Generally speaking, there are three conditions for this partial reduplication:

- (2) Conditions on partial suffixing reduplication in Korean
- a. The base, if it is to end in a consonant, should end in one of the velar consonants, /k/ or /ŋ/.
 - b. The reduplicating syllable of the base should have one of the coronal consonants, /t, c, s, or l/, as its onset.
 - c. All the syllables preceding the reduplicating syllable must be light.

The first condition, (2a), also applies to monosyllabic bases, e.g. *p'ay* → *p'apay* "with a bang", while the second and third conditions (2b) and (2c) apply only to polysyllabic bases. Previously the reference to syllable lightness in (2c) has been made only for the syllable directly preceding the reduplicating syllable, but I have tightened the condition so that it could include all the pre-reduplicating syllables, for all the examples of partial reduplication I have examined conform to this amended requirement.

Much has been said of the examples in (1b), that they are peculiar compared to those in (1a), in that they appear to repeat the final CVC (or CV) of the bases just as in (1a) but with a notable difference: the initial onset consonant of the repeated syllable is always /t/. For this reason, many previous analyses have analyzed them as 'reduplication with fixed segmentism,' drawing on the analysis of Alderete et al. (1999). One of the arguments often used to define these examples as a case for reduplicative fixed segmentism has been that the conditioning environments of (1a) and (1b) are in complementary distribution, (1a) occurring when the pre-reduplicating syllables of the base are all light and the onset of the reduplicating syllable is coronal but (1b) only when one of the pre-reduplicating syllables is heavy or the onset of the reduplicating syllable is noncoronal. We will closely examine this issue of complementarity below.

Examples in (1c) may be called cases of nonreduplicative affixation because unlike those in (1b) there is no imaginable way to subsume them under the rubric of partial suffixing reduplication. Despite this obvious character, a proper analysis is not easy, because of the questions they raise concerning the underlying forms of stem and suffix. For example, J-H. Jun (1994) gives *talkil* as the base for *talkilak*, analyzing it as derived from **talkil-lak*, by his rule of 'Metrical Weight Consistency' (MWC hereafter), which drops the base-final consonant /l/ to keep the number of metrical feet as minimal as in the base. But C-W. Kim (1998), who also regards *talkil* as the base, thinks that what is involved here is not MWC but simple

affixation: **talkil-ak*. What these analysts have not taken into account, however, are words such as *talkak/talkatak* in (1b), which are etymologically related to these sound symbolic words, making the matter much more complicated than initially thought. A correct analysis of the thematic and affixal structure of the forms in (1c) is thus a complex matter, which I have dealt with in a separate paper (cf. H-S. Kim in preparation). In this paper, I will only draw on their analysis insofar as it relates to explanation of the reduplicated and the so-called fixed segmentism cases in (1a) and (1b), ignoring most irrelevant examples.

In the following, I will briefly summarize how the above three groups of examples have been treated in the previous analyses: the underlying representations, rules and constraints, the problem of explanatory adequacy, and how they compare with one another.

1.1 Comparison of previous analyses

Generally speaking, we could divide the previous analysis of the examples in (1) into three groups.² The first group, which forms the majority, regards (1a) and (1b) as CV-infixing (internal) reduplication but (1c) as simple affixation. Belonging to this camp are the analyses of M&P (1986), Davis and Lee (1996), S. Kim (1996), J-H. Kim (1997), O-M. Kang (1998), C-W. Chung (1999) and Y-M. Yu Cho (1999). The theoretical base is Prosodic Morphology (M&P 1986) and Optimality Theory (OT hereafter) (Prince and Smolensky 1993). The main assumption is the extrametricality of base-final velar consonants, /k/ and /ŋ/, which makes the reduplications in (1a) and (1b) not as suffixing but infixing, or internal, as M&P preferred to call. Thus: *culuk* → *culu-lu-k*, *talkak* → *talka-ta-k*. Various claims of TETU have been made by analysts working with the framework of OT, regarding the repetition of the unmarked CV syllable in (1a) and (1b), which include S. Kim (1996), J-H. Kim (1997), Kang (1998), Chung (1999), Cho (1999), while the last two analysts have claimed TETU for the appearance of the fixed segment in (1b).

The second group thinks of (1a) as regular reduplication of final CVC of the base but (1b) and (1c) as emphatic suffixation of a dummy CVC syllable. Belonging to this camp are the analyses of C-K. Suh (1993), J-H. Jun (1994), S-C. Ahn (2000 a & b) and H-Y. Lee (2003). The main difference with the first group is that instead of the extrametricality of the final velar consonant of the base, they argue for ‘Metrical Weight Consistency,’ or in Suh’s case, ‘Weight Complementarity,’ for all the groups in (1). Thus: *culuk* → **culuk-luk* → *culu-luk*, *talkak* → **talkak-tak* → *talka-tak*, and *talkil* → **talkil-lak* → *talki-lak*. No claims of TETU have been made, even though some of the analysts have been working under OT

² See C-W. Kim (1998) for another look at the past analyses cited here. Absent from the list of previous analyses is Y-S. Kim (1984), which could be with the first group, except that it is based on the framework of CV phonology.

and Correspondence Theory, using constraints such as *Ident (ft)* (Ahn 2000 a & b) and *Dep-OO(foot)* (Lee 2003). While this appears to achieve unified analysis in that the three diverse groups of examples are brought under the analysis of MWC, it is beset with problems, many of which have been pointed out by the analysts in the first group: 1) many of its structural assumptions are doubtful, such as assuming mora as the basic unit despite lack of evidence for Korean (unlike Japanese) being a moraic language, assuming tense and aspirate consonants as geminates carrying a moraic weight even in the onset position, and regarding Korean as having the iambic foot type despite the general tendency of initial stress, 2) it has many exceptions, e.g. *sokon-tak*, *tətim-cək*, and *cumul-lək*, where the base-final consonants fail to drop, 3) it cannot handle partial prefixing reduplications such as *t'ekul* → *t'ekt'ekul*, where the base has only one foot but the reduplication two feet, i.e. not *ϕt'ete'kul*.³

Finally, belonging to neither groups and thus isolated from both is the analysis of H-S. Kim (2003, 2004, and this paper), who assumes (unlike the first but like the second group) reduplication of the final CVC of the base for the examples in (1a) but simple affixation of suffixes of the type *-tVK*, *-IVK*, and *-cVK* for the examples in (1b) and (1c). The reasons for assuming the CVC (instead of CV) template for reduplication in Korean are (as pointed out in Kim 2003): 1) there is no theoretical reason why only the velar consonant should be extrametrical in Korean, while there is independent evidence for the dissimilation of velar clusters *KCVKC* → *CVKC* in Korean, e.g. *koŋyayŋmi* ~ *koŋayŋmi* ‘rice offered to Buddha, which the alternative CVC template approach requires, 2) infixing as a morphological process is rare in languages, and in Korean there is no independent evidence for its existence, 3) CVC is the template occurring in the prefixing reduplications of Korean, e.g. *t'ekul* → *t'ekt'ekul*. Beside the differences in the templatic structure, the main feature that distinguishes this analysis is that the base-final velar consonant drops, not by MWC, but by the rule of dissimilation of consonant clusters, *KCVK#* → *CVK#*, which is a generalized version of the above preferential dissimilation rule and applies to the examples in (1a) and (1b). Thus: *culuk* → **culuk-luk* → *culu-luk*, *talkak* → **talkak-tak* → *talkatak*, but **talki-lak* → *talki-lak*. There is thus no need to list *sokon-tak*, etc. as exceptions as in the MWC analysis by Jun. Furthermore, the same rule explains why reduplication of *t'ekul* yields not *ϕt'ete'kul* (the form, as we recall, expected by the MWC rule) but *t'ekt'ekul*: since the second /k/ is not in word final position, the dissimilation rule fails to apply.

This is thus a good old traditional rule-based analysis in which the reduplicative and sound symbolic behaviors of Korean are explained by making use of the rules that already exist in the language. For example, it derives the sound symbolic words of *talkilak*, *talkak*, both of which mean

³ The symbol ϕ indicates incorrect forms: ‘c’ for ‘correct’, ‘/’ for ‘not’. The asterisk is reserved for underlying forms.

“rattling”, from the common underlying stem **talki-* (with different suffixes): **talki-lak* and **talki-ak*. This is possible because there already exists in Korean a phonological rule that drops the minimal vowel /i/ when it is in hiatus with another vowel, as in Infinitive *s’i-ta* but Continuative *s’ə<*s’i-ə* “use”. Thus: **talki-lak* → *idem* but **talki-ak* → **talkak*. Similarly, it will be argued in this paper that the suffixes of *-IVK* in, e.g., *talki-lak* and *-tVK* in *talka-tak* are etymologically related to each other and thus derived from the same underlying suffix *-tVK*. This is also possible because there is ‘t~l’ alternation that already exists in Korean, as in, for example, the so-called /t/-irregular predicates, e.g. Infinitive *tit-ta* but Continuative *til-ə* “hear” where the environments for /t/ and /l/ are in complementary distribution, with /l/ occurring in intervocalic position but /t/ in nonintervocalic (elsewhere) position. The same regular alternation can thus be claimed to occur because examples with the *-tVK* suffix, e.g. *talkatak*, are typically based on the velar-final forms on their left in (1b), e.g. *talkak*, being derived from **talkak-tak* by the above mentioned dissimilation rule, while the examples with the suffix *-IVK*, e.g. *talki-lak*, are based on the dependent stem **talki-*. We will go over this suffixal alternation in greater detail in section three below, as it gives additional argument for the affixational origin of the fixed segment in Korean.

With this background in mind, let us then turn to the analysis of the examples in (1b) as a case for reduplication with fixed segmentism.

2. The so-called reduplication with fixed segmentism in Korean.

In regarding the above examples in (1b) under the same purview as (1a), the previous analyses have worked under the assumption that the former are a special type of the latter, and as such they follow the same constraints that apply to partial reduplication examples in (1b), other than the fact that the first consonant of the repeated CVC (or in the first group’s analysis, CV) is replaced by /t/. A typical analysis in this direction is Chung (1999), who claims that the invariant /t/ in the extended suffixes in (1b) appears as a result of TETU. To support his claim, Chung first refers to the *Place Markedness Hierarchy* proposed by Prince and Smolensky (1993) in which labial and dorsal place features are universally more marked than coronal place,⁴ thereby establishing the constraint **Peripheral*, that segments with peripheral features such as labial and dorsal are disallowed. Then, taking advantage of the fact that the Correspondence Theory of reduplication in OT allows a correspondence relation between the base and the reduplicant, in addition to the usual input-output correspondence, he assumes two faithfulness constraints on the feature ‘peripheral’: *Ident-IO(Periph)* which requires identity between the input and the output and *Ident-BR(Periph)*

⁴ According to Lombardi (1997), the pharyngeal place is claimed to be less marked than the coronal place on the *Place Markedness Hierarchy* but Chung considers it irrelevant because pharyngeal place is not phonemic in Korean, i.e., no phonemic glottal stop occurs in Korean.

which requires identity between the base and the reduplicant. Since the marked peripheral segments are not disallowed in Korean as a whole but only in the reduplicative syllable, *Ident-IO(Periph)* should dominate **Peripheral*, which in turn should dominate *Ident-BR(Periph)*. This gives the typical TETU ranking stipulated in M&P (1994) in which a phono-constraint intervenes between the two faithfulness constraints:

- (3) TETU Ranking in Korean fixed segmentism cases:
 I-O Faithfulness >> Phono-Constraint >> B-R identity
 Ident-IO(Periph) >> *Peripheral >> Ident-BR(Periph)

The following tableau for *p'ikə-tək* illustrates the constraints involved in the optimization process:⁵

(4) Tableau for *p'ikə-tək*:

/p'ikək+Red/	Ident-IO (Periph)	*Peripheral	Ident-BR (Periph)
a. p'ikə-kə-k		****!	
b. p'ikə-tə-k		***	*
c. p'itə-tə-k	*!	**	

Similarly, Cho (1999), who also sees the examples of (1a) as a special instance of partial reduplication, proposes the TETU ranking, *Max-IO* >> *H(t)* >> *Max-BR*, *Dep-BR*, where *H(t)* is a shorthand for the hierarchy of markedness constraints that favor the unmarked /t/ in Korean.⁶

There are, however, many problems left unexplained in the above analysis. First is that Alderete et al. (1999) make the distinction between two types of reduplicative fixed segmentism: the phonological and the morphological type. They claim that it is only the phonological type that exhibits TETU, while the morphological type is the same as affixation. It is clear that the previous OT analyses are claiming phonological fixed segmentism for the examples in (1b), or otherwise they would not be claiming TETU for these examples. But to make such a claim, it would

⁵ From Chung (1999: 106), who analyzes the examples in (1) and (2) as infixal reduplication: *p'ikə-tək*. I have indicated above that these are really suffixal reduplications. I have used, however, Chung's tableau without any change in the affixes, for ease of exposition.

⁶ As *H(i)* is used by Alderete et al. (1999) as a shorthand for the hierarchy of markedness constraints that favor the unmarked /i/ in the reduplicative syllable in Yoruba. Cho, however, does not elaborate on what constraints *H(t)* consists of in Korean. Another problem is that Cho uses different constraint ranking for the examples in (1a): *Max-IO* >> *Max-BR* >> *H(t)*. This sudden reversal of ranking in the same language (or the same dialect/idolect of a language) considerably weakens the force of her arguments for TETU because it is losing the restrictiveness of a scientific theory. See below for more on this problem of ranking paradox.

seem necessary to examine both typological possibilities against the criteria that Alderete et al. provide for making the distinction between the two.

The second problem is that, given the above ranking, there is no way to prevent the reduplicant syllable from appearing with other nonperipheral coronal onsets, as in $\phi p'ik\partial-l\partial-k$, and $\phi p'ik\partial-s\partial-k$, for there is no other constraint mentioned by Chung that would favor /t/ over these coronal consonants, other than the fact that /t/ is the default consonant in Korean. But as will be explained below, reference to the default status of /t/ is not enough for the fixed segmentism in (1b) to be a phonological type.

Third, examples such as in (5) below also constitute exceptions to Jun's MWC rule because the base-final consonant does not drop despite being extended by a dummy syllable suffix. They are problematic because one of the suffixes of (1b), *-tak/tək*, occurs as a result, not of reduplication, but of simple suffixation.

(5) Sound symbolic words with the suffix *-tVk*:⁷

<u>base</u>	<u>extended by <i>-tak/tək</i></u>	
sokon	sokon-tak	'whispering'
sukun	sukun-tək	'whispering'
tokin	tokin-tak	'palpitating'
tukin	tukin-tək	'palpitating'

The suffix extension in these examples looks very much like those in (1b), but in no way can they be subsumed under fixed segmentism in Korean reduplication, because these appear to involve mere *-tVk* affixation, without the usual semblance of the stem-final syllable repetition in examples such as *talkak/talkatak*. Therefore, before one could make the claim that the examples in (1b) are instances of what Alderete et al. call 'reduplication with fixed segmentism', one must first 'deal with' the examples in (5). This is particularly so because the suffixes in (1b) and (5) not only have the same phonetic shape but seem to show likeness in syntactic as well as semantic usage. Compare the following dictionary definitions:⁸

(6) Comparison of dictionary definitions

- a. *sokontak-kəlita*, *sokontak-teta*, *sokontak-ita*: to whisper in a disorderly and repeated manner so as to prevent eavesdropping.

⁷ Examples such as *hiypəntək/hepantək* are not included here because there seems to be no evidence for the bases of *hiypən-/hepan-*. These rather seem to be an alteration of *hiypəntik*, a compound of *hiy* 'white' + *pəntik* 'flick'.

⁸ All references to dictionary in this work are from *Standard Unabridged Dictionary of Korean* compiled by The National Institute of Korean Language Research and published in 2001 by Doosan-Donga as a CD-Rom. The Korean-to-English translation is by H-S. Kim.

- b. *talkatak-kəlita*, *talkatak-təta*, *talkatak-hata*: make a small rattling sound in a repeated manner.

My own native intuition, for example, tells me that if there is any difference between *sokon-kəlita* and *sokontak-kəlita* in terms of denotative meaning, nuances, etc., the same difference exists between *talkak-kəlita* and *talkatak-kəlita*. This strongly suggests that the words in (5) possess the same *-tVk* suffix as in (1b).

The above discussion thus calls for scrutiny of arguments given for defining (1b) as examples of reduplication with phonological fixed segmentism. The previous analyses have not given a thorough examination of the behavior of the suffixes in (1b) against the criteria that Alderete et al. use to argue for their case of phonological fixed segmentism. In the following, we will therefore first consider the criteria used in discerning the types of fixed segmentism in reduplication (2.1) and then examine in detail the previous arguments for fixed segmentism in Korean against these criteria (2.2).

2.1 The phonological vs. morphological fixed segmentism

Alderete et al. (1999) in their lengthy, influential article give the following diagnostics for distinguishing fixed segmentism types.⁹

(7) Diagnostics for fixed segmentism types in reduplication:

- a. The phonological type:
 1. The fixed segment is often the default segment of the language.
 2. The fixed segment arises as a result of TETU ranking.
 3. The fixed segment may alternate across different realizations of the reduplicative morpheme.
- b. The morphological type:
 1. It has the faithfulness properties that are typical of an affix, i.e., it can contain marked structures.
 2. It has the alignment properties of an affix, i.e., it is peripheral or minimally displaced from peripheral position under crucial domination.
 3. It has the context-sensitivity of an affix, i.e., it participates in any phonological process that affects other affixes, and it can alternate by suppletion or allomorphy.
 4. In some languages the overwriting string is an affix that also occurs independently of reduplication.

⁹ The following presentation is a summary of what actually appears in Alderete et al. (1999), who go into various generalizations concerning the reduplicant-inventory and reduplicant-default relations. These generalizations have been summarized as the first two diagnostics for the phonological fixed segmentism (7a 1&2).

Simply put, in the phonological type the reduplicative fixed segment is inserted by the ‘phonology’ of the language, i.e., by phonological markedness constraints under TETU ranking, while in the morphological type it is determined morphologically, just like an affix, except that the fixed segment overwrites part of the base in the reduplicative syllable.

As examples of phonological fixed segmentism, Alderete et al. give case studies of Yoruba, Lushootseed, Tübatulabal, and Nancowry. They repeatedly argue that the fixed segment in these languages is the default segment in the language and the phonological fixed segmentism arises in these languages as a result of TETU ranking. For example, in Yoruba deverbal reduplication, the vowel of the reduplicative syllable is always /i/ regardless of what vowel occurs in the base. This /i/ is also the default vowel in Yoruba, appearing as the epenthetic vowel in loanwords such as *gírámà* ‘grammar’. The assumption is that the default /i/ is ‘inserted’ as the fixed segment in the reduplicant. The problem, however, is that the fixation of the vowel occurs only in the reduplicant, as the language as a whole allows other vowels to occur freely. This problem is solved, as mentioned above, by a TETU ranking, such as $Max-V(IO) \gg H(i) \gg Max-V(BR), Dep-V(BR)$, where $H(i)$ is a shorthand for the hierarchy of markedness constraints that favor the unmarked /i/ in Yoruba.¹⁰

As for morphological fixed segmentism, they cite reduplication in Kamrupi (8) below and English *schm*-reduplication, e.g. *table-schmable*, *Oedipus-Schmoedipus*, *resolutions-schmesolutions*, etc.

(8) Kamupi reduplicaiton

<u>base</u>	<u>reduplicated</u>
gharā ‘horse’	gharā-sarā ‘horse and the like’
khori ‘fuel’	khori-sori ‘fuel and the like’

They argue that the fixed segments in these reduplications are not default segments and as simple prefixes they have the general properties of prefixes and other bound morphemes, as illustrated in the following tableau (9) for the English example:

(9) Tableau for *table-schmable* (Alderete et al. 1999: 356)

/table-RED-šm/	Max-IO	Max-BR
a. table-šmable		<i>t</i>
b. table-table	šm!	
c. šmable-table	<i>t!</i>	šm
d. šmable-šmable	<i>t!</i>	

¹⁰ Note $H(i) = Seg-Head, Reduce, *PL/Dors, PL/Lab \gg PL/Cor \gg PL/Phar$. See Alderete et al. (1999: 337) for explanation of these constraints and their ranking.

These diagnostics for the two fixed segmentism types put the Korean examples in (1a) in limbo: the fact that the ‘inserted segment’ in *talka-tak*, is /t/, which is considered to be a default consonant in Korean, suggests that the fixed segment in (1a) is of the phonological type, while the fact that the same suffix occurs independently of reduplication, as in (5), suggests that it is of the morphological type. An issue that has to be considered in this light is the variability of the fixed segment. As Alderete et al. say in their diagnostics (7), both types of reduplication may exhibit fixed segment variability. The difference is that in the phonological type, the fixed segment may alternate across different realizations of the reduplicative morpheme, while in the morphological type, the alternation may occur by suppletion or allomorphy. This latter point is important because as we have mentioned in the introductory section, the suffix *-tVK* does show alternation with *-IVK* in certain contexts. We will elaborate on this issue below in section 3.1, but let us first examine the arguments given previously for reduplicative fixed segmentism in Korean.

2.2 Previous arguments for reduplication with fixed segmentism in Korean

The following list is a summary of arguments that appear in S. Kim (1997), Chung (1999), and Cho (1999).

- (10) Previous arguments for fixed segmentism in Korean:
- a. The suffixation in (1b) is repetitive of the base just as the partial reduplication in (1a) is, except in the invariant segment /t/.
 - b. The suffixation in (1b) occurs only when the base is an independent morpheme that ends in a velar, /k/ or /ŋ/, just as in the partial reduplication in (1a).
 - c. The invariant /t/ that appears in the suffixes of (1b) is a default consonant in Korean, which is inserted by a TETU ranking, as predicted by Alderete et al. (1999) for phonological fixed segmentism in reduplication.
 - d. There is perfect complementarity between (1a) and (1b) in that the former occurs when the first syllable of the base is light and the medial consonant is coronal, but the latter only when the first syllable of the base is heavy or when the medial consonant is noncoronal.

The first two arguments really concern the ‘reduplicative’ nature of (1b), while the last two arguments refer to the reduplication in (1b) as phonological fixed segmentism, even though no specific mention has been made of the type as ‘phonological’. We will go over the problems with the last two arguments in detail.

2.2.1 On the argument that /t/ is the default and is inserted under TETU ranking

This argument is that the fixed segment /t/ is the same as the default segment in Korean, and is thus inserted under a TETU ranking such as, e.g., *Ident-IO(Periph) >> *Peripheral >> Ident-BR(Periph)* is perhaps the most salient evidence given previously for judging the fixed segmentism in (1b) to be ‘phonological’. It is this piece of evidence that all three of the previous OT analyses (S. Kim 1996, Chung 1999, Cho 1999) cite to establish (1b) as their case for ‘fixed segmentism.’

There are, however, at least two problems with this view: First is that it is in conflict with examples such as those in (5), which rather suggests that suffixes of the type *-tVk* are affixational in origin. Note also the suffixes in (1c), some of which look very much like the suffixes in (1a). For example, the suffix *-təŋ* of *mik’i-təŋ* looks very much like the suffix *-tVŋ* in (1b), e.g. *pəlla-təŋ*, in its phonetic and semantic resemblance. According to the dictionary, besides *mik’i-təŋ*, we also have *mik’i-tək*, whose suffix also resembles what occurs in, e.g. *pik’ə-tək*. These examples thus also argue for affixational origin of *-tVk*.

Secondly, as Chung (1999, p104) notes, the default status of /t/ is relevant to the phonological nature of fixed segmentism because on the *Place Markedness Hierarchy* (Prince and Smolensky 1993; Lombardi 1997), it is not the coronal but the pharyngeal consonant that is considered to be least marked. It is the pharyngeal consonant, such as a glottal stop, that should therefore appear as the fixed consonant in languages and this is indeed the case in many languages, such as for example, Nancowry, where the reduplicative syllable always begins with a glottal stop regardless of the type of the initial consonant of the base. But in Korean we have the coronal /t/ appearing in (1b) instead of the pharyngeal consonant. Chung cites two reasons for this discrepancy: 1) pharyngeal is not phonemic in Korean as a place feature: there is, for example, no phonemic glottal stop in Korean and 2) according to the previous analyses such as Sohn (1987), /t/ is considered to be the least marked consonant in Korean, which means that the insertion of /t/ in examples such as (1b) will automatically follow from the Place Markedness Hierarchy.

But the fact is that the appearance of /t/ does not automatically follow even from this revised view of the Place Markedness Hierarchy, for, while there may be no pharyngeal or laryngeal phonemic consonant, there are several coronal consonants other than /t/ that are phonemic in Korean, and according to Chung’s TETU ranking, examples of fixed segmentism cases in (1b) would produce multiple candidates tied as optimal. Consider the following tableau for *p’ikə-tə-k*, where (11b, d, e) appear to be all tied in their calculation of optimality:

(11) An expanded tableau for *p'ikə-tə-k*:

/p'ikək+Red/	Ident-IO (Periph)	*Peripheral	Ident-BR (Periph)
a. p'ikə-kə-k		****!	
b. p'ikə-tə-k		***	*
c. p'itə-tə-k	*!	**	
d. ☹ p'ikə-lə-k		***	*
e. ☹ p'ikə-sə-k		***	*

This shows that the burden of choosing *b* as the optimal form over other candidates should be taken up by another constraint, which will interact with the constraint **Peripheral* to choose /t/ over other coronal consonants. Since the inserted /t/ in (1b) is the onset of the reduplicative syllable, we may consider constraints based on markedness of onsets, such as those proposed by Lombardi (2003):

(12) Sonority cline constraints (SCC):

- *FricV: Prohibits fricative onset
- *StopV: Prohibits stop onset
- Universal ranking: *FricV >> *StopV
- *SonV: Prohibits sonorant onset
- *ObsV: Prohibits obstruent onset
- Universal ranking: *SonV >> *ObsV

Lombardi argues that as sonorants are the least marked codas, obstruents are the least marked onsets. Hence the ranking: **SonV* >> **ObsV*. And since on the sonority scale fricatives are more sonorous than stops, among the obstruents, the former are more marked as onsets than the latter. Hence the ranking: **FricV* >> **StopV*. Since fricatives and stops make up obstruents, we can combine these two constraints into one: **SonV* >> **FricV* >> **StopV*. This universal markedness hierarchy for onsets can then interact with the constraints in (11) to choose the candidate with the /t/ as the fixed onset:

(13) A new tableau for *p'ikə-tə-k*:

/p'ikək+Red/	Ident-IO (Periph)	*SonV	*FricV	*StopV	*Peri- pheral	Ident-BR (Periph)
a. p'ikə-kə-k				***	****!	
b. ☺ p'ikə-tə-k				***	***	*
c. p'itə-tə-k	*!			***	**	
d. p'ikə-lə-k		*!		**	***	*
e. p'ikə-sə-k			*!	**	***	*

This seems to solve the problem of multiple optimal forms that had been raised regarding Chung's constraint hierarchy.

However, the problem does not stop here, for the same constraint ranking should also explain (1a), the examples of regular reduplication. This is because (1b) as an instance of phonological fixed segmentism should have the same input structure of 'base+Red' as (1a), for it is viewed as a special type of partial suffixing reduplication. This requirement of identical input structure for (1a) and (1b) did not cause any problem with Chung's constraint set of *Ident-IO(Periph)* >> **Peripheral* >> *Ident-BR(Periph)*, because the reduplicated syllable onsets are all nonperipherals, due to the condition on regular reduplication in (1a) that the onset of the reduplicating syllable should be a coronal consonant. But it causes serious problems with the revised and expanded constraint set that appears in (13), because instead of copying the onset of the reduplicating syllable, the same constraint ranking will choose /t/ as the optimal onset of the reduplicative syllable, just as it did with the examples in (1b). Consider the following tableau for *culu-lu-k*:

(14) Tableau for *culu-lu-k*:

/culuk+Red/	Ident-IO	*SonV	*FricV	*StopV	*Peri- pheral	Ident-BR (Periph)
a. culu-lu-k		**!	* ¹¹		*	
b. culu-tu-k		*	*	*	*	
c. cutu-lu-k	*!	*	*	*	*	
d. culu-su-k		*	**!		*	
e. culu-ku-k		*	*	*	**!	*

¹¹ I have marked this column with an asterisk because the affricate /c/ contains a fricative element. If one wants to set up **AffricV* as a separate constraint, it should come between **FricV* and **StopV* in the universal hierarchy, as affricates are composed of stop plus fricative.

The only way to remedy this undesirable outcome, as far as I can see, is to move the BR faithfulness constraint high on the constraint ranking, higher than the set of sonority cline constraints, so that it would be made sure that the candidate with the faithfully copied onset, *culu-lu-k*, can be chosen as optimal. But this move will cost dearly: First, it will mean losing the coveted TETU ranking, abandoning the claim that the partial reduplication examples in (1a) demonstrate TETU effects. More serious, however, would be the fact that the new ranking should be used for the examples in (1a) only, while a reversed ranking (the one that occurs in (13)) is reserved for those in (1b).¹² Allowing this sudden reversal in ranking, created to solve a problem otherwise unsolvable in the same language, would considerably weaken any claim made under such paradoxical ranking, for once we begin to allow such leisure in constraint ranking, it will make the already powerful OT machinery even more powerful, making it possible to solve almost any phonological problem.

2.2.2. On the argument that (1a) and (1b) are in complementary distribution

Despite the problems with the previous arguments based on the default status of /t/ and TETU ranking, one may still point out the complementary distribution in conditioning environments observed between (1a) and (1b) and contend that one should be able to explain the appearance of /t/ in (1b) phonologically, while still preserving all the merits of an OT analysis, i.e. TETU effect, irreversible constraint ranking, etc. After all, isn't it true that complementary distributions observed in languages arise by phonological conditioning?

Cho (1999), for example, argues for unifying the two processes as one, noting that the fixed segmentism type (1b) occurs only when the base contains two heavy syllables (e.g. *talkak* > *talkatak*) or when the medial consonant is noncoronal (e.g. *p'ikək* > *p'ikətək*), while partial reduplication of the type (1a) occurs when the medial consonants are /s, l, c, t/, which are all coronal consonants (e.g. *culuk* > *cululuk*, etc.). But as we know all too well from the distribution of /h/ and /ŋ/ in English, to find two surface alternants in complementary distribution does not necessarily guarantee their subsumption under the same base unit. For such distribution to be meaningful linguistically, the alternating units in question must be clearly defined by establishment of regular relations. This would mean in the above case finding a clear 'phonological' answer to a question such as 'why does the suffix *-tVK* appear instead of the regular partial reduplication of stem-final CVC when the first syllable of the stem is heavy or the medial consonant of the stem is noncoronal?' My objection to the 'complementarity' argument is that we cannot find an answer to such a

¹² Note that this proposal would be essentially equivalent to the one proposed in Cho (1999: 85): *Max-IO* >> *H(t)* >> *Max-BR*, *Dep-BR* for her Type 5 or our (1b) but *Max-IO* >> *Max-BR* >> *H(t)* for her Types 3, 4 or our (1a).

question convincing enough to warrant subsumption of (1b) as a special, phonologically fixed segmentism case of (1a).

If there is anything linguistically significant about the above distribution, I think it has to do with the conditions on partial reduplication of polysyllabic bases in Korean, those we have stated in (2). These conditions certainly make phonological sense because the coronal consonants, being nonperipheral in articulatory position, may lend themselves better to repetition than noncoronal, peripheral consonants such as velars and labials. This is indeed what Chung (1999) bases his **Peripheral* constraint on in his OT analysis. Similarly, the light syllable requirement on the pre-reduplicating syllable(s) also makes good sense, because reduplication of the bases of the type CVCCVC would create underlying *CVCCVCCVC, three heavy syllables in succession. Even though such heavy concatenation is eventually repaired by elision of the base final consonant, it is still much too burdensome to have such a structure in a reduplicated word. Note that this reasoning, keeping the output as minimally footed as the input, is in essence what Jun (1994) bases his proposal of metrical weight consistency on, although his analysis has focused only on the penultimate syllable that directly precedes the reduplicating syllable and included nonreduplicating, affixally extended examples such as (1c) with those in (1a) and (1b), which ended up having many exceptions and problems.

In contrast to the conditions in (2), which are at least phonologically well grounded and thus make the reduplication in (1a) regular, there do not seem to be any regular phonological relations that would compel appearance of the suffix *-tVK* in (1b) when the base does not meet the conditions in (2). Note that the situation here could be compared to the phonemic and morphophonemic analysis in which it is usually the ‘elsewhere’ alternant that serves as the basic underlying unit, from which derives the other, phonologically well-defined alternant in complementary distribution. The reason for this is of course simple and clear: while this analysis gives a rule-governed explanation of the alternation, the alternative analysis (which presumes the ‘regular’ case as the basic unit) does not. But unfortunately those who push the complementarity argument have gone against this well-known guideline and presumed the regular case (1a) as basic and the ‘elsewhere’ case (1b) as derived, without giving any convincing ‘regular’ explanation of the ‘elsewhere’ case. The presumed environments for the suffix *-tVK* in (1b), that the pre-reduplicating syllable is heavy and the onset of the reduplicating syllable is noncoronal, may be observationally correct but do not lead to any ‘phonological’ regularization. In such cases, as usual in phonemic analysis, it would make much more sense to choose the ‘elsewhere’ case itself as basic and the ‘regular’ case as derived. But this would entail that the *-tVK* suffix in (1b) is the basic unit, from which should arise the various reduplicant syllables in (1a). As one can see, this would amount to a daunting task accomplishment of which seems impracticable.

What does this then mean, that the so-called fixed segmentism cases of reduplication appear only when the conditions on partial reduplication (2) cannot be met? I think it means that the appearance of $-tVK$ in (1b) is suppletive: it morphologically compensates for the failure of the partial reduplication to the bases in (1a). The suppletive function of the suffix $-tVK$ can be seen more clearly if we consider its appearance in relation to the conditions on regular reduplication given in (2): the suffix fills in whatever role in sound symbolism that reduplication plays when a base does not meet one or more of these conditions. Thus, for example, a base such as, e.g., $p'ikək$, though it meets the first and third conditions in (2) because it ends in a velar /k/ and its first syllable is light, fails to meet the requirement on onset coronality, its onset of the reduplicating syllable being also a velar /k/. It therefore cannot undergo regular reduplication to $ɕp'ikəkək$. But the language needs a form that will fill the place in the vocabulary unoccupied by this incorrect form, so the $-tVK$ suffix has been attached to the base to fill the gap. Similarly, the base $talkak$ violates the last two conditions in (2), being with a heavy pre-reduplicating syllable and the velar onset. It is thus the form with the suffix $-tVK$, $talkatak$, that occurs in place of the regular but incorrect $ɕtalkakak$. The $-tVK$ suffixation has been chosen because it most closely matches the sound symbolism put into effect by partial reduplication. And this close match is the reason why the previous analyses have often attempted to explain the examples of reduplication and the so-called fixed segmentism under the same purview.

With doubts expressed in the foregoing discussion of the 'complementarity' issue, the only argument that still stands for phonological fixed segmentism in Korean is the fact that the fixed segment in (1b), the coronal /t/, is the default segment in Korean. How then does this fact fit into the scheme of argumentation so far developed in this paper? Is there any way to compromise this fact with the evidence so far presented for the nonphonological nature of the fixed segment? I think the answer can be found in the role of the default consonant itself. As Alderete et al. (1999) make implicitly clear in their paper, the fixed segments are often the default segment in phonological fixed segmentism but they are often nondefault in morphological fixed segmentism, because in phonological fixed segmentism the fixed segment is 'inserted' by the 'phonology' of the language but in morphological fixed segmentism it is 'overwritten' morphologically, by the process of affixation. This shows that being a default may be a necessary condition, but not a sufficient condition, for being a phonologically fixed segment in reduplication. In other words, a coronal consonant can be a default consonant only when it plays its proper role, for example, that of being inserted phonologically; otherwise it is a nondefault consonant just like the rest of the consonants. I think the evidence presented above indicates that the latter is the case in Korean partial reduplication.

This concludes our examination of the previous arguments for fixed segmentism in Korean. Now we finally turn to the regular alternation between the suffixes of *-tVK* and *-IVK* and the variability of the fixed segment, to reinforce our claim for the nonphonological nature of the fixed segment in Korean reduplication.

3. The alternation of *-tVK* and *-IVK* and what it means for the variability of the reduplicative fixed segment

We have already mentioned the existence of this alternation briefly in the introductory section. The following list of words contains the same data expanded with more examples:

(15) Sound symbolic words with the suffixes of *-IVK* and *-tVK*

<u>base</u>	<u>-IVK-affixation</u>	<u>-tVK-affixation</u>	
talkak	talki-lak	talka-tak	“rattling”
təlkək	təlki-lək	təlkə-tək	“rattling”
talkaŋ	talki-laŋ	talka-taŋ	“rattling”
təlkəŋ	təlki-ləŋ	təlkə-təŋ	“rattling”
teŋkaŋ	teŋki-laŋ	teŋka-taŋ	“ringing”
teŋkəŋ	teŋki-ləŋ	teŋkə-təŋ	“ringing”
calkak	calki-lak	calka-tak	“with a cling”
calkaŋ	calki-laŋ	calka-taŋ	“with a cling”
wəŋgaŋ	wəŋgi-laŋ	wəŋga-taŋ	“with a jangle”
cəŋkaŋ	cəŋki-laŋ	cəŋka-taŋ	“with a clank”

A careful examination of these examples raises two interesting questions. First, since the examples in each row above share the same basic meaning, except the subtle differences in nuance, they should presumably share the same underlying stem; the question is what that underlying stem is.¹³ Second, since the appearance of the suffixes *-IVK* and *-tVK* also seems to follow certain patterns, the question naturally arises whether they are the same suffix, derived from the same underlying form. Note that the possibility of the two suffixes sharing the same underlying form is real, because as mentioned earlier, the alternation between ‘t’ and ‘l’ occurs in Korean irregular verbs such as Inf. *kət-ta* but Cont. *kəl-ə* ‘walk’. This alternation shows that the environments for ‘t’ and ‘l’ are in complementary distribution, ‘t’ occurring in nonintervocalic ‘elsewhere’ position but ‘l’ in intervocalic position. The problem now is how to relate this well-established phenomenon to the above alternation between *-IVK* and *-tVK*. It is here that the observation made by Cho (1999), that suffixes with *-tVK* seem to attach to independent words, is really pertinent: under

¹³ Note, for example, Cho (1999: 86) also notes that ‘[t]here seems to be certain semantic unity’ between these examples: that ‘both denote a sense of abrupt completion of a sound or an action’.

this assumption, the forms with $-tVK$ suffix will be based on independent words such as *talkak*, etc. This supposition will effectively put the ‘t’ of $-tVK$ in nonintervocalic position, as in **talkak-tak*.¹⁴

What then can we say about examples such as *talkilak*, which occur with the suffix $-lak$? There are several points that need to be noted: First, it shows that unlike the suffix $-tak$, which we said in the above attaches to an independent morpheme, the suffix $-lak$ seems to attach to a dependent stem which obviously is **talki-*. Second, unlike the suffix $-tak$, the suffix $-lak$ is attached to a stem that ends in a vowel, effectively putting the suffix initial ‘l’ in intervocalic position. Third, once we realize that the stem meaning ‘rattle’ is **talki-*, then it follows that *talkak*, the base for *talkatak*, is derived from **talki-ak* by a well-known truncation of the minimal vowel /i/ when it is in hiatus with a suffixal vowel. Consider the following examples:

(16) Truncation of minimal vowel in Korean

<u>infinitive</u>	<u>continuative -a/ə</u>	
s ^ʰ i-ta	s ^ʰ ə < *s ^ʰ i-ə	‘write’
thi-ta	thə < *thi-ə	‘open’

Since the ‘t~l’ alternation in languages often occurs as a result of lenition routine,¹⁵ we can posit the suffix **-tak* as underlying, and derive $-lak$ by a rule changing ‘t’ to ‘l’ in intervocalic position:

(17) Derivation of *talkak*, *talkilak*, and *talkatak*

talki-ak	talki-tak	talkak-tak	
talkak	“	“	/i/-truncation: i → Ø / <u> </u> +V
“	talkilak	“	lenition: t → l / <u>V </u> <u>V</u>
“	“	talkatak	dissimilation: KCVK# → CVK# ¹⁶

This analysis clearly shows the relationship between the two groups of sound symbolic words in (15), why they share the same basic meaning, whence may the subtle difference in nuance arise, if indeed there is such difference, and why $-tak$ is always attached to an independent morpheme,

¹⁴ Note that this provides yet another argument (in addition to the arguments provided in H-S. Kim 2003) for establishing the partial reduplication in (1) to be really suffixing, rather than infixing or internal as assumed in M&P (1986) and most of the recent OT analyses.

¹⁵ Cf. K-M. Lee (1972), who assumes the following lenition routine for the history of Korean:

- 1) p → b → β → w
- 2) t → d → ð → r
- 3) k → g → ɣ → fi

It is interesting that the stages of this routine partly overlap with the change from Latin to Romance languages, suggesting its universality. See Foley (1977) for further examples.

¹⁶ Space limitation prohibits any elaboration of this dissimilation rule. For detailed arguments for establishing the rule, see H-S. Kim (2003).

as Cho has observed. Since the original, underlying suffix is **-tak*, any newly formed sound symbolic words would naturally end with *-tak* and remain as such, provided that no intervocalic lenition of *t* to *l* is applicable. Interesting in this connection are a group of sound symbolic words that share the same stem with the above group but lack examples with the *-tVK* suffixation:

(18) Sound symbolic words with examples of *-IVK* but none of *-tVK*:

<u>base</u>	<u>-IVK-affixation</u>	<u>-tVK-affixation</u>
kalkaŋ	kalkilaŋ	no ɕkalkataŋ
kilkəŋ	kilkiləŋ	no ɕkilkətəŋ
k'olc'ak	k'olc'ilak	no ɕk'olc'atak
k'omcak	k'omcilak	no ɕk'omcatak

These examples suggest that the so-called reduplication with fixed segmentism is a relatively recent phenomenon in Korean and has not yet occurred to these examples.

On the other hand, the following group of sound symbolic bases share the same suffix, *-tVK*, with the above group but lacks the corresponding *-IVK* suffixation:

(19) Sound symbolic words with examples of *-tVK* but none of *-IVK*:

<u>base</u>	<u>IVK-affixation</u>	<u>-tVK-affixation</u>
walkhak	no ɕwalkhilak	walkhatak
p'ik'ək	no ɕp'ik'ilək	p'ik'ətək
t'ak'ak	no ɕt'ak'ilak	t'ak'atak
chalphak	no ɕchalphilak	chalphatak
pəlləŋ	no ɕpəlliləŋ	pəllətəŋ
k'ulk'ək	no ɕk'uk'ilək	k'ulk'ətək
cilphək	no ɕcilphilək	cilphətək
chals'ak	no ɕchals'ilak	chals'atak
s'ollak	no ɕs'ollilak	s'ollatak

The reason is that unlike those in (15) and (18), the bases in the first column here do not contain the suffix *-VK*. This means that there are no underlying bases of the type **walkhi-*, **p'ik'i-*, etc., and thus no *-IVK* suffixation.

The following examples are also like the above examples in (15) and (18) except that the base here meets the condition on partial reduplication in (2), so that it appears with CVC-reduplication rather than *-tVK* suffixation:

(20)

<u>base</u>	<u>IVK-affixation</u>	<u>CVC-reduplication</u>
pasak	pasilak	pasasak “with a rustle”
pəsək	pəsilək	pəsəsək “with a rustle”
posak	posilak	posasak “with a rustle”
pusək	pusilək	pusəsək “with a rustle”

Contrasting with these are the following examples where the same suffixing reduplication fails to occur, showing that the reduplication, as a derivational morphological process, has not yet completed its course:

(21)

<u>base</u>	<u>IVK-affixation</u>	<u>CVC-reduplication</u>
achaŋ	achilaŋ	no čachacaŋ ¹⁷
t’otak	t’otilak	no čt’otatak
t’utək	t’utilək	no čt’utətək

The above discussion reveals that the analyses previously done of the examples in (1c) have not been thorough and must be redone. It is clear that forms such as *t’alki-laŋ*, *c’eyki-ləŋ*, and *t’əlki-lək*, share the same *-IVK* suffix with *ulki-lak* and *k’omci-lak*. The *-s* in *ulkis*, as appearing in its quasi-full reduplication form, *ulkispulkis*, is thus a suffix that often appears in sound symbolic words denoting ‘fineness’, as pointed out by Martin (1962). Similarly, *k’omcil* as appearing in its full reduplication form *k’omcilk’omcil* has the suffixal ‘l’, which according to Martin denotes ‘smoothness or liquidity’. For evidence that the actual base for these words is **k’omci-*, not **k’omci-* nor **k’omcil-*, consider the fact that related to these words is *k’omcak*, which can only come from **k’omci-ak* because the minimal vowel /i/ truncates before another vowel, as mentioned in the above but /i/ undergoes glide formation in the same environment: Infinitive *ki-ta* but Continuative *ki-ə ~ kyə* ‘crawl’. If this rule does not drop /i/, it then converts to /i/ after the palatal consonant /c/, as evinced by examples in (1c). Note that the same rule of vowel fronting seems to occur optionally after ‘s’: *pasisi~pasisi*, *pasilak ~ pasilak*, etc., though according to the dictionary some of the latter forms are substandard.

Space prohibits any detailed explanation of other forms in (1c) but note that the underlying bases for the two word pairs, *k’okis-k’okicak* and *kəchis-kəchicək*, may be actually **k’okic* and **kəchic-*, in which case the final /c/ neutralizes to [t] in the base forms, phonetically [k’okit] and [kəchit], while combining with the suffix *-VK* in the extended form. The spelling ‘s’ is a remnant of the Middle Korean change of /c/ and /ch/ to /s/, which is the precursor to the Modern Korean neutralization. For a detailed

¹⁷ But we have *achicaŋ*, which is a CV-reduplicated form with the suffix *-VK*; consult H-S. Kim (2004) for further explanation.

explanation of this and other patterns of sound symbolic words in Korean, consult H-S. Kim (2004).

For the last pair in (1c), note that the base for *mik'i-təŋ*, cannot be *mik'in-* because 'n' does not drop before the suffix *-IVK*, as evinced by the examples in (5), e.g. *sokontak*. Beside *mik'in-*, there is also *mik'il*, as appearing in *mik'il mik'il* and *mik'iləpta* 'slippery', which shows that the stem is rather *mik'i-*. The fact that the 't' in the suffix *-IVK* in *mik'i-təŋ* does not change to 'l' despite being in intervocalic position suggests that the base here is not *mik'in-* but *mik'il*, which is an extension of the above stem by the *-l* suffix. This base final 'l', which we note is the same liquid suffix denoting liquidity, then drops before 't' by a well known rule in Korean that drops 'l' before a coronal consonant such as 'n, s, t', e.g. *sonamu* < **sol-namu* "pine tree" *mitaci* < **mil-taci* "sliding door":

(22) Derivation of *mik'itəŋ* and *mik'itək*:

talki-tak	mik il-təŋ	mik'il-tək	
talkilak	“	“	$t \rightarrow l / V _ V$
“	mik itəŋ	mik'itək	$l \rightarrow \emptyset / _ C_{[coronal]}$

Note also *pusitək~pusitək* by the same rule from **pusil-tək*. Cf. *pusil pusil* 'in loose bits.'¹⁸

3.1 Variability of the fixed segment in reduplication: comparison of Nancowry and Korean.

The above realization that the suffix '*-IVK*' could alternate with '*-IVK*' in a regular pattern immediately calls for reappraisal of the examples in (1b), for Alderete et al. mention specifically in their diagnostics (7) that in the phonological type of fixed segmentism, the alternation may occur 'across different realizations of the reduplicative morpheme' but in the morphological type, the fixed segment has the context-sensitivity of an affix and participates in any phonological process that affects other affixes, and it can alternate suppletively. It is crucial that the examples with the *-IVK* suffix, which occur with bound morphemes that end in a minimal vowel, are not 'reduplicative' and as such, the two suffixes cannot be the 'realizations of the same reduplicative morpheme'.

¹⁸ Note that the same suffixes receive a completely different analysis by Ahn (2000), who follows up on Jun (1994)'s coda-to-onset correspondence with the idea of consonantal coalescence, in which 'a suffix-initial segment is merged with a root-final segment as a single consonant'. The problem is that even if we accept the notions of coda-to-onset correspondence and consonantal coalescence, there is no way in which Ahn's analysis can explain the noncoalescence of the coda to onset in examples in (5), e.g. *sokon-tak*, not *ʃsoko-tak*, which would be the optimal form under Ahn's analysis as *mik'i-təŋ* is chosen from the input **mik'in-təŋ*.

This situation in Korean compares with the fixed segmentism observed in Nancowry reduplication, for example, in which the reduplicative morpheme varies in different phonological contexts.¹⁹

(23) Nancowry reduplication (Alderete et al. 1999: 348)

- a. Red=?it or ?in with a root-final coronal or palatal stop
 - ?it-sut 'to rub' / 'to kick with the foot'
 - ?in-ɲuan 'groaning noise' / 'to groan'
 - ?it-cac 'word' / 'pray'
 - ?in-seɲ 'to cut things to pieces' / 'to cut things to pieces'
- b. Red=?i with a root-final coronal or palatal continuant
 - ?i-tus 'to fall off[bird's feather]' / 'to pluck out'
 - ?i-ruay 'moving back and forth' / 'to beckon'
- c. Red=?up/?um or ?uk/?uŋ with a root-final dorsal/labial stop
 - ?up-kəp 'to hold' / 'to sting'
 - ?um-rom 'flesh of fruit' / 'to eat pandanus fruit'
 - ?uk-ɲiak 'binding' / 'bind'
 - ?uŋ-miaŋ 'corner' / 'corner'
- d. Red=?u with a root-final dorsal/labial continuant
 - ?u-həw-a 'empty' / 'cave'
 - ?u-tuaʔ 'round' / 'a knot'

Here, the reduplicant always begins with a glottal stop, which is the least marked consonant on the *Place Markedness Hierarchy* and is the default epenthetic consonant in the language. Except for this fixed segment in the onset position, the reduplicated syllable varies, with the variation being predicted by phonological context. Thus the vocalic variation between [i] and [u] is determined by what follows the vowel in the root: [i] with the coronals but [u] with the labials and dorsals. The coda also varies, with root-final stops, nasals, and palatals copied but root-final continuants omitted. The alternations appearing in the reduplicative morpheme is predictable phonologically as Alderete et al. go at length to show.

The difference between Nancowry prefixal alternation of the reduplicative syllable and the Korean alternation of the suffix *-tVK* is unmistakable: the Korean alternation, also equally predictable in phonological terms, is not an alternation 'across reduplicative morphemes', because examples such as *talkilak* are not reduplicative in any imaginable way, while in Nancowry, the alternation occurs within the reduplicative syllable, which does not seem to function as an affix (at least Alderete et al. do not mention that it does) independently of the reduplication process. This leaves the morphological type as the only option viable for the Korean fixed segmentism. Keep in mind that we draw this conclusion in spite of the fact that as in Nancowry, the Korean fixed segment seems to be a default /t/,

¹⁹ I have relied entirely on Alderete et al. (1999) for the following presentation on Nancowry.

because being a default consonant is not a sufficient condition for being a phonological fixed segment.

Although Alderete et al. do not mention actual examples of morphological fixed segmentism in alternation, that such affixes could alternate is clear because as simple affixes, they would certainly have allomorphs. Note that Alderete et al. mention two types of allomorphs that can vary, one by way of participation in regular phonological processes and the other by suppletion. The alternation of *tVK*~*lVK* obviously belongs to the former case, while as mentioned earlier the appearance of the *-tVK* suffix in (1b) when the regular partial reduplication fails could belong to the latter.

4. Summary and concluding remarks

In this paper, I have argued for the following:

- 1) The suffixes of *-tVK* and *-lVK* as occurring in *talka-tak* and *talki-lak* are etymologically related, being derived from the same underlying suffix **-tVK* by a rule converting ‘t’ to ‘l’ in intervocalic position.
- 2) The sound symbolic words of the type, e.g., *talkak*, *talkilak*, and *talkatak* are also etymologically related to one another, sharing the same underlying stem; the former two forms are based on a dependent stem *talki-* (i.e. *talkak* < **talki-ak*, *talkilak* < **talki-tak*) and derived by the well known rules of /i/-truncation and intervocalic lenition (t → l/V__V), but the latter is based on an independent stem *talkak* < **talki-ak* (i.e. *talkatak* < **talkak-tak*) and by the newly found dissimilation of consonant clusters, *KCVK#* → *CVK#*.
- 3) The discovery of (1), that the suffix *-tVK* occurring in the examples of the so-called reduplication with fixed segmentism alternates with the suffix *-lVK* that occurs independently of reduplication, along with its affixational origin evinced by nonreduplicative sound symbolic words such as, e.g., *sokon-tak* supports the idea that the type of fixed segment in Korean reduplication is morphological, rather than phonological, as previously claimed.
- 4) The discovery of (2), that *talkatak* is based on the independent word *talkak*, i.e. *talkatak* < **talkak-tak*, provides yet another argument (in addition to those provided in H-S. Kim 2003) for its type of reduplication being suffixing rather than infixing (internal), for under the assumption of extrametricality, i.e. *talka-ta-k*, the intervocalic ‘t’ should convert to ‘l’ as in **talki-tak* > *talkilak*.
- 5) A corollary of (3) above is that the so-called TETU effect, claimed with a constraint ranking such as *Ident-IO(Periph)* >> *Peripheral* >> *Ident-BR(Periph)*, cannot be maintained even under a ranking revised with the *Sonority Cline Constraints* of Lombardi (2003), and this adds to the claims of similar denial made previously in H-S. Kim (2003) regarding the reduplications in, e.g., *culuk* → *culu-lu-k* (i.e. *Max-*

IO>>NoCoda>>Max-BR) and, e.g., *p'aj* → *p'apaj* (i.e. *Ident-IO>>*Laryngeal>>Ident-BR (Laryn)*), resulting in denial of all 'three instances of TETU in Korean reduplication' often cited in literature.

What is missing in the above summary of the claims made in this paper is a question that perhaps could be dealt with in a study on language evolution: how did the suffix *-tVK*, affixational and nonreduplicative in origin, take on the function of reduplication in the form of morphological fixed segmentism in Korean? Note that this is a new question that would not have been raised in previous analyses, for, under the hypothesis of phonological fixed segmentism, forms like, e.g., *talkatak* would have the same input structure as the regular reduplication examples, e.g. *cululuk*, both having the structure of 'base+RED' as in */talkak-RED/* and */culuk-RED/*, and the fixed segment would have been inserted phonologically. But now that the type of fixed segmentism in Korean reduplication is found to be morphological rather than phonological, the fixed segment */t/* in *talkatak* should occur morphologically as part of the input, as in */talkak-RED-t/*, while *cululuk* would still have the same input, */culuk-RED/*. This change in the status of fixed segment in *talkatak*, however, does not bring with it any new meaning, so the next question is how the morphological fixed segment took on the reduplicative function.

Most suggestive of an answer to this question regarding origins of fixed segmentism in Korean reduplication is the concept of exaptation that Lass proposes as a mechanism of language change (Lass 1990, 1997). According to Lass (1990, p80), exaptation, 'an opportunistic co-optation of a feature whose origin is unrelated or only marginally related to its later use', is a concept coined by Stephen Gould and Elisabeth Vrba in evolutionary biology to explain the fortuitous use of the old genes, or copies of an ancestral redundant gene, for new biological functions. For example, feathers of birds were originally developed as a device to protect body temperature of the birds living in high latitudes but were later opportunistically co-opted as a device of flight.

As Lass admits, it is not desirable to directly compare the changes that occur in biology and linguistics, as they are essentially two independent systems. Still, I think the concept is a useful one, in that it can provide an explanation of the change in the functions of the suffix *-tVK*, by appealing to its chance co-optation as a device for marking partial reduplication. It is not surprising that this morphological exaptation has occurred in Korean, a language so richly endowed with sound symbolic devices, providing an opportunity to the bases which, not meeting the conditions on partial reduplication, would otherwise have been unable to express the same sound symbolism reserved for the regular partial reduplication.²⁰

²⁰ See J-S. Choy (2004) for another example of exaptation: Choy argues that umlaut takes on a new sociological function, yielding vowel fronting in examples that do not meet the

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conditions on umlaut in Korean, e.g. *tampe* ~ *tempe* "cigarettes", *cutuŋi* ~ *ciütuŋi* "mouth(pejorative)".

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