

The Full-to-Partial Reduction in Korean and Turkish Reduplication*

Hyung-Soo Kim
(Jeonju University)

Kim, Hyung-Soo. 2009. The Full-to-Partial Reduction in Korean and Turkish Reduplication. *Linguistic Research*. 26(2), 121-148. Turkish and Korean share the morphological feature of having only suffixation in derivation. Partial reduplications, however, appear to contradict this typological generalization: partial prefixal reduplication has been claimed to exist in both languages, even though such prefixation is not standard in agglutinative languages. In this paper I reexamine these exceptional cases under the assumption that they are reductions from full reduplications. Independent arguments for this analysis are presented with examples of similar reduction in nonreduplicative compounds. In Korean, for example, this morphological reduction is analyzed from the overall perspective of compound reduction of the type, *waksikil* < **wakil-sikil* 'swarming'. In Turkish, on the other hand, the initial stress placement in some of the so-called irregular reduplications suggests their compound origin. Possible analyses under recent reduplication frameworks, i.e. Correspondence Theory of McCarthy & Prince (1995) and Morphological Doubling Theory of Inkelas and Zoll (2005), are also presented, with their theoretical implications compared in the concluding remark. (Jeonju University)

Keywords compound reduction, origin of partial reduplication, Korean and Turkish derivational morphology, morphology-phonology interface, Correspondence Theory, Morphological Doubling Theory.

1. Introduction

It is well known that agglutinating languages have only suffixation, while nonagglutinating (isolating and inflecting) languages such as English have both suffixation and prefixation. Greenberg (1966) in his studies of implicational universals has linked this typological generalization to word order types in

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languages: VSO languages are overwhelmingly prepositional; SOV mainly postpositional (cf. his implicational universals 3 and 4).

Since both Korean and Turkish have SOV as their basic word order and agglutinative morphology, suffixation is naturally expected of them, which seems to be born out by most of their derivational morphology. Yet exceptions do exist in both languages, especially in partial reduplication. For example, Göksel and Kerslake (2005: 52) note for Turkish:

"The vast majority of derivation in Turkish is achieved through suffixation. Prefixation is used, to a very limited extent, for reduplication ... and in a few loan words..."

What Göksel and Kerslake (2005) refer to is the reduplication observed in what has traditionally been called emphatic/intensive adjectives by Turkish grammarians:

- (1) Emphatic Adjective Reduplication in Turkish (Cf. Swift 1963, Lewis 1967, Göksel & Kerslake 2005)

<u>Adjective</u>	<u>Emphatic adjective</u>
uzun 'long'	upuzun 'very long'
eski 'old'	epeski 'very old'
olgun 'mature'	opolgun 'dead ripe'
bütün 'entire'	büsbütün 'entirely, completely'
sarı 'yellow'	sapsarı 'bright yellow'
kati 'hard'	kaskati 'hard as a rock'
temiz 'clean'	tertemiz 'clean as a pin'
siyah 'black'	sımsiyah 'pitch black'

In (1), the emphatic adjectives on the right are formed by reduplication of the initial CV of the plain adjective on the left, followed by appendage of a 'linking consonant', which is one of the set {p, m, s, r}:

- (2) Emphatic reduplication in Turkish:

$$C_1V_1C_2\cdots \rightarrow C_1V_1+\{p, m, s, r\}+C_1V_1C_2\cdots$$

The traditional interpretation of this rule is that it is a prefixal partial reduplication, albeit a complex one involving seemingly ideosyncratic insertion of

linking consonant. Yet this delineation of emphatic reduplication as prefixal is in conflict with the Greenbergian typological universal that SOV languages with agglutinative morphology have suffixation only.

The lack of prefixation seems to be a common feature that runs through Altaic languages and this obviously has to do with their being an agglutinating language, as Menges (1968: 73) notes:

"... the Altaic languages are agglutinative, and within the multitude of agglutinative languages they ... show agglutination by suffixation only."

Korean, also a member (though disputed) of the Altaic group, has mainly postpositions (or suffixes) but in reduplicative constructions it appears to have not only suffixation but prefixation:¹⁾²⁾

(3) Partial reduplication in Korean (Cf. H-S. Kim 2003)

a. Prefixal reduplication:

<u>Base</u>	<u>Reduplicated</u>
t'ekul	t'ek-t'ekul <*t'ek-t'ekul 'rolling'
tuj̄sil	tu-tuj̄sil <*tuj̄-tuj̄sil ³⁾ 'floating'
kolu	kol-kolu <*kol-kolu 'evenly divided'

b. Suffixal reduplication:

<u>Base</u>	<u>Reduplicated</u>
culuk	cululuk <*culuk-luk 'flowing'

-
- 1) Whether Korean belongs to the Altaic language family or not is not as definitive as it used to be; as a matter of fact, the existence of Altaic language family itself is often disputed, with the alternative view that the common features shared by Turkic, Mongolic, Manchu-Tungusic languages and Korean (and Japanese) could be due in part to their being in the same linguistic area (cf. Clauson 1962, chap. 11). Under this view, the common linguistic features of Turkish and Korean are considered to be due to areal diffusion (cf. Aikenvald and Dixon 2001).
- 2) I say 'mainly' because Korean does seem to have a few examples of what could be referred to as prefixes, e.g. haes-sakwa 'the newly harvested apple of the year', but these are mostly adnouns, cf. hae 'new, of the year; sunny' + s ('Bindungs s', which often marks noun compounds) + sakwa 'apple' (cf. Martin 1992: 149).
- 3) The loss of velar consonant in this and other reduplicative forms in (3) are explained by 'dissimilation of consonant clusters', which drops the first velar consonant in sequences of the type, KCVK{C, #} (where 'K' refers to /k/ and /ŋ/) as explained in section 2.1 below.

talkak	talkatak	<*talkak-tak ⁴	'clattering'
ʔaliŋ	ʔaliliŋ	<*ʔaliŋ-liŋ	'jingling'

How we should explain this seeming typological aberration is one of the topics of this paper, which we begin by examining the behavior of compounds in Korean and Turkish. Full reduplications have been known to behave like co-compounds in languages⁵) and, as Steriade (1988) has shown, it seems a viable hypothesis that partial reduplication originates by reduction from full reduplication. What is interesting is that both Korean and Turkish reduce their compounds by clipping the first member to initial CVC, suggesting that their prefixal reduplications are indeed reductions of fully reduplicated compounds by compound reduction. However, a number of points have to be clarified before one could claim compound reduction as the mechanism of full-to-partial reduction in reduplication. For one thing, Steriade (1988) sees ALL partial reduplications as reduced from their fully reduplicated counterparts, but this seems too strong a claim, as has been pointed out recently by Singh (2005) as well as Hurch and Mattes (2005; 2009). Should we analyze, for example, the suffixal partial reduplication in (3b), e.g. *cululuk* 'flowing', as a reduction of its fully reduplicated counterpart, e.g. *culuk-culuk*, despite lack of any independent evidence that the second member of a compound reduces to final CVC in Korean?

Another issue concerns the mechanism itself. Steriade (1988: 81 and *passim*.) sees 'stem truncation' rather than compound reduction as the standard mechanism of reduction in reduplication. The truncation rule used in her analysis, however, often has no internal motivation. This is in contrast to the analysis in this paper in which the prefixal reduplication in (3a) is explained as a reduction from its full reduplication, e.g. *ʔekul-ʔekul* > *ʔekʔekul*, based on the independent internal evidence for compound reduction, e.g. *wak-sikil* <**wakil-sikil* 'swarming'. An important question thus arises: should we allow stem truncation to be the standard mechanism of reduplicative reduction or should 'compound reduction' be the sole mechanism allowed?

On the other hand, there have been a number of recent proposals concerning

4) This suffixal addition of /t/ has previously been analyzed as a case of fixed segmentism in reduplication. Note the same dissimilation of consonant clusters applying in this example. See Alderete et al. (1997) and H-S. Kim (2005) for fixed segmentism and its origin in Korean.

5) Note for example Y-S Kim (1985) where he analyzes full reduplication forms as co-compounds.

analysis of reduplication, most notable of which are the Correspondence Theory of McCarthy and Prince (CT; 1995) and the Morphological Doubling Theory of Inkelas and Zoll (MDT; 2005). It seems thus appropriate to see how these frameworks can deal with the issue of full-to-partial reduction in reduplication. In the following, I therefore explore an alternative 'nonprefixal' analysis of partial reduplications in Korean and Turkish under the hypothesis that they are cases of morphological reduction of reduplicative compounds (section 2). I then compare this rule-based serial analysis with previous and/or possible analyses of the same data under the aforementioned two frameworks (section 3). A concluding remark concerning the theoretical issues and implications appears in section 4.

2. Reduction of reduplicated compounds

We begin with Steriade's (1988: 74) hypothesis concerning the relation between modified and unmodified reduplication:

"The transformations introduced by modified reduplication stem from operations encountered in non-reduplicative morphologies as well. Modified reduplications instantiate general operations of morphologically conditioned stem modification. Stem modification may involve STEM TRUNCATION (the elimination and/or simplification of stem syllables) or SEGMENTAL INSERTIONS and SUBSTITUTIONS in the stem. Partial reduplication is nothing but a subtype of stem truncation. Prespecified reduplication is nothing but a subtype of segmental insertion/substitution operating on a stem morpheme." (Emphasis original)

This hypothesis views partial reduplication as a case of reduction from full reduplication by stem truncation, while prespecified reduplication, whether partial or full, is a result of segmental insertion/substitution. It claims that since any of these modifications can occur in non-reduplicative morphologies, they are not part of, and therefore independent of, the reduplicative copying process.

The following examples in Madurese as cited by Steriade will instantiate the above claim:

(4) Madurese partial reduplication and compound reduction (Steriade

1988; McCarthy and Prince 1986/1996; Stevens 1994)

A. Partial reduplication

dus-garadus 'fast and sloppy'

waʔ-buwaʔ-(an) 'fruits'

bit-abit 'finally'

B. Compound reduction

sap-lati 'handkerchief' (usap 'wipe' lati 'lip')

sar-suri 'afternoon market' (pasar 'market' suri 'afternoon')

zhuʔ-əpul 'pinky' (tuzhuʔ 'finger' ənpul 'pinky')

As has been noted by McCarthy and Prince (1986/1996), there is a striking resemblance between (4a) and (4b) if we regard the former as originating from fully reduplicated compounds: in both cases the first stem of the compound is reduced to its last syllable, e.g. *garadus-garadus > dus-garadus 'fast and sloppy', *usap-lati > sap-lati 'handkerchief'.⁶⁾ These examples thus support Steriade's hypothesis that 'partial reduplication is full reduplication accompanied by the independent operations of stem truncation'.

But Steriade (and also MDT as explained below) uses 'stem truncation' to discard the parts unrepeated in the partially reduplicated form. An argument usually given for this rule is that languages often exhibit similar truncation of words, as in French hypocoristics, e.g. Zabe for Isabelle, etc. It is, however, not clear whether the two phenomena should be subsumed under the same rule of truncation. Broadly speaking, hypocoristics are variations of the proper surface form which has undergone the morpho-phonological rules of the language; reduplication, on the other hand, is a morphological process that should be active in the morphology as part of the word formation process, even though it is not improbable that it should occur at the surface level, perhaps as a repetition

6) Although the Madurese examples in (4) are clear enough, Stevens (1994) provides many arguments against the contention that the partial reduplication in (4a) is derived from full reduplication by the same truncation rule as in (4b). For example, the compound reduction in (4b) is not a very productive process, with its application restricted to vocatives, the short forms of the numbers and some compounds while the nontruncated compounds are much more common. The parallel reduction between partial reduplication and compounds in Madurese is thus disputable. In spite of these doubts, I take Steriade's hypothesis to be essentially correct with the caveat that not all partial reduplications are reductions from full reduplication.

of an old reduplication process.⁷⁾ The following passage from McCarthy and Prince (1986/1996: 74) rather suggests that 'compound reduction' is the intuitively correct mechanism of reduction:

"... the Madurese ... pattern in which a copy of the stem-final syllable is prefixed (as in *wa.-buwa.-an* 'fruits'), is straightforwardly derived by total stem reduplication, yielding /buwa.-buwa.-an/, and a subsequent rule reducing the left branch of a compound to its stressed (that is, final) syllable ... Both of these rules, stem reduplication and compound truncation, are extensively independently motivated in the language."

In the following analysis, I will therefore use compound reduction as a process responsible for full-to-partial reduction in reduplication, deferring a further discussion on the matter until section 3. What is interesting is that the parallel reduction observed between reduplicative and nonreduplicative compounds in Madurese is also observed in Korean and Turkish, furnishing an argument for establishing compound reduction as the proper mechanism for full-to-partial reduction of reduplicative compounds, which in turn confirms the thesis that in accordance with Greenberg's implicational universal, Korean and Turkish with SOV word order and agglutinative morphology do not have prefixes in their morphological derivation, at least in partial reduplications.

2.1 Full-to-partial reduction in Korean

We have already cited the examples of partial reduplication in (3) but under the above hypothesis we can now view the prefixal partial reduplication (3b) as arising not by the process of partial copying of the stem but by full-to-partial reduction of reduplicative constructions:

(5) Full-to-partial reduction in Korean reduplication

<u>Full reduplication</u>	<u>Reduced to partial reduplication</u>
t'ekul-t'ekul	t'ekt'ekul 'rolling'
tutʷsil-tutʷsil	tutʷsil 'floating'

7) Wilbur's (1973) Identity Constraint and its examples testify to this possibility. See H-S. Kim (2008) for how this constraint works for over- and under-application cases in Korean reduplication.

kolu-kolu kolkolu ‘evenly divided’

The rule for this reduction goes as follows: first you form a compound by repeating the base; second, you reduce the first stem of the full compound to initial CVC, discarding what follows after that. This operation will give intermediate forms such as *tek-tekul, *tuŋ-tuŋsil and *kol-kolu, to which then applies the following phonological rule of dissimilation:

(6) Dissimilation of consonant clusters (cf. H-S. Kim 2003)⁸⁾

KCVK{C, #} → CVK {C, #} where K= /k/ or /ŋ/

Consider the following derivation:

(7)

ʼekul-ʼekul	tuŋsil-tuŋsil	kolu-kolu	
tek-tekul	tuŋ-tuŋsil	kol-kolu	full-to-partial reduction
“	tu-tuŋsil	”	dissimilation

A question that immediately arises is: what kind of rule is the full-to-partial reduction, a phonological rule or a morphological rule? First thing to note in regards to this question is that while the dissimilation rule is phonologically conditioned (i.e. it occurs between two sufficiently similar consonant clusters), the full-to-partial reduction does not have such phonological conditioning. The only requirement for its application is the stipulation that it should occur to a fully reduplicated compound, which suggests its morphological character.⁹⁾

8) Partial reduplication in Korean has a long analytic history, beginning with traditional description of Chae 1986, followed by its analysis in various frameworks, e.g. Y-S. Kim 1985 (nonlinear CV phonology); M&P 1986/1996, Suh 1993, Jun 1994 and Davis and Lee 1996 (Prosodic Phonology and Morphology); and recently J-H. Kim 1997, Kang 1998, Y-M. Yu Cho 1999, Chung 1999 and Ahn 2000 (Optimality Theory). An up-to-date summary of the previous analyses is also provided by C-W. Kim (1998). This dissimilation rule is then what I have proposed under a traditional rule-based approach, after reviewing all the pros and cons of previous analyses. For this reason I have used it throughout the paper: employing the rules/constraints of previous analyses would not have changed the essence of the argument presented in the paper, namely that the partial prefix reduplications in (3a) are reductions from their fully reduplicated counterparts. The same rule, along with further critique of previous analyses also appears in the follow-up articles (cf. H-S. Kim 2005; 2006).

9) Alternatively, one may view the reduction as a rhythmic shortening, on the ground that it is designed to avoid the monotonous repetition of the base, in which case it could be viewed as a prosodic reduction process that maintains the same number of feet between the full reduplication

On the other hand, the CVC template, which is what remains of the first stem after the reduction, suggests possible involvement of weight parameters such as monosyllabic foot, in which case the condition could be argued to be partly phonological. This suggests that it is a rule that occurs at the boundary of morphology and phonology. Many implications can follow, however, from how one formulates this rule, as we will see when we discuss the theoretical implications of the analysis in section 4 below.

This analysis in terms of full-to-partial reduction offers an alternative to the previous analysis which views examples such as 'tek-tekul' as prefixal partial reduplication. Since the reduction is a result not of an affixation but of a rule occurring at the morphology-phonology interface, the first part of the reduplicative compound cannot be prefixal (obviously what is not an affix cannot be a prefix); rather, what we have is simply an alternate, morphologically reduced form of full reduplication. This analysis thus eliminates prefixal partial reduplication from Korean, the recognition of which was against the universal tendency that 'SOV' languages with agglutinative morphology are mainly postpositional.

For evidence that the full-to-partial reduction is a viable process in the language, consider the following non-reduplicative compounds:

(8) Sound symbolic words meaning 'swarming'

waksikil (>waksil)¹⁰

oksikil (>oksil)

uksikil (>uksil)

tiksikil (>tiksil)

No morphological analysis of these sound symbolic words have previously been offered; the dictionaries I have consulted, such as e.g. *The Standard Dictionary of*

form and its reduced counterpart. Borrowing Jun's (1994) 'metrical weight consistency' one could even argue that the fully reduplicated, e.g. tekul-tekul, and its reduced counterpart, e.g. tek-tekul, have the same number of feet (two feet) despite its reduction of length. But the rhythmic effect, if real, is more likely to be the result (rather than the cause) of the reduction, as, for example, the phonological reduction in, e.g. tuŋsil tuŋsil ~ tu-tuŋsil, is not caused by rhythmic shortening but by the dissimilation of consonant clusters, which has made it rhythmically pleasing.

10) Note that 'sikil' phonologically reduces to 'sil' in the forms in parenthesis, which, without the corresponding unreduced compound form, could look like a suffix.

Korean (cf. The National Academy of Korean Language Research 1999), explain the forms in parenthesis as reduced from the ones on their left but fail to mention their complex morphological structure. The compound structure of these forms becomes obvious, however, once we compare them to the following fully reduplicated forms with the same base meaning 'swarm', which unlike the forms in (5) do not reduce:

- (9) Full reduplication of sound symbolic bases meaning 'swarm'
- | | |
|-------------|------------------------------|
| wakil-wakil | (> ₩wak-wakil) ¹¹ |
| okil-okil | (> ₩ok-okil) |
| ukil-ukil | (> ₩uk-ukil) |
| tikil-tikil | (> ₩tik-tikil) |
| sikil-sikil | (> ₩sik-sikil) |

These examples suggest that the forms in (8), e.g. 'waksikil' are derived from a compound of two stems, e.g. /wakil/ and /sikil/, which occur independently as fully reduplicated forms in (9); the first stem reduces to CVC, by the same full-to-partial reduction observed in fully reduplicated forms in (5) above. The only difference is that unlike in (5) where the reduction is optional, here it is obligatory:

- (10) Obligatory reduction of sound symbolic compounds

<u>Full compound</u>	<u>Full-to-partial reduction</u>
*wakil-sikil	wak-sikil (>waksil)
*okil-sikil	ok-sikil (>oksil)
*ukil-sikil	uk-sikil (>uksil)
*tikil-sikil	tik-sikil (>tiksil)

The same full-to-partial reduction occurs with reduplicative and non-reduplicative compounding of the base /takil/ meaning 'clanging', except that both the fully reduplicated form and the compound undergo obligatory reduction:

11) The symbol ₩ indicates an incorrect form: 'c' for 'correct' and '/' for 'not'. The asterisk is reserved for an underlying or intermediate form.

(11) Reduction of the base /takil/ in reduplication and compounding

<u>Full compound</u>	<u>Full-to-partial reduction</u>
*takil-takil	tak-takil 'clanging'
*wakil-takil	wak-takil 'clanging'

A further study is required to find out the exact distribution in the reduction of reduplicated and compound sound symbolic forms: why is such reduction allowed in certain cases (e.g. *takil-takil~tak-takil) but not in others (e.g. sikil-sikil ~ *sik-sikil).¹² But since this reduction occurs independent of reduplication (e.g. *wakil-sikil>wak-sikil), it cannot occur as part of the reduplication process, as was assumed in previous analysis of partial reduplication examples in (5). Rather, these sound symbolic forms began their life as a case of full reduplication, but as a result of characteristic compound reduction, the first stem has morphologically reduced to initial CVC, giving credence to Steriade's hypothesis concerning the origin of partial reduplication as well as the thesis that no prefix exists in a postpositional language such as Korean.

A question that still remains, however, is whether we should derive the partial suffixal reduplications in (3b), e.g. culuk-culuk/cululuk, by the same process of compound reduction. This option initially looks attractive because 1) according to Steriade's hypothesis all partial reduplications are modifications from full reduplication and 2) they could be derived by applying the same rules of compound reduction and dissimilation of consonant clusters: *culuk-culuk > *culuk-luk (compound reduction) > cululuk (by dissimilation of consonant clusters). There are, however, problems with extending the compound reduction to analysis of suffixal reduplication. For example, there are fixed segmentism cases in (3b), e.g. talkak-talkak/talkatak, in which the reduction cannot be applied directly, not *talkakak. We will consider these problems in greater detail in section 3 below. For now let us look into partial reduplication in Turkish, another Altaic language that possesses the same SOV word order and agglutinative morphology.

12) Note also 'sokon-tak> soka' and 'sukun-tək> suka' (both meaning 'whispering') where the same compound reduction seems to occur, suggesting perhaps the radical origin of the suffix '-tAk' (cf. H-S. Kim 2006).

2.2 Turkish reduction of compounds and emphatic adjective formation

As in Korean, the compounds in Turkish also offer some insights into full-to-partial reduction in reduplication. I consider first the binomial compounds (2.2.1.), in which two stems of approximately the same meaning are joined to yield an emphatic adjective. When reduced by the rule of compound reduction, these adjectives superficially look very much like the emphatic adjectives in (1), which is why they are sometimes called irregular emphatic adjectives. I then present the pros and cons of analyzing the emphatic adjective formation itself under the same compound reduction (2.2.2.).

2.2.1. The so-called irregular emphatic reduplication in Turkish

The following examples of emphatic adjectives are interesting for a number of reasons:

(12) Irregular emphatic adjectives in Turkish¹³⁾

<u>Adjective</u>	<u>Emphatic adjective</u>
çıplák	çırılçıplak ~ çırçıplak 'stark naked'
çıpıldák 'naked'	çırılçıpıldak ~ çırçıpıldak 'stark naked'
*sıklam	sırılısıklam ~ sırsıklam 'sopping wet'

First, the alternate emphatic adjectives strongly suggest that the forms with apparent CVC prefixes indeed originate from compounding of two stem forms. It is a general rule of Turkish that stress falls on the first member of a compound, on its final syllable if it is polysyllabic. Göksel and Kerslake (2005: 28) note for example that 'most noun compounds are stressed on (the stressable syllable of) the first element', e.g.

13) Even though this is a misnomer (the emphatic adjective formation in Turkish as a whole is 'irregular'), I will continue to use the term for consistency. There are also other examples of irregular reduplication not included here as they occur with the enclitic /mA/: kármakarışık 'completely confused', darmadağınık 'all over the place', and parámparça <*para-ma-parça 'broken to pieces'. Although the vowel of the enclitic drops in the last example, it does not in the first two examples because the medial vowel is supported by a preceding consonant cluster (cf. footnote 15) below). These adjectives are comparable to Korean emphatic adjectives with the enclitic /ti/ or /na/: cha-ti-chan 'very cold', ki-na-kin 'very long', etc. No compound reduction occurs in paramparça presumably because the stems are tightly joined by the enclitic.

(13) Turkish compound stress

b \acute{u} g \acute{u} n (bu 'this' + g \acute{u} n 'day') 'today'b \acute{a} şbakan (baş 'head' + bakan 'minister') 'prime minister'Thus: *çırılçıplak* but *çırçıplak* 'stark naked'.

Second, they are very similar to Korean compounds in (8), e.g. **wakil-sikil* > *waksikil*, in that they are composed of two stems with the same meaning but in slightly different form. For example, consider the pair *sırılısklam* ~ *sırsıklam* 'sopping wet'. According to Nişanyan's (2002) etymological dictionary, the first part of the compound *sırıl-* means 'be smeared, stick', while **sıklam* is an adjective stem meaning 'wet' no longer in use (Lewis 1967: 56).¹⁴ The juxtaposition of these two stems thus gives the emphatic meaning 'sopping wet'. The first member of this compound then reduces to *sır-* in accordance with the general rule of compound reduction and stress placement in Turkish.

The pair *çırılçıplak* ~ *çırçıplak* 'stark naked', on the other hand, suggests another method of how emphatic adjectives may have been formed. Nişanyan(2002) notes that the adjective *çıplak* 'naked' is of onomatopoeic origin, appearing over the years (between 14th-20th century) in various forms of *cavlak/cıblak/cııldak*. Interestingly, all these bases or their modifications occur in emphatic adjectives of Turkish: the first base gives the emphatic adjective *cas-cavlak* 'completely naked or bald', while the remaining two are given in (12). Nişanyan (2002) gives *cıblı/cıbil* as the base, from which we can deduce the underlying base **çıpıl-ák* for the modern Turkish adjective *çıplak*. This etymological information suggests that the first member of the compound *çırılçıplak* could be a variation on the underlying base, the variation having been effected by changing the middle consonant from /p/ to /r/ (obviously -ak is a suffix), while the vowel in the second member as well as in the non-emphatic adjective drops by syncope:

(14) Compound formation in *çırılçıplak*

çıpıl-ak çıpıl-çıpıl-ak

çıpıl-ák çıpıl-çıpıl-ak stress assignment

14) Note that 'ıslak' is the non-emphatic adjective currently in use (Gerd Jendraschek, p.c.; I am grateful to Gerd for pointing this out to me). According to Nişanyan (2002), this adjective shares the same origin with *sırılısklam*, even though how the segment sequence got so scrambled is a mystery.

çıpıl-ák	çırıl-çıpıl-ak	/p/-to-/r/ dissimilative variation
çıplák	çırıl-çıplak	syncope
N/A	çır-çıplak	(optional) compound reduction

The same syncope, however, fails in the pair *çırılçıplıkdak* ~ *çırçıplıkdak* 'stark naked' because the medial vowel is supported by the following consonant cluster.¹⁵⁾

For dissimilative consonant replacement, perhaps the most controversial step in the derivation, note the initial variation of the consonant in Turkish /m/-reduplication, e.g. *kitap-mitap* 'books, etc. In Finnish emphatic adjective formation (Lindstrom 1995), the /p/ of the emphatic particle /pA/ changes to either /r/ or /t/ if the base contains a labial consonant, e.g. *puti-puhdas* 'completely clean' (cf. *puhdas* 'clean') and *piri-pinta* 'right on the surface' (cf. *pinta* 'surface'). In Tungusic languages it often happens that the default linking consonant /b/ (or its variant /v/) is avoided if the base begins with a labial, as in the following examples.

- (15) Dissimilation in Tungusic emphatic reduplication (Li and Whaley 2000; Hujjiltu 1998: 221)

Oroqen: *kob kəŋnərin* 'very dark' but *bag bagdarın* 'snow-white'
 Xibe: *gov golmin* 'very long', *nav narzun* 'very thin', *xab xalxun* 'very hot', *tab tarxun* 'very fat' but *faq farzun* 'very dark'

Obviously, as the following examples illustrate, this Turkish dissimilation of consonant is not limited to /m/-reduplication, nor is it to the initial consonant:

- (16) Turkish reduplication with middle consonant variation:
konu komşu 'neighbors'
çoluk çocuk 'wife and children'

2.2.2 Emphatic adjective formation in Turkish

Could the same explanation be extended to the Turkish emphatic

15) Cf. the same preferential syncope in footnote 13) above. See H-S. Kim (1993) for further explanation of this condition on syncope.

reduplication in general? That is, could we say that the emphatic adjectives in (1) are also derived not by prefixal reduplication but by full reduplication with subsequent compound reduction? This is a complex question that cannot be answered in a simple affirmative: while there certainly are advantages in answering this question affirmatively, a number of problems still remain unresolved, complicating the analysis and casting a shadow of doubt on the reduction hypothesis.

The immediate advantage of such an analysis will be that the emphatic reduplication in (1) is no longer prefixal, thus keeping Turkish (another agglutinative language with SOV word order like Korean) within the purview of Greenberg's typological universal.

The stress position in (1), which is on the initial syllable in accordance with the special compound stress rule, also supports the full-to-partial reduction analysis. Thus:

(17) The stress pattern in emphatic adjectives (cf. Dobrobolsky 1987)

<u>Adjective</u>	<u>Emphatic adjective</u>
uzún 'long'	úpuzun 'very long'
eskí 'old'	épeski 'very old'
olgún 'mature'	ópolgun 'dead ripe'
bütün 'entire'	büsbütün 'entirely, completely'
sarı 'yellow'	sápsarı 'bright yellow'
katí 'hard'	káskatı 'hard as a rock'
temíz 'clean'	tértemiz 'clean as a pin'
siyáh 'black'	sımsiyah 'pitch black'

The fact that the stress uniformly falls on the reduplicant in *úp-uzun*, *ép-eski*, etc. despite the general final syllable stress assignment in Turkish, e.g. *uzún*, *eskí*, etc., can be easily explained if we regard the emphatic adjectives as compounds that have been reduced from their fully reduplicated counterparts, just as in the above case of *çırılçıplak* ~ *çırçıplak* 'stark naked'.

The complication comes from the fact that a linking consonant intervenes between the reduplicant and the base, as in the formulation of the rule (2), repeated here for convenience:

(18) Emphatic reduplication in Turkish:

$$C_1V_1C_2\cdots \rightarrow C_1V_1+\{p, m, s, r\}+C_1V_1C_2\cdots$$

Under the compound reduction hypothesis, the linking consonant should somehow correspond to C_2 of the base, by having itself either directly substitute the latter or become inserted first, then dispose the latter phonologically. Both of these options happen to agree with Steriade's (1988) definition of prespecified reduplication, while the repetition of the first two elements indicates partial reduplication. The problem, however, is that the linking consonant is not really fixed, being picked among the four consonants of {p, m, s, r}, often with no phonological regularity. This means that the linking consonant has to be inserted lexically.¹⁶⁾ Under compound reduction, this partial prespecified reduplication then can be derived as follows:

(19) Derivation of emphatic adjectives (Cf. /p/ is prespecified as the linking consonant for sarı 'yellow'):

sarı-p-sarı
 sar-p-sarı compound reduction (CVC-)
 sár-p-sarı compound stress
 sáp-sarı substitution/elision by linking consonant

Although unwieldy in places due to the idiosyncratic nature of the linking consonant, this derivation at least shows that compound reduction is a workable hypothesis.¹⁷⁾

16) Some analysts like Wedel (2000) view the linking consonant as affixal, suggesting the variants as allomorphic, but there are just too many exceptions to the allomorphy analysis, even when /r/ is excluded from the set and only the novel adjectives solicited from native speakers are considered. This is the reason why I simply assume prespecified lexical insertion, leaving many complicated questions to the future research.

17) The problem of emphatic adjectives in Turkish (and other Altaic languages) is a topic so complicated that it requires another paper with in-depth discussion. The main problem is not the existence of the linking consonant itself but why it should come from the set {p, m, s, r}. There are also other 'irregular' emphatic adjectives that need to be taken into account. However, what is certain amid all these complexities seems to be the fact that compound reduction plays a role in formation of emphatic adjectives, as hypothesized in this paper.

3. Comparison with possible CT and MDT analyses

So far my analysis has been in a traditional rule-based approach with the purpose of showing that: 1) partial prefixal reduplications in Korean and Turkish arise as a result of reduction from their fully reduplicated counterparts, the same kind of compound reduction independently observed in these languages; 2) therefore Korean and Turkish do not really have prefixal reduplications, in accordance with Greenberg's typological universal that languages with SOV word order and agglutinative morphology generally have suffixation only. I now consider analysis of the same data under two recently proposed reduplication frameworks: the Correspondence Theory of McCarthy and Prince (CT; 1995) and the Morphological Doubling Theory of Inkelas and Zoll (MDT; 2005). The theoretical implications of this comparison appear in the conclusion.

3.1. The CT analysis of Korean and Turkish partial reduplication

In standard Correspondence Theory, one can only analyze the Korean examples in (3a), e.g. *t'ek-t'ekul*, as a prefixal partial reduplication because the theory posits RED as an affix that triggers reduplication. The reduplicant will be restricted to 'CVC' by a template in conjunction with this RED affix: REDpart ≤ σ .¹⁸⁾

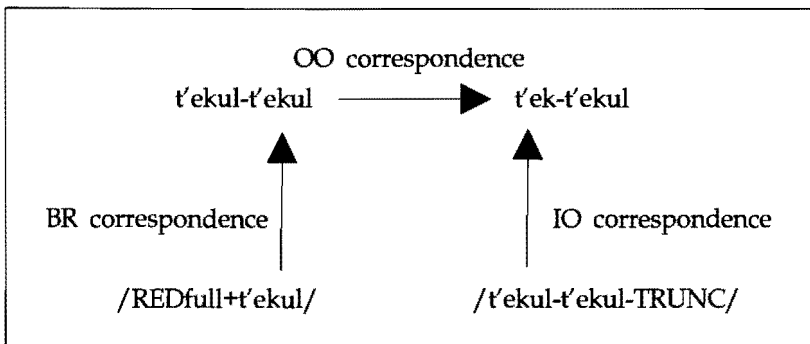
However, an analysis that views the same data as a reduction from its full reduplication counterpart is conceivable in the new version of the theory, the Transderivational Correspondence Theory of Benua (TCT; 1997), where in addition to correspondences of input to output (IO) and base to reduplicant (BR) a new correspondence relation is set up between morphologically related output forms. For example, Benua (1997: 33) explains the peculiarity of the vowel in the hypocoristic form *Lar* [læɾ], truncated from *Larry* [læri], by setting up an output to output (OO) correspondence between the two surface forms; the upshot of her explanation is that the former still maintains the lax vowel despite its violation of the phonotactic constraint against tautosyllabic [æɾ] sequence in English, because it obeys the high ranking OO-ident constraint that checks the identity with the latter, an output form morphologically related to it via truncation.

Since truncation is the rule that Steriade (1988) uses in her analysis of partial

18) For an example of such an analysis, see Y-M. Yu Cho (1999).

reduplication as a reduction from full reduplication, could we also have the same rule define compound reduction by setting up an output to output correspondence relation between the fully reduplicated form and its reduced, or truncated, form? The following diagram shows how this new OO correspondence fits into the overall scheme of correspondence relations:

(20) Transderivational relations between reduplicated forms (cf. Benua 1997: 7)



Notice that nowhere in this diagram is partial reduplication mentioned; there are only the full reduplication (which triggers co-compounding), and truncation (which reduces the first part of the compound to initial CVC).¹⁹⁾

Under such an assumption the BR correspondence in partial reduplication is no longer necessary, thus no need for the prefixal REDpart affix. As Inkelas and Zoll (2005: 65) note in their comparison of MDT with OO correspondence, such allowance will move the CT/TCT much closer to MDT, as we will see in more detail below.

A problem with CT/TCT is that sometimes there may be no output form to correspond to, as for example in the case of Korean 'wak-sikil' from *wakil-sikil. We know this form has arisen by compound reduction because there are forms such as 'wakil-wakil' and 'sikil-sikil', which are fully reduplicated; these forms however do not directly correspond to the reduced compound 'wak-sikil', which

19) In her explanation of the vowel in 'Lar' from 'Larry,' Benua (1997: 34) actually uses the morphological truncation to index the former ('as Larry-Trunc') with the latter in an OO correspondence relationship. The input form 't'ek-t'ekul' as 't'ekul-t'ekul-Trunc' follows the same tradition, which implies that this form is from a fully reduplicated form by full-to-partial truncation.

can only come from superficially nonexistent *wakil-sikil.

A similar situation obtains in Turkish emphatic reduplication. We have derived the emphatic adjective *sáp-sarı* from **sarı-p-sarı* by compound reduction, even though there is no corresponding output form with full reduplication. Although this Turkish case may be excused on account of the complications involved with the linking consonant, the Korean case clearly shows the limits of TCT.²⁰⁾

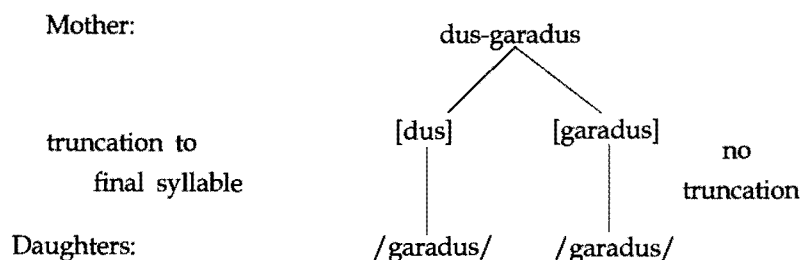
3.2. The MDT analysis of Korean and Turkish partial reduplication

Another framework that also adopts stem truncation and sees nearly all partial reduplication as a reduction from full reduplication²¹⁾ is the recently proposed Morphological Doubling Theory (MDT; Inkelas and Zoll 2005), which attempts to explain reduplication from a canonical compound structure typically made up of two synonymic stems (called ‘daughters’) conjoined into a compound at a higher word level (called ‘mother’), with independent co-phonology in each of the three components. In this framework the partial reduplication usually arises as a result of reduction in one of two daughters by stem truncation.

For example, an MDT analysis of Madurese partial reduplication could be summed up in the following diagram:

(21) An MDT analysis of Madurese partial reduplication:

**garadus-garadus* > *dus-garadus* ‘fast and sloppy’



This analysis is simple enough in reducing the first stem of the compound to

20) Inkelas and Zoll (2005: 65) also cite the same problem in Bantu reduplication.

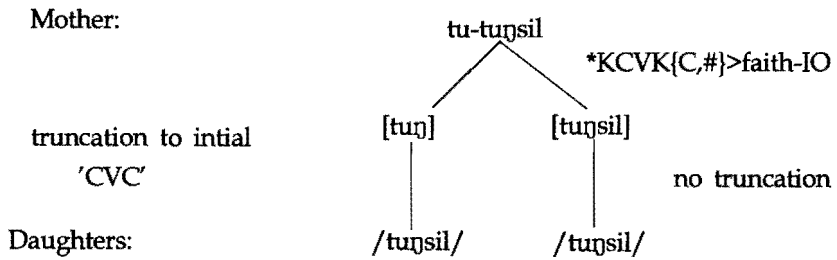
21) I say ‘nearly’ because in this framework a small number of ‘phonological doubling’ is allowed.

its final syllable in the daughter cophonology. One obvious advantage of it is that unlike in previous ‘copy and association’ analysis of Marantz (1982), where the Madurese partial reduplication is a peculiar ‘unmarked’ case of copying the final syllable of the base and affixing it as a prefix, the problem of ‘wrong side’ reduplication (cf. Nelson 2005) does not arise in this analysis, because partial reduplication is not viewed as a phonological copying from the base but as a reduction of the first stem from full reduplication via stem truncation.

For Korean partial reduplication in (3), the MDT could derive both the prefixal and the suffixal reduplications in the same manner, the former by truncation of the first daughter to initial CVC but the latter by truncation of the second daughter to final CVC:

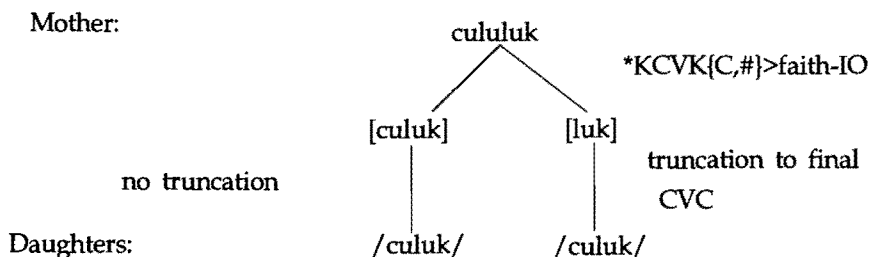
(22) An MDT analysis of partial reduplication in Korean²²⁾

a. tuŋsil-tuŋsil > *tuŋ-tuŋsil > tu-tuŋsil



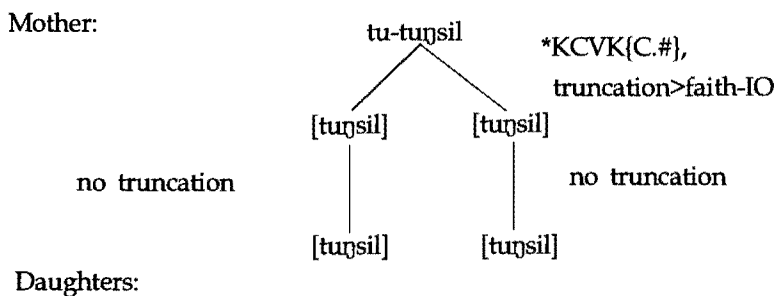
22) MDT still uses the OT constraints in the cophonology components. However, since it replaces the role played by base-reduplicant identity with morphological doubling, it does not use constraints such as ident-BR, which is thus replaced by faith-IO in the following diagrams. *KCVK{C,#} is the constraint that prohibits succession of two velar clusters, an equivalent to the phonological rule of dissimilation of consonant clusters in (6) above. This constraint dominates faith-IO at the mother node cophonology yielding further ‘phonological’ modification to the forms already reduced by truncation from morphological doubling.

b. culuk-culuk>*culuk-luk>cululuk



Another possibility is truncation at the mother node. This would yield an analysis more in line with the compound reduction hypothesis of this paper because it is at the mother node that the conjoining of two daughter stems occurs. Since the truncation occurs at this higher level, it should specifically recognize the compound word structure.

(23) MDT analysis of tuşsil-tuşsil>tu-tuşsil with truncation at the mother node:

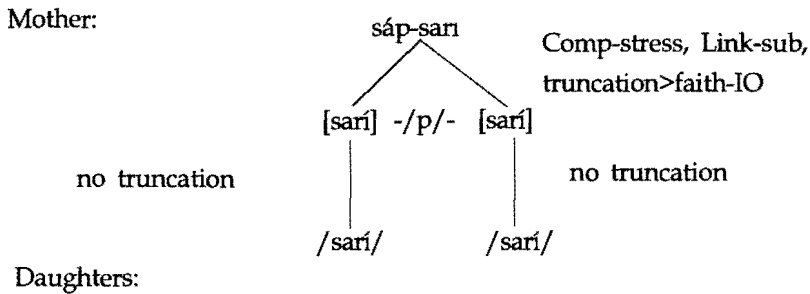


The suffixal reduplication in 'cululuk' could have a similar explanation. You only need to add that when the stem ends in a velar consonant, the truncation occurs with the second member of the compound. As in the preceding explanation in which truncation occurs at the daughter cophonology, there is no way to prevent the suffixal reduplication from being interpreted as a case of full-to-partial reduction, despite that there is no internal evidence for such a reduction.

As for Turkish emphatic reduplication, the problem is how to introduce the linking consonant. As in (19), we could assume that it is lexically inserted as a

prespecified element which replaces the C₂ of the reduplicant; it is then best to have the truncation occur in the mother cophonology in recognition of the fact that the reduction occurs at the compound word level, even though it is also possible to have the same reduction occur at the daughter level.

(24) An MDT analysis of Turkish emphatic reduplication:



In sum, both MDT and CT/TCT are well equipped with dealing with the compound reduction; CT/TCT is however problematic when there is no output form that corresponds to a partially reduplicated form. The MDT allows three cophonologies, two at the daughter level and one at the mother level. The former approximately corresponds to the stem level, and the latter to the word level of the Lexical Phonology and Morphology (cf. Kiparsky 2007). While having multiple cophonologies may be beneficial in describing the diverse reductions and modifications in reduplicative constructions, the benefit comes with the possibility of allowing overgeneration of structures that may not actually occur in languages. Aside from this empirical question, the most pointed difference between the possible MDT and CT/TCT analyses on the one hand and the analysis presented here is the mechanism of reduction: while the former, in agreement with Steriade (1988), uses truncation, the latter has argued instead for compound reduction, at least in languages such as Korean and Turkish in which there is internal evidence of its existence.

Another difference is that MDT in general views 'all' partial reduplications as reductions from full reduplication, while CT/TCT most likely sees the reduction only in cases where there is output to output correspondence between partial reduplication and its fully reduplicated counterpart. This paper disagrees with both of these positions, saying that the former is too tolerant while the latter too

restrictive: unlike the former, it will not analyze partial reduplications as reduced from full reduplication when there is no internal evidence for compound reduction/truncation, as is the case in the suffixal partial reduplication (22b); unlike the latter, it will analyze examples such as *wak-siki* < **wakil-sikil* as a reduction because even though there is no output form directly corresponding to them, there are fully reduplicated forms such as 'wakil-wakil' and 'sikil-sikil', which indirectly confirm their compound structure. These two issues are further elaborated in the concluding section.

4. Conclusion: theoretical issues and implications

Two issues stand out most from the above discussion: 1) does partial reduplication really originate from full reduplication by a mechanism of reduction? And 2) if so, what is the proper mechanism of reduction: truncation or compound reduction? These issues are considered in lieu of conclusion.

4.1 Origins of partial reduplication

Steriade (1988)'s proposal that all partial reduplications are reductions from full reduplication is certainly attractive, if for nothing else, then for the fact that full reduplication perhaps ontologically precedes partial reduplication: it is probable that reduplication as a linguistic process began by repeating words, and it is only later that the partial reduplication has developed by reduction of such iterated forms. Note that this essentially seems to be the view held by Bybee et al. (1994: 166) as they say:

"..the fullest, most explicit form of reduplication, total reduplication, [is] the originating point for all reduplications, with the various types of partial reduplication as reductions and thus later developments from this fullest form."

But as we know all too well from historical study of language evolution, especially grammaticalization, new forms or new ways of making forms often spring from old ways by conventionalization.²³⁾ Partial reduplication may have originally begun as a reduction of full reduplication, but it is also possible that

the process has become conventionalized in certain cases so that the language no longer requires full reduplication as a prerequisite of partial reduplication. It is not surprising then that some have argued against the full reduplication origin of partial reduplication (cf. Singh 2005; Hurch and Mattes 2005 & 2009). The position of this paper is that the question of which partial reduplications are reductions from full reduplication and which are not is an empirical question that has to be determined in each language on internal and external evidence available. Based on such evidences (i.e. the typological universal of Greenberg (1966) and the internal evidence of compound reduction), the paper has argued that the partial prefixal reduplications in Korean and Turkish have originated from full reduplication. This conclusion in part is a consequence of assuming compound reduction rather than truncation as the mechanism of reduction, as elaborated further below.

4.2 The mechanism of reduction: truncation or compound reduction?

The different views regarding the origin of partial reduplication in part have to do with what one chooses to posit as the mechanism of reduction. For example, this paper and MDT share the view that reduplication is essentially a type of compounding and partial reduplications originate from full reduplication by reduction. Yet the former does not allow all partial reduplications to be derived from full reduplication, while the latter does; the reason is, as far as I can see, that the former sees full-to-partial reduction as a trait intrinsic to compounds, while the latter, even with a compound architecture in place for reduplication, views the reduction itself as external to that structure. In this sense, Steriade's (1988: 75) remark that 'changes that frequently accompany reduplication are operations independent of and unrelated to the copying process central to reduplication' needs close scrutiny. Based on the reduction of words occurring in French hypocoristics or English proper names, e.g. 'Lar' from 'Larry', MDT and Steriade (1988) have posited the independent operation 'truncation' as the mechanism of morphological reduction, opening the door to the wholesale reduction from full to partial reduplication. But as mentioned

23) Cf. Bresnan and Aissen (2002: 3): "...there is no longer a mystery about how the 'conventionalization' of preferences into formal grammars can occur. An output which appears variably and only in restricted contexts may become preferred, used more frequently in wider contexts, ultimately becoming entrenched as a categorical part of grammar..."

earlier, it is dubious that the truncation observed in French hypocoristics or English shortened proper names should be considered under the same vein as the reduction of reduplicative constructions.

The problem with using truncation as the canonical process for reduction that covers not only word truncation but also partial reduplication is that by bestowing truncation this licence to define anything that appears clipped on the surface, the theory gives it an unlimited scope of coverage, ranging from word truncation to partial reduplication, and to compound reduction. Initially this simple one-for-all approach may seem desirable, but it lacks the typical constraining character of a rule, which, as in any good analysis, should be general enough to cover data as broadly as possible but specific enough to restrict its application to relevant data only. This paper thus underscores once again the old maxim in linguistic analysis that meeting the descriptive adequacy with a simple, general description of a linguistic phenomenon is only secondary to achieving the explanatory adequacy of resolving interesting problems, problems such as why, even though Korean and Turkish are typologically classified as postpositional languages by Greenberg's implicational universal, they have prefixation in reduplication. It may be possible that we will eventually be able to give a simple, structural description of reduplication in all languages of the world, but as far as what looks to be the current state of the art, there still seems to be a long way to achieving such a goal. In the mean time, what is more urgent seems to be solving problems in reduplication with the insights gained from the description and analysis of the data at hand.

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Hyung-Soo Kim

Dept. of English Education

Jeonju University

1200 3-ka Hyojadong, Wansanku, Jeonju

Jeonbuk 560-759

Korea

E-mail: csjennykim@hanmail.net

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