Double-Consonant Base Verbs in Korean

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0. In a very interesting paper entitled 'On the regularity of the so-called irregular verbs in Korean', Kim (1968b) presents a forceful argument for what he calls 'the principle of implosion' (see below). On the basis of this principle, Kim provides a re-analysis of some verbs whose final consonant alternation in conjugation has been considered irregular. In developing his argumentation for the regularity of the consonant alternations in terms of the principle of implosion, Kim postulates 'voiceless obstruents' *W* and *R* as the underlying root-final consonants for the so-called '*p*-anomalous verbs' and '*t*-anomalous verbs' respectively. Kim also argues that there are two underlying liquid phonemes, not just one as has been recognized in many traditional analyses of Korean phonology.[1] The purpose of this paper is to present an alternative solution in which I shall argue that the *p*-anomalous verbs and *t*-anomalous verbs as well as the irregular *l*-base verbs('L-doubling vowel bases', Martin 1954) do not have a single root-final consonant, but a cluster of two root-final consonants, no member of which is subject to 'absolute neutralization' (Kiparsky 1968) as Kim's *W* and *R* are.

1. I shall discuss first the *p*-anomalous verbs followed by the *t*-anomalous verbs:

(1) *p*-anomalous	Cf. *p*-normal
a. tēp-ta 'to be warm'	cep-ta 'to fold'
b. tēp-ko 'to be warm and'	cep-ko 'to fold and'
c. tew-eto 'though it is warm'	cep-eto 'though one folds'
(2) *t*-anomalous	Cf. *t*-normal
a. kēt-ta 'to walk'	ket-ta 'to lift up'
b. kēt-ko 'to walk and'	ket-ko 'to lift up and'
c. kel-eto 'though one walks'	ket-eto 'though one lifts up'

[1] In fact, Kim includes a third new obstruent, namely *sh* which belongs to the same series as *s* and *ss*, filling the slot of *th* and *kh*. I will not discuss this new consonant in this paper, since I do not have any alternative solution in which a consonant cluster might replace the abstract segment *sh*.

In the *p*-anomalous verbs, the root-final consonant is *p* before a consonant which becomes *w* before a vowel, whereas in the *p*-normal verbs the final consonant is always *p*. What is considered anomalous is the alternation of *p* with *w*. A straightforward solution would be to posit *w* as the underlying root-final consonant for the *p*-anomalous verbs provided that there is no other verb whose root-final is regularly *w* and that there is no final *w* which alternates with consonants other than *p*. Since there is no such *w*, this straightforward solution has often been proposed. I will leave this problem here for now.

As for the *t*-anomalous verbs (2), the root-final consonant *t* before a consonant alternates with *l* before a vowel(which becomes[r][2]), whereas the final *t* of the normal stems does not show this alternation. Again, one might suggest a solution in which *l* is posited as the underlying stem-final consonant for the *t*-anomalous verbs. But the problem is that there are other verbs whose final is a liquid. I will return to this kind of verb in Section 4.

What Kim observes in the alternating pairs *p* vs *w* of (1) and *t* vs *l* of (2) is that *p* and *t* are imploded counterparts of *w* and *l* respectively, a phenomenon quite comparable to the implosion of all obstruents(voiceless) before a consonant or a pause as illustrated by the following examples among others:

(3) *c*-regular

a. cic-ta [cit'ta] 'to bark'

b. cic-ko [cit'ko] 'to bark and'

c. cic-eto [cijədo] 'though it barks'

(4) *t*-regular

a. pat-ta [pat'ta] 'to receive'

b. pak-ko [pat'ko] 'to receive and'

c. pat-ato [padado] 'although one receives'

All obstruents in Korean are unreleased(viz. imploded) before another obstruent. This leads to the neutralization of alveoar and alveo-palatal obstruents, all of which becomes [t']. This is a very general rule in Korean, and Kim interprets the alternation between *w* and *p* and between *l* and *t* in terms of this principle of implosion; hence, no exception to the general rule.

However, Kim does not consider *w* and *l* as underlying segments; instead he postulates two corresponding voiceless obstruents, namely *W* and *R*. There are two reasons for doing this; (1) since the principle of implosion applies to voiceless obstruents, Kim reasons that

[2] I will discuss the problem of [r] and [l] in Section 4.

w and *l* which alternate with *p* and *t* respectively are voiceless obstruents(underlyingly) which become voiced between vowels by a general rule and (ii) since there are other verbs whose root-final is *l* which does not alternate with *t*, he reasons that these roots should be distinguished by different underlying representations. The above is a rough summary of Kim's argument for the 'regularity' of the so-called 'irregular verbs' and of his justification for the abstract representation of *W* and *R* which are never realized on the phonetic level, a case of 'absolute neutralization'. The problem of absolute neutralization has in recent years triggered a great deal of discussion among generative phonologists, and questions related to the problem have by no means been clearly answered. It is, therefore, not my intention to argue for or against the abstract representations as such, although I hold a view in favour of absolute neutralization under some conditions which are difficult to define here(see Cook 1972, Cook 1973 MS). In what follows I will simply present an alternative solution which, I believe, is more transparent in that no absolute neutralization is involved, and seems more adequate in that it accounts for additional facts.

2. As for the *p*-anomalous verbs, I propose a consonant cluster of *wp*, instead of *w*, as the underlying root-final segments. Hence, the verb stem of (1) is represented as *tewp* instead of *tew*. With this underlying representation one can handily explain the source of vowel length in such forms as (la) and (1b) which is often overlooked in other analyses. On the phonetic level the vowel length is the only difference between *tēp-ta* 'to be warm' and *tep-ta* 'to cover' and between *kēt-ta* 'to walk' and *ket-ta* 'to lift'. The source of this vowel length is obviously the underlying *w*. If we consider *w* to be the only underlying root-final consonant which becomes *p* before a consonant, it is impossible to give any plausible explanation for the lenghthening of the preceding vowel. Furthermore, it is interesting to note that the underlying consonant cluster *wp* is subject to another process which Kim calls 'the principle of close articulation' (1969). This principle, according to Kim, is a process of consonant reduction which is observed in the following, among other data:

(5) *ps*~*p*

a. kaps-un 'as for the price'

b. kaɾ**s** i 'price(subj)'

c. kap-to 'the price also'

d. kap-man 'only the price'

(6) *ks*~*k*

a. saks-un 'as for the wa~e'

b. saks-i 'the wage(subj)'

c. sak-to 'the wage also'

d. sak-man 'only the wage'

(7) *nc*~*n*

a. anc-a 'Sit!'

b. anc-ul 'to sit'

c. an-ko 'one sits and'

d. an-ciman 'although one sits'

(8) *lk*~*k*

a. ilk-e 'Read!'

b. ilk-ul 'to read'

c. ik-ko 'one reads and'

d. ik-ciman 'though one reads'

The root-final consonants are reduced before a third consonant. Of the two consonants, the more closed one remains while the more open one deletes. This rule, however, has exceptions where the first member of the stem-final cluster is *l* (hereafter 'l-clusters'). For example, the final cluster *lph* of *sulph* 'to be sad' is reduced to *l* but not to *ph: sulph-e, sul-ta, *suph-ta*. Of the cluster *ls* of *tols* 'anniversary' *l* remains while *s* deletes before a consonant: *tol-to, *tos-to* 'anniversary also'.

Returning now to the verbs (1), the derivation of (la) *tēp-ta* from underlying *tewp-ta* is well explained in terms of close articulation, since the final cluster *wp* is reduced in favor of the more closed segment. Furthermore, this underlying representation of clusters provides a source for yet another alternation, namely the appearance of *u* in *teup-ta*, a slow citation form. It is of course unnatural to generate [teup-ta] from underlying *tew-ta*, but it is reasonable to generate it from underlying *·tewp-ta* because all that is required is a vocalization rule. In short, with the underlying root-final cluster *wp* for the so-called *p*-anomalous verbs, one can explain the alternations shown in (1) in terms of close articulation, and the vocalization of *w* accounts for additional facts. This is particularly appealing in this analysis is that it provides for a source of vowel length and of an additional syllable.

3. The *t*-anomalous verbs are more complicated. As in the case of the p-anomalous verbs (1), the vowel length of (2a) and (2b) is crucial in that it is the only phonetic difference which accounts for the contrast between *kēt-ta* 'to walk' and *ket-ta* 'to lift'. I propose here

that this vowel length is attributable to underlying *l* which is realized as [r] between vowels. This means that the t-anomalous verbs too have an underlying root-final cluster, namely *lt*. Hence, *kēt* of (2a) and (2b) is derivable from the underlying *kelt* by the principle of close articulation as in the case of the *p*-anomalous verb. The remaining problem is the deletion of *t* between vowels as in (2c). There seem to be no plausible phonologic grounds to explain this phenomenon. However, it is not altogether unexpected in the light of the following observations on the behaviour of *l*-clusters.

First of all, I have already mentioned that the principle of close articulation has exceptions where *l* is involved. For roots like *ccalp* 'to be short', *yalp* 'to be thin', etc. one observes either *ccap-ta* or *ccal-ta* and *yap-ta* or *yal-ta*. On the other hand, in my own speech, for the root *sulph* 'to be sad' only *sul-ta* is acceptable and *suph-ta* is not, whereas *sulph-e* and *sul-e* are equally acceptable. Among these forms, the last, namely *sul-e*, is particularly interesting in that it is comparable to *kel-e* in which the stop of the *l*-cluster has been deleted. The point to be emphasized is that *l*-clusters are anomalous because some of them are exceptions to the principle of close articulation and because the second member of the cluster which is a stop may be deleted before a vowel. There appears to be no reasonable explanation for this anomaly, and the behaviour of the *l*-cluster in *t*-anomalous verbs is no more anomalous than that of the other anomalous *l*-clusters.

A second arguemrnt for the underlying *lt* cluster for the *t*-anomalous verbs comes from the symmetry of the *l* plus 'stop' clusters. The following charts show possible root-final consonant clusters with *l* as the first member and a stop as the second member:

C_2 / C_1	I			II			III		
	p	*t*	*k*	*ph*	*th*	*kh*	*pp*	*tt*	*kk*
l	yes	no	yes	yes	yes	no	no	no	no
e. g.	*ccalp* 'to be short' *ilk* 'to read'			*sulph* 'to be sad' *halth* 'to lick'					

The tense series (III) never occurs in the *l*-cluster. Among the aspirated stops (II), the velar does not occur in the *l*-cluster. It seems reasonable to assume that all the plain stops may occur in the cluster and that the possibilities in Column II presuppose possibilities in Column I. In other words, cluster *lth* (II) presupposes cluster *lt* (I). If this is the case, the *t*-anomalous stem must fill the slot in (I).

Needless to say, this solution does not offer an answer to the question why *t* of *lt* is deleted before a vowel. However, the point is that this is not an isolated problem, but a problem common to the behaviour of all anomalous *l*-clusters. The abstract representation of *R* for the *t*-anomalous verbs and the principle of implosion appear to offer a tentative solution for an isolated problem, but it falls short of dealing with the main question.

Similar anomaly is observed in the raising of *ē* to *ū* among the stems whose root-final is *l*. Compare the forms of Dialect I with those of Dialect II:

	I	II	
a.	hēm	hūm	'fault'
	yēnkwu	yūnkwu	'study'
	pēt	pūt	'friend'
	ēlum	ūlun	'adult'
b.	kēl-ta	*kūl-ta	'to hang'
	mēl-ta	*mūl-ta	'to become blind'
	nēl-ta	*nūl-ta	'to hang(laundry)'
	tēl-ta	*tūl-ta	'to reduce'

The long vowel *ē* in the stem-initial syllable is raised to *ū* regularly if the syllable final consonant is other than *l;* on the other hand, if the final consonant is *l* the vowel in question is not regularly raised. Again, the *l*-final roots contribute to the general rule of vowel raising.

4. A third set of data to be considered is liquid-base verbs. Traditionally, it has been assumed that there is only one liquid phoneme *l*, whcah is realized as [r] between vowels and as [l] otherwise. With this assumption, the verbs of (9) are considered 'regular' and those of (10) 'irregular'(see Martin 1954 for the distinction 'L-extending vowel bases' vs 'L-doubling vowel bases').

	Before ta	*Before A*	
(9) a.	mal-ta	mar-a. *mal-a	'to roll'
b.	cwul-ta	cwur-e, *cwul-e	'to be shortened'
c.	tal-ta	tar-a, *tal-a	'to be sweet'
(10) a.	malu-ta, maru-ta	mal-a, *mar-a	'to be dry'
b.	coluta, coru-ta	col-a, *cor-a	'to beg'
c.	talu-ta, taru-ta	tal-a, *tar-a	'to be different'

The verbs of (9) are considered regular because [l] and [r] alternate regularly. For future references I shall consider that these liquids are derivable from underlying *l* by a rule which will be called 'Liquid Rule'.[3] The morpheme A (whose grammatical function is not the concern ot his paper) is realized by [a] or [ə] according to a rule which will be called 'Vowel Harmony'.[4] On the other hand, the verbs of (10) have been considered irregular because [l] and [r] are apparently in complementary distribution, and furthermore, forms with [r] between vowels are ungrammatical for the paradigm, i.e. for the intended meaning. When forms of (9) and (10) are compared, however, it is clear that [l] and [r] contrast, occurring in identical environments as demonstrated by minimal pairs like [mar-a] 'to roll' vs [mal-a] 'to be dry' and [tar-a] 'to be sweet' and [tal-a] 'to be different'. Hence, one may quickly conclude that these two liquids are phonemic. The problem, however, can be resolved, as is implicit in the traditional writing system, without recognizing an extra liquid phoneme. I propose here that the so-called regular verbs of (9) have a single root-final *l* and the so-called irregular verbs of (10) a geminate *ll*. What we need here, in order to account for the free variation before the suffix *ta*, is an optional rule (called Degemination) which reduces the geminate *ll*'s to a single *l*, which eventually becomes [r] between vowels. In order to derive [mal-a] 'to be dry' but not [mar-a] from underlying *mallu+A*, we need a rule, which deletes *u* before another vowel(called U-Deletion), ordered to precede Degemination. The following derivation illustrates the point:

	'to be dry'	
mallu+ta		mallu+A
NA	U-Deletion	mall+A
malu ta	Degemination	NA
maruta	Other rules	mala

Now, I shall formulate the two rules in order to examine their structural descriptions for further discussion:

U-Deletion $u \rightarrow \phi / \_\_\_\_ V$ (obligatory)

Degemination $ll \rightarrow l / \_\_\_\_ u$ (optional)

Notice that the environment for degemination should be limited to the vowel *u*; otherwise,

[3] It will be seen that *ll* will be realized as [l]. This phenomenon is comparable to the phonetic realization of a geminate cluster of stops, e.g. *kass-ta* 'went'→*kat-ta*→[kat'a] or [kata]. Of further interest is that the [t] which comes from underlying *tt* is not voiced between vowels; similarly, [l] from *ll* does not become [r] between vowels.

[4] I have discussed this rule extensively in Cook 1973 Ms.

undesirable [mar-a] will result from underlying *mallu*+*A*. Also, the order of the two rules should be kept as above; otherwise, the same ungrammatical string will be generated. I shall return to this rule ordering shortly.

Another difference between the verbs of (9) and the verbs of (10) is that the latter has a vowel *u* before the suffix *ta* whereas the former does not. For this reason, it has traditionally been considered that the vowel *u* is the root-final segment of the verbs of (10). Although I hold the view that the stems of both classes (9) and (10) end in the vowel *u* (see Cook 1973 Ms), I shall consider the traditional view is correct in order to simplify the problem under discussion. Now, all regular *l*-base verbs are represented with the final *l*, while all irregular *l*-base verbs with the final *llu*. Then, all *l*-base verbs with these underlying representations can be accounted for by the two rules, namely U-Deletion and Degemination, in that order, plus other phonological rules such as Liquid Rule and Vowel Harmony.

There is, however, at least one exception in my natve dialect, namely the verb *nallu* 'to fly', which cannot be accounted for by the two rules in that order. What is peculiar in the paradigmn of this verb is that the stem may occur with or without the vowel *u* before *ta*, i.e. both [nal-ta] and [nali-ta] as well as [nari-ta] are grammatical; also, both [nal-a] and [nar-a][5] are equally grammatical. How can we account for these apparent free variations? I shall consider the case of [nali] and [nal] alternation first. Since the root is underlyingly *nallu*, an irregular *l*-base verb, [nali] is derivable by Liquid Rule only, neither U-Deletion nor Degemination applying, while [nal] is derivable by a rule which deletes *u*, apparently not by U-Deletion, and Liquid Rule. The deletion of *u* before the suffix *ta* is not well motivated here, but has been discussed in some detail elsewhere (Cook 1973 Ms).

The other alternating pair, namely [nal-a] and [nar-a] is more interesting. The form [nal-a] is derivable by U-Deletion (as well as Liquid Rule and Vowel Harmony) like any other forms in (10), whereas the second form [nar-a] is derivable by re-ordering U-Deletion and Degemination. Consider the following derivations:

(i)	nallu+A	Underlying	(ii)	nallu+A	Underlying
	nall+A	U-Deletion		nalu+A	Degemination
	[nala]	Other rules		nal+A	U-Deletion
				[nara]	Other rules

Notice that if U-Deletion applies first, Degemination cannot apply because what follows *ll*

[5] Kim considers [nara] 'fly' is ungrammatical.

is not *u*(see derivation (i)); however, if the order of the two rules is reversed, both rules apply, as in derivation (ii), the structural description of U-Deletion not being altered by Degemination. The verb *nallu* is certainly an excetion in that it does not belong to either class, (9) or (10). The derivation of [nar-a]from *nallu*+*A* is a clear case of rule re-ordering by which the two rules have begun to establish a new relationship—from 'bleeding' to 'non-bleeding' and change from the 'marked' order to the 'unmarked' order as the principle of 'maximum applicability of rules' predicts(Kiparsky 1968).

What I have argued here is that the intervocalic [l] is phonemically *ll* as is reflected in the 'unified spelling system of Korean'. This phonemic interpretation is further supported by a rule which Kim(1968 a) calls 'the vowel fronting rule', by which *ai* becomes *ay* 'child', *emi* becomes *eymi* 'mother' *api* becomes *aybi* 'father', etc. In this rule the fronting of a back vowel is conditioned by the front vowel *i* with or without a consonant intervening. The point is that the fronting process is blocked if there are *two* consonants between a back vowel and *i*. This explains why [næri] alternates with [nari] both being derived from underlying *nali* 'to lower', but only [nali] is derivable from underlying *nalli* 'to fly(tr)'. In other words, if we consider intervocalic [*l*] to be a single segment, the fronting rule would be further constrained, so that *l* may be considered to function like other CC clusters which block the fronting process. This certainly would be an unreasonable solution.

Another morphological argument in support of the geminate *l*'s for intervocalic [*l*] is due to the behavior of the morpheme *le* 'in order to' as in *sa-le*→[sarə] 'in order to buy' vs *sāl-le*→[sālə] 'in order to live'. Data like these clearly suggest that intervocalic [l] represents underlying geminate *ll*'s.

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