

Coordinate Structure in Korean

Kim, Hyoung Youb & Suh, Donghee

1. Introduction

Selkirk (1980, 1984), Nespor and Vogel (1982, 1986) and Hayes (1985) argued for phrasal phonology which postulates supra-lexical, hierarchical phonological constituents, in order that the domains in which phonological rules are bounded can be predicted. Phrasal phonology supplements Lexical Phonology by defining domains for phrasal rules. In Lexical Phonology (Mohanan, 1986), lexical rules are managed within the lexical strata while post-lexical rules do not have a domain where they work. Therefore, Selkirk (1980, 1984), Nespor and Vogel (1982, 1986) and Hayes (1985) proposed that domains to accommodate post-lexical rules with a hierarchy are needed and defined the domains where those rules affect, such as phonological word, phonological phrase and intonational phrase.

Yu Cho (1987), G. Kim (1988), and H. Kim (1990) which were developed from Selkirk (1980, 1984) for Korean said that coordinate structures does not form a phonological phrase. Therefore, it cannot be a domain where tone deletion rules or Voicing Rule can occur, since both off rules affect only within the domain of phonological phrase.

In this paper, however, we will show that the phonological phenomena in Korean concerned with tone deletion rules and Voicing Rule is easily explained in case that a coordinate structure as a head preceded by an adjacent complement does form a phonological phrase. In section 2, we will present some tonal phenomena in Taegu dialect in Korean which will not need additional rules if we

assume that a coordinate structure as a head preceded by an adjacent complement forms a phonological phrase. Another example which will show that the assumption leads to a correct prediction is Voicing Rule of Seoul dialect in Korean in section 3, which will support the hypothesis that a coordinate structure as a head preceded by an adjacent complement forms a phonological phrase.

2. Coordinate Structure in Taegu Dialect

Tonal phenomena in Taegu dialect support the hypothesis that a coordinate structure as a head preceded by an adjacent complement forms a phonological phrase. To argue for it, two kinds of tone deletion rules which occur only within a phonological phrase affect within a coordinate structure as a head preceded by an adjacent complement which must be not a phonological phrase by the definition in Yo Cho (1987), G.Kim (1988) and H.Kim (1990). In 2.3, partial modification of the definition will be made to deal with that kind of coordinate structure as a non-exceptional case.

2.1. Tone Deletion Rules in Taegu Dialect

In this section, we will show several examples of phonetic and underlying representations of Taegu dialect, and introduce tone deletion rules such as High-Deletion Rule and Pre-linked High-Deletion Rule. Taegu dialect which is spoken at Taegu City in Korea has three kinds of phonetic representations of tone such as High, Long High and Low (Kim, 1988). Firstly, a High tone in PR is underlyingly either a High associated with a Nucleus as in (2.1a) or a floating High as in (2.1b). Floating H-Linking Rule in (2.2) which associates an initial floating High tone to all the right-hand tone bearing units (henceforth, TBU) applies to the UR of (2.1b) to get its correct PR in (2.1b).

(2.1)		UR		PR
	a. 'form'	/k'ol/		
		H		[H]
	b. 'price'	/kaps/		
		H		[H]

(2.2) Floating H-Linking

#	N	No	#	-->	#	N	No	#
							\ /	
							H	

Secondly, a Long High tone in PR is underlyingly floating High with two vacant slots in the skeletal tier as in (2.3) Floting H-Line Rule in (2.2) applies to UR in (2.3) to get the Long High in PR of (2.3).

(2.3)		UR		PR
	'persimon'	/kam/		
		/ \		
		x x		
		H		[H:]

Lastly, a Low tone in PR is not represented at in UR as in (2.4) because it is default tone in Taegu dialect. The Low is inserted by the Default L-Insertion Rule in (2.5) which inserts a Low to the free TBU.

(2.4)		UR	PR
	'mushroom'	/p̄as̄əs̄/	
		H	[HL]

(2.5) Default L-insertion : \textcircled{N} --> N
 |
 L

Taegu dialect has two general tone deletion rules such as High-Deletion Rule and Pre-linked High-Deletion Rule. Both of them occur within the phonological phrase which is roughly a head with an adjacent complement (Kim,1988). As in (2.6), High-deletion Rule deletes a High tone preceded by another High tone.

(2.6) High-Deletion Rule
 H --> \emptyset / H _

Pre-linked High-Deletion Rule deletes a High tone followed by another High tone across a morpheme boundary, as in (2.7).

(2.7) Pre-linked High-Deletion Rule
 H --> \emptyset / # (N) N - (N) N (N) #
 | |
 - H
 (- is a morpheme boundary)

The order of application of Pre-linked High-Deletion Rule in (2.7) and High

Deletion Rule in (2.6) is determined by the Elsewhere Condition 1 in (2.8), since the former is special rule while the latter is general rule and the structural description of the latter includes that of the former.

(2.8) Elsewhere condition 1 (Kiparsky 1982: 136)

Rule A, B in the same component apply disjunctively to form x iff and only if the structural description of A (the special rule) properly includes the structural description of B (the general rule). In that case, A is applied first and if it takes effect, then B is not applied.

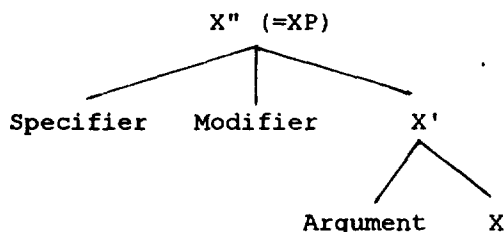
(2.8) says that the special rule Pre-linked High-Deletion in (2.6) applies first, and if (2.6) does not apply the general rule High-Deletion in (2.7) applies, due to the disjunctive ordering. Both rules which do not permit two adjacent High tones are triggered by the Obligatory Contour Principle as in (2.9).

(2.9) Obligatory Coantour Principle (McCarthy 1979: 238)

In a given autosegmental tier, adjacent identical segments are prohibited.

We will show several examples where High-Deletion in (2.6) and Pre-linked High-Deletion in (2.7) apply.

- b. Diagram of the maximal projection XP in Korean
(Lee, 1983)



In (2.11a), phonological word consists of stems, all affixes, and all members of compound words. (2.11b) says that the categories that are sisters to the head in the syntactic structure are its arguments; arguments are those constituents that a head subcategorizes for; at the higher levels of structure come modifiers, and specifiers which are things like determiners in NPs and degree modifiers (like very).

We will give several examples which show that two tone deletion rules in (2.6) and (2.7) occur within the phonological phrase.

- (2.12) a. /nap'+n il/ 'bad affair'
 |
 H H [LHL]
 bad affair
 (+ is a high back vowel in Korean)

- b. /cə nap'+n il/ 'that bad affair'
 |
 H H H [H LHL]
 that bad affair

In (2.12a), since il is a head and nap'+n is its complement, nap'+n il is a phonological phrase. Therefore, High-Deletion in (2.6) which affects within the

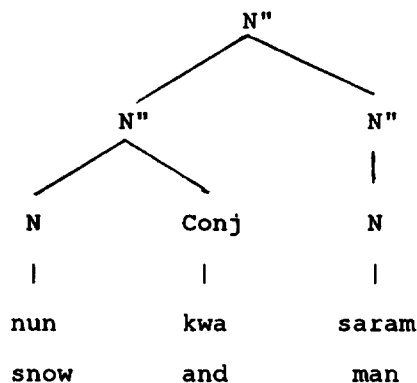
phonological phrase occurs. Contrariwise, in (2.12b), c is not included in the phonological phrase, because it is not adjacent to the head il. Therefore, High-Deletion does not occur within c nap'+n, while it does occur within nap'+n il.

2.2 Tone Deletion Rules in Coordinate Structure

In this section, we will show that the tone deletion rules follow from the hypothesis that they occur within the phonological phrase in case of a coordinate structure, while they do not if a coordinate structure is a head preceded by an adjacent complement.

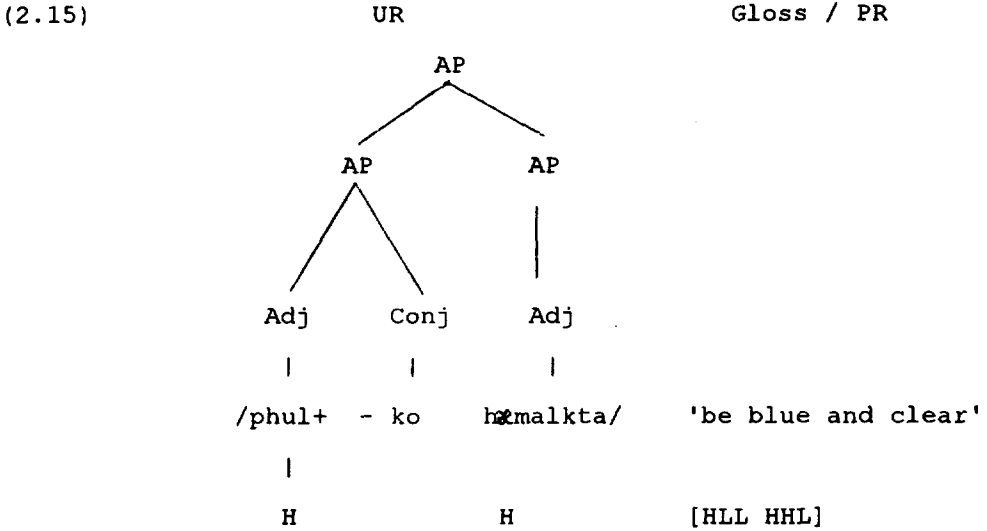
As shown in (2.11), the coordinate structure does not form a phonological phrase, because it usually has two maximal projections - the former is X" with a conjunctive suffix and the latter X" as in (2.13). Rather, it consists of two phonological phrases nunkwa and saram. Since the coordinate structure is not a phonological phrase, High-Deletion in (2.6) must not occur within it.

(2.13)



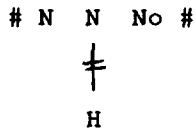
Examples in (2.14) follow from the hypothesis that the tone deletion rules occur only within the phonological phrase, when we have a coordinate structure. High-Deletion in (2.6) does not affect within the coordinate NP and VP which is not a phonological phrase by the definition in (2.11). Roughly speaking, kwa is a

suffix for adjectives.



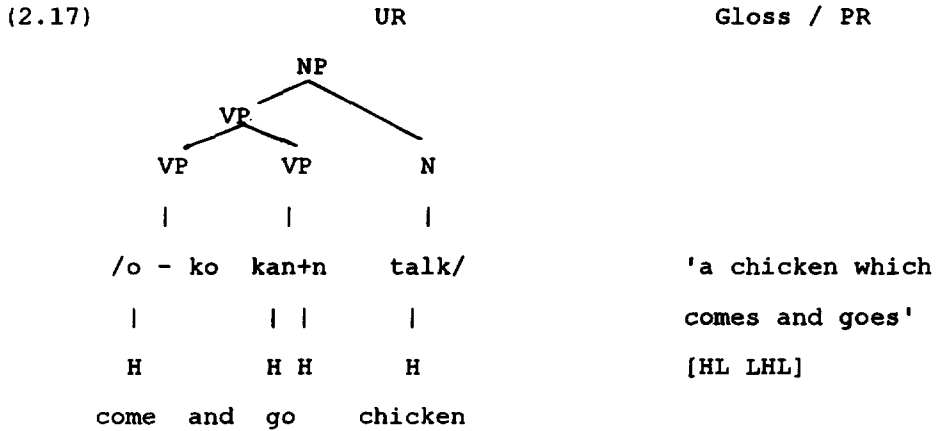
In (2.15), there are two phonological phrases phul+ - ko and h malkta, therefore, High-Deletion in (2.6) does not occur. The floating High tone in h malkta spreads upto the final TBU to be [HHH] by the Floating H-Linking in (2.2). And then, Third H-Delinking as in (2.16) below applies to get the PR [HHL].

(2.16) Third H-Delinking (Kim, 1988: 51)



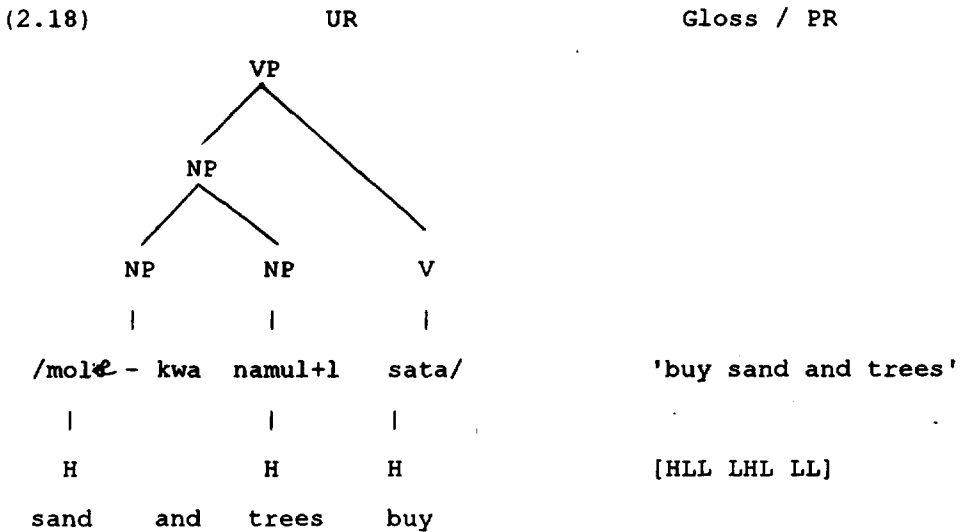
(Third H-Delinking Rule delinks the third High tone)

Contrariwise, (2.17) shows that High-Deletion in (2.5) affect within the sequence of the head preceded by the second element of the coordinate VP, since it is a phonological phrase as defined in (2.11).

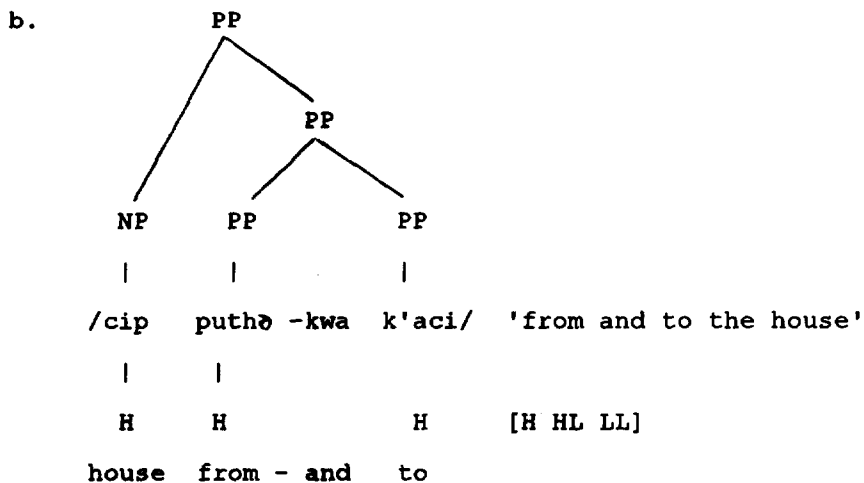
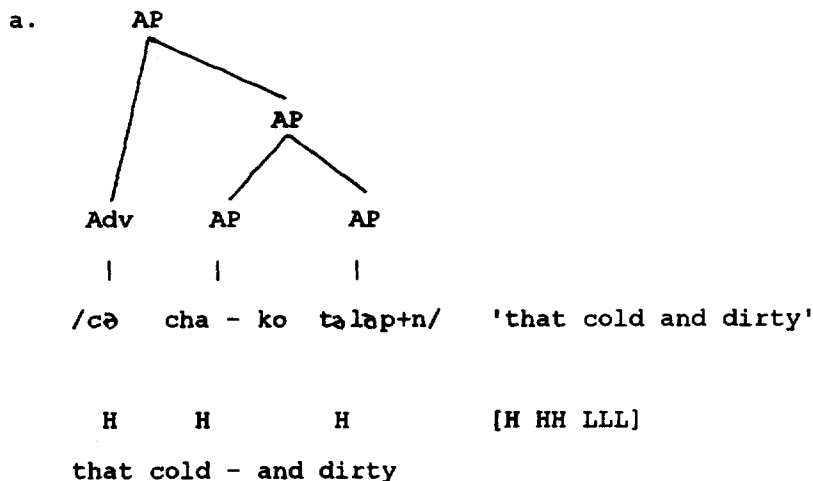


In (2.17), Pre-linked High-Deletion in (2.7) affects first in kan+n, so that the PR [LH] is taken. And High-Deletion in (2.6) occurs within kan+n talk since it is a different phonological phrase from o-ko.

(2.18) shows that the head preceded by the second NP of the coordinate NP which forms a phonological phrase is affected by High-Deletion in (2.6).



(2.21) UR Gloss / PR



In (2.21a), since cə, cha-ko and təl p+n form three different phonological phrases with the definition in (2.11), High-Deletion cannot occur within the whole AP. However, it occurs within cha-ko təl p+n to delete the final High in təl p+n. And then, the floating High tone in cha spreads to -ko by the Floating H-Linking in (2.2). In (2.21b), since cip, puthə -kwa and k'aci form three different phonological phrases respectively with the definition in (2.11), High-Deletion must not occur

within them. It, however, affects with puh -kwa k'aci. The final High in k'aci is deleted then.

If we modify the definition of the phonological phrase as in (2.22) adopting Yu Cho (1987), we do not have to deal with the above problem as an exceptional case, but can accept it as a regular one.

(2.22) Phonological Phrase Formation in Korean

- a. In [... Y"X]_{X"}, where X is the head of X" and Y" is an adjacent complement, the sequence Y"X forms a phonological phrase.
- b. In [... Y"X]_{X"} (n>1), where X" consists of more than two X's and an adjacent complement Y", only X forms a phonological phrase.

(2.22a) means that the sequence of a complement and a head forms a phonological phrase, while (2.22b) says that the coordinate structure as a head preceded by a complement forms a phonological phrase. If we accept the modified definition in (2.22), we can get the correct prediction of examples in (2.19), (2.20) and (2.21) without any additional rules. In case of accepting the modified definition in (2.22), kamca-kwa pɛ in (2.19) forms a phonological phrase, since kamca-kwa pɛ is N" which has two N"s such as N" kamca-kwa and another N" pɛ, and san+n as an adjacent complement. Therefore, High-Deletion occurs only within kamca-kwa pɛ, not across them. with the modified definition, (2.20) also has sa-ko phalta as a phonological phrase: V" which has two V" sa-ko and phalta, and an adjacent complement man+l+l. Therefore, High-Deletion occurs only within sa-ko phalta. In (2.21a) and (2.21b), the phonological phrases are cha-ko tɔp+n and puh -kwa k'aci with the modified definition in (2.22). Hence, High-Deletion in (2.7) occurs within them.

3. Coordinate Structure in Seoul Dialect

Voicing Rule in Seoul Dialect also follows from the hypothesis that a coordinate structure as a head preceded by an adjacent complement. 3.1 will introduce Voicing Rule and some of examples. While 3.2 shows that most coordinate structures do not form a phonological phrase, 3.3 shows that a coordinate structure as a head preceded by an adjacent complement forms a phonological phrase.

3.2 Voicing in Seoul Dialect

In this section, we will introduce Voicing Rule which occurs within phonological phrase and give some examples which support the assumption that it occurs within phonological phrase. Seoul dialect which is spoken at Seoul City in Korea has Voicing Rule which is a post-lexical rule (phonetic rule). It makes an unaspirated obstruent such as /p/, /t/, /k/, /c/ between two voiced segments a voiced obstruent such as [b], [d], [g], [j] as in (3.1).

(3.1) Voicing Rule

$$\left[\begin{array}{l} -\text{con} \\ -\text{asp} \\ -\text{tense} \end{array} \right] \rightarrow [+voice] / [+voice] _ [+voice]$$

Some examples in (3.2) show how Voicing Rule in (3.1) affects.

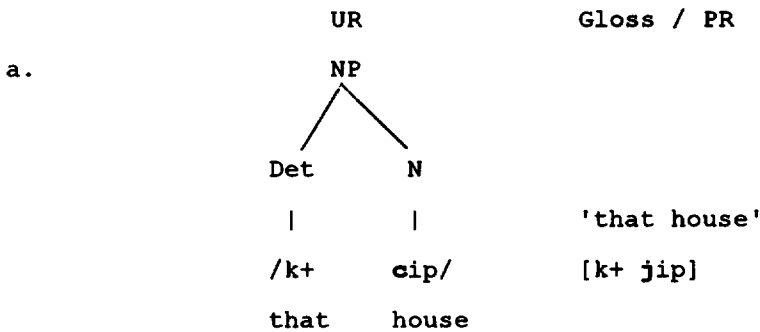
(3.2)	UR	PR
a. 'bedsheet'	/ipul/	[ibul]
b. 'thou'	/k+tæ/	[k+dæ]

c. 'straw thatched house' /chokacip/ [chogacip]

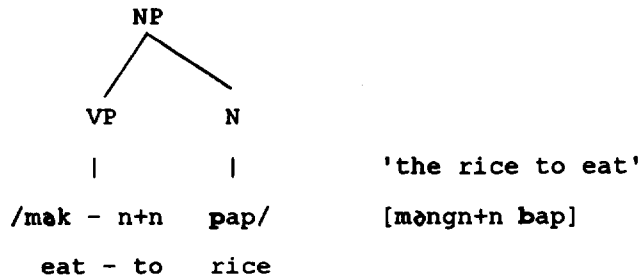
In (3.2a) to (3.2c), the URs have the obstruents /p, t, k, c/ between vowels; therefore, they become [b, d, g, j] in the PRs.

Voicing Rule in (3.1) occurs within a phonological phrase as below by Yu Cho (1987) and H. Kim (1990). I have shown that the phonological phrase consists of a head with an adjacent complement roughly (See (2.11)).

(3.3)

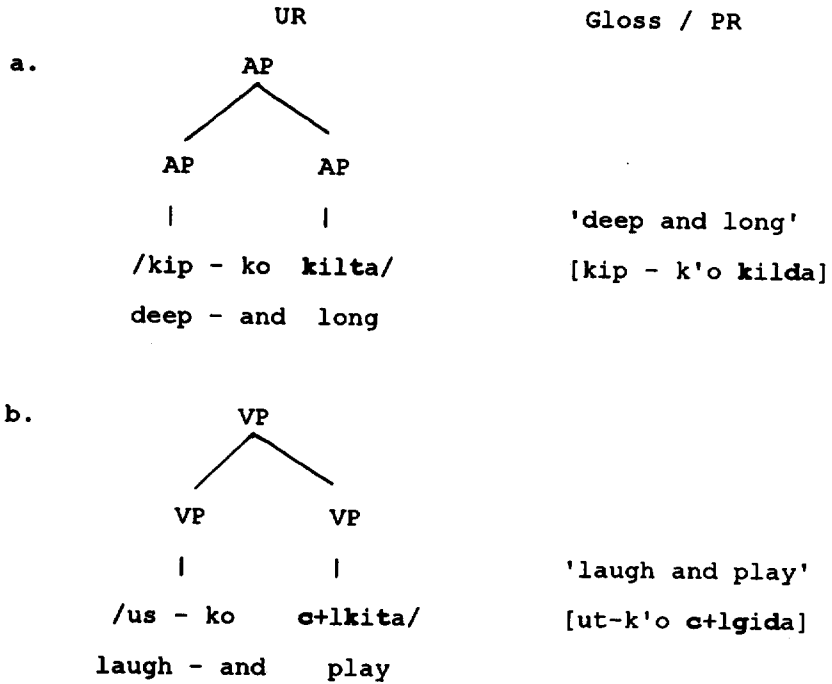


b.



Since (3.3a) consists of determiner **k+** as a complement followed by a noun **cip** as a head, it forms a phonological phrase. Then, Voicing Rule in (3.1) applies to it because Voicing Rule affects within the phonological phrase. (4.3b) consists of an adjective which is a complement **mækn+n** followed by a noun **pap** as a head. Therefore, it forms a phonological phrase to which Voicing Rule applies.

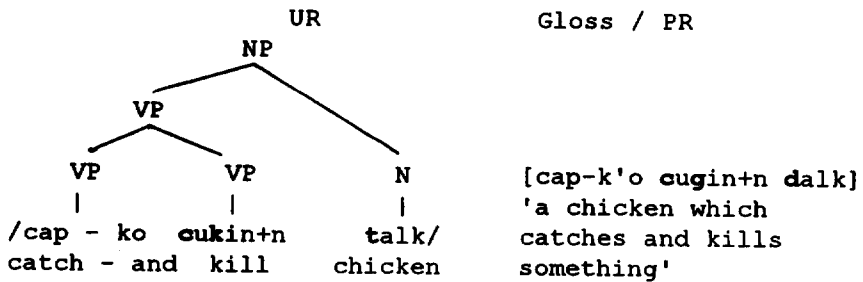
(3.5)



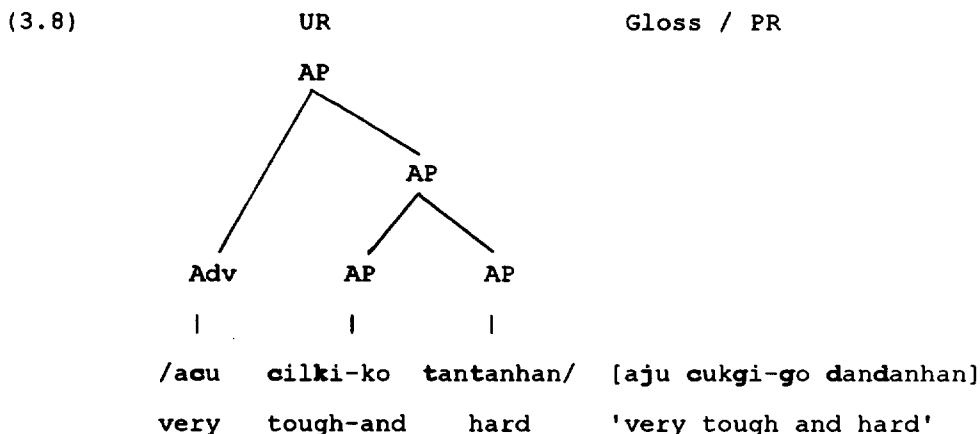
In (3.5a), k in kilita does not become g, not being between voiced segments any more since its domain is different from that of kip-ko. Likewise, in (3.5b), k and t in c+lilita become voiced while c does not become voiced. It is because c in c+lilita does not have the environment since it has different phonological phrase from that of us-ko.

(3.6) shows that Voicing Rule affects within the sequence of a head and an adjacent complement, which is a phonological phrase as defined in (2.11).

(3.6)

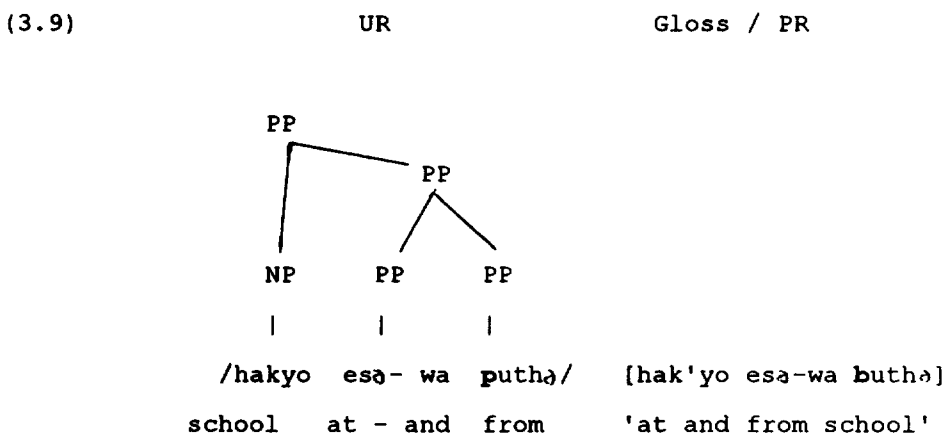


definition in (2.22).



(3.8) consists of two phonological phrases acu and cilki-ko tantanhan with the modified definition in (2.22). Therefore, c in cilki-ko does not become j while the other obstruents become voiced.

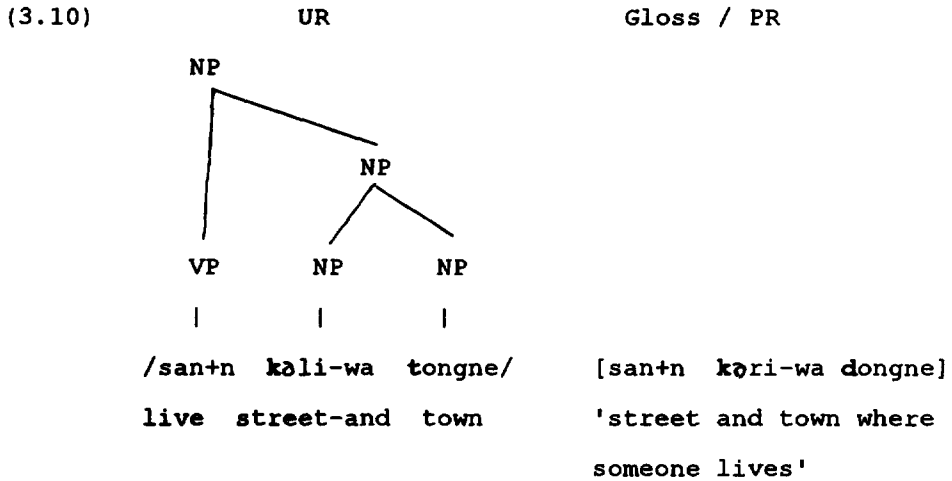
(3.9) shows that the coordinate PP as a head forms a phonological phrase with the definition in (2.22).



In (3.9), the phonological phrase is esə-wa puthə, therefore, p in puthə is affected by

Voicing Rule.

The coordinate NP as a head in (3.10) is explained by the definition in (2.22), not by that off (2.11).



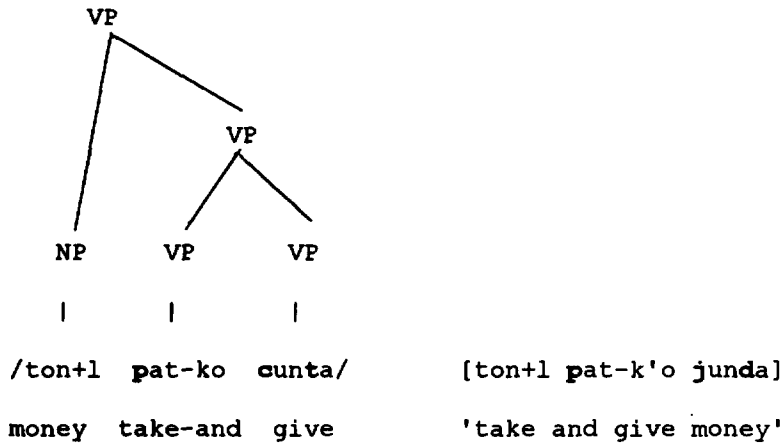
In (3.10), the phonological phrases are san+n, kəli-wa and tongne by the definition in (2.11). However, Voicing does not occur within it, since kəri does not become gəri despite that it is within the domain. If we accept the modified definition in (2.22b), we can get the correct prediction. Since kəli-wa tongne is a phonological phrase by the definition in (2.22b), k in kəli does not become voiced but t in tongne becomes d.

(3.11) shows that Voicing Rule occurs within a coordinate VP as a head preceded by a complement as defined in (2.22).

(3.11)

UR

Gloss / PR



In (3.11), since the phonological phrase is pat-ko cunta by the definition in (2.22), p in pat is not changed into b while c in cunta is changed into j. In case of the definition in (2.11), the phonological phrases are ton+l, pat-ko and cunta, hence p in pat must become b since it is within the domain. However, it is not changed into a voiced segment.

4. Conclusion

By some examples from the two dialects in the above sections, we have shown that the clauses with a coordinate structure in Korean follow from the hypothesis that the tone deletion rules and Voicing Rule affect within a phonological phrase. The definition of phonological phrase is roughly a head X followed by an adjacent complement Y". However, the coordinate structure as a head preceded by an adjacent complement does not follow from the definition. If we assume that a head X" is a phonological phrase in case of the coordinate structure as a head X" preceded by an adjacent complement Y", we can get the

correct prediction of tonal phenomena in Taegu dialect and Voicing in Seoul dialect without any additional or ad hoc rules.

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Korea University