

A Constraint-Based Approach to Post-Verbal Constructions in Korean

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1 Introduction

This paper examines post-verbal constructions (PVCs hereafter) in Korean, commonly called afterthought or inversion constructions (Kuno 1978, Choe 1987, Whitman 1991, Yoo 1992, among others). Examples of the construction are in (1) where the subject and/or the object can be used as a post-verbal element:

- (1) a. Mary-ka ku chayk-ul ilkessta.
 M-Nom the book-Acc read
 'Mary read the book.'
 b. Mary-ka ilkessta, ku chayk-ul.
 c. Ilkessta, Mary-ka ku chayk-ul.
 d. Ilkessta, ku chayk-ul Mary-ka.

Even though this pattern is prevalent in causal speech, much attention has not been paid to its analysis so far. This paper focuses on the account of its mixed properties of scrambling and Chinese-style (base-generated) topics.

2 Mixed Properties of Scrambling and Topicalization

The PVC has a scrambling property in a sense that it meets Huang's 1982 condition on Extraction Domain, i.e., an element cannot be extracted to the post-verbal position out of an adjunct or a sentential subject, as shown in (2a). Note that scrambling out of such constituents is also not allowed as in (2c), while (2c,d) show that both scrambling and post-verbal dislocation are possible out of a complement clause.

- (2) a. post-verbal dislocation out of a complex NP
 *Mary-ka [_{NP} [_S ____i an pon] salam-ul]
 M-Nom not see person-Acc
 mannaci mos hayssta, ku yenghwa-lul.
 meet did not the movie-Acc
 'Mary did not meet anyone who did not watch the movie.'

b. scrambling out of a complex NP

*Ku yenghwa-lul_i Mary-ka [NP [s ____i an pon] salam-ul]
 the movie-Acc M-Nom not see person-Acc
 mannaci mos hayssta.
 meet did not

c. post-verbal dislocation out of a complement clause

Mary-ka [s John-i ____i ilkesstako] sayngkakhayssta, ku chayk-ul_i.
 M-Nom J-Nom read thought the book-Acc
 'Mary thought that John read the book.'

d. scrambling out of a complement clause

Ku chayk-ul_i, Mary-ka [s John-i ____i ilkesstako] sayngkakhayssta.
 the book-Acc M-Nom J-Nom read thought

However, the Korean PVC is also similar to the Chinese-style topic construction in a sense that it allows a resumptive pronoun (Saito 1985 and Whitman 1991), as shown in (3a).¹⁾ (3b) shows that the resumptive pronoun is not allowed in scrambling.

(3) a. post-verbal dislocation with a resumptive pronoun

Na-nun [s Mary-ka ku-lul_i cohahantako] sayngkakhayssta, John-ul_i.
 I-Top M-Nom he-Acc like thought J-Acc
 'I thought that Mary liked John.'

b. scrambling with a resumptive pronoun

*John-ul_i na-nun [s Mary-ka ku-lul_i cohahantako] sayngkakhayssta.
 J-Acc I-Top M-Nom he-Acc like thought

However, the PVC differs from the Korean or Chinese topic construction in some other respects. The topic in Korean is generally interpretable as an element within an adjunct or a complex NP, as long as the topic and the comment clause satisfy the aboutness condition (Kuno 1973) as shown in (4a). However, (4b) shows that this kind of resumptive pronoun interpretation is not allowed in the PVC.

1) See Kuno 1973, and Xu and Langendoen 1985 for the Chinese-style topic construction.

- (4) a. Ku yenghwa-nun_i Mary-ka [_{NP} [_S kuke-l_i an pon] salam-ul]
 the movie-Top M-Nom it-Acc not see person-Acc
 mannaci mos hayssta.
 meet did not
 'As for the movie, Mary did not meet anyone who did not watch it.'
- b. *Mary-ka [_{NP} [_S kuke-l_i an pon] salam-ul]
 M-Nom it-Acc not see person-Acc
 mannaci mos hayssta, kuyenghwa-lul_i.
 meet did not the movie-Acc

Another PVC's property that deserves discussion is the root phenomenon property: the post-verbal element never occurs within an embedded clause as shown in (5a). However, (5b) shows that scrambling can occur within an embedded clause.

- (5) a. post-verbal dislocation within an embedded clause
 *Mary-nun [_S John-i poasstako, ku yenghwa-lul] sayngkakhayssta.
 M-Top J-Nom saw the movie-Acc thought
 'Mary thought John watched the movie.'
- b. scrambling within an embedded clause
 Mary-nun [_S ku yenghwa-lul John-i poasstako] sayngkakhayssta.
 M-Top the movie-Acc J-Nom saw thought

In order to account for the given facts, this paper proposes a new analysis under the framework of Head-driven Phrase Structure Grammar (Pollard and Sag 1994, henceforth HPSG).

3 A New Analysis

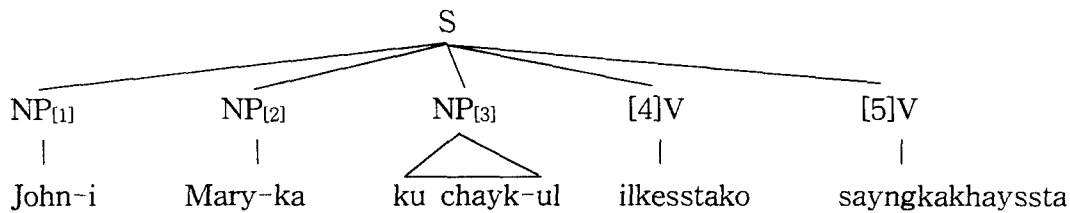
3.1 Long-Distance Scrambling and Argument Composition

Following Chung 1998, this paper proposes that long-distance scrambling in Korean is licensed by the argument composition mechanism (Hinrichs and Nakazawa 1994) that is similar to raising in GB, i.e., an element not discharged within an embedded clause is raised to the main clause. This approach proposes that a sentence with an S-complement such as in (6) has ambiguous structures, i.e., one with an embedded S-complement constituent, and the other with a liberated S-complement through the argument composition lexical rule.

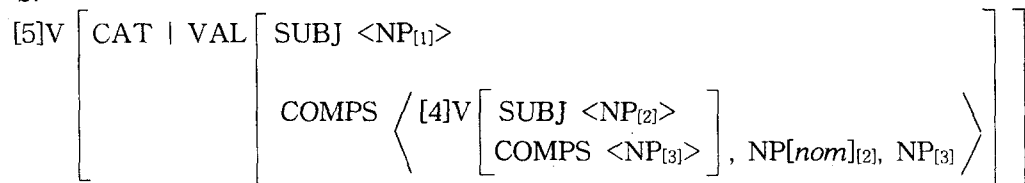
- (6) John-i Mary-ka ku chayk-ul ilkesstako sayngkakhayssta
 J-Nom M-Nom the book-Acc read thought
 'John thought that Mary read the book.'

The liberated structure in (7a) and the lexical entry in (7b) show how the arguments of the embedded verb *ilkesstako* is raised to the COMPS list of the matrix verb *sayngkakhayssta*. (See Chung 1998 for a more detailed analysis.)

(7) a.



b.



The argument composition occurs only between the verbal categories in head-complement relations, and thus long-distance scrambling does not occur beyond the boundary of an adjunct or NP.

3.1.2 Amelioration of the Weak Crossover Effect

This argument-composition approach to long-distance scrambling can predict some facts about the amelioration of the weak crossover effect and about the long-distance passive. The examples of the WCO effect in a simplex sentence are in (8):

- (8) a. *[Ku-uy_i/pro_i emma-ka] nwukwu-lul salangha-ni?
 he-Gen/pro mother-Nom who-Acc love-Q
 'Who does his mother love?'
 b. Nwukwu-lul [ku-uy_i/pro_i emma-ka] salangha-ni?
 who-Acc he-Gen/pro mother-Nom love-Q

In (8a), the *wh*-operator *nwukwu-lul* neither *o*-commands nor precedes the NP dominating a pronoun coindexed with the operator, which induces WCO effects.

In contrast, in (8b), the operator precedes the NP dominating a pronoun, and thus the WCO effect is ameliorated.

In Korean, the amelioration of the WCO effect also occurs with long-distance scrambling (Cho 1994), as shown in (9):²⁾

- (9) a. *[Ku-uy_i/pro_i emma-ka] [_s Mary-ka nwukwu-lul_i
 he-Gen/pro mother-Nom M-Nom who-Acc
 ttaylyesstako] sayngkakha-ni?
 hit think-Q
 Lit. 'Who_i did his_i mother think Mary hit?'
- b. Nwukwu-lul_i [ku-uy_i/pro_i emma-ka] Mary-ka
 who-Acc he-Gen/pro mother-Nom M-Nom
 ttaylyesstako sayngkakha-ni?
 hit think-Q

In (9a), *nwukwu-lul* neither o-command nor precedes the NP dominating the pronoun, which induces a WCO effect. In contrast, in (9b), the operator precedes the NP dominating the pronoun, and thus the WCO effect is ameliorated. This observation shows that, in Korean, the WCO effect is ameliorated by scrambling regardless of whether the type of scrambling involved is clause-internal or clause-external.

If the behavior with respect to the WCO effect is considered to be a diagnostic of different kinds of dislocation, then the above evidence suggests that long-distance scrambling and clause-internal scrambling in Korean are not qualitatively distinct phenomena. Then there is no reason to assume another mechanism such as an A-bar movement in GB or a SLASH feature percolation in GPSG/HPSG for long-distance scrambling. In our theory, this lack of distinction between long-distance scrambling and clause-internal scrambling is captured since we analyze the former as licensed in terms of argument composition, resulting in flat constituent structures.

3.1.3 Long-Distance Passive

Our unified account of long-distance scrambling and clause-internal scrambling in terms of flat analysis also predicts some facts about the long-distance passive. The examples are in (10):³⁾

2) Saito 1992 and Yoshimura 1989 make the same observation about Japanese.

3) Kiss 1992, Hinrichs and Nakazawa 1998, Nagai 1991 and Yatabe 1993 discuss long-distance passives in German and Japanese.

- (10) a. Motun salam-i [s hyun cengpwu-ka ku cengchayk-ul
 all people-Nom current government-Nom the policy-Acc
 sihayngchalilako] sayngkakhayssta.
 will-carry-out thought
 'All people thought the government would carry out the policy.'
- b. ?Ku cengchayk-i motun salam-eyuyhayse hyun cengpwu-ka
 the policy-Nom all people-by current government-Nom
 sihayngchalilako sayngkak-toy-essta.
 will-carry-out think-Passive-Past
 Lit. 'The policy was believed by all people that the government would
 carry out.' (It was believed by all people that the government would
 carry out the policy.)

In (10b), the object NP *ku cengchayk-ul* within the S complement is passivized, while the passive morpheme *-toy* is realized on the matrix verb, i.e., *sayngkak-toy-essta*.

This type of passive is problematic for phrase structure grammar in general, because under the standard assumptions, an object can be passivized only when it is an argument of a verb on which a passive morpheme is realized.

This long-distance passive phenomenon is naturally accounted for by our theory of long-distance scrambling. According to that proposal, the object NP *ku cengchayk-ul* of the embedded verb can be attracted to the COMPS list of the matrix verb, i.e., raised to the object of the matrix verb. Then the attracted object can be promoted to subject by the passive lexical rule, while the passive morpheme is realized on the matrix verb.

3.2 EXTRA Feature, Lexical Rule, and LP Constraints

To account for the given facts about the post-verbal construction, we introduce a new valence feature EXTRA(position) that is responsible for the license of the post-verbal element. To this end, we propose to divide the current valence features into two subgroups: CORE and PERI(pheral) valences. The former has SUBJ and COMPS as its value, and the latter TOPIC and EXTRA.

$$(11) \quad \text{LOC} \left[\text{VAL} \left[\begin{array}{l} \text{CORE} \left[\begin{array}{l} \text{SUBJ} [1] \\ \text{COMPS} [2] \end{array} \right] \\ \text{PERI} \left[\begin{array}{l} \text{TOPIC} [3] \\ \text{EXTRA} [4] \end{array} \right] \end{array} \right] \right]$$

We also propose a lexical rule for the peripheral constructions, the topic and post-verbal constructions:

$$(12) \quad \left[\text{VAL} \left[\begin{array}{l} \text{CORE} \mid F_1 \langle \dots, \text{XP}_i, \dots \rangle \\ \text{PERI} \mid F_2 [2] \end{array} \right] \right]$$

↓

$$\left[\text{VAL} \left[\begin{array}{l} \text{CORE} \mid F_1 \langle \dots, \text{pro}_i, \dots \rangle \\ \text{PERI} \mid F_2 [2] \oplus \langle \text{XP}_i \rangle \end{array} \right] \right]$$

This lexical rule specifies that a phrasal element in the valence list can be attracted to one of the peripheral valence lists, leaving *pro* in one of the core valence lists. The PVC is licensed when the attraction occurs to the EXTRA feature. This lexical rule, along with the constraint on long-distance scrambling, is responsible for the existence of a resumptive pronoun only in the complement clause (e.g., (3a) vs. (4b)).

An example of the output lexical entry for *sayngkakhayssta* in (6) is as follows (cf. (7b)):

$$(13) \quad [5]V \left[\text{VAL} \left[\begin{array}{l} \text{CORE} \left[\begin{array}{l} \text{SUBJ} \langle \text{NP} \rangle \\ \text{COMPS} \left\langle V \left[\begin{array}{l} \text{SUBJ} \langle \text{NP}_i \rangle \\ \text{COMPS} \langle \text{NP}_i \rangle \right], \text{NP}[\text{nom}]_i, \text{pro}_i \right\rangle \end{array} \right] \\ \text{PERI} \left[\begin{array}{l} \text{TOPIC} \langle \rangle \\ \text{EXTRA} \langle \text{NP}_i \rangle \end{array} \right] \end{array} \right] \right]$$

The following new ID schema is needed to guarantee that a core valence element is discharged before a post-verbal element:

(14) Head-Extra Schema

$$[\text{VAL} \mid \text{EXTRA} \langle \rangle] \rightarrow \left[\begin{array}{l} \text{VAL} \left[\begin{array}{l} \text{EXTRA} \langle [1] \rangle \\ \text{SUBJ} \langle \rangle \\ \text{COMPS} \langle \rangle \end{array} \right] \\ \text{HEAD-DTR} \end{array} \right], \quad [1] \quad \text{EXTRA-DTR}$$

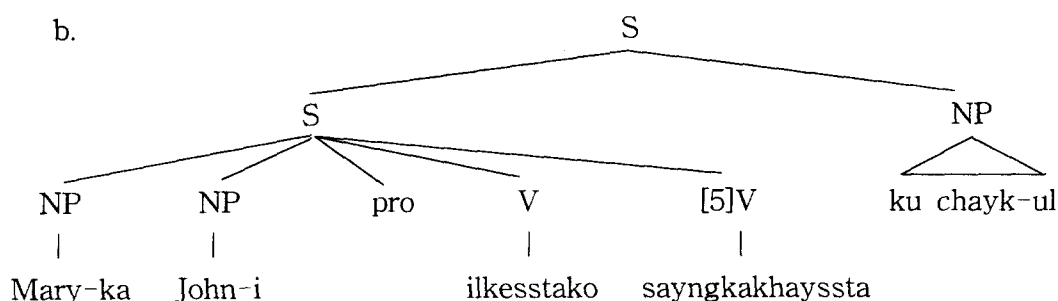
We also need LP constraint (15a) to specify that the element of the EXTRA value linearly follows the head daughter.

- (15) a. [EXTRA <SYNSEM[1]>] < SYNSEM[1]
 b. SYNSEM [1] < [VAL | CORE ∨ TOPIC <SYNSEM [1]>]

(15b) specifies the head finality of Korean in a sense that valence elements other than the EXTRA value—the subject, complement, and topic—precede their governing element.

The output lexical entry in (13) with the constraints in (14) and (15) licenses the structure in (16b) for the sentence in (16a):

- (16) a. Mary-ka John-i pro_i ilkesstako sayngkakhasta, ku chayk-ul.
 M-Nom J-Nom pro read thought the book-Acc
 'Mary thought that John read the book.'



Here, the covert pronoun *pro* can be replaced with an overt pronoun *kuke-l* as in (3a).

The LP constraints in (15b) accounts for the contrast between (17a) and (17b) which are variations of (16a):

- (17) a. John-i pro_i ilkesstako Mary-ka sayngkakhasta, ku chayk-ul.
 J-Nom pro read M-Nom thought the book-Acc
 'Mary thought that John read the book.'

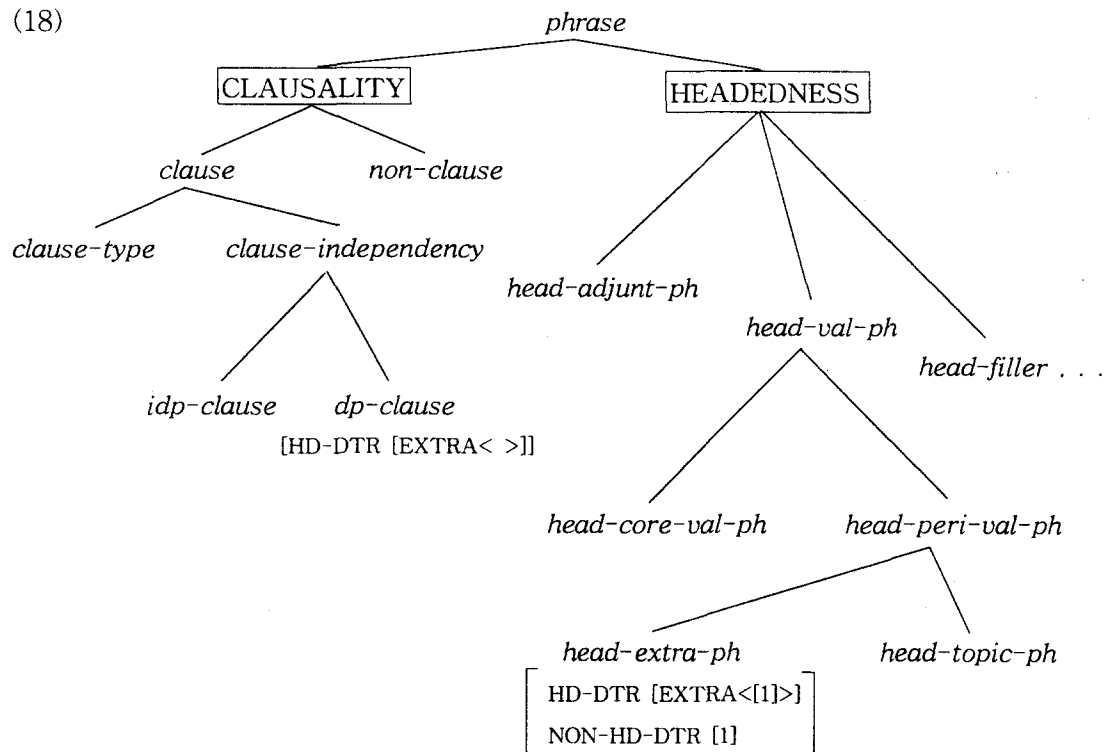
- b. *Mary-ka pro_i ilkesstako John-i sayngkakhasta, ku chayk-ul_i.
 M-Nom pro read J-Nom thought the book-Acc

In (17), *John-i* is a core valence element of the governed verb *ilkesstako*, and thus by (15b), *John-i* must linearly precede the verb. However, *Mary-ka* can occur after *ilkesstako* because it is not a core valence element of the verb.

3.3 Multiple Construction Type Inheritance

Following Sag 1997 and Ginzburg and Sag 1999, the present analysis imposes the aforementioned constraints on the multiple construction type inheritance hierarchy that is used to capture the fact that instances of some construction types seem to resist being uniquely categorized in a natural way.

In order to account for the mixed properties of the Korean post-verbal construction, the following multiple construction type inheritance hierarchy is proposed:



On this approach, post-verbal construction's co-relations with scrambling arise from the assumption that *head-extra-ph* is a subtype of *head-val-ph*, not a subtype of *head-filler*. That is, the right-dislocated constituent is licensed not by the unbounded dependency mechanism such as SLASH percolation but locally

by one of the valence features.

The root phenomenon is accounted for by the supposition that *head-extra-ph* is a subtype of *independent-clause*, and that the value of the EXTRA must be an empty set in an embedded clause (*dp-clause*). These constraints guarantee that only main-clause elements or raised-to-main-clause elements can be the value of the EXTRA (e.g., (1), (2) and (5)).

4 Conclusion

An advantage of the present analysis is that the notion of multiple type inheritance induces interactions of the given constraints, and thus that the mixed properties of the PVC are naturally accounted for.

The discourse properties of the post-verbal construction are controversial. According to Kuno 1978 and Saito 1985, a post-verbal element is restricted to either an element which can be deleted without any substantial change in the meaning of the sentence or an element which represents supplementary information. Contrary to their claims, however, Kim 1985, Choe 1987, Whitman 1991, and Yoo 1992 report that some focused or unexpected expression can also be a post-verbal element, even though it cannot be a *wh*-phrase or an answer to a *wh*-question. Accounts of the discourse properties of postverbal elements need further studies.

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