

Peripheral Phenomena from Core Grammars: Korean Internally Headed Relatives*

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Chung, Chan. 1999. Peripheral Phenomena from Core Grammars: Korean Internally Headed Relatives. *Linguistic Research* 17, 246-270. This paper proposes that the idiosyncratic properties of the Korean IHRC construction are naturally accounted for through the notions such as multiple inheritance and argument composition. The proposed analysis assumes only two construction specific constraints on the IHRC phrase: (i) the semantics of an argument of the adnominal verb is structure shared with that of *kes*, and (ii) the adnominal verb within the IHRC bears contrastive focus. Then the idiosyncratic properties of the Korean IHRC construction are accounted for by collaboration of cross-linguistically well-motivated grammatical devices such as the default mechanism, multiple inheritance, and argument composition. (Dongseo University)

1. Introduction

One of the major tasks in linguistics is to account for some peripheral or idiosyncratic phenomena through general principles which are relatively well-accepted cross-linguistically. The goal of this paper is to explore an account of the mixed-categorial and mixed-functional properties of the Korean Internally Headed Relative Clause (IHRC) construction from this perspective, i.e., how the idiosyncratic properties of the IHRC construction are explained by the core parts of the Korean grammar. Theoretically, our analysis is based on the notions of argument composition (Hinrichs and Nakazawa 1994) and construction type inheritance (Sag 1997 and Malouf (To appear) among others). The organization of this paper is as follows. Section 2 discusses the syntactic, semantic and discourse properties of the IHRC. Section 3 discusses the previous analyses and their problems. Section 4 proposes

a new analysis of the IHRC by the notions of multiple inheritance, argument composition, and contrastive focus, Section 5 is the conclusion.

2. Properties of the IHRC construction

2.1. Middle-distance dependency

Consider a typical example of the IHRC in (1):

- (1) Na-nun [[kangtoi-ka unhayng-eyse nao-nun] kesi-ul] capassta.
 I-Top robber-Nom bank-from come-out-Adn KES-Acc caught
 'I arrested the robber who was coming out of the bank.'

In (1), the locality principle seems to be violated in the sense that the object, *kangto-ka* 'robber', subcategorized for by the matrix verb, *capassta* 'caught', appears within an embedded constituent. To account for this fact, arbitrary coindexation between an element within a relative clause and the head of the IHRC *kes* is generally assumed (e.g., Jhang 1991, Kuroda 1992, and Hoshi 1994, Chung 1996, among others).¹

As shown in (2), however, the IHRC construction cannot be considered as an instance of the genuine unbounded dependency:

- (2) a. Na-nun [kutul-i [_i unhayng-eyse nawassta-ko malha-n]
 I-Top they-Nom bank-from came-out-Comp say-Adn
 kangtoi-lul capassta. (EHRC)
 robber-Acc caught
 'I arrested the robber who they said was coming out of the bank.'

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¹ In Korean, as in other languages, a non-subject can also be coindexed with the head of the IHRC phrase, *kes*.

- b. *Na-nun [kutul-i [kangtoi-ka unhayng-eyse nawassta-ko]
 I-Top they-Nom robber-Nom bank-from came-out-Comp
 malha-n] kesi-ul capassta. (IHRC)
 say-Adn KES-Acc caught
 'I arrested the robber who they said was coming out of the bank.'

In (2a), which is an instance of the Externally Headed Relative Clause (EHRC) construction, the head of the EHRC phrase, *kangto*, is construed with the gap within the embedded clause as in the English relative clause. In (2b), however, the head of the IHRC phrase, *kes*, cannot be construed that way, and thus it shows that the IHRC phrase does not involve the unbounded dependency.

2.2. Mixed-Categorial Properties of the IHRC Phrase

The IHRC phrase externally has the nominal property in that it bears accusative, nominative, or genitive case as shown in (1) and (3), while the typical clause cannot bear such case at all as shown in (4):²

- (3) a. [Sakwa-ka namwu-eyse tteleci-n kes-i] ssekessta.
 apple-Nom tree-from fall-Adn KES-Nom be-rotten
 'The apple which fell off the tree got rotten.'
- b. [Kangto-ka unhayng-eyse nao-nun kes-uy] chepho
 robber-Nom bank-from come-out-Adn KES-Gen arrest
 the arrest of the robber who was coming out of the bank.'
- (4) a. Motwu-ka [John-i ton-ul hwumchessta-ko(*-lul)]
 All-Nom J-Nom money-Acc stole-Comp-(Acc)
 sayngkakhayssta.
 thought
 'All thought that John stole the money.'
- b. [John-i ton-ul hwumchessta-ko(*-ka)] sayngkak-toy-essta.
 J-Nom money-Acc stole-Comp-Nom think-Passive-Past
 'It was thought that John stole the money.'

² (3b) is marginal to some speakers.

- c. [John-i ton-ul hwuchessta-ko(*-uy)] sayngkak
 J-Nom money-Acc stole-Comp-Gen thought
 'the thought that John stole the money'

However, the IHRC phrase also has the verbal property in that it allows the subject-to-object raising:

- (5) Na-nun kangto-lul unhayng-eyse nao-nun kes-ul capassta.
 I-Top robber-Acc bank-out-of come-out-Adn KES-Acc caught
 I arrested the robber who was coming out of the bank.'

In (5), the embedded nominative subject *kangto-ka* 'robber' in (1) is realized as an accusative NP *kangto-lul*, which suggests that the embedded subject can be raised to the object of the matrix verb *capassta* 'caught.'

We may consider that (5) is not an instance of the raising construction, and thus that it is not derived from the IHRC in (1). That is, we may consider it a totally different construction where the constituent [*unhayng-eyse nao-nun kes-ul*] is an appositive parenthetical. A typical example of the parenthetical is in (6) where the head of the parenthetical is the non-expletive *nom-ul* 'guy':

- (6) Na-nun kangto-lul, khi-ka ku-n nom-ul, capassta.
 I-Top robber-Acc height-Nom tall-Adn guy-Acc caught
 'I arrested a robber, the guy who was tall.'

However, it seems that (5) cannot be considered as the parenthetical construction. If (5) and (6) are the same construction, the head noun of the parenthetical *nom-ul* in (6) may be substituted by *kes*, as in (5). However, this prediction is not born out, as shown in (7):

- (7) ??Na-nun kangto-lul khi-ka khu-n kes-ul capassta.
 I-Top robber-Acc height-Nom tall-Adn KES-Acc caught
 'I arrested a robber, the one who was tall.'

In the analysis where (7) is considered as an instance of the IHRC, the

sentence is predicted to be awkward simply because its non-raised version is also awkward as shown in (8):

- (8) ??Na-nun [kangto-ka khi-ka khu-n kes-ul] capassta.
 I-Top robber-Nom height-Nom tall-Adn KES-Acc caught
 'I arrested the robber who was tall.'

According to Ohara 1996, the Japanese IHRC has the function of the event reporting, and it tends to allow only the stage-level verb to be the head, which denotes a temporarily bounded situation. In (7) and (8), however, the head verb of the IHRC is a verb of an individual-level which denotes a temporarily unbounded situation. We may assume that the same constraint is imposed to Korean to account for the ill-formedness of (7) and (8).

To sum, the case marking and raising facts suggest that the IHRC phrase has a mixed categorial properties of a nominal and a verbal, as the gerund in English. That is, its external category is nominal while its internal category is verbal.

2.3. Mixed-Functional Properties of the Adnominal Verb

The adnominal verb in the IHRC phrase semantically plays the role of an adjunct, which is apparently indicated by the meaning of the whole sentence. However, there exist some syntactic parallelisms between the constituency of the adnominal-verb + *kes*, and that of the verbal complex. The parallelisms suggest that the adnominal verb also needs to be considered as a kind of verbal complement. Note that the verbal complex is generally analyzed as a combination of verb + auxiliary verb (e.g., Cho 1988, Sells 1995, and Chung 1998, among others).

In the traditional Korean grammar, *kes* in the IHRC is called a dependent noun in that it always requires a verb of an adnominal form, and in that *kes* itself cannot exist alone as a word as shown in (9):

- (9) (Na-nun kangto-ka unhayng-eyse) *(nao-nun) kes-ul capassta.
 I-Top robber-Nom bank-from come-out-Adn KES-Acc caught
 'I arrested the robber who was coming out of the bank.'

Example (9) indicates that the adnominal verb of the IHRC phrase, *nao-nun* 'come-out', neither is optional nor can be realized as an empty category, and thus that *kes* itself cannot exist as an independent word. It shows a sharp contrast with the typical EHRC construction in (10), where the entire relative clause including the adnominal verb *nao-nun* is optional.

- (10) (Na-nun unhayng-eyse nao-nun) kangto-lul capassta
 I-Top bank-from come-out-Adn robber-Acc caught
 'I arrested the robber who was coming out of the bank.'

In the Korean verbal complex construction, the same observation can be made as shown in (11):

- (11) (Na-nun sakwa-lul) *(mek-e) poassta.
 I-Top apple-Acc eat try as a test (AUX)
 'I tried an apple.'

Here the auxiliary verb *poassta* 'tried as a test' itself cannot exist as an independent word without its governed verb.

Another example of the parallelism between the IHRC and verbal complex constructions arises from the afterthought expression construction in (12) and (13):

- (12) a. *Na-nun kes-ul capassta, kangto-ka unhayng-eyse nao-nun.
 I-Top KES-Acc arrested robber-Nom bank-from come-out-Adn
 'I arrested the robber who was coming out of the bank.'
 b. Na-nun kangto-lul capassta, unhayng-eyse nao-nun.
 I-Top robber-Acc arrested bank-from come-out-Adn

Sentence (12a) is an instance of the IHRC construction where the IHRC is an afterthought expression. It shows that the IHRC cannot be used

as an afterthought expression differently from the externally headed relative clause in (12b). It suggests that *kes* and the adnominal verb constitute a syntactic unit and that they cannot be separated. The same pattern is also observed in the verbal complex construction, as shown in (13):

- (13) *Na-nun poassta, sakwa-lul mek-e.
 I-Top tried apple-Acc eat
 'I tried an apple.'

Finally, the insertion test shows another parallelism between the verbal complex and the IHRC phrase:

- (14) a. Mary-nun [S1 cikwu-ka twungkulta-nun]
 M-Top earth-Nom be-round-Adn
 [s2 wuli motwu-ka alkoiss-nun] sasil-ul molunta.
 we all-Nom know-And fact-Acc do-not-know
 'Mary does not know the fact that the earth is round, which we all know.'
- b. *Na-nun [kangto-ka unhayng-eyse nao-nun]
 I-Top robber-Nom bank-from come-out-Adn
 [ton-ul hwumchi-n] kes-ul capassta.
 Money-Acc stole-Adn KES-Acc caught
 'I arrested the robber who was coming out of the bank, who stole the money.'

In (14a), S1 is generally considered as a sentential complement of the noun *sasil* 'fact' (Kim 1998). In this case, a parenthetical clause, S2, can be inserted between the noun and its sentential complement. In the IHRC phrase, however, this type of insertion is not allowed as shown in (14b).

The same pattern is also observed in the verbal complex as shown in (15) where the parenthetical *hayekan* 'anyway' is inserted between the verb *meke* 'eat' and the auxiliary *poassta* 'tried':

- (15) *Na-nun sakwa-lul meke hayekan poassta.
 I-Top apple-Acc eat anyway tried
 'I anyway tried an apple.'

To sum, there are some parallelisms between the verbal complex and the combination of adnominal verb+*kes* in the IHRC phrase. It suggests (i) that the combination of adnominal verb + *kes* in the IHRC needs to be treated as a syntactic unit, namely, as a complex noun, and (ii) that the adnominal verb needs to be considered as a verbal complement at the level of syntax but as an adjunct at the level of semantics.

2.4. Entity vs. Event Readings

Sentence (1) has only an entity reading, i.e., the object of the matrix verb of (1) is not the whole event but the robber. In contrast, sentence (16) has only an event reading, i.e., the object of the matrix verb is not the robber but the whole event.

- (16) Na-nun [kangto-ka unhayng-eyse nao-nun kes-ul] mollassta.
 I-Top robber-Nom bank-from come-out-Adn KES-Acc not-knew
 'I did not know that the robber was coming out of the bank.'
 But not I did not know the robber who was coming out of the bank.'

The difference comes from the matrix verb. When the verb is a perception verb, only the event reading is available. When it is a physical action verb, however, only the entity reading is available. Then the question is how the difference can be predicted from the syntactic perspective. In other words, if the internal structure of the embedded constituent in (1) and (16) is assumed to be the same, and if the coindexation between *kangto* and the embedded constituent is possible in both sentences, it may be hard to explain why only the physical action verb can have the entity reading. To account for the given fact, we need to assume two different internal structures of the embedded constituent, i.e., the embedded constituents in (1) and (16) are

structurally ambiguous, and one of the readings is determined by the matrix verb.

2.5. Some Discourse Properties

Even though the IHRC and EHRC constructions are truth-conditionally identical (Ohara 1996), as indicated by the glosses of the examples in (1) and (10), they have different discourse properties.

One of the well-known discourse properties of the IHRC construction is that it is not felicitous as an answer to a *wh*-question (Park (1994) and Kim (1996) among others). The example is in (17):

- (17) A: Ne-nun nwukwu-lul capass-ni?
 you-Top who-Acc caught-Q
 'Who did you arrest?'
 B: a. Na-nun unhayng-eyse nao-nun kangto-lul capassta.
 I-Top bank-from come-out-Mod robber-Acc caught
 'I arrested the robber who was coming out of the bank.'
 b. #Na-nun kangto-ka unhayng-eyse nao-nun
 I-Top robber-Nom bank-from come-out-Mod
 kes-ul capassta.
 KES-Acc caught

According to Kim 1996, (17b) is awkward since the IHRC represents background information and is not good for an answer to a *wh*-question which needs to carry new information.

Kuroda (1976) and Kim (1996) point out another discourse-related property of the IHRC. An example is in (18):

- (18) a. Mary-nun tosekwan-eyse ilha-nun tongsayng-ul Conglo-eyse
 M-Top library-in work-Mod brother-Acc Chongro-on
 mannassta.
 met
 'Mary met on Chongro Street his bother who worked in a library.'

- b. #Mary-nun tongsayng-i tosekwan-eyse ilha-nun kes-ul
 M-Top brother-Nom library-in work-Mod KES-Acc
 Conglo-eyse mannassta.
 Chongro-on met

According to Kim, the IHRC construction must have a spatio-temporal relation between the events represented by the IHRC and by the matrix clause (or the matrix verb). (18b) is awkward because this relation does not exist there: the event of working occurs in a library, while the event of meeting occurs on Chongro Street.

3. Previous Analyses

3.1. NP Complement Analyses³

Jhang 1991, Kuroda 1992, and Hoshi 1994, among others propose the NP complement analysis for the IHRC construction, illustrated in (19) after Kuroda 1992:

- (19) Na-nun [_v[_{NP}[_s kangto_i-ka unhayng-eyse nao-nun kes-ul]]
 I-Top robber-Nom bank-from come-out-Mod KES-Acc
 capassta]
 caught
 'I arrested the robber who was coming out of the bank.'

This analysis proposes that the head of the IHRC, *kes*, is a complementizer, and that the clause [*kangto-ka unhayng-eyse nao-nun kes-ul*] is reanalyzed into an NP, which is coindexed with *kangto-ka* and plays the object role of the matrix verb *capassta*.

Problems with this analysis are as follows. First, it does not account for the constituency of adnominal verb + *kes*. Second, it is not clear how the relative clause reading is obtained. It simply stipulates that one of the NP elements within the embedded clause is

³ See Culy (1990), Jung (1995) and Ohara (1996) for the problems of LF-movement approaches to the IHRCs such as Cole 1987 and Ito 1986.

coindexed with the whole reanalyzed NP, but it does not show how the meaning of the rest of the embedded clause contributes to the whole meaning of the IHRC phrase.

3.2. Adjunct Analyses

Two other types of analyses are proposed by Murasugi 1994 and Chung 1996. Murasugi proposes an adjunct-*pro* analysis in (20): the embedded constituent is an adjunct, and *pro* coindexed with *kangto-ka* is assumed to be the object of the matrix verb *capassta*.

- (20) Na-nun [_{VP}[_{ADJ}]_{[NP}[_S kangto_i-ka unhayng-eyse nao-nun]
 I-Top robber-Nom bank-from come-out-Mod
 kes-ul]] [_{VP} pro_i capassta]
 KES-Acc caught
 'I arrested the robber who was coming out of the bank.'

Chung (1996) proposes a similar analysis to Murasugi 1994 in that it assumes the embedded constituent is an adjunct, and that *pro* is the argument of the matrix verb. However, his analysis differs from Murasugi's in that it assumes another empty perception predicate (PRED), as shown in (21):

- (21) Na-nun [_{VP}[_{ADJ}]_{[NP}[_S kangto_i-ka unhayng-eyse nao-nun] kes-ul]
 I-Top robber-Nom bank-from come-out-Adn KES-Acc
 PRED] [_{VP} pro_i capassta]
 caught
 'Seeing a robber coming out of the bank, I arrested him.'

According to this analysis, [[*kangto-ka unhayng-eyse nao-nun kes-ul*] PRED] as a whole is an adjunct, where the embedded constituent is a complement of the empty perception predicate.

These adjunct analyses have some problems. First, they cannot account for the constituency of adnominal verb + *kes* as in the NP complement analyses. Another problem arises when the examples of

pro-substitution in (22) are considered:

- (22) a. Na-nun [ADJ kangtoi-ka unhayng-eyse nao-ca maca]
 I-Top robber-Nom bank-from come-out-as soon as
 ku_i-lul/ku kangtoi-lul/pro capassta.
 him-Acc/the robber-Acc/pro caught
 'As soon as the robber came out of the bank, I arrested him/the thief.'
- b. *Na-nun [ADJ kangtoi-ka unhayng-eyse nao-nun kes-ul]
 I-Top robber-Nom bank-from come-out-Mod KES-Acc
 kui-lul/ku kangtoi-lul capassta.
 him-Acc/the robber-Acc caught
 'I arrested the robber who was coming out of the bank.'

(22a) is a typical example of the adjunct construction, and in this case, *pro* can generally be substituted by an overt pronoun or R-expression when its antecedent is within the adjunct. However, in the IHRC construction, such substitution is not allowed as shown in (22b). Thus another problem with the adjunct-*pro* analysis is that it cannot account for the grammatical difference between (22a) and (22b).⁴

The empty PRED analysis of Chung 1996 has another problem. If the embedded constituent headed by *kes* were a complement of an empty predicate, it would be hard to account for the examples like (3a).

⁴ Chung 1996 considers the concession construction such as (i) as the IHRC construction, where the empty PRED is *moluko* 'do not know':

- (i) Nay-ka [cwusu-ka nayngcangko aney iss-nun kes-ul] PRED mwul-ul
 I-Nom juice-Nom fridge inside exist-Adn KES-Acc water-Acc
 masiessta.
 drank
 'I drank water even though there was juice in the fridge (since I did not know it).'

However, it differs from the genuine IHRC construction in that the NP headed by *kes* is not the argument of the matrix verb, and in that a pause must be put at the end of the embedded constituent, i.e., right after *kes-ul*. We may need to assume another construction type to account for the concession construction headed by *kes*. One of the possible analyses may be the empty PRED approach in (i).

Here the embedded constituent bears nominative case and cannot be considered as a complement of a predicate. To avoid this problem, Chung 1996 simply assumes that (3a) is not an instance of the IHRC construction, but he fails to provide any independent evidence for the assumption.

3.3. "Sentential Complement + Kes" Analysis

Under the HPSG framework, Uda 1998 proposes that the adnominal clause of the *kes*-constructions is a sentential complement of the non-referential noun *kes*. She also proposes that the event reading arises from the structure-sharing between the semantic contents of the adnominal clause and *kes*, while the entity reading arises from the coindexation between an argument of the adnominal clause and *kes*. To obtain the entity reading, she assumes that the complement of *kes*, which is an S, has the ARGUMENT-STRUCTURE (ARG-ST) and that the coindexation occurs between *kes* and an NP element in the ARG-ST list.

However, Uda's analysis has a problem in the account of the constituency of adnominal verb + *kes*. For example, let us consider the examples in (14) above. If the adnominal clause is the sentential complement, it is hard to explain why (14b) does not allow an intervention of a parenthetical between the adnominal verb and *kes*, while it is allowed in (14a) where S1 is also a sentential complement of the noun *sasil fact'*.

4. A New Analysis

In this section, a new analysis of the IHRC is proposed through the notions of multiple inheritance of construction types and argument composition.

4.1. Multiple Inheritance of Construction Types

The notion of the multiple inheritance is used in the Construction

Grammar to capture the fact that instances of some construction types seem to resist being uniquely categorized in a natural way. Sag 1997 and Malouf 1998, (To appear) introduce the notion into the framework of HPSG.

To account for the IHRC construction, I propose the type hierarchy in (23) below. In (23), the sort *sign* is divided into PHRASALITY and HEADEDNESS. Here the notion of PHRASALITY is introduced so as to introduce the sort *complex word* into the hierarchy. *Non-phrase* stands for a sign which does not have phrasal daughters. *Complex-word* stands for a non-phrase which has a non-phrasal daughters, i.e., *word* or *complex-word*.

Head-gov(ernee)-str is a sign which has a constraint that the non-head (governee) daughter's SUBJ and COMPS lists is appended to those of the head daughter.⁵ *Head-adnom-str* is a sign which has a semantics of the traditional relative clause construction.

In the next two subsections, I will discuss how this inheritance hierarchy works for the account of the given properties of the IHRC construction.

4.2. Argument Composition and Syntax of the IHRC Phrase

Hinrichs and Nakazawa 1994 introduce the mechanism of argument composition into the HPSG framework. The effect of argument composition is to attract or raise the arguments of the governed verb to the argument list of the governing verb: roughly, when a lexical category X takes Y as its arguments, the non-discharged arguments of Y are raised to the argument(s) of X.

⁵ My analysis assumes that argument composition is a property of certain constructions such as the verbal complex and light verb constructions, as well as the IHRC's complex noun. However, Andreas Kathol (in personal communication) points out that argument composition may be a property of some specific lexical entries. Our constructional approach can be converted to the lexical approach with no difficulty through revision of the lexical structure of *kes* in (24) (Chung 1999).

The notion of argument composition is used in Chung 1998 to account for the verbal complexes in Korean. On this approach to verbal complexes, the auxiliary verb selects its verb by the GOV(ERNEE) feature, and the subject and complement lists of the governed verb are list-appended (or raised) to those of the auxiliary verb. In this analysis, the argument structures of most of the auxiliary verbs are determined by the governed verb. And the governed verb and auxiliary verb combine first, constituting a complex predicate.

Based on the observation on the parallelisms between the verbal complex and verb+*kes* in the IHRC, I propose the feature structure of the dependent noun *kes* in (24):

(24) Lexical structure of IHRC *kes*

HEAD	<i>noun</i>								
VAL	<table style="border-collapse: collapse; margin-left: 20px;"> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">SUBJ</td> <td style="padding: 5px;">< ></td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">SPR</td> <td style="padding: 5px;">< ></td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">COMPS</td> <td style="padding: 5px;">< ></td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">GOV</td> <td style="padding: 5px;"><V[VFROM <i>adnom</i>]></td> </tr> </table>	SUBJ	< >	SPR	< >	COMPS	< >	GOV	<V[VFROM <i>adnom</i>]>
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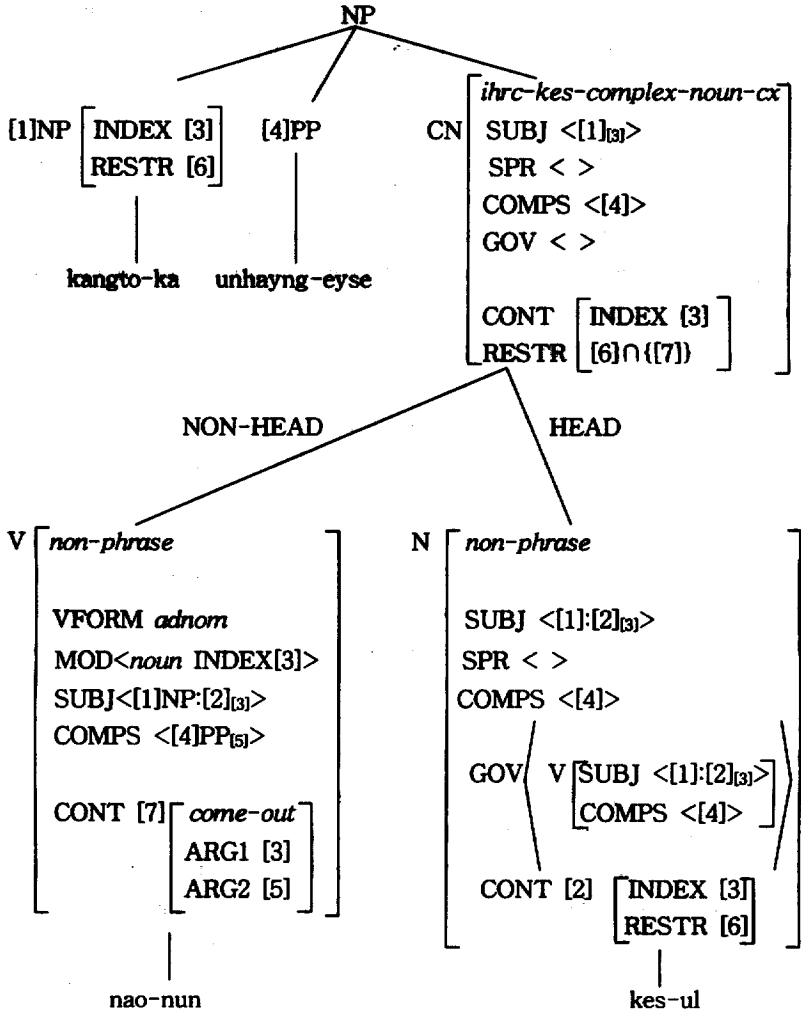
Feature structure (24) states the following: (i) *kes* takes only a verb of adnominal form as its verbal complement (GOV), and (ii) its default index value is non-referential, which entails that its default restriction value is an empty set.⁶ The default CONTENT value can be overridden by the construction-specific constraint of *ihrc-kes-complex-noun-cx* (the left part of the bottom of hierarchy (23)), which states that the CONTENT value of an element in a VALENCE list of the adnominal verb is structure shared with that of *kes*.

On my complex-noun approach, the adnominal verb *nao-nun*

⁶ Following Sag 1997, a default value is represented by the notation "/".

come out' and *kes* in (1) constitute a syntactic unit, namely a complex noun (CN henceforth), as shown in (25):

(25)



Here the valence value of the CN is identical to that of the adnominal verb due to the constraint on *head-gov-str*. Note that here nominative case, not genitive case, is assigned to *kangto* 'robber' even though it is

a sister to a noun. In my analysis, *kangto* is the element of the SUBJ list of the CN, not that of SPR, because the valence structure of *kes* is identical to that of the verb *nao-nun* due to the argument composition constraint on *head-gov-str*.

My analysis predicts that the combination of verb+*kes* has mixed categorial properties. Its external category is nominal in that the HEAD value is *noun*, while its internal argument structure is verbal in that its VALENCE value is attracted from the adnominal verb through argument composition. Then this approach can relatively naturally account for the subject-to-object raising fact in the IHRC construction if we assume that the raising is a structure-sharing between the element in the SUBJ list of an embedded category and an element in the COMPS list of the matrix verb.⁷

My analysis naturally accounts for the fact that the argument of the matrix verb is not *pro* (e.g., (22b)) because the argument position is already occupied by the NP headed by *kes* in my analysis.

The complex noun approach to the IHRC construction also has a theoretical advantage over Uda's complement clause approach. In the HPSG framework, there is no natural way to guarantee the coindexation between *kes* and an element within the relative clause if we assume that *kes* takes an S as its complement. An S is a fully saturated sign where the dependents of the embedded verb (subject or complements) are already discharged. Thus the index value of a dependent is not locally accessible from *kes*. On the complex-noun approach, however, the index value of a dependent of the embedded verb is locally accessible from *kes* because *kes* takes as its complement the adnominal lexical verb where its dependents are not discharged yet.

My approach also accounts for the fact that the IHRC does not involve the unbounded dependency (e.g. (2b)). The coindexation between *kes* and an element within the relative clause is only locally guaranteed by argument composition rather than by the REL and SLASH features,

⁷ Of course argument composition itself does not fully account for the raising fact. To account for the fact, we may assume a separate IHRC raising lexical rule. Doubtlessly, however, this is a very *ad hoc* solution, and thus a deeper generalization remains for further study.

which are used to license the EHRC construction in HPSG. That is, in my analysis, the coindexation is possible only locally between *kes* and one of the arguments subcategorized for by a verb which is in turn selected by *kes*.

In the next section, I will discuss how the semantics parts of the IHRC properties are accounted for by the mechanism of the multiple construction type inheritance.

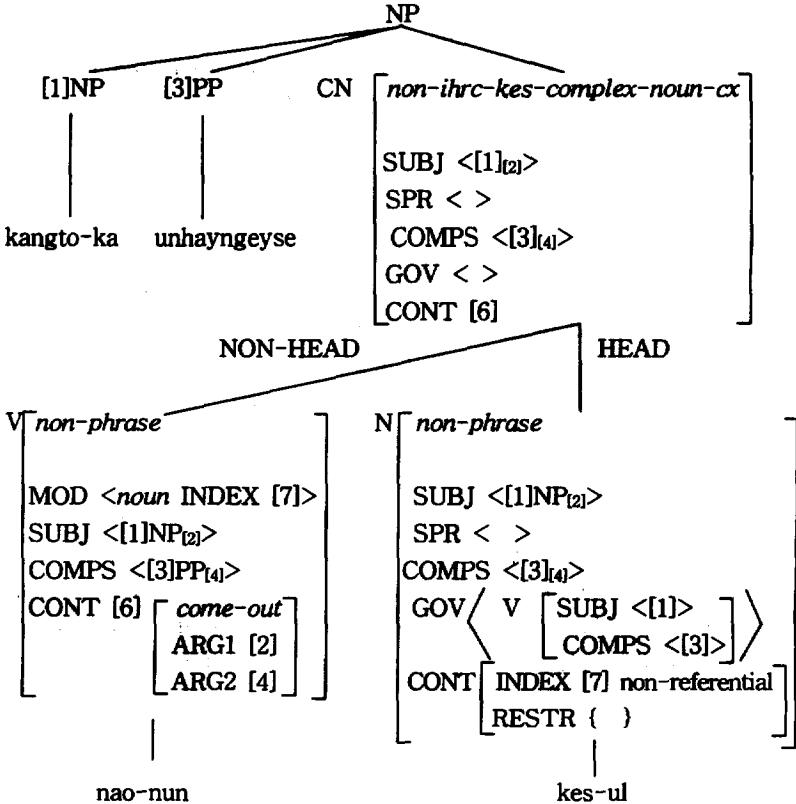
4.3. Multiple Inheritance and Semantics of the IHRC

Section 2.3 claims that the adnominal verb in IHRC has the property of the verbal complement (governee) at the level of syntax. However, at the semantics level, it functions as an adjunct. On my approach, the dual function of the adnominal verb is naturally accounted for by the multiple inheritance and by the default mechanism. According to the type hierarchy in (23), the complex noun of the IHRC construction is a subtype of *head-gov-str* which is a subtype of *head-nexus-str*, and also a subtype of *head-adnom-str* which is a subtype of *head-adjunct-str*. That is, the complex noun of the IHRC phrase is a subtype of both *head-nexus-str* and *head-adjunct-str*. Also note that a default value is used in *head-nexus-str* to represent that its CONTENT is the same as that of the head daughter. It means (i) that the default CONTENT value of *head-nexus-str* can be overridden by the CONTENT value of *head-adnom-str*, when a construction is a subtype of the both structures, and thus (ii) that the semantic CONTENT of the complex noun of the IHRC phrase is inherited from *head-adnom-str* rather than from *head-adnom-str*.

Hierarchy (23) indicates that the IHRC construction's complex word (verb+*kes*) has the only one construction-specific constraint that the CONTENT value of an element in a VALENCE list of the adnominal verb is structure shared with that of *kes* (the left part of the bottom of hierarchy (23)). Then the semantics of the relative construction is inherited from *head-adnom-str*, and thus the whole complex noun has a semantics of the traditional relative construction, as shown in (25) above.

Following Uda (1998), the event reading of the NP headed by *kes* (e.g., (1) vs. (16)) is accounted for by the assumption that the event reading arises from the structure-sharing between the semantic contents of the adnominal verb and *kes*. To this end, I assume another complex-noun construction which, differently from that of the IHRC construction, does not have the constraint of the CONTENT sharing (the right part of the bottom of hierarchy (23)). Also note that its CONTENT value is inherited from *head-adjunct-str*, not from *head-adnom-str*. On this approach, sentence (16) has the structure in (26):

(26)



Here the adnominal verb modifies a non-referential noun *kes* which

does not have any specific meaning, and thus the CONTENT of the verbal complex is the same as that of the adnominal verb. That is, the complex noun has a proposition as its CONTENT value.

Note that here the CONENT value of *head-gov-str* is also overridden by the CONTENT value of *head-adjunct-str* because the constraint on the CONTENT value of *head-nexus-str* is specified as a default.

4.4. Contrastive Focus and Pragmatics of the IHRC

The goal of this section is to provide a unified account of the discourse properties discussed in section 2.5. To this end, I propose that the IHRC is a type of the focus construction where the adnominal verb bears focus, and that this approach naturally accounts for the facts regarding the different discourse properties between the IHRC and EHRC in Korean.

First, the IHRC cannot be used as a felicitous answer to a *wh*-question about an argument, while the EHRC can, as shown in (17). This is because in my account, the focus in the IHRC is inherently located on the adnominal verb, not on an NP argument. The similar pattern is also observed in English as shown in (27) where the capitals represent the focus (Engdahl and Vallduv 1996):

(27) A: What does he hate?

B: a. He hates CHOCOLATE.

b. #He HATES chocolate.

Second, in the IHRC, there must be direct relations, such as logical or spatio-temporal relations, between the events represented by the embedded relative clause (or the embedded adnominal verb) and by the matrix clause (or the matrix verb), as shown in (18). According to Kiss 1998, contrastive focus (identificational focus in his terms) is usually related to a specific syntactic construction. If this claim is correct, it will be reasonable to assume that the IHRC also involves contrastive focus since it is a syntactic-structure oriented focus, and

that the contrastive focus is located on the adnominal verb, e.g., *ilha-nun* 'working' in (18b). The contrastive focus approach accounts for the logical or spatio-temporal relations mentioned above. For example, the contrastive reading in (18b) is 'I met my brother on Chongro Street when he WORKED in a library (not when he did something else there)'. This is a very awkward reading because in the real world, it is hard to imagine a context where people meet when they are in different places, i.e., one is on Chongro Street while the other is in a library working. In contrast, (18a) is perfect because the EHRC can carry a generic reading, 'I met my brother who is a librarian'.

Third, my analysis accounts for as to why the IHRC has the word order or the structure as in (1), i.e., why the adnominal verb occurs right before the expletive *kes* (or almost at the end of the embedded clause). According to Givón 1975 and Erguvanli 1984, among others, one of the most crucial factors in constituent order variation in a sentence is the Principle of Information Flow. This principle states that the constituents in a sentence tend to be sequentially ordered in such a way that a constituent expressing given information (i.e., information shared by interlocutors) comes in the initial portion of a sentence, and a constituent expressing new or unpredictable information comes at the end of a sentence. This principle predicts that in the IHRC, the focused adnominal verb comes at the end of an embedded clause. Note that the expletive pronoun *kes* functions simply as a nominalizer to make the embedded clause a nominal expression so that the whole embedded constituent can be used as the object of the matrix transitive verb *capassta* 'caught'. If a contentful noun such as *kangto* 'robber', instead of *kes*, comes at the end of the relative clause as in the EHRC, the adnominal verb will not have the focus effect since it does not come (almost) at the end of the relative clause.

The focus property of the adnominal verb can easily be implemented into the current analysis through the information packaging theory proposed by Engdahl and Vallduv 1996, in which another structure called INFO(RMATION)-STR(UCTURE) is assumed as one of the values of the CONTEXT feature. Following their proposal, I revise the construction specific constraint of the IHRC complex noun, the

bottom of hierarchy (23), into (28):

$$(28) \left[\begin{array}{l} \textit{ihrc-kes-complex-noun-cx} \\ \\ \text{HD-DTR | CONT [1]} \\ \text{NON-HD-DTR [2] } \left[\begin{array}{l} \text{VAL | F < . . NP[CONT[1]]. . . >} \\ \text{INFO-STR | FOCUS [2]} \end{array} \right] \end{array} \right]$$

(28) simply adds one more constraint to the previous one: in the complex noun of the IHRC phrase, the adnominal verb, the non-head daughter, inherently bears focus. Then the focus value percolates up to the top S by the INFO-STR instantiation principles, one of which states that if a daughter's INFO-STR is instantiated, the mother inherits this instantiation. The implementation is simple because the adnominal verb is the only head daughter constituent in the IHRC complex noun on my approach.

6. Conclusion

This paper proposes that the idiosyncratic properties of the Korean IHRC construction such as the properties of the mixed-category/function and middle-distance dependency are naturally accounted for through the notions of multiple inheritance and argument composition. It is also proposed that the default mechanism is crucial for a unified account of *kes*, which is used for the entity vs. event readings.

Note that my analysis assumes only two construction specific constraints on the complex noun in the IHRC phrase: (i) the CONT value of an argument of the adnominal verb is structure shared with that of *kes*, and (ii) the adnominal verb within the IHRC bears contrastive focus. Then the idiosyncratic properties of the Korean IHRC construction are accounted for by collaboration of cross-linguistically well-motivated grammatical devices such as the default mechanism, multiple inheritance, and argument composition.

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