

Unbounded Dependency in Korean *Tough* Constructions

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Abstract

In this study, we define unbounded dependency as a characteristic property of Korean *tough* constructions and examine nonlocal slash feature percolation of Pollard and Sag (1994) captures the long-distance argument dependency in them. We further show that strong crossover phenomena and coordination facts support a trace analysis of *tough* constructions. Korean *tough* constructions can be divided into two classes according to different argument realization, and our lexical analysis accounts for the argument realization of two types of Korean TCs by using different lexical constraints.

1 Introduction

In English a certain class of predicates that includes adjectives like *easy*, *hard*, and *impossible* occurs in a syntactic construction that is traditionally referred to as *tough* construction. An example is shown in (1).

- (1) a. This book_i is easy to read ____i
b. Kim_i is hard to persuade people to hire ____i

In these examples, the subject NP is coindexed with the missing object of the embedded predicate. This relationship between the subject NP and missing object has been considered to be a long-distance dependency because in principle there is no bound on the depth of embedding of the missing object. This dependency, however, is not the same as the filler-gap dependency seen in *wh*-phrase constructions; the subject NP and a missing object do not need to have the same case in (1).

In Korean, a group of adjectives semantically similar to the English *tough* predicates exhibits similar behavior; this group includes *swipta* ‘easy’, *elyepta* ‘hard’, *pulkanunghata* ‘impossible’, etc. Consider the following examples.

- (2) a. i chayk_j-i [____j ilk - ki]-ey swipta
this book-Nom read-NML -for easy
‘This book is easy in terms of reading.’
b. i chayk_j-i [____j ilk - ki]-ka swipta
this book-Nom read-NML -Nom easy
‘This book is easy to read’
- (3) a. yenge_j-ka [honcase ____j paywu-ki]-ey elyepta
English-Nom by oneself learn-NML -for hard
‘In terms of learning by oneself, English is hard.’

- b. yenge_j-ka [honcase ____j paywu-ki]-ka elyepta
 English-Nom by oneself learn-NML -Nom hard
 ‘English is hard to learn by oneself’

In (2) and (3), we find that nominative marked *ka*-NPs (or NPs marked with *ka*’s phonological variant *i* refer to the same entities as the missing elements in the object position of the embedded predicates. Given that object NPs of the embedded predicates cannot be assigned nominative case *in situ*, we know that they must appear outside of the embedded clauses in the given examples. The second phrases that takes *ki* correspond to English gerunds. In these phrases, *ki* has been treated as a nominalizing affix, which combines with a predicate and maintains the same VALENCE feature of the predicate while allows the whole phrase to combine with a case marker like normal NPs.

There are two kinds of Korean *tough* constructions (hereafter TCs), and they can be categorized according to the case marker on the second nominalized argument. As we see in (2) and (3), one kind takes the case marker ‘ey’ and the other takes the nominative case marker ‘ka’ or ‘i’. We distinguish them as *ki-ey* TCs and *ki-ka* TCs. Both *ki-ey* and *ki-ka* TCs show the same kind of long distance dependency as in English TCs, although they show different syntactic behaviors. Their different properties will be discussed in detail in the next section.

In this study, we will investigate basic properties of Korean TCs and provide a theoretical analysis to explain argument realization in TCs. Following Pollard and Sag (1994) who took English TCs to be a sort of weak unbounded dependency construction (UDC), and captured the semantic connectivity in the lexical entry of *tough* predicates, we argue that the same kind of analysis can be adopted for Korean.

The organization of this paper is as follows: In section 2, we discuss basic properties of Korean TCs and distinguish them from English. Section 3 deals with unbounded dependency and the status of a missing element in Korean TCs. As Chae (1998) noted, an unbounded dependency is a characterizing property of Korean TCs. We claim that a missing element in a TC has the status of a trace and oppose a null pronominal (or *pro*) analysis. This is supported by semantic and syntactic evidence including crossover and coordination phenomena. In section 4, we show that the connectivity of arguments can be encoded in the lexical entries of *tough* predicates. Our lexical analysis provides a natural account for the formation of TCs by correctly capturing unbounded dependencies in them.

2 Basic Properties of Korean TCs

Compared to English, the formation of TCs in Korean is less restricted. First, the subject NP can be linked not only to an accusative NP but also to NPs having other case markers such as locative, dative, instrumental, etc.

[Dative NP]

- (4) Mary_j-ka [____j mal-ul kel-ki]-ka/-ey elyepta
 Mary-Nom talk-Acc do-NML -for hard
 ‘Mary is hard to start talking (to)’

[Locative NP]

- (5) Lazarus_j-ka [____j shyophingha-ki]-ka/ey swipta
 Lazarus-Nom do shopping-NML -Nom/for easy
 ‘Lazarus is easy to do shopping (in)’

[Instrumental NP]

- (6) yenphil_j-i [____j kulssi-lul sseu-ki]-ka/ey himtulta
 a pencil-Nom letters-Acc write-NML -Nom/for tough
 ‘A pencil is tough to write letters (with).’

Second, Korean *tough* predicates subcategorize for so-called nominalized gerund phrases (NGPs) with *ki*. While *ki* NGPs occur as subject, object, or oblique with a case marker, their internal argument realization is the same as that of a VP or an S. We claim that NGPs have the status of VPs or Ss and that *ki* is a morphological complementizer that marks the whole phrase as one constituent. However, we use the term NGPs for *ki* phrases since NPGs have been widely used in Korean grammar. We will discuss this in detail in section 4.

Third, *ki-ey* TCs and *ki-ka* TCs are similar in that they can be combined with the same kind of matrix predicates. Both also show connectivity between the nominative NP and the missing element in an embedded clause. Even though the two TCs are quite similar, they have the following different properties:

[1] Argument Realization

ki-ey TCs do not have corresponding single argument constructions, while *ki-ka* TCs do.

- (7) a. *[kyewul-ey swuyeng-ul paywu-ki]-ey himtulta
 winter-In swimming learn-NML -At tough
- b. [kyewul-ey swuyeng-ul paywu-ki]-ka himtulta
 winter-In swimming learn-NML -Nom tough
 'It is tough to learn swimming in winter.'

As shown in (7a), there must be at least one NP preceding *ki* phrase in *ki-ey* TCs. In contrast, the *ki-ka* phrase can appear as a single argument, as in (7a).

[2] Correspondence with double nominative constructions

Only *ki-ka* TCs correspond to certain double nominative constructions (DNCs). Consider the following examples:

- (8) a. yenge_j-ka [___j kongpwu-lul ha-ki]-ey swipta
 English-Nom study-Acc do-NML -for easy
 (lit.) 'English is easy for doing study.'
- b. ?* yenge-ka kongpwu-ey swipta
 English-Nom study-For easy
 'English is easy in terms of studying.'
- (9) a. yenge_j-ka [___j kongpwu-lul ha-ki]-ka swipta
 English-Nom study-Acc do-NML- Nom easy
 'English is easy to do study.'
- b. yenge-ka kongpwu-ka swipta
 English-Nom study-Nom easy
 'English is easy to study.'

In examples (8a) and (9a), *kongpwulul haki* 'to do study' is a complex predicate that contains a verbal noun subcategorizing for an argument and a function verb *hata* 'do'. In the given complex predicate construction, *yenge* 'English' is subcategorized for by the verbal noun *kongpwu* 'study', while the verb *hata* 'do' supports the argument realization of the verbal noun.¹ Most verbal nouns in Korean originate from verbs of Chinese or other foreign languages. As in (9b), a verbal noun can appear instead of the

¹Korean complex predicate constructions have been discussed using the argument composition mechanism in Lee (2001).

nominalized form of a complex predicate, forming a DNC. An argument of the verbal noun can be realized as the subject of the sentence by taking the nominative case. However, this is not possible when the nominalized phrase combines with *ey* ‘for’, as we see in (8b).

[3] Semantic Properties

Semantically, a *ki-ey* phrase in a TC is interpreted as a goal event that is closely related to the properties of the subject NP. We know that a *ki-ey* NP refers to an event that corresponds to a goal or standard because it can be paraphrased into ‘in order to achieve the goal of’ or ‘in order to satisfy the standard of’. In addition, the subject NP refers to an entity that achieves that goal or standard. Unlike *ki-ka* phrases, *ki-ey* phrases also appear with predicates subcategorizing for a goal element such as *pwucekhaphata* ‘be inappropriate’, *kelmacta* ‘be proper’, *mocaluta* ‘be lacking’, *chungpwunhata* ‘be enough’, etc.

- (10) umsik_j-i [salamtul-i ____j mek-ki] -ey/*ka mocaluta.
 food-Nom people-Nom eat-NML -for/Nom be lacking
 ‘There is not enough food for people to eat.’

In (10), a *ki-ey* phrase appears in the position of a goal argument, but a *ki-ka* phrase cannot. This suggests that only *ki-ey* phrases are related to the goal interpretation.

[4] The Use of Comparative Adjuncts

The range of possible uses for *ki-ey* phrases is wider than that of *ki-ka* phrases; *ki-ey* phrases can be used as adjuncts in various constructions, while *ki-ka* phrases cannot. *ki-ey* phrases are used as adjuncts of degree adjective predicates, which represent a comparison set or standard for evaluating degree on a scale.

- (11) a. i os_j-i [John-i ____j ip-ki]-ey/*ka khuta
 this clothing-Nom John-Nom wear-NML-for/Nom big
 ‘This clothing is too big for John to wear.’
 b. John-i_j [____j hakkyo-ey ponay-ki] -ey/*ka elita
 John-Nom school-to send-NML -for/Nom young
 ‘John is too young to send to school.’

In (11), the comparative phrase is an optional element that does not affect the grammaticality of the sentence. It seems to be interpreted as an adjunct that modifies a degree adjective. Degree adjectives like *khuta* ‘be tall/big’, *elita* ‘be young’, and *nopta* ‘be high’ describe a relative state. *ki-ey* phrases express a goal event and provide a sort of event comparison set² for use in evaluating the meaning of the main predicate.

3 Unbounded Dependency and the Status of TC Gaps

Long-distance dependency between a subject NP and a missing element in a gerund NP can be found in the following Korean TCs.

- (12) a. i chayk_j-i [s pwumo-ka ai-eykey [vP ____j il-ulako] kwenha-ki] -ey swipta
 this book-Nom parent-Nom child-to read-Comp recommend-NML -for easy
 (lit.) ‘This book_j is easy for the parent in terms of recommending to the child to read ____j.’

²Cipollone (1996) uses the notion of a comparison set to account for English TCs. According to him, TC comparison sets are sets of events or entities which provide the means for a particular element (the subject) to be rated ‘high’ or ‘low’ on some scale. This scale is normally one of ‘difficulty’ or ‘effort required’ for tough-type adjectives, but in principle, could be anything. The concept can be used to explain comparative constructions with *ki-ey* phrases in Korean. This issue will not be discussed in detail because it is too far from the main concern of this paper.

- b. Kim_j-i [VP salamtul-eykey [VP ____j hwecang-ulo ppopu-lako] seltukha-ki] -ey swipta.
 Kim-Nom people-to president-as elect-NML persuade-NML -for easy
 (lit.) 'Kim_j is easy in terms of persuading people to elect ____j to be the president.'

In the given examples, *i chayk* 'this book' and *Kim* are related to missing elements in the deeply embedded clauses. The connectivity between a nominative NP and a missing element of an embedded clause is a characteristic of Korean TCs. The nominalized *ki* phrase can take the nominative case marker 'ka' instead of 'ey'. The same kind of long-distance dependency can be found in both *ki-ey* and *ki-ka* TCs.

Whether or not a missing element or a gap is required for the formation of Korean TCs is controversial. Chae (1998) argues that a gap is not required in the complement S or VP in Korean. To support this, he provides two arguments. First, the object position of the embedded predicate can be occupied by an element with phonetic content, as in *ki-ka* TCs.

- (13) i chayk-i [nayyong-ul ihayha-ki]-ka elyepeta
 this book-Nom content-Acc understand-NML -Nom hard
 'This book is hard to understand (its) content.'

Second, Chae argues that a phonologically empty pronoun occurs in the position of the missing element.

- (14) ce twukkep-ko elyew-un chayk_j-i [[Cholswu-ka ku_j selon-ul ilkess-tako]
 that thick-and difficult-REL book-Nom Cholswu-Nom its introduction-Acc read-NML
 mit-ki] -ka elyepeta
 believe-NML -Nom hard
 (lit.) 'That thick and difficult book is hard to believe that Cholswu read its introductions.'

On our account, though, there is a genitive NP gap in the embedded clause of (13), as we see in (15)

- (15) a. [i chayk-uy nayyong-ul ihayha-ki] -ka elyepeta
 this book-Gen content-Acc understand-NML -Nom hard
 'It is hard to understand the content of this book.'
- b. i chayk_j-i [____j nayyong-ul ihayha-ki]-ka/-ey elyepeta
 this book-Nom content-Acc understand-NML -Nom/-for hard
 (lit.) 'This book is hard to understand (its) content.'

According to Chae, TC gaps are actually empty pronominals, or *pro* in the Government and Binding (GB) Theory terms. It is true that a contextually identifiable element or some element already introduced in a preceding clause can be phonologically dropped in Korean. A *pro* is generally bound by either a preceding antecedent in a sentence or a discourse topic, as in (16).

- (16) John_j-i Tomi-eykey [Mary-ka *pro*_{j/vk} coaha-n-tako] malhayssta.
 John-Nom Tom-to Mary-Nom like-Pres-comp told
 'John_j told Tom_i that Mary likes *him*_{j/vk}'

In (16), *pro* can refer to John, Tom, or someone else whom the speaker and the hearer already share background information about. This is different from a *tough* gap because a *tough* gap is normally bound by the subject of a *tough* predicate. Considering this fact, it is hard to argue that a *tough* gap is a *pro*. Even though Chae (1998) concludes that there is no gap in TCs, he suggests that the semantic connectivity is a characteristic of Korean TCs. An interesting fact is that a missing element can be replaced by an overt pronoun as in (14b). Similarly, gaps in (12) can be replaced by pronouns as we see in the following examples.

- (17) a. i chayk _{j} -i [s pwumo-ka ai-eykey [VP kukes- j -ul ilula-ko] kwenha-ki] -ey swipta
 this book-Nom parent-Nom child-to it-acc read-Comp recommend-NML -for easy
 (lit.) 'This book _{j} is easy for the parent in terms of recommending it to the child to read it _{j} .'
- b. Kim _{j} -i [VP salamtul-eykey [VP ku j -lul hwecang-ulo ppopula-ko] seltukha-ki] -ey swipta.
 Kim-Nom people-to him president-as elect-NML persuade-NML -for easy
 (lit.) 'Kim _{j} is easy in terms of persuading people to elect him _{j} to be the president.'

We can find that the same unbounded dependency hold between the first NP and a resumptive pronoun in (17). Thus, we analyze the pronouns in (17) as resumptive pronouns, which can appear in relative clauses and topic constructions.

If we assume that gaps are normal pronouns, as in Sells (1984) and Chae (1998), the problem of semantic connectivity is simply attributed to binding theory. In contrast, necessary connectivity between the head noun and a missing element is hard to explain under the analysis of a *pro* whose antecedent can be found in the context. Thus, we assume that a resumptive pronoun in Korean TCs is another form of a trace following Vaillette (2001) and Georgopoulos (1991).³ This allows us to treat *tough* constructions as unbounded dependency constructions (UDCs). A resumptive pronoun that is coindexed with the TC subject can be represented in HPSG via the propagation of a non-local feature.⁴

A resumptive pronoun generally occurs in a sentence with a deeply embedded clause, but in Korean there are rare cases of it occurring in a simple sentence that does not have any embedded clauses. In English, gaps and resumptive pronouns are in near complementary distribution in that the latter appears in islands, whereas the former cannot. In contrast, gaps and resumptive pronouns have overlapping distribution in Korean. However, they are not in free variation. In Korean, a resumptive pronoun tends to occur in a deeply embedding structure as in (17), but not in a simple TC as in (18).

- (18) a. *yenge _{i} -ka [kukes _{i} -ul paywu-ki] -ka/ey swipta
 English-Nom it-Acc learn-NML -nom/for easy
 (lit.) 'English _{i} is easy to learn it _{i} .'
- b. *John _{j} -i [ku _{j} -lul soki-ki]-ka eleypta
 John-Nom he-Acc deceive-NML-NOM hard
 (lit.) 'John _{j} is hard to deceive him _{j} .'

The argument that a *tough* gap is a trace is cross-linguistically consistent with strong crossover phenomena. In English, example (19b) is ruled out by strong crossover violation; a trace cannot be bound by the intervening pronoun *she*.

- (19) a. She criticized Mary.
 b. *Who _{j} did she _{j} criticize __ _{j} .

In Korean, the strong crossover phenomenon appears in topic constructions, which seem to show long-distance dependency.

- (20) a. ku ai _{j} -nun Mary-ka salamtul-eykey [__ _{j} cal posalphi-kess-tako] yaksokhayssta
 that child-Top Mary-Nom people-to well take care-Fut-comp promised
 (lit.) 'As for the child, Mary promised people to take care of well.'

³Georgopoulos (1991) argues that resumptive pronouns are variables by pointing out that they are subject to the same recoverability requirements as traces. She provides various syntactic evidence for the variable analysis, working mainly on Palauan.

⁴In relative or topic constructions, the long distance reflexive *caki* 'self' can appear in the position of the trace as well as resumptive pronouns. However, the distribution of the reflexive is more restricted because its antecedent should normally be a subject. In *tough* constructions, a reflexive *caki* 'self' does not seem to occur in the position of a gap. However, when we consider unbounded dependency in Korean, the factors determining the distribution of gaps, a resumptive pronoun and a reflexive should be clearly explained. We will leave this issues for the future study.

- b. *ku ai_j-nun Mary-ka ku papo_j-eykey [___j cal posalphi-kess-tako] yaksokhayssta
 that child-Top Mary-Nom that idiot-to well take careFut-comp promised
 (lit.) ‘As for the child_j, Mary promised that idiot_j to take care of well ___j’
- c. *ku ai_j-nun Mary-ka ku papo_j-eykey [ku_j-lul cal posalphi-kess-tako] yaksokhayssta
 that child-Top Mary-Nom that idiot-to he-Acc well take careFut-comp promised
 (lit.) ‘As for the child_j, Mary promised that idiot_j to take care of him_j well.’

Note that we use the epithet *ku papo* ‘that idiot’, which has the same index value as the preceding subject *ku ai*, instead of a pronoun in (20b) and (20c). This is because a pronoun in those positions can be interpreted as a resumptive pronoun in Korean. By using epithets, we can guarantee that the pronouns in the deepest position is the gapped element. It is based on the fact that an epithet cannot be a gapped element in Korean as in the following examples.

- (21) *Minho_i-eykey-nun [Mary-ka ku papo_i-eykey kakessta-ko yaksokhayssta].
 Minho-DAT-TOP Mary-NOM that idiot-DAT go-COMP promised
 ‘As for Minho_j, Mary promised that idiot_j to go.’

An epithet eliminates the ambiguity and guarantees that the pronoun in the deepest clause is another form of a trace. As we have seen in (20), a gap and a trace show the same behavior in the same position. This kind of strong crossover violation can be found in TCs, too.⁵

- (22) a. John_j-i [salamtul-eykey [___j hoychang-ulo chwuchenhala-ko] seltukha-ki]-ka elyep_ta
 John-NOM people-to president-as recommen-COMP seltukha-NML-Nom hard
 (lit.) ‘John_j is hard to persuade people to recommend ___j to be the president’
- b. *John_j-i [ku papo_j-eykey [___j hoychang-ulo chwuchenhala-ko] seltukha-ki]-ka elyep_ta
 John-NOM that idiot-to president-as recommend-Comp seltukha-NML-NOM hard
 (lit.) ‘John_j is hard to persuade that idiot_j to recommend ___j to be the president’
- c. *John_j-i [ku papo_j-eykey [ku_j-lul hoychang-ulo chwuchenhala-ko] seltukha-ki]-ka elyep_ta
 John-NOM that idiot-to he-Acc president-to recommend-COMP persuade-NML-Nom hard
 (lit.) ‘John_j is hard to persuade that idiot_j to recommend him_j to be the president.’

Moreover, a trace analysis of resumptive pronouns can be supported by the coordinate structure constraint (CSC) proposed by Ross (1967).

- (23) The Coordinate Structure Constraint (Ross, 1967; pp 98-99)

In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.

As we see in the following coordinate structure, extraction out of the coordinate structure is not allowed.

- (24) a. i sosel_j-i [aitul-i e_j ilk-ko elun-i e_j ihayha-ki]-ka swipta
 this novel-NOM children-NOM read-and adult-NOM understand-NML-NOM easy
 ‘This novel_i is easy for children to read e_i and for adults to understand e_i.’
- b. *i sosel_j-i aitul-i swuphil-lul ilk-ko elun-i e_j ihayha-ki-ka swipta
 this novel-NOM children-NOM essay-ACC read-and adult-NOM understand-NML-NOM easy
 (Intended) ‘This novel_i is easy for children to read an essay and for adults to understand it_i.’

⁵Sentence (22c) is bad even if the reflexive pronoun *caki* appears in the position of the gap or the resumptive pronoun *ku*.

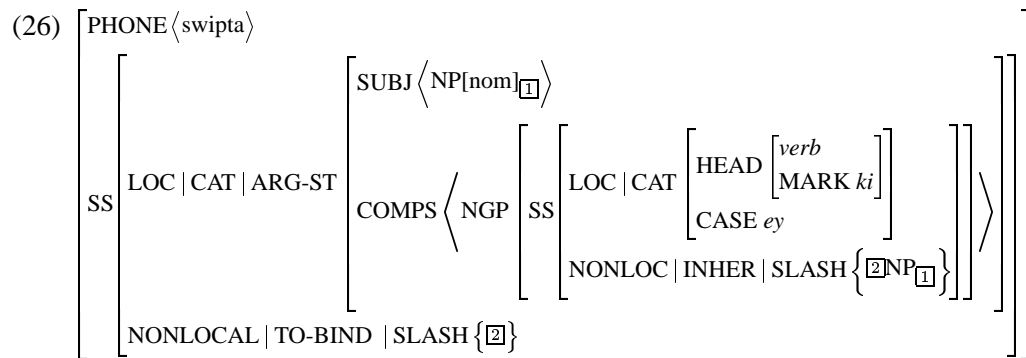
In Korean, a gap in the first conjunct is required when there is a gap in the second conjunct.⁶ A resumptive pronoun can appear in the first conjunct instead of a gap as we see in (25). This supports that a resumptive pronoun in this construction is another form of a trace.

(25) *i* *sose*_{*j*}-*i* [*aitul*-*i* *kukes*_{*j*} *ilk*-*ko* *elun*-*i* *e*_{*j*} *ihayha*-*ki*]-*ka* *swipta*
 this novel-NOM children-NOM it_{*j*} read-and adult-NOM understand-NML-NOM easy
 (Intended) ‘This novel_{*j*} is easy for children to read it_{*j*} and for adults to understand e_{*j*}.’

On the basis of long-distance connectivity and the status of the missing element as a trace, Korean TCs can be analyzed as weak unbounded dependency constructions following Pollard and Sag (1994); there is no overt filler in the nonargument position and the connectivity holds between the subject NP and the trace.

4 The Formation of Korean TCs

In this section, we present a lexical analysis of the formation of Korean TCs and discuss how to represent relevant syntactic and semantic information. Long distance connectivity of TCs can be encoded in the lexical entries of *tough* predicates. As mentioned before, there are two kinds of TCs, ones taking *ki-ey* phrases and ones taking *ki-ka* phrases. Lexical entries of *tough* predicates that require *ki-ey* and *ki-ka* phrases are distinct in their VALENCE features. We provide a lexical entry of *swipta* ‘easy’ having a *ki-ey* phrase as follows.



Tough predicates like *swipta* ‘easy’, *himitulta* ‘tough’, and *elyepta* ‘hard’ subcategorize for a *ki-ey* phrase in their COMPS list. We use ARG(ument)-ST(ructure) that has the features SUBJ, SPR, and COMPS, just as valence structures do, following Pollard (1994). The *ki-ey* phrase must contain an NP gap coindexed with the subject of *swipta* ‘easy’. The SLASH value that originates in a *ki-ey* phrase is bound by TO-BIND SLASH feature of *swipta*. This is represented by the SLASH feature in the lexical entry of a *tough* predicate.

With respect to *ki* phrases, the status of nominalized phrases has been controversial in the Korean grammar. We can summarize the general properties of Korean NGPS as follows:

- There are two nominalizers, *ki* and *um*, which attach to a stem of a predicate. The realization of the *ki* and *um* phrases is restricted according to the matrix predicates. Semantically, nominalizer *ki* combines with event or active predicates, while *um* combines with descriptive or inactive predicates. The main predicate subcategorizing for an NGP determines whether it selects a *ki* phrase or a *um* phrase. It is commonly accepted that *ki* refers to nonfactual events while *um* refers to factual events. In TCs, a stem of a predicate combining with *ki* is restricted to the base form, while in other constructions, a tense or agreement morpheme can precedes *ki*.

⁶As argued by Cho (1995), a untensed phrase with the conjunctive *-ko* is ambiguous between a temporal adjunct phrase and a coordinate structure. Thus, Across-The-Board (ATB) violation is allowed for adjunct structures but not for coordinate structures in Korean.

- It has been argued that NGPs have dual status; there is no change of internal arguments as in a VP or an S, but they combine with case markers like NPs.
- There are word-level deverbal affixes *ki* and *um* distinguished from phrase-level nominalizers *ki* and *um* in Korean. The word-level affixes *ki* and *um* attach to a stem of a verb or an adjective and change the lexical category into a noun as in *talli-ki* ‘running’, *ilk-ki* ‘reading’, *po-ki* ‘example’. There are different morphosyntactic and semantic properties between these two kinds, which has been discussed in Yoon (1996) and Kaiser (1997).⁷ *ki* and *um* have been respectively distinguished into two different morphemes introducing lexical nominalization and phrasal nominalization. Only phrasal nominalization involves TCs.

There are three kinds of approaches to phrasal nominalization in Korean. The first argues that the phrasal nominalizer *ki* is applied at the level of syntax while the second argues that it is introduced at the morphological level. For example, Yoon (1996) and Kaiser (1997) propose a syntactic approach to phrasal nominalization by putting the nominalizer in a separate syntactic node or a phrasal affix, respectively. The affix combines with a VP and projects a nominal structure. The second approach is the lexical approach of Lapointe and Nielsen (1994). They propose a dual lexical category, ⟨N|V⟩ for gerunds. They combine the affix *ki* with a verbal stem instead of putting it in a separate syntactic node. The third approach is a mixed category analysis of Chang et al. (2001) similar to Malouf (2000). They argue that *gerund* has a subtype of *nominal* and *verb* on the basis of the multiple inheritance type hierarchy.

Without assuming mixed category of gerunds, we claim that *ki* phrases maintain the status of VPs or Ss and *ki* nominalizer marks them as functioning similar to NPs. There is no change in the morphosyntactic status of VPs or Ss with nominalizing complementizers. Case marking has been used as the main supporting evidence for the argument that *ki* or *um* marked phrases are NPs. However, some VPs or Ss which end with certain predicate suffixes can be combined with a case marker as follows.

- (27) a. na-nun [John-i nwukwu-lul ttayli-ess-nay]-ka kwungkumhata.
 I-TOP John-NOM who-ACC hit-PAST-End -NOM wonder
 ‘I wonder who John hit.’
- b. Mary-ka [Sora-ka wu-nunci]-lul molunta
 Mary-NOM Sora-NOM cry-End -ACC not know
 ‘Mary does not know that Sora cries.’

In (27), embedded sentences do not have nominalizers but end with suffixes like *nay* and *nunci*. The main predicate subcategorizes for a VP or an S with a predicate that has a particular suffix and a case marker can be assigned to that phrase. The whole embedded phrases can stand alone as complete sentences. However, we do not need to assume an NP status of these VPs or Ss even though they combine with case markers. In *ki* phrases, there is no change in the VALENCE feature of a predicate. Unlike English, the genitive NP cannot appear as the subject of the *ki* or *um* marked phrase.⁸ Moreover, *ki*

⁷It has been known that a word-level affix *um* and a phrase-level affix *um* had different forms historically. The term, phrase-level nominalization is based on the fact that *ki* or *um* marked predicate and its elements form one syntactic constituent.

⁸In this respect, my intuition does not accord with Yoon (1996), Kaiser (1997) and Chung et al. (2001). Thus, the following sentence is ungrammatical.

- i *John-uy pap-ul mek-um
 John-GEN meal-ACC eat-NML
 ‘John’s eating the meal.’

The above example does not appear in speech but seems to occur sometime in translated texts. We think it is a result of direct translation of English and an analogical usage triggered from the fact that the genitive NP can occur with word-level nominalization as follows.

- ii. John-uy cwuk-um
 John-GEN death
 ‘John’s death’

phrases can be modified by adverbs but not by nominal modifiers and cannot be combined with a plural morpheme ‘tul’. The internal properties of gerunds as verbs have been discussed in (Chung et al., 2001).

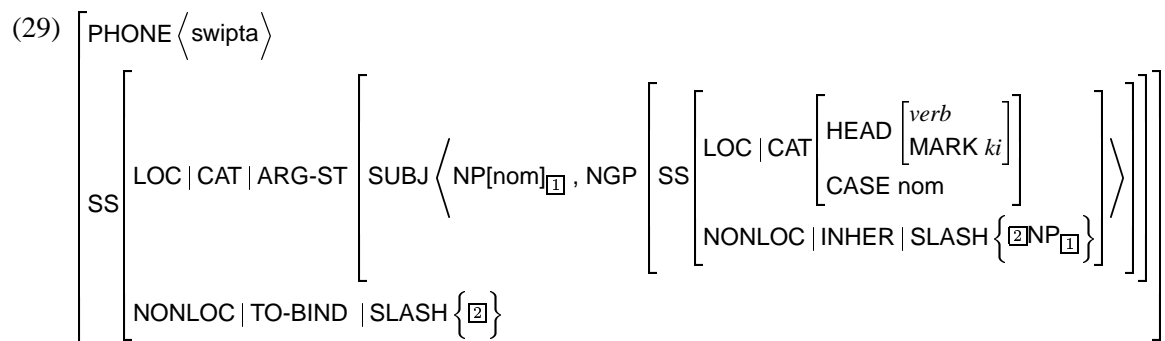
Additional evidence for not treating NGPs as NPs comes from morphosyntactic properties of complementizers of Korean. In addition to nominalizers, there are other complementizers such as relativizers, *un*, *nun*, *ul* and adverbializers *key*, *tolok* in Korean. Each of them attaches to the stem of a predicate and make the whole phrase or sentence work as a relative clause or an adverbial clause in (28).

- (28) a. [s John-i e_i tutko-iss-nun] umak
 John-NOM listen-PRES-REL music
 ‘the music that John is listening.’
- b. Mary-ka [s hanul-i cal poi-key] yulichang-ul takassta
 Mary-NOM sky-NOM well be seen-Adv window-NOM wiped
 ‘Mary wiped the window clean to see the sky well.’

Even though a relativizer *nun* and an adverbializer *key* change the function of sentences to work as modifiers in (28), we do not need to assume that they change the syntactic categories of the whole phrase. In English, *that* clauses can replace NPs without having the status of NPs.

A notable point is that the information of a complementizer is visible by the main predicate and the complementizer marks the whole phrase as one constituent. In order to capture this fact, we use the MARKING (MARK) feature as a HEAD feature that is introduced by the lexical rule that attaches a nominalizing suffix to the stem of a predicate in (26). In addition, we argue that the CASE feature is not a HEAD feature of *noun* in Korean. It can be supported by the fact that a case marker morphologically combines with verbs or adjectives with complementizers as in (27).⁹

In *ki-ka* TCs, there are two phrases taking the nominative case *ka/i*. As in *ki-ey* constructions, we can encode the dependency between the first NP and a missing element in the second NGP. Thus, the lexical entry of *tough* predicates can be represented as in (29). Unlike *ki-ey* phrases, *ki-ka* phrases appear in the SUBJ list of the predicate because they take the nominative case. Thus, (29) contrasts with (26) in that there are two elements in the SUBJ list of *swipta* ‘easy’ in (29).



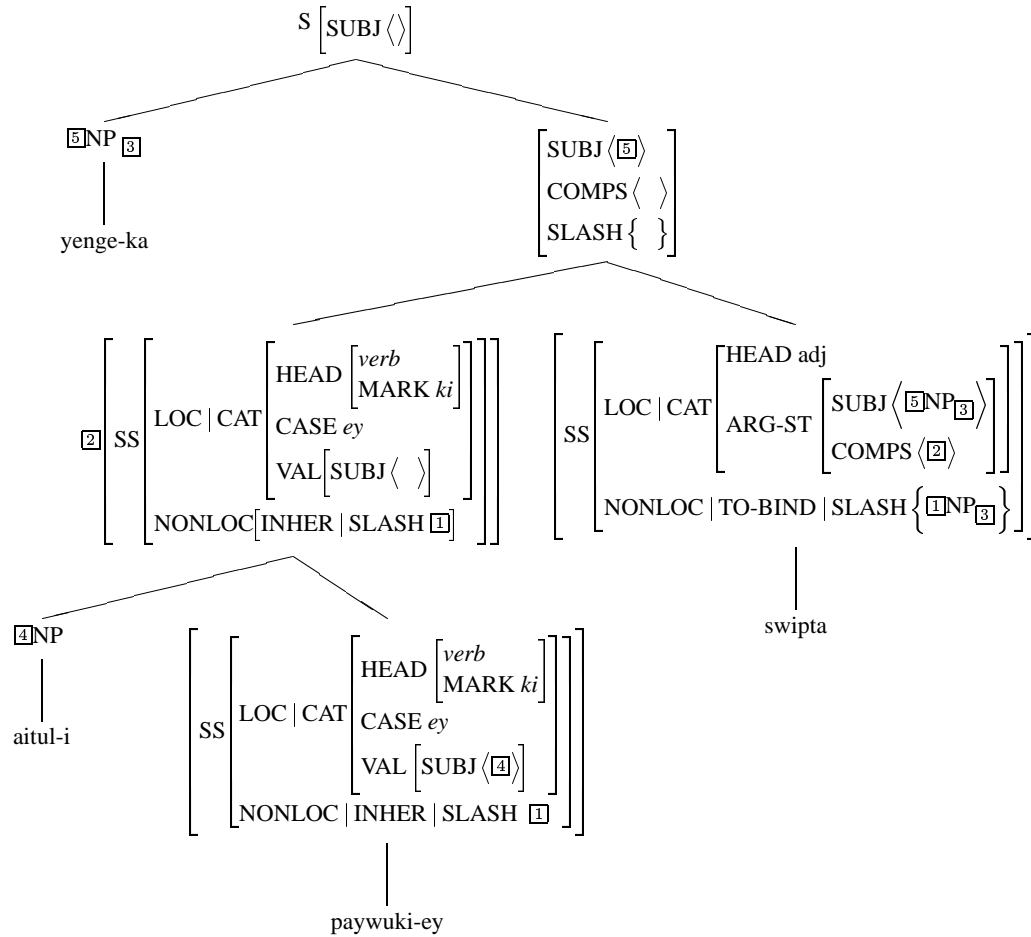
An example structure of *ki-ey* TCs can be presented as follows.¹⁰

In this paper we do not consider NGPs with the genitive subject as grammatical examples.

⁹In this paper, we do not have a room for discussion of morphosyntactic case marking in Korean. We will postpone this subject in Lee (in preparation).

¹⁰Unlike English, Korean adjectives appear without the predicate ‘be’, so there is not much of a grammatical difference between intransitive verbs and adjectives. Thus, instead of VP, we will use AP, which percolates the HEAD feature A, for adjectives.

(30)



As we see in the given structure, *swipta* subcategorizes for an NGP containing an accusative NP gap coindexed with the subject and the gap is introduced within the INHER|SLASH value of *paywuki* by a lexical rule. Then the percolated SLASH value is discharged by the TO-BIND|SLASH value of *swipta*.

5 Conclusion

In this paper, we have examined the characteristic properties of Korean TCs and given a structural analysis of them. Various kinds of argument dependencies in Korean TCs are considered to be unbounded dependencies, and they can be represented by the SLASH feature and by binding within the lexical entries of *tough predicates*. TC gaps in Korean are analyzed as traces rather than null pronominals that can be dropped based on contexts. Furthermore, we claim that a resumptive pronoun is another form of a trace in Korean. Korean TCs are divided into *ki-ey* TCs and *ki-ka* TCs and we provided supporting evidence to distinguish these two constructions. The unbounded dependency of elements can be lexically encoded in the lexical entries of *tough predicates* that have two different subcategorization frames.

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