A LEXICAL ANALYSIS OF SELECT UNBOUNDED DEPENDENCY CONSTRUCTIONS IN KOREAN

DISSERTATION

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ABSTRACT

The purpose of this dissertation is to provide a lexical analysis of certain constructions that license unbounded dependencies in Korean. The term “unbounded dependency” refers to the long-distance relationship holding between a gap and its coreferential element. We investigate four types of unbounded dependency constructions (UDCs): topic constructions, tough predicate constructions, double nominative constructions, and relative clause constructions.

Over the last few decades, various syntactic approaches have been taken in order to explain the formation of these UDCs. In particular, grammarians in GB theory claim that UDCs involve movement processes language universally. However, as pointed out in previous literature, movement-based accounts for Korean UDCs are problematic because island constraints and bounding conditions for movement are frequently violated. As an alternative, some analyses propose that UDC gaps are not traces but null resumptive pronouns, pros that involve semantic binding relations.

In this dissertation, we argue that UDC gaps in Korean are traces that need to be handled at the level of syntax. We support our argument by showing how UDC gaps have unique properties. We discuss their semantic interpretations and strong crossover and coordination facts. In addition, we analyze overt pronouns and the reflexive caki as sort of audible traces when they occur in a gap position in a UDC. We argue for three different kinds of UDC gaps in Korean: traces, resumptive pronouns, and resumptive reflexive caki. In
non-UDCs, these correspond respectively to pro, overt pronouns, and the long-distance reflexive caki. Because these corresponding forms have the same semantic and pragmatic properties, UDC traces do form separate categories from their corresponding non-UDC forms. Without assuming any extra mechanism, we provide a simple UDC analysis using the nonlocal SLASH feature proposed by Pollard and Sag (1994). In HPSG, this SLASH feature can encompass the different lexical properties of traces, pronouns, and reflexive pronouns.

Our theory investigates four kinds of Korean UDCs and provides lexical constraints and structural representations for each type. This study touches on various issues, including filler-gap dependencies, argument realization, morphosyntactic combinations, and multi-level interfaces (syntax-semantic-pragmatics), which are crucial parts of a speaker’s unconscious knowledge of linguistics.
I dedicate this dissertation to my family.
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CHAPTER 1

INTRODUCTION

1.1 Introduction

In this study, we will provide a lexical analysis that accounts for some constructions in Korean that license an unbounded dependency. The term “unbounded dependency” was introduced by Gazdar (1981), and it refers to a class of constructions that are standardly characterized as involving movement to a nonargument position. In principle, there is no bound on the depth of embedding and the dependency can be extended across many clausal boundaries.

Several unbounded dependency constructions (UDCs) occur in Korean. They include *wh*-questions, pseudo-clefts, topicalization, relative clauses, *tough* predicates, and double nominative clauses. These are exemplified in (1)-(6). Most of these constructions have been analyzed within the frameworks of transformational generative grammar and thus they have been argued to involve syntactic movement (Kim, 1992; Kim, 1990; Yoon, 1990; Yoon, 1996; Yang, 1987, among many others.)

[wh-question]

(1) Jang-un [ nwuka ttenasstako ] alko iss-ni?
    Jang-TOP who left know is-Q
    ‘Who does Jang know left?’
With the exception of the \textit{wh}-question in (1), (2)-(6) all contain a constituent that is coreferential with a gap in an embedded clause. In contrast to languages like English, in which \textit{wh}-questions are formed by syntactic fronting of \textit{wh}-phrases, \textit{wh}-phrases remain in their ordinary positions in \textit{wh}-in-situ languages like Korean, Chinese, and Japanese. Since Huang (1982) argued that there is \textit{wh}-movement at LF in such languages, most studies in transformational generative grammar have used this invisible movement at LF to explain the scopal properties of \textit{wh}-questions. However, Gazdar (1981) and Yoo (1997) have shown that even the scopal nature of \textit{wh}-fronting languages can be handled by a quantifier and retrieval
mechanism that does not assume syntactic movement. Yoo (1997) points out several serious defects of an LF movement analysis, and she argues that question markers determine wh-scope in a wh-in-situ language. We accept her analysis of wh-questions and exclude wh-questions from our study of unbounded dependency in Korean. The focus of this thesis is on four major constructions that have been treated by movement to a nonargument position in many previous approaches: topicalization, relative clause constructions, tough predicate constructions, and double nominative constructions. In our list of main topics, pseudo-clefts are not included. Korean pseudo-cleft constructions, which are rarely used contain the copula *ita*. In Korean copula constructions, the combination of a preceding phrase and the copula *-ita* seems to work as a single predicate. However, given that the preceding phrase maintains its own categorical properties, the combination of the preceding phrase maintains its own categorical properties, the combination of the preceding phrase of the copula does not form a single morphological unit. For example, an NP preceding *-ita* can be modified by a relative clause or prenominal modifiers such as *i* ‘this’, *ku* ‘that’, *hen* ‘old’, etc. The formation of copula constructions is associated with various pragmatic factors including predication and focus interpretation.

Pseudo-clefts also require a modifying relative clause and a subject NP whose head noun is the dependent pronoun *kes*. The pronoun *kes* cannot stand alone morphosyntactically. Thus, this pronoun *kes* can be analyzed as a function word or as a nominalizing complementizer that shows a sentential boundary of an NP. While a gap appears in the relative clause, its filler appears in front of copula *-ita* ‘be’. The filler has strong connectivity with the gap in the relative clause. It even holds the case markers originating from the gap position. The structural analysis of pseudo-clefts is closely related to the question of how to represent copula constructions, which have broad distributions in Korean. It seems to be a
language universal fact that copula constructions involve complex factors at the syntax and pragmatics interface. By excluding pseudo-clefts, we limit ourselves to addressing how to represent syntactic and semantic filler-gap linkages in four other UDCs. With respect to the formation of four UDCs, however, relevant pragmatic factors are included in our discussion.

Our lexical analysis of those unbounded dependency constructions touches on various issues, including argument realization, morphosyntactic combinations, the syntax-semantics interface, and finally, how pragmatic factors and processing factors can help determine the grammatical acceptability of sentences.

1.2 Strong UDCs vs. Weak UDCs

Unbounded dependency constructions (UDCs) in English can be divided into two classes according to Pollard and Sag (1994). Strong UDCs that require a match in syntactic category between the filler in a non-argument position and the gap. Weak UDCs show coindexing between the argument and the gap. Whereas strong UDCs include wh-questions, topicalization, wh-relatives, etc., weak UDCs include so-called tough movement constructions and too/enate infinitives in English.

Similarly to English, Korean UDCs can also be divided into these two classes. Strong UDCs in Korean include topic constructions and pseudo-clefts, and they show a strong syntactic association between a gap and its filler. In weak Korean UDCs, a coreference relation holds between a constituent in an argument position and a gap, but there is no overt filler. Weak UDCs in Korean include tough predicate constructions, double nominative constructions, and relative clause constructions.
We refer to the morphosyntactic dependency between a gap and its filler as evidence of the syntactic associations in strong Korean UDCs. For example, case matching conditions exist in strong UDCs as we see in the following examples.

(7) a. Kim-i pan-ey tuleossta.
   Kim-NOM room-to came in
   ‘Kim came into the room.’

   room-to-TOP Kim-NOM came in
   ‘Into the room, Kim came.’

   room-TOP Kim-NOM came in

(8) a. Mary-ka yenphil-lo phyenci-lul ssessta.
   Mary-NOM pencil-with letter-ACC wrote
   ‘It was with a pencil that Mary wrote a letter.’

b. [ Mary-ka e_i phyenci-lul ssu-n kes]-un yenphil-lo-ita.
   Mary-NOM letter-ACC wrote-REL thing-TOP pencil-with-COP
   ‘It was with a pencil that Mary wrote a letter.’

c. ?* [ Mary-ka e_i phyenci-lul ssu-n kes]-un yenphil-ita.
   Mary-NOM letter-ACC wrote-REL thing-TOP pencil-with-COP

As we see in (7b), the topic element contains a locative marker in addition to the topic marker -nun. In (8b) the adjunct phrase marked by the instrumental case -lo appears in front of the copula -ita. These case marking features originate from the case properties of the gap positions. This suggests that the filler respects the syntactic category requirements that are locally imposed on the gap position.

However, some case markers can be dropped in the topic and pseudo-cleft constructions.

   Yonsei university-to-TOP John-NOM donation-ACC gave
   ‘As for Yonsei University, John gave a donation.’

1The topic case marker -nun alternates with -un according to their phonetic contexts. -nun occurs after a vowel while -un occurs after a consonant. This alternation pattern exists in other cases. The nominative marker ka appears after a vowel while -i appears after a consonant. The accusative case -lul comes after a vowel while -ul follows a consonant.
Yonsei university-∅-TOP John-NOM donation-ACC gave

John-NOM donation-ACC give-REL thing-TOP Yonsei university-to-COP
‘It was to Yonsei University that John gave a donation.’
John-NOM donation-ACC give-REL thing-∅-TOP Yonsei university-COP

As we see (9b) and (10b), the case marker ey ‘to’ is dropped. This kind of case marker ellipsis is optional. We do not know the exact factors triggering case marker dropping. However, one notable point is that even though some case markers can disappear, the dropping is not required. This contrasts with the nominative and the accusative case markers, which must drop in the same constructions. In general, it is known that the nominative marker -i (or its phonological variant -ka), and the accusative marker -ul (or its phonological variant -lul) do not appear in topic position or in front of copula ita. The examples are shown as follows.

Kim-NOM room-ACC cleaned up
‘Kim cleaned up the room’
b. Kim-i-nun e_i pang-ul chengsohayssta.
Kim-NOM-
PLACE room-ACC cleaned up
‘As for Kim, he cleaned up the room.’
c. *Kim-i-nun e_i pang-ul chengsohayssta.
Kim-NOM-
PLACE room-ACC cleaned up
d. pang-i un Kim-i e_i chengsohayssta.
room-TOP Kim-NOM cleaned up
‘As for the room, Kim cleaned it up.’
e. * pang-i-ul-un Kim-i e_i chengsohayssta.
room-ACC-TOP Kim-NOM cleaned up

The differences in case marker dropping suggest that Korean case markers needs to be classified into two different kinds. We will discuss how case marking in Korean can be handled later in this chapter.
Additional evidence of syntactic connectivity comes from the fact that an adverb can appear in the topic position when a proper pragmatic setting is given, as in (12). As we argue in Chapter 2, this supports the idea that there is a syntactic dependency between the filler and the gap.

   Kim-NOM unkindly customer-ACC treat-COMP  
   ‘Kim treats customers unkindly.’

   no, unkindly-TOP Inho-NOM customer-ACC treat-COMP  
   ‘No, as for being unkind, it is Inho who treats customers unkindly.’

We conclude here that topic constructions and pseudo-clefts in Korean require a stronger association between a gap and its filler than other weak UDCs that have two semantically coreferent elements. However, a UDC is strong or weak, the long-distance dependency between a gap and its coreferential element can be simply captured by using a mechanism of nonlocal feature percolation. In this thesis, we will examine four types of Korean UDCs and specify how to represent their formation within the framework of HPSG.

1.3 **Theoretical Issues and Proposals on Korean UDCs**

In terms of research in modern Korean linguistics, topic constructions, double nominative constructions, and relative clauses constructions have been the main constructions of interest. This is because these constructions show unique properties with respect to filler-gap dependencies, argument relations, and case realization. In particular, the main theoretical issue has focused on how to capture the dependencies between a gap and its coreferential element in these constructions. This problem encompasses various theoretical issues, including the status of UDC gaps, the existence of resumptive elements in gap positions and explanations of island constraint violations.
Ever since Chomsky (1977) introduced the notion of \(wh\)-movement, many researchers have accounted for these constructions with a syntactic mechanism of transformation (Choe (1985), Yang (1987), Yoon (1989), Kim (1992), etc.). Even within the GB framework, however, Kang (1986) proposes that a movement analysis cannot be maintained for topic and relative clause constructions in Korean because island constraints and bounding conditions that regulate movement are frequently violated. To account for these violations, two base-generation analyses have been proposed. Choo (1993) provides a base-generation analysis for topic and relative clauses that uses an interpretation rule for \(pro\) within the GB framework. Yoon (1993) also analyzes relative clauses as base-generated constructions within the framework of HPSG. Both base-generation approaches assume that the long-distance dependencies in these UDCs represent semantic binding phenomena between a lexical item and the invisible element, \(pro\) in the gap position. This argument is based on the fact that Korean is a \(pro\)-drop language. In \(pro\)-drop languages, either a contextually identifiable element or some element introduced in the preceding context can be dropped, as in (13) and (14).

(13) a. John-i mues-ul hako iss-ni?
    John-NOM what-ACC do being-Q
    ‘What is John doing?’
b. \(pro_k\) kongpwu-lul hako iss-e.
    study-ACC do being-END
    ‘He is studying.’

(14) John_i-i Tom_j-eykey [Mary-ka \(pro\_{i/j/k}\) coahan-tako] malhayssta.
    John-NOM Tom-DAT Mary-NOM like-COMP told
    ‘John_i told Tom_j that Mary likes him\(_{i/j/k}\).’

In line with the \(pro\) analysis of Korean UDCs, Cinque (1990) and Postal (1994) claim that null resumptive pronouns appear in gap positions in certain English UDCs, such as parasitic gap constructions. Crosslinguistically, Cinque’s and Postal’s arguments for null
resumptive pronouns seem to solidify base-generation approaches to Korean UDCs. However, Levine et al. (2001) point out empirical problems with these null resumptive pronoun analyses for English. Similarly for Korean, we argue against a pro analysis of UDC gaps. In particular, we provide an account in Chapter 2 of why UDC gaps cannot be analyzed as counterparts of overt pronouns, that is, pros in Korean.

The main evidence for the pro analysis comes from the fact that a gap can be replaced by a resumptive pronoun in most UDCs. This is shown in the following examples.

(15) [Topicalization]
   a. ku haksayng\_i\_un Yumi-ka sensayngnim-eykey Jaymin-i \(e_i\) that student-TOP Yumi-NOM teacher-DAT Jaymin-NOM chacnunta-ko cenhaissta. look for-COMP said ‘As for that student\(_i\), Yumi said to the teacher that Jaymin is looking for him\(_i\).’
   b. ku haksayng\_i\_un Yumi-ka sensayngnim-eykey Jaymin-i \(ku_i\)-lul that student-TOP Yumi-NOM teacher-DAT Jaymin-NOM he-ACC chacnunta-ko cenhaissta. look for-COMP said

(16) [Relativization]
   a. Yumi-ka sensayngnim-eykey Jaymin-i \(e_i\) chacnunta-ko cenha-n Yumi-NOM teacher-DAT Jaymin-NOM look for-COMP say-REL haksayng\(_i\) (relativization) student ‘the student\(_i\) who Yumi said to the teacher that Jaymin is looking for him\(_i\).’

(17) [tough Predicate Constructions]
   a. Kim\(_j\)-i salamutl-eykey \(e_i\) hoycang-ulo ppopula-ko seltukha-ki-ka Kim-NOM people-DAT president-as elect-COMP persuade-NML-NOM swipta. easy ‘(lit.) Kim\(_i\) is easy in terms of persuading people to elect him\(_i\) to be the president.’

(18) [Double Nominative Constructions]

   Jiho-NOM last month-at love-REL person-NOM died
   ‘Jiho had someone who heᵢ loved die last month.’

   Jiho-NOM last month-at he-NOM love-REL person-NOM died

In GB theory, it has been assumed that pros correspond to overt pronouns. Thus, if UDC gaps are pros, they should show the same properties as other pros. In this study, however, we demonstrate that UDC gaps have different grammatical properties from pros in non-UDCs. Based on this, we claim that UDC gaps need to be handled by a different syntactic mechanism. Furthermore, we analyze the resumptive pronouns in (15)-(18) as audible traces. In doing so, the fact that resumptive pronouns occur in gap positions no longer supports base-generation analyses of Korean UDCs. Our trace analysis of resumptive pronouns is crosslinguistically coherent with resumptive pronoun analyses in other languages like Hebrew and Palauan, which are also pro-drop languages (Vaillette, 2001; Georgopoulos, 1991). In our analysis, Korean UDC gaps will be divided into three kinds: traces, resumptive pronouns, and the resumptive reflexive caki. Those three elements share some of the lexical properties of their corresponding forms in non-UDCs. Because the SLASH feature can take different forms in HPSG, our trace analysis of resumptive elements is not problematic theoretically.

Our HPSG analysis correctly captures filler-gap dependencies in Korean UDCs using a nonlocal SLASH feature, while avoiding problems of island constraint violations. In addition, while topicalization and relativization have generally been analyzed as UDCs,
the dependencies in double nominative constructions and tough predicate constructions in Korean have been discussed in only a few analyses. Gunji (1987) analyzes Japanese double nominative constructions as UDCs, and Chae (1998) accounts for long-distance dependencies in tough predicate constructions in Korean. Along the lines of these previous analyses, we provide a UDC analysis of tough predicate constructions and expand it to account for the formation of double nominative constructions.

1.4 Preliminaries on the Theoretical Framework

1.4.1 HPSG Feature Structure

Our analysis of Korean UDCs is based on the theoretical framework of HPSG that is laid out in Pollard and Sag (1994). This section summarizes basic components related to our discussion. In HPSG, linguistic entities are generally signs, which are divided into subsorts of words and phrases as in (19). Each linguistic sign is represented by a sorted feature structure that is composed of features and values. The feature structure of a sign has two attributes, PHON and SYNSEM. The value of PHON attribute is a list of sort phon.

(19) \[
\begin{array}{c}
\text{PHON} \\
\text{SYNSEM}
\end{array}
\]

\[
\begin{array}{c}
\text{list(phon)} \\
\text{synsem}
\end{array}
\]

The value of the SYNSEM attribute is another structured object of sort synsem that has its own attributes, LOCAL (LOC) and NONLOCAL (NONLOC). The LOCAL attribute has CATEGORY (CAT), CONTENT, and CONTEXT. The NONLOCAL value handles the unbounded dependencies and contains INHERITED\|SLASH and TO-BIND\|SLASH as in (20). The SLASH attribute takes the LOCAL feature of the missing element as its value.

\[2\text{Chae considers the dependencies in tough predicate constructions to be semantic binding and does not assume syntactic nonlocal feature percolation.}\]

11
As in (21), the CAT(EGORY) value has the attributes HEAD and VAL(ENCE). The HEAD feature represents parts of speech including the sort verb, adjective, noun, etc. The sort verb has the attributes VFORM, AUX, and INV. The values of VAL(ENCE) features are SUBJ, COMPS, and SP(ECIFIE)R which are lists of synsem objects. The verb eat selects the SYNSEM value of NP that has structural case and the index 1. In (21), the INDEX attribute takes sort index that has attributes PERSON, NUMBER, and GENDER. The thematic roles are assigned to indices and the INDEX value has three subsorts, referential, and dummy there and it. The index that bears the semantic role of EATER is token-identical (or structure-shared) with the index of the NP in the SUBJ list.

3The PHON value is represented with orthographies for convenience.
The CONT(ENT) value represents the sign’s semantic contribution, particularly with respect to reference. The CONTENT value of nominals takes a value of sort \textit{nom-obj(ect)} which has two attributes, INDEX and RESTR(ICTION), as in (22). The value of RESTR is a set of parametrized states-of-affairs (\textit{psoas}), which provides restrictions on the index of nonexpletive nominals.

\begin{equation}
\begin{bmatrix}
\text{nom-obj} \\
\text{INDEX} \quad \text{local} \\
\text{RESTR} \quad \text{set(psoa)}
\end{bmatrix}
\end{equation}

A \textit{nom-obj} has two subsorts, \textit{nonpronoun (npro)} and \textit{pronoun (pron)} and the latter can be divided again into \textit{personal-pronoun (ppro)} and \textit{anaphor (ana)}. The sort hierarchy of nominal-objects in HPSG is as follows.

\begin{equation}
\begin{array}{c}
\text{nom obj} \\
\downarrow \\
\text{pron} \\
\downarrow \\
\text{ana} \\
\downarrow \\
\text{reflexive} \quad \text{reciprocal} \\
\downarrow \\
\text{ppro} \\
\downarrow \\
\text{npro}
\end{array}
\end{equation}

The CONTENT value of verb takes as its value \textit{psoa} that bears the attributes QUANT(IFIER)S and NUC(LEUS). The value of NUCLEUS is sort \textit{quantifier-free-parameterized-state-of-affairs (qfpsoa)}. The thematic roles of arguments such as EATER and EATEN are specified within sort \textit{qfpsoa}, as in (21).

1.4.2 Phrasal Signs and Principles

In HPSG, the formation of phrase structure is handled by an \textit{immediate dominance} (ID) schemata. Basic ID schemata in HPSG are presented as follows.\footnote{In the given schemata, \textit{X}'s refer to words while \textit{XPs} and \textit{X'} are phrases. \textit{X'} has an unsaturated SPR value ($\{\text{SPR} < \text{X''}\}$), while \textit{X''} has saturated SPR value. More schemata need to be added for Korean UDCs.}

\begin{itemize}
\item \textit{pron} \hspace{1cm} \textit{npro}
\item \textit{ana} \hspace{1cm} \textit{ppro}
\item \textit{reflexive} \hspace{1cm} \textit{reciprocal}
\end{itemize}
In addition to the ID schemata, argument realization is based on the two universal principles, the Valence Principle and the Head Feature Principle.

(25) Valence Principle
In a headed phrase, for each valence feature $F$, the $F$ value of the head daughter is the concatenation of the phrase’s $F$ value with the list of SYNSEM values of the $F$-DTRS value.

(26) Head Feature Principle
The head value of any headed phrase is structure-shared with the HEAD value of the head daughter.

The Valence Principle constrains the discharge of the elements in the COMPS and SUBJ lists, while the Head Feature Principle guarantees that the value of the HEAD feature is structure-shared between the phrase and its head daughter.

Unbounded-dependencies (UDCs) in filler-gap constructions are handled by the NONLOCAL features in HPSG. Pollard and Sag (1994) use three kinds of NONLOCAL features: SLASH, QUE, and REL. In English, SLASH features are used for topicalized sentences and nonsubject wh-questions. The QUE and REL features are employed respectively for interrogative dependencies and relative clauses. The dependency introduced by a nonempty value of a NONLOCAL feature percolates up to larger phrases and is discharged.
or bound off at a certain point in the structure. The Nonlocal Feature Principle in (27) licenses the NONLOCAL value to pass up to the higher node.

(27) Nonlocal Feature Principle (NFP, Pollard and Sag (1994))
For each nonlocal feature the INHERITED value on the mother is the union of the INHERITED values on the daughters minus the TO-BIND value on the head daughter.

The INHER\slash attribute takes as its value a set of local feature structures of missing constituents, and it percolates up via the NFP. The Head-Filler Schema in (24) specifies that the LOC value of the filler is the same as some element of the TO-BIND\slash in the head phrase. Then, the INHER\slash value is bound off at that point by the NFP. As an illustration, the structural analysis of a topic sentence in English is given as follows.

(28) a. Pineapples, John-i likes $e_i$.

\begin{diagram}
\textbf{Pineapples}

\textbf{John}

\textbf{likes $e_i$}
\end{diagram}

\footnote{Pollard and Yoo (1998) provide separate constraints for SLASH, QUE, and REL.}
A similar UDC approach can account for Korean UDCs. However, while English \textit{wh}-questions can be handled by the NFP in (27) and the HEAD-FILLER schema in (24d), it is hard to employ the same analysis for Korean because \textit{wh}-phrases appear in-situ.\textsuperscript{6}

1.5 Case Marking in Korean

In this section, we discuss how to handle case assignment in Korean. Case markers contribute to identify the syntactic status of a gap in strong UDCs, like topic constructions. Morphosyntactically, Korean case makers show mixed properties of words and bound morphemes; that is, they cannot stand alone, but they function as separate words at the level of syntax. The CASE feature in English is the Head feature of nominals, but in Korean the CASE feature is not only restricted to nominal objects. This is because either an S or a VP can combine with a case marker, as we see in the following examples.\textsuperscript{7}

\begin{enumerate}
\item Yumi-ka Jiho-eykey [\textit{s} tap-i mwues-i-nya]-lul mwulessta.
\textit{Yumi-NOM Jiho-DAT answer-NOM what-COP-Q-ACC asked}
\textquoteleft Yumi asked Jiho what is the answer.\textquoteright
\item [\textit{VP} etten il-ul ha-Ikka]-ka komin-ita.
\textit{what job-ACC do-Q-NOM problem-COP}
\textquoteleft What kind of job (I should) do is a problem.\textquoteright
\end{enumerate}

In addition, more than two case markers can be stacked together, as shown in (31). This demonstrates that the combination of an NP and a case marker is a syntactic phenomenon.

\begin{enumerate}
\item a. Mira-ka hakkyo-ey-lul ilccik nwassta.
\textit{Mira-NOM school-at-ACC early came}
\textquoteleft Mira came to school early.\textquoteright
\end{enumerate}

\textsuperscript{6}Yoo (1997) points out that such syntactic licensing is not relevant in \textit{wh}-in-situ languages like Korean and that question markers contribute to determine \textit{wh}-scope in Korean. In turn, she provides a scopal analysis of Korean \textit{wh}-questions. This is based on Pollard and Yoo’s (1998) unified account of scope for both quantification NPs and \textit{wh}-phrases.

\textsuperscript{7}An S or a VP which ends with a certain group of complementizers including ‘-ci, -nya, -kka, -um, -ki’ can combine with a case marker in Korean. However, if an S or a VP ends with ‘-ta, -ca, -yo’ does not take a case marker.
Case markers in Korean are similar to prepositions in English, even though case markers in Korean follow NPs as postpositions. Unlike English, every noun phrase including subject, object, and topicalized phrases can be followed by at least one case marker in Korean. We provide the Head-C(ASE)MARK schema that licenses syntactic combinations of a noun phrase and its case marker in (32). The following schema is similar to the HEAD-MARK schema in Pollard and Sag (1994); a case marker in Korean specifies the grammatical or semantic role of a constituent and marks the constituency of the whole NP. However, a case marker is morphologically attached to the preceding element.

Within the HPSG framework, Pollard (1994) introduced the notion of structural case. Structural case specified and realized as either nominative or accusative depending on the syntactic context. Yoo (1993) adopts the notion of structural case and distinguishes it from lexical case. She provides the following Case Principle for structural case realization.

(33) Case Principle: An unresolved structural NP, which is a daughter of a phrase $\alpha$, is [nom] if it is a SUBJ-DTR of $\alpha$ and [acc] if it is a COMP-DTR of $\alpha$

Following Yoo (1993), we assume that Korean case markers are divided into two sub-classes: structural case and semantic case. We use the term, semantic case instead of lexical case because a predicate lexically assigns both structural case to its argument NPs as well as so-called lexical case. However, the predicate does not specify which structural
case is to appear with its particular argument. In addition to nominative case and accusative case, we include *topic* as structural case, which is assigned to the TOPIC daughter of the TOPIC-HEAD schema. Thus, we add the following condition for topic marker to Yoo’s Case Principle in (33); an unresolved structural NP which is a daughter of a phrase α is \{topic\} if it is a TOPIC-DTR of α.

Two grammatical facts support our argument for distinguishing structural case and semantic case in Korean. First, nominative, accusative, and topic markers show case conflict; they do not occur in the same phrase. As we have seen in 1.2 and as shown in the following examples, nominative and accusative markers are suppressed in topic position.

(34) a. John$_{i}$-un [ $e_i$ chayk-ul chaykcang-ey kkocassta.] John-TOP book-ACC bookshelf-in located
   ‘As for John, he located a book in the bookshelf.’

   ‘As for the book, John inserted it in the bookshelf.’


Structural case markers can combine with semantic case markers, even though they do not combine with other structural case markers. Another difference between structural case and semantic case is that when case markers are stacked together, structural markers always follow semantic case markers. This was shown in (31) and (36).

We analyze structural case to have subsorts, *nominative, accusative, and topic*, and semantic case to have *dative, goal, locative*, etc. For instance, a lexical entry of the case-marked noun *chayk-ul* can be represented as follows.
Similar to our distinction between structural case and semantic case, previous research within the GB framework has divided Korean case markers into two kinds: structural case markers and inherent case markers. The nominative and accusative cases are analyzed as structural cases that are assigned at particular tree configurational positions. In contrast, the other case markers are classified as inherent cases that are lexically assigned by predicates ((Kang, 1986), (Kim, 1990), etc.) The notion of structural case in GB theory is purely based on syntactic configuration. This excludes any meaningful content from structural case markers. However, within HPSG, structural case and semantic case are not so different; both of them are lexically assigned in the lexical entry of a predicate even though structural case requires some syntactic information. In addition to considering structural case and semantic case to be lexically assigned, we claim that structural case markers in Korean convey meaningful content like other semantic case markers. Their meaning is based on semantic entailments of the predicate. Dowty (1991) points out the language universal phenomenon that grammatical subject and object are based on certain lexical entailments of the predicates. He characterizes the realization of subject and object using two

8Within the framework of HPSG, Bratt (1997) distinguishes two classes of cases in terms of grammatical case vs. semantic case. She argues that the term “grammatical case” avoids the confusion about “structural case” indicating constituent structure.
types of semantic entailments: Proto-Agent and Proto-Patient. In transitive predicate constructions, the subject shows more Proto-Agent properties, while the object shows more Proto-Patient properties. Gao (2000) reports that in Chinese more Agent-like argument generally serves as the subject and the more Patient-like argument serves as the object. As for Korean transitive verb constructions, Lee (1999) argues that the nominative and the accusative case markers are associated with Proto-Agent or Proto-Patient entailments, while other semantic cases are related to more specific thematic roles like location, goal, instrument, etc. Thus, the fact that structural case is associated with certain semantic information is compatible with our lexical analysis. However, association between structural case and lexical entailments causes problems in GB, which automatically assigns structural case to a particular constituent structure.

1.6 Overview

In this thesis, we investigate four types of UDCs that require a long-distance dependency between a gap and a certain constituent. Those four types include topic constructions, tough-predicate constructions, double nominative constructions, and relative clause constructions. We argue that constituent dependencies in these constructions need to be

9Dowty (1991) provides two sets of entailments for Proto-Agent Roles and Proto-Patient Roles as follows.

(i) Semantic Entailments of Proto-Agent Role
   a. volitional involvement in the event or state
   b. sentience/perception
   c. causing an event or change of state in another participants
   d. movement relative to the position of another participant
(ii) Semantic Entailments of Proto-Patient Role
   a. undergoes change of state
   b. incremental theme
   c. causally affected by another participant
   d. stationary relative to movement of another participants
handled by a syntactic mechanism rather than semantic binding. In previous movement-based approaches, analyses of Korean UDCs have been problematic due to frequent island constraint violations and subjacency conditions. In contrast, our HPSG analysis is compatible with general properties of Korean UDCs. Without assuming an extra syntactic tool, we provide a simpler account for Korean UDCs.

UDC gaps in Korean include three different kinds: traces, resumptive pronouns, and the resumptive reflexive caki. They correspond respectively to pro, overt pronouns, and the long-distance reflexive caki in non-UDCs. We show that while those UDC gaps show distinctive behaviors relative to their corresponding forms in non-UDCs, UDC gaps and their non-UDC corresponding forms share common properties.

Our theory provides lexical constraints and structural representations that work for four major Korean UDCs. We identify characteristic properties of four UDC types and specify lexical constraints licensing those constructions.

The overall organization of this thesis and main proposals of each chapter are as follows.

Chapter 2 discusses general properties of Korean UDCs. This includes issues regarding the status of UDC gaps. In contrast to semantic binding approaches, we argue for a trace analysis of Korean UDCs in order to capture the necessary binding between a gap and a constituent. Strong crossover and coordination facts are provided as supporting evidence for our trace analysis of UDC gaps. We determine resumptive elements in gap positions to be overt traces. While resumptive elements work as traces in UDCs, they share certain grammatical properties with their non-UDC corresponding forms. This fact does not cause any theoretical problems in our lexical analysis. Within the framework of HPSG, the SLASH feature is allowed to take the form of pro, pronoun, or long-distance reflexive caki.
Chapter 3 discusses the formation of strong UDC, topic constructions. Topic constructions are divided into two kinds: gapless constructions and gapped constructions. While focusing on gapped constructions, we compare topicalization and scrambling; in many previous analyses, they are accounted for with the same syntactic mechanism. In contrast, we claim that topicalization cannot be handled by the same mechanism as scrambling. We support this argument with empirical evidence from case marking, long-distance dependency, and resumptive pronouns in Korean.

In Chapter 4, we characterize Korean *tough* predicate constructions in terms of unbounded dependency following Chae (1998). Korean *tough* predicate constructions are divided into two classes: *ki-ka* constructions and *ki-ey* constructions. We account for the different properties and formation of these *tough* predicate constructions. In order to support our UDC analysis, we reintroduce several general properties of UDC gaps, including strong crossover and coordination facts.

Chapter 5 examines certain double nominative constructions, a subclass that is closely related to certain *tough* predicate constructions. Due to the unique semantic relations between two adjacent subject NPs, dependencies in double nominative constructions have been considered to be local dependencies in most previous analyses. However, we show that dependencies of some double nominative constructions are nonlocal dependencies. We identify *tough* predicate constructions to be a subclass of double nominative constructions given their syntactic and semantic behaviors. Furthermore, we expand our UDC analysis of *tough* constructions to account for the formation of relevant double nominative constructions.

In Chapter 6, we investigate the formation of Korean relative clause constructions and provide lexical constraints for them. One of the controversial problems related to Korean
relative clauses is existence of island constraint violations. We look into these violations and suggest that pragmatic and semantic factors contribute to them.

Chapter 7 presents the conclusion of this thesis and summarizes our main proposals.
CHAPTER 2

GAPS IN KOREAN UDCS

2.1 Introduction

In Korean, there are various grammatical constructions that involve a long-distance dependency between a gap and some constituent that is coreferential with that gap. The dependency is in principle unbounded and can be captured by a feature percolation mechanism within HPSG. However, certain properties of gaps in Korean unbounded dependency constructions (hereafter UDCs) raise questions as to whether a syntactic approach to this long-distance dependency is appropriate. In fact, some previous researchers, including Kang (1986) and Yoon (1993) have argued that this dependency needs to be handled at the level of semantics, not syntax. In such a semantic approach, UDC gaps are treated as null resumptive pronouns (so-called pros in GB terms), and syntactic binding between a gap and its antecedent is not required. However, as we will show in this chapter, the arguments for semantic binding fail to account for the necessity of syntactic binding and the grammatical connectivity between a gap and the constituent that depends on it in Korean UDCs. In this chapter, we conclude that the filler-gap linkage in Korean UDCs needs to be handled at the level of syntax, we show that unbounded dependencies in Korean can be captured by a feature percolation mechanism within HPSG. More specifically, we treat UDC gaps...
as traces and argue that a nonlocal feature, SLASH, and associated constraints in HPSG capture both the syntactic and semantic properties of Korean UDCs. Moreover, we treat putative overt resumptive pronouns as audible traces, which we refer to as RPs. We will address the merits of the feature percolation account vis-à-vis one in terms of resumptive elements through examination of island constraint violations in Korean.

In 2.2, we discuss general properties of Korean UDC gaps. In 2.3, we briefly summarize island constraint phenomena in Korean. In short, the pattern of island constraints suggests that the main syntactic mechanism of GB theory (i.e., movement) does not account for Korean UDCs. In 2.4, we present a constraint-based analysis of UDCs. In 2.5, we discuss a null resumptive pronoun approach and problems with this approach. In 2.6, we examine the overlapping distribution of traces, RPs, and the resumptive reflexive (RR) *caki*. In 2.7, we analyze RPs and the RR *caki* within our constraint-based approach and argue that these elements are actually overt traces. Ultimately, we argue that traces in Korean UDCs have three different forms: phonologically null, RPs, and RRs. We further argue that the phonological form of a trace is constrained by semantic and pragmatic properties.

### 2.2 Properties of Korean UDC Gaps

As shown in Chapter 1, a UDC gap needs to have a coreferential element within the given sentence. While the syntactic and semantic connectivity between a gap and its antecedent in Korean UDCs is similar to the corresponding English sentences, Korean UDC gaps are known to be less sensitive to island constraints. In this section, we determine the basic properties of Korean UDCs by considering the various syntactic and semantic properties of their gapped elements.
2.2.1 Syntactic Connectivity

In Chapter 1, two natural classes of Korean UDCs were presented: strong UDCs and weak UDCs. In the case of strong UDCs, the filler is accompanied by the morphosyntactic case marker that originated from the gapped position, thus the filler shows a strong syntactic association with its gap. This syntactic category matching between the filler and the gap is an exclusive property of strong UDCs. Strong UDCs in Korean include topic and pseudo-cleft sentences, and examples of each are shown in (38b) and (39b).

(38) a. Mary-ka *John-eykey* senmwul-ul cwuessta.
   Mary-NOM John-to present-ACC gave
   ‘Mary gave a present to John.’

b. *John*-eykey-nun [Mary-ka *e-i* senmwul-ul cwuessta].
   John-to-TOP Mary-NOM present-ACC gave
   ‘As for John, Mary gave a present (to himi)’

   Yumi-NOM hospital-at Mira-ACC met
   ‘Yumi met Mira in a hospital.’

   Yumi-NOM Mira-ACC meet-REL thing hospital-in-COP
   ‘It was in the hospital that Yumi met Mira.’

The case markers in the topics and postposed elements in (38) and (39) show that these elements are syntactically connected to the gaps. In (38) the dative case eykey (to) is required by the verb cwuta (give). In (39) the locative marker of the adverbial phrase originates from the embedded clause of the pseudo-cleft sentence.

In contrast to strong UDCs, weak UDCs do not require such a strong syntactic dependency. They include relative clauses and tough constructions, and examples of each are shown in (40) and (41).
2.2.2 Sentence-Internal Binding between a Gap and Its Antecedent

A UDC gap must have a coreferential element within the same sentence. This property distinguishes UDC gaps from *pros, which are licensed by various syntactic, semantic, and pragmatic factors. For example, discourse factors allow a repeated or already-known element to be dropped from a sentence in languages like Korean. When this happens, the missing element can be retrieved from the context. However, a UDC gap requires its coreferential element to be present in the given sentence; it cannot be licensed only by context. Consider the following UDC examples.

\[(42)\] sensayngnim-un [ Mary-ka e_i coahay].
teacher-TOP Mary-NOM likes
‘As for the teacher, Mary likes him/her.’

\[(43)\] [John_{j-i} Tom_{k-eykey} [ Mary-ka e_{i/*j/*k} coahanta-ko] malha-n]
John-NOM Tom-DAT Mary-NOM like-COMP told-REL
sensayngnim, student
‘the teacher_i who John told Tom that Mary likes him_i’

In (42) and (43), the gaps in the topic and in the relative clause are necessarily bound by either the preceding topic or the following head noun. The gaps cannot be bound by a
discourse topic (i.e., an antecedent that has already been mentioned in the previous utterances). In contrast, (44) and (45) demonstrate discourse bound gaps; the missing elements can be connected to an antecedent either in the same sentence or in the previous discourse.

\[(44)\] Mary-ka $e_{i/k}$ coahay.  
Mary-NOM like  
‘Mary likes him/her/you/me.’

\[(45)\] John-i Tom-j-eykey [ Mary-ka $e_{i/k}$ coahanta-ko] malhayssta.  
John-NOM Tom-DAT Mary-NOM like-COMP told  
‘John told Tom that Mary likes him$_{i/k}$.’

In (44) and (45), the interpretation of the gap depends on the discourse entity that has been contextually identified by the speaker and the hearer. For example, the missing object of (44) is an individual about whom the speaker and the hearer already share background information. Therefore, (44) and (45) are considered unacceptable when they are uttered in out-of-blue contexts. The possibility of discourse binding is, however, excluded for UDC gaps; a gap that appears in a double nominative or tough construction, or in a topic or relative clause, must be bound to an overt NP within the sentence.

2.2.3 Strong Crossover

In English, coreferential elements cannot intervene between a filler and a gap. This has been discussed by Postal (1971), Wasow (1972), and Hukari and Levine (1995) inter alia. In example (46b), the pronoun she that intervenes between who and the gap cannot corefer with the gap. This phenomenon is known as strong crossover.

\[(46)\] a. She criticized Mary.  
b. *Who$_j$ did she$_j$ criticize ____$_j$.  

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Korean UDCs are subject to strong crossover effects. The following examples of topicalization in (47), relative clauses in (48), and tough constructions in (49) show that the strong crossover constraint is observed.

(47) a. \[ ai_i-nun [ John-i Mary-eykey [ e_i cal tolpokessta-ko] hayssta.] \]
child-TOP John-NOM Mary-to well take care-COMP told
‘As for the child, John told Mary that (he) would take care of him well.’

b. ?\[ ai_i-nun [ John-i ku_i-eykey [ e_i cal tolpokessta-ko] hayssta.] \]
child-TOP John-NOM he-to well take care-COMP told

(48) a. [ Jimin-i Minwoo-eykey [ Mira-ka e_i ttaylyessta-ko malha-n] salam_i 
Jimin-NOM Minwoo-to Mira-NOM hitCOMP told-REL person
‘the person who Jimin told Minwoo that Mira hit him’

b. ?[ Jimin-i ku_i-eykey [ Mira-ka ku_i-lul ttaylyessta-ko malha-n] salam_i 
Jimin-NOM he-to Mira-NOM he-ACC hit-COMP told-REL person

(49) a. Kim_i-i [ aitul-i e_i choahaki]-ka swipta.
Kim-NOM children-NOM like-NOM easy
‘Kim is easy for children to like e_i.’

b. *Kim_i-i [ ku_i-ka e_i choahaki]-ka swipta.
Kim-NOM he-NOM like-NOM easy
‘Kim is easy for him to like e_i’

The UDC sentences become ungrammatical, as in (47b)-(49b), when the intervening pronoun shares the same index as the gap and its antecedent.\(^\text{10}\) The fact that the strong crossover constraint is observed in these Korean constructions strongly suggests that the connectivity between an antecedent and the gap corresponds to a filler-gap linkage. We will show more strong crossover examples in 2.5.3.

\(^{10}\)Native speakers do not agree on grammaticality judgments for the sentences in (47)-(49). We argue that this is because the intervening pronoun itself can be interpreted as an RPs. This will be discussed later in section 2.5.3 when we deal with resumptive pronouns.
2.3 Island Constraints

GB theory ((Chomsky, 1981)) accounts for island constraint effects with two principles: the Empty Category Principle (ECP) and Subjacency. The Empty Category Principle requires that a nonpronominal empty category be governed by an antecedent or by a lexical head. Subjacency (Chomsky (1981)) is a condition on step-by-step syntactic movement. According to this approach, the ECP and subjacency are syntactic mechanisms that account for island constraints in various languages, including Korean. In this section, we claim that sensitivity to island constraints is not related to the existence of syntactic filler-gap linkages, at least not in Korean.

With respect to Korean UDCs, it has been argued that some examples of topicalization and relativization are subject to three island constraints: the Complex NP constraint (CNPC), the Sentential Subject constraint, and the Adjunct constraint. This evidence has been used to support the claim that topicalization and relativization involve NP movement out of gap positions in Korean. Examples of each constraint are given as follows.

[Complex NP Constraint]

- Topicalization

\[(50) \quad * \text{Mira-nun Jiho-ka } [[[e_i e_j \text{ kilu-nun} \text{ kay}_{j^*}] \text{-lul choahanta.}]}\]

\[
\begin{array}{ll}
\text{Mira-TOP Jiho-NOM} & \text{raise-REL dog-ACC like} \\
\end{array}
\]

‘As for Mira, Jiho likes the dog\(_j\) that (she\(_i\)) has \(e_j\).’

\(^{11}\)The ECP was originally proposed to deal with subject/object asymmetries in \(w/\text{-questions.}

(i) Who\(_t\) do you think Bill saw \(t_i\) ?

(ii) * Who\(_t\) do you think that \(t_i\) left?

According to the GB approach, the object is properly governed by the predicate, while the subject is not. Huang (1982) extended the subject/object asymmetry to the more general case of complement/noncomplement asymmetry.
• Relativization

(51) * [ Jiho-ka [ $e_i$ kilu-nun] kay$_j$-lul choaha-nun yeca$_i$ ]
     Jiho-NOM raise-REL dog-ACC like-REL woman
     ‘the woman$_i$ who Jiho likes the dog$_j$ that (she$_i$) has $e_j$’

[Sentential Subject Constraint]

• Topicalization

(52) ?* [ Mini-nun [ [ Youngho-ka $e_i$ cohaha-nun kes-i] motwu-eykey ]
     Mini-TOP Youngho-NOM like-REL thing-NOM everyone-to
     revealed
     ‘As for Mini$_i$, it has been revealed to everyone that Youngho likes (her$_i$).’

• Relativization

(53) * [ [ Yumi-ka $e_i$ salko-iss-nun kes-i] nollawu-n] aphath$_i$
     Yumi-NOM live-PRES-REL thing-NOM surprising apartment
     ‘the apartment$_i$ where it is surprising that Yumi lives (there$_i$).’

[Adjunct Constraint]

• Topicalization

(54) * ku cangmi-nun [ [ Kim-i $e_i$ cwu-ese] Youn-i that rose-TOP Kim-NOM gave-because Youn-NOM
     kippehaysssta].
     glad
     ‘As for that rose$_i$, Youn was glad because Kim gave (it$_i$).’

• Relativization

(55) ?* [ [ sensyangnim-i $e_i$ yatanchisyess-ul ttay] motwu-ka choyonghihan]
     teacher-NOM scold-REL when everyone-NOM quiet-REL
     haksaying
     student
     ‘the student$_i$ who everyone got quiet when the teacher scolded (him$_i$)’
The ungrammaticality of the given examples seems to suggest that Korean UDCs involve NP movement and observe island constraints. However, despite (50) - (55), topic and relative clauses in Korean frequently do violate island constraints, as pointed out in previous research. For example, Kang (1986) presents island constraint violations in Korean topic and relative clauses. According to him, island constraint violations support the claim that topic and relative constructions are base generated and do not involve any syntactic movement. We present some grammatical examples of island constraint violations in (56)-(61).

[Complex NP Constraint]

(56) ku cakka_i-nun [nay-ka [e_i e_j palpyoha-n] sosel_j-ul cal alkoissta.
that writer-TOP I-NOM publish-REL novel-ACC well know
‘As for that writer_i, I know well the novel_j that (he_i) published e_j.’

(57) [nay-ka [e_i e_j khiwe cwu-un] pwumo_i-lul manna po-n] ai_j
I-NOM raise give-REL parents-ACC met try-REL kid
‘the kid_i who I happened to meet the parent_j who_j raised (him_i)’

[Sentential Subject Constraint]

(58) sennwul_i-un [[Mary-ka John-eykey e_i centalhayss-um]-i tulenassta]
gift-TOP Mary-NOM John-to gave-NML-NOM revealed
‘As for the gift, it has been revealed that Mary gave (it) to John.’

(59) [[motwu-ka e_i chac-ko iss-nun kes]-i thulimeps-nun] chayk
everyone-NOM looking for- PRES-REL thing-NOM be evident-REL book
‘the book that it is evident that everyone is looking for (it_i)”

[Adjunct Constraint]

- Topicalization

(60) ku kok-un [[Mira-ka e_i yencwuha-myen] motwu-ka
that song-TOP Mira-NOM play-if everyone-NOM
culkewehanta].
pleased
‘As for the song_i, everyone gets pleased if Mira plays (it_i).”
In (56)-(61), the dependency between each gap and its antecedent holds even though each gap appears within an island. It has been noted that when certain semantic or pragmatic conditions hold, island constraints are easy to violate. For example, Na and Huck (1993) pointed out that the Complex NP Constraint (CNPC) can be violated, as in the relative clause in (57), when the gap in the relative clause and the head noun have a thematically ‘subordinate’ relation. According to them, X is thematically subordinate to an entity Y iff Y’s salient properties are determined at least in part by the salient properties of X.\footnote{According to Na and Huck (1993), subordinate relations include five types: part-whole, quality-to-entity, conventional, hierarchical, and taxonomic. We discuss these relations in detail in chapter 5.} In (57) the gap referring to \textit{ai} (kid) is subordinate to \textit{pwumo} ‘parents’. However, it is hard to determine the exact conditions that trigger the difference in grammaticality between (50)-(55) and (56)-(61).

In addition, grammaticality judgments for these sentences vary among native speakers. This suggests that, when it comes to filler-gap linkages, it is hard to find a clear boundary of grammaticality for island constraint contexts in Korean UDCs. Moreover, using “pronouns” in the gapped positions does not change the grammaticality of (50)-(61). This shows parallel behavior, with respect to island constraints, for gaps that are phonologically empty and resumptive pronouns that appear in a rather deeply embedded clause. (We later propose that so-called resumptive pronouns in Korean are actually overt traces, hence the scare quotes above.)
Most previous analyses in GB theory have used island constraints as a crucial test for determining whether a particular construction is a UDC or not. However, previous researchers have pointed out that sensitivity to island constraints cannot be used as evidence for the existence of a filler-gap linkage. When dealing with English adjunct extractions, Hukari and Levine (1995) argued that island effects are substantially irrelevant to the issue of whether or not adjunct extraction represents a genuine syntactic filler-gap construction. Instead, they argued that adjunct extraction belongs to the same category of UDCs as argument extraction. They based their conclusion on parallel patterns of crossover effects and on cross-linguistic evidence of syntactic binding domain effects.\(^\text{13}\) Szabolcsi and den Dikken (1999) also argued that some island constraint effects are relevant to the semantic scope that an expression takes over certain operators. They argued that the characterization of island sensitivity is determined by semantic factors rather than syntactic properties.\(^\text{14}\) Erteschik-Shir (1998) argued that island constraints should be handled by focus structure. In addition, Kluender (1998) argued that island constraint phenomena need to be handled from a processing point of view. For English UDCs, he argued that island constraints are related to processing factors that are based on pragmatic and semantic factors. In line with this, previous research on Korean and Japanese has pointed out that CNPC violations are allowed in topic and relative constructions that have certain semantic and pragmatic properties. For example, Kuno (1976) focused on the parallel grammaticality of topic and relative

\(^{13}\)According to Zaenen (1983), binding domains are subconfigurations that intervene between fillers and trigger a certain morphosyntactic phenomenon that exclusively accompanies genuine extraction. Hukari and Levine (1995) argue for a syntactic UDC analysis of adjunct extraction using cross-linguistic evidence, including French inversion, Irish, Icelandic, Yiddish, Kikuyu, and Chamorro.

\(^{14}\)In previous literature, islands constraints are divided into two kinds: strong islands and weak islands. Strong islands block extraction of argument and adjuncts. Weak islands only prohibit adjunct extraction. However, the dichotomy is not clearly defined as discussed in Szabolcsi and den Dikken (1999) and Kluender (1998). Szabolcsi and den Dikken (1999) focus on weak island constraints and argue that the weak island effects are reduced to independent semantic facts.
clauses in Japanese and proposed an aboutness condition for licensing relative clauses. Na and Huck (1993) also adopted his analysis and provided a similar constraint for topic and relative clause constructions in Korean. They showed that island constraint violations are not related to syntactic structures but to semantic or pragmatic factors. In summary, island constraints are a phenomenon that is directly related to an interpretive representation but not to a syntactic representation. Thus, we claim that it is hard to use island constraints as evidence for determining whether a certain construction requires a syntactic filler-gap linkage or not.

The fact that island constraint violations are driven by semantic and pragmatic factors does not support semantic binding approaches to Korean. As we mentioned before, some UDCs show strong syntactic dependencies between gaps and their antecedents. In addition, semantic dependencies between a UDC gap and a constituent are tighter than other binding relations between a pronoun and its antecedent. We determined that UDC gaps in four types of Korean UDCs show parallel patterns with respect to semantic interpretations and strong crossover. Our syntactic analysis will provide a syntactic representation of unbounded dependencies with a simple syntactic tool, while avoiding all the problems of island constraint violations that the movement approaches have confronted.

2.4 A Constraint-Based Approach

Within the framework of HPSG, the discharging of an unbounded dependency is represented in terms of the Filler-Head Schema which we presented in Chapter 1. This schema, given in (62) requires a certain identity between a filler and a gap. In this section, relevant syntactic schema and constraints on unbounded dependencies are repeated for the convenience of discussion.
The schema in (62) specifies that a filler and a gap share a complex feature structure of syntactic and semantic information. It also shows how a SLASH specification, which is percolated through the structure, is bound off in a phrase structure. The properties of a gap propagate up to its mother through SLASH percolation. In turn, SLASH percolation and binding are handled by the NONLOCAL value, which contains INHERITED SLASH and TO-BIND SLASH. They are also governed by the Non-local Feature Principle in (64).

(63) \[
\begin{align*}
\text{INHERITED} & \quad \text{set (slash)} \\
\text{TO-BIND} & \quad \text{set (slash)}
\end{align*}
\]

(64) Non-Local Feature Principle (NLFP) (Pollard and Sag (1994))
For each non-local feature the INHERITED value on the mother is the union of the INHERITED values on the daughters minus the TO-BIND value on the head daughter.

The NLFP constrains the propagation of gap information and ensures that the bound-off SLASH value does not percolate higher. One way that a non-local dependency can be bound off is for a local tree to instantiate the filler-gap schema. For example, a UDC topicalization structure is presented in (65).
As Levine and Sag (2003) point out, constraint-based approaches to UDCs from Gazdar (1981) on have provided simpler mechanisms for filler-gap dependencies than the transformational grammar approaches. In constraint-based approaches, the syntactic mechanism of iterated feature percolation assumes an empty category only in the gap site itself. This contrasts with movement-based accounts, which assume that a filler leaves a phonologically null copy in various escape hatch positions such as COMP, [SPEC, CP], VP-adjoined positions, and other major category projections. Furthermore, some transformation-based accounts have argued that the same mechanism of normal gap construction cannot be applied to the filler-gap linkage in parasitic gap and multiple gap constructions. For example, Cinque (1990) and Postal (1998) differentiated English parasitic gaps from normal gaps by interpreting parasitic gaps as in-situ null pronominals. They pointed out that antecedents of parasitic gaps are restricted to nominals and that null resumptive pronouns, pro, correspond weak definite pronominals. However, Levine et al. (2001) argue that parasitic gaps
in English need to be treated as formally identical to normal gaps. Contrary to Cinque and Postal’s null pronominal analysis, they show that nonnominal parasitic gaps exist and that parasitic gaps have a different distribution than weak definite pronouns. Their HPSG account of parasitic gap constructions supports the hypothesis that the content of parasitic gaps and normal gaps in other UDCs are the same. Thus, it provides a unitary analysis of parasitic gap and other gap constructions without posing extra conditions. Semantic binding accounts of Korean UDCs are similar to Cinque (1990) and Postal (1998) because they treat gaps as *in-situ* null pronominals. In contrast to semantic binding accounts, we analyze UDC gaps as traces in the next section. As SLASH percolation captures various filler-gap linkages in English, the same non-local feature specification can be used to account for different kinds of Korean UDCs.

### 2.5 A Null Pronominal Analysis and Its Problems

Korean has been standardly considered to be a *pro*-drop language. This is a language where a contextually identifiable element or some element introduced in the preceding context can be dropped. Huang (1984) argues that “cool” languages, including Chinese and Korean, are different from “hot” languages, like English, in that cool languages license a zero topic that binds a null element. While Huang argues that the phonologically null element *pro* appears only in the subject position in cool languages, it has been argued that there is no subject-object asymmetry in Chinese (Xu and Langendoen, 1985) or Korean (Moon, 1991; Cole, 1987). Since Korean is classified as a *pro*-drop language, it is possible to argue that gaps in UDCs are null resumptive pronouns or *pro*s, and that correspondingly, the long-distance dependencies are not syntactic relations but rather semantic binding relations. Similar approaches have been taken in English; Cinque (1990) and Postal (1994)
propose transformational analyses with null pronominals for English *tough* gaps and parasitic gaps. If we were to assume that a gap is a null resumptive pronoun as in English, we would not need to use the syntactic mechanism of non-local SLASH feature percolation because the connectivity in UDCs would be attributed to binding theory.

In previous research, Chae (1998), Kang (1986), and Yoon (1993) assumed that *tough* constructions, topicalization, and relativization in Korean license pros, which are phonologically null elements in the gap position. However, we will argue that gaps in Korean UDCs cannot be treated as null resumptive pronouns. Our HPSG analysis will use the syntactic mechanism of SLASH feature percolation, instead of semantic binding relations, in order to capture the filler gap linkages in Korean UDCs.

Semantic binding accounts of Korean UDCs seem to be supported by the fact that a gap can be replaced by an overt pronoun, as in the following examples.

(66) a. Kim_{j}-i salamtuł-eykey e_{i} hoycang-ulo ppopula-ko seltukha-ki-ka Kim-NOM people-DAT president-as elect-COMP persuade-NML-NOM swipta.
  easy
  ‘Kim_{i} is easy in terms of persuading people to elect (him_{i}) to be the president.’

b. Kim_{j}-i salamtuł-eykey ku_{t}-lul hoycang-ulo ppopula-ko Kim-NOM people-DAT he-ACC president-as elect-COMP seltukha-ki-ka swipta.
  persuade-NML-NOM easy
  ‘Kim_{i} is easy in terms of persuading people to elect him_{i} to be the president.’

  child
  ‘a child_{i} who Yumi said to the teacher that Jaymin is looking for (him_{i}).’

  say-REL child
  ‘a child_{i} who Yumi said to the teacher that Jaymin is looking for him_{i}.’
Kang (1986) observes that gaps in topic, relative clause, and double nominative constructions can be replaced by pronouns or the long distance anaphor caki in Korean. Kang also argues that while various linkages between a gap and its antecedent cannot be handled by a syntactic mechanism, they can be handled by semantic binding. Also, Chae (1998) and Yoon (1993) assume that a pronoun that replaces a gap is a normal pronoun and that semantic coreference between a pronoun and its antecedent within a sentence is required. However, in this study we argue that the filler-gap linkages in Korean UDCs need to be handled by a syntactic mechanism of binding and not just by semantic coreference. Our UDC approach treats those pronouns and the long-distance (LD) caki as audible traces. In other words, UDC gaps in Korean can be realized as three different forms: a trace (i.e., pro), a pronoun, or the long-distance (LD) reflexive caki. Moreover, we argue that those resumptive pronouns (RPs) and the resumptive reflexive (RR) caki in UDCs work as overt traces; they originates the SLASH feature in UDCs. However, those UDC traces maintain
the same semantic and pragmatic properties as pronouns and the reflexive caki that appear in non-UDCs. We will discuss this later in this section.

### 2.5.1 Distributions of Gaps

If gaps are phonologically null correspondents of overt pronouns, it is generally expected that they will have the same distributions as overt pronouns. Gao (2000) argues that a gap is a phonologically null resumptive pronoun in Chinese based on the fact that a pronoun can replace a gap in Chinese topic constructions. However, a UDC gap is not always replaceable by an RP or the RR caki in Korean. RPs and RR caki have limited distributions in UDCs compared to inaudible traces. The exact distribution of those resumptive elements in Korean is hard to determine because it involves various semantic, pragmatic, and processing factors. For example, resumptive elements tend to occur in sentences that contain a deeply embedded clause, as we see in (70)-(71). A resumptive pronoun rarely appears in a simple sentence that does not have a embedded clause. Consider the following examples.

(70) [Yumi-ka Mira-eykey [\(pr_{i}\) /\(e_{i}\)/ku_{i}-lul choahanta-ko] kopaykha-n] namec_{i}, Yumi-NOM Mira-DAT \(e_{i}\)/he-ACC likes-COMP confess-REL man

‘a man_{i} who Yumi_{j} confessed Mira that she_{j} likes (him_{j})/him_{j}.’

(71) Jun-un [Yumi-ka Inho-eykey [\(e_{i}\)/ku_{i}-lul taylila-ko] kangyohayessta]. Jun-TOP Yumi-NOM Inho-DAT \(e_{i}\)/he-ACC hit-COMP forced

‘As for Jun_{i}, Yumi forced Inho to hit (him_{j})/him_{j}.’

In Korean, a gap cannot be replaced by an RP in simple sentences. This contrasts with Chinese and Hebrew, which allow a gapped element to be replaced by a resumptive pronoun even in very simple UDC constructions, as in (72) and (73).

(72) a. Zhāngsān, wǒ rènshí \(t_{i}\),

Zhāngsān I know

‘Zhāngsān_{i}, I know \(e_{i}\).’
b. Zhāngsàn wǒ rènshì tā/*j
Zhāngsan I know he
‘Zhāngsàn, I know him.’

(73) a. ha-yeled še raʔiti
the-boy that saw-1.SG
‘the boy that I saw e_i’
b. ha-yeled, še raʔiti ?oto_i
the-boy that saw-1.SG him
‘the boy, that I saw him_i’

In corresponding structures of Korean, a resumptive pronoun does not appear in the position of a gap, as we see in (74) and (75).

(74) a. John_i-un nay-ka e_i anta
John-TOP I-NOM know
‘John, I know.’
b. * John_i-un nay-ka ku_i-lul anta
John-TOP I-NOM he-ACC know
‘John_i, I know him_i.’

(75) a. nay-ka po-n ai
I-NOM see-REL child
‘the boy I saw’
b. * nay-ka ku_i-lul po-n ai_i
I-NOM he-ACC see-REL child
‘the boy_i I saw him_i’

According to the hypothesis that inaudible traces are overt pronouns functioning pronominally in Korean, traces and overt pronouns are predicted to have nearly overlapping distributions. However, the fact that inaudible traces are not freely replaced by overt pronouns as in (74) and (75) suggests that the gaps cannot be simply analyzed as correspondents of overt pronouns. However, it is also true that overt pronouns overlap in distribution with UDC gaps. These RPs in Korean contrast with resumptive pronouns in English, which have a near complementary distribution with gaps. According to Sells (1984), a resumptive
pronoun is defined as a pronoun that is operator bound. He classified resumptive pronouns in English as intrusive pronouns and differentiated them from resumptive pronouns in languages like Hebrew and Swedish.\textsuperscript{15} We argue that resumptive pronouns (RPs) in Korean are equivalent with gaps.\textsuperscript{16}

Various factors must hold for a pronoun to replace a gap. The exact factors that determine the occurrences of resumptive pronouns in trace position are hard to determine, though. One possible answer for the occurrences of RPs may be related to processing factors. Their distribution seems to help the cognitive processing of complex sentences; RPs make it easier to process complex sentences because they exist phonologically. This is supported by the fact that (70) and (71) are easier to understand than the same sentences with gaps in the RP positions. In other words, the use of an RP in the gap position makes semantic predication clearer through its phonological instantiation. In spite of the fact that overt traces, including RPs and RR \textit{caki}, help processing, using them rarely changes grammaticality judgments of the sentences that violate island constraints in Korean. Instead, resumptive elements appear when their existence adds a certain semantic or discourse interpretation to the whole sentence. We discuss detailed properties of gaps, RPs, and the RR in UDCs later in this chapter. Before we get into that, let us discuss how gaps are differentiated from Cinque’s or Postal’s notion of \textit{pros}.

\textsuperscript{15}Sells argues that intrusive pronouns in English are not operator-bound and that binding interpretation arises by a sort of accidental coreference. In addition, intrusive pronouns in English involve reference to individuals. For detailed discussion, refer to Chapter1 of Sells (1984).

\textsuperscript{16}In Korean UDCs, gaps can be referred to as null resumptive pronouns or \textit{pros}. Within the GB framework, Cinque (1990) and Postal (1994) used the term “null resumptive pronouns” based on the assumption that those gaps correspond with weak definite pronouns in English. According to them, only NPs and referential NPs are eligible to become gaps in certain constructions including parasitic gap and \textit{tough} constructions. However, as shown in Levine et al. (2001), gaps are not restricted to NP fillers and appear in anti-pronominal environments in English. We have seen also that Korean UDC gaps do not correspond with overt pronouns. However, in UDC environment gaps, resumptive pronouns, and the resumptive reflexive function as traces whose feature percolate up to the higher structure.
2.5.2 Gaps in an Antipronominal Environment

Postal (1994) argues that there is an anti-pronominal environment that prohibits the occurrence of a pronoun in gap positions in English. According to him, English extraction is divided into two kinds; one occurs only in pronominal environments, which includes clefts, NP topicalization, nonrestrictive relatives, parasitic gaps and missing object constructions. The other does not have such a restriction. Classifying pronominal-compatible extraction as B-type extraction, Postal argues that B-type extraction gap sites are initially occupied by null resumptive pronouns. In line with Postal (1994), it can be argued that Korean UDC gaps are null resumptive pronouns because they can be replaced by pronouns. As for English parasitic gap constructions, Levine et al. (2001) argue that Postal’s claim is untenable by showing how parasitic gaps are licensed in antipronominal environments. A similar argument can be made for inaudible traces of UDCs in Korean. As shown in (76) and (77), UDC gaps are licensed in antipronominal environments, which clarifies the difference between UDC gaps and pronouns.

(76) a. Taypepwon-i John-eykey phankyel-ul nayliessta.
sumpreme court-NOM John-to verdict-ACC gave
‘The supreme court gave a verdict to John.’

sumpreme court-NOM John-to it-ACC gave

Yumi-NOM Kim-with meet-to promise-ACC did
‘Yumi made a promise to meet with Kim.’

Yumi-NOM Kim-with meet-to promise-ACC did

In (76)-(77), the underlined elements are verbal nouns that license their arguments and allow those arguments to appear directly under the VPs. They do this by functioning like
verbal predicates. In general, verbal nouns cannot be replaced by pronouns that have specific reference. However, those arguments that are incompatible with pronouns can be relativized or topicalized as in (78)-(79). This suggests that phonologically empty elements are not null pronominals that correspond to overt pronouns.

(78) a. pankyel\textsubscript{1}-un [taypepwon-i John-eykey e\textsubscript{i} nayliessta]. verdict-TOP supreme court-NOM John-ACC gave

‘As for the verdict, the supreme court gave (it\textsubscript{i}) to John.’

b. yaksok\textsubscript{1}-un [Yumi-ka Kim-kwa manna-kilo e\textsubscript{i} hayssta]. promis-TOP Yumi-NOM Kim-with meet-COMP did

‘As for the promise, Yumi made (it\textsubscript{i}) to meet with Kim.’

(79) a. [taypepwon-i John-eykey e\textsubscript{i} nayli-n] pankyel\textsubscript{1}. supreme court-NOM John-ACC gave-REL verdict

‘the verdict that the supreme court gave (it\textsubscript{i}) to John.’

b. [Yumi-ka Kim-kwa manna-kilo e\textsubscript{i} ha-n] yaksok\textsubscript{1} Yumi-NOM Kim-with meet-COMP did-REL promise

‘the promise that Yumi made (it\textsubscript{i}) to meet with Kim.’

Another example of the antipronominality of UDC gaps can be found in examples containing arguments that refer to state or result of change and that cannot be replaced by pronouns.

(80) a. Motu-ka Kim-ul hoycang/*it-ulo ppopassta. everyone-NOM Kim-ACC president/*it-as elected

‘Everyone elected Kim as president.’

b. Hoycang-ulo-nun [mowtu-ka Kim-ul e\textsubscript{i} ppopassta]. president-as-TOP everyone-NOM Kim-ACC elected

‘As for the president, everyone elected Kim.’

Topicalization is also related to the antipronominality of Korean UDC gaps. Specifically, nominals are not the only element that can be topicalized in Korean. Adverbial elements can also be topicalized.

\[17\] In Korean, there are nominals that require arguments like verbs. Verbal nouns originate from Chinese and form complex predicates with the following function verbs. For a detailed discussion, refer to Lee (2001).
(81) a. Jini-ka isanghakey ketnunta.
   Jini-NOM strangely walk.
   ‘Jini walks strangely.’

b. isanghakey-nun Jini-ka ketnunta
   strangely-TOP Jini-NOM walk.
   ‘As for (walking) strangely, Jini walks (like thati).’

One might argue that a null resumptive adverbial proform appears in (81b) instead of a null resumptive pronoun based on the fact that there is an adverbial proform kulehkey (so) in Korean.

(82) Jini-ka kulehkey ketnunta.
   Jini-NOM so walk.
   ‘Jini walks so.’

However, this argument is hard to maintain because, in contrast to nominal topicalization, the gap sites of the adverbs cannot be replaced by their proforms in any cases.

### 2.5.3 Strong Crossover

As we have briefly presented in section 2.3, the Strong Crossover (SCO) Constraint applies to UDC gaps. However, it does not apply to pros in general, as we see in (83).

(83) [ John-un [ ei [ Maryj-ka ku_i-eykey [ pr o_j pr o_i mannako siphta-ko] John-TOP Mary-NOM he-to meet want-COMP malhayssta-ko] kiekhanta].
      told-COMP remember
   ‘As for Johni, (he_i) remembers that Maryj told himi that (she_j) wants to meet (him_i).

(84) [ ei [ aitul-i ku_i-eykey [ pr o_i kongpwu-lul mos hanta-ko] kids-NOM he_i-to study-ACC poor do-COMP nollyessta-ko] pwulpyengha-n] haksayng_i
   made fun of-COMP complain-REL student
   ‘A student who complained that kids made fun of himi that (he_i) does not study well.’

In (83) and (84), ei's represent gaps directly linked to their antecedents in the positions of topic and head noun. They contrast with pros that appear in the most deeply embedded
clauses. In general, pros in Korean occur when their coreferential elements (antecedents) are introduced in the previous context or when their coreferential elements syntactically precede. 18 A proi refers to John in (83) and haksayng (student) in (84). Unlike gaps, pros take the preceding pronouns as their antecedents and have the same semantic value as those preceding pronouns, or the topic or head noun. In contrast with pros, UDC gaps observe the SCO constraint, as in the following examples.

(85) * ku ai,-nun Mary-ka ku,-eykey [ei cal tolpokessta-ka] yaksokhayssta.
    that child-TOP Mary-NOM he-to well care-COMP promised
    ‘As for the child, Mary promised himi to take care of (himi) well’

(86) * [ Mary-ka ku,-eykey [ei pyenci-ul ssuki-lo] yaksokha-n] namca
    Mary-NOM hei-to letter write-ACC promised-COMP man
    ‘the mani who Mary promised himi to give a present (to himi)’

In (85) and (86), the intervening pronoun ‘ku’ cannot bind the gaps in the most deeply embedded clauses. Thus, SCO is observed in the given UDC examples. However, there may be some disagreement as to the grammaticality of (85) and (86) among native speakers. Some may argue that those examples are quite grammatical, which contradicts our argument. This judgment difference, however, can be easily explained. Those who accept the given examples interpret intermediate pronouns as RPs. When we analyze the intervening pronouns as RPs, then the empty elements ei in the deepest positions are pros that are bound by their preceding RP. The following example supports this argument.

---

18 However, there are cases in which a pro in an adverbial phrase precedes its antecedent in the main clause. Those adverbial phrases contain predicates with connective endings like -kose, -nya, -ase, etc. Those adverbial phrases can intervene between the subject and a VP as we see in (ii).

(i) [ proi atul-i wusung-ul hay-se], Kimi-i kipwun-i cohassta.
    son-NOM first-ACC did-because] Kim-NOM mood-NOM good
    ‘Since his son won, Kim was in good mood.’

(ii) Kimi-i [ atuli wusung-ul hay-se] kipwun-i cohassta.
    Kim-NOM son-NOM first-ACC did-because] mood-NOM good
In (87), the topicalized element has the dative case marker -eykey. This supports our argument that some speakers interpret the intervening pronouns as RPs (i.e., traces) in (85) and (86). The same kind of phenomenon has been found in Hebrew relative clauses, as discussed in Vaillette (2001). To show the applicability of crossover to Hebrew RPs, Vaillette (2001) replaces the upper pronoun by an epithet. The epithet has the same index value as the antecedent, while it retains an independent lexical meaning. Although (what look like) pronouns and reflexives can be audible (SLASH-bearing) traces, epithets cannot be. The same strategy can be applied to Korean.

promised
‘As for the childᵢ, Mary promised people to take care of himᵢ well.’
promised
‘As for the childᵢ, Mary promised that idiotᵢ to take care of himᵢ well’
promised
‘As for the childᵢ, Mary promised that idiotᵢ to take care of himᵢ well.’

‘the man who Mary promised her mother to write a letter’
b. * Maryj-ka [ku papo_j-eykey [ e_j pyenci-ul ssukessta-ko] yaksokha]-n
Mary-NOM that idiot-to present-ACC give-COMP promised-REL
man
‘the man_i who Mary promised that idiot_i to write a letter (to him_i)’

c. * Maryj-ka [ku papo_j-eykey [ ku_i-eykey pyenci-ul ssukessta-ko]
Mary-NOM that idiot-to he_i-to letter-ACC write-COMP
yaksokha]-n namca
promised-REL man
‘the man_i who Mary promised that idiot_i to write a letter to him_i’

A sentence is grammatical when there is no intermediate binder of a gap as in (88a) and
(89a). In contrast, a sentence is ungrammatical when a gap or RP is bound by an interme-
diate epithet, which has the same index value, as in (88 b, c) and (89 b, c). Thus, strong
crossover is violated in those examples. Using epithets instead of pronouns excludes the
possibility of a gap interpretation for the intermediate pronoun position. Under this condi-
tion, gaps observe the SCO violation. In addition, RPs occupying the gap position behave
in the same way, as seen in (88c) and (89c). Detailed strong crossover facts in Korean
UDCs will be presented when we discuss topic, relative clause, and tough
constructions, since the SCO constraint is considered to be the main property of Korean UDCs.

Crosslinguistically, it has been argued that an RP is another form of a trace in other
languages like Hebrew and Palauan (Vaillette, 2001; Georgopoulos, 1991). Based on
this, we claim that a resumptive pronoun appearing in the position of a UDC gap is also
another form of a trace, even though the distribution of RPs and inaudible traces is not

\[19\] Georgopoulos (1991) argues that RPs are variables by pointing out that they are subject to the same re-
coverability requirements as traces. She provides various syntactic evidence for the variable analysis, working
mainly on Palauan. Vaillette (2001) deals with resumptive pronouns in Hebrew relatives as having a non-local
feature analogous to SLASH.

\[20\] This is due to the difference in semantic properties between gaps and RPs. This will be discussed in
section 2.6.
A notable point is that resumptive pronominal elements in Korean UDCs observe the SCO constraint as do inaudible traces. This fact is problematic because the previous literature has assumed that SCO violations are triggered by the status of UDC gaps; in general UDC gaps are nonpronominal elements or R(eferring)-expressions. However, RPs in Korean UDCs show the same SCO effects as nonpronominal gaps in spite of their pronominal status. Within Chomskyan approaches, the SCO effects are accounted for by Principle C that requires so-called R(eferring)-expressions to be unbound. Similarly, within the framework of HPSG, the SCO phenomenon has been explained by the binding condition C that specifies that a nonpronoun must be o-free. However, Postal (2004) argues that the SCO phenomenon in English cannot be accounted for by Chomsky’s Principle C, and based on his arguments it is hard to argue that SCO effects are attributed to the status of UDC gaps as nonpronominal elements. The SCO effects in Korean UDCs are not associated with Principle C (or condition C in HPSG). This argument is supported by the following examples.

exam-at pass-NML-ACC know became
(lit.) ‘As for the kid, Mary got to know via John that (he) passed the entrance exam.’

b. * ku ai-nun Mary-ka [ADV ku papo-l-lul thonghay-se] [S ei iphak the kid-TOP Mary-NOM that idiot-ACC mediate-by entrance sihem-ey hapkyekhayss-um-ul] alkey toyessta.
exam-at pass-NML-ACC know became
(lit.) ‘As for the kid, Mary got to know via that idiot that (he) passed the university exam.’

Postal (2004) points out that the SCO effect cannot be reduced to Chomsky’s Principle C that bars anaphoric linkage between pronoun and the nonpronominal trace based on (i) existence of SCO effects in non-NP extraction, (ii) the secondary strong effect, (iii) the Asymmetry Property and (iv) failure of the c-command condition required for Principle C. He claims that even though the Principle C account of the SCO effect is often considered to be supporting evidence of traces as nonpronominal R-expressions, there is no empirical evidence for any trace-like objects connected with extraction.
c. * ku aiₗ-nun Mary-ka [ADVP ku papo₁-lul thonghay-se] [S kuₘ-ka that child-TOP Mary-NOM that idiot-ACC mediate-by he-NOM iphak sihem-ey hapkyekhayss-um-ul] alkey toyessta.
entrance exam-at pass-NML-ACC know became
(lit.) ‘As for the kid, Mary got to know via that idiot that he passed the entrance exam.’

In the given examples, the intervening epithets are located in adjunct phrases that do not c-command (or o-command) the gaps in the embedded phrases. Although no violation of Principle C (or condition C) can be induced in (90), anaphoric linkage between a filler and a gap is as impossible as in (88). Moreover, when a gap appears in an adverbial phrase of the embedded clause, the SCO effects appear in spite of the failure of c-command between a pronoun or an epithet and its anaphoric gap. Specifically, the backward linking of a pronoun or an epithet to an antecedent in an adjunct can be licensed as shown in (91a).²²

In contrast, the antecedent in an adjunct cannot be topicalized as in (91b) and (91c).

feel sad-COMP told
‘I told himₗ/that idiot₂ that since Johnₗ left, Mary feels sad.’

feel sad-COMP told
‘As for Johnₗ, I told himₗ/that idiot₂ that since (he₂) left, Mary feels sad.

²²In general, backward linking between a pronoun and its antecedents is often allowed. Postal points out that ungrammatical extractions out of islands can be still used to test binding hypothesis because of the following principle.

(i) Mere extraction from an island, even when yielding severe ill-formedness, does not inherently block anaphoric linkage if such are licit in the pre-extraction structure itself.

This principle can be used for examples in (91).
Based on the fact that a pronoun and its anaphoric element do not hold a c-command (or o-command) relation, we conclude that SCO effects in Korean UDCs cannot be reduced to Principle C in GB theory or condition C in HPSG. Thus, there is no factual support for the status of traces as nonpronominal elements, which is why the SCO constraint is observed by both RPs and inaudible traces in Korean UDCs. This accords with SCO effects in English as shown in Postal (2004). An RP can be represented in HPSG via the propagation of a non-local feature. In addition to an RP, the long distance reflexive *caki ‘self’ can also appear in the position of the trace. We will discuss the distribution of RPs and RR *caki in 2.6.

2.5.4 Coordination

The status of a gap and *pro can be differentiated by examining coordination facts. In general, it has been argued that the Coordinate Structure Constraint (CSC) is observed in Korean coordinate structures. For example, Cho (1999a) and Yoon (1997) argue that constructions with the conjunction ending ‘ko’ (and) are divided into true conjunction and adjunction. Furthermore, they identify various grammatical differences between them. In general, two conjuncts can change their positions only in true conjunction. In contrast, adjunct conjuncts can be replaced by attaching a temporal or causal ending to the conjunction, as in *V-ko-se and V-ko-nun. Both Cho and Yoon confirm that true coordination, but not adjuction, is subject to the Coordinate Structure Constraint, which disallows asymmetric extraction out of one conjunct. For example, (93b) and (94c) are ungrammatical.
because only one conjunct has a missing element. However, (92a) is grammatical because
the topicalized element is connected to the missing elements in both conjuncts.

(92) a. this book-TOP kids-NOM like-CONJ adults-also like
   ‘As for this book, kids like (it) and adults also like (it).’

b. the book which kids like (it) and adults also like (it).’

   ‘As for this book, kids like (it) and adults dislikes comic books.’

b. * the book which kids like (it) and adults dislikes comic books.’

(94) a. * this book-TOP kids-NOM comic books-ACC like-CONJ adults-NOM unlike
   ‘As for this book, kids like comic books and adults dislike (it).’

b. * the book which kids like comic books and adults dislike (him).’

Another fact related to coordination is that a gap in a conjunct is allowed when there is a
gap in the other conjunct, or a pronoun, as in (95b) and (95c).23

(95) a. this book-NOM kids-NOM very like-CONJ old people-also often unlike
   ‘As for this book, kids like (it) very much and old people also buy (it) often.’

23This argument is presented with respect to the Hebrew data by Vaillette (2003) and Sells (1984).
b. ī chayk-
un [aitul-
i kukes-
ul acwu cohaha-
ko nointul-
to e

this book-
NOM kids-
NOM it-
ACC very like-
CONJ old people-
also concccong chassnunta] often ask for
‘As for this book
j, kids like it
j very much and old people also buy (it
j) often.’

c. ī chayk-
un [aitul-
i e

this book-
NOM kids-
NOM very like-
CONJ old people-
also it-
ACC concccong chassnunta] often ask for
‘As for this book
j, kids like (it
j) very much and old people also ask for (it
j).’

Given that the CSC operates in Korean UDCs to require a gap in each conjunct and given that the pronominal kukes in a conjunct does not cause a violation of the CSC, as in (95b) and (95c), we can argue that those pronouns are RPs and that they behave in the same way as traces. Thus, this favors the UDC approach to RPs.

However, the status of RPs in both conjuncts is still not clear since one can argue that those RPs are pros, not traces. The following example suggests that the second gap in coordinated structure may correspond to pro.

(96) [ aitul-
i chay- ul choaha-
ko] [ elun-
tul-to pro

this book-
ACC like-and adults-
also often ask for
‘Kids like this book
i and adults also ask for (it
i) often.’

In the non-UDC in (96) the gap in the second conjunct is considered to be a pro that can be replaced by an overt pronoun. This may suggest that the gaps in (95) are pros, not traces. However, the gap appearing in the first conjunct of (95c), at least, cannot be considered a pro. This is supported by the distribution of pros in non-UDC coordination in Korean. In coordinated structures, like (97), a pro is not allowed to appear in the first conjunct only, while its antecedent shows up in the second conjunct.

(97) a. John-

Min-
eykey [ pro

salanga-
ko pro
	olpoa talla-
ko] haysse.
John-
NOM Min-
to love-
CONJ care give-
COMP told
‘John
i told Min
j to love (him
j) and take care of (him
j).’

54
b. John-i Min-eykey [ ku_i/k-lul salangha-ko pro_i/k tolpoa talla-ko]  
    John-NOM Min-to him-ACC love-CONJ care give-COMP  
    haysse. told  
    ‘John_t told Min_j to love him_i/k and take care of (him_i/k).’

c. * John-i Min-eykey [ pro_i/k salangha-ko ku_i/k-lul tolpoa talla-ko]  
    John-NOM Min-to love-CONJ him-ACC care give-COMP  
    haysse. told  
    ‘John_t told Min_j to love (him_i/k) and take care of him_i/k.’

The ungrammaticality of (97c) suggests that an empty element in the first conjunct of UDCs cannot be a pro. Thus, the fact that a gap appears in the first conjunct in (95c) supports the claim that the first gap in (95c) is not a pro but a trace. In addition, the pronoun replacing the gap is an RP that has the non-local feature.

In summary, we conclude that the pronouns appearing in the gap positions in (66b)-(69b) are not null pronominal elements. Instead, we argue that RPs in the gap position work as audible traces. According to the trace approach, RPs and gaps arise from a single mechanism. Georgopoulos (1991) argues that RPs are variables by pointing out that they are subject to the same recoverability requirements as traces in Palauan. Vaillette (2001) accounts for RPs in Hebrew relative clauses by using the non-local propagation of a special RESUMPTIVE feature similar to the SLASH feature. Even though Sells (1984) opposes the use of the UDC approach to RPs, he treats both gaps and RPs as variables bound by operators in his GB-based analysis. Furthermore, he uses a Cooper storage mechanism to propagate pronominal indices in the theory of Generalized Phrase Structure Grammar so as to capture the binding of RPs semantically.\footnote{Sells (1984) discusses RPs within three different theoretical frameworks: GB theory, GPSG, and Discourse Representation Theory.} As pointed out by Vaillette (2001), Sell’s
GPSG analysis using a Cooper storage mechanism is essentially the same as the UDC approach that uses semantic index propagation instead of syntactic propagation.

### 2.6 Resumptive Pronouns and Resumptive Reflexive caki in UDCs

As we briefly noted before, UDC gaps can be replaced by RPs especially in complex sentences. In addition, the RR caki occurs instead of a gap or an RP in certain contexts. In Korean, reflexive caki can be bound by an antecedent within a sentence and it can also be bound by an antecedent across clausal boundaries as in (98).

\[(98) \text{Yumi} -\text{ka} \text{John} -\text{eykey} \{ \text{Miho}-\text{ka} \text{caki}/_/\text{self-ACC} \text{like-}\text{COMP} \text{said} \}
\]

\n
Yumi-NOM John-DAT Miho-NOM self-ACC like-COMP said

‘Yumi told John that Miho likes her/him/herself.’

In the given example, the reflexive caki in the embedded clause can be bound not only by the subject Miho in the same clause but also by Yumi and John in the matrix clause. The latter kind of caki has been classified as a long-distance (LD) reflexive in the previous literature (e.g., Kang, 1988 and Gill, 2000). Only RR caki appears in a gapped position.

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25 Previous studies on the LD reflexive can be divided into three different kinds; the syntactic approach, the nonsyntactic approach, and the mixed approach. Most studies within the GB framework and minimalist program have taken the syntactic approach. These studies provide syntactic conditions that account for long-distance binding in terms of tree-configurational commanding relations (see Park, 1986; Kang, 1986, etc.). In terms of the nonsyntactic approach to Korean LD reflexive caki, Cho (1999b) argues that caki has a dual status; it is used as a referentially independent noun and as a discourse pronoun. The latter lacks a referentially independent semantic content and is locally free and optional. The mixed approach includes Chung (1998) and Kim (1995), who argue that binding of caki can be explained by some combination of pragmatic and discourse factors as well as syntactic factors.

26 While distinguishing syntactic binding and discourse binding, Chung (1998) generalizes the syntactic constraint of local anaphor binding by using prominence-command (p-command). P-command is based on local o-command and prominence-binding within the HPSG framework as follows:

\[(i) \text{P-Command: } X \text{ p-commands } Y \text{ iff either (i) } X \text{ locally o-commands } Y, \text{ or (ii) } X \text{ and } Y \text{ are equally oblique and } X \text{ linearly precedes } Y. \]

\[(ii) \text{P-Bind: } X \text{ p-binds } Y \text{ iff } X \text{ and } Y \text{ are coindexed and } X \text{ p-commands } Y. \]

Local O-Command: X locally o-commands Y just in case X is less oblique than Y.
In Korean UDCs, three different kinds of gaps appear: one corresponds to null pronominals (pros), the second to pronouns, and the third to LD reflexive caki. In this section, we investigate the distribution of RPs and RR caki in UDCs. We also discuss whether UDC RPs and the LD reflexive caki in UDCs, respectively, have the same properties as normal pronouns and the LD reflexive caki in non-UDCs.

2.6.1 Distributions of Resumptive Pronouns and the Resumptive Reflexive caki

Even though UDC gaps cannot always be replaced by RPs and the LD reflexive caki, the following examples demonstrate overlapping distributions among them.

Here, X and Y are arguments of the same lexical head.

(iii) Subject $\prec$ Non-Verbal Complements $\prec$ Verbal Complements ....

The obliqueness hierarchy proposed by Chung handles nonlocally bound caki as well as locally bound caki.

(iv) a. John_{i}-i caki_{i}-lul pinanhyssta.
    John_{i}-NOM sel_{i}-ACC draw-PAST-END
    ‘Johni criticized himself.’

b. * caki_{i}/ku_{i}-ka John_{i}-ul pinanhyssta.
   sel_{i}-ACC John-NOM draw-PAST-END

(v) a. Jini_{j}-ka Yumi_{j}-ekkey [ caki_{j}/j-ka thulyess-um]-ul aye cwuessta.
    Jini-NOM Yumi-DAT self-NOM be wrong-NML-ACC inform gave
    ‘Jini informed Yumi that self_{ij} was wrong.’

b. Jini_{i}-ka [ caki_{i}/j-ka thulyess-um]-ul Yumi_{j}-eykey aye cwuessta.
   Jini-NOM self-NOM be wrong-NML-ACC Yumi-eykey inform gave
   ‘Jini told to Yumi that self_{ij} was wrong.’

(ivb) is ungrammatical because caki and ku are bound by the less oblique element John. According to Chung’s obliqueness hierarchy, caki in (va) and (vb) are less oblique than other NPs because they appear in an S-complement that is less oblique than the subject and non-verbal complements. Thus, caki can be bound by the more oblique elements Jini and Yumi.

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(99) Topicalization

a. ku namca_i-nun [ sacang-i eps-umyeon, e_i motun il-ul that man-TOP president-NOM absent-if every work-ACC ttmath-aya hayssta ].
took care had to
‘As for that man, if the president were absent, (he) had to take care of everything.’
b. ku namca_i-nun [ sacang-i eps-umyeon, ku_i/caki_i-ka motun that man-TOP president-NOM absent-if he/self all il-ul ttmath-aya hayssta ].
work-ACC took care did
‘As for that man, if the president were absent, he had to take care of everything.’

(100) Relativization

a. [ sacang-i eps-umyen, e_i motun il-ul ttmath-aya hayss-ten] president-NOM absent-if every work-ACC take care had to-REL
man
(‘the man who (he) had to take care of everything if the president were absent.’)
b. [ sacang-i eps-umyen, ku_i/caki_i-ka motun il-ul ttmathaya president-NOM absent-if he_i/self_i-NOM every work-ACC take care hayss-ten] Jun_i,
had to-REL Jun
‘the man who he had to take care of everything if the president were absent.’

(101) Double Nominative Constructions

John-NOM now live-PRES-REL house-NOM taken down-become
‘John got his house that (he) lives in now to be taken down.’
b. John-i [ cikum ku_i/caki_i-ka sal-ko iss-nun] cip-i
John-NOM now he_i/self_i-NOM live-PRES-REL house-NOM heli-key toyssta.
taken down-become
‘John got his house that he lives in now to be taken down.’

As we see in the given examples, an RP and the RR caki appear in the position of a UDC gap. Although they appear in the same environment, each of them contributes semantic and pragmatic subtleties to the interpretations. In some cases, a resumptive reflexive cannot replace a gap, while a RP can, and vice versa. The semantic and pragmatic constraints that are associated with them is discussed in detail in the next section.
In dealing with Korean LD reflexive *caki* in topic and relative clauses, Kang (1986) argues that *caki* functions the same as a resumptive pronoun in English. In addition, he treats resumptive *caki* as a variable within the syntactic framework of GB theory by differentiating it from anaphoric *caki* in non-UDCs. He claims that anaphoric *caki* in Korean is subject to the Subject Priority Antecedent Condition (SPAC) in (102)

(102) The anaphor *caki* is bound to a 3rd-person antecedent according to the following Relational Hierarchy: Subject → Experiencer/Beneficiary object

When a subject is disqualified as an antecedent (i.e., it is not a 3rd-person antecedent like *na* ‘I’), an Experiencer or Beneficiary object becomes the antecedent.

Kang’s argument for distinguishing anaphors and RPs based on SPAC is not convincing because the SPAC itself does not capture general constraints of anaphoric *caki* binding. For example, while he argues that Patient NP and Recipient dative NP cannot be antecedents for anaphoric *caki*, in fact they can:

(103) John₁-i kangceylo Maryᵢ-lul cakiᵢ/cakiᵢ-uy cip-ey ponayssta.
    John-NOM in force Mary-ACC selfᵢ/selfᵢ-GEN house-to send
    ‘Johnᵢ sent Maryᵢ to his/herᵢ house.’

(104) John₁-i Maryᵢ-eykey cakiᵢ/cakiᵢ-uy mwulken-ul cenhay cwuessta.
    John-NOM Mary-to selfᵢ/selfᵢ-GEN things-ACC deliver gave
    ‘Johnᵢ delivered his/herᵢ things to Maryᵢ.’

The given examples prefer the interpretation that *caki* takes the Patient or the Recipient *Mary* as its antecedent rather than the subject. Kang’s SPAC does not correctly predict this fact.

In addition, Kang (1986) classifies *ku* and *caki* in UDCs in the same category of resumptive pronoun. Resumptive pronouns appear in gap positions that are deeply embedded. Kang provides the notion of ‘thick insulation’ to predict the occurrence of resumptive pronouns.
Define ‘thick insulation’ as follows:
Presence of more than two maximal projections between a resumptive pronoun and its A-bar binder:
a. insulation within an NP, the resumptive pronoun being a Genitive NP.
b. deep embedding, such as the embedding of a resumptive pronoun within a relative clause or an adverbial clause. (Kang, 1986 pp.202)

Kang argues that the resumptive *caki* and *ku* are allowed in the object position only when they are thickly insulated as in (99b) - (100b). These occurrences of RPs and *caki* in object position contrast with resumptive *caki* in subject position as in (106); the former requires thick insulation, while the latter can appear in a shallowly insulated position.

(106) [kyengcal-i *[caki,*/*ku,-lul ccochko issnun] salam, plice-NOM self/he-ACC chase being-REL person ‘the person whom the police are chasing.’

However, resumptive *caki* is different from resumptive *ku* in that only *caki*, not *ku*, is allowed in subject position without thick insulation, as we see in (107).

(107) *caki,*/*ku,-ka sihem-ey silphayha-n haksayng, self/*he,NOM exam-in fail-REL student ‘the student who failed in the exam.’

Even though Kang’s syntactic constraint of thick insulation partially captures the way that resumptive pronoun *ku* and reflexive *caki* are licensed in complex sentences, it is not enough to account for their different realizations.\(^{27}\)

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\(^{27}\)With respect to an occurrence of an RP, we need to have a syntactic constraint that is similar to Kang’s. The rule will specify that a gap originating from a simple sentence with no structural embedding cannot be replaced by an RP. This will prevent us from assuming an RP in the gap position of the following ungrammatical example in Korean.

(i) * John,-un Mary-ka *ku,-lul cohahanta.
   John-TOP Mary-NOM he-ACC like
   ‘As for John, Mary likes him’

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more complex constraints that are based on the semantic and pragmatic relationships between their antecedents and the meaning of predicates. The following grammatical differences involving the resumptive reflexive support this claim. While the resumptive reflexive is allowed in the gap position in (108a), it is not allowed in (108b).

(108) a. [caki/*ku-ka sihem-ey silphayha-n salam]-i  Mira-lul wirohyssta. self/he-NOM exam-in fail-REL person-NOM Mira-ACC comforted ‘the person who failed in the exam comforted Mira.’


The antecedent nameca of caki in (108a) is the subject of the whole sentence, but its corresponding form in (108b) is the object. In general, the subject is the individual whose point of view or general state of consciousness is expressed in the discourse. This property is related to the notion of logophoricity by Clements (1975). The reflexive caki refers to the head noun that is the subject and the center of consciousness in (108a). However in (108b), it does not refer to the object because it is not the center. According to Kang, resumptive caki is always allowed in the subject position of a relative clause. However, in (109a) the gap cannot be replaced by reflexive caki even though it is in the subject position of a relative clause.

(109) a. *[caki-ka/ei kananha-n] namca-ka ton-ul pili-le wassta. self-NOM poor-REL man-NOM money-ACC borrow-to came ‘the man who is poor came to borrow money.’

b. [caki-ka/ei kananha-n] namca-ka pwlwuhan iwus-ul towassta self-NOM poor-REL man-NOM poor neighbor-ACC helped ‘the man who is poor helped poor neighbors.’

In general, when embedded predicates in relative clauses are stative verbs or adjectives, the subject gaps are not replaced by the RR caki, as we see in (109a). However, when
the interpretation of a sentence has contrastive meaning, the occurrence of *caki* is allowed in the gap position, as in (109b). *caki* does not appear with stative predicates including adjectives in Korean, as we see in (110). This shows that non-syntactic factors contribute to the occurrence of *caki* in UDCs.

(110) a. * [ caki-ka_ei cwuk-un] salam

    self-NOM    died-REL person

    ‘the person who died’

b. * [ caki-ka_ei yepp-un] akassi

    self-NOM    pretty-REL lady

    ‘the lady who is pretty’

With respect to anaphor binding, many previous studies have shown that various non-syntactic factors determine the antecedent of a reflexive (Baker, 1995; Pollard and Sag, 1994; Pollard and Xue, 1998, 2001, etc.).\(^28\) In the next section, we discuss relevant semantic and pragmatic factors that affect the binding of RPs and RR *caki*. Before we move on to this issue, the terms for UDC gaps and non-UDC correspondents in Korean are summarized in the following chart. The UDC elements in the left-hand column all originate a nonzero SLASH feature. Note that UDC traces are *npros*. Thus, UDC traces have different types than non-UDC *pros*, which are *ppros*. The different properties between these two elements have been already discussed in section 2.3.

(111) |          | UDCs | non-UDCs |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>zero form</td>
<td>trace(<em>nonpro</em>)</td>
<td><em>pro</em> (<em>ppro</em>)</td>
</tr>
<tr>
<td>overt pronoun</td>
<td>resumptive pronoun</td>
<td>(ordinary) pronoun</td>
</tr>
<tr>
<td><em>caki</em></td>
<td>resumptive reflexive</td>
<td>(ordinary) reflexive</td>
</tr>
</tbody>
</table>

\(^28\) We need to consider whether syntactically bound reflexive *caki* is distinguished from pragmatically bound *caki*.
2.6.2 Semantic and Pragmatic Properties of RPs and the RR *caki*

A complete analysis of binding in Korean is another dissertation-length topic requiring in-depth study, although it is necessary to clarify the status of RPs and reflexive *caki* in Korean UDCs. Thus, we briefly discuss properties of those resumptive elements. Whenever they occur in UDCs, RPs and RR *caki* retain the same kinds of semantic and pragmatic properties as their corresponding non-UDCs forms. This suggests that resumptive elements in UDCs are the same entities as those in non-UDCs except that the LOCAL feature of the former is the value of the SLASH feature percolating into higher structure. Thus, we claim that resumptive elements in UDCs belong to the same sort hierarchy as non-UDC correspondents. They do not form separate entities. While the previous transformation-based analyses on *caki* and pronouns (Yang, 1983; Kang, 1986, etc.) focus on only syntactic constraints, Im (1987), Kim (1995), and Pollard and Xue (2001) discuss various semantic and discourse binding properties of these elements. In dealing with discourse binding in Chinese, Pollard and Xue (2001) mention intensification, contrastiveness, logophoricity, and discourse prominence as general factors involved in the distribution of nonsyntactic antecedents of reflexives. Similar properties have been proposed to account for *caki* binding in Korean, as in Kim (1995). The binding of the LD reflexive *caki* in Korean shows certain semantic and discourse properties, i.e., logophoricity and contrastiveness that are distinguished from pronoun binding.

**Logophoricity**

In example (108) of the previous section, we showed that logophoricity contributes to binding of the LD reflexive *caki* in Korean. The role of logophoricity in the interpretation of nonsyntactic reflexives has been widely discussed in the previous literature (e.g. Sells
(1987), Pollard and Xue (2001), etc.). According to Sells (1987), logophoricity refers to subject of consciousness (SELF), the source of reported speech (SOURCE), and deictic perspective (PIVOT). Based on Sell’s notion of logophoricity, the antecedent of the LD reflexive caki is logophoric in the following examples.

(112) a. Mira-{ka [ Yumi-ka caki_{i}/kunye_{j}-lul chotayhayse] kipputa.}
   Mira-NOM Yumi-NOM self_{j}/her_{j}-ACC invite-because be glad
   ‘Mira_{i} is glad because her_{j} son entered a university.’

   b. Mira_{i}-ka [ Yumi-ka *caki_{j}/kunye_{j}-lul chotayhayse] Jisu_{j}-ul
   Mira-NOM Yumi-NOM self_{j}/her_{j}-ACC invite-because Jisu-ACC
   pwulewehanta.
   envied
   ‘Mira_{i} envies Jisu_{j} because Yumik_{i} invited her_{j}’

In (112a), both reflexive caki and pronoun kunye are bound by the long-distance antecedent Mira that is the subject of consciousness. However, in (112b) it cannot be bound by the object Yumi because Yumi is not the subject. While caki takes the center of consciousness as its antecedent, the pronoun binding is not related to logophoricity. Instead, the pronoun use in (112) implies that the speaker takes an objective or 3^{rd}-person point of view in describing the proposition. Using the reflexive caki implies that the viewpoint of the sentence is based on the subject of consciousness, and Sells (1987) names this notion as SELF.

The same kind of logophoric properties can be found in UDCs.

(113) a. [ caki_{i}-ka silswu ha-n] namca_{i}-ka ohilye hwa-lul nayssta.
   self-NOM mistake make-REL man-NOM ironically anger-ACC expressed
   ‘The man_{i} who he_{i} made a mistake got angry ironically.’

   b. * nay-ka [ caki_{i}-ka silswu ha-n] namca_{i}-lul yatanchyessta.
   I-NOM self-NOM mistake make-REL man-ACC scolded
   ‘I scolded the man_{i} who he_{i} made a mistake.’

In (113a), the antecedent namca works as SELF and binds caki in the gapped position. In (113b), it is not SELF and does not bind caki.
Logophoricity is related to certain predicates such as verbs of communication, psych-predicates, etc. In particular, a psych-predicate experiencer is logophoric because the predicate reports the state of consciousness of the experiencer. Consider the following examples.

(114) a. [John\textsubscript{i}-i [caki\textsubscript{j}/kunye\textsubscript{j}-lul salanghanta-ko] malha-n] sasil-i
    John-NOM self/she-ACC love-COMP said-REL fact-NOM
    Mary\textsubscript{i}-eykey pwutamsulewessta.
    Mary-to burdensome
    ‘The fact that John\textsubscript{i} said that (he\textsubscript{i}) loves her\textsubscript{i} was burdensome to Mary\textsubscript{i}.’

b. Mina\textsubscript{k}-ka [John\textsubscript{k}-i [\*caki\textsubscript{j}/kunye\textsubscript{j}-lul salanghanta-ko] malhay-se]
    Mina-NOM John-NOM self/her-ACC love-COMP said-because
    Mary\textsubscript{j}-lul miwehanta.
    Mary-ACC hate
    ‘Since John\textsubscript{k} told Mina\textsubscript{k} that (he\textsubscript{k}) loves Mary\textsubscript{j}, she\textsubscript{j} hates her\textsubscript{j}.’

In (114a), the experiencer NP of the psych-predicate *pwutamsulepta* is interpreted as an antecedent of *Mary* (Backward binding is allowed). However, in (114b) *caki* cannot be bound by the object antecedent that is not SELF. Pronouns, however, can be bound by antecedents that appear as an Experiencer argument and by the object in (114a) and (114b).

In Korean, logophoricity seems to be related to the thematic roles Agent and Experiencer. The antecedent of reflexive *caki* is interpreted either as an individual who plays the central role performing an action or as an experiencer going through a particular physical or psychological process. An experiencer argument is not restricted to psych-predicates. It plays a more active role in the event structure described by the main predicate compared to other arguments of theme, goal, and source. With respect to reflexive binding, an Experiencer NP can be an antecedent of *caki* as we see in the following examples.

(115) Mary\textsubscript{i}-ka Yumi\textsubscript{j}-eykey [caki\textsubscript{j}/j cip-ey ka-key] hayssta.
    Mary-NOM Yumi-to self house-to go-ACC made
    ‘Mary\textsubscript{i} made Yumi\textsubscript{j} her\textsubscript{j}/j book to Yumi\textsubscript{j}.’
In (115) and (116), the reflexive caki can be bound by the dative NPs. Dative NPs can be interpreted as a sort of Experiencer that goes through a certain event or a psychological process. In addition, if the verb specifies a certain situation, then the dative NP can be the preferred antecedent of caki. For example, if the verb tolakata (go back) is used instead of kata as the embedded predicate, then the Experiencer antecedent is preferred in (115).

Thematic roles of Agent and Experiencer share certain semantic entailments with respect to the event structure of the main verb. Those common properties can be captured by the notion of Proto-Agent role as suggested by Lee (1999). Lee (1999) uses the Proto-role analysis of Dowty (1991) for case marker realization in Korean and argues that an experiencer argument in Korean has strong Proto-Agent properties. Proto-Agent properties of an argument in Dowty (1991) are based on lexical entailments of a verb. They include volitional involvement in the event or state, sentience/perception, causing an event or change of state in another participants, and movement relative to the position of another participant. An argument with more Proto-Agent properties tends to be realized as the subject in many languages. We can account for the fact that Experiencer elements appearing with case marker eykey or with psych-predicates work as antecedents of caki in Korean since they are known to retain Proto-Agent entailments. Proto-Agent properties seem to be related to logophoricity. In other words, an argument with more Proto-Agent properties is easily considered as SELF.

Another UDC example with logophoricity can be found in the following double nominative constructions.
In (117), John\textsubscript{i} caki\textsubscript{/ku\textsubscript{i}-uy apeci-ka uysa-ta.}
John-NOM self/he-GEN father-NOM doctor-COP
‘John’s father is a doctor.’

(118) John\textsubscript{i} [ caki\textsubscript{/ku\textsubscript{i}-ka cacwu ka-ten] kakey-ka mwun-ul tatassta.
John-NOM self/he-NOM often go-REL store-NOM door-ACC closed
‘The store that John\textsubscript{i} goes to often is closed.’

In the given examples, reflexive caki and RP ku appear in the position of a gap.\textsuperscript{29} When reflexive caki appears in (117)-(118), the point of view describing the event has been fixed on the antecedent of caki, the subject. However, RPs ku and kunye maintain the third party’s point of view that is often taken in newspaper articles or reports.

\textbf{Contrastiveness}

Reflexive caki is associated with the meaning of discourse prominence or contrastiveness. caki is used when its antecedent shows contrastiveness with other discourse entities.

Consider the following examples.

(119) Mira-ka talum salamtul-eykey-nun kwantayha-myense, Mira-NOM other people-to-CTOP generous-while
self/she-CTOP strict
‘Mira\textsubscript{i} is generous to other people while she\textsubscript{i} is strict about herself\textsubscript{i}.’

(120) John\textsubscript{i} [ caki\textsubscript{/ku\textsubscript{i}-nun mwusiha-myense hyeng-un chingchanha-nun] John-NOM self/he-CTOP ignore-while brother-CTOP praise-REL
apeci-ka miwessta.
father-ACC hate
‘John\textsubscript{i} hates his father, who is ignoring him\textsubscript{i} while praising his brother.’

In (119), Mira’s attitude toward others contrasts with her attitude toward herself. Here, nun/lun are contrastive topic markers (CTOP). In (120), the father’s behavior with one son contrast with his behavior with another. Contrastive topic markers are attached to two

\textsuperscript{29}The fact that John cannot appear in the genitive NP positions in (118) supports the claim that the given double nominative constructions belong to UDCs. We discuss this in detail in chapter 5.
contrasting NPs and are differentiated from topic markers attached to topicalized elements in sentence initial position. In the context of a contrastive interpretation, reflexive *caki* is licensed, while a pronoun is not. In (120), John’s attitude toward others is opposite of that toward him.\(^{30}\) The contrastiveness of the reflexive *caki* is frequently found in topic and relative constructions, where its antecedents play a contrastive role with others.\(^{31}\)

(121) [ emeni-ka hyeng-eykey-nun senmul\(_{j}\)-ul cwumyense caki\(_{j}\)/ku\(_{i}\)-eykey-nun mother-NOM brother-to-CTOP gift-ACC give-while self/he-to-CTOP senmwul-ul cwuci ahn-un] ai, gift-ACC give did not-REL kid
the kid\(_{i}\) whose mother did not gave a present to him\(_{i}\) while she gave it to his bother.’

(122) Mira\(_{i}\)-nun [ John-i talun aitul-pota-nun caki\(_{j}\)/kunye\(_{i}\)-eykey calhay Mira-TOP John-NOM other kids-than-CTOP self/she-to be nice cwunta].
give
‘As for Mira\(_{i}\), John\(_{j}\) is nicer to her, than to other kids.’

\(^{30}\)A pronoun and long-distance ‘caki’ can be licensed in the same position although they deliver different focus interpretations.

(i) a. Minwoo\(_{i}\)-ka kyosil-ey tule o-nun John\(_{j}\)-ul po-ca, caki\(_{j}\)/ku\(_{i}\)-ka insa-lul
Minwoo-NOM classroom-to enter come-REL John-ACC see-when self-NOM greeting-ACC
hayssa. did
‘When Minwoo saw John, who came into the classroom, he\(_{i}\) (but not John) greeted (to him).’

b. Minwoo\(_{i}\)-ka kyosil-ey tule o-nun John\(_{j}\)-ul po-ca, ku\(_{i}\)/ku\(_{j}\)-ka insa-lul
Monwoo-NOM classroom-to enter come-REL John-ACC see-when he-NOM greeting-ACC
hayssa. did
‘When Minwoo saw John, who came into the classroom, he\(_{i}\) greeting (to him) first.’

In (ia), the implication is that it was *Minwoo* but not *John* who performed the act of greeting. This separates *Minwoo* from other discourse participants so the focus is on *Minwoo*. However, (ib) does not imply any contrast between *Minwoo* and others.

\(^{31}\)Pollard and Xue (2001) point out that contrastiveness signified by pitch accent or by lexical/structural marking makes a nonsyntactic use of Chinese reflexive *ziji* (more) acceptable. This seems to be the case in Korean too.
As in (121) and (122), when the contrastive meaning is distinct, the occurrence of *caki* is more natural than that of an RP. In particular, when the sentence has a comparative meaning as in (122), the resumptive element is realized in terms of the RR *caki* rather than the RPs.

Given that RR *caki* and RPs show the same characteristics with respect to logophoricity and contrastiveness, both in non-UDCs and UDCs, we conclude that these elements are the same objects. This approach is reminiscent of Pollard and Xue (1998, 2001) who pointed out that a distinction between structural and discourse binding should not be treated as lexical ambiguity. Instead, they proposed one type of reflexive, which can be either syntactically bound or pragmatically bound or both simultaneously. One their view, there is no notion of obligatory binding for reflexives in Chinese or in American English; rather, reflexives are subject to nonexclusive constraints of syntactic binding or discourse binding. We agree with them because the distinction between syntactic and nonsyntactic uses of reflexives can be captured simply in their theory without introducing lexical ambiguity and its redundant complications. Although Pollard and Xue (1998, 2001) do not consider resumptive pronouns, their combinatoric approach seems to be properly applied for a general realization of the RR *caki* in UDCs and the LD reflexive *caki* in non-UDCs in Korean. In addition, RPs in UDCs maintain the same sort of constraints in non-UDCs and UDCs, too. The only extra property of these elements is that they license a non-local feature that percolates upper phrasal categories in UDCs.

### 2.7 The Analysis of RPs and RR *caki*

Previous analyses of resumptive pronouns can be divided into two kinds following Vaillette (2003): the operator binding approach and the UDC approach. The former includes the GB analysis of Sells (1984), which argues that RPs are based-generated elements bound
by operators in the COMPS position. In this approach, RPs are analyzed as different from
gaps that are generated from movement. The same analysis has been adopted by Kang
(1986) for the LD reflexive caki in Korean UDCs. In contrast, UDC approaches treat RPs
as the corresponding forms of gaps. Doron (1982) uses a Cooper-storage mechanism for
both gaps and RPs. Maling and Zaenen (1982) deal with gaps and RPs in Swedish using
the non-local SLASH feature. Based on crosslinguistic varieties of RPs in Hebrew, Irish,
Swedish, and Welsh, Chapter 5 of Sells (1984) proposes the possibility of a mixed analysis
of RPs. He uses a syntactic mechanism with a non-local feature and a storage mechanism.

While comparing the operator binding approach and the UDC approach, Vaillette (2003)
argues for the UDC approach to RPs in Hebrew relative clauses. As supporting evidence,
he provides parasitic gap, coordination, and crossover data. More specifically, a gap ap-
ppears in a coordination construction when there is another gap in a conjunct or a RP and
RPs and gaps observe the SCO constraint. Vaillette (2003) argues that these facts favor a
treatment of RPs using non-local feature percolation.32

In Korean, we have provided SCO and coordination facts to support nonlocal feature
propagation for RPs. Unlike Hebrew RPs, Korean RPs show inconsistent behavior with
respect to island constraints; some of them are sensitive to island constraints while others
are not. Thus, it is hard to provide a syntactic account for island constraints. Unbounded
dependencies represented by traces, RPs, and the RR caki can be simply captured - without

32 He introduces a new non-local feature, RESUMP and provides the following lexical rule, which changes
any pronoun into a RP in Hebrew.

\[
(i) \begin{array}{c}
  \text{LOC}
  \text{CONT}
  \begin{array}{c}
    \text{ppro}
    \text{INDEX} \\
  \end{array}
  \ \rightarrow \\
  \text{LOC}
  \text{CONT}
  \begin{array}{c}
    \text{nprom}
    \text{INDEX} \\
  \end{array}
  \text{NONLOC}
  \text{INHER}
  \text{RESUMP}
  \{I\}
\end{array}
\]

The given lexical rule captures RPs working as R-expressions. This also captures the properties of RPs that
are susceptible to strong crossover.
posing any extra mechanisms - in the traditional HPSG analysis of UDCs following Pollard and Sag (1994). In HPSG, traces are not all required to have the same features. In Korean UDCs, local values of traces, RPs, and the RR *caki* can originate the nonlocal SLASH feature. The three kinds of UDC elements appearing in gap positions do not form separate categories from their corresponding forms appearing in non-UDCs. In other words, pros, overt pronouns, and the LD reflexive *caki* work in UDCs as inaudible traces, RPs, and the RR *caki* so that they are required to be semantically and syntactically bound by the nonlocal TO-BIND|SLASH feature.

In sum, Korean UDCs always involve the presence of one of three elements that give rise to a nonlocal SLASH feature: trace, resumptive pronoun, and resumptive reflexive. These three elements have certain properties with respect to the SCO constraint and coordination. Each of them shares certain information with a filler that appears in a possibly distant higher node. Furthermore, they share certain properties in common with their corresponding forms in non-UDCs. This UDC approach is different from accounts of Chomsky’s minimalist program and GB theory, where all traces are considered to be the same category. In addition, Chomsky’s binding theory requires that fillers be reconstructed to the trace position before binding conditions are applied. Thus, within this kind of approach, it is hard to capture the fact that RPs and RR *caki* work as traces. The HPSG system makes three different kinds of traces possible and captures the fact that traces, RP, and the RR *caki* in UDCs belong respectively to the subset of pros, pronouns, the LD reflexive *caki*. In addition, our trace analysis of resumptive elements casts some doubt on traceless approaches proposed by Sag (1997) and Kim (1998a). According to their traceless analyses, gap information is encoded in the lexical entry of a predicate without involving a structural position.

33Within GB theory, noun phrases are classified by the two binary features, a(naphoric) and p(ronominal), and all traces are assumed to be R-expressions with -a and -p features.
for an empty category. However, resumptive elements that trigger the SLASH feature need to appear in syntactic structures. Thus, the existence of audible correspondents of traces supports the traditional HPSG analysis of Pollard and Sag (1994), which assumes an empty category in a given syntactic structure.
CHAPTER 3

TOPIC CONSTRUCTIONS

3.1 Introduction

Topic constructions in Korean show a strong unbounded dependency between gaps and their fillers. For example, the topic NPs sometimes retain the case markers that originated at the gapped positions.\(^{34}\) This was shown in chapter 1.

\[(123)\] sensa\(nym\)-eykey\(_i\)-nun [s Jiwoo-ka \(e_i\) senmwul-ul tuli-ess-e].
\(\text{teacher-to-TOP Jiwoo-NOM present-ACC gave-PAST-END}\)
‘To the teacher, Jiwoo gave a present.’

\[(124)\] wundongcang-eyse\(_i\)-nun [s aitul-i \(e_i\) nol-ko iss-ess-ta].
\(\text{playground-in-TOP children-NOM play-ing be-PAST-END}\)
‘In the playground, children were playing.’

The \(\text{nun}\)-marked NPs in (123) and (124) are topic NPs and the following words are comments about the topics. In general, topic elements always appear in sentence initial position.\(^{35}\) While some topic constructions involve gaps in the comment phrases, there are also topic constructions in Korean that do not license any gaps. Ever since Kuno (1973)\

\(^{34}\)While the structural cases, nominative and accusative, do not appear in topic NPs, other markers can precede the topic marker \(\text{nun/\text{un}}\).

\(^{35}\)The \(\text{nun/\text{un}}\) marked NPs can appear in non-initial positions. Those NPs carry contrastive focus and are distinct from topics.
pointed out that gapless topic constructions exist in Japanese, many previous research have noted gapless topicalization in Korean (Kang, 1986), (Whitman, 1989), etc.). Consider the following examples.

(125) kkoch-un cangmi-ka alumtap-ci.
      flowers-TOP rose-NOM beautiful-END
      'Speaking of flowers, roses are beautiful.'

(126) sayngsen-un meyki-ka masiss-ta.
      teacher-TOP catfish-NOM tasty
      'Speaking of fish, catfish is tasty.'

In examples (125) and (126), the NPs marked with the marker -nun (or its phonological variant -un) do not have corresponding gaps in the rest of the sentence. This gapless topicalization is only licensed when a semantic relation of kind vs. subkind holds between the topic NP and the subject NP of the comment phrase. For example, cangmi ‘rose’ is a subset of the set of kkoch ‘flowers,’ and meyki ‘catfish’ is a subset of the set of sayngsen ‘fish.’ This semantic restriction is required for gapless topicalization, but not for gapped topicalization.

In addition to this difference in semantic restrictions, gapped and gapless topicalization have different grammatical properties. First, they are different with respect to relativization.

In addition to the examples in (125) and (126), there is another kind of gapless topicalization that is more commonly used in spoken language.

(i) na-nun [ Hankwuk-i ikil-keya ].
    I-TOP Korea-NOM win-will
    'According to my judgment, Korea will win.'

(ii) na-nun [ Mira-ka Yumi-hantay cinta].
    I-TOP Mira-NOM Yumi-to lose
    'I bet that Mira will lose to Yumi.'

The topic element is restricted to the lexical item na (I). The topicalized na-nun can be added to any sentence with present or future tense while implying “as far as I am concerned” or “according to my judgment or expectation”. This kind of topicalization commonly appears in the context of making bets or predictions.
This is shown in (127) and (128). While the topics of a gapped topic construction can be the head noun of a relative clause, the topic in a gapless construction cannot.

(127) a. [ Jiwoo-ka senmwul-ul tuli-n ] sensayngnim
    Jiwoo-NOM present-ACC gave-REL teacher
    ‘the teacher whom Jiwoo gave a present’
b. [ aitul-i nol-ko iss-nun ] wuntongcang
    children-NOM play-and being-REL playground
    ‘the playground where children are playing’

(128) a. * [ cangmi-ka alumptaw-un ] kkoch
    roses-NOM beautiful-REL flower
    b. * [ meyki-ka maiss-nun ] sayngsen
    catfish-NOM delicious-REL fish

Second, topics of gapless topic constructions can be realized as parts of adverbial phrases, as in (129) and (130) (cf. (125)). As shown in (131), topic of gapped constructions cannot.

(129) kkoch-ulo malhaca-myen, cangmi-ka alumptap-ci.
    flower-as speak-if rose-NOM beautiful-END
    ‘If we speak about flowers, roses are beautiful.’
(130) kkoch-ul nohko sayngkakhaca-myen, cangmi-ka alumptap-ci.
    flower-ACC put think-if rose-NOM beautiful-END
    ‘If we think of flowers, roses are beautiful.’
(131) ?* kkoch-ulo malhaca-myen, Mira-ka $e_i$ choahanta.
    flower-as speak-if Mira-NOM likes

Third, while topic NPs in gapless constructions are generic, topic NPs in gapped constructions need to be definite. Thus, deictic prenominal expressions like $ku$ (‘that’ or ‘those’) or $i$ (‘this’ or ‘these’) cannot combine with topicalized elements in gapless constructions. This contrasts with the fact that common nouns in topic position can take these prenominal expressions in gapped topic constructions.

(132) * ku/i kkoch-un cangmi-ka alumptap-ci.
    those/these flower-TOP rose-NOM beautiful-END
    ‘As for those flowers, roses are beautiful.’
Based on different properties of gapless and gapped topic constructions, we consider their formation to be different. In turn, we provide different schemas for gapless and gapped topic constructions. Despite different grammatical properties, both gapless and gapped topic constructions involve a semantic relation between a topic and the following phrase. This relation is similar to a relation seen in double nominative constructions (DNCs).³⁷ See the following examples.

(134) Samsung-i [ cenhwaki-ka cohta ].
      Samsung-NOM phone-NOM good
      ‘Samsung is good for phones.’

(135) Daygu-ka [ sakwa-ka yumyenghata ].
      Daygu-NOM apples-NOM famous
      ‘Daygu is famous for apples.’

In (134) and (135), the second nominative NP and the predicate form a phrasal constituent, which provides predication about the first nominative NP. Many previous analyses, including Kang (1988) and O’Grady (1991) have used an aboutness relation in order to capture the semantic relations in DNCs.³⁸ In addition, ever since Kuno (1973), an aboutness relation has been used to account for semantic and pragmatic dependencies between a topic and a comment in much of the literature. We use this aboutness relation in order to capture semantic and pragmatic relations of both double nominative constructions and topic constructions. We argue that an aboutness relation holds for a salient subject and the following predicate in double nominative constructions, while it holds for a topic and its comment in

³⁷NPs in DNCs have a kind of class-member relation rather than a kind-subkind relation.
³⁸The semantic restriction of DNCs will be discussed in Chapter 5 in detail.
topic constructions. In this way, the aboutness relation captures the semantic and pragmatic differences between them.

### 3.2 Topicalization vs. Scrambling

Korean has relatively free word order. Like Japanese, it allows word order to change among the internal arguments in a sentence. This phenomenon is called scrambling, and it includes clause-internal and long-distance word order changes. While Ross (1967) treated scrambling to be a stylistic reordering rule, many previous transformation-based analyses considered scrambling as a syntactic phenomenon (Saito, 1985; Mahajan, 1990; Webelhuth, 1989; etc.). The formation of topic constructions in Japanese and Korean has been discussed in connection with scrambling in Saito (1985), Kang (1986), Gill (2000), Kim (1992), etc.

There have been three different approaches to topicalization in Korean. The first approach treats topicalization as scrambling that involves A’-movement. Saito (1985) and Joo (1993) argue that some cases of topicalization are instances of A’-scrambling that involves adjunction to an S node (or IP node). The second approach assumes that topicalization involves A-scrambling, but not A’-scrambling. The distinction between A-scrambling and A’-scrambling is based on the landing sites of the moved element (Chomsky, 1981). Mahajan (1990) argues that local scrambling in Hindi involves A-movement. According to him, A-movement includes a substitution into a Spec of a functional category, while A’-movement involves adjunction to a maximal projection. In addition, Webelhuth (1989) proposes that scrambling in German has both A and A’ properties. In line with these analyses,
Yoon (1990) and Kim (1992) assume that Korean topicalization involves A-scrambling. The third approach treats topicalization in terms of base-generated structure. It does not involve any movement. Kang (1986) argues that Korean topicalization shows similar properties to English left dislocation and that it involves the existence of empty pronouns or overt resumptive elements. Kang suggests that the dependency between the topicalized element and the gapped position is handled by semantic binding between them.

In Korean, scrambling and topicalization have different morphosyntactic properties, suggesting that they need to be handled in different ways. Morphologically, they show different case marking properties: a topic marker -un/-nun is added to the topicalized element, while a scrambled element carries its original case marker. This is shown in the following examples.

(136) chayk-un John-i Mira-eykey cwuessta.
book-TOP John-NOM Mirea-to gave
‘As for John, Mira gave (him) a book.’

(137) chayk-ul John-i Mirea-eykey cwuessta.
book-ACC John-NOM Mirea-to gave
‘Mira gave a book to John.’

Many transformation-based approaches have treated topicalization as involving the same kind of movement as scrambling. However, topicalization is less restricted than scrambling in terms of long-distance dependency between the topic and its gap.

(138) a. Mary-wa-nun [ Yumi-ka Miran-eykey [ John-\(e_i\) teyithayssta-ko ]
Mary-with-TOP Yumi-NOM Miran-to John-NOM had date-COMP
malhay cwuessta.
talk gave
‘As for Mary, Yumi told Mary that John dated her.’

\(^{39}\)Yoon’s A-scrambling of topicalization does not accord with Mahajan’s definition of A-movement because the former involves adjunction to the maximal projection. Kim argues that topicalization in Korean is licensed by XP movement to an A-position via Spec-Head agreement.
Compared to unbounded dependency triggered by topicalization, long-distance dependency by scrambling seems to be more restricted. This suggests that scrambling may involve a different syntactic mechanism. This argument is supported by the fact that resumptive pronouns are only allowed in topic constructions, not in scrambling constructions. Consider the following examples.

(140) a. John-\textsubscript{1} un [ aitul-i ]
    [ sensayngnim-i ku\textsubscript{i}-lul miwehanta-ko ]
    John-TOP children-NOM teacher-NOM he\textsubscript{i}-ACC hates-COMP
    think sayngkakhanta
    ‘As for John, children think that the teacher hates him\textsubscript{i}.’

b. * John-\textsubscript{1} ul [ aitul-i ]
    [ sensayngnim-i ku\textsubscript{i}-lul miwehanta-ko ]
    John-\textsubscript{1} ACC children-NOM teacher-NOM he\textsubscript{i}-ACC hates-COMP
    think sayngkakhanta

(141) a. ku namca\textsubscript{i}-nun [ Mira-ka ]
    [ salamtul-i ku\textsubscript{i}-lul chencay-lo ]
    that man-\textsubscript{TOP} Mira-NOM people-NOM he\textsubscript{i}-ACC genius-as
    yekinta-ko ] pwulphyenghassta
    regard-COMP complain
    ‘As for that man\textsubscript{i}, Mira complians that people regard him\textsubscript{i} as a genius.’
While a pronoun takes the place of a gap in (140a) and (141a), it cannot in (140b) and (141b). These facts support the hypothesis that topic constructions involve gapped positions and scrambling constructions do not.

In summary, topicalization in Korean cannot be explained by the mechanism of scrambling. Case marking properties, long-distance dependency, and resumptive pronouns show that scrambling does not involve extraction. This is in contrast to other filler-gap linkages in Korean. Before we move onto the UDC analysis of topic constructions, let us consider how scrambling in Korean can be accounted for syntactically.

3.2.1 Scrambling and Weak Crossover Effects

Since Wasow (1972), the weak crossover (WCO) effect has been frequently used as a diagnostic for movement. An example violating the WCO constraint in English is given in (142). It contrasts with the example in (143).

(142) His$_i$ mother loves John$_i$.
(143) * Who$_i$ does his$_i$ mother love$_i$.

The ungrammaticality of (143) is triggered by the pronoun ‘his’, which intervenes between the filler ‘who’ and its gap. Similar WCO effects have been reported for Japanese and Korean with respect to scrambling (Saito and Hoji (1983), Saito (1985), Choe (1989), Young-Suk (1991), Cho (1994), etc.). These effects have been used as supporting evidence for the movement analysis of scrambling within GB theory. In particular, Saito and Hoji (1983) claim that the WCO effect in Japanese (as well as in Korean, for that matter) supports
the argument that the structure of the VP in Japanese is hierarchical and that scrambling involves movement.

(144) a. [[John-ga zibun-no kuruma-o kowasita koto]-ga [Mary-o John NOM self GEN car ACC damaged fact NOM Mary ACC odorokaseta]]
surprised
‘The fact that John damaged her car surprised Mary.’

b. ?* [[John-ga zibun-no kuruma-o kowasita koto]-ga [John NOM self GEN car ACC damaged fact NOM
daremo/dareka-o odorokaseta]]
everyone/someone ACC surprised
‘The fact that John damaged his car surprised everyone/someone.’

c. ?* [[John-ga zibun-no kuruma-o kowasita koto]-ga [dare-o John NOM self GEN car ACC damage fact NOM who ACC odorokaseta]-no]
surprised Q
‘Who had the fact that John damaged his car surprised?’

In Japanese, *zibun* behaves in relevant respects like an English pronoun. Thus, the WCO effects are expected for *zibun*. According to Saito and Hoji (1983), the binding between *zibun* and *Mary* is explained by “backward reflexivization”. With the assumption of the VP node, example (144) is grammatical because the antecedent does not c-command *zibun*, which is inside the VP. According to their account, (144a) and (144b) are ungrammatical because the quantifier antecedent moves to the S-adjoined position at LF, and thus, the existence of the VP node does not allow the bound variable interpretation for the anaphor *zibun* at LF in Japanese. They provide a condition that induces the WCO effect and the resulting configuration at LF as follows.

(145) A variable cannot be the antecedent of a pronoun or an anaphor that it does not c-command (in Saito and Hoji (1983))
Saito & Hoji’s account assumes that scrambling involves similar quantifier raising at LF. Thus, a scrambled element in (147b) appears in the S adjunction position at LF, like *dare-o* in (146).

(147) a. $[S [NP [RP Hanako-ga zibun$_1$-o kiratteiru] koto]-ga [VP Ziro$_1$-o Hanako-NOM self-ACC dislike fact-NOM Ziro-ACC yuutu-ni siteiru ]].$

   The fact that Hanako dislikes him$_1$ has depressed Jiro$_1$.

b. *$[ Ziro$_1$-o [S [NP[RP Hanako-ga zibun$_1$-o kiratteiru] koto]-ga [ t$_{t}$ Ziro-ACC Hanako-NOM self-ACC dislike fact-NOM yuutu-ni siteiru ]]].$  

   depressed make

In general, scrambling of the object induces ungrammaticality in languages like Japanese and Korean. However, Saito (1992), Yoon (1990), and Kim (1993b) provide examples ameliorating the WCO constraint in Japanese and Korean as shown in (148) and (149). Noting this fact, they claim that some scrambling involves A-movement, as in Mahajan’s (1990) A-movement analysis of scrambling in Hindi.
According to Saito, the scrambled position of the antecedent is reanalyzed as an A position, and the anaphor caki is c-commanded by the antecedent.\textsuperscript{40} Yoon (1990) and Kim (1993b) argue that topicalization involves A-scrambling because (149) can then be accounted for on the basis of binding condition A, which is observed in the configuration in (149). However, the binding facts in the following examples cannot be captured by binding condition A and c-command, as pointed out by Chung (1995).

\begin{align*}
(148) & \text{ dare}_i\cdot o \quad [ \text{ soitu}_i\cdot no \quad \text{ hahaoya }]\cdot ga \ e_i \ \text{ aisiteru}]? \quad \text{(Japanese)} \\
& \quad \text{ who-ACC} \quad \text{ the guy-GEN mother-NOM} \quad \text{ love} \\
& \quad \text{ ‘Who}_i \ \text{ does his}_i \ \text{ mother love (} e_i \text{)?’} \\
(149) & \text{ nwkuku}_i\cdot lulu \quad [ \text{ caki}_i \ \text{ emma-ga} \quad \ e_i \ \text{ salangha-ni}]? \quad \text{(Korean)} \\
& \quad \text{ who-ACC} \quad \text{ self mother-NOM love-Q} \\
& \quad \text{ ‘Whom}_i \ \text{ does his mother love (} e_i \text{)?’}
\end{align*}

If we assume a c-command condition for binding, (150) is problematic because nwkuku is inside the NP, and the pronominals, including the LD reflexive caki, a pronoun, and a pro, do not c-command it. It also is hard to argue that nwkuku moves out of the NP into a higher position at LF and c-commands the pronominals because of the ungrammaticality of (151). While pointing out this problem, Chung argues that the WCO effects in Korean can be captured by relative obliqueness and linear precedence. According to him, pronominal binding can be divided into variable binding and discourse binding. Variable binding is conditioned by syntactic factors, while discourse binding is conditioned by pragmatic

\begin{align*}
(150) & \quad [ \text{ nwkuku}_i\cdot uy \ \text{ kwake]-ka} \quad [ \text{ caki}_i\cdot ku_i\cdot uy/pro}_i \ \text{ anay}-lulu \ \text{ koylophyess-ni}?. \\
& \quad \text{ who-GEN past-NOM-NOM self/he-GEN/pro wife-ACC bothered-Q} \\
& \quad \text{ ‘Whose}_i \ \text{ past bothered his}_i \ \text{ wife?’} \\
(151) & \quad * [ \text{ nwkuku}_i\cdot uy \ \text{ kwake]-ka} \quad [\text{ caki}_i\cdot ku_i\cdot uy/lul/pro}_i \ \text{ koylophyess-ni}?. \\
& \quad \text{ who-GEN past-NOM self/-he-ACC/pro bothered-Q} \\
& \quad \text{ ‘Whose}_i \ \text{ past bothered him.’}
\end{align*}

\textsuperscript{40}Saito considers soitu ‘the guy’ to be an overt bound variable. Thus, the given sentence is expected to show the WCO effect. However, according to him the sentence seems to be solid.
factors. His binding conditions are divided into two kinds according to two subsorts of
pronominals: *x-pronouns*, including the LD reflexive *caki* and *pro*, and *y-pronouns*, in-
cluding pronouns like *ku*. According to him, binding of *x-pronouns* is conditioned by
obliqueness and linear precedence, while binding of *y-pronouns* is conditioned only by
linear precedence. Chung’s binding conditions for pronouns are given as follows.

(152) Variable binding condition of *x-pronouns*:
an *x-pronoun* X may be bound by an operator O only if
either (i) O properly o-commands X
or (ii) O-complex properly precedes X.

(153) Variable binding condition of *y-pronouns*:
A *y-pronoun* Y may be bound by an operator O only if the O-complex properly
precedes Y.

(154) a. Proper o-command: Y properly o-commands Z iff Y locally o-commands X
properly dominating Z
b. Local o-command: Y locally o-commands Z iff Y is less oblique than Z.
c. Proper Precedence: Y properly precedes Z iff Y precedes X properly domi-
nating Z.

Chung’s binding condition includes the notion of the operator-complex (O-complex) de-
defined by Pollard and Yoo (1998). The definition of O-complex is as follows.

(155) An O-complex is a constituent whose QSTORE contains a non-definite quantifier
or a *wh*-operator.

According to the definition in (155), quantifiers like *everyone* and *wh*-words are O-complexes
because their QSTORE contains a non-definite quantifier or a *wh* operator. The obliqueness
hierarchy is assumed by Pollard and Sag (1992, 1994).41 Chung modifies the obliqueness
hierarchy for Korean so that a subject is less oblique than a complement and complements
are all equally oblique as follows.

41 Pollard & Sag assume the following hierarchy.
Subject ≪ Primary Object ≪ Secondary Object ≪ Obliques ...
With the modified obliqueness hierarchy, Chung’s binding condition accounts for the WCO constraint violation without assuming movement. For example, (151) is unacceptable because the operator nukwu neither properly commands nor properly precedes the pronominals. In contrast, (150) is acceptable because the operator properly precedes the pronominals. The fact that the WCO constraint can be handled by variable binding conditions suggests that the WCO effects cannot be used as supporting evidence for the movement analysis.

Chung’s scrambling analysis is based on a flat structure analysis of Korean instead of a hierarchical structure. However, without assuming flat structure, scrambling facts can be effectively handled using the linearization model (Dowty, 1996; Reape, 1996; Pollard et al., 1993; Kathol, 1995; Lee, 2001). The linearization approach to Korean scrambling has been discussed in Lee (2001) in order to account for argument and adjunct asymmetry in complex predicates. The linearization model accounts for how scrambling phenomenon can be treated differently from topicalization without assuming flat structure in Korean. As an alternative to a flat structure hypothesis of scrambling, we will briefly go over how scrambling can be handled according to the linearization model.

The linearization approach makes a basic distinction between tectogrammatical and phenogrammatical structure, which were originally proposed by Curry (1961). Tectogrammatical structure involves grammatical function-based, compositional structure of a sentence, while phenogrammatical structure involves the actual form of the words in a string with a particular ordering.
Reape (1996) introduces the phenogrammatical notion of word order domains, which involves the actual ordering of words in sentences. Tectogrammatic combinations can appear as discontinuous or non-adjacent elements. According to him, word order is handled by domain union. Domain union is a sequence union relation of two DOM values, which is akin to the shuffle operator in the formal language.

These DOM values represent linear order information. In domain union relation \( \cup_{<} \) (A, B, C), C is the result of sequence unioning A and B and contains all and only the elements of them. The relative order of elements of any daughter domain must be the same as that of its mother domain. This relation allows two elements that were not sisters in the tectogrammatical structure to appear in adjacent positions in the phenogrammatical structure.

Adapting Reape’s idea for representing information about linear order, Pollard et al. (1993) propose that DOM features do not take signs as their values but rather objects with only PHON and SYNSEM attributes. In Kathol (1995) this type of grouping is referred to as DOM(AIN)-OBJ(ECT), rather than NODE as in (Pollard et al., 1993). We also follow Pollard et al. (1993) and Calcagno (1993) in assuming that words are specified for a word order domain, so that every sign (phrasal and lexical) bears a DOM feature. Through the feature DOM, phenogrammatical information is encoded. This will allow word order change among constituents. Based on the linearization model, the following permutation is allowed for the given example.

     John-NOM Mira-to that book-ACC gave
     ‘John gave that book to Mira.’

(158) a. DOM < [kuchayk – ul], [John – i], [Mira – eykey], [cwuessta] >
b. DOM < [kuchayk – ul], [John – i], [kuchayk – ul], [cwuessta] >
c. DOM < [John – i], [Mira – eykey], [kuchayk – ul], [cwuessta] >
The given DOM feature represents scrambling facts without assuming either movement or a flat structure. Thus, scrambling can be represented by a different mechanism than topicalization. Within the linearization model approach, we need to capture different properties of nominal objects with respect to scrambling. It is because a binding condition for a certain nominal type is affected by the scrambling phenomenon in Korean. Chung presents binding principles: A principle A deals with the local anaphor caki and principles B and C deal with personal pronouns (ppro) and nonpronouns (npro), respectively. Binding principles B and C are known to be unaffected by scrambling, while principle A is affected. This shows that the application of binding conditions varies according to the properties of nominal objects. We, however, limit ourselves to the category of UDCs and simply point out the possibility of different applications of binding conditions according to the status of nominal objects.

When we take the linearization approach to scrambling, the mechanism of scrambling can be explained without assuming any UDC gaps. Thus, a syntactic mechanism of scrambling can be differentiated from that of topicalization, which involves nonlocal feature percolation.

3.2.2 Long-distance Scrambling vs. Clausal Internal Scrambling

Scrambling can be divided into two kinds: clause internal and long-distance. In the previous literature, whether the two kinds need to be treated by the same or different mechanisms has been a point of controversy in the previous literature. Saito (1992) suggests that long-distance scrambling can be distinguished from clause internal scrambling because only the latter can involve A-movement. This argument is based on the amelioration of the
WCO effect we have seen in (149). With respect to Korean, Kim (1993a) also differenti-
ated scrambling into two types. In contrast, Joo (1993) and Chung (1995) point out that
long-distance scrambling shows amelioration of the WCO effect just like clause-internal
scrambling and argue that long-distance and clause internal scrambling belong to the same
class. Chung provides the following examples of clause internal scrambling (159) and
long-distance scrambling (160) that have the WCO effect amelioration.

(159) a. *[caki₁/ku₁-uy/pro₁ emma-ga] nwuku₁-lul sayngkakha-ni?
   self-GEN/he-GEN/pro mother-NOM who-ACC     think-Q
   ‘Who₁ does his₁ mother think?’
b. nwuku-lul [caki₁/ku₁-uy/pro₁ emma-ga] sayngkakha-ni?
   who-ACC self-GEN/he-GEN/pro mother-NOM think-Q

(160) a. *[caki₁-uy/ku₁-uy/pro₁ emma-ga] Mary-ka nwukwu₁-lul
   self-GEN/he-GEN/pro mother-NOM Mary-NOM who-ACC
   ttaylyessta-ko] sayngkakha-ni ]?
   hit-COMP think-Q
   (lit.)’Whom₁ does his₁ mother think Mary hit.’
b. nwuku₁-lul [caki₁-uy/ku₁-uy/pro₁ emma-ga ] Mary-ka
   who-ACC self-GEN/he-GEN/pro mother-NOM Mary-NOM
   ttaylyessta-ko sayngkakha-ni ]?
   hit-COMP think-Q

While accepting the unified approaches to scrambling of Joo (1993) and Chung (1995),
we claim that long-distance scrambling in Korean can be handled by the same mechanism
as clause internal scrambling via the linearization approach. Kathol (1995) argues that a
domain object, which contains linear order information projected from a sign, is associated
with that sign by the compaction relation.

(161) COMPACTION

According to Kathol, instead of having a separate DOM-OBJ attribute containing SYNSEM
and PHON values, we can map a sign’s SYNSEM value directly onto the corresponding
domain object. The PHON value of the domain objects corresponds to the concatenation of the PHON values of all the elements in the sign’s domain. Thus, we can capture the association between a sign and its correlated domain objects.

In Korean, an argument or adjunct of the matrix predicate does not intervene among the elements of an embedded clause. This contrasts with the fact that an argument or adjunct of the embedded predicate can appear in sentence initial position. With the notion of compaction, we can easily explain why the element of the matrix predicate does not intervene among the elements of the embedded VP or S. Since the embedded S or VP is compacted by combining with its head verb, the element of the matrix predicate cannot be inserted into it. Compaction, however, is too restrictive to fully license scrambling possibilities in Korean. This kind of element insertion into a higher domain, while other elements are compacted together, can be explained by generalizing the notion of compaction to partial compaction as proposed in Kathol (1995). Intuitively, partial compaction allows designated domain objects to be liberated into a higher domain, while the remaining elements of the source domain are compacted. The definition of partial compaction is provided as follows.

(162) \((P\text{-}COMPACT) \equiv \exists \text{sign} \; \exists \text{dom-obj} \; \text{SYSEM} \; \text{SYNSEM} \; \text{DOM} \; \text{PHON} \; \text{SHUFFLE} \; \text{JOIN PHON} \)

In long-distance scrambling constructions, the designated element of the embedded clause becomes liberated into the higher domain, while the remaining elements are compacted into a single domain object through partial compaction. In general, the liberated element receives a focus interpretation from either an accompanying pause or pitch accent. This mechanism licenses scrambling of an element out of an embedded S or VP.42 In contrast,

42 Instead of the linearization approach, De Kuthy and Meurers (2003) and De Kuthy (2002) show that scrambling of a focused element can be accounted for using information structure. This seems to be a
an element of the matrix predicate does not scramble into the embedded S or VP, which is already compacted together as in (163b).

(163) a. nay-ka Mary\textsubscript{j}-eykey [ John-i caki\textsubscript{i}-lul salanghanta-ko ] malhay
   I-NOM Mary-to John-NOM self-ACC love-COMP tell
cwuessta
gave
'I told Mary\textsubscript{i} that John loves her\textsubscript{j}.'

b. *nay-ka [ John-i Mary\textsubscript{j}-eykey caki\textsubscript{i}-lul salanghanta-ko ] malhay
   I-NOM John-NOM Mary-to self-ACC love-COMP tell
cwuessta
gave

Like Saito (1992), Gill (2000) distinguishes short-distance topicalization and long-distance topicalization as two different types of constructions. According to her, short-distance topicalization, as in (164), involves scrambling, while long-distance topicalization involve extraction, as in (165).

(164) John-un Mary-ka cohahanta.
   John-TOP Mary-NOM likes
   'As for John, Mary likes him.'

(165) Bill\textsubscript{j}-un Mary\textsubscript{i}-ka [ caki\textsubscript{i}/j-ka choahanta-ko] sayngkakhanta.
   Bill-TOP Mary-NOM self-NOM like-COMP thinks
   'As for Bill\textsubscript{j}, Mary\textsubscript{i} thinks that she\textsubscript{i}/he\textsubscript{j} likes him\textsubscript{j}.'

Her distinction between short-distance and long-distance topicalization is based on the possibility of having resumptive pronouns in the gapped positions. According to her, short-distance topicalization is a case of scrambling, while long-distance topicalization is licensed by the UDC mechanism. However, this account does not explain why so-called short-distance topicalization and long-distance topicalization show such similar grammatical properties as morphological topic markers and crossover effects. In addition, it does

promising approach that combines mechanisms of word order variation, focus, and intonation. In this thesis, however, we provide an example analysis using the linearization model and show how scrambling can be treated differently from topicalization.
not explain why long-distance scrambling disallows a gap or a resumptive element, while long-distance topicalization always requires one of them. We analyze short-distance and long-distance topicalization as belonging to the same class, one that can be handled by the UDC approaches.

3.3 A Structural Analysis of Topic Constructions

Some previous analyses, including Kang (1986) and Choo (1993), assume that topic constructions have base-generated structure and no traces in the gapped positions. As supporting evidence, they point out that overt pronouns or the reflexive caki appear instead of phonologically null elements.


‘As for Jun\textsubscript{1}, Yumi said to the teacher that Jaymin is looking for him\textsubscript{i}.’

b. Jun\textsubscript{1}-un [Yumi-ka sensayngnim-eykey [Jaymin-i ku\textsubscript{i}-lul chacnunta-ko] malhayssta].

look for-COMP said

In particular, Kang claims that Korean topic constructions have a structure that is similar to English left dislocation constructions. The relevant examples are given in (167) and (168).

(167) (As for) this book, I read it.
(168) (As for) these lobsters, I bought them right at the shore.

Kang points out three similarities of Korean topic constructions and English left dislocation constructions: both allow for a resumptive pronoun; both violate the complex noun phrase constraint (CNPC), the wh-island constraint, and subjacency; and both are impossible in
most embedded contexts. He also summarizes two different properties of these constructions: English has no empty pronouns, and Korean resumptive pronouns need to appear in a deeply embedded clause. However, in order to capture a dependency between a topic and a resumptive pronoun, Kang adds a restriction that the binding relation is required in topic constructions. The key idea of the base-generation approach is that the dependency between the topic and the relevant missing element is purely semantic. However, the binding relations in topic constructions show strong syntactic dependencies, as we have already seen in Chapters 1 and 2. Moreover, if topic constructions only license semantic binding between the topic and the gap, it is predicted that the SCO effects will not appear in topic constructions. In the following constructions, only semantic binding holds among the LD reflexive ‘caki’ or pronouns.

John-NOM he-NOM Mira-NOM he-ACC like-COMP rumor-ACC
nay]-n sasil-ul pwuinhayssta.
spread-REL fact-ACC denied
‘John denied that he spread the rumor that Mary liked him.’

(170) ku-haksayng-i [ John-i ku-eykey [ proj kos caki-lul
that student-NOM John-NOM ku-to soon self-ACC
visit-COMP promised-COMP remember
‘that student remembers that John promised him that he will visit him soon.’

In (169) and (170), the LD reflexive caki and pronouns are bound by the main subject NPs. In spite of the intervening pronouns between the first subject NP and a pronoun (or the LD reflexive caki), the sentences are grammatical. Thus, SCO effects do not appear in the given examples. However, topic constructions do not allow this kind of semantic binding between the topic and its gap, as we have already seen in Chapter 2. For convenience,
the relevant grammatical examples with respect to the SCO effects are provided again as follows.

(171) * John_i-un [ku_i/ku papo_i-ey uyhayse [Mary-ka e_i cohahanta-ko] John-TOP him_i/that idiot_i-by Mary-NOM like-COMP somwun-i nassta]. rumor-NOM spread

‘As for John_i, by him_i/that idiot_i a rumor that Mary liked (him_i) was spread.’

(172) * ku haksayng_i-nun [John-i ku_i/ku papo_i taymwun-ey salamutl-eykey that student-TOP John-NOM him_i/that idiot_i reason-as peole-to [kos e_i pangmwunhakeyssta-ko] yaksokhayssta]. soon visit-COMP promised

(lit.) ‘As for that student_i, John made a promise to people because of him_i/that idiot_i to visit (him_i) soon.’

In (171) and (172), the gap in the embedded clause cannot be bound by the topic NP when there exists a coreferential pronoun or an intervening epithet. In the given position, the pronoun or the epithet does not c-commanded (o-command) the gap, but the SCO effects appear. We have also shown that resumptive pronouns cannot be used as a counterargument to the UDC analysis. This is because resumptive pronouns and the long-distance (LD) reflexive caki are overt traces in Korean UDCs. The same SCO effects can be found in topic constructions when reflexive pronouns or the LD reflexive caki appear as in (173) and (174). This shows that those elements work as overt traces in topic constructions.

(173) * John_i-un [ku_i/ku papo_i-ey uyhayse [Mary-ka ku_i/caki_i-lul cohahanta-ko John-TOP him_i/that idiot_i-by Mary-NOM he_i/self_i-ACC like-COMP ] somwun-i nassta. rumor-NOM spread

‘As for John_i, by him_i/that idiot_i a rumor that Mary liked him_i was spread.’

43 We may use an epithet instead of a pronoun in order to block the possible resumptive pronoun interpretation of the intervening pronoun.
(174) * ku haksayng-nun [John-i ku/ku papo-i taymwun-ey salamtul-eykey that student-TOP John-NOM him/that idiot reason-as people-to
[kos ku/caki-i pangmunhakeyssta-ko] yaksokhayssta].
soon hei/selfi-ACC visit-COMP promised
(lit.) ‘As for that student$_i$, John made a promise to people because of him$_i$/that idiot$_i$ to
visit him$_i$ soon.’

In parallel with (171) and (172), we claim that the SCO effects appear because the topic is
bound by the intervening the LD reflexive or pronoun in (173) and (174). Thus, this fact
supports our UDC analysis of topic constructions.

Another argument for the trace analysis of resumptive pronouns and caki is based on the
Coordinate Structure Constraint (CSC), which disallows asymmetric extraction out of one
conjunct. Examples (175b) and (175c) are ungrammatical because only one conjunct has a
missing element. This contrasts with (176a) and (176b), where the topicalized element is
connected to the missing element and a resumptive pronoun kukes ‘it.’

(175) a. i chayk$_j$-un [aitul-i e$_j$ cohaha-ko eluntul-to e$_j$ chohahay].
this book-TOP kids-NOM like-CONJ adults-also like
‘As for this book$_j$, kids like (it$_j$) and adults also like (it$_j$).’

b. * i chayk$_j$-un [aitul-i e$_j$ cohaha-ko eluntul-i manhwachayk-ul
this book-TOP kids-NOM like-CONJ adults-NOM comic book-ACC
like
silehay].
‘As for this book$_j$, kids like (it$_j$) and adults dislikes comic books.’

c. * [aitul-i e$_j$ cohaha-ko eluntul-i manhwachayk-ul sileha-nun] chayk
‘the book$_j$ which kids like (it$_j$) and adults dislike comic books.’

(176) a. i chayk$_j$-un [aitul-i e$_i$ acwu cohaha-ko nointul-to e$_j$ congcong
this book-NOM kids-NOM very like-CONJ old people-also often
chassnunta]
chassnunta
‘ As for this book$_j$, kids like (it$_j$) very much and old people also buy (it$_j$) often.’
In spite of the fact that the CSC requires a gap in each conjunct of Korean UDCs, the pronominal kukes in a conjunct does not cause a violation of the CSC. This is shown in (176b) and (176c). We claim that those pronouns behave in the same way as traces.

In summary, the trace analysis of resumptive elements weakens the main argument of the base-generation approach and favors the UDC analysis. Kang (1986) presents additional supporting evidence for the base-generation of topic constructions: island constraint insensitivity to topicalization. However, in chapter 2 we saw that island constraints do not provide strong evidence for determining whether a certain construction requires a syntactic filler-gap linkage or not. Even though Kang (1986) takes the syntactic approach within GB theory, the status of the so-called empty pronouns in topic constructions is not quite clear. According to him, the formation of topic constructions does not involve syntactic movement, so the topicalized element is semantically bound with a phonologically null element in the comment phrase. Thus, he argues that an empty pronoun behaves in the same way as overt pronouns and that an empty pronoun is a variable in topic constructions. However, variables include only empty categories bound by an A’-antecedent within GB theory. Therefore, Kang’s analysis is inconsistent within the same theoretical framework. The syntactic and semantic dependencies between a topic and its gap are similar to those of a filler
and its gap. Thus, rather than treating them as different we claim that the same nonlocal feature percolation mechanism accounts for the grammatical facts of topic constructions in Korean.

In order to deal with the formation of Korean topic constructions, we present two kinds of Topic-Head schemas: one for gapless topicalization and one for gapped topicalization. The schema for gapped topicalization is similar to the Filler-Head schema. Both gapless and gapped topic constructions show unique discourse-based properties, which can be captured by the aboutness relation that we used for gapless topic constructions. In addition, the case marking feature of the topicalized element needs to be added to the new schema.

(177) Topic-Head Schema for Gapless Topicalization

\[
X \rightarrow [S|L_{OC}[\text{CAT}|\text{CMARK topic}], \quad S \rightarrow [\text{HEAD} \quad \text{stative} \quad \text{ARG-ST} \quad \text{SUBJ} \quad \text{NP}], \quad \text{RELATION kind-subkind} \quad \text{CONT} \quad \text{INDEX}, \quad \text{NONLOC}|\text{SLASH} \{\}]
\]

(178) Topic-Head Schema for Gapped Topicalization

\[
X \rightarrow [L_{OC}[\text{CAT}|\text{CMARK topic}], \quad S \rightarrow [\text{HEAD} \quad \text{verb or adjective} \quad \text{fin} \quad \text{ARG-ST} \quad \text{SUBJ} \quad \text{NP}], \quad \text{RELATION aboutness} \quad \text{CONT} \quad \text{SUBKIND}, \quad \text{CXT}|\text{BACKGR} \quad \text{TOPIC} \quad \text{COMMENT}, \quad \text{INHER}|\text{SLASH} \{1, ..., \}, \quad \text{TO-BIND}|\text{SLASH} \{\}]
\]

In the given schemas, a topic has the CASEMARKING (CMARK) value of topic. The CMARK feature is introduced when the nominal head combines morphosyntactically with a marker. The context feature provides the aboutness semantic relation with topic-comment
roles. Those schemas account for the similarities in syntactic representation and semantic interpretations of both types of topicalization.

As shown in (177), the schema licenses gapless topicalization with stative predicates, and it captures the particular semantic relation of kind-subkind between a topic and the subject of the main predicate.

(178) captures the representation of gapped topic constructions. According to the given schema, the topic has the same local value as the SLASH value. It also accounts for semantic and syntactic dependency between a topic and its gap. An example of gapped topicalization can be represented as follows.

(179) Mira\_{eykey-nun}, John-i \_ e\_j senmwul-ul \_ cwuessta
Mira-\textit{TOP} \_ John-\textit{NOM} \_ present-\textit{ACC} gave

‘As for Mira, John gave a present.’
CHAPTER 4

KOREAN TOUGH CONSTRUCTIONS AS UDCS

4.1 Introduction

In this chapter, we focus on Korean tough constructions (TCs) and examine their grammatical structure. Like Chae (1998), we identify unbounded dependency as a characteristic property of TCs. By taking English TCs to be a sort of weak unbounded dependency construction (UDC), Pollard and Sag (1994) captured the semantic connectivity between the subject and a missing argument in the lexical entries of tough predicates. We will show that a similar syntactic mechanism can be used to capture argument realization in Korean tough constructions.

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 the tough construction. Examples are shown as follows:

(181) This book is easy to read
(182) Kim is hard to persuade people to hire

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 missing object in (181) and (182) do not need to have the same case.

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.

(183) a. i chayjk-i [__j ilk-ki]-ey swipta
    this book-NOM read-NML-for easy
    ‘This book is easy in terms of reading ej.’
b. i chayjk-i [__j ilk-ki]-ka swipta
    this book-NOM read-NML-NOM easy
    ‘This book is easy to read’

(184) a. yengej-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. yengej-ka [honcase __j paywu-ki]-ka elyepta
    English-NOM by oneself learn-NML-NOM hard
    ‘English is hard to learn by oneself’

In (183) and (184), 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 embedded _ki_-marked phrase can be seen as corresponding to English gerunds. We analyze _ki_ as a nominalizing affix, which morphologically attaches to a predicate without changing its VALENCE feature. The resulting phrase can combine with a case marker.
There are two kinds of Korean *tough* constructions, and they can be categorized according to the case marker of the second nominalized argument. As we see in (183) and (184), one kind takes the case marker *ey* and the other takes the 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 differ in other respects to be discussed in detail in the later sections.

The organization of this chapter is as follows: In section 2, we discuss basic properties of Korean TCs and compare them to English ones. Section 3 deals with unbounded dependency and the status of missing elements in Korean TCs. We claim that missing elements in a TC are traces and argue against a null pronominal (or *pro*) analysis. We provide semantic and syntactic evidence, including strong crossover facts, to support our argument. In section 4, we show how 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 the unbounded dependencies in them.

### 4.2 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, goal, etc.

[Dative NP]

(185) a. [Mary-eykey mal-ul kel-ki]-ka elyepta
Mary-to talk-Acc start-NML-NOM hard
‘It is hard to talk to Mary.’
b. Mary-ka [____; mal-ul kel-ki]-ey elyepta.
Mary-NOM talk-ACC start-NML-NOM hard
‘Mary is hard to start talking (to).’

c. Mary-ka [____; mal-ul kel-ki]-ey elyepta.
Mary-NOM talk-ACC start-NML-for hard
(lit.) ‘Mary is hard for starting talking (to).’

[Locative NP]

(186) a. [salamtul-i Lazarus-eyse shyophingha-ki]-ka swipta.
persons-NOM Lazarus-in do shopping-NML-NOM/for easy
‘It is easy for people to do shopping in Lazarus.’

b. Lazarus-ka [____-shyophingha-ki]-ka swipta.
Lazarus-NOM do shopping-NML-NOM easy
‘Lazarus is easy to do shopping (in)’

c. Lazarus-ka [____-shyophingha-ki]-ey swipta.
Lazarus-NOM do shopping-NML-for easy
(lit.) ‘Lazarus is easy for doing shopping (in)’

[Instrumental NP]

(187) a. [yenphil-lo kulssi-lul sseu-ki]-ka himtulta.
pencil-with letters-ACC write-NML-NOM tough
‘It is tough to write letters with a pencil.’

b. yenphil-i [____-kulssi-lul sseu-ki]-ka himtulta.
pencil-NOM letters-ACC write-NML-NOM tough
‘A pencil is tough to write letters (with).’

c. yenphil-i [____-kulssi-lul sseu-ki]-ey himtulta.
pencil-NOM letters-ACC write-NML-for tough
‘A pencil is tough for writing letters (with).’

[Goal NP]

(188) a. [John-i Seoul tayhak-ey tuleka-ki]-ka elyepta.
John-Nom Seoul university-into enter-NML-NOM hard
‘It is hard for John to enter Seoul University.’

Seoul university-NOM John-NOM enter-NML-NOM hard
‘Seoul University is hard for John to enter.’
Second, Korean *tough* predicates subcategorize for so-called nominalized gerund phrases (NGPs) with *ki*. While *ki* NGPs appear in NP positions, including subject, object, or other nominal phrases, the internal argument realization of an NGP is the same as that of a VP or an S. This suggests that NGPs have the status of VPs or Ss. While the suffix *ki* is morphologically attached to the preceding predicate, it marks the whole phrase containing the predicate as one constituent. Later in this chapter, we analyze *ki* as a complementizer that is lexically combined with the preceding predicate.44 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. Despite the similarity between two types of TCs, however, they differ with respect to some grammatical properties.

[1] Argument Realization

*ki-ka* TCs and *ki-ey* TCs show different patterns with respect to argument realization. As in (189) and (190), the nominative NP preceding the *ki-ka* phrase can appear inside of the *ki-ka* phrase. In contrast, *ki-ey* TCs do not allow it.

44The constituency of a VP or an S can be identified by the fact that the whole phrase can be replaced by a pro-verb form *kule-.*

(i) kuleh-ki-ka elyepta.
    do so-NML-NOM hard
    ‘To do so is hard.’
(189) a. kyewul-i [___] swuyeng-ul paywu-ki]-ka himtulta.
    winter-NOM swimming-ACC learn-NML-NOM tough
    (lit.)‘Winter is tough to learn swimming.’

b. [ kyewul-ey swuyeng-ul paywu-ki]-ka himtulta.
    winter-in swimming learn-NML-NOM tough
    ‘It is tough to learn swimming in winter.’

(190) a. yenge-ka [___] paywu-ki]-ka elyepta.
    English-NOM learn-NML-NOM hard
    ‘English is hard to learn.’

b. [ yenge-lul paywu-ki]-ka elyepta.
    English-ACC learn-NML-NOM hard
    ‘It is hard to learn English.’

(191) a. kyewul-i [___] swuyeng-ul paywu-ki]-ey himtulta.
    winter-NOM swimming-ACC learn-NML-at tough
    ‘Winter is tough for learning swimming.’

b. * [ kyewul-ey swuyeng-ul paywu-ki]-ey himtulta.
    winter-in swimming learn-NML-at tough

(192) a. yenge-ka [___] paywu-ki]-ey elyepta.
    English-NOM English-ACC learn-NML-for hard
    ‘English is hard in terms of learning.’

b. * [ yenge-lul paywu-ki]-ey elyepta.
    English-ACC learn-NML-for hard

[2] Correspondence with ki-ka TCs and Double Nominative Constructions

Even though ki-ka TCs have been excluded from discussions of double nominative constructions (DNCs) in previous research, they require two nominative phrases. ki-ey TCs have only one nominative NP. Because ki-ka TCs show a relation between the first NP and the second NP similar to that in DNCs, we argue that ki-ka TCs represent another unrecognized subclass of DNCs.45 Consider the following examples:

45Subclasses of DNCs will be discussed in detail in the next chapter.
(193) a. yenge-ka [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.’

(194) a. yenge-ka [kongpwu-lul ha-ki]-ka swipta.
English-NOM study-ACC do-NML-NOM easy
(lit.) ‘English is easy to do study.’
b. yenge-ka kongpwu-ka swipta.
English-NOM study-NOM easy
‘English is easy to study.’

In examples (193a) and (194a), 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. In (194b), a verbal noun kongpwu ‘study’ appears instead of the nominalized form of a complex predicate. It forms a DNC and its argument is realized as the first subject. The first subject NP yengeka can be considered to be a subcategorized argument of the verbal noun kongpwu in (194b). This parallels the argument relations between the first subject NP and a gap in ki-ka TCs. In contrast, ki-ey TCs do not show this sort of grammatical connection between two case-marked phrases, as we see in (193b).


Semantically, a ki-ey phrase in a TC is interpreted as a goal event that is closely related

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46 Korean complex predicate constructions have been discussed using the argument composition mechanism in Lee (2001).
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 or purpose of’ or ‘in order to satisfy a certain 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. In (195) and (196), 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.

(195) umsik-i [ salamtul-i ____i  mek-ki]-ey/*ka  mocaluta. food-NOM  people-NOM  eat-NML-for/NOM be lacking
‘There is not enough food for people to eat.’

(196) i osj-i [ sensayngnim-i ____i  ip-ki]-ey/*ka  pwucekhaphata. this clothing-NOM  teacher-NOM  wear-NML-for/NOM inappropriate
‘This clothing is inappropriate for a teacher to wear.’

[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.

(197) i osj-i [ John-i ____i  ip-ki]-ey/*ka  khuta. this clothing-NOM  John-NOM  wear-NML-for/NOM big
‘This clothing is too big for John to wear.’

(198) Johnj-i [ ____i  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 (197) and (198), the comparative phrase is an optional element that does not affect the grammaticality of the sentence. It specifies with respect to what standard or purpose the quality denoted by the adjective is possessed to an excessive degree. Gradable adjectives like khuta ‘be tall/big’, elita ‘be young’, and nopta ‘be high’ describe properties that can be possessed to varying degrees.

*ki-ey* phrases express a goal or purpose event type and provide a sort of event comparison set\(^{47}\) for use in evaluating the meaning of the main predicate.

### 4.3 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.

(199) i chayk\(j\)-i \([s\ pwumo-ka\ ai-eykey\ [VP\ ___]\ ilula-ko]\)  
this book-NOM parent-NOM child-to read-COMP  
kwenha-ki]-ey swipta.  
recommend-NML-for easy  
(lit.) ‘This book\(j\) is easy for the parent in terms of recommending to the child to read ___.’

(200) Kim\(j\)-i \([VP\ salamutl-eykey\ [VP\ ___]\ hoycang-ulo\ ppopula-ko]\)  
Kim-NOM people-to president-as elect-COMP  
seltukha-ki]-ey swipta.  
persuade-NML-for easy  
(lit.) ‘Kim\(j\) is easy in terms of persuading people to elect ___ 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*  

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\(^{47}\)Cipollone (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 phrases that appear in *ki-ey* TCs.
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.

As we have seen in chapter 2, whether or not a missing element or a gap is required for the formation of Korean TCs has been controversial. With respect to Korean TCs, Chae (1998) argues that a gap is not required in the complement S or VP. 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.

(201) i chayk-i [ nayyong-ul ihayha-ki]-ka elypeta
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.

(202) ce twukkep-ko elyw-un chayk_j-i [{ Cholswu-ka ku_j that thick-and difficult-REL book-NOM Cholswu-NOM its selon-ul ilkess-tako mit-ki]-ka elyepeta
introduction-ACC read-COMP believe-NML-NOM hard
(lit.) ‘That thick and difficult book is hard to believe that Cholswu read its introductions.’

However, an alternative analysis is that there is a genitive NP gap in the embedded clause of (201), as we see in (203).

(203) a. [ i chayk-uy nayyong-ul ihayha-ki]-ka elypeta.
this book-Gen content-ACC understand-NML-NOM hard

‘It is hard to understand the content of this book.’

b. i chayk_j-i [ ___i nayyong-ul ihayha-ki]-ka/-ey elypeta.
this book-NOM content-ACC understand-NML-NOM/-for hard
(lit.) ‘This book is hard to understand (its) content.’

Chae (1998) points out that the null pronominal can be replaced by an overt pronoun as in (202b). Similarly, gaps in (199) and (200) can be replaced by overt pronouns as in the following examples.
In chapter 2, we have already shown that resumptive pronouns and the long-distance anaphor caki can appear in the position of UDC gaps. In (204) and (205), a dependency holds between the first NP and a resumptive pronoun. In chapter 2, we have already discussed the so-called pro analysis of gaps in topic and relative clause constructions, and we argued that those gaps are not pros but resumptive pronouns corresponding to traces. Resumptive pronouns (RPs) in TCs behave in the same way as RPs in topic and relative clause constructions, which suggests that they belong to the same category of trace. In particular, the distribution of TC gaps and strong crossover facts support our analysis of RPs as overt traces.

**Distribution of Gaps**

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 TCs, a resumptive pronoun tends to occur in a deeply embedded structure as in (204) and (205), but not in a simple TC as in (206) and (207).

(206) *yenge_t-ka [ kukes_t-ul paywu-ki]-ka/ey swipta. English-NOM it-ACC learn-NML-NOM/for easy (lit.) ‘English_t is easy to learn it_t.’
Strong Crossover

TCs observe the strong crossover constraint even if an RP takes the position of a gap. This is shown in (208c).

(208)  a. John-j-i [ salamtul-eykey [ __-j hoycang-ulo chwuchenhalaka-ko] people-to recommend COMP
        seltukha-ki]-ka elyepa. president-as
        seltukha-NML-NOM hard
        (lit.) ‘John_j is hard to persuade people to recommend __-j to be the president’

          seltukha-ki]-ka elyepa. president-as
          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-ju papo-eykey [ ku-ju-lul hoycang-ulo chwuchenhalaka-ko] that idiot-to he-ACC president-to recommend COMP
          seltukha-ki]-ka elyepa. persuade-NML-NOM hard
          (lit.) ‘John_j is hard to persuade him_j/that idiot_j to recommend him_j to be the president.’

As in Chapter 2, we use the epithet ku papo ‘that idiot’, which has the same index value as the preceding subject ku ai, instead of using a pronoun in (208b) and (208c). 48

In addition, the SCO constraint is observed by RPs which are pronominal elements. As we have shown in Chapter 2, SCO effects can be induced without assuming Principle C or condition C that requires the status of traces as nonpronominal elements. The following examples of TCs do not violate the Principle C or the condition C while still showing the SCO effects.

48In Chapter 2, we explained that native speakers can give varying judgments because the intervening pronoun can be interpreted as a resumptive pronoun. The use of an epithet excludes this possibility.
In (209), pronouns in adverbial phrases precede gaps in the *ki-ka* phrases. This triggers SCO effects without involving violations of Principle C or condition C. These examples support our UDC analysis of Korean TCs.

### 4.4 The Formation of Korean TCs

In this section, we present a lexical analysis of the formation of Korean TCs and discuss how to represent the 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.

\[(209)\] a. \(\text{John}_j -i [A_{DP} \text{uywentul}-ul \text{ seltukhay-se}] [v_P e_j \text{hoycang-ulo John-NOM committee members-to persuade-by president-as chwuchenha-ki-ka}] \text{swipta.}
\]

(lit.) John\(_j\) is easy to recommend **j** to be the president by persuading the committee members.

b. * \(\text{John}_j -i [A_{DP} \text{ku}_j/\text{ku} \text{papo}_j-lul \text{ seltukhay-se}] [v_P e_j \text{hoycang-ulo John-NOM he/that idiot-ACC persuade-by president-as chwuchenha-ki]}-\text{ka} \text{swipta.}
\]

(lit.) John\(_j\) is easy to recommend **j** to be the president by persuading him\(_j\)/that idiot\(_j\).

c. * \(\text{John}_j -i [A_{DP} \text{ku}_j/\text{ku} \text{papo}_j-lul \text{ seltukhay-se}] [v_P \text{ku}_j-lul \text{hoycang-ulo John-NOM he/that idiot-ACC persuade-by he-ACC president-as chwuchenha-ki]}-\text{ka} \text{swipta.}
\]

(lit.) John\(_j\) is easy for me to recommend him\(_j\) to be the president by convincing him\(_j\)/that idiot\(_j\).
Tough predicates like swipta ‘easy’, himtulta ‘tough’, and elyepta ‘hard’ subcategorize for a ki-ey phrase in their COMPS list. Following Pollard (1994), we use ARG(ument)-ST(ructure) with the features SUBJ, SPR, and COMPS, just as valence structures do. 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 the 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:

i. 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, or past tense active predicates. The main predicate subcategorizing for an NGP determines whether it selects a ki phrase or an 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 precede ki.
ii. It has been argued that NGPs have dual status: Argument realization of an NGP is the same as that of a VP or an S, but the whole NGP combines with case markers, like NPs.

iii. There are word-level deverbal affixes *ki* and *um* that are 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 have been discussed in Yoon (1996) and Kaiser (1998).49 *ki* and *um* have been respectively distinguished into two different morphemes introducing lexical nominalization and phrasal nominalization.

Only phrasal nominalization involves TCs.

There have been 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 (1998) 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 and combine the affix *ki* with a verbal stem instead of putting it in a separate syntactic node. However, in this approach, it is not quite clear how phrasal affixes and word-level affixes can be differentiated. The third approach is a mixed category analysis of Chung et al. (2001), which is similar to Malouf (2000). They argue that *gerund* is a subtype of *nominal* and

49It has been known that the word-level affix *um* and the phrase-level affix *um* had different forms historically. The term, phrase-level nominalization is based on the fact that a *ki* or *um* marked predicate and its elements form one syntactic constituent.
verb on the basis of the multiple inheritance type hierarchy. Thus, the outer distribution of gerund comes from a nominal property while it inherits its part of speech value from verb. However, the analysis of Chung et al. (2001) is not so clear as to how the sort gerund can be defined in terms of multiple inheritance type hierarchy without assuming an independent syntactic category of gerund. Following Occam’s razor, we argue that the formation of Korean NGPs can be accounted for without introducing mixed categories.

As for phrase-level ‘ki’ phrases, we claim that Korean NGPs have the syntactic category of VP or S instead of a mixed category. The morpho-syntactically nominalizing complementizer ‘ki’ attaches to the stem of a predicate. This allows the whole VP or S to appear in as a subject, object, or other nominal element.50 One might reject the VP analysis of Korean NGPs because ki phrases combine with the case markers, which are usually thought to follow nominal elements. However, case markers can be morphologically combined with verbal predicates as well as nominal elements. Let us consider the following examples.

(211) na-nun [ John-i nwukwu-lul tayli-ess-nay]-ka kwungkumhata.
    I-TOP John-NOM who-ACC hit-PAST-Ending-NOM wonder
    ‘I wonder who John hit.’

(212) Mary-ka [ Sora-ka wu-nun-ci]-lul molunta.
    Mary-NOM Sora-NOM cry-PRES-Ending-ACC not know
    ‘Mary does not know that Sora cries.’

In (211) and (212), the main predicates subcategorize for embedded phrases VP or S, which do not have nominalizers, and the embedded phrases end with verbs with endings nay and ci. In these examples, the whole embedded phrase can stand alone as a complete sentence and a case marker is morphologically attached to the embedded predicate. However, these VPs or Ss do not have any head nouns, so they cannot be analyzed as NPs. The

50Semantically, a nominalizer adds a specific meaning to its combining category, which explains the meaning difference between ki and um nominalized phrases.
fact that *ki* phrases can be combined with case markers seems to be weak evidence for the NP analysis. Another piece of counter-evidence against the NP analysis of Korean NGPs can be found in the fact that Korean NGPs do not show any change in the VALENCE feature of the predicate, unlike English NGPs; the genitive NP does not appear as the subject of the *ki* or *um* marked phrase. Moreover, *ki* phrases can be modified by adverbs but not by nominal modifiers. The internal properties of gerunds as verbs have been discussed in Chung et al. (2001). The VP analysis of NGPs as NPs can be supported by morphosyntactic properties of complementizers in 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 makes the whole phrase or sentence work as a relative clause or an adverbial clause, as in (213).

(213) [s John-i *e* tstk-iss-nun] umak
     John-NOM listen-PRES-REL music
     ‘the music that John is listening to.’

(214) Mary-ka [s hanul-i *cal* poi-key] yulichang-ul takassta.
     Mary-NOM sky-NOM well be seen-Adv window-ACC wiped
     ‘Mary wiped the window clean to see the sky well.’

Even though a relativizer *nun* or an adverbializer *key* changes the syntactic function of its combining phrasal categories by allowing the whole phrase to work as a modifier as in

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51 In this respect, my intuition does not accord with Yoon (1996), Kaiser (1998), and Chung et al. (2001). Thus, the following sentence is ungrammatical.

i. *John-uy pap-ul mek-um*
   John-GENmeal-ACCeat-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-GENdeath
    ‘John’s death’

We do not consider NGPs with the genitive subject to be grammatical examples.
(213) and (214), they do not change the internal syntactic structure of the whole phrase. The grammatical function of these complementizers is similar to the complementizer *that* in English, which appears with an S in subject and object position. The difference is that Korean complementizers are morphologically bound to the stem of the main predicate in a sentence. The complementizers contribute to mark the clausal boundaries. In order to capture this fact in Korean, 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 as follows.

\[
(215) \left[ \text{ss loc cat} \left[ \text{head} \left[ \text{verb} \text{mark} \text{unmarked} \right] \right] \right] \rightarrow \left[ \text{ss loc cat} \left[ \text{head} \left[ \text{verb} \text{mark} \text{ki gerund} \right] \right] \right]
\]

As mentioned in Chapter 1, we argue that the CASE feature is not a HEAD feature of *noun* in Korean; case markers follow verbs, adjectives, or adverbs, which morphologically combine with complementizers as we have seen in (211) and (212). In Korean, case markers are analyzed as phrasal affixes that morphologically combine with NPs and some VPs or Ss having specific endings in Korean.

In *ki-ka* TCs, there are two phrases taking the nominative case *kali*. 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 (216). Unlike *ki-ey* phrases, *ki-ka* phrases appear in the SUBJ list of the predicate because they take the nominative case. Thus, (216) contrasts with (210) in that there are two elements in the SUBJ list of *swipta* ‘easy’ in (216).
Each exemplar structure of *ki-ey* TCs and *ki-ka* TCs can be presented as follows.\footnote{Unlike English, Korean adjectives appear without the predicate ‘be’, so there is not much of a grammatical difference between intransitive verbs and adjectives. Yoo (1996) argues that Korean adjectives behave as predicates like verbs. Instead of using VP as the predicate phrasal category in a sentence, we will use AP that percolates the HEAD feature A, for adjectives in Korean.}
As we see in the given structures, *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. The difference between *ki-ey* and *ki-ka* TCs is represented by the VALENCE feature of *swipta*; while the *ki-ey* phrase is required as a complement in (217), the *ki-ka* phrase is required as a subject in (218). In both structures, the percolated SLASH value is discharged by the TO-BIND|SLASH value of *swipta*. 
4.5 Conclusion

In this chapter, 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. Furthermore, resumptive pronouns behave in the same way as traces with respect to their distribution, strong crossover, and coordination. This phenomenon accords with analysis of resumptive pronouns as traces. 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.
CHAPTER 5

DOUBLE NOMINATIVE CONSTRUCTIONS

5.1 Introduction

We provided a lexical analysis of Korean TCs in chapter 4. Here we expand it to account for the formation of certain Korean double nominative constructions (DNCs). In chapter 4, unbounded dependency was identified as a characteristic property of Korean TCs. Following Pollard and Sag (1994), we used non-local SLASH feature percolation and binding to capture the relationship of the arguments within TCs. In this chapter, we argue that the same mechanism can account for the relationship between arguments in DNCs. Before taking a closer look at the similarities between TCs and certain DNCs, we provide a detailed classification of DNCs.

In previous literature, the formation of DNCs in languages such as Korean and Japanese has been considered a puzzling phenomenon. DNCs and more generally multiple nominative constructions (MNCs) include different subclasses with different grammatical relationships among arguments. After discussing the classification and properties of various DNCs, we will survey previous approaches and some of their problems in 5.2. 5.3 will show that some DNCs have syntactic and semantic properties similar to those of the Korean TCs that we examined in Chapter 4. This suggests that a lexical analysis of Korean TCs can be also
used for DNCs. Furthermore, we present lexical constraints that handle the formation of a certain type of DNCs and that capture a close relationship between single nominative constructions and DNCs.

### 5.2 Classification of DNCs

Korean DNCs include subclasses with different argument relations. Various approaches have been taken to account for the formation of DNCs. In particular, most analyses within GB theory and the minimalist programs have used a transformational mechanism to account for the formation of DNCs and MNCs. As representative examples, Kim (1990) and Yoon (1989) argue that an NP in the position of the genitive NP moves to the first subject because it gets a focus interpretation. These approaches have mainly focused on properties of NP subjects that occur with inalienable possession, kinship, and social relationship terms as in the following examples.

(219) John-i son-i cakta. (Inalienable Possession)
      John-NOM hand-NOM small
      ‘John has small hands.’

(220) Mira-ka apeci-ka puwca-ta. (Kinship Relation)
      Mira-NOM father-NOM a rich-END
      ‘Mira has a rich father.’

(221) Kim-i chinkwu-ka manhi aphuta. (Social Relation)
      Kim-NOM -NOMfriend-NOM very sick
      ‘Kim has a friend who is very sick.’

However, argument realization in DNCs varies. As a result, their structural analyses may differ as Nam and Ko (1987) and Kim (2000) have noted. Nam and Ko point out that whereas psych-predicates form pseudo-DNCs by taking two nominative NPs, the second NP does not function as a subject but as a complement. The same observation has been made by Kim (2000). Specifically (222a) corresponds to the transitive sentence, (222b).
a. Kim-i tongsyang-i mipta.
   Kim-NOM brother-NOM hateful
   ‘To Kim, his brother is hateful.’

   Kim-NOM brother-ACC hate

The nominative NP tongsayng-i in (222a) corresponds to the object tongsayng-ul in (222b). Morphologically the adjective mipta is related to the derived verb form miwehata. Semantically, however, (222b) implies stronger involvement of the subject NP than (222a). In (222a), the second nominative NP is closer to the object in terms of its semantic role; the second subject NP is an affected object by the action or state of the subject NP. The same pattern appears with respect to other psych-adjective constructions. Thus, this type of DNC forms a separate class from other DNCs.

There exist, however, even more constructions that have been excluded or ignored in the discussion of DNCs. In order to provide an accurate structural analysis of DNCs, we need to show a detailed classification of them. First, we broadly distinguish DNCs into three types on the basis of subcategorization properties that hold between the predicate and the subject: Type I, Type II, Type III. Then, we divide each type into subtypes according to the various semantic relationships of the nominative NPs.

Type I DNCs include examples that correspond to single subject constructions. In these constructions, the first subject NP corresponds to the genitive NP. The main predicate does not subcategorize the first subject NP as its argument. Thus, there is no subcategorization relation between the main predicate and the first subject NP.

In Type II DNCs, the two nominative NPs are separately subcategorized for by the predicate as arguments. Omitting one nominative NP causes ungrammaticality.

Type III DNCs are similar to Type I in that the main predicates only subcategorize for the second subject NP. In these constructions, there is a semantic relation of class vs.
member between the first NP and the second NP. However, these constructions do not show a correspondence with single subject constructions.

The formation of DNCs is allowed for so-called unaccusative predicates, including adjectives, copula *be*, and stative verbs. Unaccusative predicates in Korean do not allow accusative NPs as complements and their subjects show less agentivity compared to subjects in transitive verb constructions. For example, the unaccusative predicate cannot be combined with adverbs like *ilpwule* ‘intentionally’, or *capalcekulo* ‘voluntarily,’ which imply intentional or active involvement of the subject NP. This is shown in the following examples.

   Kim-GEN friend-NOM intentionally very sick
   ‘Kim’s friend is intentionally very sick.’

   Kim-NOM friend-NOM voluntarily very sick
   ‘Kim has a friend who is sick voluntarily.’

The lack of agentivity in (223) can be characterized in terms of Dowty’s (1991) Proto-Roles. According to Dowty, grammatical argument realization of subjects and objects is based on two contrastive semantic role types, Proto-Agent and Proto-Patient. He provides semantic entailments for each and suggests that the class of unaccusative verbs has as a semantic property that verbs in this class with a Proto-Patient role in the subject position.

Based on Proto-Role theory, we define unaccusative predicates in Korean as predicates requiring a Proto-Patient element in subject position.53

53 Unaccusative predicates forming DNCs also belong to the semantic category of individual-level predicates. Carlson (1977) distinguishes two types of predicates: stage-level predicates and individual-level predicates. Stage level predicates are commonly understood to express temporary states such as ‘tired, nervous, hungry, etc.’ Individual-level predicates express permanent and inherent properties such as ‘smart, blond, a linguist, etc.’. Kim (2000) argues that individual-level predicates license the formation of DNCs. However, many stage-level predicates such as *wwulhayhata* ‘feel gloomy’, *aphuta* ‘sick’, and *salta* ‘live’ also license DNCs. Some examples are given in (i).
The sub-classification of each DNC type is presented as follows.

[1] TYPE I

This type can be divided into four subclasses on the basis of the semantic relationship between the two NPs: whole-part, relation, possessor-possessed, and verbal noun constructions.

1) Whole-part Constructions

The second NP refers to a part of the first NP. This kind of relation has been referred to as inalienable possession and is strictly restricted to body part relations.

John-GEN hands-NOM small
‘John’s hands are small.’

John-NOM hands-NOM small
‘John has small hands.’

Mira-GEN face-NOM pretty
‘Mira’s face is pretty.’

b. Mira-ka elkwul-i yepputa.
John-NOM face-NOM pretty
‘Mira has a pretty face.’

(i) a. Mira-ka emenika wuwulhayha-si-n-ta.
Mira-NOM mother-NOM feel gloomy-HON-PRES-END
‘Mira has a mother, who feels gloomy.’

John-NOM girlfriend-NOM sick
‘John has a girlfriend who is sick.’

c. ku haysayng-i apeci-ka Seoul-ey santa.
that student-NOM father-NOM Seoul-in live-PRES-END
‘That student has a father, who lives in Seoul.’
2) Relation Constructions

These are DNCs in which a relational nominal, including kinship terms and personal or social relationship terms, appears as the second NP.

   John-GEN son-NOM short
   ‘John’s son is short’

   John-NOM son-NOM short
   ‘John has a short son.’

   John-GEN teacher-NOM short
   ‘Yumi’s teacher is famous.’

b. Yumi-i sensayngnim-i cakta.
   John-NOM teacher-NOM famous.
   ‘Yumi has a famous teacher.’

3) Possessor-possessed Constructions

In these DNCs, the first NP is a possessor and the second NP is a possession. This subclass is closely related to the whole-part constructions, but it includes more abstract relations of possession other than the body-part relation.

   John-GEN house-NOM small
   ‘John’s house is small’

   John-NOM house-NOM small
   ‘John has a small house.’

4) Verbal-noun Constructions

The first NP is an argument of the second NP, which is a verbal noun. A verbal noun, generally borrowed from a verb of Chinese or a foreign language, subcategorizes for arguments as a predicate.
The general assumption in the previous literature has been that all types of DNCs are expanded to multiple nominative constructions (MNCs) by adding more subject NPs. However, only whole-part and relation constructions of Type I DNCs expand to MNCs with more than two semantically related NPs.

[2] TYPE II

In Type II DNCs, two NPs are separately required by a predicate. This type is divided into two classes; the first includes locative subject constructions and the second includes nominative NP constructions.

1) Locative Subject Constructions

The first nominative NP corresponds to a Locative or Experiencer NP that can take ey (at) and eykey (to) instead of nominative case.

(230) a. i san-ey namwu-ka manhta.
this mountain-at trees-NOM abundant
‘There are many trees at this mountain.’

b. i san-i namwu-ka manhta.
this mountain-NOM trees-NOM abundant
‘This mountain has many trees.’
John-To worry-NOM become-to-exist
(lit.) ‘To John, there happen to be some worries.’
John-NOM worry-NOM become-to-exist
‘John has some worries.’

2) Nominative Object Constructions

These predicates require two nominative NPs, and those NPs cannot take any other case marker. As we mentioned earlier, the second NP in this type works like an object. This type includes so-called psych-adjectives, as in (5.2), and two-place predicates like anita (be-not) and toyta (become).

John-NOM Mary-NOM be fond of
‘John is fond of Mary’
b. nay-ka tongsaying-i mipta.
I-NOM brother-NOM hate
‘I hate my brother.’

John-NOM singer-NOM be-not
‘John is not a singer.’
b. Mary-ka uysa-ka toyessta.
Mary-NOM doctor-NOM became
‘Mary became a doctor.’

[3] TYPE III

There are two subclasses in Type III DNCs; namely, class-member constructions and classifier constructions.54

54 Another relation can be found in the following examples. The first subject refers to an entity with a general property. The second subject is formed by a nominal ‘kes’(thing) and a relative clause that provides more specific properties of the first subject. The second NP is considered an adjunct phrase that is added to specify the properties of the first NP.
1) Class-member Constructions

In this type, two NPs have the taxonomic relation of class and subclass. In other words, the second NP is a hyponym of the first NP. In general, the first NP, which has been analyzed as a base-generated topic, can also take the topic marker un/nun. The second nominals are members of the sets of the first nominals. As shown in (234), kwail ‘fruit’ belongs to the set of sakwa ‘apple’.

(234) a. kwail-i sakwa-ka masissta.
    fruit-NOM apples-NOM tasty
    (lit.) ‘As for fruit, apples are tasty.’

b. * kwail-uy sakwa-ka masissta.
    fruit-GEN apples-NOM tasty
    (lit.) ‘As for fruit, apples are tasty.’

2) Classifier (Cl) Constructions

A classifier phrase, which is composed of a number and a classifier, appears in the position of the second NP and modifies the first NP. A classifier phrase can precede the first NP by taking the genitive case marker. However, it cannot precede the first NP when it has the nominative case marker.

(235) a. twu-kay-uy sakwa-ka ssekessta.
    two-Clf-nom apples-NOM rotten
    ‘Two apples are rotten.’

b. sakwa-ka twu-kay-ka ssekessta.
    apples-NOM two-Cl-NOM rotten
    ‘Two of the apples are rotten.’

(i) a. chengnyen-i-ka [ yeuy-ka palu-n] kes-i calsayngkyessta.
    young man-NOM manners-NOM good-REL thing-NOM handsome
    ‘The young man, who has good manners, is handsome.’

b. Mira-i-ka [ ca-ko malun] kes-i acwu cal ttyinta
    Mira-NOM little-and thin thing-NOM very well run
    ‘Mira, who is little and thin, runs very well.’
Based on this classification of DNCs, we argue that Type I DNCs include *ki-ka* TCs as a subclass and that the analysis of *ki-ka* TCs can be applied to them. We discuss these similarities in detail in section 3. Before we get into that, however, we review previous approaches to the formation of DNCs.

### 5.3 Previous Approaches

Because of the unique syntactic and semantic properties of DNCs, there have been many previous studies regarding their formation. These studies include MNCs in their accounts. The main approaches can be divided into three groups: transformation-based analyses, semantic binding analyses, and constraint-based analyses.55 We go through the different approaches and present the relevant problems.

#### 5.3.1 Transformation-Based Analyses

Within GB theory and minimalist programs, it has been generally assumed that the first subject NP moves from the genitive NP position or from inside VP. Kang (1986), Kim (1994), Yoon (1989), and Kim (1990), among others, propose the following kind of movement process for the first subject in (236a) and (236b).

(236) a. \[ [N_P \text{ Mina-uy emeni}-ka \text{ tolakiessta}] \]
    Mina-GEN mother-NOM passed away
    ‘Mina’s mother passed away.’

b. \[ N_P [s \text{ Mina}-ka \text{ emeni}-ka \text{ tolakiessta}] \]
    Mina-NOM mother-NOM passed away
    ‘Mina had her mother pass away.’

Ura (1996) and Yang (1993) also base their accounts on the minimalist program, but they assume possessor-raising that moves an NP out of the host NP for the formation of

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Japanese and Korean DNCs. According to the movement hypothesis, there need be no difference between single nominative constructions (SNCs) and DNCs except for the number of nominative NPs. However, as pointed out by Yoon (1987) and Kim (2000), SNCs and DNCs show different interpretations in an idiomatic reading. This is shown in the following example.\(^{56}\)

(237) a.  [ Jiwoo-uy pal]-i nelpta.
    Jiwoo-GEN feet-NOM big.
        ‘Jiwoo’s feet are wide.’
    b.  Jiwoo-ka [ pal-i nelpta ].
        Jiwoo-NOM feet-NOM big
            ‘Jiwoo has wide feet.’
    (lit.) ‘Jiwoo is a well-connected person’

Different interpretations between DNCs and SNCs are also found with non-idiomatic expressions. Consider the following examples.

(238) a.  Shakespeare-uy yenkuk-i yumyenghata.
    Shakespeare-GEN play-NOM famous
        ‘Shakespeare’s play is famous.’
    b.  Shakespear-ka yenkuk-i yumyenghata.
        Shakespear-NOM play-NOM famous
            ‘Shakespeare is famous for his play.’

(238a) provides a neutral description about Shakespeare’s play, while (238b) implies that there is some play that makes Shakespeare famous among other works such as poems.

\(^{56}\)Kim (2000) also points out that adverb insertion is only allowed for DNCs, not for corresponding SNCs as in (i).

    Mina-GEN yesterday mother-NOM passed away
        ‘Mina’s mother passed away yesterday.’
    b.  Mina-ka ecey emeni-ka talakasiesssta.
        Mina-NOM yesterday mother-NOM passed away
            ‘Mina had her mother passed away yesterday.’
criticisms, etc. In addition, as noted in Na and Huck (1993) and Kim (2000), there are
DNCs like the type III that we have seen, but that have no corresponding single subject
counterparts. However, these kinds of constructions have not received much attention in
transformational approaches to DNCs.

5.3.2 Semantic Binding Analyses

Instead of using movement, Kang (1988), Park (1982), and Yoon (1987) assume base-
generated structure for DNCs. They assume that semantic binding holds between the first
NP and an empty element, pro, inside of the second NP. While focusing on the possessor-
possessed relationship in DNCs, semantic binding approaches relegate the relation of two
nominals to pragmatic and semantic factors. They argue that a pro element in the specifier
position of the second NP is bound by the first NP. However, the semantic or pragmatic rela-
tions assumed by these semantic binding approaches incorrectly predict that the following
sentences should be grammatical.

(239) * John_{1}-i [pro_{j} kulim]-i mesjita.
    John-NOM picture-NOM splendid
(240) * haksayng_{i} [pro_{j} emeni-ka] phyenchanhusita
    student-NOM mother-NOM sick

If a pro refers to John’s mother in (239), there is a close relation between the first subject
and the second subject. This is also true if a pro refers to a student’s friend in (240). In
both cases, the sentences are predicted be grammatical. Because the condition that there be
a close semantic relation between two nominals has been satisfied according to semantic
binding analyses.

In addition, semantic binding is not enough to capture the connectivity holding between
two NPs that do not belong to the same local domain. In DNCs, the two subject NPs do not
form a constituent; the first subject NP appears in a higher syntactic position than the second subject. This can be confirmed by using pro-form substitution. In the given examples, the proform kulay replaces nwun-i khuta ‘Eyes are big.’ This shows the constituency of the second subject and the predicate.

    John-NOM eyes-NOM big
    ‘John has big eyes.’

    b. Mira-to kulay.
    Mira-also does so
    ‘Mira does so.’

Semantic binding approaches have mostly focused on DNCs with possessor-possessed relations. However, there are other DNCs that belong to the same category of possessor-possessed constructions, but that have different semantic and syntactic relations between the subjects. Examples include the verbal noun constructions that we have shown. In this type of DNC, we can assume there is a gap in the specifier position of the second NP. However, it is hard to capture the tight syntactic and semantic connectivity between the two nominative NPs with semantic binding.

In Chapters 2 and 4 we showed that pro binding analysis does not properly handle Korean UDCs. UDC gaps show strong connectivity between a gap and its coreferential element. Thus, their dependencies need to be captured by a syntactic mechanism. We argue that a mechanism of non-local feature percolation handles the necessary binding facts in DNCs, although most dependencies in DNCs tend to be local due to the close semantic relation between two nominative NPs.
5.3.3 Constraint-Based Analyses

Working within the HPSG framework, Kim (2001) distinguishes DNCs into three classes, whole-part constructions, focus constructions, and psych constructions, as in (242). He further argues that all three types of DNCs have different syntactic structures.57

(242) a. John-i son-i khu-ta. [whole-part construction]
   John-NOM hand-NOM big
   ‘John has big hands.’

b. John-i emeni-ka chincelha-si-ta. [focus construction]
   John-NOM mother-NOM kind-HON-END
   ‘John’s mother is kind.’

c. John-i Mary-ka coh-ta. [psych construction]
   John-NOM Mary-NOM be fond of
   ‘John is fond of Mary.’

In particular, Kim claims that in whole-part constructions the first NP is the subject and the second NP is a VP specifier, while in focus constructions the first NP is a focused element and the second NP is the subject. This distinction is the same as presented in O’Grady (1991), which distinguishes whole-part and focus constructions within categorial grammar. In addition, both O’Grady (1991) and Kim (2000, 2001) consider psych-predicate constructions to be separate constructions from those three types of DNCs.

Our DNC classification is compatible with Kim’s (2000) analysis in that psych constructions form a separate class of DNCs, while our classification includes different classes of DNCs. In addition, we analyze whole-part and focus constructions as belonging to the same class, which contrasts with Kim’s (2001) strict classification of whole-part constructions as distinct from focus constructions.

Kim (2001) distinguishes whole-part constructions and focus constructions by arguing that the second NP of focus constructions is the subject only in focus constructions, not in

57Kim (2000) excluded the psych-predicate construction as a separate construction.
whole-part constructions. In order to support the subjecthood of the second NP in focus constructions, he provides evidence of subject sensitivity to honorification, binding, control, and plural marker copying. We can summarize Kim’s arguments as follows.

[1] Honorification

In Korean, an honorific marker -si- attaches to the main predicate when the subject NP has an honorific property. According to Kim, the second NP in focus constructions controls the honorific marker attachment to the predicate, and it can carry the nominative honorific marker -kkeyse, as in (244). In contrast, in whole-part constructions only the first NP controls and carries honorific markers, as in (243)

(243) sensyng-nim-kkese elkwal-i yeppu-si-ta. (whole-part)
    teacher-HON-NOM face-NOM pretty-HON-END
    ‘The teacher’s face is pretty.’

(244) * sensayng-nim-i ttal-i yeppu-si-ta. (focus)
    teacher-HON-NOM daughter-NOM pretty-HON-END
    ‘The teacher’s daughter is pretty.’

[2] Binding

Kim assumes that reflexive caki is normally bound by the subject NP in Korean. Based on this, he points out that in the whole-part pattern of 245) the first NP can serve as the antecedent of the anaphor caki. In the focus pattern, the antecedent tends to be the second NP as in (246).

(245) Maryi-ka nwun-i caki pan-eyse ceyil yeypputa.
    Mary-NOM eyes-NOM self class-in most pretty
    ‘Mary’s eyes are the prettiest in her class.’

(246) sensayngnim-i ttal-i caki/s, j pan-eyse ceyil yeypputa.
    teacher-NOM daughter-NOM self class-LOC pretty
    ‘The teacher’s daughter is the prettiest in her class.’
According to Kim, the unrealized subject PRO in (247) is always controlled by the first NP. In contrast, the unrealized subject PRO of the embedded clause in (248) is controlled not by the first NP but by the second NP.

Mary-NOM face-NOM pretty-become-COMP tried.
‘Mary₁ tried (PRO₁) to have a pretty face.’

(248) Mary$j$-ka tongsayng$_j$-i [ PRO$_i$/*$j$ yeppu-e-cilye-ko] nolyekayessta.
Mary-NOM sister-NOM pretty-become-COMP tried
‘It is Mary whose sister tried (PRO$_i$/*$j$) to have a pretty face.’

Unfortunately, Kim’s equi-constructions do not work with other whole-part DNCs as in the following example.

(249) * Mary-ka [ PRO$_i$ son-i caka-cilye-ko] nolyekhayessta.
Mary-NOM hands-NOM small-become-COMP tried.
‘Mary$_i$ tried (PRO$_i$) to have small hands.’

(250) * Jonn$_i$-i [ PRO$_i$ pal-i khe-cilye-ko] nolyekhayessta.
John-NOM feet-NOM big-become-COMP tried.
‘John$_i$ tried (PRO$_i$) to have wide feet.’

The ungrammaticality of (249) and (250) is related to semantic properties of predicates in DNCs. As mentioned before, DNCs are allowed for unaccusative predicates. In equi-constructions, however, there is a restriction that embedded predicates must be active predicates having an agentive subject. Because DNC predicates do not include active predicates, they do not normally appear in equi-constructions. Thus, it is not proper to use equi-constructions as supporting evidence for subjecthood of DNCs.
[4] Plural Copying

A plural subject can trigger the plural marker *tul* to attach to other constituents of a sentence. Kim argues that the plural marker in the second NP in focus constructions can trigger its re-occurrence on the adverbial element *acwu* ‘very’. In contrast, the first NP cannot.

    John-NOM friends-PL very-PL good  
    ‘It is John whose friends are really good.’

(252)  * Haksayng-tul-i emeni-ka acwu-tul cohusita.  
    student-PL-NOM mother-NOM good  
    ‘It is students whose mothers are really good.’

Based on the given evidence, Kim provides different structures for the whole-part and focus constructions. According to him, the whole-part construction has a structure in which the second NP serves as a VP modifier, while it is selected as a specifier by the first NP. He added semantic relationship between the first and the second NP as the values of a RESTRICTION feature. Kim’s examplar structure of the whole-part pattern is given in (254).

(253) John-i nwun-i cohta.  
    John-NOM eyes-NOM good  
    ‘John has good eyes.’
In the structure of whole-part constructions, Kim analyzes the second NP as a modifier of a VP. In addition, there is semantic coindexing between the SPECIFIER of the second NP and the SUBJECT of the VP.\textsuperscript{58} For focus constructions, Kim (2001) provides the Head-Focus Schema in (255a) and adopts the feature attribute INFO-STR(UCTURE)|FOC(US) of Elizabeth and Vallduvi (1996). According to him, INFO-STR|FOC integrates focus

\textsuperscript{58}The given structure in (254) is based on the following lexical entry of the so-called inalienable noun, \textit{nwun} ‘eyes’.
information into grammar. For an illustration, he presents the structure of focus DNCs as in (255b)

\[(255) \quad \begin{align*}
\text{a.} & \quad \mathcal{S} \left[ \text{SPR \_INFO-STR\_FOC} \begin{array}{c} \mathbf{B} \\ \mathbf{A} \end{array} \right] \Rightarrow \mathcal{N} \left[ \text{MARKER \_i\_ka} \right], \mathcal{S} \left[ \text{INFOR-STR\_FOC} \begin{array}{c} \mathbf{A} \\ \mathbf{B} \end{array} \right] \\
\text{b.} & \quad \mathcal{S} \left[ \text{head-focus-ph} \_FOCUS \begin{array}{c} \mathbf{B} \end{array} \right] \\
& \quad \mathcal{N} \left[ \text{FOCUS} \begin{array}{c} \mathbf{B} \end{array} \right] \\
& \quad \text{John-i} \left[ \text{head-subj-ph} \_SPR \begin{array}{c} \mathbf{B} \end{array} \right] \\
& \quad \text{emeni-ka} \left[ \text{comps} \_SPR \begin{array}{c} \mathbf{B} \end{array} \right] \\
& \quad \text{cohta} \left[ \text{verb} \_SPR \begin{array}{c} \mathbf{B} \end{array} \_SUBJ \_COMPS \_SPR \begin{array}{c} \mathbf{B} \_SPR \begin{array}{c} \mathbf{B} \end{array} \right] \right] \right] 
\end{align*}\]

Kim’s argument for distinguishing whole-part DNCs and focus DNCs is based on his observation that the first NP does not show subjecthood. However, there are counter-examples showing that the first NP of focus constructions has subjecthood properties. This casts doubt on Kim’s analysis separating whole-part vs. focus constructions. Consider the following examples contradicting Kim’s argument.
[1] Honorification

Although the second NP seems to be directly related to the predicate in DNCs, the first NP can also control the appearance of honorific markers in focus constructions.

(256) sensayng-nim-kkeyse cokha-ka wekyokwan-i-si-ta.
     teacher-HON-HON nephew-NOM diplomat-COP-HON-END
     ‘The teacher has a nephew who is a diplomat.’

(257) sensayngnim-kkese ttanim-i yeppu-si-ta.
     teacher-HON daughter-NOM pretty-HON-END
     ‘The teacher has a daughter who is pretty.’

In Korean, honorification is related to various pragmatic and semantic factors. In particular, when the first NP refers to an individual in a higher social position, it is common to use an honorific expression in the position of the second NP, as shown in (257). This suggests that the first NP controls the appearance of an honorific expression. It also suggests that honorification supports the subjecthood of the second and first NPs.

[2] Binding

Although Kim argues that reflexive caki is bound by the second NP in focus constructions, the following examples show that it can be bound by the first. Thus, caki binding does not support the subjecthood of the second NP.

(258) Sangwu-ka yetongsayng-i caki-pan-eyse ceyil yepputa.
     Sangwu-NOM sister-NOM self/$_j$ most pretty
     ‘Sangwu has a sister who is the prettiest in his/her class.’

[3] Plural Copying

The first plural NP can trigger a plural marker to appear in other elements, including within an adverb in focus constructions. This shows that the first NP works as the subject.

(259) haksayng-tul-i emeni-ka kyongcanghi-tul kenkanghasita.
     student-PL-NOM mother-NOM very-PL healthy
     ‘It is students’ mothers who are very healthy.’
(260) kwuin-tul-i casik-i acwu-tul ssikssikhata.  
soldier-PL-NOM kid-NOM very-PL energetic
‘It is soldiers’ kids who are very energetic.’

In sum, the given counter-examples show that the first NP of focus constructions behave in parallel to the first NP of whole-part constructions with respect to honorification, binding, and plural copying. However, the two constructions can be distinguished in terms of different semantic relationship between the nominative NPs.

According to Kim’s analysis, the NP son-i is the subject of the predicate in (261a), while it is a modifier in (261b).

(261) a. Yumi-uy son-i yepputa.  
Yumi-GEN hand-NOM pretty
‘Yumi’s hands are pretty.’

b. Yumi-ka son-i yepputa.  
Yumi-NOM hand-NOM pretty.
‘Yumi has pretty hands.’

In addition, Kim argues that the nominative case marker in Korean functions as a focus marker and that the first NP of focus DNCs receives the focus interpretation. However, in DNCs two NPs appear with nominative case and it is is hard to determine which NP is focused.\footnote{\textsuperscript{59}} Therefore, we argue that while the whole-part and focus constructions have

\footnote{\textsuperscript{59}Kim points out that only the first NP in focus constructions can be a wh-question as in (i).}

(i) nwuka apeci-ka kyoswu-i-si-ni?  
who father-NOM professor-COP-HON-Q
‘Whose father is a professor?’

However, the second NPs of focus DNCs can be also wh-questioned in terms of kwuka ‘who’ as in (ii) and (iii).

(ii) Yumi-ka pwumonim kwunthey nwuka kyoswu-i-si-ni?  
Yumi-NOM parents between who professor-COP-HON-Q
‘Between Yumi’s parents, who is a professor?’
different semantic properties, they form subclasses of the same DNC class, one which is represented by the same syntactic mechanism and structure. In the next section, we show that there is a close relationship between Type I DNCs and *ki-ka* TCs. This suggests that our analysis of *tough* constructions extends to Type I DNCs.

### 5.4 Similarities of Type I DNCs and *ki-ka* TCs

Among the various DNCs, Type I DNCs show syntactic and semantic behaviors that are similar to *ki-ka* TCs. This suggests that *ki-ka* TCs form another subclass of Type I DNCs, even though they have been excluded from the list of DNCs in previous research on Korean DNCs. Consider the following properties.

**Connectivity of Arguments**

As in TCs, there is a semantic connectivity between the first NP and a missing element of the second NP in DNCs.

(262)  
\[
\text{i sacen}_j\text{-i} \quad [\quad \text{sayongha-ki}\text{-ka} \text{ swipta}. \\
\text{this dictionary-NOM} \quad \text{use-NML-NOM} \quad \text{easy} \\
\text{‘This dictionary is easy to use.’}
\]

(263)  
\[
\text{i sacen}_j\text{-i} \quad [\quad \text{sayongpep}\text{-i} \text{ swipta}. \\
\text{this dictionary-NOM} \quad \text{usage-NOM} \quad \text{easy} \\
\text{(lit.) ‘This dictionary has easy usage.’}
\]

**Scrambling**

The second NP cannot precede the first NP in both TCs and DNCs.

(iii)  
\[
\text{Yumi-ka} \quad \text{cinan} \text{ cwu-ey} \text{ mwuka-ka} \text{ tolaka-si-ess-ni?} \\
\text{Yumi-NOM} \quad \text{last} \quad \text{week-in} \quad \text{who} \quad \text{die-HON-PAST-Q} \\
\text{(lit.) ‘Who did Yumi have pass away last week?’}
\]

142
Relativization

In ki-ka TCs and Type 1 DNCs, the second nominative phrase cannot be the head noun of a relativized construction, but the first one can.

This fact can be accounted for by assuming an intimate constituency in which the second nominative NP and the following predicate form a sort of a complex predicate. We will present the syntactic structure of DNCs in the following section.

Long-distance Dependency

As we have seen, there is a long-distance dependency between the first NP and the second NGP in ki-ka TCs. This kind of dependency can be found in the following Type 1 DNCs.
Kim- NOM people-to president-as elect-COMP seltukha-ki]-ey swipta. 
(lit.) 'Kim is easy in terms of persuading people to elect to be the president.'

The process of electing Kim as president was tough for the people.'

Additional examples showing long-distance dependencies are given as follows.

Yesterday, the woman lost the man who she loved.'

'With respect to English, there is a strong tendency that parents emphasize their kids to study (it i).'

In the given examples, the first subject NP is required to bind a gap in the relative clause of the second NP.

This kind of long-distance dependency has not been reported in previous research on Korean DNCs. In most studies, the first NP has been considered to appear in the specifier position of the second NP in single nominative constructions. However, as we see in the given examples, the first NP can be connected to a missing element in a deeply embedded position.

5.5  A New Analysis of Double Nominative Constructions

Similarities between Type I DNCs and ki-ka TCs, including long-distance dependency, support our claim that the formation of Type 1 DNCs can be accounted for by a lexical
analysis analogous to that of *ki-ka* TCs. Thus, we provide the following example structures for relevant constructions of TCs and DNCs.

(272) *swipta* in TCs

```
S
  NP
    i sacen-i
      SS|NL|INHER|SLASH{|I|}
      S|L|C|AS|SUBJ(5)
      SLASH{ }
      L|C|AS|SUBJ(5)
      ARG-ST SUBJ(3 NP 3)
      NL|TO-BIND|SLASH{1 NP [3]}
      HEAD adj
      L|C|HEAD
      verb MARK ki gerund
      e_j
      sayounghaki-ka
      swipta
```
(273) *swipta* in DNCs

In the given structures, the only difference is that the *ki-ka* TC in (272) takes a nominalized gerund phrase (NGP) as an argument, while the DNC in (273) takes an NP. The first subject has the same index value as the index value of the NP SLASH that is bound by the TO-BIND SLASH feature of the predicate. Following Pollard and Sag (1994), there is no overt filler in the nonargument position and connectivity holds between the subject NP and the trace. In (274), we provided similar lexical entries for *swipta* ‘easy’, which takes a NP and a NGP in the SUBJ list and *swipta* ‘easy’, which takes two NPs.
The predicate *swipta* subcategorizes for a *ki* NGP, which contains a gap coindexed with the first subject NP. This is represented by the SLASH feature in the lexical entry of *swipta*. As discussed in Chapter 4, we assume that an NGP is a verbal projection and analyze *ki* as a complementizing suffix that introduces the MARKING (MARK) feature as a HEAD feature of a predicate. We also argue that the C(ASE) MARK feature is not a HEAD feature of a noun, and that it can appear in a phrase with certain complementizers such as *-ki*, *-um*, *-ci*, *-nya*, *-kka* in Korean.

Now, we can represent the structure of a DNC involving a long-distance dependency as follows. For convenience, a DNC in (275) is repeated as in (276)

(275) yengeũ-ka [pwumotul-i aitul-eykey eũ kongpwuha-lako kangcoha-nun]
    English-NOM parents-NOM kids-to study-to emphasize-REL
    kyenghayng-i nophta.
    tendency-NOM high

  ‘With respect to English*, there is a strong tendency that parents emphasize their kids to study (*it*).’
A correspondence exist between predicates with a single subject and those with double subjects. We provide the descriptive Subject Insertion Lexical Rule (277) to capture the correspondence.
(277) Subject Insertion Lexical Rule (SILR)

\[
\text{SILR: } \left[ \begin{array}{c}
\text{PHON}\langle\text{swipta}\rangle \\
\text{CAT}\langle\text{ARG-ST}\rangle \\
\text{SUBJ}\langle\text{NGP}\rangle \\
\text{REL}\langle\text{swipta}\rangle \\
\text{SOA}\langle\text{V}\rangle
\end{array} \right] \rightarrow \left[ \begin{array}{c}
\text{PHON}\langle\text{swipta}\rangle \\
\text{CAT}\langle\text{ARG-ST}\rangle \\
\text{SUBJ}\langle\text{NGP}\rangle \\
\text{REL}\langle\text{aboutness}\rangle \\
\text{SALIENT}\langle\text{E}\rangle \\
\text{PREDICATION}\langle\text{E}\rangle
\end{array} \right]
\]

The Subject Insertion Lexical Rule (SILR) introduces a subject NP with the same index value as the SLASH NP, which originates from an NP or NGP in the ARG-ST of a predicate. The rule works only for unaccusative predicates with the ergative (ERG) feature because DNCs are possible only for those predicates as we discussed in 5.2. ERG encodes that the predicate takes an element, which behaves like a primary object in the subject position, as suggested by Pollard (1994). The application of SILR to 'easy' is shown as follows.

(278) Application of SILR to 'easy'

\[
\text{SILR: } \left[ \begin{array}{c}
\text{PHON}\langle\text{swipta}\rangle \\
\text{CAT}\langle\text{ARG-ST}\rangle \\
\text{SUBJ}\langle\text{NGP}\rangle \\
\text{REL}\langle\text{aboutness}\rangle \\
\text{SALIENT}\langle\text{E}\rangle \\
\text{PREDICATION}\langle\text{E}\rangle
\end{array} \right] \rightarrow \left[ \begin{array}{c}
\text{PHON}\langle\text{swipta}\rangle \\
\text{CAT}\langle\text{ARG-ST}\rangle \\
\text{SUBJ}\langle\text{NGP}\rangle \\
\text{REL}\langle\text{aboutness}\rangle \\
\text{SALIENT}\langle\text{E}\rangle \\
\text{PREDICATION}\langle\text{E}\rangle
\end{array} \right]
\]

In DNCs, the combination of the second subject with a predicate works as a predicate that is directly related to the first subject. The combination predicates the properties of...
the first NP that is a SALIENT element in the given context. Our SILR captures it by including an ‘aboutness’ relation in the BACKGROUND value (Kang (1988) and O’Grady (1991)). This aboutness relation is very similar to the aboutness relation between topic and comment that we assumed for topic construction.\(^{60}\) With respect to DNCs, acceptability of ‘aboutness’ relations is not uniform, as we see in (279)-(281)

(279) \begin{align*}
\text{John-i} & \quad \text{nun-i} & \quad \text{khuta.}\nonumber \\
\text{John-NOM} & \quad \text{eyes-NOM} & \quad \text{big}\nonumber \\
\text{‘John has big eyes.’}\nonumber 
\end{align*}

(280) \begin{align*}
\text{?#John-i} & \quad \text{kay-ka} & \quad \text{khuta.}\nonumber \\
\text{John-NOM} & \quad \text{dog-NOM} & \quad \text{big}\nonumber \\
\text{‘John has a big dog.’}\nonumber 
\end{align*}

(281) \begin{align*}
\text{# John-i} & \quad \text{haksayng-i} & \quad \text{khuta.}\nonumber \\
\text{John-NOM} & \quad \text{student-NOM} & \quad \text{big}\nonumber \\
\text{‘John has a big student.’}\nonumber 
\end{align*}

When the second NP and a predicate describe properties that are more permanent and pertinent to the first NP, as in (279), DNCs are easily licensed. Otherwise, the sentences become unacceptable, as in (280) and (281). The structure of (279) can be represented as follows.

\(^{60}\)In topic constructions, the topic element is old information that has already been introduced in the previous context or has been shared as background knowledge between the speaker and the hearer. However, in DNCs the first subject NP is the newly introduced or focused element.
In (282), the predication feature takes the content value of the given predicate. In addition, the SALIENCE feature takes the INDEX value of the subject NP ‘John’ which is the salient entity in the given context. In general, the subject NP refers to the most salient object in the context. This sort of saliency is connected to the pragmatic notion of foreground, as opposed to background, as Fillmore (1968) suggested. Thus, in this thesis, we introduce

A similar characterization of ‘exhaustivization’ has been provided in Gunji (1987) to explain Japanese DNCs. This has been called exhaustive listing in Kuno (1973). Exhaustivization refers to the semantic interpretation that if some property is predicated about a subject marked by the nominative case, then the default assumption is that it is the only the subject that possesses the property. Consider the following example.

(i) John-i apeci-ka kyoswu-ita.
John-NOM father-NOM professor-COP
‘John’s father is a professor.’

According to ‘exhaustivization’ analysis, the sentence is interpreted to exclude other people in the context and to provide a description only about the first subject. Thus, in (61) default assumption is that John is the only one whose father is a professor and nobody else’s is. The notion of ‘exhaustivization’ is more restricted than the ‘aboutness’ relation because it implies excluding other individuals.
the BACKGROUND feature as a *psoa* that provides some predication about a salient element. By using the BACKGROUND feature, we can capture the semantic and pragmatic information of DNCs.

The SILR can be used when a proper context has been established. For example, the unacceptable example (280) can be licensed in a context in which people go for walk with their dogs and compare whose dog is bigger. Our lexical rule correctly captures the argument realization of DNCs by considering semantic and pragmatic factors.

## 5.6 Conclusion

Based upon the similar behaviors of TCs and Type I DNCs, we showed that an unbounded dependency analysis can be provided for DNCs in Korean, as has been proposed for Japanese in Gunji (1987). We provided a Subject Insertion Lexical Rule, which captures the correspondence between single subject and double subject valences of a single lexeme. In addition, we suggested that DNCs can be divided into three types and that *ki-ka* TCs belong to Type I DNCs. Furthermore, we applied the analysis of *ki-ka* TCs to Type I DNCs. Of course, the classification of DNCs is still incomplete, and a detailed discussion of them remains for future study.
CHAPTER 6

KOREAN RELATIVE CLAUSE CONSTRUCTIONS

6.1 Introduction

Relative clauses constructions (hereafter RCs) have been of continuous interest in many languages. In particular, there is the important question of how to capture the semantic connectivity between a gapped element within an RC and the head noun modified by that RC. In contrast to English, which has relative pronouns, Korean has morphological elements that function as relativizers. In this chapter, we will investigate unbounded dependencies in Korean relative clauses and their formation. Although traceless approaches to RCs have been proposed by several studies (Kim, 1998b; Sag, 1997, among others), we will adopt a SLASH-based analysis, as in Pollard and Sag (1994) which assumes traces; we will provide modifications to the analysis and a new lexical schema that captures the unique properties of Korean RCs.

We will further discuss examples of island constraint violations in RCs, which are hard to explain with transformation-based analyses. In conjunction with island constraint violations, we will discuss long-distance dependencies that appear in so-called “double relative clauses”. Kim (1998b) and Han and Kim (to appear) argue that double relative clauses are derived from double nominative constructions and that Korean RCs observe the Complex
Noun Phrase Constraint. In contrast, we will provide counterexamples of CNPC violation and argue that RC examples of island constraint violations are driven by semantic and pragmatic properties as well as processing factors.

6.2 Korean Relative Clause Constructions

Relative clause constructions in Korean differ from their English counterparts in that there are no overt relative pronouns. The presence of a relative clause is marked by verbal suffixes, such as -nun, -un, -ul, and -ten. The following example shows a typical relative clause construction. In (283), e is coindexed with the head noun and it indicates the empty element within the relative clause.

\[(283) \quad \text{ikes-i Mary-ka } e_{i} \text{ sa-n chayk_{i}-i-ta.} \]
\[
\begin{array}{c}
\text{this-NOM Mary-NOM } e_{i} \text{ buy-REL book_{i}-be-END} \\
\end{array}
\]

‘This is the book Mary bought.’

In addition to the canonical type, which is similar to English gap type RCs, there are different types of RCs that do not include gaps, as noted in the previous literature (Nam, 1973; Cha, 1998; Kim, 1998b). Non-canonical RCs can be distinguished according to the different properties of the head nouns. There are pseudo relative clauses, noun complement relative clauses, and bound noun complement relative clauses. Relevant examples of non-canonical relative clauses are given as follows.

\[(284) \quad [\text{Pseudo RCs}]
\]
\[
\begin{array}{c}
a. \quad [_{RC} \text{ sayngsen-i tha-nun}] \text{ naymsay} \\
\text{ fish-NOM burn-REL smell} \\
\end{array}
\]

‘the smell of fish burning’

\[62\text{ Morphologically, there are several variants of -un, which we use as a representative form of the relativizer; each of them serves as a relative clause marker but carries different tense, aspect, and/or mood information. -ul/l (future), -un/n (past), -nun (present), -ten (retrospective) can be used for verbs, while -un/n (present), -ten (retrospective) are used for adjectives. Later, we will argue that these relativizers are inflectional suffixes that mark the boundary of RCs. See section 5 for details.}\]
These three types of non-canonical RCs lack a gap, and thus lack binding between a gap and its head noun. They do, however, have different syntactic and semantic properties. In pseudo RCs, as mentioned in Nam (1996) and Kim (1998b), the head nouns belong to a certain semantic class of perception nouns, which are related to vision, auditory sense, taste, or nouns such as feeling, trace, scene, etc. The words in the following list appear as head nouns of pseudo RCs.

\[(287)\]
\[
naymsay \text{‘smell’}, \ soli \text{‘sound’}, \ mas \text{‘taste’}, \ mosup \text{‘figure’}, \ casay \text{‘posture’}, \ nukkim \text{‘feeling’}, \ huncek \text{‘trace’}, \ kwangkyeng \text{‘scene/sight’}, \ phwungkyeng \text{‘scenery’}, \text{ etc.}
\]

In noun complement RCs, a similar kind of restriction exists. Head nouns are restricted to a certain type of noun including events, thoughts, ideas, rumors, facts, etc. An example list of head nouns is given as follows.

\[(288)\]
\[
sasil \text{‘fact’}, \ somwun \text{‘rumor’}, \ cwucang \text{‘claim’}, \ cwungke \text{‘evidence’}, \ kiek \text{‘memory’}, \ il \text{‘happening’}, \ kyenghem \text{‘experience’}, \text{ etc.}
\]
Head nouns of non-canonical RCs do not appear alone in out of the blue contexts unless the previous contexts provides enough information related to the head noun. This is shown in (289). In contrast, head nouns of canonical RCs can appear alone in out of the blue contexts.

(289) a. Mira: sasil-i palhyeciessta
    fact-NOM revealed
    ‘Mira: The fact has been revealed.’

b. John: mwusun sasil?
    what fact?
    ‘John: What fact?’

Kim also points out that non-canonical RCs have different morpho-syntactic properties than canonical RCs. First, relativizers in non-canonical RCs are more restricted. Whereas canonical RCs take various relativizers representing different tense and aspect information, relativizers in non-canonical RCs depend on properties of the following head noun. For example, the head noun soli and naymsay follow a verb ending with the present tense relativizer -nun, but not with the past tense relativizer -un, or future tense relativizer -ul. In parallel, head nouns of noun complement RCs combine with predicates containing certain relativizers. For instance, kiek ‘memory’ only combines with predicates ending with the past tense relativizer un but not with present -nun and future -ul.

Second, coordination and stacking facts support the idea that non-canonical RCs are distinct from canonical RCs. Canonical RCs cannot be coordinated together with non-canonical RCs, as shown in (291), while canonical RCs and non-canonical RCs combine with the same types of RCs, as shown in (290).

(290) a. [John-i e_{i} ilk-un] kuliko [Mary-ka e_{i} kiekha-nun] chayk_{i}
    John-NOM read-REL and Mary-NOM remembers-REL book
    ‘the book that John read and Mary remembers’
b. [saynsen-i tha-nun] kuliko [koki-ka ssek-nun] naymsay
   fish burn-REL and meat rot-REL smell
   ‘the smell of the fish burning and the meat rotting’

c. [Mira-ka ttenanun] kuliko [Min-i kyelhonha-nun] sasil
   Mra-NOM leave-REL and Min-NOM marry-REL fact
   ‘the fact that Mira leaves and Min marries’

d. [totwuk-i tomangka-nun] kuliko [kyengchal-i totwuk-ul ccochaka-nun]
   thief-NOM run away-REL and police-NOM thief-ACC chase-REL
   thing
   (lit.) ‘the scene that a thief runs away and the police chases the thief’

   John-NOM like-REL and fish-NOM burn-REL smell
   (lit.) ‘the smell that John likes and the fish burning’

   John-NOM know being-REL and Mary-NOM marry-REL fact
   (lit.) ‘the fact that John knows and Mary marries’

   John-NOM see-REL and thief-NOM run away-REL thing
   (lit.) ‘the scene that John sees and the thief runs away’

In addition, two canonical relatives can be stacked together as in (292). Two pseudo
relatives or two noun complement relatives cannot, as in (293).

(292) [John-i e_i ilk-un] [Mary-ka e_i kiekha-nun] chayk
   John-NOM read-REL Mary-NOM remember-REL book
   ‘the book that John read and Mary remembers’

(293) a. * [saynsen-i tha-nun] [koki-ka ssek-nun] naymsay
   fish burn-REL meat-NOM rotten-REL smell
   ‘the smell of the fish burning and the meat rotting’

b. * [Mira-ka ttenanun] [Min-i kyelhonha-nun] sasil
   Mira-NOM leave-REL Min-NOM marry-REL fact
   ‘the fact that Mira leaves and Min marries’

c. * [totwuk-i tomangka-nun] [kyengchal-i totwuk-ul ccochaka-nun] kes
   thief-NOM run away-REL police-NOM thief-ACC chase-REL thing
   ‘the happening that a thief runs away and the police chases the thief’
In addition to different properties of non-canonical RCs and canonical RCs, the recoverability of a gap in canonical RCs also shows that canonical RCs are different from non-canonical RCs. Only gaps in canonical RCs can be realized as resumptive pronouns and long-distance reflexives. On the basis of these grammatical facts, we argue that the formation of canonical RCs and non-canonical RCs needs to be differentiated. In the next section, we will discuss how canonical RCs have been handled in the previous literature.

6.3 Previous Analysis

Previous approaches to Korean RCs can be divided into three kinds: transformation-based approaches, semantic binding approaches, and constraint-based approaches. According to transformation-based approaches, the formation of RCs is accounted for by operator movement. Semantic binding approaches assume null pronominal elements in the position of gaps; for example, Yoon (1993) argues that a semantic relation holds between a head noun and a so-called pro in an RC while arguing for a non-gap analysis of Korean RCs. Constraint-based approaches assume no movement, but do assume filler-gap connectivity that can be captured by a nonlocal feature percolation mechanism. The three kinds of approaches can be summarized as follows.

6.3.1 Transformation-Based Approaches

According to transformation-based approaches, the formation of RCs is based on movement. For example, Yang (1987), following Chomsky (1986), uses empty operator movement and argues that the movement observes island constraints in Korean RCs. However, his account assumes that island constraints are strongly observed in Korean RCs. In line with this, Han (1992) argues that Korean RCs are formed by syntactic movement based on
the fact that Korean RCs exhibit all the typical properties of Wh-movement; they are subject to syntactic islands of complex NPs, subjects, and adjuncts. She uses the subadjacency and the empty category principle (ECP) to account for the putative ungrammaticality of island violations in Korean RCs. Like Yang’s analysis, her account strictly prohibits island violations in RCs. However, there are many examples of island constraint violations that their mechanisms cannot capture. We will discuss this in section 5 in detail.

6.3.2 Semantic Binding Approaches

In the process of proposing a gapless analysis of Korean RCs, which especially focuses on pseudo RCs, Yoon (1993) claims that the missing element, even in a canonical RC, is *pro*. However, Yoon’s argument that only pragmatic constraints license the formation of Korean RCs seems to be too weak. This is because the formation of RCs is not always possible, even when the gap is closely related pragmatically to the head noun, as we see in the following examples.

(294) *John-i $e_i$ choaha-nun saram$_j$
John-NOM like-REL person
(lit.) ‘the person$_j$ whom John likes $e_i$’

(295) *$e_i$ tolakasi-ess-ul tay, motwu-ka sulpheha-n haksang$_j$
passed away-PAST-REL when, everyone-NOM grieve-REL student
(lit.) ‘the student$_j$ whom everyone grieved when $e_i$ passed away.’

The given examples are ungrammatical even though the empty elements in the relative clauses are semantically or pragmatically related to the head nouns. For example, according to Yoon’s account, (294) would be grammatical in the situation in which John likes the person’s child. (295) would also be grammatical under Yoon’s assumptions given a situation in which the student’s parent passed away. However, they are not grammatical. Even though close semantic and pragmatic relations exist between the head noun and the
content of the RC, the formation of the RC is only allowed when the head noun and the missing element refer to the same entity. This suggests that semantic or pragmatic constraints between the head noun and the missing element in an RC are not enough to explain the formation of canonical RCs. Yoon’s gapless analysis is based on his analysis of pseudo RCs, which he extends to include canonical RCs. According to him, all types of RCs including pseudo RCs are formed on the basis of pragmatic relative clause relations. The semantic interpretation of a pseudo RC has been represented by Yoon as follows.

(296) a. mwul-i hulu-nun soli  
   water-NOM flow-REL sound  
   ‘the sound of water falling’

b. $\lambda x[\text{sound}'(x) \& \text{flow}'(w) \& \text{perceptive-result-event}(\text{flow}'(w), x)]$

The given semantic representation includes the sound $x$ and the event of water flowing. In addition, $x$ is in the perceptive-event-relation with the event of water flowing. The pragmatic relations properly handle the formation of pseudo RCs, but they are not enough to deal with the formation of canonical RCs. Yoon (1993) argues that the head of an RC is the relativizer -un, and he provides the following simplified structure for an RC.

![Diagram](image-url)
According to Yoon, the relativizer -un appears in a syntactic position that is separated from the preceding clause complement. Because the MOD feature of the relativizer percolates up to an RC, the modification relation between the RC and head noun can be easily explained. However, this analysis does not capture the morphosyntactic properties of -un, which works as a verbal suffix.

In Korean, relativizing elements are bound morphemes that attach to verbal or adjectival stems. There are some restrictions in these combinations. -ul, -nun, and -un combine with verbal stems, representing future, present, and past tense, respectively. In constrast, only -un combines with adjectival stems, representing present tense. Another relativizer -ten combines with both verbs and adjectives but adds rather different mood information from normal relativizers. Even though a relativizer is a suffix of a predicate stem, the whole RC forms one constituent. In support of this, no outer elements from the matrix clause intervene inside an RC. To capture the many morphological combinations that a predicate stem and relativizer produce, we need to treat relativizers as verbal suffixes instead of a separate lexical items. At the same time, we need to capture their properties as complementizers. We will discuss this in 6.4.

### 6.3.3 Constraint-Based Approaches

Kim (1998a) adopts the traceless analysis of Sag (1997) and argues that the SLASH feature is introduced by the SLASH Amalgamation Constraint at the word level. The amalgamated feature passes up to S via the SLASH Inheritance Constraint. Kim also argues

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63 The meaning of -ten has been discussed in Nam (1973). He shows that it represents the mood of ‘retrospectiveness’: the speaker perceives the event or state described by an RC as something that was true only in the past, not in the present.

64 Kim adopted Sag’s SLASH Amalgamation Constraint and SLASH Inheritance Constraint as follows.
that Korean RCs all belong to the type *relative-clause*, which is subject to the following lexical constraint.

\[(298) \text{rel-cl} \Rightarrow \left[ \begin{array}{c}
\text{HEAD} \\
\text{VERB} \\
\text{MOD nominal} \\
\text{SLASH} \\
\text{HD-DTR} \end{array} \right] \]

A relevant example and the structure of an RC provided by Kim is given in (299).

(299) a. John-i \(e_i\) ilk-un chayk\(_i\)
    John-NOM \(e_i\) read-REL book\(_i\)
    ‘the book\(_i\) which John read \(e_i\)’

b. 
\[
\text{NP} \left[ \begin{array}{c}
\text{head-rel-ph} \\
\text{SLASH} \{\} \\
\end{array} \right] \\
\text{NP} \left[ \begin{array}{c}
\text{rel-cl} \\
\text{SLASH} \{\} \\
\end{array} \right] \\
\end{array}
\]

Kim argues that (298) guarantees that the SLASH value of an RC will be bound off and that the slashed element will have the same index as the head noun. According to him, the following example is blocked by the constraint in (298).

\begin{enumerate}
\item \text{SLASH} Amalgamation Constraint:
\[
\text{word} \Rightarrow \left[ \begin{array}{c}
\text{LOC} \\
\text{ARG- ST} \left( \text{SLASH}_1, \ldots, \text{SLASH}_n \right) \end{array} \right] \\
\text{NONLOCAL} \left( \text{SLASH}_1, \ldots, \text{SLASH}_n \right) \]
\item \text{SLASH} Inheritance Constraint:
\[
\text{hd-nexus-ph} \Rightarrow \left[ \begin{array}{c}
\text{NONLOCAL} \left( \text{SLASH} @ 1 \right) \\
\text{HD-DTR} \end{array} \right] \\
\end{array}
\]
In addition, he assumes that an NP has an empty SLASH value in Korean by claiming that there are no Complex Noun Phrase Constraint (CNPC) violations. He provides the following lexical constraint for the CNPC.

\[
\begin{align*}
\text{(301)} & \quad \text{[noun-word]} \\
& \quad \text{SLASH } \{ \} 
\end{align*}
\]

The given constraint seems to assert that a percolated SLASH value disappears when an RC is combined with the head noun because every noun cannot have a filled SLASH feature. However, there are many examples, such as the one in (302) that do not observe the CNPC in Korean. Kim argues that the relativization in (302) originates from the multiple nominative construction (MNC) in (303).

\[
\begin{align*}
\text{(302)} & \quad \text{[RC2} \text{[RC1} e_i \text{e_j ipko iss-nun]} o s_j^-i \text{mesci-n]} n a m c a_i \\
& \quad \text{wearing is-REL clothes-NOM nice-REL man} \\
& \quad \text{‘(lit.) man}_i \text{ who the clothes that } e_i \text{ is wearing are stylish’} \\
\text{(303)} & \quad \text{ku namc}_a_i^-\text{-ka [S} \text{[RC pro}_i \text{e_j ipko iss-nun]} o s_j^-i \text{mescita]} \\
& \quad \text{that man-NOM wear being-REL clothes-NOM nice} \\
& \quad \text{‘The man’s clothes are nice.’}
\end{align*}
\]

Kim argues that the head noun of (302) corresponds to the first subject of the multiple nominative clause (303). In other words, so-called CNPC violations have corresponding MNCs. However, in section 4 we will provide counterexamples of CNPC violations that do not have corresponding Double Nominative Constructions. This suggests that the CNPC does not apply to every noun. If the CNPC violation is allowed as in (302), it is hard to explain how the SLASH value in RC1 whose index value is different from the index value of the first head noun percolates up to the higher phrase. Thus, grammatical examples of violating the CNPC cannot be accounted for by following Kim’s analysis. In addition, his relative-clause type do not include resumptive pronouns appearing in the gapped position.
We do not see a clear advantage of the traceless approach over the trace-based account in Pollard and Sag (1994). The trace-based analysis locally encodes filler and gap dependency without newly introducing type constraints. Thus, we will follow a traceful analysis of Pollard and Sag (1994).

### 6.4 An Alternative Analysis

Based on the unbounded dependency of canonical RCs in Korean, we argue that a lexical analysis following Pollard and Sag (1994) properly captures their formation. In the previous section, we pointed out some problems in Kim’s gapless approach, which uses the construction type `relative-clause`, with respect to the CNPC. Instead of using extrasyntactic mechanisms, UDC properties of Korean canonical RCs can be simply handled by SLASH percolation along the lines of Pollard and Sag (1994). In order to explain the formation of an RC, we need to explain how a relativizing element combines with its stem. The formation of relativized predicates is a highly productive morphological process and a lexical rule analysis can be provided in order to capture the relation between a basic predicate form and a relativized form. We analyze Korean relativizing elements as relativizing complementizers (relativizers) that are morphologically added to verbal stems. Relativizers `-nun`, `-un`, `-ul` and `-ten` add specific tense information to the stems while they represent sentence boundaries of RCs. As a complementizing suffix, a relativizer lexically adds a MARK(ING) feature to the Head feature of its predicate. In Korean, the markedness of a

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65 Although Bourma et al. (2001), as well as Sag (1997) and Kim (1998b), argue that the traceless analysis supersedes the traceful analysis, Levine (2002a) points out a severe problem with respect to multiple adverb modification in traceless approaches.
sentence is represented by the predicate that is formed by combining with a complementizing suffix. Through the Head Feature Principle, the MARK(ING) feature is percolated up to the highest phrasal level. The lexical rule of *un* relativization can be given in (304).

(304) \[
\begin{array}{c}
\text{word} \\
\text{PHON} \\
\text{SS|LOC|CAT|HEAD} \\
\text{verb} \\
\text{VFORM base} \\
\text{MARK unmarked} \\
\end{array} \rightarrow \begin{array}{c}
\text{PHON add\_un (II)} \\
\text{SS|LOC|CAT|HEAD} \\
\text{VFORM past} \\
\text{MARK relative} \\
\end{array}
\]

The given lexical rule captures that a relativizer *un* combines with a verbal stem whose VFORM value is a base and gives out a past relativized form.\(^{66}\) We can provide separate lexical rules for different relativizers such as *-nun, -ul*, and *-ten.*\(^{67}\)

We provide a schema in (305) which licenses Relative Clause (RC)-Head structures.

(305) a. NP \(\rightarrow\) RC

\[
\begin{array}{c}
\text{SS|LOC|CAT|HEAD|MARK relative} \\
\text{NONLOC} \\
\text{INHER}\_\text{SLASH} \\
\{\text{HEAD nominal} \} \\
\{\text{CONT}\_\text{INDEX} \} \\
\{\text{TO\_BIND}\_\text{SLASH} \} \\
\end{array} \rightarrow \begin{array}{c}
\text{HEAD nominal} \\
\text{INDEX} \end{array}
\]

\(^{66}\) As the outputs of *add\_un*, relativized phonological forms of base verbs are derived. In addition, when the preceding verbs end with a consonant, *-un* is attached, while *-n* is attached when the preceding verbs end with a vowel.

\(^{67}\) In case of *-ten*, it combines with the past form of an adjectival stem as well as a verbal stem. The VFORM value of an input stem is not restricted to a base form. The relativizer *-un* also combines with adjectival stems, but the output has present tense form. We treat this relativizer as different from *-un* combining with verbal stems. The lexical rule of adjective *-un* relativization is given as follows.

\[
\begin{array}{c}
\text{word} \\
\text{PHON} \\
\text{SS|LOC|CAT|HEAD} \\
\text{adjective} \\
\text{VFORM base} \\
\text{MARK unmarked} \\
\end{array} \rightarrow \begin{array}{c}
\text{PHON add\_un (II)} \\
\text{SS|LOC|CAT|HEAD} \\
\text{VFORM present} \\
\text{MARK relative} \\
\end{array}
\]

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As we see in the given schema, the nonlocal SLASH feature of an RC is bound off when it meets the head noun. Unlike English, there is no overt filler for the inherited SLASH feature in Korean. Instead, coreference exists between the head noun and the trace of an RC. The TO-BIND SLASH feature is introduced when an RC combines with a head noun, but there is only semantic coreference between a head noun and the SLASH value. With the given schema and SLASH inheritance mechanism, the structure of an RC is shown in (307).

(306) Mary-ka e_i ilk-un chayk_i
Mary-NOM e_i read-REL book_i
‘the book Mary read.’
In the given example, the information of a gapped complement percolates based on the Nonlocal Feature Principle given in Pollard and Sag (1994). The relativized verb ilkun has a MOD feature whose HEAD value is nominal. The INDEX value of that nominal is the same as that of the head noun. The percolated SLASH value of the RC is bound off when the RC combines with the head noun chayk as allowed by the schema given in (305).

68Nonlocal Feature Principle: For each nonlocal feature, the INHERITED value on the mother is the union of the INHERITED values on the daughters minus the TO-BIND value on the head daughter.
6.5 Island Constraint Violations in RCs

In this section, we will discuss RC constructions that license long-distance dependencies. Ever since Ross (1967) proposed structural constraints for island constraints, many studies have tried to deal with these kinds of constructions at the level of syntax (Chomsky, 1977), (Kim, 1998b), among others). However, we propose that examples that have been analyzed as violations of the CNPC should be handled not by syntactic constraints but by semantic and pragmatic constraints as well as processing difficulties. We will also point out that extraction possibilities in RCs and topic constructions are similar and seem to originate from similar semantic and pragmatic properties. We will also discuss complement and adjunct extractions in canonical RCs. We will show that there is not much difference between complement and adjunct extractions in canonical RCs.

6.5.1 Complex Noun Phrase Extractions

CNPC violations appear in the following canonical RCs.

(308) \[ RC_1 [ RC_2 e_i e_j \text{ palpyoha-n] sose}_j{-i \text{ inki-ka iss-nun] cakka}_i \text{ publish-REL novel-NOM popularity-NOM has-REL writer} \]

(lit.) ‘writer_i who the novel that e_i e_j wrote is popular.’

(309) \[ RC_1 \text{ Mira-ka } [ RC_2 e_i e_j \text{ cacwu ka-nun] swulci}_j{-lul alkoiss-nun] namca}_i \text{ man} \]

‘a man_i who Mira knows the bar that (he_i) goes often.’

In the given examples, the head noun in the rightmost position is related to a missing element in an RC that is also embedded in another RC. It has been known that Korean allows this kind of relativization out of another relative clause. This phenomenon has been referred to as double relativization in Han and Kim (to appear). Kim (1998b) and Han and Kim (to appear) claim that examples such as this do not violate the CNPC. According to
them, so-called double relativization constructions originate from relativizing the subject of a double nominative construction. For example, the highest verb of the RC in the above example allows the a double nominative construction (DNC) in (310).

(310) \[
\begin{array}{l}
\text{[}_s_1 \text{ ku cakk}_a_i-\text{ka [}_s_1 \text{ RC e}_i \text{ e}_j \text{ ssu-n] sosel}_j-\text{i inki-ka issta}].}
\end{array}
\]

that writer-NOM write-REL novel-NOM popularity-NOM have

‘Speaking of that writer, the novel that he wrote is popular.’

However, relativization from a relative clause need not be restricted to verbs that license double nominative constructions. For example, the RC in (309) does not correspond to a DNC, as shown in (311).

(311) \[
\begin{array}{l}
\text{[}_s_1 \text{ ku namba}_i-\text{ka [}_s_2 \text{ Mira-ka [}_s_1 \text{ RC e}_i \text{ e}_j \text{ cacwu ka-nun] swulci}_j-\text{lul}}
\end{array}
\]

that man-NOM Mary-NOM often go-REL bar-ACC

know

‘As for that man, Mira knows the bar that (he) goes often.’

More examples of double relativization are presented as follows.

(312) a. \[
\begin{array}{l}
\text{[}_r_1 \text{ Kim-i [}_r_2 \text{ e}_i \text{ e}_j \text{ palpyoha-n] sosel}_j-\text{ul alko iss-nun] cakk}_a_i
\end{array}
\]

Kim-NOM publish-REL novel-ACC knowing is-REL writer

‘the writer who Kim knows the novel which he published e_j’

b. \[
\begin{array}{l}
\text{[}_s_1 \text{ ku cakk}_a_i-\text{ka [}_s_2 \text{ Kim-i [}_s_1 \text{ RC e}_i \text{ e}_j \text{ palpyoha-n] sosel}_j-\text{ul}}
\end{array}
\]

the writer-NOM Kim-NOM publish-REL novel-ACC

know

‘As for the writer, Kim knows the novel that he wrote.’

(313) a. \[
\begin{array}{l}
\text{[}_r_1 \text{ John-i [}_r_2 \text{ e}_i \text{ e}_j \text{ calmos kyoyukha-n] pwnomo}_j-\text{lul honnay cwu-n] ai}_i
\end{array}
\]

John-NOM wrong educate-REL parent-ACC scold-REL kid

(lit.) ‘a kid who John scolded the parents who educated (him) in the wrong way.’

b. \[
\begin{array}{l}
\text{[}_s_1 \text{ ku ai}_i-\text{ka [}_s \text{ John-i [}_r_1 \text{ RC e}_i \text{ e}_j \text{ calmos kyoyukha-n] pwnomo}_j-\text{lul}}
\end{array}
\]

that kid-NOM John-NOM wrongly educate-REL parent-ACC

scolded

‘As for the kid, John scolded his parents who educated him in the wrong way.’
As we mentioned in Chapter 5, the formation of DNCs is restricted to unaccusative predicates. However, in (312a) and (313a) the main predicates are not unaccusative constructions. This predicts that they cannot form DNCs. Although the relativization from a relative clause is allowed in (312a) and (313a), the supposedly corresponding DNCs are ungrammatical in (312b) and (313b). This contradicts the hypothesis that Kim (1998b) and Han and Kim (to appear) assume. According to Kim’s (1998) non-trace approach, every SLASH value that originates from an embedded predicate is amalgamated to the main predicate. However, long-distance dependencies in the CNPC violations require the SLASH value of the deeply embedded RC to be amalgamated in the lexical entry of the main predicate, which does not have any direct relation with the embedded RC. However, this approach seems less than convincing.

In our UDC analysis, the formation of double relativization is licensed via the nonlocal SLASH percolation and the RC-Head Schema. The structure of example (312a) can be represented by our syntactic mechanism.
Han and Kim (to appear) also predict that resumptive pronouns do not appear in the gap positions of doubly relativized examples. However, resumptive pronouns appear in the gap positions of the following examples that correspond to (312a) and (313a). 69

(315) \[
\text{[} \text{RC}_1 \text{ Kim-i} \text{ [} \text{RC}_2 \text{ ku}_i\text{-ka} \text{ e}_j \text{ palpyoha-n} \text{]} \text{ sosel}_j\text{-ul} \text{ (cal) alko}
\text{ Kim-NOM he-NOM publish-REL novel-ACC (well) knowing}
\text{ iss-nun} \text{ cakka}_i
\text{ is-REL writer}
\text{ ‘the writer}i\text{ who Kim knows the novel which }he_i\text{ published }e_j\text{’}
\]

(316) \[
\text{[} \text{RC}_1 \text{ John-i} \text{ [} \text{RC}_2 \text{ e}_i \text{ ku}_j\text{-lul calmos kyoyukha-n} \text{]} \text{ pwumbo}_j\text{-lul}
\text{ John-NOM he-ACC wrong educate-REL parent-ACC}
\text{ honnay cwu-n} \text{ ai}_i
\text{ scold-REL kid}
\text{ (lit.) ‘a kid}i\text{ who John scolded the parents who educated him}i\text{ in the wrong way.’}
\]

The degree of acceptability for CNPC violations seems to vary among speakers. We propose that are pragmatic or semantic factors contribute to the acceptability of CNPC violations in Korean, similar to the processing account that Kluender (1998) proposed for with respect to English island constraints. In explaining the difference in acceptability of extraction from RCs in English, Kluender discusses the cost of undertaking additional referential processing in definite NPs. Consider Kluender’s example in (317).

(317) a. That’s the article that we need to find someone [ who understands — ].
   b. That’s the article that we need to find the reviewer [ who understands — ].

When the indefinite pronoun someone is used as the head noun as in (317a), the acceptability improves relative to example (317b), where a definite description the reviewer is used. As noted in Ariel’s (1988, 1999) model of antecedent-anaphor relations, pronouns have high accessibility, whereas proper names and definite descriptions have low accessibility.

69 According to our theory, resumptive pronouns work as audible traces. However, their occurrence involves semantic and pragmatic factors.
In Korean, the semantic properties of an NP within an RC, rather than the head noun, seem to show a similar effect. Compare (318a) and (318b).

(318) a. [Kim-i [e_i e_j palpyoha-n] sosel_j-ul alko iss-nun] cakka_i
   Kim-NOM publish-REL novel-ACC know being-REL writer
   ‘writer_i who Kim knows the novel which e_i published e_j’

b. [uli-ka [e_i e_j palpyoha-n] sosel_j-ul alko iss-nun] cakka_i
   we-NOM publish-REL novel-ACC know being-REL writer
   ‘writer_i who we knows the novel which e_i published e_j’

According to native speaker intuitions, (318b) sounds better than (318a). Speculatively, this is because the pronoun in (318b) has higher accessibility and causes less processing difficulty than the proper name in (318a). Additional supporting evidence can be found in the following example, which Kim (1998b) considers to be ungrammatical.

(319) ?* Yenghi-ka Chelswu-eykey [e_i e_j palphyo-ha-n] sosel_j-ul cwu-n cakka_i
   Yenghi-NOM Chelswu-to publish-REL novel-ACC gave-REL writer
   ‘the writer who Yenghi gave Chelswu the book which __ wrote __’.

A notable point is that the unacceptability of (319) gets better when we replace the proper names Yenghi, and Chelswu with the pronouns wuri and ku, as in (320).

(320) ? wuli-ka ku-eykey [e_i e_j palphyo-ha-n] sosel_j-ul cwu-n cakka_i
   we-NOM he-to publish-REL novel-ACC gave-REL writer
   ‘the writer who we gave him the book which __ wrote __’.

An attempt to draw on syntactic constraints will fail to account for the contrast in these syntactically identical examples. Given this, a processing account seems to be more promising in explaining examples of so-called CNPC violations, at least in Korean. Processing cost gets higher according to the depth of embeddings and this explains the general tendency to avoid CNPC examples. However, when the semantic and pragmatic constraints are close
enough to relate a head noun and the event of the main predicate in an RC, relativization from an embedded RC seems to be licensed.

Interestingly, it seems that there is a closer relationship between RCs and Topic constructions than between RCs and MNCs. Extractions in topic constructions show the same pattern as in RCs. Example (312a) has a corresponding topic construction, as we see in (321).

(321) ku cakka_i-nun, Kim-i [ e_i e_j palpyoha-n] sosel_j-ul alko issta.
    the writer-TOP Kim-NOM publish-REL novel-ACC know being
    ‘the writer_i, Kim knows his_i novel which e_i published e_j’

However, when relativization is disallowed, as in (319), topicalization is not possible either, as in (322).

(322) *ku cakka_i-nun, Kim-i Chelswu-eykey [ e_i e_j palpyoha-n] sosel_j-ul
    the writer-TOP Kim-NOM Chelswu-to publish-REL novel-ACC
cwuessta.
    gave
    (lit.) ‘the writer_i, Kim gave Chelswu his_i novel which e_i published e_j’

The parallel grammaticality of (312a) and (321) and ungrammaticality of (319) and (322) have been noted in many previous studies, including Kuno (1976) and Na and Huck (1993). Both topic and relative constructions seem to share certain semantic properties. Kuno (1976) proposed an aboutness condition to explain the semantic constraints of RCs; specifically, a relative clause must be a statement about its head noun. Na and Huck (1993) provides a sophisticated definition of the aboutness condition.

The Argument Condition
A relative clause (or topic complement) must contain an element E that the clause (or complement) predicates something of, where E is either
A. a gap coindexed with the clause head (or topic); or
B. a nominal whose denotation is thematically subordinate to that of the clause head (or topic).
According to them, an entity X is thematically subordinate to an entity Y iff Y’s salient properties are determined at least in part by the salient properties of X. In this study, we will use the aboutness condition to refer to semantic and pragmatic constraints that work to form RCs, as well as topic and double nominative constructions.
relation between the topic and comment can be found in topic constructions as well as some double nominatives. It has been known that the formation of topic constructions is subject to pragmatic and semantic constraints, not just purely syntactic ones. In line with this, the processing account of Kluender (1998), which is based on pragmatic and semantic factors, seems to apply to Korean. In the account that we propose, semantic and pragmatic factors have control over extractibility of an element in topic and relative clause constructions. In principle, syntactic constraints do not block the possibility of extraction while semantic and pragmatic constraints determine which element can be licensed by the syntactic mechanism of nonlocal feature percolation.

6.6 Relativization and Adjuncts

In this section, we will briefly discuss relativization of adjuncts and also relativization out of adjunct clauses.

6.6.1 Adjunct Extraction

There seems to be no asymmetry between arguments and adjuncts with respect to the formation of canonical RCs. In general, relativization out of complement clauses is allowed in constructions of assertive verbs, such as *pokohata* (report), *cwucanghata* (claim), *midta* (believe) etc. An example is shown in (323).

(323) a. [ kyungchal-i [ Kim-i e i hwumchyessta-ko] cwucangha-n ] chayk i
    police-NOM Kim-NOM stole-COMP claim-REL book
    ‘the book that the police claimed that Kim stole.’

71 Manner and measure adjuncts are hard to relativize, while location and instrument adjuncts are not. This appears to result from semantic contraints on manner and measure adjuncts.
b. [Yumi-ka na-eykey [Kim-i $e_i$ kongpuhako issta-ko] malha-n] Yumi-NOM I-to Kim-NOM study being-COMP say-REL tosekwan$\text{i}$ library
‘the library that Yumi told me that Kim was studying’

In the given examples, the head nouns are coindexed with either argument or adjunct gaps within sentential complements of assertive predicates. In the case of adjunct extraction, the strong crossover effect appears.

(324) a. * [Yumi-ka Mira-eykey [Kim-i $e_i$ mayil pam kongpuhan-tako] Yumi-NOM Mira-to Kim-NOM every night study-COMP keku$\text{i}$-eyse alye cwu-n] tosekwan$\text{i}$ there$\text{i}$-in inform give-REL library
‘the library that Yumi informed Mira that Kim studies (there$\text{i}$) every night’

b. [Yumi-ka Mira-eykey [Kim-i $e_i$ mayil pam kongpuhan-tako] Yumi-NOM Mira-to Kim-NOM every night study-COMP kkape$\text{j}$-eyse alye cwun] tosekwan$\text{i}$ cafe$\text{j}$-in inform give-REL library
‘the library that Yumi informed me in a cafe$\text{j}$ that Kim studies (there$\text{i}$) every night.’

(325) a. * [Minsu-ka [John-i $e_i$ mayil kathi untonghanta-ko] Minsu-NOM John-NOM every day together exercise-COMP kunye$\text{i}$-eykey malhan-n] yeca$\text{i}$ she$\text{i}$-to tell-REL woman
‘the woman who Minsu told her$\text{i}$ that John exercises together (with her$\text{i}$) every day.’

b. [Minsu-ka [John-i $e_i$ mayil kathi untonghanta-ko] Minsu-NOM John-NOM every day together exercise-COMP sensayngnim$\text{j}$-eykey malha-n yeca$\text{i}$ teacher$\text{j}$ tell-REL woman
‘the woman who Minsu told the teacher$\text{k}$ that John exercises together (with her$\text{i}$) every day.’

As shown in (324a) and (325a), when there is an intervening pronoun with the same index between a gap and its head noun (keki-eyse and kunye-eykey respectively), an RC becomes ungrammatical. This contrasts with the examples in (324b) and (325b). The SCO effect in Korean RCs supports treating adjunct extraction as argument extraction. When it comes to
English UDCs, Hukari and Levine (1995) argue that adjunct UDCs have the same syntactic nature as complement UDCs. They make this argument on the basis of binding domain effects such as strong crossover and weak crossover. In addition, they support their hypothesis with cross-linguistics facts in French, Irish, Icelandic, Yiddish, and Kikuyu. Strong crossover effects of adjunct relativization in Korean are also compatible with Levine and Hukari’s (1995) parallel treatment of adjunct extraction.

6.6.2 Relativization From Adjunct Phrases

Another notable point with respect to complement and adjunct distinction in Korean RCs is that relativization is not only possible within sentential complements but also within sentential adjuncts. Let us consider the following examples.

(326) [ [ $e_i$ cwk-ese ] motu-ka sulpeha-nun ] sarami
  
  $e_i$ die-since  all-NOM  grieve-REL  person_i

(lit.) ‘the person_i who since $h e_i$ died, everybody grieved.’

(327) [ [ sensayngnim-i $e_i$ ilkess-ul ttay] motun haksayngtul-i wuless-ten ] pyenci

  teacher-NOM  read-REL  when  all  students-NOM  cry-REL  letter

(lit.) ‘the letter_i which all students cried when the teacher read it_i’

(328) [ nay-ka [ $e_i$ ilk-taka] ] camtu-n] chyak

  I-NOM  read-while  fall  asleep-REL  book

  ‘the book_i that I fell asleep while reading $e_i$’

The head nouns in (326)-(328) are coindexed with empty elements in adjunct phrases. However, extraction from adjunct phrases is not always acceptable, as we see in the following ungrammatical examples.

(329) * [ [ $e_i$ swuep-ul chwisohay-se] haksayngtul-i yeonghwa-lul pole kass-ten ]

  class-ACC  cancelled-because  students-NOM  movies-ACC  see  went-REL

  sensayngnim_i

  teacher

(lit.) ‘the teacher_i who the students could go to see movies because $h e_i$ cancelled the class.’
In order to form a canonical RC containing a gap only in an adjunct phrase, the gap seems to be semantically related to the event structure of the main predicate. For example, in (326) the main clause means that everybody grieved the death of the person. In (327), it means that all students cried over the letter that teacher read. (328) also means that I fell asleep because of the book.

In contrast, when it is hard to find the connection between the event that is described by the predicate and the missing element, as in (329)-(331), relativization from adjunct phrases is not allowed. However, relativization is much easier when there are gaps with the same index value in both an adjunct clause and the main clause. Compare the following examples with (329)-(331).

(332) \[
\begin{array}{l}
\text{swuep-ul class-ACC}\\
\text{chwisohayse cancelled-because}\\
\text{haksayngtul-ul student-ACC}\\
\text{kincangsikhi-n made nervous-REL}\\
\end{array}
\]
\[
sensayngnim\text{ni teacher}\\
\text{who made the students nervous because } he_i \text{ canceled the class.}'
\]

In the given examples, a gap appears in both the adjuncts phrase and the matrix clause. Thus, the gap in the adjunct phrase can be analyzed as a parasitic gap. However, given
that Korean has *pro*, it is hard to apply a parasitic gap analysis to these examples. This is because the gapped element in the adjunct phrase could be analyzed as a *pro*. When gap appears in both an adjunct phrase and the main clause, it is hard in languages like Korean to determine whether the null element in the adjunct phrase is a *pro* or a parasitic gap.

However, it is true that it is easy to form an RC when there is a null element in the matrix clause, as well as in an adjunct phrase. In addition, a gapped element in an adjunct phrase work to show as cause, time, or instrument. This suggests that extraction from an adjunct phrase is easy when a missing element in a adjunct phrase is semantically related with the event of the main clause in the form of place, time, and cause.

When relativization out of an adjunct phrase is possible, the head noun can be realized as the topic. We have already shown that topicalization and relativization behave in similar ways with respect to extraction. The head nouns of (326)-(328) can appear in topicalized positions, as in (335)-(337).

(335) ku salam<sub>i</sub>-un [[*e<sub>i</sub> cwuk-ese] motwu-ka selpheayssta].

that person-TOP died-because everyone-NOM grieved

'As for that person<sub>i</sub>, everyone grieved when *he_<sub>i</sub> died.'

(336) ku pyenci<sub>i</sub>-nun [[sensayngnim-i *e<sub>i</sub> ilkessul ttay] motun haksayngtul-i that latter-TOP teacher-NOM read when all students-NOM wulessta]

cried

'As for the letter<sub>i</sub>, all students cried when the teacher read it<sub>i</sub>.'

(337) ku chayk-un [[nay-ka *e<sub>i</sub> ilk-taka] camtul-ess-ta.] that book-TOP I-NOM read-while fall asleep-PRES-END

'As for the book<sub>i</sub>, I fell asleep while reading it<sub>i</sub>.'

In contrast, the head nouns of ungrammatical examples (329)-(331) cannot be topicalized, as we see in (338)-(340)
Both topicalization and relativization seem to be based on a semantic uniqueness or focus interpretation of an extracted element. Our schema and lexical contraints license extraction from adjunct clauses as follows.
6.7 Conclusion

In this chapter, we provided lexical constraints that account for the formation of Korean canonical RCs. Morphosyntactic properties of Korean RCs are correctly captured in our mechanism by analyzing a relativizing complementizer as a verbal suffix. The relativizers have grammatical functions. They add the MARKING feature to the HEAD feature and in turn the MARKING value *relative* is assigned to the combining verbal stem. This MARKING feature percolates up as the Head feature and marks a sentence as a relative clause. We provided a lexical rule in order to capture the right combinations of a verbal stem and the relativizer *-un*. In addition, we proposed a new RC-Head schema to account for the unbounded dependency of RCs.

In terms of nonlocal feature percolation, our new schema is similar to the Filler-Head schema in English. However, because there is coindexation between the head noun and the trace, with no overt fillers, Korean RCs represent a weak unbounded dependency construction. Our schema shows that the percolated SLASH feature is bound off in an RC when it meets the head noun.

We examined a nonlocal extraction phenomenon in Korean RCs. Kim (1998a) and Han and Kim (to appear) argued that the syntactic constraint CNPC is observed in Korean. They concluded that examples of CNPC violation are based on extraction out of double nominative constructions. However, we showed that there are counterexamples RCs. We claimed that the CNPC violations of Korean RCs are triggered by pragmatic and semantic factors along the lines of the analyses of English island constraints including Hukari and Levine (1995) and Kluender (1998).

In addition to CNPC violations, there are other nonlocal extractions: extractions from complement clauses and extractions from adjunct clauses. There is no asymmetric behavior
with respect to extractions out of complement and adjunct clauses. Interestingly, there seems to be a correspondence between RCs and topic constructions. The formation of canonical relativization is based on various semantic and pragmatic properties that exist between an RC and its head noun. This is similar to a topic-comment relation.

In order to account for the UDC properties of canonical RCs, we depend on the traditional syntactic mechanism of long-distance features without assuming an extra mechanism. We claim that island constraints are substantially irrelevant to the filler-gap dependencies. Instead, semantic, pragmatic and processing accounts should be considered in order to deal with nonlocal extraction phenomena of canonical RCs.
CHAPTER 7

CONCLUSION

In this thesis, we have provided a lexical analysis of select unbounded dependency constructions (UDCs) in Korean including topic constructions, tough predicate constructions, double nominative constructions, and relative clause constructions. The formation of these four constructions in Korean has been one of the main issues in Korean syntax and semantics. We have shown that syntactic and semantic dependencies in these UDCs can be accounted for with nonlocal SLASH feature percolation proposed by Pollard and Sag (1994). We have provided lexical constraints and structural representations that work for the four major Korean UDCs. In addition, our analysis discussed how to handle morphosyntactically unique properties of Korean including case marking, scrambling, complementizers, etc.

Following Occam’s razor, our lexical analysis is favored because it handled the formation of UDCs without posing extra syntactic mechanisms. In previous movement-based approaches, analyses of Korean UDCs have been problematic due to frequent island constraint violations and subadjacency conditions. In contrast, the inheritance of nonempty \textsc{INHER|SLASH} in Korean UDCs is not prevented by any syntactic constraints. Instead, processing factors related to semantics and pragmatics contribute to island constraint violations.
Our main proposals in each chapter can be summarized as follows.

In Chapter 2, we discussed the status of UDC gaps in Korean. We argued against semantic binding approaches and for a trace analysis of Korean UDC gaps. We showed that UDC gaps have tight semantic and syntactic associations with coreferential constituents. We also demonstrated how strong crossover, coordination, and island constraint violations favor our trace analysis. Moreover, we claimed that resumptive elements in gap positions are overt traces. While UDC gaps have unique properties as traces, they share similar syntactic and semantic constraints with their corresponding forms in non-UDCs.

In Chapter 3, we analyzed one type of strong UDC, namely, topic constructions. We divided Korean topic constructions into two kinds: gapless constructions and gapped constructions. We presented two Topic-Head schemas to handle these two types of topicalization. While focusing on gapped constructions, we compared topicalization and scrambling; previous researchers have assumed that topicalization is licensed by the same syntactic mechanism as scrambling. In contrast, we claimed that topicalization needs to be differentiated from scrambling in Korean in terms of case marking, long-distance dependency, and resumptive pronouns.

In Chapter 4, we differentiated Korean tough predicate constructions (TCs) into two classes: ki-ka constructions and ki-ey constructions. We addressed different properties of these two tough predicate constructions. While applying our trace analysis of gaps to TCs, we showed that the formation of TCs can be represented by the SLASH feature and by binding within the lexical entries of tough predicates.

In Chapter 5, we expanded our analysis of TCs to account for certain double nominative constructions (DNCs) in Korean. As background discussion, we introduced a classification of Korean DNCs and described their grammatical properties. In general, a semantic relation
of possessor-possessed has been known to license Korean DNCs. However, we argued that the formation of certain DNCs involves long-distance dependencies that appear in TCs. On the basis of syntactic and semantic similarities between TCs and certain DNCs, we provided a structural analysis of DNCs using a nonlocal SLASH feature and new lexical constraints.

In Chapter 6, we discussed the formation of Korean relative clause constructions and provided lexical constraints for them. Like topic constructions, we divided relative clause constructions in Korean into gapless and gapped constructions. We explained the formation of Korean RCs with a new schema and a nonlocal SLASH feature. In addition, we observed island constraint violations and adjunct vs. argument extractions in Korean RCs. We basically claimed that island constraints are substantially irrelevant to UDC dependencies. Instead, we argued that semantic, pragmatic and processing accounts should be considered in order to deal with nonlocal extraction phenomena of canonical RCs.
BIBLIOGRAPHY


Dominic Cipollone. *Tough* constructions. The Ohio State University, MS, 1996.


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Robert Levine. BMS on extraction: rethinking the argument. Ohio State Univ. ms., 2002b.


