Relativization in Korean ko Constructions: A Topological Solution

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Abstract

Using a linearization formalism in the framework of dependency grammars, this article proposes a simple analysis of new data on word order constraints in Korean *ko* construction composed of three verbs V3-*ko* V2 V1. It will be shown that V3-*ko* rejoins the verb cluster in the case of extraction of its nominal dependent, while V3-*ko* forms an independent constituent with its dependent in the case where extraction does not take place. We show that island constraints can take place indirectly at the level of topological (constituent) structure, contrary to classic descriptions of extraction put forth by Ross (1967) or Kaplan & Zaenen (1989).

1. Introduction

In this paper, we present an analysis of Korean word order constraints concerning the *ko* construction. Observing an interesting and yet undescribed word order constraints of *ko* constructions composed of the three verbs V3-*ko* V2 V1[1], we note that in the case where V3-*ko* is separated from V2V1, relativization of a nominal dependent of V3-*ko* is impossible. On the basis of the notion of "island constraints", we try to clarify the reasons why the displacement of V3 prevents relative clause formation and on which kind of linguistic elements these constraints apply. We will show that island constraints can proceed indirectly at the topological level, in comparison with Ross (1967) and with Kaplan & Zaenen (1989) where island constraints are only sensitive to the syntactic level.

2. *ko* Constructions and Relativization

In this section, we present *ko* construction as having different readings: non-sequential, sequential and simultaneous. We note that the possibility of extraction is involved with different readings of *ko* constructions.

2.1. *ko* Constructions and Relativization in Previous Studies

[1] These numbers refer to the order of subcategorization: V1 taking V2 as an argument etc.

Commonly, the *ko* marker in predicative chains is considered to have two functions in the literature: temporal adjunct (like *after, and then*) and conjunctive (like *and*) (Cho 1995):

(1) Kim-i bab-eul meok-**ko** ppang-eul meok-eoss-da
Kim-SUBJ rice-ACC eat-**KO** bread-ACC eat-P-N[2]
'Kim ate the rice and ate the bread' or 'Kim ate the bread after eating the rice'

(Cho 1995)

This sentence can have two readings, that is, non-sequential or sequential. We recognize that when the sentence has the non-sequential reading, no complement can be extracted (see 2a). These properties show that in this case, the *ko* marker marks a coordination according to Coordination Structure Constraint (Ross 1967). On the other hand, in the case of the sequential reading of the sentence (1), the extraction only out of the final conjunct is allowed:

(2) a. * Kim-i bal-eul meok-ko **Ø** meok-eun **ppang** [non-sequentilatiy]
Kim-SUBJ rice-ACC eat-KO eat-ADN **bread**
b. Kim-i bal-eul meok-ko **Ø** meok-eun **ppang** [sequentiality]
Kim-SUBJ rice-ACC eat-KO eat-ADN **bread**
'the bread which Kim ate after eating the rice'

Kwon (2004) points out that *ko* construction can also have simultaneous readings:

(3) Nonkae-ka jeokjang-eul kkyeoan-ko kang-e tusinha-eoss-da [simultaneity]
Nonkae-SUBJ enemy-general-ACC hug-KO river-LOC throw-P-N
'Nonkae threw herself into the river hugging the enemy general'

(Kwon 2004)

According to Kwon (2004), it is possible to relativize both *jeokjang* 'enemy general' and *kang* 'river', respectively, complement of V2 and one of V1:

(4) a. Nonkae-ka **Ø** kkyeoan-ko kang-e tusinha-n **jeokjang**
Nonkae-SUBJ hug-KO river-LOC throw-ADN **enemy-general**
'The enemy general who Nonkae hugged when she threw herself into the river'

[2] SUBJ: subject ACC: accusative LOC: locative PL: plural KO: *ko* marker
P: past tense N: neutral form NM: nominalizer ADN: adnominal

b. Nonkae-ka jeokjang-eul kkyeoan-ko **Ø** tusinha-n **kang**
Nonkae-SUBJ enemy-general-ACC hug-KO throw-ADN **river**
'The river that Nonkae threw herself into hugging the enemy general'

(Kwon 2004)

However, we realize that the sentence (4a) is not natural[3] and we prefer to produce the following sentence in which V2 *kkyeoan-* 'hug' is placed just next to V1 *tusinha-* 'throw oneself':

(5) Nonkae-ka kang-e **kkyeoan-ko tusinha-n** jeokjang
Nonkae-SBUJ river-LOC **hug-KO throw-ADN** enemy-general
'The enemy general who Nonkae hugged when she threw herself into the river'

That is to say, the extraction of *jeokjang* 'enemy general' is possible, but it is more preferable in the case where V2 and V1 are placed side by side. Hence, we suppose that there exist word order constraints when relativizing, in particular the complement of V-*ko* in the *ko* construction with simultaneous readings.

In the next section, we present our data which corresponds to *ko* construction having simultaneous readings and we discuss undescribed word order constraints of our target constructions, namely, impossibility of extraction of V3's nominal dependent in the case where V3 is separated from V2V1.

2.2. Island Constraints in *ko* Constructions with Simultaneity

We encountered in our corpus data (6) with three verbs V3V2V1 having simultaneous readings:

(6) dareun haksaeng-deul-i hakkyo-e seukulbus-reul **ta-ko dani-ki sijakha-eoss-eo**
other student-PL-SUBJ school-LOC schoolbus-ACC **take-KO go-NM begin-P-N**
'Other students began to go to school by school bus'

In this example, three verbs are juxtaposed; V1 is an aspectual verb, V2 and V3 don't have a tense marker and V3 has the *ko* marker. As shown by Kwon (2004), relativization is possible without any problem, the *seukulbus* 'school bus' can be relativized:

(7) dareun haksaeng-deul-i hakkyo-e **ta-ko dani-ki sijakha-n** seukulbus
other student-PL-SUBJ school-LOC **take-KO go-NM begin-ADN** school bus
'the school bus by which other students began to go to school'

[3] This was confirmed by a sample of Korean speakers. According to them, we could interpret this sentence (4a) as if the enemy general threw himself into the river, not *Nonkae*.

Korean is well known as a verb final language with relatively free word order for verbal arguments ("scrambling"): Chung (1998) emphasized a great freedom of surface word order in Korean, and Choi (1999) pointed out that information structural notions such as topic and focus play a crucial role in scrambling. Hence, the production of other sentences with varied word order is possible:[4]

(8) a. hakkyo-e dareun haksaeng-deul-i seukulbus-reul **ta-ko dani-ki sijakha-eoss-eo**
school-LOC other student-PL-SUBJ schoolbus-ACC **take-KO go-NM begin-P-N**
'Other students began to go to school by school bus'

b. dareun haksaeng-deul-i seukulbus-reul **ta-ko** hakkyo-e **dani-ki sijakha-eoss-eo**
other student-PL-SUBJ schoolbus-ACC **take-KO** school-LOC **go-NM begin-P-N**
'Other students began to go to school by school bus'

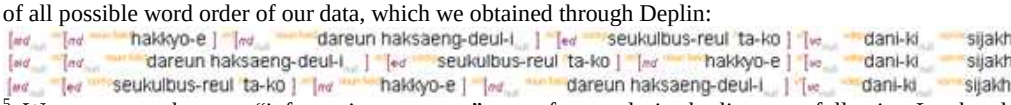
c. seukulbus-reul **ta-ko** dareun haksaeng-deul-i hakkyo-e **dani-ki sijakha-eoss-eo**
schoolbus-ACC **take-KO** other student-PL-SUBJ school-LOC **go-NM begin-P-N**
'Other students began to go to school by school bus'

In the sentence (8a), the three verbs are still placed side by side, but the locative complement *hakkyo-e* 'to school' of V2 *dani-* 'go' is placed at the beginning of the sentence following a particular communicative structure[5]. This means that *hakkyo-e* 'to school' functions as a topic of the context[6], which is generally placed at the beginning of the sentence: This communicative context arises, for example, when the interlocutor wonders how other students began to go to school. By contrast, in the examples (8b) and (8c), the complement of V2, *hakkyo-e*, can be intercalated between V3 and V2, hence, the sequence V3V2V1 is no longer connected. The important point is that the relativization of *seukulbus* 'school bus' becomes interestingly unnatural in this case:

(9) a. dareun haksaeng-deul-i seukulbus-reul **ta-ko** hakkyo-e **dani-ki sijakha-eoss-eo**
other student-PL-SUBJ schoolbus-ACC **take-KO** school-LOC **go-NM begin-P-N**
'Other students began to go to the school by school bus'

b. ?? dareun haksaeng-deul-i **ta-ko** hakkyo-e **dani-ki sijakha-n** seukulbus
other student-PL-SUBJ **take-KO** school-LOC **go-NM begin-ADN** school bus

[4] We can obtain all possible linear orders using Deplin (Dependency Linearizer) implemented by Kim Gerdes for the purpose of linearizing all possible word orders from the same syntactic dependency tree, and we show just some part of all possible word order of our data, which we obtained through Deplin:



[5] We encounter the term "information structure" more frequently in the literature following Lambrecht (1994), but within our framework, we prefer to employ this term "communicative structure" following Mel'čuk (2001) in which emphasis is placed on the way in which the content of the sentence is communicated or transmitted.

[6] Here, we simply present a piece of information in a situation instead of considering a whole context. But we would like to insist on the fact that it is necessary to take into account the discourse context in which the sentence is embedded when discussing the communicative structure with the notions such as topic and focus.

A simple but interesting question arises: Does the displacement of V3 with its nominal dependent out of the predicative chains V3V2V1 cause the impossibility of relativization? That is to say, the ungrammaticality of the sentence (9b) leads us to think about word order constraints in predicative chains, more specifically, with *ko* constructions and what happens in the process of relativization (or extraction).

In the next section, after sketching several descriptions of island constraints, in particular those of Ross (1967) and Kaplan & Zaenen (1989), we give the reasons why we need a topological solution for extraction in Korean where word order is relatively free.

3. Several Accounts of Island Constraints

There are several accounts in the literature which still maintain that the displacement operations we observed in the previous section are related to the syntactic level: According to Ross (1967) where English is the main concern, displacement operations such as topicalization, *wh*-movement, relative clause formation etc. are part of a larger pattern of constraints on movement that limit movement from certain kinds of constituents. In his terminology, a "syntactic constituent" that disallows movement from within itself is known as an "island" and this behavior is an "island constraint". Let us take just one example of these kinds of constraints on movement operations; the complex NP constraint which indicates that extraction out of a clause within an NP is not grammatical:

(10) a. *I read* [*a statement* [*which was about that man*]]

b. * *the man who I read a statement* [*which was about* _____] *is sick*

(Ross 1967)

However, we wonder how we can effectively describe this phenomenon in different languages such as Korean where word order is relatively free and the communicative structure plays an important role in word order constraints. For example, in analysis by X-bar Theory, where syntactic relations and word order are manipulated in the same structure, it would be very complicated and require mixing the different levels of information. On the other hand, one of the main concerns of the Lexical-Functional Grammar (LFG) framework (Bresnan & Kaplan 1982) is to account for the behavior of the so called "non-configurational" languages where word order is relatively free, and there exist two separated levels: "c-structure" describing constituency (word order and phrasal grouping) and "f-structure" containing functional information. Also, island constraints have been studied in particular in terms of "long-distance dependencies" in this model. Even though this manipulation is concerned with ordering operation in a transformational account, LFG has no movement operations and there are no empty categories in c-structure either. Kaplan & Zaenen (1989) claim that it is more convincing that long distance dependencies are described at the functional level, based on the data from Icelandic. In this language, adverb placement

illustrates that both adjunct and argument PP's are sisters of S when there is no auxiliary, but they are both in the VP when the auxiliary appears[7]:

(11) a. Eg vonaðist **alltaf** til að hann fengi bíl [argument]
I hoped **always** for that he will-get car
'I always hoped that he would get a car'

b. Eg hef **alltaf** vonast til að hann fengi bíl
I have **always** hoped for that he will-get car
'I have always hoped that he would get a car'

c. * Eg hef vonast **alltaf** til að hann fengi bíl
I have hoped **always** for that he will-get car

(12) a. Hann fór **alltaf** eftir að eg lauk verkinu [adjunct]
he went **always** after that I finished the work
'He always went after I finished the work'

b. Hann hefur **alltaf** farið eftir að eg lyk verkinu
he has **always** gone after that I finished work-the
'He has always gone after I finished the work'

c.* Hann hefur farið **alltaf** eftir að eg lyk verkinu
he has gone **always** after that I finished work-the

(Kaplan & Zaenen 1989)

This shows that these two different types of complements have the same c-structure. This same configuration allows for extraction only when PP is an argument, but not when PP is an adjunct:

(13) a. Hvaða bíl vonaðist bu **alltaf** fil að hann fengi? [argument]
which car hoped you **always** for that he will-get?
'Which car did you always hope he would get?'

b.* Hvaða verki fór hann **alltaf** eftir að eg lauk? [adjunct]
which job went he **always** after that I finished?

(Kaplan & Zaenen 1989)

Hence, Kaplan & Zaenen (1989) claim that long-distance dependencies are sensitive to functional information rather than phrase structure constraints. For generalization about this fact, they thus introduce the mechanism they term "Functional Uncertainty", which permits an entirely functional approach to

[7] Note that in Icelandic, when the auxiliary appears in a sentence, adverb placement becomes more restrictive.

constraints on unbounded dependencies, based on the idea that "appropriate predicate-argument relations can be defined without relying on empty nodes or traces in c-structure" (Kaplan & Zaenen 1989). In this framework, the topic or focus are described as (discourse) function in the f-structure. In the case of long-distance dependencies such as topicalization or relative clause formation, the extraction of an object out of the same level or out of an embedded constituent is described at f-structure through functional equation with a regular expression: (↑TOPIC) = (↑COMP* OBJ).[8] And the adverbial island constraints in Icelandic shown above can be described as follows: (↑TOPIC) = (↑(GF-ADJ)* GF) in which GF means grammatical functions, and GF-ADJ indicates the set of grammatical functions other than adjunct.

However, we suppose that within LFG framework, we cannot give an account of the data (6), (7) and (9), shown in the section 2.2 where we see different word order configurations, which differs from Icelandic examples illustrated above. Furthermore, we assume that our data (6) and (9a) have the same functional structure (see Fig. I), therefore, the contrast between two relativizations cannot be described at the syntactic level in our study. This means that even LFG framework is not sufficient for Korean data where word order is relatively free, and we need further analysis to arrive at a solution.

In our study, that which is modeled through movement in Generative Grammar is modeled using a topological approach through the correspondence between two separated and different representations, namely, the "syntax-topology interface". We believe that extraction is a phenomenon controlled by the "semantic-syntax interface"; the extracted noun controlled by this interface is a head of relative clause in the syntactic (dependency) structure; topology doesn't intervene at this level. But, this intervenes in the syntax-topology interface which allows linearization of the syntactic structure obtained by the semantic-syntax interface. Examples (7 and 9b) lead us to the assumption that topology can intervene in constraints on extraction in some way. Hence, following common approaches in dependency theory, in particular Gerdes & Kahane (2001), we propose the consideration of two separate levels of organization: the syntactic (dependency) structure in which the functions of the yet unordered words are described, and the "topological (constituent) structure" in which the order and the grouping of the words are expressed in terms of the functional relation and in terms of communicative structure. We also introduce the term "verb cluster", proposed for predicative chains which tend to form a topological constituent with a strong cohesion in the linearization process, namely, in the syntax-topology interface.

In this framework, we suppose the existence of two possibly competing structures in the word order constraints in Korean predicative chains and relativization: 1) in the case of extraction of the nominal dependent of V3-*ko*, the sequence V3V2V1 seems to have obtained a higher degree of cohesion ("verb cluster" construction), 2) in the case where extraction does not take place, V3 and its dependent can form a free constituent (as shown in (8b) and (8c)). And it will be argued and reconsidered that topology

[8] (i) a. *Mary John telephoned yesterday* (Topic = Obj)
b. *Mary John claimed that Bill telephoned yesterday* (Topic = Comp Obj)
c. *Mary John claimed that Bill said that ….that Henry telephoned yesterday* (Topic = Comp …Comp Obj)
(Kaplan & Zaenen 1989)

indirectly intervenes in constraints on extraction, unlike the thesis of Ross (1967), and of Kaplan & Zaenen (1989) where island constraints are functionally conditioned.

4. Topological Account of Relativization in *ko* Constructions

This section is divided into two subsections according to the two competing hypotheses we proposed above. On the basis of word order constraints on, in particular V3-*ko*, we investigate how topology intervenes in constraints on extraction.

4.1. Possibility of Relativization and Formation of "Verb Cluster"

Let us look once more at our initial data in which the sequence V3V2V1 is placed side by side (the sentences (6 and 7) are reproduced here as (14) for convenience of the reader):

(14) a. dareun haksaeng-deul-i hakkyo-e seukulbus-reul **ta-ko dani-ki sijakha-eoss-eo**
other student-PL-SUBJ school-LOC schoolbus-ACC **take-KO go-NM begin-P-N**
'Other students began to go to school by school bus'

b. dareun haksaeng-deul-i hakkyo-e **ta-ko dani-ki sijakha-n** seukulbus
other student-PL-SUBJ school-LOC **take-KO go-NM begin-ADN** school bus
'the school bus by which other students began to go to school'

Firstly, let us observe the dependency among these three verbs. According to some authors (Chung 1993[9], Kwon 2004), the *ko* construction, such as *ta-ko dani-* 'take and go', expresses simultaneity. Furthermore, in *dani-ki sijakha-* 'begin to go', *-ki* is a nominalization marker,[10] and *sijakha-* 'begin' demands the same marker when combining with another verb. Note that the position between V2 and V1 is confined to few specific elements.[11] In the simultaneous construction, *seukulbus-reul ta-ko* 'take the school bus' could be considered as an adjunction expressing how the students go to school. Moreover, the free placement of the complements ("scrambling") implies that *ta-ko* 'take' is one of the dependents of *dani-* 'go'. This is why we suppose that V3 *ta-ko* 'take' depends on V2 *dani-ki* 'go', which gives the following functional configuration:

[9] His work focuses on serial verb constructions in Korean and he pointed out that there exist an ambiguity between serial verb construction and this type of *ko* construction which exhibits simultaneity.

[10] Cho (1988) pointed out that the suffixes like *-ki* and *-eum* are nominalizers and showed that these markers can be combined with other case suffixes such as *-(r)eul* (accusative marker), *-ka* (nominative marker) etc., for example with the verb *dali-* 'run': *dali-**ki-reul**, dali-**ki-ka***.

[11] Roughly speaking, if the accusative marker *–(r)eul* is combined with V2, this chain V3V2 can be separated from V1. However, we do not deal with this problem in this paper. Here, we are interested rather in the separation of the embedded verb V3, which bears the *ko* marker, from V2V1.

Fig. I. Dependency tree of our examples [12]

As mentioned above, our data has this same syntactic structure, but with different word order configurations in the case of extraction. This is why we need a stronger model which can effectively describe word order constraints. Here, we try to explain these constraints in the process of relativization with three rules in the syntax-topology interface, proposed by Gerdes & Kahane (2001, 2006 & 2007):

> **Constituent creation rules** give the types of constituents a word can create and specify which field of the constituent it occupies; **Constituent description rules** describe the ordered list of fields the constituent consists of and indicate whether a field can or must accommodate one or more constituents; **Constituent placement rules** indicate into which field a word can go – depending on the position and the constituent of its governor
>
> (Gerdes & Kahane 2007)

In the Korean topological grammar of Chun (2009b), the sentence is analyzed as a template, and the main constituent, opened by the highest verb of the dependency tree, consists of the main field and the verbal field, "field" being positions that can be filled under certain conditions. The main field can accept any number of elements, while the verbal field has to have exactly one occupant.

Considering the topology-syntax interface rules, let us analyze our data (14). As mentioned in section 3, even though extraction is controlled by the semantic-syntax interface, we believe that, in the topology-syntax interface, topology blocks the linearization of certain sentences containing extraction. That is to say, this is a constraint on the linearization of the syntactic structure in which *seukulbus* 'school

[12] In our examples, the three verbs seem to share the same agent. However, this is not entirely true; Chun (2009b) argued that in the dependency tree, the subject in Korean doesn't always attach to the highest verb, because in some cases, we have a detached completive phrase that has its own subject. Furthermore, Korean is a language where it is sometimes more natural to omit the subject in speech, and where the subject can be placed relatively freely. So, we perceive that this problem is not so simple. This is not our preoccupation for the time being, and therefore this problem will not be explored in this work, and we describe the dependency tree as if the subject depends on the highest verb.

bus' is extracted. In this case, V3 doesn't want to remain alone (without its nominal dependent) and takes the position opened by its governor V2 for a verbal dependent in the "verb cluster", topological constituent, which has great cohesion in word order:[13]

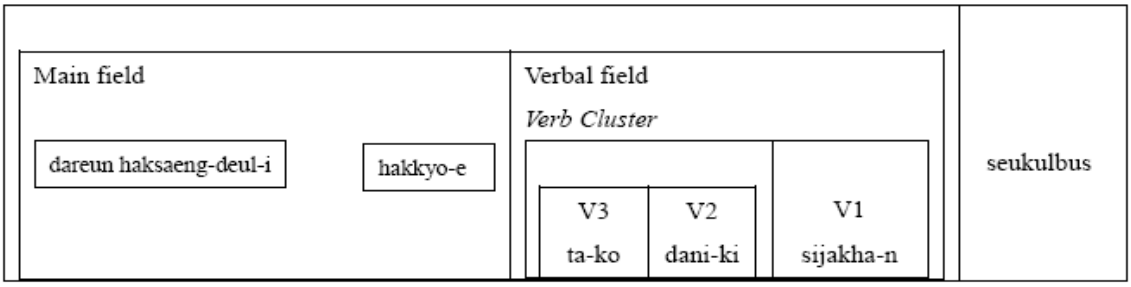


Fig. II. Topological structure of the sentence (14b)[14]

It is noted that only the word order of the sentence (14b) is satisfactory.

In the following section, we will see that in comparison with the results found here, in the case where extraction of *seukulbus* 'school bus' does not take place, V3 can form an independent constituent with its nominal dependent.

4.2. Impossibility of Relativization and Emancipation of V3

Let us begin with the examples in which V3 is separated from its governor in word order and the relative clause formation of this sentence is not natural (the sentences (9) are reproduced here as (15) for convenience of the reader):

(15) a. dareun haksaeng-deul-i seukulbus-reul **ta-ko** hakkyo-e **dani-ki sijakha-eoss-eo**
other student-PL-SUBJ schoolbus-ACC **take-KO** school-LOC **go-NM begin-P-N**
'Other students began to go to school by school bus'

b. ?? dareun haksaeng-deul-i **ta-ko** hakkyo-e **dani-ki sijakha-n** seukulbus
other student-PL-SUBJ **take-KO** school-LOC **go-NM begin-ADN** school bus

As shown in these examples, there is only one difference distinguished from the data in the previous section, i.e., displacement of V3 *ta-ko* 'take'. Furthermore, as we discussed above, they have the same syntactic structure (see Fig. I). This is why we assume that the different placement of V3 *ta-ko* 'take' is involved with the impossibility of relativization of *seukulbus* 'school bus'.

[13] Gerdes & Kahane (2001, 2006) discussed the apparition of the "verb cluster" in European languages such as French and German. Chun (2009a, 2009b) also argued that this is observed in the case of Korean predicative chains. Moreover, this type of *ko* construction is not traditionally recognized as a construction having strong cohesion, so we expect our approach to open a new point of view concerning the analysis of Korean predicative chains.

[14] Gerdes & Kahane (2006) explain and emphasize the relation between extraction and verb cluster construction.

As stated in the sections 3 and 4.1, the semantic-syntax interface directly intervenes in extraction. Nevertheless, we have shown that our constraints on word order are expressed in the topology-syntax interface, and we have discussed our first constraint in the case of extraction of *seukulbus* 'school bus'; V3 tends to remain with its governor V2 when its dependent leaves from V3 for extraction. On the other hand, we recognized, in the sentence (15), that when V3 is separated from V2V1, extraction is not possible. This is why we suppose that V3 obeys another constraint on linearization. In order to explain this constraint, we need to present some topological conditions: In the case where the element is not placed in the topological constituent opened by its syntactic governor, we are confronted by "emancipation". That is to say, the dependents of a verb do not have to be in their governor's constituent, but can be 'emancipated' and end up in a superior constituent (Gerdes & Kahane 2001). In fact, the heart of Gerdes & Kahane's proposition is based on the postulate that in certain cases of French and German predicative chains, the embedded verbs can either rejoin their governor's constituent (formation of verb cluster construction) or form their proper constituent.[15] The latter case is emancipation which corresponds to a move-α in a structure combining both functional and topological information.

Let us analyze our data (15) considering these facts. We believe that in the semantic-syntax interface, *seukulbus* 'school bus' is not extracted (this differs from the data (14)) so that V3 obeys another constraint: V3 has been emancipated from the governor's constituent in order to form an independent constituent with its nominal dependent. V3 *ta-ko* 'take' thus opens an embedded constituent with a place for its nominal dependent *seukulbus* 'school bus' in the main field:[16]

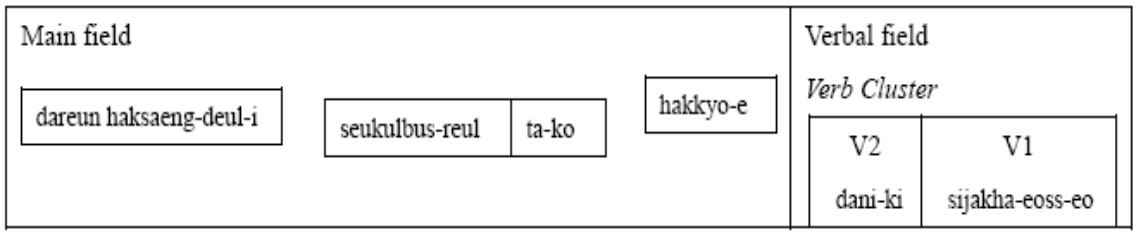


Fig. III. Topological structure of the sentence (15a)

This embedded constituent freely commutes with other complements and this gives us the two word orders (14a) and (15a) (and others).

Here, we allow that our analysis is unable to fully satisfy the possibility that topology could directly control island constraints. However, we would like to insist on the fact that topology blocks the linearization of certain sentences containing extraction; when *seukulbus* 'school bus' is extracted, V3 alone isn't able to form an embedded constituent, and this must rejoin the verb cluster with its governor V2. On the other hand, when *seukulbus* 'school bus' is not extracted, V3 has its nominal dependent and

[15] Emancipation renders the correspondence between the syntactic structure and the topological structure more complex. For this reason, it must be communicatively well motivated (Gerdes & Kahane 2001).
[16] It is noted that any complements in the embedded constituent cannot be emancipated.

V3 prefers to be placed with that dependent, more concisely, V3 forms an embedded constituent in the main field.

In our study, even though our analysis couldn't completely satisfy the description of the topological constraints on extraction, we believe that our model, which proposes to separate dependency and constituency, thereby distinguishing it from the X-bar Theory, permits us to capture this topological account of relativization in Korean *ko* constructions, which could not be noted using LFG where dependency and constituency are separately described. Of course, we expect to develop a formalization which permits direct and complete description of the topological constraints on extraction.

5. Conclusion

We have discussed word order constraints in Korean *ko* constructions with simultaneous readings, composed of three verbs V3-*ko* V2 V1: V3-*ko* rejoins the verb cluster in the case of extraction of its nominal dependent, while in the case where extraction does not take place, V3-*ko* forms an independent constituent with its nominal dependent. We have shown that the separation of the function and of the constituency facilitates the analysis of predicative chains in Korean where word order is relatively free. Moreover, it is revealed that topology allows indirect description of constraints on extraction, contrary to classic descriptions of extraction such as Ross (1967) or Kaplan & Zaenen (1989) where island constraints are only sensitive to the syntactic level.

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