DP Internal Structure of Korean

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This work proposes a structural account of Korean determiner phrase (DP) under the assumption of Minimalist Program. The analysis is first motivated by the question of *What's in the DP?* In order to offer an answer to this question, possible DP-internal elements are determined first; they are the head noun and pre/post-nominal modifiers. Examinations of these elements and the interactions among them reveal their positions in the hierarchy of DP structure. Four optional functional categories are found in between the two obligatory projections, NP and DP. Special attention is paid to, first, *floating quantifier* a popular topic among Korean and Japanese syntacticians, and second, the post-nominal quantifier *ta*. The data analysis reveals that the numeral phrase projects immediately above the noun phrase, and the classifier phrase takes the numeral phrase as its complement, which many researchers agree. Then, two subsequent quantifier phrases merge in, the higher one of which represents the quantifier *ta*. All of the functional categories above the NP project post-nominally. Finally, I argue that DP-layer is necessary as the locus of a number of features and the case-assignee.

Keywords: determiner, phrase structure, Korean, quantifier, functional categories

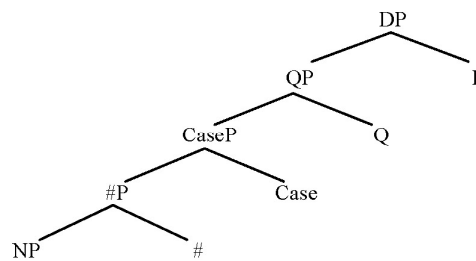
1. Introduction

Many linguists seem to assume that Korean nominal phrase is headed by DP, but proposals dealing with the entire structure of DP are rare. Much attention has been paid to certain part of the DP or some syntactic operations in it. Those most discussed topics in the literature include what is referred to as *floating quantifier* along with the case assignment

system and scrambling of constituents of the DP. Complicated scope relations among those modifiers inside DP and a daunting array of word order possibilities appear to have been discouraging researchers from scrutinizing the DP.

Among those DP accounts, one heavily cited study is Watanabe (2006) who proposed a DP structure of Japanese, a language that is structurally very similar to Korean. Let's take a look at Watanabe's structure shown in (1) below.

(1) Watanabe's (2006) Japanese DP structure (#P: Numeral Phrase)

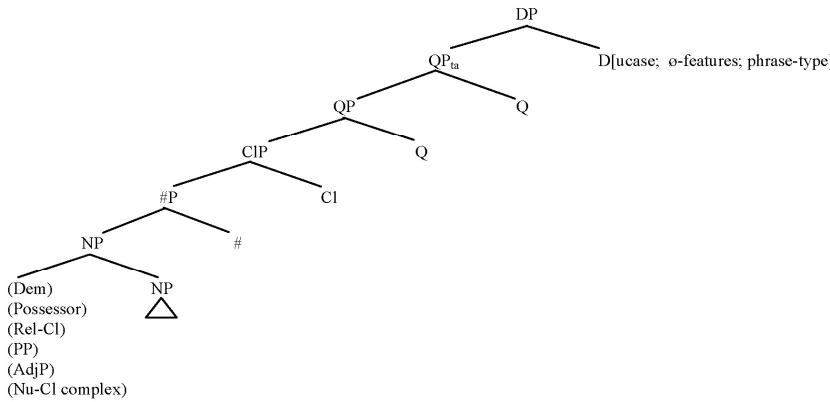


Consider CaseP in (1). This projection is motivated in order to account for the variation in word order and case marker. Example (2) below shows the variation. (Below example is a copy of Watanabe's example number (3) on p. 244. The object DPs are embraced by the brackets.)

(2) a.	John-wa	[hon	san-satsu-o]	katta.
	John-TOP	book	3-Cl-ACC	bought
	"John bought three books."			
b.	John-wa	[san-satsu-no	hon-o]	katta.
	John-TOP	3-Cl-GEN	book-ACC	bought
c.	John-wa	[hon-o	san-satsu]	katta.
	John-TOP	book-ACC	3-Cl-ACC	bought
d.	John-wa	[san-satsu	hon-o]	katta.
	John-TOP	3-Cl	book-ACC	bought

Watanabe argues that these word orders are derived by movement operations from the underlying structure he postulates, which is given in (3).

(3)



For example, the NP obligatorily moves up to SpecCaseP to derive the order in (2a), and from there, #P moves to the SpecQP deriving the order of (2b), and furthermore, if CaseP moves up to SpecDP, the order of (2c) is achieved from (2b).[1)]

One problem regarding the projection of CaseP is that, although not completely clear in his illustration, the case of the DP merges in the structure during the process of DP generation. Those movements deriving various orders, also as part of the process of DP generation, include the case phrase as well. This is problematic simply because case should be assigned by a DP-external element when the DP merges into a larger phrase, e.g. the VP. Another account similar to this, case being DP-internal, is Kim (2005) whose focus was Korean floating quantifiers. Section 2.1 below discusses this issue in detail and presents evidence showing that case is not generated DP-internally.

There is another problem in Watanabe (2006) structure which involves the D-head. He shows two examples of D-head (his example number 83), the boldfaced morphemes in the sentences below:

1) Watanabe (2006) assumes that the insertion of -no in (2b) is a matter of morphology, which is inserted at the PF branch. See Watanabe (2006) Section 3.2 for detailed illustration of derivations.

(4) a. John-wa dono hon-ø-**mo** yonda.
John-TOP which book-***MO*** read
"John read every book."
b. John-wa dono hon-**ka**-o yonda.
John-TOP which book-***KA***-ACC read
"John read some book."

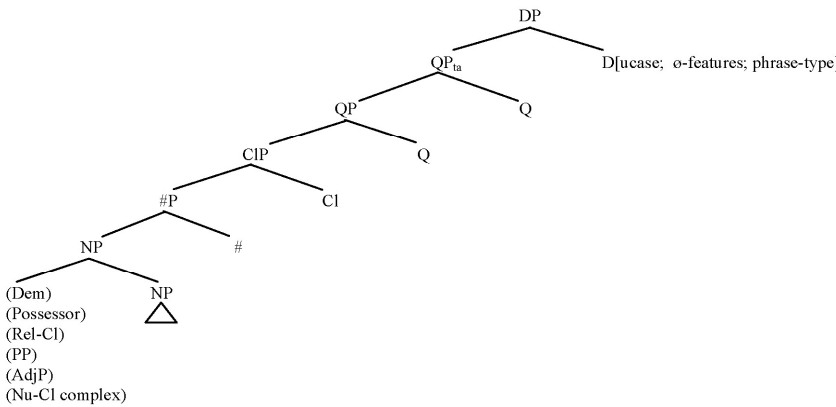
Watanabe argues that these morphemes are quantifiers (*mo* is a universal one, and *ka* existential) constituting indeed the D-head. K-H Gil & Tsoulas (2005) reject this view for the very reason that these morphemes *are* quantifiers; if they are quantifiers, their locus should be QP in Watanabe's structure. K-H Gill & Tsoulas (2005) further argues that languages like Korean and Japanese have no roles for D; therefore, the projection of D is not motivated. M-J Jo (2000) shows that Korean lacks DP layer for a different reason that the role of D is split and carried out by other elements in the sentence. I agree with Watanabe that DP projection is required but for different motivations, which is the topic of Section 3.5, but I conclude that there is no overt form of D-head; the Korean counterpart of the Japanese morpheme in (4a) is a relative of case markers rather than a D-head. (Korean counterpart of (4b) is an unacceptable sentence.) Some other earlier accounts on DP structure are introduced and reviewed whenever necessary in the sections following. (See Watanabe (2006), K-H Gill & Tsoulas (2005), and S-Y Park (2009) for more reviews and discussions.)

Section 2 provides an answer to the question *What is in the DP?* In this section, it is first determined that case is not DP-internally generated, rejecting any phrasal projection for case such as the CaseP in Watanabe (2006), or KP in M-J Jo (2000) and Suh (2005), or the case marker as a D-head in Kim (2005). The proposed structure is built in Sections 3. This structure building is based on the relations among the DP elements found in Section 2, that is, the head noun and its various modifiers. A great deal of the structure is determined by scope relations those modifiers exhibit with respect to one another and to the head noun. It is found that scope relations depend quite largely on the modifiers types, types

being e.g., descriptive adjective, post-positional phrase, quantifier, relative clause, and so on. It is also found that scope hierarchy at the surface form and the logical form may differ. Different LF forms arise particularly when a scope relation of certain modifiers raises multiple interpretations such as the well-known case of ambiguity between two quantifiers. I appreciate James Huang (1994) for his contribution exploring Logical Form (LF). The idea of LF and some important LF operations are well-summarized in Jeffery Poole (2002).

Building the structure below and justifying it, is the goal of this work.

(5) The Proposed Structure of Korean DP



Among the phrasal projections in (5), NP and DP are obligatory, and all of the intermediate projections are optional. All the optional phrases constitute postnominal modifiers while prenominal modifiers are NP adjuncts. #P and ClP are the focus of Sections 3.1. In Section 3.2 is built the structure up to QP, and Section 3.3 introduces QP_{ta}. The need for DP is discussed in Section 3.4.

2. Nominal Modifiers

In order to determine the structure of DP, an important step to make is to ask what the elements of DP are. To answer this question, it is

helpful to focus on prenominal and postnominal modifiers separately and examine their positions in the phrase. As it will be shown, postnominal modifiers bear particular importance in determining hierarchical structure of DP. In the following, case marker (focusing on accusative marker: ACC-marker) is eliminated from the structure of DP, and all the modifiers are discussed in the subsequent sections.

2.1. Eliminating the Case-Marker

The discussion begins with the multiple possible arrangements among the numeral quantifier, the noun, and the case marker. As it is well-known, numeral modification involves a numeral and its classifier forming a numeral-classifier (Nu-Cl) complex, which is where an important controversy lies in. Consider the sentences in (6) for the positional variation[2)]:

(6) a. Jonny-nun (pyunči-lul **sae-jang** / letter-ACC **three-Cl**) s'eu -ess-ta.
Jonny-TOP write-PST-IND
"Jonny wrote three letters."

b. Jonny-nun (pyunči **sae-jang**-ul / letter **three-Cl**-ACC) s'eu-ess-ta.
Jonny-TOP write-PST-IND

c. Jonny-nun (pyunči-lul **sae-jang**-ul / letter-ACC **three-Cl**-ACC) s'eu -ess-ta.
Jonny-TOP write-PST-IND

d. Jonny-nun (**sae-jang-**uy pyunči-lul / **three-Cl-**GEN letter- ACC) s'eu-ess-ta.
Jonny-TOP write-PST-IND

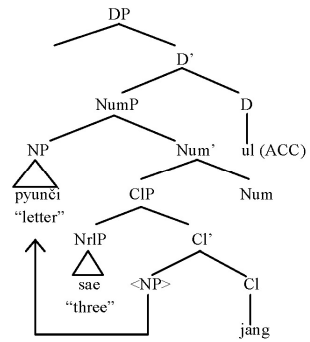
In each of the sentences above, the object DP is embraced in the brackets, and the Nu-Cl complex is boldfaced. In terms of the Nu-Cl complex's position with respect to the noun and the ACC-marker, there are four different possible arrangements. The ACC-marker *-(l)ul* can accompany either the head noun (6a) or the Nu-Cl complex (6b), or both (6c), and the Nu-Cl complex is in genitive preceding the ACC-marked noun head (6d). Compared to the Japanese examples in (2), Japanese lacks the order in (6c) not allowing multiple case marking, while Korean lacks the

2) For subject / object asymmetry, see B-M Kang (2002) and K-H Gil (2001).

Japanese arrangement in (2d).

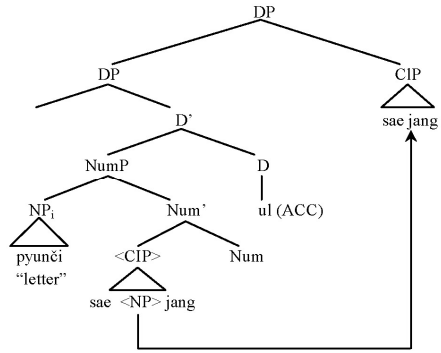
A relevant question to ask here is which elements among the ones in the bracket are generated DP-internally. As mentioned previously, it is often indicated in the literature that the ACC-marker is internal to the DP such as M-J Jo (2000) and Suh (2005) who propose a case phrase (KP) which subordinates the NP and takes the DP as its complement. An interesting proposal is made by Kim (2005), who argues that the order in (6b) is basic, derived from the underlying order [Nu-NP-Cl] by a movement of the NP as shown in (7). (NrlP = NumeralP=#P)

(7) NP movement deriving (6b) from underlying [Nu-NP-Cl] (Kim 2005)



Following this movement of NP, the ClP may also moves to the right of the D-head, which derive the form in (6a).

(8) ClP movement deriving (6a) from (6b) (Kim 2005)



There are two problems in this structure. The first problem is the case-marker being treated as a head of D. This analysis is simply unable to account for the multiple case-markers as in (6c). The second problem echoes the problem found in Watanabe's (2006) structure; the case marker is realized before the complete generation of DP. It is indeed an empirical question whether any DP internal movements can occur after case assignment on the DP. The answer is negative if assuming that such movements are part of the process of DP generation, and that case is assigned only to a completed DP from an external element.

A couple of tests show that case markers are DP-external and so, they cannot be realized during the DP generation. The first test is to evaluate DP responses to a wh-question, and the second test involves focalization by clefting. I consider these tests independent of various movement operations such as, most importantly, scrambling by which Korean achieves its relatively free word order.

First, consider the exchange in (9) and (10) below. To the question in (9), (10a) through (10f) offer either a sentential response (10a) and (10b), or a DP response (10c) through (10f). Among the responses in (10), DPs *with* the ACC-marker are ill-formed, which demonstrates that the DP cannot have the ACC-marker without a verbal projection.

(9) Jonny-nun mues-ul s'eu-ess-ni?
Jonny-TOP What-ACC write-PST-Q
"What did Jonny write?"

(10) a. Jonny-nun pyunči-lul sae-jang s'eu -ess-ta.
Jonny-TOP letter-ACC three-Cl write-PST-IND
"Jonny wrote three letters."
b. pyunči-lul sae-jang s'eu -ess-ta.
letter-ACC three-Cl write-PST-IND
"(Jonny) wrote three letters."
c. *pyunči sae-jang-ul
etter three-Cl-ACC
"three letters"

d. *pyunči-lul sae-jang
letter-ACC three-Cl
"three letters"

e. *pyunči-lul sae-jang-ul
letters-ACC three-Cl-ACC

f. pyunči sae-jang
letter three-Cl
"three letters" It is a ready explanation

In addition, in (11) below are more DP responses to the same question in (9). Among them, (11b) is well-formed while (11a) and (c) are not. Contrasting (11c) with (11b), the ACC-marker is not DP internal, but the GEN-marker is; the Nu-Cl complex receives the Gen-marker when it merges into the DP, which is a process of DP generation. (It should be noted that although (11b), the order of Nu-Cl complex preceding the noun, seems to be legitimate, it sounds much less natural than the one in (10f) above, the order of the noun preceding the Nu-Cl complex.)

(11) a. *sae-jang pyunčI
three-Cl letter
"three letters"

b. sae-jang-uy pyunčI
three-Cl-GEN letter

c. *sae-jang-uy pyunči-lul
three-Cl-GEN letter-ACC

Clefting test presents the same result as in (12a) and (b).

(12) a. Jonny-ga s'eu-n-kes-eun **pyunči**(*-lul) **sae-jang**(-*ul) i-da
Jonny-NOM write-REL-C-TOP **letter**(-ACC) **three-Cl**(-ACC) be-IND
"It is **three letters** that Jonny wrote."

b. Jonny-ga s'eu-n-kes-eun **sae-jang**-uy **pyunči**(-*lul) i-da
Jonny-NOM write-REL-C-TOP **three-Cl**-GEN **letter**(-ACC) be-IND
"It is **three letters** that Jonny wrote."

The clefted item is allowed to contain only the focus DP, and this excludes the case-marker. The findings here are in accordance with what is explained and summarized in Adger (2003) and Gill (2001), that is, case is assigned by a higher projection into which the assignee-phrase merges. Note, however, that the situation is a bit different in Japanese regarding an example from Watanabe (2006) that is taken from Kamio (1983):

(13) John-ga katta-no-wa **hon-o** **san-satsu** da
John-NOM bought-C-TOP **book-ACC** **three-Cl** copula
"It is three books that John bought."

Apparently, the ACC-marker is allowed in the clefted material. In fact, Watanabe notes that Kamio argues that the clefted constituent is not a DP but a VP, which explains the case marker. As seen in examples (10a) and (b), the ACC-marker is licensed only in the presence of VP which hosts the DP. Therefore, if the clefted focus is a VP, case-marker can certainly be present.

Now, the two phrases (10f) and (11b) are repeated in (14) below for a brief review of what is called *floating quantifier*. Phrases (14a) and (b) have the same noun and Nu-Cl complex, but they are ordered differently, and when the Nu-Cl complex precedes the noun, it must be GEN-marked as in (14b):

(14) a. pyunči sae-jang
letter three-Cl
"three letters"
b. sae-jang-uy pyunči
three-Cl-GEN letter
"three letters"

What is shown in (14) is the two possible positions of Nu-Cl complex: prenominal and postnominal positions. This is why the Nu-Cl complex is also called a floating quantifier. As seen examples from Kim (2005) and Watanabe (2006), a movement of Nu-Cl complex (or the head noun)

from one side to the other is certainly a possible analysis. But in that case, the GEN-marker in (14b) must be explained as to why the GEN-marker appears only with the prenominal Nu-Cl complex. However, what is more important at this point is to consider other DP-internal materials besides the Nu-Cl complex so that one can have a better look at each element. The following Sections 2.2 through 2.4 are devoted to reveal all possible nominal modifiers.

2.2. Prenominal Modifiers

Prenominal modifiers include almost all modifier types. The example in (15) below reveals all possible prenominal modifier types.[3)]

(15) a. [John-i chat]-eun TV-dyi-uy Tim-uy keu gabye-un
John-NOM find-REL(=ADJ) TV-behind-GEN Tim-GEN Dem light-ADJ
nora-n sae-kwen-uy bis'a-n cak-eun gyiha-n chaek
yellow-ADJ three-Cl-GEN expensive-ADJ small-ADJ precious-ADJ book
"Tim's those three, light, yellow, expensive, small, and precious books behind the TV that John found"

b. $(\text{Rel})^{+}$ $(\text{PP})^{+}$ (POSS) (Dem) $(\text{Adj})^{+}$ $\left(\begin{array}{l}\text{Nu-Cl Complex}\\ \text{Quantifier}\end{array}\right)$ $(\text{Adj})^{+}$ N

The grammaticality judgment of (15a) may be difficult to make because it is too long and unlikely for anyone to say. In fact, there are some issues related to word order which will be discussed in depth when building the structure in Section 3. (15b) is a classic phrasal notation showing the possible prenominal modifiers.[4)] There is a certain level of freedom in word order as well as preferred orders, which, however, do not concern the current purpose. Also, it is certainly possible to conjoin like-terms together. At any event, given the freedom of order, it seems unproblematic to assume that these prenominal modifiers are adjuncts to the noun. Also, since they are modifying the *noun*, the noun can certainly be the element which these modifiers adjoin to.

There are a few more things to note. First, all prenominal modifiers

3) I changed the noun from *letter* to *book* only because it is easier to find adjectives for *book* than for *letter*.

4) The parenthesis shows optionality, and the superscript "+" means possible multiplicity.

are morphologically marked either with the genitive or the adjective marker (and note the adjective marker varies phonologically while the former does not). These two markers are selected largely based on the modifier type. The genitive, for example, marks the postpositional phrase, the possessor, and the Nu-Cl complex. It is interesting that the relativizer is identical to the adjective marker in the above example (*-eun* = *-un* = *-n*).

Second, as indicated in (15b): $\begin{pmatrix} \text{Nu-Cl Complex} \\ \text{Quantifier} \end{pmatrix}$, other quantifiers such as the ones in (16a) and (b) compete for the position with the Nu-Cl complex. This is not surprising since if they occur together, an illegitimate DP would result as in (16a') and (b').[5)]

(16) a.	man-eun	a'. *man-eun	yel-kwen-uy	chaek	
	many-ADJ	many-ADJ	ten-Cl-ADJ	book	
	"many"	"*ten many books."			
b.	cuk-eun	b'. *cuk-eun	sae-kwen-uy	chaek	
	a few-ADJ	a few-ADJ	three-Cl-GEN	book	
	"a few"	"*a few three books"			

The last to note is the class of demonstratives such as *keu* "that", the fifth word in (15a). Other examples include *i* "this", *ce* "that". The demonstrative must precede the noun, and as long as it is prenominal, it is quite free of order, but they are not completely free because they interact with the head noun and some postnominal modifiers. This interaction will be discussed in Section 3.3. Currently, we have seen all possible prenominal modifier types. Let's turn our attention to postnominal modifiers.

2.3. Postnominal Modifiers

Korean being a well-known head-final language, its modifiers after the head noun are limited and positionally restricted. Consider the following

5) Note that some quantifiers like (16) competing for the position with Nu-Cl complex, are ADJ-marked. Other examples includes the following: *mod-eun* "all"; *ett-un* "some".

DPs in (17). The first example is structurally identical to (10f), having a Nu-Cl complex postnominally.

(17) a. chaek sae-kwen b. chaek jenbu c. chaek ta_N
book three-Cl book all letter all
"three books" "all books" "all books"

The examples in (18) illustrate that the Nu-Cl complex and the postnominal quantifiers *jenbu* or ta_N may co-occur. As seen in (19), although it is a type of quantifier, ta_N is treated as separate category; it is a category of its own, not competing for position with any preceding quantifier.

(18) a. chaek sae-kwen jenbu
book three-Cl all
"all three books"
b. chaek sae-kwen ta_N
book three-Cl all
"all three books"
c. chaek jenbu ta_N
book all all
"all books"
d. chaek sae-kwen jenbu ta_N
book three-Cl all all
"all three books"

(19) N (Nu-Cl Complex) (Quantifier) (ta_N)

Here are some findings. First, all permitted postnominal modifiers are quantifiers in nature. Second, unlike prenominal modifiers, they are not morphologically marked. Third, the *postnominal* Nu-Cl complex, unlike the prenominal one, can co-occur with other quantifiers; which means that they do not compete for the same position. However, the ones like *myus-kwen* in (20), which is a Nu-Cl complex itself, would certainly be impossible to co-exist with another Nu-Cl complex since there is a single

position reserved for Nu-Cl complexes.

(20) chaek myus-kwen
book some-Cl
"some books"

The fourth is particularly important; the word order is strict. When more than one postnominal modifiers are juxtaposed, the order should be as the ones in (18). Therefore, if all postnominal modifiers are present, (18d) is the only possible order. Any order change will cause either strong unacceptability or ungrammatically. (21) shows some illegal examples.

(21) a. *chaek jenbu sae-kwen
book all three-Cl
"*three all books"
b. *chaek ta_N jenbu
book all all
"all books"
c. *chaek ta_N sae-kwen jenbu
book all three-Cl all
"all three all books"

Given that the positions of the postnominal modifiers are strict, it is arguable that they are not adjuncts to the noun. It is also highly unlikely that they are complements or specifiers of the noun because they are quantifiers whose presence is not obligatory for the convergence of the DP. Then, the reasonable conclusion is that each quantifier projects its own *optional* functional phrase above the noun.

It is a common conception that adjuncts are phrasal constituents, and since the postnominal modifiers are not adjuncts themselves, those quantifiers we see in (18) are heads of their own projections. Nominal adjuncts such as prenominal modifiers, on the other hand, are phrases themselves, which explains why they are (relatively) order free and GEN or ADJ-marked. (i) Being an adjunct or not and (ii) being case-marked or not, are two critical

differences between prenominal and postnominal modifiers. With this much in mind, let's leave the structural analysis to Section 3.

2.4. The Nominal taN

First, recall the quantifier ta_N from the phrases in (18); ta_N occurs on the right edge of the DP. In the literature, little attention has been paid to this element, which I call, the nominal ta_N. For this reason, this whole section is devoted to it. Let's start with an ambiguity presented in the sentence in (22). Interestingly enough, the two interpretations are not critically different from each other.

(22) Jonny-nun pyunči-lul **ta** s'eu-ess-ta
Jonny-TOP letter-ACC **all / up** write-PST-IND
(i) Jonny wrote up the letter.
(ii) Jonny wrote all the letters.

The word *ta* (without a subscript yet) is placed between the object and the verb. As the interpretations indicate, it can modify either the preceding object, or the following verb. In the former case, it means "all" (the quantifier); in the latter case, it is interpreted as an adverb meaning "exhaustively" (See C-M Lee 2000 for more examples).

So, the two *ta*'s are homophonous, and therefore, it is reasonable that the sentence in (23) below is well-formed. It seems redundant in writing, but the sentence becomes better in speaking since it is clear which *ta* modifies which constituent. As indicated by the subscript, ta_N modifies the preceding noun, and the ta_V following verb.

(23) Jonny-nun pyunči -lul **ta_N** **ta_V** s'eu -ess-ta[6)]
Jonny-Top letter -Acc **all** **up** write-PST-IND
"Jonny wrote up all of the letters." (Or, Jonny finished writing all the letters.)

6) A number of native speakers indicated that (23) it sounds better if a stress on the first *ta* or a pause between two *ta*'s is given.

Now consider the ta_N in (24) below, the sentence reinforces the fact that ta_N is obligatorily postnominal. It can only modify the noun that precedes it. So, this sentence can only be interpreted as (i) but not (ii). It is also noteworthy that the verbal ta_V must immediately precede the verb. Therefore, in (24), the ta_N cannot be modifying the verb.

(24) keu-tul-un **ta_N** **pyunči**-lul s'eu -ess-ta
he-PL-TOP **all** letter-ACC write-PST-IND
(i) They all wrote a letter (*or* letters).
NOT (ii) They wrote all of the letters.

Lastly, unlike ta_V, ta_N is allowed to be discontinuous under some specific conditions. For instance, if *ta*N and its modifiee (human or animate) are both pluralized, remote modification is possible since the apparent number agreement prevents any ambiguity. So, (25a) and (b) are identical in meaning. Although it is not pursued here, this seems to fit the traditional concept of floating quantifiers, where the quantifier is being stranded as in (25b) when only its modifiee is scrambled up.

(25) a. keu-**tul**-un **ta_N-tul** pyunči-lul s'eu -ess-ta
he-PL-TOP **all-PL** letter-ACC write-PST-IND
"All of them wrote a letter (*or* letters).
b. keu-**tul**-un pyunči-lul **ta_N-tul** s'eu -ess-ta
he-**PL**-TOP letter-ACC **all-PL** write-PST-IND
"All of them wrote a letter (*or* letters).

We looked at the nominal ta_N, in this section. I argue later in Section 3.4 that it projects immediate below DP as a quantifier phrase.

2.5. Clashes between Prenominal and Postnominal Modifiers

We have now found all possible DP elements: The phrasal notation in (26) below shows all possible elements of DP.

(26) (Rel)$^{+}$ (PP)$^{+}$ (POSS) (Dem) (Adj)$^{+}$ $\begin{pmatrix}\text{Nu-Cl}\\ \text{Quant}\end{pmatrix}$ (Adj)$^{+}$ **N** (Nu-Cl) (Quant) (ta$_{N}$)

It is apparent what situation would be problematic. First, there is certainly no need to have more than one Nu-Cl complexes. It has to be either prenominal or postnominal. A semantic clash would occur if there is a quantifier prenominally such as *man-eun* "many-ADJ" and an Nu-Cl complex postnominally, which explains the ill-formedness of (27a) for the same reason a quantifier and an Nu-Cl complex compete for a single prenominal position, discussed in Section 2.2. Interestingly however, between a prenominal and a postnominal quantifiers in (27b) or between the prenominal Nu-Cl complex and a postnominal quantifier in (27c), no such clash occurs. (27d) is also well-formed despite its redundancy.

(27) a. *man-eun chaek sae-kwen
many-ADJ book three-Cl
"*many three books
b. man-eun chaek jenbu
many-ADJ book all
"all of the many books"
c. sae-kwen-uy chaek *ta*$_{N}$
three-Cl-ADJ book all
"all three books"
d. mod-eun chaek jenbu
all-ADJ book all
"all of all the books"

A related point to note is that postnominal modifiers take scope wider than prenominal modifiers. Consider again (27b) through (d) above. Postnominal quantifiers mean *all*, which have scope over whatever quantification made prenominally. In (27a), the postnominal Nu-Cl complex cannot envelop the meaning of the prenominal quantifier *many*, an indeterminately large number. It will be shown in the following sections that postnominal modifiers are placed higher in the structure than prenominal ones. But if it is to be so, postnominal quantification must have

the interpretation that must cover the quantification of the prenominal one. This condition is not met in (27a). The structure built in the following sections will show the hierarchy corresponding the scope relations among modifiers. Scope relations should be demonstrated either at the surface structure or at the logical form (LF). LF is important because it is where the interpretation is made; in other words, LF is where the scope relation must be clarified.

3. The Structure

The structure building process is making a series of empirical decisions such as what phrases are needed, and which one is placed where. These decisions will be discussed and made in this chapter, and the structure will be completed in the end. The section begins with determining the structure of Nu-Cl complex.

3.1. Partial Structure: the Nu-Cl Complex

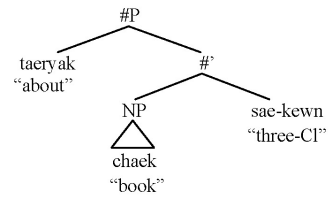
As seen in the previous sections, the Nu-Cl complex and some other quantifiers may occur before or after the head noun. For that reason, the question of where the basic position of the quantifier is has been explored much in the literature. Some of the accounts (Watanabe 2006, Kim 2005, among others), as discussed above, have proposed a series of movements by which the different positions of the quantifier is derived.

Given the discussion in Sections 2.2 and 2.3 that prenominal modifiers are adjunct phrases while postnominal modifiers are functional categories above the NP, I exclude any movement derivation from one position to another of an Nu-Cl complex or a quantifier; thus, prenominal Nu-Cl complex is base-generated prenominally, and postnominal Nu-Cl complex is postnominally base-generated. The choice between the two positions is made based on the meaning associated with the forms, for example, specific or non-specific (Kim 2005).[7)]

7) In addition, C-Y Sim (2006) denies any derivational relation between the two positions

Recapitulating the point here, the prenominal Nu-Cl complex is an adjunct phrase, while postnominal Nu-Cl complex is neither an adjunct nor a complement nor a specifier, but it is a head of a functional category. At any event, a phrasal category is needed that is headed by the Nu-Cl complex, namely, #P (that is, the Numeral Phrase as in Watanabe 2006, S-Y Park 2009, Suh 2005, which is equivalent to NmrlP in Kim 2005 and M-J Jo 2000, or to QP in K-H Gill 2001). Initially, I propose the structure in (28); the #P is a head-final functional category whose complement is the NP. This is the structure of the noun followed by a postnominal Nu-Cl complex.

(28)



Since the realization of classifier is dependent on the physical and semantic properties of the noun, it is certainly possible to posit a feature checking operation responsible for classifier selection between the noun and the #-head (For nouns and their classifiers, I recommend Unterbeck 1994).

There is a group of words to consider which includes *taeryak*, the one in (29), meaning "about" (which has already been introduced in the tree in (28).) Other such words include *han* "about", *kyeoo* "only" *junghwak-hi* "exactly" et cetera. As their meanings indicate, they specifically modify quantities, and the specifier of #P seems to be in the right position for these items. In the above structure in (28), therefore, the Spec#P is filled

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of Nu-Cl complex. She argues that if they are related derivationally, semantic differences such as the following should not arise:

(i) Kyengchal-i tocuha-n-un **twu tay-uy** cha-lul cap-ass-ta. (Prenominal Nu-Cl complex)
police-NOM run.away-PRES-mod **2 Cl-GEN** car-ACC catch-PAST-DECL
'The police caught two cars that were running away.'
→ The number of cars that were running away = 2

(ii) Kyengchal-i tocuha-n-un cha-lul **twu tay**(-lul) cap-ass-ta. (Postnominal Nu-Cl complex)
police-NOM run.away-PRES-mod car-ACC **2 Cl**-ACC catch-PAST-DECL
'The police caught two of the cars that were running away.'
→ The number of cars that were running away ≥ 2

with *taeryak*. However, as demonstrated in (29) below, two orders are possible, and they are identical in meaning.

(29) a. **taeryak** chaek sae-kwen
about book three
"about three books"
b. chaek **taeryak** sae-kwen
book about three-Cl
"about three books"

I argue that there is an *optional* left-ward movement of the noun deriving (29a) to (29b), and the landing site of this optional NP movement is somewhere above #P. A closer look at the Nu-Cl complex reveals a place available, which will change the initial structure into two consecutive functional categories.

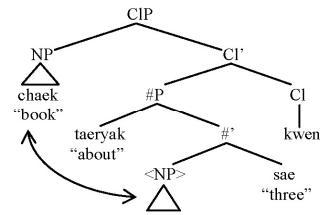
Consider example (30). (30a) is a statement and (b) is its wh-interrogative counterpart; the wh-quantifier *myus* substitutes the numeral only (Also recall, example (20) where the same item *myus* is interpreted as existential quantifier).

(30) a. Jonny-nun keu chaek sae-kwen-ul ilg-ess-ta.
Jonny-Top that book three-Cl-ACC read-PAST-INDI
"Jonny read all those three books."
b. Jonny-nun keu chaek **myus**-kwen-ul ilg-ess-ni?
Jonny-Top that book **how many**-Cl-ACC read-PAST-Q
"How many of those books did Jonny?"

This is an important piece of evidence supporting the split of Nu-Cl complex. In fact, although not clearly explained, splitting Nu-Cl complex into a Numeral Phrase and a Classifier Phrase has been suggested in the literature by many including Kim (2005), K-H Gill 2001, and Borer (2005). I agree to this view; the Nu-Cl complex is now split into #P and ClP. This better explains the replacement of #P with the wh-word in (30b), and further, the ClP provides a specifier position as a landing site to the optional movement of the NP. The quantity modifier *taeryak*

"about" remains in Spec#P since its modifiee is the head of #P, the numeral quantity. The tree in (31) shows the structure of a noun and its postnominal Nu-Cl complex.

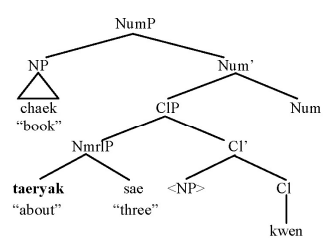
(31) The structure for (29)



Again, the two different structures for the identical meaning as in (29a) and (29b) motivated the optional movement of the NP, and the ClP provides a position for this movement. Then, the feature checking process proposed earlier that is responsible for phonological realization of the classifier occurs between the NP and the Cl-head.[8)]

To compare this structure to Kim's (2005), an important difference between them is that Kim has NmrlP (equivalent to #P) in SpecClP, and the NP is the complement of ClP; from which the NP moves up to SpecNumP as shown in (32).

(32) Kim's structure for (29a) chaek taeryak sae-kwen
book about three-Cl
"about three books"



8) Here, a question arises: what would be the motivation of the NP movement? The two forms (29a) and (29b) mean the same, then there can be a syntactic feature that optionally triggers the movement. Or possibly, the two forms may indeed differ in meaning context-dependently, which I would leave for future research.

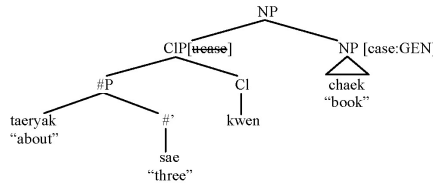
Kim's structure can account for the phrase in (29b) where the noun is at the beginning of the phrase, but (29a), where the modifier *taeyak* precedes the noun, poses a problem to her structure; there is no way for the NP to be placed between "about" and "three."

Let's turn to prenominal Nu-Cl complex. The prenominal counterpart of the phrases in (29) is shown in (33).

(33) taeryak sae-kwen-uy chaek
about three-Cl-GEN book
"about three books"

This phrase in (33) has no alternative order. What I argue is that a ClP is generated separately and adjoined to the NP. The #P is generated without a complement, and GEN-case is given to the adjunct ClP by the noun.

(34) The structure of (33): Prenominal Nu-Cl complex



Any prenominal modifiers undergo the same processes: (i) phrase-level generation; (ii) adjunction to the NP and case-assigned (GEN or ADJ). Only the *case* is different depending on the modifier type: either adjective or genitive. Reviewing briefly the example in (15) copied in (35) below, the possessor, the postpositional phrase, and the Nu-Cl complex are GEN-marked, descriptive adjectives and the relative clause are ADJ-marked, and the demonstrative receives none of the cases.

(35) [John-i chat]-eun TV-dyi-uy Tim-uy keu gabye-un
John-NOM find-REL(=ADJ) TV-behind-GEN Tim-GEN Dem light-ADJ
nora-n sae-kwen-uy bis'a-n cak-eun gyiha-n chaek
yellow-ADJ three-Cl-GEN expensive-ADJ small-ADJ precious-ADJ book
"Tim's those three, light, yellow, expensive, small, and precious books behind the TV that John found"

The point of the section is that prenominal and postnominal modifiers are not "derivationally related." Unlike prenominal modifiers that are adjunct phrases, postnominal modifiers are functional categories, layers above the NP.

3.2. More Clues from the Demonstrative's Interaction

Some important clues to the structure are found in the interaction of demonstratives with the noun and the Nu-Cl complex. Consider the example in (36) below. (36a) is a plain [N - Nu-Cl complex] phrase. When a demonstrative such as *keu* comes in, a structural ambiguity arises as seen in (b) and (c).

(36) a. chaek sae-kwen
book three-Cl
"three book

b. [keu chaek] sae-kwen
that book three-Cl
"three of that book (Three same books)"

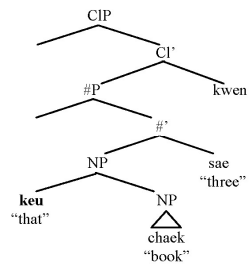
c. keu [chaek sae-kwen]
that book three-Cl
"those three books (Any same or different three books)"

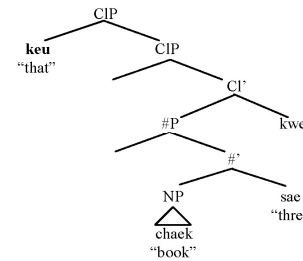
The meaning difference between (b) and (c) is the result of different modifying relations. In (b), the demonstrative only modifies the noun "book", and therefore, the scope of the demonstrative is narrower than that of Nu-Cl complex. Then, no problems arise; the ClP is over the NP, and the demonstrative is in the NP as an adjunct. On the other hand, as the interpretation indicates, the demonstrative in (36c) modifies the rest of the phrase as a whole. Then, reasonably, the demonstrative must adjoin to the ClP, which means that what I argued earlier (that all prenominal modifiers are NP adjuncts) needs to be changed: e.g., some prenominal modifiers are ClP adjuncts.

But before making any changes, further discussion should be carried

out in order to make sure about ClP adjunction. Let's first look at the trees below representing what has just been mentioned; the demonstrative is NP adjoined in (36b), but it is ClP adjoined in (36c).

(37) a. The structure for (36b) b. The structure for (36c)





Other prenominal modifiers may also show similar interactions, raising the same structural ambiguity. There seems to be no such ambiguity, but rather different modifiers display different scope relations to the post-nominal Nu-Cl complex. Consider the phrases in (38). (a) has a descriptive adjective, (b) has a possessor, (c) has a postpositional phrase, and (d) a relative clause.

(38) a. [nora-n chaek] sae-kwen
yellow-ADJ book three-Cl
"three yellow books"

b. John-uy [chaek sae-kwen]
John-GEN book three-Cl
"John's three books"

c. TV-dyi-uy [chaek sae-kwen]
TV-behind-GEN book three-Cl
"three books behind the TV"

d. Jane-i sa-n [chaek sae-kwen]
Jane-NOM bought-REL book three-Cl
"three books that Jane bought"

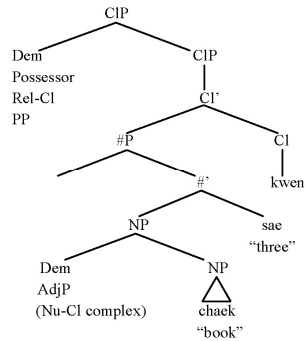
In phrase (a), a pause naturally falls in between the noun and the Nu-Cl complex, which means that the prenominal modifier and the noun form

a unit; as expected, the Nu-Cl complex has scope over the unit. But in phrases (b) through (d), a pause falls after the prenominal modifier; the rest of the phrase forms a constituent indicated by the bracket. In other words, the adjective in (38a) targets each one of the books, and there are three such books. But the possessor *John-uy*, for example, targets the three books as a whole. Therefore, the possessor, as well as the postpositional phrase, and the relative clause, has wide scope, adjoining to ClP. Such phrases in English are interpreted in the same way as shown in (39).

(39) a. three [yellow books] / *yellow [three books]
b. John's [three books] / *[John's three] books
c. [three books] behind the TV / *three [books behind the TV]
b. [three books] that Jane bought / *three [books that Jane bought]

The tree below shows how these phrases in (38) are accommodated in the structure constructed thus far.

(40) The structure for (38)[9)]



There is a problem, however. NP adjunction is always an available option because NP is an obligatory projection in a nominal phrase. But ClP adjunction is not always possible because ClP, together with #P, is an optional projection. This means that if we say that Possessor, Rel-Cl,

9) The NP-adjoined prenominal Nu-Cl complex is in the parenthesis because it is incompatible with the postnominal Nu-Cl complex; however, when the Nu-Cl complex comes in prenominally, instead of postnominally, it adjoins to the NP. Recall example (34).

and PP's are ClP adjoined, their positions are only guaranteed when there is a postnominal Nu-Cl complex; and this is unworkable. Recall (35); there are all sorts of prenominal modifiers in the absence of postnominal Nu-Cl complex. Therefore, a reliable position must be given to those prenominal modifiers. In fact, NP adjunction is the only option that is always available so far. Thus, we are forced to conclude that these prenominal modifiers, all prenominal modifiers indeed, do adjoin to the NP, or at least, they are *originally* adjoined to NP.

Unfortunately, this causes a further problem. To see this, suppose a numeration for a DP given below.

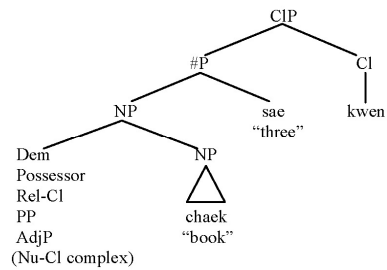
(41) Numeration = {N, Adj, PP, Rel-Cl, Dem, Possessor, Nu-Cl complex(#P, ClP)}

Obligatorily prenominal modifiers

Suppose that all the prenominal modifiers are NP adjuncts. Then, if the Nu-Cl complex in (41) merges postnominally (because the speaker is somehow motivated to do so), it has to wait until all other modifiers have adjoined to the NP. However, if this is how the structure is built, the scope relations found in (40) cannot obtain; PP, Rel-Cl, and Poss are placed under #P.

Fortunately, the solution for this problem lies how the structure has been constructed so far. The tree in (40) is built based on how the speaker *interprets* the surface structure, or put differently, how the speaker says to achieve the intended meaning. Thus, (40) is the form where that meaning interpretation is made; i.e., (40) is a logical form (LF), the structure where scope relations among constituents are structurally represented, rather than a surface form. This solution certainly saves the structure built up so far, but more importantly, it solves the problem which would have been a structural paradox. Therefore, we can keep the syntactic derivation and Spell-out simple. The points of argument and the current structure are presented in (42).

(42) (i) All the prenominal modifiers are adjuncts of the NP.
(ii) The Nu-Cl complex (#P and ClP) merges either prenominally or postnominally depending on the meaning (See Section 3.1 and footnote 7).
(iii) If a Nu-Cl complex comes in postnominally, the possessor, the relative clause, and the PP move up and adjoin to ClP at LF as seen in tree (40).
(iv) Demonstratives have two possible positions at LF: adjunct to NP and ClP.



Considering the derivation from the numeration in (41) again, all the prenominal modifiers adjoin to the NP, then the NP merges with the numeral phrase, #P. Lastly, the two structures in (37) show the two different LF positions of the demonstrative.

It should also be examined whether the demonstrative raises any ambiguities in relation to other postnominal modifiers. The phrases in (43) are repeated for a quick review, copied from Section 2.3. The circled elements are postnominal modifiers (which are quantifiers) that are not Nu-Cl complex.

(43) a. chaek sae-kwen jenbu ta_N
book three-Cl all all
"all three books"

b. N (Nu-Cl) (Quantifier) (ta_N)

The following shows how the demonstrative may interact with postnominal quantifiers.

(44) a. [keu chaek] ta_N / *keu [chaek ta_N]
that book all
"all of the books"

b. [keu chaek] jenbu / *keu [chaek jenbu]
that book all
"all of the books"

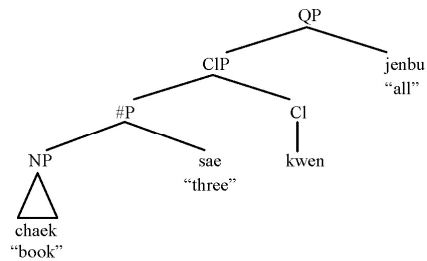
c. [keu [chaek sae-kwen]] jenbu / *keu [[chaek sae-kwen] jenbu]
that book three-Cl all
"all of the three books"

d. [[keu chaek] sae-kwen] jenbu [10] / *[keu chaek] [sae-kwen jenbu]
that book three-Cl all
"all of the three books"

The phrases in (44) demonstrate that the postnominal quantifiers must take scope over the rest of the phrase; the demonstrative does not raise any scope ambiguity.

Meanwhile, we need another functional category for the quantifier *jenbu*, namely, a quantifier phrase (QP). This phrase must be above ClP since the scope of the demonstrative must be narrower than the scope of this quantifier as shown in (44b) through (d). Given this, in (45) the structure of phrase (44c) is shown. By having a QP layer above ClP, the postnominal Q-head is higher than any other modifiers both at Spell-out and LF.

(45) The structure for (44c): [keu [chaek sae-kwen]] jenbu
that book three-Cl all
"all of the three books"



10) Contrary to what is discussed at the beginning of the section, this phrase does not strongly have the meaning of "three *same* books." I assume that this is because the focus of the phrase is now on the quantifier *jenbu*; the subtle meaning differences are not emphasized.

The following phrases in (46) prove the above hierarchy; the quantifier *jenbu* has scope over everything that precedes.

(46) a. [[nora-n chaek] sae-kwen] jenbu
yellow-ADJ book three-Cl all
"all of the three yellow books"
b. [John-uy [chaek sae-kwen]] jenbu
John-GEN book three-Cl all
"all of John's three books"
c. [TV-dyi-uy [chaek sae-kwen]] jenbu
TV-behind-GEN book three-Cl all
"all of three books behind the TV
d. [Jane-i sa-n [chaek sae-kwen]] jenbu
Jane-NOM bought-REL book three-Cl all
"all of three books that Jane bought"

Then, what about ta_N? Given the order of N (Nu-Cl) (Quantifier) (ta_N) in (43), we need another functional category for ta_N even though it does not differ in meaning from the immediately preceding quantifier; *jenbu* or *modu*, for example. This will be taken up in the next section which provides clues for the projection of ta_N.

Before finishing this section, there is one last question to consider: Does the demonstrative cause an ambiguity in relation to the *prenominal* Nu-Cl complex? We saw above that the demonstrative can adjoin either to the NP or the ClP, which causes the structural ambiguity with the postnominal Nu-Cl complex. With the prenominal Nu-Cl complex, no such ambiguity arises. As shown in (47a), prenominal Nu-Cl complex forms a constituent with the noun, rendering the meaning identical to (36c), but not (36b).

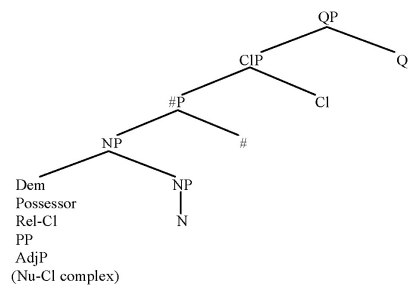
(47) a. keu [sae-kwen-uy chaek]
that three-Cl-ADJ book
"those three books (May or may not be three identical books)"
b. ?sae-kwen-uy keu chaek
three-Cl-ADJ that book

This shows that the demonstrative has scope wider than the prenominal Nu-Cl complex, suggesting that the demonstrative's adjunction has to be higher (therefore, adjoined later in the derivation) than the Nu-Cl complex. In fact, this may explain why (47b), the Nu-Cl complex followed by the demonstrative, is less acceptable to many native speakers.

3.3. Multiple Case-Marking and the Quantifier ta_N

The structure we have built so far is in (48):

(48)



Below, consider the DP in (49) and the sentence in (50), whose object that is embraced is the DP in (49).

(49) keu nora-n chaek sae-kwen jenbu ta_N
that yellow-ADJ book three-Cl all all
"all those three yellow books"

(50) Jonny-nun (keu nora-n chaek sae-kwen jenbu ta_N) ilg-ess-ta.
Jonny-Top (that yellow-ADJ book three-Cl all all) read-PST-IND
"Jonny read all those three yellow books."

(50) is incomplete because the object is missing ACC-marker (*-l/ul*). There must be at least one ACC-marker realized somewhere in the DP (Recall the examples in (6), Section 2.1), and again, more than one ACC-markers are possible as well. But there are restrictions to this:

(51) (i) Prenominal modifiers cannot take ACC-marker.
(They are already marked with ADJ or GEN by the noun when they adjoin to the NP. Demonstratives do not take any cases)
(ii) ta_N cannot take ACC-marker, while the other two post-nominal modifier categories can: Nu-Cl complex and the quantifier preceding ta_N).

Therefore, three boldfaced items in the DP below may take the ACC marker. They are the head noun, the Nu-Cl complex, and the quantifier.

(52) Jonny-nun (keu nora-n **chaek** **sae-kwen** **jenbu** ta_N) ilg-ess-ta.[11)]
Jonny-Top (that yellow-ADJ book three-Cl all all) read-PST-IND
"Jonny read all those three yellow books."

If there is one ACC-marker (*-l/ul*) realized, it can attach to any one of the three boldfaced items above. If there are two ACC-markers, they may mark any two of the three items with slightly varying acceptability. Finally, there can be three ACC-markers realized, in which case all three items are marked:

(53) Jonny-nun (keu nora-n chaek-**ul** sae-kwen-**ul** jenbu-**lul** ta_N) ilg-ess-ta.
Jonny-Top (that yellow-ADJ book-ACC three-Cl-ACC all-ACC all) read
"Jonny read all those three yellow books."

With this in mind, consider (54) below. The object DP is split by an adverb inserted after the head noun, which is ACC-marked.

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11) One of the reviewers pointed out that ta_N may take the ACC-marker as in the example below,

Jonny-nun keu nora-n chaek sae-kwen jenbu ta_N-**lul** ilg-ess-ta.
Jonny-Top that yellow-ADJ book three-Cl all all read-PST-IND
"Jonny read all those three yellow books."

I believe this is highly marginal at best in acceptability. Certainly, this issue may reflect differences in acceptability among regional variety any. I would like to leave this issue for future study.

(54) Jonny-nun keu chaek**-ul** **shinjung-hi** sae-kwen jenbu ta_N ilg-ess-ta.
Jonny-Top that book-ACC carefully-ADV three-Cl all all read
"Jonny read all those three yellow books."

What is interesting here is that the adverb cannot be inserted just anywhere in the DP but the one position immediately after the ACC-marked element. Therefore, sentences (a) and (b) in (55) below are unacceptable because the adverb is inserted after a non-ACC-marked element, but the sentences in (56) are grammatical because the adverb follows an ACC-marked element.[12)]

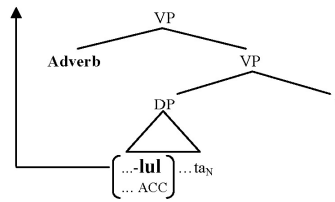
(55) a. *Jonny-nun keu chaek**-ul** sae-kwen **shinjung-hi** jenbu ta_N ilg-ess-ta.
Jonny-Top that book-ACC three-Cl carefully-ADV all all read
"Jonny carefully read all those three yellow books."
b. *Jonny-nun keu chaek**-ul** sae-kwen jenbu **shinjung-hi** ta_N ilg-ess-ta.
Jonny-Top that book-ACC three-Cl all carefully-ADV all read
"Jonny carefully read all those three yellow books."

(56) a. Jonny-nun keu chaek sae-kwen**-ul** **shinjung-hi** jenbu ta_N ilg-ess-ta.
Jonny-Top that book three-Cl-ACC carefully-ADV all all read
"Jonny carefully read all those three yellow books."
b. Jonny-nun keu chaek sae-kwen jenbu**-lul** **shinjung-hi** ta_N ilg-ess-ta.
Jonny-Top that book three-Cl all-ACC carefully-ADV all read
"Jonny carefully read all those three yellow books."

Likewise, in (56), if the adverb is inserted after any unmarked elements, the sentence becomes unacceptable or ungrammatical. The ACC-marker puts some kind of boundary, so an element like adverbs can intervene inside the DP, splitting it into parts. A plausible analysis of this adverb intervention is, I argue, that part of the DP, left to the ACC-marker together with the marker itself, moves out of DP and over the adverb, rather than the adverb comes into the DP. The diagram in (57) illustrates it.

12) One may ask if the Adverb can appear after ta_N. The answer is certainly "yes"; the position immediately preceding the verb is certainly a preferred position for an adverb. It is discussed below briefly.

(57)



To repeat, the three elements to which the ACC-marker can be attached to are the noun, the Nu-Cl complex, and the quantifier: NP, ClP, and QP in other words. They are the bracketed phrases in (58) except for #P (Since Nu-Cl complex never split on the surface, the #head is never ACC-marked).

(58) $[_{QP}$ $[_{ClP}$ $[_{\#P}$ $[_{NP}$ chaek $_{NP}]$ sae $_{\#P}]$ -kwen $_{ClP}]$ jenbu $_{QP}]$ ta_N

book three Cl all all

"all three books"

Two questions to ask:

(59) a. What about ta_N?

b. What moves when there are more than one ACC-markings?

Question (59a) is asked in the previous section. It is also mentioned that the meaning of ta_N is identical to the meaning of any immediately preceding quantifier, such as *jenbu* "all" or *modu* "all." So, semantically they are interchangeable, but syntactically, the ta_N differs from the quantifiers in two important points: First, its position is strictly at the right-edge of the DP, and second, it can not be ACC-marked. These syntactic properties of ta_N motivate another layer above QP, the projection of ta_N. I propose here another quantifier projection for ta_N since it is a quantifier after all.

There is another possibility to consider, however. In the current work, it has been a fundamental assumption that the topmost layer in the nominal phrase is DP. ta_N being the rightmost item in Korean DP, one may argue that it is a D head. But we need to make sure whether or not the function of ta_N fits the general description of the function of D-head. M-J Jo (2000)

summarizes the function of D-head:

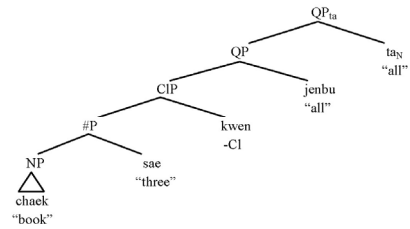
> … [D] functions as the subordinator which turns [NPs] into an argument, and it has the ability to pick out a single instance of whatever described by an NP. In addition, D is the locus of a lexically-governed semantic nominalizing operator which shifts a property realized in an adjective into a generic and kind reference.

So, the roles of D head Jo describes are:

(60) (i) D is a subordinator that turns an NP into an argument.
(ii) D picks out a single instance of what the NP describes.
(iii) D is the locus of nominalizer.

Jo further argues that in artless languages like Korean, these roles are carried out by other elements, denying the existence of D layer in Korean. For example, she argues that case markers function as the subordinator of NP, and although the grammatical noun *-kes* is a nominalizer for clausal nominal phrases, this nominalizer is not placed in D. So, assuming Jo's description, ta_N cannot be a D head. In other words, ta_N is never a subordinator in (60i), nor a nominalizer of any kind in (60iii). Does it pick out a single instance of what the NP describes, the role in (60ii)? I say *no* to this question as well, because this role is specific to demonstratives in Korean rather than to ta_N. Given this reason, having another QP layer headed by ta_N is more plausible. So, let's call it QP_{ta} to differentiate it from the other QP place immediately below. The tree in (61) sums up the structure with its corresponding bracket notation underneath it.

(61)



(62) $[QP_{ta}$ $[_{QP}$ $[_{ClP}$ $[_{\#P}$ $[_{NP}$ chaek $_{NP}]$ sae $_{\#P}]$ -kwen $_{ClP}]$ jenbu $_{QP}]$ ta_N $QP_{ta}]$
book three -Cl all all
"all three books"

Having all *optional* functional categories presented so far, some constituency tests may find useful to independently support the array of phrases. (63) below shows a series of pronominalization tests applied to the phrase in (62). The pro-form used here is *keu-kes* meaning literally "that thing," and all the tests come out right (As for testing #P, we saw a wh-substitution test in example (30) Section 3.1, where wh-quantifier *myus* substitutes the numeral only, but not the classifier).

(63) a. keu-kes sae-kwen jenbu ta_N → pronominalization of NP
that thing three-Cl all all
b. keu-kes jenbu ta_N → pronominalization of ClP
that thing all all
c. keu-kes ta_N → pronominalization of QP
that thing all
d. keu-kes → pronominalization of QP_{ta}
that thing

Finally, question (59ii) asks about the instances in which more than one elements in the DP are ACC-marked. Consider (64). Since there are two ACC-marked elements, two interventions are possible as expected, and so, two adverbs are intervening in the DP.

(64) Jonny-nun pyunči-lul **ejae** sae-jang-ul **shinjung-hi** ta_N s'eu-ess-ta.[13)]
Jonny-TOP letter-ACC **yesterday** three-CL-ACC carefully-ADV all wrote
"Yesterday, Jonny carefully wrote three letters."

Time adverbs such as *ejae* "yesterday" is considered to be IP- (or TP-) adjoined, and manner adverbs such as *shinjun-hi* "carefully" is VP adjoined. Thus, I assume a series of scrambling movements of those case-marked elements (Recall the upward movement described in (57)). Therefore, the

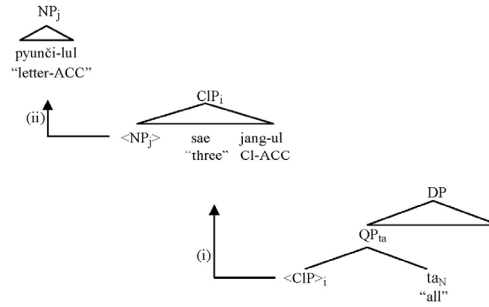
13) I recommend Korean readers to give a short pause after ta_N in order to make sure that this is ta_N, not ta_N. Recall example (23) in Section 2.4; a pause intervenes between ta_N and ta_N when they co-occur.

sentence in (64) is derived from the version prior to the scrambling in (65) below.

(64) **ejae** Jonny-nun **shinjung-hi** pyunči-lul sae-jang-ul ta_N s'eu-ess-ta.
yesterday Jonny-TOP **carefully-ADV** letter-ACC three-CL-ACC all wrote
"Yesterday, Jonny carefully wrote three letters."

Briefly, *pyunči-lul* "letter-ACC" and *sae-jang-ul* "three-Cl-ACC" (that is, the ClP) move together over the VP adjunct "carefully," and from there, *pyunči-lul* moves once more over the TP adjoined adverb "yesterday." Finally, the subject (Nominative case-marked) moves to the sentence initial position. Let's, also briefly, focus on how the two consecutive movements of the object DP elements *pyunči-lul* "letter-ACC" and *sae-jang-ul* "three-Cl-ACC." (65) below illustrates it; first, the ClP and moves out of QP_{ta} movement (i), and from the moved ClP, NP moves out: movement (ii).

(65) Two Consecutive Movements of Elements in the Object DP



Then, why multiple ACC-markings? It is shown above that the ACC-marker behaves like a border after which a non-DP material (e.g., an adverb) can be inserted. In other words, the ACC-marker provides certain freedom to the constituent it attaches to so that this constituent can scramble away from its host. It is commonly observed that languages that have morphological case marking system exhibit free word order.[14] I argue that after the DP is case-assigned, the overt case marker is distributed to one or more of the three constituents: QP, ClP, and NP. When a constituent

14) But, as it is well-known, free word order is not an indicator of overt case system.

scrambles out of DP, especially when the constituent moves over other elements, it needs to carry the case-marker phonologically realized in order to keep its identity clear, and this is one motivation of multiple case marking; it is quite common that more than one elements get scrambled which raises confusion in interpretation. Gill (2001) supports this point, "it is only possible to scramble NPs with overt case markers." However, it should also be noted that case-marking is not a sign of movement; a case-marked constituent can certainly stay in its original position. Then, there are other motivations for multiple case markers, and possibly it is related to the prosody or the information structure of the sentence.[15)]

3.4. Motivating Determiner Phrase (DP)

Three different motivations for the DP projection are discussed in this section. These motivations are, in fact, roles of D other than what is discussed in M-J Jo (2000).

(66) (i) D as the Case-Assignee
(ii) D as the locus of ø-features
(iii) D as the locus of phrase-type feature

In Section 2.1, it is shown that case is not originated DP-internally. The phrase undergoes a checking relation with, e.g., the verb, and receives its case. Once the nominal phrase gets its case, the marker is realized phonologically on one or more heads in the nominal phrase, and again, there can be up to three overt markers. So, in the repeating example below, the ACC-marker is realized on three different heads.

(67) Jonny-nun (pyunči-**lul** sae-jang-**ul** jenbu-**lul** ta_N) s'eu -ess-ta.
Jonny-TOP (letter-**ACC** three-Cl-**ACC** all-**ACC** all) wrote
"Jonny wrote all three letters."

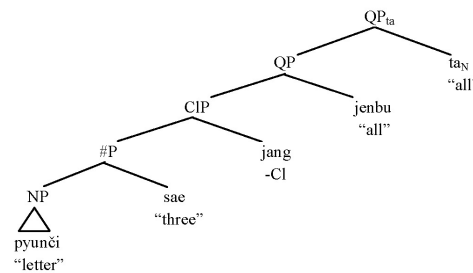
Derivation of the above sentence involves first the derivation of the object

15) I recommend two readings regarding the issue of information structure in Korean: Hwang Jackson (2008), and Choi (1999).

nominal phrase, which is in (68), whose tree structure is in (69).

(68) pyunči sae-jang jenbu ta_N
letter three-Cl all all
"all three letters."

(69) The structure of (68)



Then, this nominal phrase merges with the verb "write" which gives [ACC-case] to the phrase. But when considering which heads in the phrase receives the case, it is quite unlikely that each head may individually undergo its own case-checking process with the verb. Also unlikely is that those ones of the three phrases that can take an overt ACC-marker (NP, ClP, QP) are particularly allowed to have a case-checking relation with the verb. This is the first motivation for the D-head: D behaves as a representative of the whole nominal phrase, carrying the feature of [ucase] and has this feature checked by the verb (Following Adger 2003). Also importantly, the functional phrases: #P, ClP, QP, and QP_{ta} can not be responsible for case-checking simply because they are *optional* projections.

Moving on to the second motivation (D as the locus of ø-features), consider the sentences in (70) below. In (a) sentence, the plural morpheme appears in the verb, agreeing with the subject's number. However, this number agreement is not mandatory; the verb is not inflected in (70b). But when the subject is singular, the plural morpheme is not allowed as shown in (c). Although the plural agreement can be covert, singular agreement is obligatory.[16)]

16) I assume that singular, that is, *non-plural*, is default and unmarked.

(70) a. keu-**tul** sae-myung-i mak tochak-**tul**-ha-ess-ta.
he-**PL** three-Cl-TOP just arrive-PL-do-PST-IND
"Three of them just arrived."

b. keu-**tul** sae-myung-i mak tochak-ha-ess-ta.
he-**PL** three-Cl-TOP just arrive-do-PST-IND
"Three of them just arrived

c. *keu-ga mak dochak-**tul**-ha-ess-ta.
he-NOM just arrive-PL-do-PST-IND
"He just arrived."

As (71) below shows, this plural morpheme can also attach to adverbs as well. In (a) sentence, it is also important that the head noun "student" is in its bare singular form; the plurality is encoded in the Nu-Cl complex instead of the head noun. Sentence (b) is ungrammatical because nothing in the subject nominal phrase encodes plurality while the adverb is marked plural. In (c), the head noun encodes plurality by being overtly plural, justifying the appearance of the plural morpheme on the adverb.

(71) a. keu hacksaeng sae-myung-un jal-**tul** jinae-ni?
that student three-Cl-TOP well-PL live-Q?
"Are the three students doing well?

b. *keu hacksaeng-un jal-**tul** jinae-ni?
that student-TOP well-PL live-Q?
"Is the student doing well?

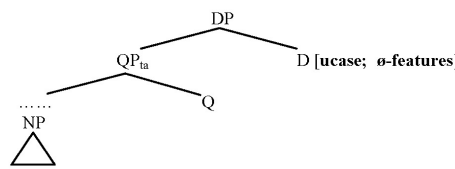
c. keu hacksaeng-**tul**-un jal-**tul** jinae-ni?
that student-PL-TOP well-PL live-Q?
"Is the student doing well?

Certainly, more than one element in the nominal phrase can encode plurality. In (72) the head noun is plural-marked and the Nu-Cl complex also encodes plurality of the noun as well.

(72) keu hacksaeng-**tul** sae-myung-un jal-**tul** jinae-ni?
that student-PL three-Cl-TOP well-PL live-Q?
"Are the three students doing well?

In sum, the number feature (ø-features, more generally speaking) is encoded somewhere in the nominal phrase, and it agrees with the feature of other sentential constituents. Then, similar to the situation of case-assignment, it is better to conclude that the ø-features percolate to the top layer of the nominal phrase, namely D, and it enters into an agreement with other constituents, rather than to say that any XP in the nominal phrase individually undergoes such agreement processes. The D layer makes a reliable locus for the ø-features. Now, we have DP in the simplified structure in (73).

(73) The structure of DP



Lastly, I propose another feature [phrase-type], which parallels with [clause-type] on the complementizer head.[17] Consider (74).

(74) John-un ETEN chaek-**do** ilg-ess-da. (Stress on *ETEN*)
John-TOP ANY book-**X** read-PST-IND
"John read any book."

The boldfaced morpheme *-do* is certainly not a case-marker. But interestingly enough, it competes with the ACC-marker for a single position. Also, it is true that the DP [any book] it attaches to is the object of the verb in all respect. For that reason, it is another type of argument marker apparently complementary to case markers. Furthermore, *-do* renders the meaning, which is roughly "too" although it slightly varies de-

17) The idea occurred to me during my examination of Watanabe's (2006) example (83a) copied below, which corresponds the Korean sentence in (74).

John-wa dono hon-ø-**mo** yonda.
John-TOP which book-***MO*** read
"John read every book."

pending on the intonation pattern and the clause type of the sentence where the *do*-marked DP occurs in. This is illustrated in (75). The meaning that *-do* brings about is underlined in English translation.

(75) a. John-un CHAEK-do il-ess-da.
John-TOP book-X read-PST-IND
"John read some books too"

b. John-un ETEN chaek-do il-ess-ni?
John-TOP which book-X read-PST-Q
"What other books did John read?"

c. John-un chaek-do il-ess-ni?
John-TOP BOOK-X read-PST-Q
"John read even the book?"

d. John-un CHAEK-do an-il-ess-ni?
John-TOP book-X NEG-read-PST-Q
"John did not even read the book?"

One important reason why *-do* is different from a case marker is that it can attaches to any argument in the sentence as demonstrated in (76).

(76) John-**do** Mary-eke-**do** chaek-**do** ju-ess-ta
John-X Mary-to-X book-X give-PST-IND
"John (as *Tim* did) gave also a book to Mary too."

There is a relatively small class of such morphemes in Korean (and again, their meaning differs in different context).

(77) a. John-un chaek-**irado** ilg-ess-ta.
John-TOP book-Y read-PST-IND
"John read the book at least."

b. John-un chaek-**ina** ilg-ess-ta.
John-TOP book-Z read-PST-IND
"John, read just some books."

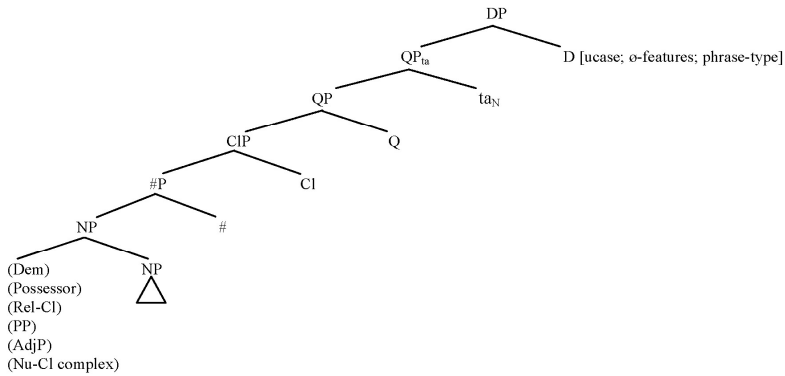
c. John-un chaek-**man** ilg-ess-ta.
John-TOP book-W read-PST-IND
"John read nothing but books."

d. John-un chaek-**maje** ilg-ess-ta.
John-TOP book-V read-PST-IND
"John read eventually some books too."

The point of argument here is that there are types of nominal phrase encoded by the morpheme attached to it, and I argue that it is under the government of [phrase-type] feature residing on D-head. Reviewing the CP system discussed in Adger (2003), the feature [clause-type] is responsible for the type of clause. In Rizzi's (1997) system, ForceP hosts [clause-type]. I argue that nominal phrases come in with different flavors just like clauses come in different moods, and reasonably, D-head carries the feature responsible for it, that is the [phrase-type] feature.

In fact, this is not completely new. Any phrases have such features. Again,the C-head encodes the mood of the clause (Indicative, Interrogative, Imperative, Exclamative, and so on, and negative as a subclass). VP types have been well discussed that they vary either on the valency of the verb: intransitive, transitive, ditransitive, or on the event types (Borer 2006; Travis 2006; Ramchand 2008) such as state, activity, accomplishment, achievement, and so on. PPs would have locative, temporal, source, or goal, and AdvPs vary as for time, place, manner, degree, stance, and so on (Biber et. al. 2002: 208-215). AdjPs are broadly descriptors and classifiers (Biber et. all: 197-203) or syntactically attributive and predicative. In fact, except for DPs, all other major categories have quite distinctive sub-types. DP Types may be morphologically realized in Korean as examples (75) through (77) show, and these morphemes are in complementary distribution with case markers. However, the mechanism of assigning these morphemes should be related to the semantics of the whole sentence, which may imply that the assigned case is later overwritten by the type-marker; thus it follows that the DP case is valued but not always expressed. I would like to leave this issue as an implication for further research. The final structure of DP is given in (78).

(78) The structure of DP



4. Conclusion

The first question asked in constructing Korean DP structure was *What is in the DP?* The answer to the question reveals an array of pre-nominal/postnominal modifiers to the noun head, which includes the nominal *ta*$_N$, a quantifier that has little been studied. Three important distinctions between pre- and postnominal modifiers are observed. First, prenominal modifiers are phrasal adjuncts to the NP while postnominal modifiers form *optional* functional phrases above the NP. Second, pre-nominal modifiers, but not postnominal ones, are morphologically marked as genitive or adjective. Lastly, an important characteristic of postnominal modifiers is that they are all quantifiers in nature and they take scope wider than prenominal ones. The structure proposed in the current study is built based largely on scope relations among modifiers found in meaning interpretations of various DP samples.

Given the observed differences between pre- and post-nominal modi-fiers, I argued that the *floating quantifier* (Nu-Cl complex) does not *float* from one to the other side of the noun, but it is base generated in the position either preceding (if specific) or following (if non-specific) the noun (Kim 2005). Optional NP movement (see the structure in (31)) and a wh-substitution test (in example (30)) motivated the split of the Nu-Cl complex into #P and ClP. The structural ambiguity raised by the two

possible positions of demonstratives is resolved as a scope ambiguity at LF, where some prenominal modifiers move up to adjoin to ClP.

Two quantifier phrases, QP and QP_{ta} project above ClP. All those quantifiers mean "all" and they take scope over any preceding modifiers. In particular, it is concluded that ta_N is a quantifier head, rather than a D-head; although it is the right-most item in the DP, it does not fit the description of D's function (Jo 2000). Then, the layer of D above QP_{ta} is necessary as D is the case assignee and it harbors ø-features and the feature of [phrase-type].

Multiple case marking is considered to be motivated to make clear the identity of scrambled constituents. Other possible motivations, such as information structure or sentence prosody are yet to be discussed in future studies. Besides, some possible overt D-heads call for further investigation. I conclude that Korean lacks overt D-heads, and it is always null and head-final.

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