

# On the NP Structure and Prenominal Ordering in Korean\*

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The flexibility of Korean NP structures has been well-observed, but there have been few attempts to provide precise syntactic structures. This paper at first reviews the basic distributional properties of Korean prenominal expressions as well as constraints in ordering, and then sketches a constraint-based, lexicalist analysis for Korean NP structures. Arguing for surface-based syntactic structures with more flexible subcategorization requirements, the paper shows that this lexicalist-based analysis can in a simple manner capture the flexible orderings of prenominal expressions as well as generate proper and precise NP structures, without resorting to functional projections.

*Key Words:* NP structure, prenominal, determinant, ordering

## 1. Introduction

It is well-known that prenominal expressions in Korean display a high flexibility in their distributional possibilities. For example, the prenominal expression 'honest' can either precede or follow a determiner:

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- (1) a. *ku chakha-n haksayng* `the honest student'  
       the honest-MOD student  
       b. *chakha-n ku haksayng* `the honest student'  
       honest-MOD the student

Such pronominal expressions can be largely classified into two: deterministic ones and phrasal-pronominal ones.<sup>1</sup> The deterministic pronominals, which we call determinants here, roughly correspond to determiners in English (cf. Jackendoff 1977, Huddleston and Pullum 2002 for English). These lexical determinants can be classified as following:

- (2) a. characteristic: *say* `new', *hun* `old', *yes* `old', *ttan* `other' ...  
       b. indicative: *i* `this', *ku* `the', *ce* `that' ...  
       c. interrogative: *ene* `which', *mwusen* `what', *etten* `which' ...  
       d. quantificational: *motun* `all', *myech* `some', *yelye* `several' ...  
       e. numeral: *han* `one', *twu* `two', *sey* `three' ...

Unlike these lexical determinants, there are also phrasal pronominal expressions like adjectival elements, relative clauses, and genitive-marked possessive NPs:<sup>2</sup>

- (3) a. Adjectival:  
       *acwu [khu-ko] [pissa-n] [ppalka-n] chayk*  
       very big-and expensive-MOD red-MOD book  
       `a very big and expensive read book'  
       b. Relative:  
       [Mia-ka ilk-un] ku chayk

\* Many thanks go to the three anonymous reviewers of this journal for constructive criticisms and suggestions. This work was originally inspired by Hong (2010) and initiated with aiming at a computational implementation. The usual disclaimer of course applies here.

<sup>1</sup> Hong (2010) classifies pronominal elements into two groups in accordance with their distributional possibilities: specifiers and modifiers. These two groups are similar to our classifications: lexical determinants and phrasal pronominals. Pronominal specifiers in Hong (2010) include most of the lexical determinants given in (2) whereas Hong's modifiers consist of relative clauses and genitive NPs. Such classifications can be also found in traditional literature including Chang (1995), Sohn (1999), Lee and Ramsey (2000), and others. See Hong (2010) for further discussion.

<sup>2</sup> The adjectival expression *pissa-n* `expensive-MOD' or *chakha-n* `honest-MOD' is derived from the adjectival predicate *pissa-ta* `expensive' *chakha-ta* `honest' with the attachment of the pronominal modifying suffix *-n*. Instead of treating this as a subject relative clause here, for the reason of simplicity, we gloss this simply as an adjectival expression. See Chang (1995) and Kim (2004) and references therein.

- Mia-NOM read-MOD the book  
 `the book that Mia read'  
 c. Genitive:  
 [Mia-uy] ku chayk  
 Mia-GEN the book  
 `Mia's book'

The ordering of these phrasal prenominal elements is much more flexible than that of the lexical determinants. Consider some illustrative examples:<sup>3</sup>

- (4) a. [Mia-ka ilk-un] [ku] [pissa-n] chayk  
 Mia-NOM read-MOD the expensive book  
 `the expensive book that Mia read'  
 b. [ku] [Mia-ka ilk-un] [pissa-n] chayk  
 c. [ku] [pissa-n] [Mia-ka ilk-un] chayk

As shown here, the relative clause `Mia read' can precede or follow the indicative determinant *ku*. Its position is also free with the adjectival modifier *pissa-n* `expensive'. However, this flexibility does not mean that the ordering among prenominal expressions is always free:

- (5) a. ppalkan kacwuk kapang/\*kacwuk ppalkan kapang  
 red leather bag/\*leather red bag  
 b. \*pissa-n Mia-ka ilk-un say ku chayk  
 expensive-MOD Mia-NOM read-MOD new the book

The examples in (5a) show us that as in English, the color adjective needs to precede the qualitative one.<sup>4</sup> In addition, as in (5b), the characteristic determinant *say* cannot be separated from the head noun.

In principle, prenominal modifiers occur in almost any order, and some orders are more marked than others. However, there also exist certain ordering constraints which a proper grammar needs to capture. In this paper, we offer a constraint-based, lexicalist approach that can capture such a complex ordering system in the NP structure.

<sup>3</sup> Different orderings can cause subtle meaning differences in terms of scope. See Sohn (1999).

<sup>4</sup> This ordering restriction can be attributed to the noun compound. That is, *leather bag* can be taken as a noun compound. See Sohn (1999).

## 2. Basic Ordering Properties

As is well known, the internal NP structure in Korean is a lot different from the one in English. Some of the language peculiar properties can be summarized as following:

**Property 1:** The (indicative) determinant is optional and even the countable noun requires no determiner:<sup>5</sup>

- (6) a. *ku haksayng-i tali-ess-ta*  
       the student-NOM run-PAST-DECL  
       `The student ran.'
- b. *haksayng-tul-i tali-ess-ta*  
       student-PL-NOM run-PAST-DECL  
       `(The) Students ran.'
- c. *haksayng-i tali-ess-ta*  
       student-NOM run-PAST-DECL  
       `(The/A) student(s) ran.'

Unlike English, the language does not require the countable singular noun to combine with a determiner. The (in)definiteness of the NP is interpreted, dependent upon the context. That is, the context provides a clue to its definiteness:<sup>6</sup>

**Property 2:** Indicative and characteristic determinants cannot be repeated. Though having to do with semantics, no two indicative determinants or characteristic determinants can occur together:<sup>7</sup>

- (7) a. *\*ku ce chayk`the that book'*  
       b. *\*say ttan chayk`new other book'*

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<sup>5</sup> The indicative determinants thus express the physical or psychological distance the head noun has relative to the listener and the speaker. The determinant *ku* and *ce* are similar in terms of meaning, but different in terms of anaphoric uses. See Chang (1995), Sohn (1999), and Lee and Ramsey (2000).

<sup>6</sup> See Chierchia (1998) for the detailed properties of countable and mass nouns with respect to the possibility of combining with determiners and prenominals.

<sup>7</sup> As noted by a reviewer, this property is also found in languages like Japanese.

Even an adjectival element between the two indicative element cannot save the repetition as in *\*ku chakha-n ku haksayng* 'the honest the student'.

**Property 3:** Interrogative determinants can occur either before or after the characteristic or indicative determinant when interpreted as an indefinite article:<sup>8</sup>

- (8) a. *ku enu nwukwu-ka ku-uy nwumul-ul ttak-a cwul-kkayo?*  
 the which who-NOM he-GEN tears-ACC wipe-COMP ~~ge~~-Q  
 'Who can wipe out his tears?'  
 b. *enu ku nwukwu-ka ku-lul swip-key yongsehal swu iss-ul-kka?*  
 which the who-NOM he-ACC easily forgive can exist-FUT-Q  
 'Who can forgive him so easily?'

Leaving aside the exact function of *enu* here, we can at least observe the flexible distribution of the determinant.<sup>9</sup> Consider the corpus examples in the following:

- (9) a. *i chayk-i [ku etten chayk-pota] cwungyo-hata*  
 this book-NOM the some book-than importance-do  
 'This book is more important than any book.'  
 b. *cepeney [etten ku salam-i] na-eykey kopayk-ul hase*  
 last time some the man-NOM I-DAT confess-ACC did  
 'Last time, the certain man confessed to me.'  
 c. *i-nun etten ku salam-uy inkanseng-ul malhay cwunta*  
 this-TOP some the person-GEN personality-ACC tell ~~u~~  
 'This tells us the personality of the certain person.'

As attested by such naturally occurring data, the indefinite uses of the determinant *etten* can appear either before or after the indicative determinant.<sup>10</sup>

<sup>8</sup> To be precise, the expression here is not exactly indefinite in terms of meaning. It is more similar to the adjectival element *certain* in English.

<sup>9</sup> The interrogative uses are more complicated than described here. When the interrogatives are combined with the indicative determinant, it has only an indefinite reading. See section 3.4.

<sup>10</sup> As noted by a reviewer and Hong (2010), examples in (9b) in where the indefinite determinant *etten* precedes the indicative one, the acceptability appears to decrease, probably due to the

**Property 4:** Numerals can be only in the post-determinant position. They can neither modify a fully saturated NP nor can appear with a quantifier:

- (10) a. ku twu [salam] `the two men'  
 b. \*twu [ku salam] `two the men'  
 c. \*twu [motun salam] `two all men'

The numeral cannot precede a determinant, but must appear only immediately preceding a head noun or a classifier.<sup>11</sup> To be more specific, the numeral expression combines only with a lexical noun, indicating that it behaves like a lexical compound.

**Property 5:** Characteristic determinants can only be in the pre-head noun position. Korean has a handful number of characteristic determinants, which are canonically monosyllabic, but these always appear closest to the head noun:<sup>12</sup>

- (11) a. khu-n say chayk `big new book'  
 b. \*say khu-n chayk `new big book'

**Property 6:** Adjectival, relative, and genitive determinants behave a lot differently from lexical determinants. As noted earlier, these phrasal determinants are quite flexible in their distributional possibilities. For example, the genitive and adjectival modifier are interchangeable in terms of ordering:<sup>13</sup>

- (12) a. [Mia-uy] [acwu khu-n] chayk  
 Mia-GEN very big-MOD book

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semantic mismatch between indefinite and definite. However, the attested examples tell us that we cannot rule out such an ordering from the formal grammar.

<sup>11</sup> The numeral with a classifier can appear in various positions. For example, as in *haksayng twu myeong* `student two classifier', the unit can appear. See Kim and Yang (2006) for the discussion of numeral classifier constructions and references therein.

<sup>12</sup> Prenominal expressions with the suffix *cek* like *hankwuk-cek* `Korean-way' are also similar in this respect:

- (i) ku hankwuk-cek sako vs. \*hankwuk-cek ku sako `Korean way of thinking'  
 the Korean-way thinking \*Korean-way the thinking

See Hong (2010) for further discussion.

<sup>13</sup> As noted earlier, adjectival premodifiers can be taken as relative clauses too.

- b. [acwu khu-n] [Mia-uy] chayk  
 very big-MOD Mia-GEN book

Given the three phrasal determinants, the possible ordering will then be total six. All these factorial possibilities are in fact acceptable:

- (13) a. [Mia-ka ilk-un] [acwu khu-n] [Chelswu-uy] chayk  
 Mia-NOM read very big-MOD Chelswu-GEN book  
 'Chelswu's very big book that Mia read'  
 b. [Mia-ka ilk-un] [Chelswu-uy] [acwu khu-n] chayk  
 c. [acwu khu-n] [Mia-ka ilk-un] [Chelswu-uy] chayk  
 d. [acwu khu-n] [Chelswu-uy] [Mia-ka ilk-un] chayk  
 e. [Chelswu-uy] [acwu khu-n] [Mia-ka ilk-un] chayk  
 f. [Chelswu-uy] [Mia-ka ilk-un] [acwu khu-n] chayk

As shown here, the relative, adjectival, and genitive phrasal determinants are all interchangeable, allowing total 6 ordering possibilities. In (13a), we have the ordering of the object relative clause, adjectival modifier (relative clause), and genitive NP. The ordering from (13b) and (13f) also show us that these three can be freely permuted though certain preferences can be given to one of these depending on the context.

Any proper Korean grammar thus needs to address these ordering constraints of the prenominal expressions as well as their high flexibility of distributional possibilities. Some of these properties may have to do with semantic or pragmatic constraints, but in this paper our discussion will be focused on the morpho-syntactic constraints that control the ordering possibilities.

### 3. Simple NP Structures

#### 3.1. NPs with an Indicative Determinant

Even though prenominal determinants have great freedom in their distributions, there are certain constraints that the grammar needs to observe.

The first thing to note concerns the optionality of determinants. Their optionality has often led literature to assume that the Korean NP structure is non-configurational or lacks the category D.<sup>14</sup> However, as we have noted, the

<sup>14</sup> This in turn means that the NP structure is not projected into the intermediate category or the Det cannot serve as the head (cf. Fukui 1986 for Japanese). However, there are also DP analyses

absence of the determiner does not mean its non-existence in the interpretation of NP structures: context provides its deterministic meaning. For example, the countable NPs in (14) do not have any determiners, but are acceptable in the language:

- (14) a. haksayng-i    sensayngnim-ul    manna-ss-ta  
          student-NOM teacher-ACC    meet-PAST-DECL  
          `(lit.) Student met teacher.'  
       b. kay-ka        cic-nun-ta  
          dog-NOM    bark-PRES-DECL  
          `(lit.) Dog barks.'

The context assigns either an indefinite or definite interpretation to the NPs here, even a singular or plural reading. As such, Korean nouns lack Det and require no plural marking.

Even though the appearance of determiners is optional, they are controlled by certain ordering restrictions when they appear. In particular, as we have seen, indicative determinants such as *ku* 'the' or *ce* 'that' cannot be repeated; they cannot follow a numeral like *twu* 'two' as in *\*twu ku salam* 'two the men'. To capture such fundamental ordering constraints, we assume that indicative determinants, corresponding to English definite articles, are selected by the head noun. In addition, we also assume that the determinants are selecting their heads. This bi-directional selection can be represented in the lexical entries for common nouns (typed as *cn*) and indicative determinants (*det-ind*):<sup>15</sup>

- (15) a. 
$$\left[ \begin{array}{l} cn \\ \text{FORM } \langle \text{haksayng} \rangle \\ \text{HEAD} | \text{POS } \textit{noun} \\ \text{SPR } \langle \text{Det} \rangle \end{array} \right]$$
- b. 
$$\left[ \begin{array}{l} \textit{det-ind} \\ \text{FORM } \langle \textit{ku} \rangle \\ \text{HEAD} | \text{POS } \textit{det} \\ \text{SEL } \left\langle \left[ \begin{array}{l} \text{POS } \textit{noun} \\ \text{SPR } \langle \text{Det} \rangle \end{array} \right] \right\rangle \end{array} \right]$$

The common noun *haksayng* now requires a determinant specifier as its

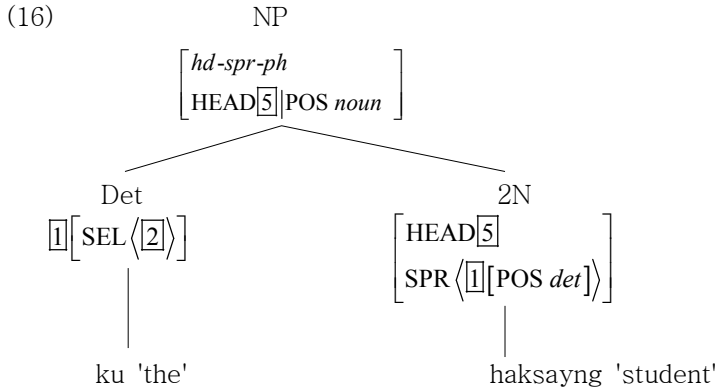
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suggested for Korean (e.g., Ahn 1996, Lee and Cho 2003, Hong 2010), basically motivated from Abney (1987), Alexiadou et al. (2007), and other subsequent analyses for English within the framework of the traditional movement approaches.

<sup>15</sup> For the typed feature structure system, see Sag et al. (2002), Kim (2004), Kim and Sells (2008). The feature attributes we use here include COMPS (complements), GCASE (grammatical case), MOD (modifying), POS (parts of speech), SPR (specifier), SEL (selection).



subcategorization requirement.<sup>16</sup> Meanwhile, the determinant *ku* 'the' is taken to be a functor selecting its nominal head through the feature SEL (select).<sup>17</sup> These lexical entries will then project a structure like the following:



This structure is similar to the English counterpart in that the head noun combines with its specifier serving as the functor of the phrase. The combination here is licensed by the grammar rule, Head-Specifier Rule, one of the well-formed conditions on phrasal elements:<sup>18</sup>

(17) Head-Specifier Rule:

$$\left[ \begin{array}{l} \textit{hd-spr-ph} \\ \text{SPR} \langle \quad \rangle \end{array} \right] \rightarrow \boxed{1}, \text{H} \left[ \text{SPR} \langle \boxed{1} \rangle \right]$$

The grammar rule basically specifies that a head element can combine with its specifier, forming a well-formed head-specifier-phrase.<sup>19</sup> The idea that the head noun requires a determinant in Korean departs from the traditional wisdom in

<sup>16</sup> The italicized words *cn* and *det-ind* here mean the type of these two feature structures.

<sup>17</sup> This bidirectional selection is motivated by both syntactic and semantic reason too. For syntactic motivations in English, see Pollard and Sag (1994), Van Eynde (2006, 2007) and Kim and Sells (2009). For the semantic motivations in Korean, see Kim (2006).

<sup>18</sup> The head-specifier phrase and head-modifier phrase are subtypes of the head-functor phrase in which the nonhead functor (specifier and modifier) selects the head expression (see Van Eynde 2007 and Kim and Sells 2009). Just like the traditional X-bar system, the grammar here also assumes there are other well-formed phrases such as head-complement and head-modifier phrases. See Kim (2004) for the other well-formed phrases in Korean.

<sup>19</sup> The arrow here in the rule is interpreted as 'consist of', not as an input-output relation, as a reviewer questioned.

which the determiners are taken to be adnominal adjuncts, but it straightforwardly captures many ordering possibilities as well as restrictions.<sup>20</sup> For example, the analysis will syntactically rule out the repetition of indicative determinants:

- (18) a. \*ku [ku haksayng] `the the student'  
 b. \*ku [ce haksayng] `the that student'

Such examples are not generated since the first determinant is combining not with either an N or an N', but with a fully saturated NP. This violates the basic lexical requirement of the determiner as given in (15b) and further no grammar rule licenses the combination of a determiner and a fully saturated NP.

### 3.2. Bare NPs

As we have noted, canonical uses of the common noun or complex noun do not accompany a determinant:

- (19) hwakana-n    sensayngnim-i    sikhulewu-n    haksayng-ul  
           pwull-ess-ta  
       angry-MOD    teacher-NOM    noisy-MOD    student-ACC  
           call-PAST-DECL  
       `The/A angry teacher called a/the noisy student.'

Even though there is no definite or indefinite article, the grammar needs to offer a way of interpreting bare NPs.<sup>21</sup> That is, we need to project such bare NPs as saturated ones. An economical way is to assume a unary Head-Only Rule like the following:

<sup>20</sup> See Fukui (1986) for Japanese and Chang (1995), Sohn (1999), and Kim (2004) for Korean in which the determinant is taken to be a type of modifier.

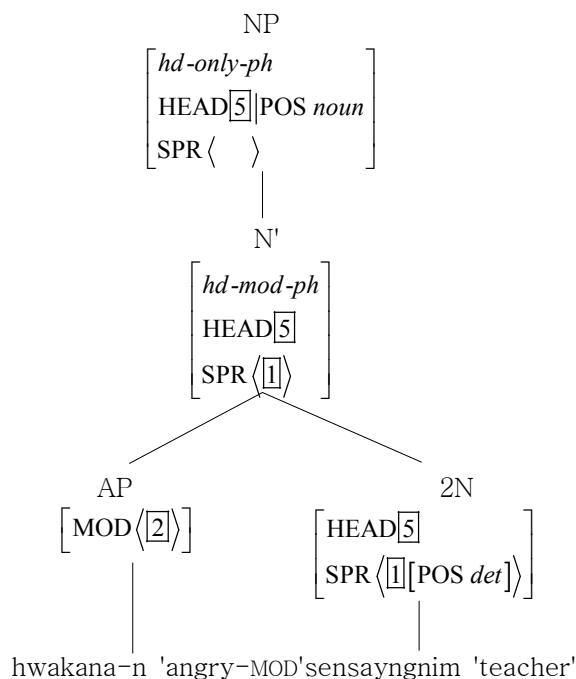
<sup>21</sup> In terms of meaning composition, we assume every NP is interpreted as generalized quantifiers. See Kim (2006) for a similar note.

(20)

$$\text{NP} \left[ \begin{array}{l} \textit{hd-only-ph} \\ \text{POS } \textit{noun} \\ \text{VAL|SPR} \langle \quad \rangle \end{array} \right] \rightarrow \text{H} \left[ \begin{array}{l} \text{POS } \textit{noun} \\ \text{VAL|SPR} \langle \text{Det} \rangle \end{array} \right]$$

The rule basically allows an N or N' head requiring a determiner (as noted by its SPR value) to be directly projected into a saturated NP without combining it.<sup>22</sup> This kind of direct pumping-up rule will then allow us to generate determiner-less NPs like the following:<sup>23</sup>

(21)



The head noun *sensayngnim* 'teacher' is first modified by the adjectival modifier *hwakana-n*, forming a head-modifier construction. This resulting phrase still requires a determiner specifier. However, the Head-Only Rule in (20) can project this N'

<sup>22</sup> As a reviewer questioned, we use the notation N' simply as an unsaturated phrase still seeking a specifier.

<sup>23</sup> In Korean, there is no category AP since adjectives and verbs syntactically behave alike. We use this AP category just for convenience, and as noted earlier, the AP here can be taken as a relative clause. See Chang (1995), Sohn (1999), Kim (2004), and others.

into a full NP without combining its required specifier. The analysis thus attributes the difference between Korean and English-like languages to the supposition of this rule: English does not allow this kind of rule for singular common nouns.<sup>24</sup>

### 3.3. NPs with a Quantificational Determinant

The main difference of the quantificational determinant from the indicative determinant is that the former can combine with any type of nominal expression:<sup>25</sup>

- (22) a. *motun* [haksayng] `all students'  
           all           student  
       b. *ku motun* [chakha-n haksayng] `all the honest students'  
           the all           honest-MOD student  
       c. [*ku chakha-n haksayng*] `all the honest students'  
           all the           honest-MOD student

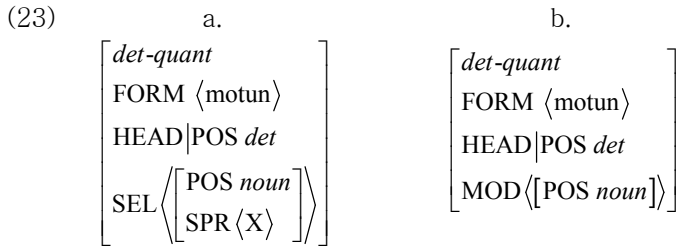
As illustrated here, the quantificational determinant *motun* can select either a lexical noun, an N', or a saturated NP.<sup>26</sup> One can assume that quantificational determinants can combine with any nominal expression, N, N' or NP. This would then license all these three ordering possibilities. However, as in (22b) and (22c), it can be preceded or followed by the indicative determinant, implying that in such cases, it cannot be a determiner. The direction we take is that even though there is no difference in the POS value, the quantificational determinant can function either as a specifier or a modifier, as represented in the following:<sup>27</sup>

<sup>24</sup> In terms of meaning, this head-only rule will add an undefined quantificational reading. See Kim (2006) for further discussion.

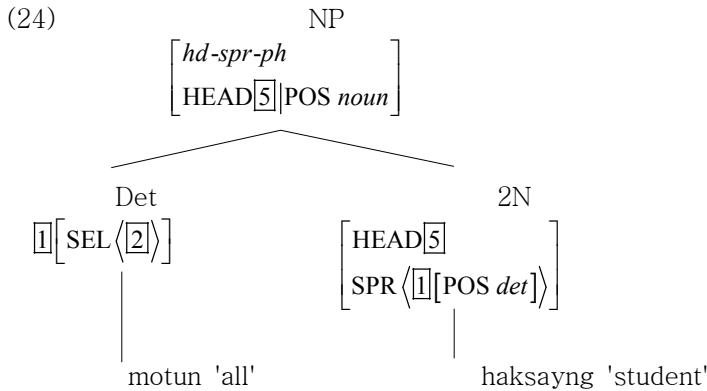
<sup>25</sup> For similar discussion, see Fukui and Sakai (2003) for Japanese and Szabolcsi (1987) for Hungarian.

<sup>26</sup> The acceptability of examples like (22c) is also in contrast to Hong's (2010) judgement. In particular, when *motun* combines with *i* `this' as in *motun i nonmwun* `all this paper', it sounds weird, possibly due to a semantic reason. However, our corpus search gives us abundant examples where *motun* precedes the definite indicative determinant *ku* as in *motun ku chinkwu* `all the friend' and *motun ku il* `all the work'. The contrast implies that a semantic filtering process may follow a syntactic generation process.

<sup>27</sup> As questioned by a reviewer, the postulation of two lexical entries for *motun* with a similar meaning may not be viable enough. However, its distributional flexibility leads us to posit two different, but similar lexical entries. Such multi-lexical entries, though may be redundant, are prominent in languages. For example, considering the uses of *all* as in *all students*, *all the students*, and *all of the*



The lexical entry (23a) specifies that *motun* selects a noun or an N' still seeking for a specifier (X). Meanwhile, (23b) indicates that *motun* functions as a modifier to a nominal expression, saturated or not. Given these dual functions of the quantificational determiner, the present analysis then can generate two different structures. When it functions as a specifier, we would have the following simple saturated NP structure:

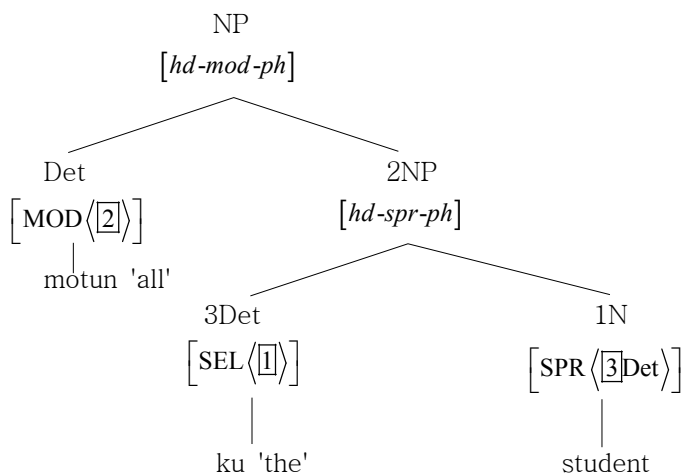


The structure is just like the one for *all students* in which *all* functions as a determiner. As assumed, when the quantificational determiner functions as a modifier, we would have the following structures:

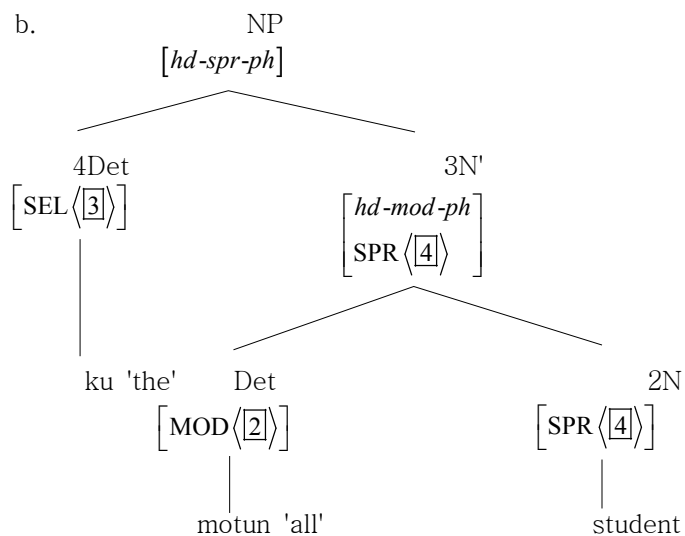
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*students*, we may posit one simple lexical category, but this may require other syntactic operations to license the variations. We believe it is more economical to treat the uses of *it all* as having different combinatory possibilities.

(25) a.



b.



In both structures, the prenominal element *motun* is selecting a nominal expression. In (25a), it combines with a full NP whereas in (25b) it selects a noun head.

One thing to note here is that even though we take these quantificational expressions as determinants, they are not required by the head noun. Such modifying cases are thus different from the head-specifier phrases with bidirectional selections, and licensed by the following head-modifier rule:

(26) Head-Modifier Rule:

$$[hd-mod-ph] \rightarrow [MOD \langle \underline{2} \rangle], H \underline{2}X$$

The difference from the head-specifier-phrase is thus that the head-modifier-phrase does not have a bidirectional selection: it is only the functor (modifier) that bears the feature MOD.<sup>28</sup>

### 3.4. NPs with an Interrogative Determinant

The interrogative determinants like *ene* 'which' or *mwusen* 'what' combine only with an unsaturated NP. Consider the following:

- (27) a. *ene chayk-i inki-ka iss-e?*  
 which book-NOM popularity-NOM exist?  
 'Which book is popular?'  
 b. *ku ene chayk-i inki-ka iss-kess-e?*  
 the which book-NOM popularity-NOM exist?  
 'No book will be popular.'  
 c. \**ene ku chayk-i inki-ka iss-e?*  
 which the book-NOM popularity-NOM exist?  
 'Which book is popular?'

The expression in (27a) is interrogative, but the one in (27b) where *ene* follows the indicative determinant is not an interrogative but an indefinite determinant. (27c) illustrates that the interrogative cannot combine with a saturated NP (cf. Chang 1995, Sohn 1999, Hong 2010). That is, the interrogative expression is an indefinite determinant when not closing off the noun phrase. Further examples clearly show this fact:

- (28) a. *i chayk-i [ku etten chayk-pota] cwungyo-hata*  
 this book-NOM the which book-than importance-do  
 'This book is more important than any book.'  
 b. *[ku ene chayk-to] i chayk-ul taysinha-l swu e~~ta~~*  
 the some book-also this book-ACC replace-MOD can  
 not.exist-DECL

<sup>28</sup> As in Van Eynde (2006, 2007), we could unify both the head-specifier and head-modifier-phrase as the head-functor-phrase. In this paper, we leave this possibility open.

‘No book can replace this book.’

The observations imply that the interrogative determinant will have the following lexical entry:

- (29) 
$$\left[ \begin{array}{l} \textit{det-inter} \\ \text{FORM} \langle \textit{ene} \rangle \\ \text{HEAD} | \text{POS} \textit{det} \\ \text{SEL} \left\langle \left[ \begin{array}{l} \text{POS} \textit{noun} \\ \text{SPR} \langle \textit{Det} \rangle \end{array} \right] \right\rangle \\ \text{QUE} + \end{array} \right]$$

The interrogative determinant is thus just like the indicative determinant, functioning as the specifier of an unsaturated NP. This lexical entry will block us from generating cases (27c) where it combines with a full NP.

However, when the determinant modifies a nominal expression (N, N', or even a full NP), it is used only as indefinite:

- (30) 
$$\left[ \begin{array}{l} \textit{det-indef} \\ \text{FORM} \langle \textit{ene} \rangle \\ \text{HEAD} | \text{POS} \textit{det} \\ \text{MOD} \langle \left[ \text{POS} \textit{noun} \right] \rangle \end{array} \right]$$

The use of *ene* as an indefinite post-nominal element thus allows the determinant to combine either a saturated NP as in *ene ku nwuka* ‘some the who’ or an unsaturated one *ku ene nwuka* ‘the some who’.

As pointed out by a reviewer, this analysis differentiates the interrogative use of *ene* from the indefinite use of *ene*. It is natural to assign two different entries for two different meanings and their position tell us the different uses. The interrogative use is in the complementary distribution with the indicative one to avoid any clash in meaning between definiteness and indefiniteness.

### 3.5. NPs with a Numeral Determinant

Numeral determinants are different from the quantificational ones in that they



cannot precede a definite determiner:<sup>29</sup>

- (31) a. ku sey salam `the three men'  
 b. \*sey ku salam `three the men'

We also note that no element can intervene between numeral and head noun, implying

that numeral determinants (*det-num*) can combine only with a lexical head.<sup>30</sup> However, as shown in (31a), its combination does not close off the NP. This leads us to take the numeral determinant as a type of lexical modifier:

- (32) 
$$\left[ \begin{array}{l} \textit{det-num} \\ \text{FORM } \langle \textit{sey} \rangle \text{ 'three'} \\ \text{MOD} \langle \text{N} \rangle \end{array} \right]$$

The lexical information specifies that even though the numeral determinant is optional, it modifies only a lexical element. This kind of lexical constraint also applies to characteristic determinants (*det-char*) which need to appear in the pre-head noun position:

- (33) 
$$\left[ \begin{array}{l} \textit{det-char} \\ \text{FORM } \langle \textit{sey} \rangle \text{ 'new'} \\ \text{MOD} \langle \text{N} \rangle \end{array} \right]$$

This simple lexical entry will then license orderings like (34), but not those in (35):

- (34) a. motun [ku [sey salam]] `all the three men'  
 all the three men  
 b. motun [ku [say chayk]] `all the new books'  
 all the new book  
 (35) a. \*ku sey [motun salam]  
 the three all men  
 b. \*motun say [ku chayk]  
 all new the book

<sup>29</sup> As a reviewer points out, bare numerals like *sey* can combine only with human nouns.

<sup>30</sup> See Kim and Yang (2006) in which the combination between numeral and head noun is a type of constructional compound.

In (34), the numeral and characteristic determinant are combining with a lexical head noun *salam* 'men' and *chayk* 'book' respectively. The resulting expressions are closed off by the indicative determinant *ku*, whose result is again modified by *motun* 'all'. However, the present analysis does not license examples like (35). In (35a) the numeral *sey* 'three' incorrectly modifies the N' *motun salam* 'all men' whereas in (35b) the characteristic determinant *say* 'new' combines with the saturated NP *ku chayk* 'this book'.<sup>31</sup>

#### 4. NPs with Phrasal Determinants

As we have noted earlier, phrasal elements like relative clauses and possessive NPs can also function as a prenominal expression. In particular, observe the following:

- (36) a. *Mia-uy chinkwu* 'Mia-GEN friend'  
 b. *ku [Mia-uy] chinkwu* 'the Mia-GEN friend'  
 c. *[Mia-uy] [ku chinkwu]* 'Mia-GEN the friend'

These simple data indicate that the possessive NP can select either a full NP or an unsaturated NP, as quantificational determinants.<sup>32</sup> The genitive marked noun will have a lexical entry like the following:<sup>33</sup>

- (37) 
$$\left[ \begin{array}{l} \textit{noun-gen} \\ \text{FORM } \langle \textit{Mia-uy} \rangle \textit{ 'Mia-GEN'} \\ \text{HEAD} | \text{GCASE } \textit{gen} \\ \text{MOD} (\langle \textit{nominal} \rangle) \end{array} \right]$$

The difference from English is thus that the genitive NP is not a specifier but serves as a functor (a modifier) to any nominal category. The categorial freedom

<sup>31</sup> A reviewer accepted examples like *ku tases say chayk* 'the five new book'. The present analysis does not license such examples since the numeral needs to combine with a lexical head. Our corpus search also fails to find examples like this where a numeral precedes the characteristic determinant. A long pause after the numeral seems to slightly improve its acceptability, hinting that in a noncanonical use, the simple numeral *tases* in this position might be used as a counterpart like *tases kwon-uy* 'five CL-GEN'.

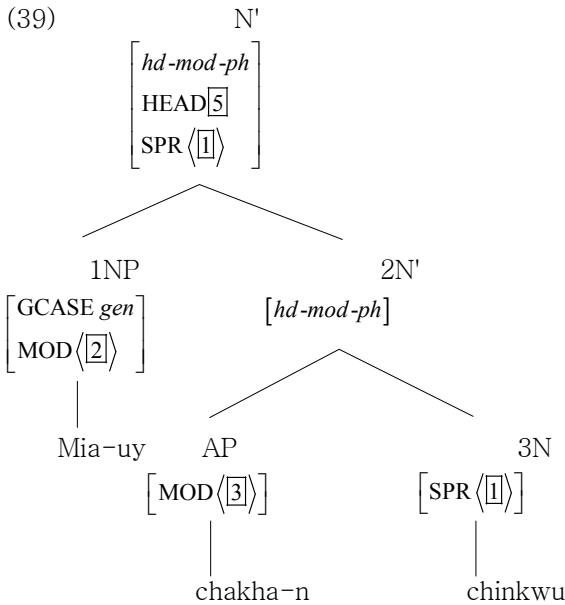
<sup>32</sup> The possibility of examples like (36b) hinders us from taking the genitive NP as an NP specifier.

<sup>33</sup> The feature GCASE stands for grammatical case whereas SCASE means semantic case. See Kim (2004).

of the selected head then licenses the following three variations:

- (38) a. Mia-uy chinkwu `Mia-GEN friend'
- b. Mia-uy chakha-n chinkwu `Mia-GEN honest-MOD friend'
- c. Mia-uy ku chakha-n chinkwu `Mia-GEN the honest-MOD friend'
- d. ku Mia-uy chakha-n chinkwu `the Mia-GEN honest-MOD friend'

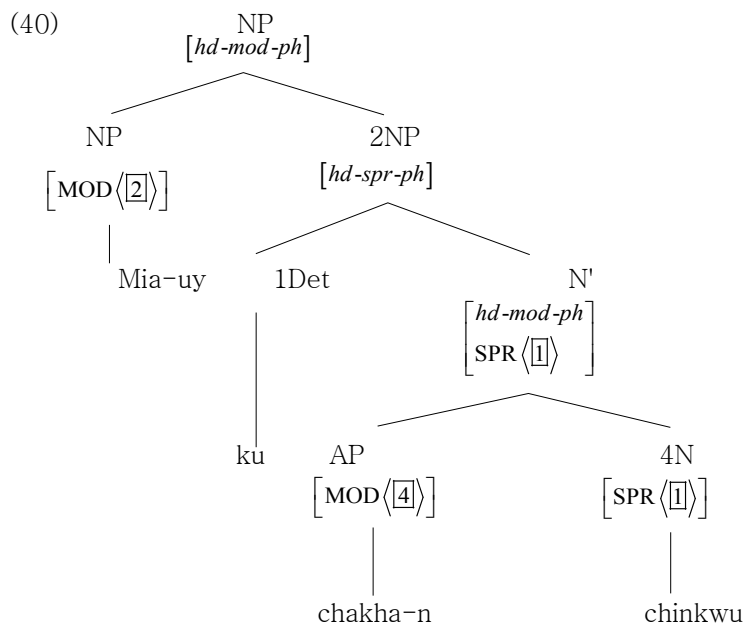
Let us consider the structure of (38b) that the present analysis generates:<sup>34</sup>



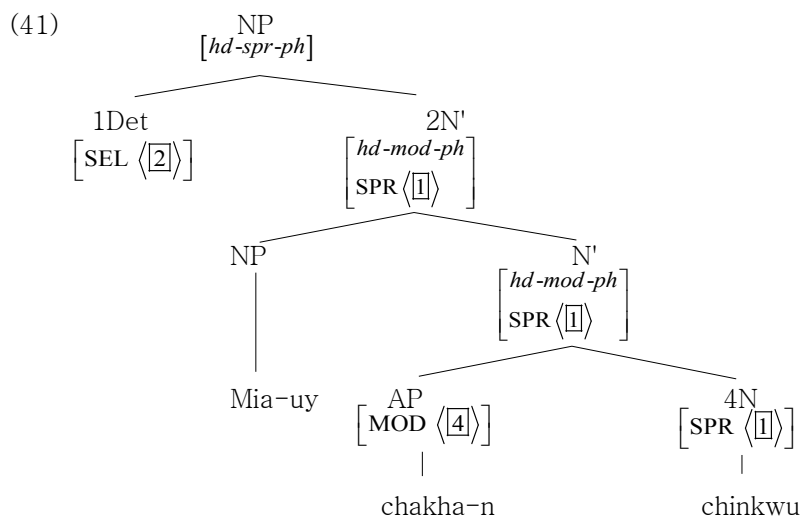
The head noun *chinkwu* `friend', requiring a specifier, is modified by the adjectival adnominal *chakha-n* `honest-MOD'. This *head-modifier-ph* again combines with the functor, genitive NP, forming a modifier phrase. The final expression still requires a specifier which will be discharged by the Head-Only Rule.

The genitive NP can also select a full NP as represented in the following for (38c):

<sup>34</sup> To be more precise, this structure is a simplified one. The SPR value required by the head noun can be discharged by the Head-Only Rule at either at the final stage or at the phrasal level of *chakha-n chinkwu* `honest-MOD friend'.



The difference from the one in (39) is that the genitive NP *Mia-uy* now selects a full NP. By allowing the genitive NP to be a functor combining with any level of nominal expression, the analysis will further allow a structure like the following:



Different from (40), this structure licenses the genitive NP to modify an N', forming another N'. The indicative determinant *ku* then can combine with this intermediate

phrase, saturating the required SPR (specifier value).

When interacting with other lexical determinants, relative clauses and genitive NPs also have flexible distribution, as we have seen. For example, they can occur before or after a quantificational determinant:

- (42) a. i    motun    Mia-uy    chayk-tul  
           this all        Mia-GEN book-PL  
       b. i    Mia-uy    motun    saylowu-n chayk-tul  
           this Mia-GEN all        new        book-PL  
       c. Mia-uy    motun    i        saylowu-n chayk-tul  
           Mia-GEN all        this    new        book-PL

Since the quantificational determinant is also selecting any nominal expression, this freedom is a natural expectation.<sup>35</sup>

## 5. Conclusion

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<sup>35</sup> The analysis would generate examples with multiple indicative determinants as in the following:

- (i) ??/\*i    Mia-uy    ku        motun    ce    saylowu-n    ku    chayk-tul  
           this Mia-GEN the        all        the    new        the    book-PL

We believe that such an example needs to be ruled out not by syntax but by other grammatical constraints such as semantics or processing reason.

The acceptability of such an example is related to examples like the following both of which a reviewer accepted and questioned about:

- (ii) a. ?[ku twu    myeng-uy]    [ku twu salam]  
           the two CL-GEN        the    two    men-PL  
       b. \*/??[ku ttoktokha-n]    [ku twu    salam]  
           the smart-MOD        the    two    men

In both examples, the indicative determinant *ku* is in a sense repeated. In present analysis, the genitive NP *ku twu myeng-uy* can function as a nominal modifier, thus licensing (ia). However, the present analysis does not license examples like (iib) since *ttoktokha-n* can modify a full NP, but the indicative determinant *ku* cannot. We believe that all these examples are not natural, and need to be ruled out by either processing or grammatical constraints.

Korean NP structures are, as is well-known, quite flexible in terms of the ordering of internal elements. However, this does not mean that there exist no ordering constraints. The challenges for theoretical or computational approaches have been to constrain the word ordering between various prenominal expressions while keeping their freedom in distributional possibilities as much as possible.

In this paper, we have sketched a direction for this within a constraint-based, lexicalist framework. The main gist of the analysis is to assign the selectional properties to the prenominal determinants (with the feature SEL). This SEL feature is also differentiated from the MOD feature which is not linked to bidirectional selections. This analysis, departing from the traditional wisdom where all these prenominal determinants are taken to be simple modifiers, can provide us with an effective way of constraining the ordering possibilities among prenominals as well as precise NP structures.

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