Nominative/Accusative Adpositions in Negative Auxiliary Constructions

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Yongkyoon No. 2004. Nominative/Accusative Adpositions in Negative Auxiliary Constructions. *Language and Information 8.2*, 73 91. The nominative and accusative postpositions in Korean may intervene between the negative auxiliary verb ANH and its complement verb phrase. As Korean is an OV language, this means that "verb + {nom, acc} + ANH" as well as the simpler concatenation "verb + ANH" is possible. This fact, together with an overwhelming regularity of these postpositions' optionality in virtually all constructions, poses a problem for formal approaches to the syntax of the language.

Working in a constraint-based grammatical framework shaped by such works as Sag and Wasow (1999) and Copestake (2002), we put forth type hierarchies for *major_class*, which represents verb inflection, and for *pos*, which has two immediate subtypes, i.e., *htrp_pos* and *ord_pos*. What we call the "half-transparency" of the case postpositions separates them from all the other lexical items in the language. The type *htrp_pos* is used to constrain one of the two newly proposed *head_comp_rules*, where a newly proposed feature HEAD2 of a phrase inherits its value from the HEAD feature of the head word. The COMPS list of the negative auxiliary ANH is seen as containing a single phrase whose HEAD is a kind of nominal clause and whose HEAD2 is something that is one of the three maximal types: *acc*, *nom*, and *null*. **(Chungnam National University)**

Key words: nominative case, accusative, adposition, postposition, Korean, constraint-base grammar formalism, gerund, verbal inflection

1. The problem

The nominative postposition may occur between the auxiliary verb of negation and its complement VP, in effect attached to what must be a projection of a verb rather

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than one of a noun. Consider

(1) ca ka kil-ci ka anh-a
ruler NOM be long-INFL NOM NEGAUX
'The ruler is not long'

The second occurrence of the nominative postposition in (1) is curious in many ways: it is an exception to an otherwise valid generalization that the nominative postposition occurs right after a noun, i.e. immediately following the head of the noun phrase; its occurrence does not seem to be motivated by the semantics of the auxiliary verb; the verb of the complement has to be in the specified inflection no matter whether it intervenes.

Exactly the same meaning can be conveyed by (2) as by (1).

(2) ca ka kil-ci lul anh-a
ruler NOM be long-INFL ACC NEGAUX
'The ruler is not long'

The problematic nominative postposition in (1) has been substituted with the accusative postposition in (2). It is just as curious as its nominative counterpart.

We will discuss in this paper what an adequate analysis of the above fact is, what consequences this analysis has on the description of verb inflection, and how a better formulation of the optional occurrence of case postpositions in the language as a whole can be obtained in a constraint-based grammatical framework of Sag and Wasow (1999).

2. Varieties of verb inflection

The verb in the Korean language inflects and does so in complex ways. The most prominent property realized with most other properties by inflection is SUBJECT-HONORIFIC. The realization of other properties is constrained by what other properties are simultaneously realized on the verb form. The phonological operations that are used to realize certain properties may differ wildly from each other.[1]

We will assume an overarching classification of verb forms in the language into seven groups, whose distinction is not so much motivated by semantic considerations as by syntactic considerations. The seven groups of verb forms, hence of verb inflections, are: (a) the root clause forms, (b) the nominal clause forms, (c) the forms appropriate for sentential complements, (d) the forms appropriate for relative clauses, (e) the adverbial forms, (f) the indirect quotation forms, and (g) the forms appropriate for special embedded phrases of a variety of auxiliary verbs. Some exemplars of each of the seven groups may help readers better understand the classification. In (3) is a set of exemplars for each of these seven groups, where (sequences of) suffixes are underlined as they attach to the regularly inflecting verb CAP 'capture'.

[1] This makes it difficult for a grammarian to arrive at a coherent yet complete picture of the inflection of the Korean verb.

(3)

form	exemplars
root clause	*capasssupnita, capni, capala*
nominal clause	*capki, capassum, capulci*
sentential complement	*capnun, capun, capul*
relative clause	*capnun, capun, capten*
adverbial clause	*capassumyen, capkeysscіman, capusinikka*
indirect quotation	*captelako, capkeyssnunyako, capusilako*
governed phrase	*capa, capkey, capko*

Of these, the inflections for sentential complements bear family resemblance to those for relative clauses. As *-ten* and *-essten* are restricted to the latter clauses, I separate the two. Nothing in this paper, however, hinges on this particular decision.[2]

While the SUBJECT-HONORIFIC property may be realized in all seven of these groups using the same set of phonological operations, all other properties are subject to restrictions. Among the less restricted properties are PAST and IRREALIS. The property PAST may be realized in (b), (c), and (d) with basically no restrictions, in (a), (e), and (f) with some restrictions, but not in (g); the affix used in realizing PAST in (d) differs completely from that for the same property in the other groups. The property IRREALIS is similar but slightly more restricted than PAST. It is realized by suffixing *-ul* in relative clauses but by suffixing *-keyss* in (a), (b), (c), (e), and (f).

The partial paradigms for the two groups of inflections, i.e. for the root clause forms and for the relative clause forms, are given in Table 1 and Table 2, respectively.

		− PAST	+ PAST
− IRREALIS	− RETROSPECTIVE	*capsupnita*	*capasssupnita*
	+ RETROSPECTIVE	*capsuptita*	*capasssuptita*
+ IRREALIS	− RETROSPECTIVE	*capkeysssupnita*	*capasskeysssupnita*
	+ RETROSPECTIVE	*capkeysssuptita*	*capasskeysssuptita*

[Table 1] A partial paradigm for a root clause inflection (DECLARATIVE, − SUBJECT-HONORIFIC, + HEARER-HONORIFIC)

Properties like HEARER-HONORIFIC and RETROSPECTIVE are subject to heavy restrictions. The former can be realized in root clause forms only, and the latter in root clause forms and in indirect quotation forms. Table 3 maps out a paradigm for indirect quotation forms.

[2] A referee suggests that the proper subpart /ci/ of the inflectional suffixes *-nunci* and *-ulci* is better treated as a noun, and hence the remaining *-nun* and *-ul* are actually nothing other than the suffixes for sentential complements themselves. Chae and No (1998, 82-85) explicitly argue against this thesis and no counterarguments have since been made to their view that *-nunci* and *-ulci* are atomic. We are more in favor of this view.

		− PAST	+ PAST
− IRREALIS	− RETROSPECTIVE	*capnun*	*capun*
	+ RETROSPECTIVE	*capten*	*capassten*
+ IRREALIS		*capul*	*capassul*

[Table 2] The paradigm for a relative clause inflection (− SUBJECT-HONORIFIC)

		− PAST		+ PAST	
		− RETRO	+ RETRO	− RETRO	+ RETRO
DEC	− IR	*-nuntako*	*-telako*	*-asstako*	*-asstelako*
	+ IR	*-keysstako*	*-keysstelako*	*-asskeysstako*	*-asskeysstelako*
INT	− IR	*-nunyako*	*-tenyako*	*-assnunyako*	*-asstenyako*
	+ IR	*-keyssnunyako*	*-keysstenyako*	*-asskeyssnunyako*	*-asskeysstenyako*

[Table 3] A partial paradigm for an indirect quotation inflection (− SUBJECT-HONORIFIC)

3. Types and their hierarchies

3.1 Types involved in verb inflection

A fully inflected verb will have specified on it a combination of values for the features: MAJOR_CLASS, SUBJHON, PAST, IRREALIS, RETROSP, and HHON.[3] The values of all these features except MAJOR_CLASS are boolean. The nonboolean-valued feature MAJOR_CLASS is further assumed to have a value of type *major_class*. Instead of taking these features to be appropriate for the type *verbword*, we will take HHON, RETROSP and PAST as appropriate for various subtypes of the type *major_class*. This allows us to capture the following feature cooccurrence constraints:

C1HHON has distinct values in no other inflections than those of root clauses.

C2RETROSP has distinct values only in root clause forms, indirect quotation forms, and relative clause forms.

C3PAST can be realized in every inflection besides the special governed phrase forms.

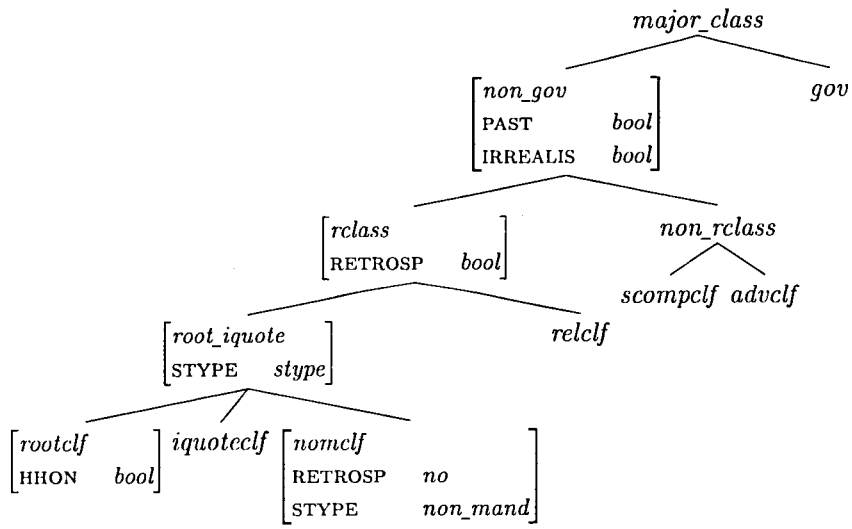
Two of the seven groups of verb forms introduced above make a distinction in sentence types. Four such types are assumed to be in the language: declarative, interrogative, imperative, and hortative. The root clause form and the indirect quotation form do make a distinction in these sentence types.

This picture takes us to the following types and hierarchies.

(4) $\begin{bmatrix} \textit{verbword} & \\ \text{MAJOR\_CLASS} & \textit{major\_class} \\ \text{SUBJHON} & \textit{bool} \end{bmatrix}$

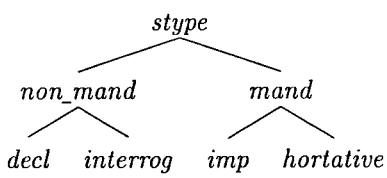
[3] The feature names SUBJHON, RETROSP, and HHON stand for 'subject-honorific', 'retrospective', and 'hearer-honorific', respectively.

(5)



The nominal clause forms cannot be in a retrospective inflection. Neither can it be in an imperative or hortative inflection. Hence, the specifications RESTROSP *no* and STYPE *non_mand*. The hierarchy in (6) is for *stype*.

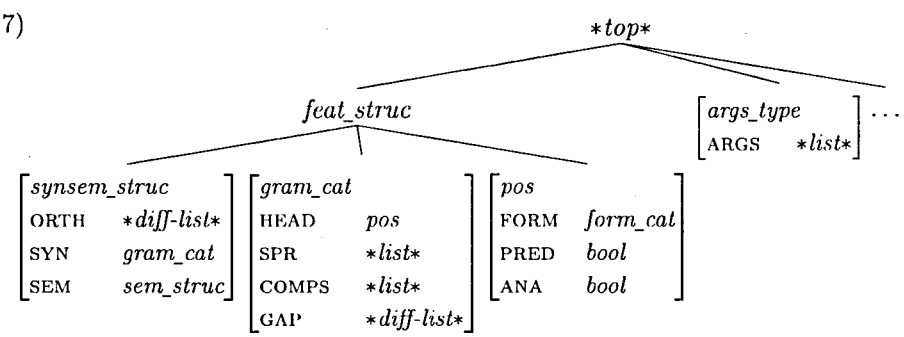
(6)



3.2 General types for the whole machinery

We obviously need to fit the types *verbword* and *major_class* in the type hierarchy for the grammar as a whole. To do that, we first introduce the types *word* and *lexeme* as subtypes of the type *synsem_struc*. As Sag and Wasow (1999) see it, *synsem_struc* is an immediate subtype of *feat_struc*, the other subtypes of the latter being *agr_cat*, *gram_cat*, and *pos*.

(7)



Other important types include *lexeme*, *word*, *infl_rule*, *dtr_type*, and *grule*.[4] All

[4] A typical type hierarchy contains a large number of types and the names of the types often get prohibitively complex. What is important is not the names themselves, but the individuation

these types are assumed to be subtypes of *synsem_struc*, which appears in the hierarchy in (7). Various inflectional rules, namely, subtypes of *infl_rule*, take a single lexeme and give a word. The input to those rules, the element in the ARGS list, must be a lexeme of an inflecting kind. As the verb is the only category that inflects in the language, we take the two subtypes of *lexeme* to be *verb_lxm* and *const_lxm*. *infl_rule* will have subtypes that account for the whole range of inflections. Not only *infl_rule*, but also *grule* has the ARGS list. Both of these types must inherit from *synsem_struc* as well as from *args_type*.

3.3 Examples of *verb_lxm* and *verbword*

The inflection rules are supposed to take a linguistic sign of the type *verb_lxm* and ultimately give another sign of the type *verbword*. If the lexicon lists a sign like (8), the set of *infl_rules* working in cooperation yields one like (9). For the type *nominal*, see Section 4.2. For the abbreviation PPNOM, see Footnote 17.

(8)
$$\begin{bmatrix} \textit{verb\_lxm} & \\ \text{ORTH} & \langle\, |\, \textit{kath}\, |\, \rangle \\ \text{SYN} & \begin{bmatrix} \textit{gram\_cat} & \\ \text{HEAD} & \textit{major\_class} \\ \text{SPR} & \langle \text{PPNOM} \rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \textit{phrase} & \\ \text{SYN}\,|\,\text{HEAD} & \textit{nominal} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

(9)
$$\begin{bmatrix} \textit{verbword} & \\ \text{ORTH} & \langle\, |\, \textit{kathassnunci}\, |\, \rangle \\ \text{SYN} & \begin{bmatrix} \textit{gram\_cat} & \\ \text{HEAD} & \begin{bmatrix} \textit{nomclf} & \\ \text{PAST} & \textit{yes} \\ \text{IRREALIS} & \textit{no} \\ \text{RETROSP} & \textit{no} \\ \text{STYPE} & \textit{interrog} \\ \text{HHON} & \textit{no} \end{bmatrix} \\ \text{SPR} & \langle \text{PPNOM} \rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \textit{phrase} & \\ \text{SYN}\,|\,\text{HEAD} & \textit{nominal} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{SUBJHON} & \textit{no} \end{bmatrix}$$

of and the relationship among the types. Here, *grule* is intended to refer to some notion similar to "grammar rule".

An exact statement of the system of inflectional rules for the language is a formidable task in its own. We leave the issue for another occasion.

4. The crosscategorial generalization between the verb in *nomclf* and the noun

The nominative postposition typically occurs after a noun phrase.[5] This is exemplified by (10), which is one of the simplest possible sentences in the language.

(10) ciswu ka o-ass-e
Chisoo NOM come PAST DECL
'Chisoo came'

(11) a. ca ka kil-ci ka anh-a
ruler NOM be long-INFL NOM NEGAUX
'The ruler is not long'

b. ca ka kil-ci lul anh-a
ruler NOM be long-INFL ACC NEGAUX
'The ruler is not long'

As is the case in (1) and in (2), which are repeated above as (11a and b), the verb inflected in the way identified by our type *nomclf* acts exactly like a noun: they both occur immediately before the nominative/accusative postposition.

There are five distinct inflections of the verb that may occur immediately before the nomintaive/accusative postposition. They are marked with distinct suffixes to the verb: *-nunci*, *-nunka*, *-ki*, *-um*, and *-ci*.[6] The first two form interrogative clauses; the next two, *-ki* and *-um*, are for declarative clauses; The last one, *-ci* cooccurs only with a negative auxiliary verb.[7]

As it is the whole clause that can be substituted for the noun phrase, as is shown by the two sentences in (12), the inflection realized with the suffix *-nunci* is to be seen to be shared between the verb and all its projections up to the clause.

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[5] Together with the fact that the noun is the final element of the noun phrase (in conformity with the fact that Korean is a head-final language), this is presumably why many grammarians wrongly take the postposition to be an inflectional suffix.

[6] One may add to this list *-ulci* and *-ulkka*, both of which introduce an interrogative clause.

[7] A few more inflections must be recognized which invoke suffixation of /ci/. Firstly, /ci/ is suffixed to realize properties associated with our *rootclf*. Secondly, it realizes properties associated with our *advclf* and is illustrated by (i) below. Thirdly, it relaizes properties linked to our *gov*. This last usage is confined to the head verb of the complement of the verb *siph* 'seem like'.

(i) na nun sumu sal i-ci selun sal i ani-ta
I DLM twenty age COP ADVCLF thirty age NOM NEGCOP NONPAST DECL
'I am twenty years old rather than thirty years old'

(ii) ciswu ka ttena-ssci siph-ta
Chisoo NOM leave-PAST GOV seem like-NONPAST DECL
'It seems that Chisoo left'

(12) a. cengchey ka pulmyenghoak ha-ta
identity NOM unclarity HA DECL
'The identity is not clear'

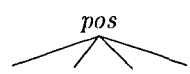
b. ciswu ka o-ass-nunci ka pulmyenghoak ha-ta
Chisoo NOM come PAST INTERROG NOM unclarity HA DECL
'Whether Chisoo came is not clear'

All the other inflections have this property of percolation over the local tree. This fact motivates a treatment of our MAJOR_CLASS as a head feature, i.e., as being subject to the Head Feature Principle.

4.1 The Head Feature Principle and the type *pos*

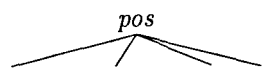
One of the features appropriate for Sag and Wasow (1999)'s type *gram_cat* is HEAD and its value is a part-of-speech. Due to this arrangement and to the Head Feature Principle, a noun phrase can be exclusively referred to as a phrase whose SYN | HEAD value is *noun*, a verb phrase as a phrase and $\left[\text{SYN} \mid \text{HEAD} \quad \textit{verb}\right]$, and a prepositional phrase as a phrase and $\left[\text{SYN} \mid \text{HEAD} \quad \textit{prep}\right]$, all assuming the following types and their relationships.

(13)



As the type *major_class*, which we proposed in (5) in 3.1, is seen as appropriate for *verbword*, it is all too natural to simply take our *major_class* to be a subtype of the type *pos* and get rid of the feature constraint MAJOR_CLASS *major_class* on *verbword*. This leaves us SUBJHON as the only uninherited feature for *verbword* and the following type hierarchy for *pos*.

(14)



Note here that a change of *prep* into *adp* has taken place to cover postpositions. (*adp* is intended to stand for "adposition", which is a hypernym of "postposition".)

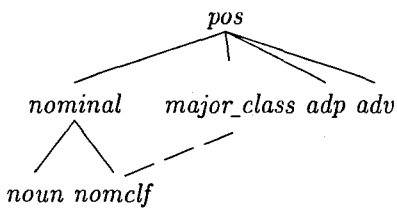
4.2 Capturing crosscategorial similarity via multiple inheritance

The class of verb words identified as *nomclf* in previous sections form a natural class with nouns for certain purposes, one of them being the ability of their projections to fill the complement slot of the nominative postposition. This similarity between *nomclf* and *noun* can be captured by using the multiple inheritance mechanism built into the modern day grammar formalisms of the sort advocated by, among others, Sag and Wasow (1999). As nouns have properties that do not overlap those of verbs, whether of type *nomclf* or not, it won't do just to make the type *nomclf*, which is a nonimmediate subtype of *major_class*, a subtype of *noun*. A new type would have to be introduced so that both the type *nomclf* and the type *noun*, but

no others, are its subtypes. This new type will have to be a subtype of *pos*, of course.

The hierarchy in (15) fits the description of the new type and its relationships to the others, where the dotted line indicates that the lower type is a nonimmediate subtype of the one above it.

(15)



The approach is very similar to the ones taken by Malouf (2002) and by Chung et al. (2002) in dealing with so-called gerundive constructions.[8] Authors who take the suffixes *-ki*, *-um*, and *-ulci* to be independent words take different approaches. For these, see Chae (2004) and references therein.[9]

Our new type *nominal* may be directly referred to in the lexicon, among other things, in specifying the complement of verbs like the copula, KATH 'seem like', and TAP 'be a typical instance of'. The form *iptita*, of the copula, in (16) has a description in (17).

(16) a. i ke n khal i-ptita
this thing DLM knife COP DECL
'(I found that) This is a knife'

b. i ke n ttang ciph-ko heyem chi-ki i-ptita
this thing DLM ground touch while swimming do NOMCLF COP DECL
'(I found that) This is (like) swimming with your hands on the ground.'

[8] It has to be noted, however, that the move, made by Chung et al. (2002), to make one type of gerund an immediate subtype of *noun*, which is an immediate subtype of *nominal*, and an immediate subtype of *verbal* and, at the same time, another type of gerund an immediate subtype of *verb*, which is an immediate subtype of *verbal*, and an immediate subtype of *nominal* is an unfortunate one. This violates the wellformedness condition, stated by Copestake (2002, 40), of "the unique greatest lower bounds condition" on TFS hierarchies.

[9] Based on his observation of a wide range of phenomena that are not addressed in this article, Chae (2004) arrives at a conclusion that the morphemes *-ki*, *-um*, and *-ulci* are clitics. We leave a scrutiny of his argumentation for another occasion.

(17)
$$\begin{bmatrix} \textit{verbword} & & \\ \text{ORTH} & \langle\, |\, \textit{iptita}\, |\, \rangle & \\ \text{SYN} & \begin{bmatrix} \textit{gram\_cat} & & \\ \text{HEAD} & \begin{bmatrix} \textit{rootclf} & \\ \text{PAST} & \textit{no} \\ \text{IRREALIS} & \textit{no} \\ \text{RETROSP} & \textit{yes} \\ \text{STYPE} & \textit{decl} \\ \text{HHON} & \textit{yes} \end{bmatrix} & \\ \text{SPR} & \langle \text{PPNOM} \rangle & \\ \text{COMPS} & \left\langle \begin{bmatrix} \textit{phrase} & \\ \text{SYN}\,|\,\text{HEAD} & \textit{nominal} \end{bmatrix} \right\rangle & \end{bmatrix} \\ \text{SUBJHON} & \textit{no} & \end{bmatrix}$$

5. Half-transparent heads

5.1 The lexical entry for the negative verb ANH

The verb ANH is quite unique in that it requires not only that a verb precede it but also that the preceding verb be in a *-ci* form.[10] Using the types established in previous sections, this verb can be said to require its complement to have the specification $\left[\text{SYN}\,|\,\text{HEAD} \quad \textit{nomclf}\right]$. However, this won't quite do the job for two reasons. Firstly, there are other forms of a verb which have got to be instances of *nomclf* yet do not meet the requirement imposed by the negative verb. Such nonconforming forms have one of the suffixes *-nunci, -ki*, and *-um*. Secondly, there is a remaining issue of the intervening nominative/accusative postposition, which is the main topic of this paper. Recall that the nominative and accusative adpositions can occur between ANH and its complement.

The first problem is easy to deal with. One may subtype *nomclf* further into *nomclf1*, *nomclf2*, *nomclf3*, and *nomclf4*.[11] In addition, *nomclf4* may be made to involve the suffix *-ci* and then to appear in the COMPS list of ANH. The other subtypes of *nomclf* would then have to be associated with the other suffixes.

The second problem is not so easy. Specifying the negative verb's COMPS list as

[10] There is just one more verb in the language that has these requirements: MAL. This latter verb is a negative one, too.

[11] The four nominal clause forms are illustrated with sentences in various parts of this article.

type	suffix	exemplar
NOMCLF1	*-nunci*	(22)
NOMCLF2	*-ki*	(16)
NOMCLF3	*-um*	(21)
NOMCLF4	*-ci*	(1), (2)

$\left\langle \left[\text{SYN} \mid \text{HEAD} \quad \textit{nomclf4}\right], \left[\text{SYN} \mid \text{HEAD} \quad \textit{adp}\right] \right\rangle$ would introduce a number of inadequacies into our grammar. It makes syntactic rules peek deep into local trees, thus violating strict locality: except in the specification of the negative verb, word-level constituents would not appear in a word's COMPS list. The adposition typically combines with a noun phrase (or a verb phrase whose verb is in one of the *nomclf* forms), whereas in this case it has to be immune from an application of the Head Complement Rule. Finally, yet as importantly, the nominative postposition is optional: the negative verb's COMPS list has to be specified, in addition to the one above, $\left\langle \left[\text{SYN} \mid \text{HEAD} \quad \textit{nomclf4}\right] \right\rangle$.

5.2 The optionality of the postpositions

The two postpositions, the nominative and the accusative, are optional in the language. This optionality is quite regular and overwhelming. The right generalization is: where a postpositional phrase headed by the nominative postposition may occur, a noun phrase (or a verb phrase whose HEAD value is *nomclf*) may occur instead; where a postpositional phrase headed by the accusative postposition may occur, a noun phrase (or a verb phrase whose HEAD value is *nomclf*) may occur instead. The optionally intervening postposition, whether nominative or accusative, does not contribute to the truth conditions of the whole sentence.

(18) a. pic i man wen i nem-nunta
debt NOM ten thousand Won NOM exceed NONPAST DECL
'The debt is more than ten thousand Won'

b. pic i man wen ul nem-nunta
debt NOM ten thousand Won ACC exceed NONPAST DECL
'The debt is more than ten thousand Won'

c. pic i man wen nem-nunta
debt NOM ten thousand Won exceed NONPAST DECL
'The debt is more than ten thousand Won'

(19) a. nay ka ciswu lul manna-ssta
I NOM Chisoo ACC meet PAST DECL
'It is I that met with Chisoo'

b. *nay ka ciswu ka manna-ssta
'(Intended) It is I that met with Chisoo'

c. nay ka ciswu manna-ssta
I NOM Chisoo meet PAST DECL
'It is I that met with Chisoo'

(20) a. ciswu to puca ka toi-essta
Chisoo DLM rich person NOM become PAST DECL
'Chisoo also became rich'

b. *ciswu to puca lul toi-essta
'(Intended) Chisoo also became rich'

c. ciswu to puca toi-essta
'Chisoo also became rich'

Every word subcategorized for a nominative/accusative postpositional phrase is at the same time subcategorized for a simple noun phrase (and a verb phrase with the above described inflection). One way of capturing this optionality in our framework would be by relying on a lexical rule, a rule which takes as input a verb lexeme whose COMPS list contains, say, a phrase whose SYN | HEAD value is *acc* and gives as output a verb lexeme whose COMPS list instead contains a noun phrase.

This approach, i.e. capturing the optionality of the case postpositions via a lexical rule, runs into a problem. Assuming that a verb's COMPS list is minimally specified in the lexicon, thus constrained as having a nominative or an accusative PP as the case calls for, it is impossible to predict just what the SYN | HEAD value would have to be of the complement of the resultant verb lexeme. The choice among NP and the four kinds of nominal clause forms cannot be made on the basis of the structural description of the input lexeme. This would result in a failure to capture the ungrammaticality of the c and d strings of (21) and (22).[12]

(21) a. na nun ciswu ka ttena-ssum ul
I sc dlm Chisoo NOM leave PAST NOMCLF3 ACC
mit-nunta
believe NONPAST DECL
'I believe that Chisoo has left'

b. *na nun ciswu ka ttena-ssum i mit-nunta

c. ?na nun ciswu ka ttena-ssum mit-nunta
'I believe that Chisoo has left'

d. *na nun ciswu ka ttena-sski lul mit-nunta

e. *na nun ciswu ka ttena-ssnunci lul mit-nunta

(22) a. ne nun na hanthey ciswu ka ttena-ssnunci
you sc dlm I to Chisoo NOM leave PAST NOMCLF1
lul mul-essta
ACC ask PAST DECL
'You asked me whether Chisoo had left'

b. *ne nun na hanthey ciswu ka ttena-ssnunci ka mul-essta

[12] We are grateful to an anonymous referee of this journal for urging us to give more precise an analysis of these facts. A previous version of this paper failed to provide a comprehensive analysis of the remote restriction imposed by the lexical head on its complement's complement.

c. ne nun na hanthey ciswu ka ttena-ssnunci mul-essta
'You asked me whether Chisoo had left'

d. *ne nun na hanthey ciswu ka ttena-ssum ul mul-essta

e. *ne nun na hanthey ciswu ka ttena-ki lul mul-essta

The possibility of solving the problem of remote government with lexical rules being out of the way, the option left involves subtyping the head-complement rule into two sorts. The intervening postpositions are peculiar kinds of heads: they are partly transparent in that the phrases they head seem to have most of the properties their complement has; they are not totally transparent in the sense that which particular postposition can occur depends on the lexeme whose complement it heads. The verb NEM, as is shown in (18), allows both the nominative and accusative postpositions to intervene, while the verb TOI allows the nominative postposition only, as is demonstrated by the ungrammaticality of (20b).

5.3 Introducing another feature HEAD2

We propose to treat the half-transparency of the intervening postpositions with (a) a new feature, HEAD2, appropriate for *gram_cat* and (b) a new type, *head_comp_rule_htrp*. The value of HEAD2 will be constrained to be subtypes of *pos*, just like that of the existing feature HEAD is. The ordinary head-complement rule would take a word and its complements and give a phrase whose HEAD inherits from the HEAD value of its head daughter. The half-transparent head-complement rule would take a word and its complements and give a phrase whose HEAD inherits from the HEAD value of its non-head daughter rather than from that of its head daughter. The resulting phrase's HEAD2 inherits from the HEAD value of its head daughter.

As the only lexical items that are to be subject to *head_comp_rule_htrp* are the nominative and accusative postpositions, these have to be able to be referred to to the exclusion of all the other lexical items in the grammar.[13] In addition, as these postpositions are not to be subject to the ordinary head-complement rule, all lexical items besides the nominative and accusative postpositions have to be specifically mentioned in the rule. This calls for a division of *pos* into two. The two may be called *htrp_pos* (half-transparent part-of-speech) and *ord_pos* (ordinary part-of-speech), respectively.

This arrangement gets us to the following statement of the more unusual head-complement rule.

[13] One more lexical item that stands a good chance of being subject to this rule is the genitive postposition UY, which I do not consider in this paper.

(23)
$$\left[\begin{array}{l} \textit{head\_comp\_rule\_htrp} \\ \\ \text{SYN} \quad \left[\begin{array}{ll} \text{HEAD} & \boxed{2} \\ \text{HEAD2} & \boxed{1} \\ \text{COMPS} & \langle\rangle \end{array}\right] \\ \\ \text{ARGS} \quad \left\langle \boxed{3}\left[\begin{array}{ll} \textit{phrase} & \\ \text{SYN}\,|\,\text{HEAD} & \boxed{2}\ \textit{pos} \end{array}\right], \left[\begin{array}{ll} \textit{word} & \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \boxed{1}\ \textit{htrp\_pos} \\ \text{COMPS} & \langle\boxed{3}\rangle \end{array}\right] \end{array}\right] \right\rangle \end{array}\right]$$

The reader is reminded that, here and in (29), the feature ARGS plays the roles Sag and Wasow (1999, 16.4)'s NON-HEAD-DAUGHTERS (NHD-DTRS) and HEAD-DAUGHTER (HD-DTR) play. Thus, the value of their HD-DTR would appear as the final element in the list which is the value of our ARGS. The other members of our ARGS list are those in Sag and Wasow (1999)'s NHD-DTRS list.[14]

With this bit of machinery backing us, we can now specify the COMPS list of various lexemes. We start off with the accusative postposition.

(24)
$$\left[\begin{array}{ll} \textit{adp\_lxm} & \\ \text{ORTH} & \langle\,|\ \textit{lul}\ |\,\rangle \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \textit{acc} \\ \text{SPR} & \langle\rangle \\ \text{COMPS} & \left\langle \left[\begin{array}{ll} \textit{phrase} & \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \textit{nominal} \\ \text{HEAD2} & \textit{null} \end{array}\right] \end{array}\right] \right\rangle \end{array}\right] \end{array}\right]$$

The specification in (24) of the feature HEAD2 in the complement's SYN value merits some discussion. It requires that the complement be a noun phrase or a clause whose verb is in a nominal clause form, and nothing else. In particular, a postpositional phrase, i.e. an instance of *head_comp_rule_htrp*, cannot be a complement of LUL.[15] Thus, the grammar disallows any string like "NP *ka lul*" and "NP *lul lul*", which it should.

A verb whose complement is the nominative postpositional phrase would have a specification as in (25).

[14] This change in the treatment of the features NHD-DTRS and HD-DTR is introduced in the electronically distributed files comprising LKB (`http://cslipublications.stanford.edu/lkb.html`) and is standard in Copestake (2002).

[15] Quite analogously to our specification of the accusative postposition LUL in (24), we have the following for the nominative postposition KA.

(25)
$$\begin{bmatrix} \textit{verb\_lxm} \\ \text{ORTH} \quad \langle\, |\ \textit{toi}\ | \,\rangle \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{major\_class} \\ \text{COMPS} \quad \left\langle \begin{bmatrix} \textit{phrase} \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{noun} \\ \text{HEAD2} \quad \textit{nom} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{SPR} \quad \left\langle \begin{bmatrix} \textit{phrase} \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{noun} \\ \text{HEAD2} \quad \textit{nom} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

Similarly, the verb MIT 'believe' in (21) will have a specification as in (26).

(26)
$$\begin{bmatrix} \textit{verb\_lxm} \\ \text{ORTH} \quad \langle\, |\ \textit{mit}\ | \,\rangle \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{major\_class} \\ \text{COMPS} \quad \left\langle \begin{bmatrix} \textit{phrase} \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{nomclf3} \\ \text{HEAD2} \quad \textit{acc} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{SPR} \quad \left\langle \begin{bmatrix} \textit{phrase} \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{noun} \\ \text{HEAD2} \quad \textit{nom} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

The lexical specification for the copula, the verbs KATH and TAP discussed in 4.2 would be similar to (24) except that they are verb lexemes rather than postpositions.

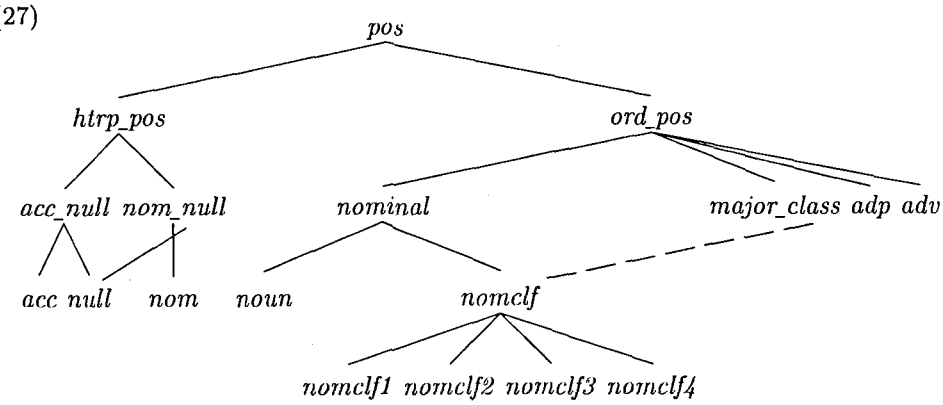
Some new types are being mentioned in the specifications above. These have to be located in the type hierarchy of the grammar. Before we provide a more comprehensive hierarchy, i.e. one that locates the new types *acc*, *nom*, and *null*, we might do well to pay closer attention to the correctness of the specifications above,

(i)
$$\begin{bmatrix} \textit{adp\_lxm} \\ \text{ORTH} \quad \langle\, |\ \textit{ka}\ | \,\rangle \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{nom} \\ \text{SPR} \quad \langle\rangle \\ \text{COMPS} \quad \left\langle \begin{bmatrix} \textit{phrase} \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{nominal} \\ \text{HEAD2} \quad \textit{null} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

especially regarding the values of SYN | HEAD2 in (24) – (26). While the restriction on the HEAD2 value of the complement of the accusative postposition might be correct with an appropriate interpretation of the type *null*, those restrictions on the two verb lexemes seem incorrect. The specifications (25) and (26), as they stand, do not allow the respective verbs to take anything other than a postpositional phrase as their complement, on the natural assumption that there is no way a noun phrase or a clause can get *nom* or *acc* as their value of SYN | HEAD2 . Thus, the specifications in (25) and (26) demand of the respective verbs that they must occur with a postposition, which of course runs counter to the optionality of these case postpositions.

We can mend this state of affairs. Firstly, we introduce to our type hierarchy two abstract types, named *acc_null* and *nom_null*. Both of these types are to be immediate subtypes of *htrp_pos*. Secondly, we further subtype these abstract types in such a way that *acc_null* subsumes *acc* and *null* and *nom_null*, *nom* and *null*. The type *null* inherits both from *acc_null* and from *nom_null*. Thus, our final hierarchy is the one in (27).

(27)



Thirdly, we revise the above specifications utilizing these new types, *acc_null* and *nom_null*. The specification in (25) will now be replaced with the following.[16]

[16] The specification of the word MIT 'believe' in (26) will now be revised to have *acc_null* in place of *acc* as the value of SYN | HEAD2 in the element of SYN | COMPS list.

(28)
$$\begin{bmatrix} \textit{verb\_lxm} \\ \text{ORTH} \quad \langle\, |\ \textit{toi}\ | \,\rangle \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{major\_class} \\ \text{COMPS} \quad \left\langle \begin{bmatrix} \textit{phrase} \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{noun} \\ \text{HEAD2} \quad \textit{nom\_null} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{SPR} \quad \left\langle \begin{bmatrix} \textit{phrase} \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{noun} \\ \text{HEAD2} \quad \textit{nom\_null} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

It is worth noting that SYN | SPR list contains a *phrase* whose SYN | HEAD2 value is *nom_null* rather than *nom*.[17]

The ordinary head-complement rule has yet to be stated. The HEAD value of the phrase inherits from that of its head daughter. But the head daughter must be words other than those whose HEAD value is *htrp_pos*. There seem to be two tacks one could take in specifying the HEAD2 value of the ordinary head-complement phrase. One is simply getting it to inherit from the HEAD2 value of its head daughter. The other is stipulating it to be *null*, in which case no mention needs to be made on the HEAD2 value of the head daughter. In neither case, does the complement need peeking into.

(29)
$$\begin{bmatrix} \textit{head\_comp\_rule\_ord} \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \boxed{1} \\ \text{HEAD2} \quad \textit{null} \\ \text{COMPS} \quad \langle\rangle \end{bmatrix} \\ \text{ARGS} \quad \left\langle \boxed{3}\textit{phrase}, \begin{bmatrix} \textit{word} \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \boxed{1}\ \textit{ord\_pos} \\ \text{COMPS} \quad \langle \boxed{3} \rangle \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

The latter approach is what we prefer and is the one coded in (29). Ordinary lexemes do not have to have their SYN | HEAD2 value specified in the lexicon.

[17] The feature structure (i), which is the element of SYN | SPR list in (28), was abbreviated to "PPNOM" in (8), (9), and (17).

(i)
$$\begin{bmatrix} \textit{phrase} \\ \text{SYN} \quad \begin{bmatrix} \text{HEAD} \quad \textit{noun} \\ \text{HEAD2} \quad \textit{nom\_null} \end{bmatrix} \end{bmatrix}$$

5.4 The specification of the verb ANH

We are now in a position to present the specification of the negative auxiliary verb ANH.

(30)
$$\left[\begin{array}{ll} \textit{verb\_lxm} & \\ \text{ORTH} & \langle\, |\ \textit{anh}\ | \,\rangle \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \textit{gram\_cat} \\ \text{SPR} & \left\langle \left[\begin{array}{ll} \textit{phrase} & \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \textit{nominal} \\ \text{HEAD2} & \textit{nom\_null} \end{array}\right] \end{array}\right] \right\rangle \\ \text{COMPS} & \left\langle \left[\begin{array}{ll} \textit{phrase} & \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \textit{nomclf4} \\ \text{HEAD2} & \textit{htrp\_pos} \end{array}\right] \end{array}\right] \right\rangle \end{array}\right] \end{array}\right]$$

All three of the maximal types *acc*, *nom*, and *null* are subsumed by *htrp_pos*. It follows that the nominative postposition in (1) and the accusative postposition in (2) may both intervene between the verb and its complement. It is also possible that neither postposition intervenes, in which case *null* would have been instantiated on the complement verb phrase by our *head_comp_rule_ord* in (29). No matter which of these three situations holds, the head of the VP-complement must be in the right inflection, since the value of the SYN | HEAD feature of the phrase in the COMPS list above is specifically *nomclf4*.

6. Remaining problems and conclusion

While complex, the type hierarchy for *pos* and its subtypes is not yet restrictive enough to disallow the following strings, which seem ungrammatical.

(31) *cha ka memchwuci ka anh-nunta
car NOM stop NOM NEGAUX DECL
'(Intended) The car doesn't stop'

(32) a. *cha ka ppaluci ka anh-nunta
car NOM be fast NOM NEGAUX DECL
'(Intended) The car isn't fast'

b. *cha ka ppaluci lul anh-nunta

What is involved in (31) seems to be an additional constraint that has to do with the bipartitioning of the verbs with respect to stativity. Nonstative verb phrases, when they are the complement of the negative verb, do not seem to allow the nominative postposition to intervene.[18] What makes (32) ungrammatical, in contrast

[18] Intuition seems to vary about the acceptability of (31). One of the referees of this journal says it is acceptable.

to the ungrammatical (1) and (2), might be thought of as an instance of stativity concord between the negative auxiliary verb and its complement verb phrase. These problems have to be explicated in a fuller account of the interaction between the case system and the verb inflection.

These remaining problems notwithstanding, I would hope that the most complex subcomponents of Korean grammar, namely, verbal inflections and the case system, have been shown to be amenable to a description in a rigorous and mathematically tractable grammatical framework.

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