

## 1. Introduction

We examine Korean postpositions (P) and present a grammar formalized in HPSG. We propose to treat Ps as phonological clitics and weak syntactic heads. They differ from suffixes in several ways but are phonologically cliticized to the last word of the preceding phrase. As weak syntactic heads, they select for a phrase and share syntactic properties such as category, case, *etc.* with the latter. As for Ps' lexical properties, we redefine values for CASE feature and introduce MARKING feature. On the basis of CASE and MARKING features, we define 3 subtypes : marking P, oblique P and semantic P.

## 2. The morphological status of Ps

### 2.1. Word or suffix ?

Ps denote the syntactic or semantic function of a phrase but are attached to its last word :

- (1) [na-ui dongsang]-i [Paul-gwa John]-eul manna-ss-da.  
I-gen brother-nom Paul-and John-acc meet-past-decl.  
My brother met Paul and John.

They are treated as words (Seo 1999, *etc.*) or inflectional suffixes (Kim & Choi 2005, *etc.*). We treat them as words, in consideration of their differences from suffixes. A) Ps can be stacked while inflectional suffixes can't. B) words with a suffix, but not with a P, can be affected by syntactic rules, such as relativization (Zwicky & Pullum 1983, Nam 1996).

- (2) a. na-neun [\_\_ John-eul manna-n] [chingu(\*-ga)]-leul manna-ss-da.  
I-top [\_\_ John-acc meet-Comp] friend(\*-nom)-acc meet-past-decl.  
I met Paul who had met Mary.  
b. na-neun [\_\_ John-eul manna-n] [chingu-deul]-eul manna-ss-da.  
friend-plur-acc

C) Ps have different distribution from suffixes in the coordination :

- (3) a. Mary-neun haggyo(-e)-na doseogwan\*(-e) iss-gess-ji.  
Mary-top school(-loc)-or library\*(-loc) be-may-decl.  
Mary might be in school or (in) library.  
b. namu(-kkun)-gwa sanyang(-kkun) 'tree(-person)-and hunting(-person)'  
a woodcutter and a hunter/a tree and a hunter/a woodcutter and the hunting  
c. kkoch(-deul)-gwa namu(-deul) 'flower-plur-and tree-plur'  
flowers and trees/(a) flower(s) and trees/flowers and a tree

Note also that Ps in the last conjunct have wide scope over the coordination like words, while suffixes can't<sup>1</sup> :

- (4) Paul-i [Mary-wa John-ui] abeoji-leul manna-ss-da.  
Paul-nom [Mary-and John-gen] father-acc meet-past-decl.  
Paul met Mary's and John's father/Mary and John's father.

\* I am grateful to Anne Abeillé and 3 anonymous reviewers for their comments and suggestions.

<sup>1</sup> (4) has 2 interpretations : Paul met 1 or 2 persons. (3a) has no such ambiguity. The difference seems due to the referentiality of the coordinated word.

D) The wide scope in (3a) is difficult to account for in the suffix analysis. If “X+P” were a word, the last conjunct should prevail over preceding conjunct. But the latter count also in the coordination :

- (5) Mary-neun haggyo-\*e-na doseogwan-eulo ga-gess-ji.  
 Mary-top school-loc-or library-to go-may-decl.

And Ps’ suffix-like properties can not be strong evidences against the word analysis.

- (6) a. Paul-{i,\*ga} ‘Paul-nom’ vs. Mary-{\*i,ga} ‘Mary-nom’  
 b. Paul-{eul,\*leul} ‘Paul-acc’ vs. Mary-{\*eul,leul} ‘Mary-acc’  
 (7) a. {\*na,nai}-ga ‘I-nom’ vs. {na,\*nai}-leul ‘I-acc’  
 b. {\*nugu,nu}-ga ‘who-nom’ vs. {nugu,\*nu}-leul ‘who-acc’  
 (8) a. Paul-ege-man-eul ‘Paul-dat-only-acc’  
 b. \*Paul-man-ege-leul ‘Paul-only-dat-acc’  
 c. \*Paul-ege-eul-man ‘Paul-dat-acc-only’

Variations<sup>2</sup> in (6) are strictly phonologically determined : whether the preceding word finishes by a consonant or a vowel. Idiosyncratic forms in (7) can be registered on the lexicon, in that they are not numerous. Ordering restrictions in (8) can be accounted for by making Ps restrict the preceding element’s features (see §3).

## 2.2. Ps as clitics

Ps differ from ordinary words in that they are phonologically and syntactically deficient. A) They can never be separated from the preceding word, even by a pause.

- (9) Paul(\*, hwagsilhi,-)i John(\*#)-eul manna-ss-da.  
 Paul(certainly)-nom John(#)-acc meet-past-decl.

B) They can neither appear alone without the preceding word (10) nor be coordinated (11) (Cardinaletti & Starke 1994).

- (10) Paul-i sagwa-leul geuligo \*(sagwa)-man meog-neun-da.  
 Paul-nom apple-acc and apple-only eat-progressive-decl.  
 Paul eats apple and only apple.  
 (11) sageon-eun \*haggyo-eseo-wa-lobuteo sijagdoi-eoss-da.  
 accident-top school-loc-and-from start-pst-decl.  
 The accident started at and from the school.

We treat then Ps as clitics, i.e. phonologically and syntactically deficient words (Abeillé & Godard 2004). They combine with phrases in the syntax but attach to the last word in the phonology : (1’a) → (1’b).

- (1’) a. [na-ui dongsaeng]-i [Paul-gwa John]-eul manna-ss-da.  
 b. [na-ui dongsaeng-i] [Paul-gwa John-eul] manna-ss-da.

## 3. The syntactical status of Ps

### 3.1. Head or non-head ?

The next issue is to decide Ps’ syntactical status. Semantic case-marking Ps, like -e ‘loc’, -(eu)lo ‘by’, etc., are treated as heads, and the others, in general, as non head (Seo 1999, etc.). But the latters can also be treated as heads.

A) all Ps follow the phrase they combine with and Korean is a head-final language.

<sup>2</sup> There exist also variations motivated by semantic reasons : -ege ‘dat’ (human and animal) vs. -e ‘loc’ (others) vs. -kke ‘dat’ (honorific) ; -i/ga ‘nom’ (neutre) vs. -kkeseo ‘nom’ (honorific) vs. -eseo ‘nom’ (groupe).

B) Grammatical case-marking Ps, like *-i/ga* ‘nom’, *-(l)eul* ‘acc’, *etc.*, can be selected by Vs and restrict the distribution of phrases.

- (12) a. Paul- $\{i,*eul,*ege\}$  sagwa- $\{*ga,leul,*ege\}$  meog-neun-da.  
 Paul- $\{nom,acc,dat\}$  apple- $\{nom,acc,dat\}$  eat-progressive-decl.  
 Paul eats apples.
- b. gongbuha-gi-ga joyongha-n doseogwan-eseo-\*(ga) joh-da.  
 study-Nominal-nom be quiet-Comp library-loc-nom be good-decl.  
 a quiet library is good place for study.

In (12a), V requires *-i/ga* and *-(l)eul* for its subject and object, respectively. In (12b), *-i/ga* helps an NP marked by *-eseo* to appear at a position that is inaccessible.

C) Discursive markers, like *-(n)eun* ‘top’ and *-do* ‘too’, can be classified into the same type as *-i/ga*, *-(l)eul*, *etc.* They have complementary distribution with the latter. Replacing them, they share also their facultative/obligatory property (12’).

- (13) a. \*Paul- $\{i,eul\}$ - $\{eun,do\}$   
 b. \*Paul- $\{eun,do\}$ - $\{i,eul\}$
- (12’) a. Paul-(eun,do) sagwa-(neun,do) meog-neun-da.  
 b. gongbuha-gi-ga doseogwan-eseo-\*(neun,do) joh-da.

D) Non-case-marking Ps, like *-man* ‘only’, *-kkaji* ‘till’, *etc.*, are semantic heads selecting the preceding phrase as argument.

We treat then Ps as syntactic heads and the preceding phrase as their complement.

### 3.2. Ps as weak heads

Ps differ from ordinary heads in that they let the mother phrase share the complement’s syntactic properties. A) The mother phrase inherits the category from the latter : NP after an NP, AdvP after an AdvP, VP after a VP. So, an Adv can not appear as subject, though it is marked by *-i/ga*.

- (14) \*jal-i sagwa-leul meog-neun-da.  
 well-nom apple-acc eat-progressive-decl.

B) It inherits also other syntactic properties such as case and verbal form from the complement. So, these values can still be restricted by Vs, as in the following example.

- (15) a. Paul-i chaig-eul Mary- $\{ege,*egeseo,*lobuteo\}$ - $\{leul,neun,do\}$  bonae-ss-da.  
 Paul-nom book-acc Mary- $\{dat,from,from\}$ - $\{acc,top,too\}$  send-past-decl.
- b. Paul-i haggyo-e o- $\{*a,*go,ji\}$ -leul anh-ass-da.  
 Paul-nom school-loc come-Comp-acc neg-past-decl.  
 Paul did not come to school.

We treat then Ps as weak heads that lack syntactic properties like category, case, *etc.* but that share them with their complement (Abeillé *et al.* 2004, 2006, *etc.*).

Semantic case-marking Ps, *-e* ‘loc’, *-ege* ‘dat’, *-(eu)lo* ‘to, by’ *etc.*, are often treated as projecting a PP. But we propose to treat them also as weak heads constituting an oblique NP.

A) The PP analysis has 2 motivations : they forms adjunct NPs and can’t be omitted. But these facts can be accounted for by attributing them oblique case value. Their omission is blocked by losing the case value ; an oblique NP can function as adjunct.

B) Their oblique case value predicts the incompatibility with AdvPs and VPs followed by an adverbial particle, such as *-a/eo*, *-go*, *-ge*, *etc.*

- (16) a. \*aju- $\{e,lo,eseo,...\}$  ‘very- $\{loc,to,from,...\}$ ’

- b. \*jeomsim-eul meog-{eo,go,ge,...}-{e,lo,eseo,...}  
 lunch-acc eat-Comp-{loc,to,from,...}

The PP analysis needs additional restrictions, because the category P does not suffice to account for it.

#### 4. Ps' information in the syntax

##### 4.1. The case feature

We assume 2 case values : *direct* and *oblique*. The first is for NPs appearing as subject, direct object or genitive complement. The second is for NPs appearing as indirect object or adjunct.

We remove values such as *nom, acc, etc.* A) An NP without P can appear as subject or object ; B) Ps known as marking these values can attach to non case categories ; C) they don't change the syntactic function after an oblique NP.

- (17) a. Paul(-i) sagwa(-leul) meog-neun-da.  
 Paul-nom apple-acc eat-progressive-decl.  
 Paul eats apple.
- b. bi-ga manhi-ga naeli-n-da.  
 rain-nom much-nom fall-progressive-decl.  
 It rains much.
- c. Paul-i chaig-eul Mary-ege-leul ju-eoss-da.  
 Paul-nom book-acc Mary-dat-acc give-past-decl.  
 Paul gave a book to Mary.

Values such as *dat, loc, etc.* are also removed. A) They refer to semantic functions while it is hard to define them in the syntax ; B) we can simplify the case value of an NP followed by more than one P<sup>3</sup> :

- (18) Paul-ege-lo 'Paul-dat-to' : NP-*oblique-oblique* -> NP-*oblique*

*direct* value is inherent to Ns, in that an bare NP can appear as subject or direct object. On the contrary, *oblique* value is assigned by Ps, because Ps of indirect objects or adjunct NPs can't be omitted.

- (19) Paul-i doseogwan\*(-eseo) gongbuha-n-da.  
 Paul-nom library-loc study-progressive-decl.  
 Paul studies at/in the library.

Briefly, only semantic case-marking Ps, such as *-e* 'loc', *-ege* 'dat', *etc.* carry a specified case value. They assign to the mother phrase an *oblique* value. The others inherit the case value from the complement<sup>4</sup>.

##### 4.2. The marking feature

We introduce a marking feature to Ps in (17). Their restricted distribution illustrated in (12) can be accounted for by transferring a marking value to the mother phrase.

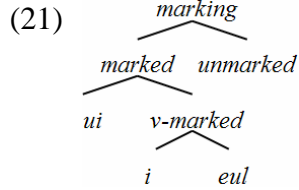
The marking feature can be used also to account for marking Ps' final positioning in (8) and their incompatibility with each other in (13), by introducing a constraint that Ps select for a complement with *unmarked* value. This constraint rules out also following examples :

<sup>3</sup> It is still possible to let this NP have 2 case values.

<sup>4</sup> Conjunctive P -(g)wa 'and' has an oblique value when it appears after a commitative complement of a V but not when it appears in the coordination. But, *-na* 'or' is not an oblique P, because it cannot be attached to a verbal complement.

- (20) a. \*Paul-{i-leul,eul-i} ‘Paul-{nom-acc,acc-nom}  
 b. \*Paul-{eun,do}-{ege,egeseo,...} ‘Paul-{top,too}-{dat,from,...}

We use marking values as follows.



*i* and *eul* are differentiated to account for the distribution illustrated in (12). *v-marked* value is attributed to *-(n)eun* and *-do*, replacing *-i/ga* and *-(l)eul* indifferently as in (12’). *ui* is for the genitive P that appears also at final position (22) but that does not appear in VPs. *unmarked* value is for all other Ps.

- (22) Paul-ege-ui ‘Paul-dat-gen’ vs. \*Paul-ui-ege ‘Paul-gen-dat’

To summarize, there are 3 subtypes of Ps : marking P with a marked value, oblique Ps with a oblique case value and semantic Ps with an unmarked value and without case feature :

	Marking P	Oblique P	Semantic P
Grammatical case-marking : <i>-i/ga, etc.</i>	X		
Semantic case-marking : <i>-e, -ege, etc.</i>		X	
Non-case-marking : <i>-kkaji, etc.</i>			X
Topic : <i>-(n)eun</i>	X		
Focus : <i>-do</i> ‘too’	X		
Conjunctive : <i>-(g)wa, -na, etc.</i>		X	

## 5. Ps in HPSG

### 5.1. Lexical description of Ps

Ps have following features in their lexical description.

- (23) a.  $P \rightarrow [CL+]$                                       b.  $P \rightarrow \left[ \begin{array}{l} HEAD/[1] \\ COMPS < \left[ \begin{array}{l} HEAD[1] \\ COMPS <> \end{array} \right] > \end{array} \right]$

(23) characterizes Ps as clitic words (cf. Monachesi 1998) and as weak heads. In (23b), Ps select for a phrasal complement (COMPS <[COMPS <>]>) and share HEAD feature’s values with the latter (HEAD/[1], COMPS <[HEAD[1]]>). Feature sharing is by default (/[1]) : Ps share all values, except *oblique* Ps whose case value overrides that of the complement.

All Ps carry MARKING feature, with *marked* or *unmarked* value, while CASE feature is attributed only to oblique Ps.

- (24) a.  $P \rightarrow [MARKING \textit{marked}]$                                       b.  $\textit{marking P} \rightarrow [MARKING \textit{marked}]$   
 c.  $\textit{oblique P} \rightarrow \left[ \begin{array}{l} HEAD|CASE \textit{oblique} \\ MARKING \textit{unmarked} \end{array} \right]$                                       d.  $\textit{semantic P} \rightarrow [MARKING \textit{unmarked}]$

Finally, with the constraint that Ps select an *unmarked* complement ([COMPS <[MARKING *unmarked*]]>)<sup>5</sup>, Ps and some lexical entries can be described as follows.

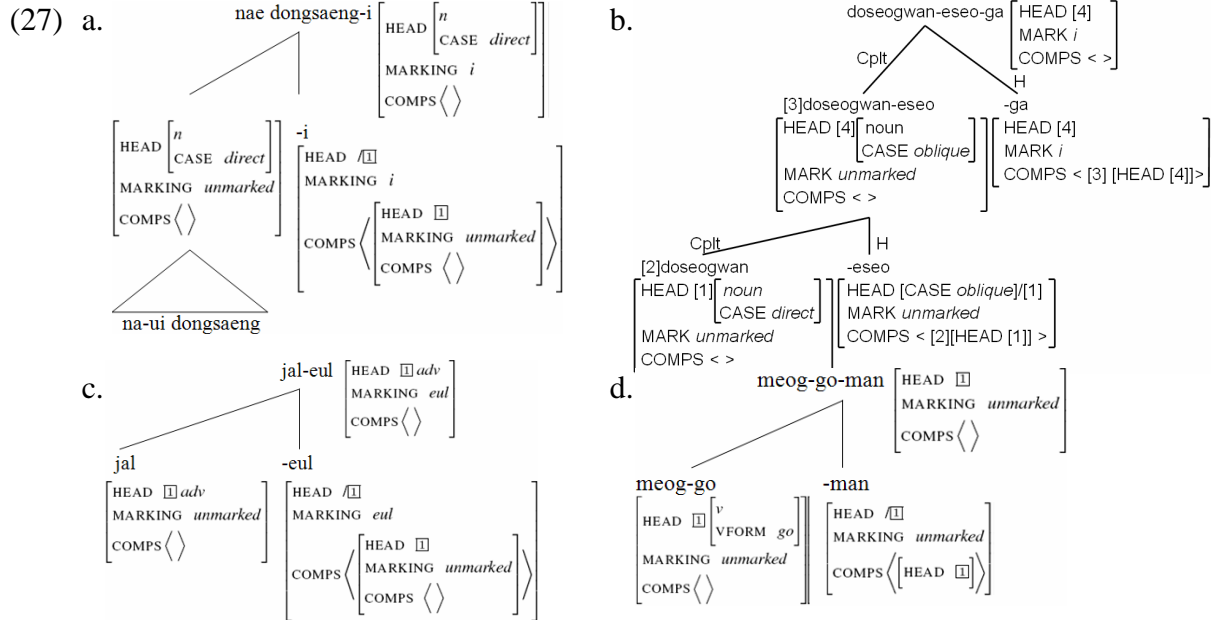
- (25) a.  $P \rightarrow \left[ \begin{array}{l} HEAD/[1] \\ CL+ \\ MARKING \textit{marked} \\ COMPS < \left[ \begin{array}{l} HEAD[1] \\ MARKING \textit{unmarked} \\ COMPS <> \end{array} \right] > \end{array} \right]$                                       b.  $\textit{marking P} \rightarrow P \ \& \ [MARKING \textit{marked}]$   
 c.  $\textit{oblique P} \rightarrow P \ \& \ \left[ \begin{array}{l} HEAD|CASE \textit{oblique} \\ MARKING \textit{unmarked} \end{array} \right]$   
 d.  $\textit{semantic P} \rightarrow P \ \& \ [MARKING \textit{unmarked}]$

<sup>5</sup> The contrast between (8a) and (8b) can be described by another constraint : oblique P < non-oblique P.

- (26) a. *-i* → marking P & [MARKING *i*]      b. *-ege* → oblique P  
 c. *-do* → marking P& [MARKING *v-marked*]      d. *-kkaji* → semantic P

### 5.2. Ps' combination with the preceding phrase

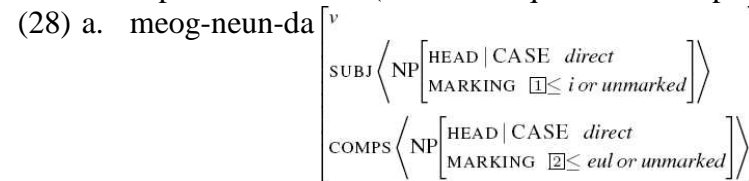
Ps are heads and the preceding phrase is their complement. They combine with the latter following the HEAD-COMPS rule. They share HEAD values and percolate them to the mother phrase, as illustrated in following examples :



*-i* marks a *direct* NP in (27a) and an *oblique* NP in (27b) ; an AdvP is marked by *-eul* in (27c) ; a VP is followed by *-man* in (27d).

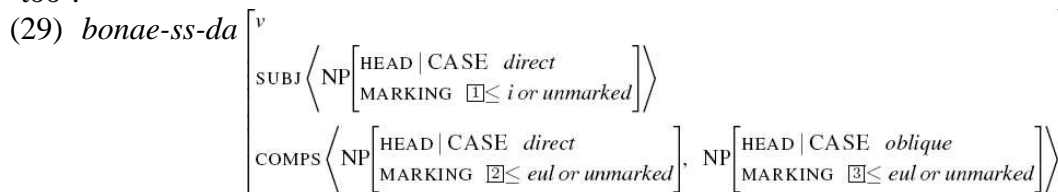
### 5.3. The mother phrase in larger contexts

Finally, we show how the mother phrase appears in larger contexts, starting from cases where it appears as subject or direct object of a V. Vs select in general a *direct* NP subject and direct object. They exclude certain MARKING values (13-13'). For example, the V in (12a) has a description as follows ( $\leq$  means 'equals or is a supertype of', Sag 2002???)



Only NPs with compatible values may appear as subject and direct object. *Paul-{i,neun}* can appear as subject, for their CASE and MARKING values are compatible. But *Paul-eul* can not appear as subject, because it has an incompatible MARKING value.

Following cases are those of indirect object or adjunct of Vs. *Oblique* case value is required but MARKING values vary according to Vs. For example, the V in (15a) selects for an NP followed by *-ege* 'dat' and allows it to be marked by *-eul* 'acc', *-(n)eun* 'top' or *-do* 'too'.



Third cases are those of oblique NPs in (12b=30a), where marking Ps can not be omitted. Note that *doseogwan-eseo-ga* ‘library-loc-nom’ can be replaced by *doseogwan-i* ‘library-nom’ and that the latter NP allows *-i/ga*’s omission.

- (30) a. *gongbuha-gi-ga*      *joyongha-n*      *doseogwan-eseo\*(-ga)*    *joh-da*.  
 b. *gongbuha-gi-ga*      *joyongha-n*      *doseogwan(-i)*      *joh-da*.

The omission in (30b) is parallel to that of ordinary NP arguments : Vs require a specific CASE value but allow certain MARKING values. If we assume that the V *joh-da* select for a direct NP, we can infer that the V requires *marked* or its subtype values, instead of CASE value, in (30a) where the CASE requirement is not satisfied. Now we can account for why marking Ps can not be deleted : a *marked* value is required.

Fourth cases are those of NPs inherited by a higher V. They may preserve Ps required by lower Vs (NPs inherited by Vaux) or be marked by different Ps (NP object raised from subject, *etc.*). We assume that Vs in the first case share the conditions of the lower V but that Vs in the second case impose their own conditions on the inherited argument. In the same vein, we can account for double case constructions involving raising of a genitive NP.

## 6. Conclusion

We tried to build a grammar of Korean Ps and to show how it works. We analyzed them as clitics and as weak syntactic heads. They differ from suffixes and words. They have head-like properties but some of their syntactic properties are underspecified, such as category, case, *etc.* In order to account for their distribution and stacking, we proposed 2 case values and introduced a marking feature with its value set. In our analysis, Ps are classified into 3 subtypes : marking P, oblique P and semantic P. They share HEAD feature with their complement, except oblique Ps that have a specified case value.

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