English Passive Constructions without Lexical Rules

Sangjae Kim
(Chonnam National University)

Kim, Sangjae. 1998. English Passive Constructions without Lexical Rules. *Linguistics*, 6-1, 397-412. In this paper, Standard HPSG analysis of passives is shown to have some problems, and English passive constructions are treated with classification of types and subtypes of passive verbs and constraints on them without depending on lexical rules. The treatment called multiple inheritance hierarchy approach help solve the passive problems of Standard HPSG. A word type *verb* has as one of its subtype a *passive* type, which is divided into different subtypes such as *strict-passive, pseudo-passive, ditransitive-passive,* and *raising-passive,* and all of the types are constrained according to their distinct properties and inherit all the constraints of their supertypes. **(Chonnam National University)**

1. Introduction

Passive constructions have been one of the most widely treated topics in modern linguistic theory. The primary reason is that passives are related to various linguistic phenomena, e.g. raising, binding, case assignment, control, etc.

There exists a vast literature on the diverse languages making use of concepts such as 'passive', 'passive voice', and 'passivization'. While the phenomena referred to in these terms are usually described as having language-particular and idiosyncratic features, they appeal to a universal underlying reality of some kind in using such concepts. The nature of this universal underlying reality, however, is not specified. No grammatical theory may be considered adequate without the substantive

content of these notions.

With respect to monostratal theories of grammar, whereas GPSG makes use of metarules that produce passive constructions, lexical theories of grammar such as LFG and HPSG have depended on lexical rules that directly map active lexical elements into passive lexical elements (Bresnan 1982, Nerbonne 1982, Pollard and Sag 1987, 1994). In Zwicky (1987), Kathol (1994), Pollard (1994), and Wechsler (1995), however, the lexical rule treatments of passives have been strongly questioned.[1] In this paper, English passive constructions are treated with classification of types and subtypes of passive verbs and constraints on them without lexical rules.

2. Passives in standard HPSG

2.1. Pollard & Sag (1987, 1994)

The most notable feature of passive constructions is active-passive alternation, as shown in the following:

(1) a. Mary annoyed John.
b. John was annoyed (by Mary).

In P&S (1987, 1994), the passive constructions are explained by a lexical rule like the following:

1. Problematic aspects of lexical rules in a constraint-based setting are overviewed in Bouma (1997), where they are raised in terms of default sharing between input and output, interaction with inheritance, spurious ambiguity, and subsumption.

(2) PASSIVE LEXICAL RULE

$$\begin{bmatrix} \textit{tran} \\ \text{HEAD } \textit{verb} \\ \text{SUBJ } \langle \boxed{1}\text{NP}_{\boxed{n}} \rangle \\ \text{COMPS } \langle \boxed{3} \cdots \rangle \\ \text{ARG-S } \langle \boxed{1} \cdots \rangle \\ \text{CNT } \boxed{4} \end{bmatrix} \Rightarrow \begin{bmatrix} \textit{pass-part} \\ \text{HEAD } \textit{verb}[\textit{pass}] \\ \text{SUBJ } \langle \boxed{3} \rangle \\ \text{COMPS } \langle \cdots (\boxed{5}\text{PP}[\textit{by}]_{\boxed{n}}) \rangle \\ \text{ARG-S } \langle \cdots \boxed{5} \rangle \\ \text{CNT } \boxed{4} \end{bmatrix}$$

The passive lexical rule replaces the active subject with the least oblique complement, i.e., the direct object, and introduces a PP[by] complement with the same index as the active subject. And it also rearranges the elements of the ARG-S list.

2.2. Problems

First, active clauses do not always correspond to their passive counterparts. The passive lexical rule suggested in P&S will allow the ungrammatical passives like (4).

(3) a. John lacks confidence.
b. The auditorium holds 5000 people.
c. John has a nice house.

(4) a. *Confidence is lacked (by John).
b. *5000 people are held (by the auditorium).
c. *A nice house is had (by John).

A solution would be to mark those passivizable complements with some additional feature, e.g. [PAS-OBJ +], or to mark those verbs that can undergo the rule with a distinguishing feature.

Second, the lexical rule analysis of passives assumes that passive subjects correspond to active objects. Thus, the postverbal NPs in the examples in (5) are required to be an object and not a subject, given

their passive couterparts in (6). In reality, they are considered a subject in small clauses.

(5) a. We considered John irritating.
b. We expected Mary to make a good impression.
(6) a. John was considered irritating.
b. Mary was expected to make a good impression.

Third, Zwicky (1987) suggests pseudo-passives like the following as strong evidence against standard HPSG approaches with lexical rules:

(7) a. Theses matters are attended to by Kim.
b. Kim attended to these matters.

In the above examples, passive subjects correspond not to active verbal objects but to active prepositional objects. Standard HPSG assumes verbs and prepositions as complex verbs. However, there is important evidence against such assumption. Long distance dependency phenomena such as (8) shows that the verbs can take a PP complement (Postal, 1986).

(8) a. To which matters does Kim attend?
b. Across this ocean numerous explorers have sailed.

And with respect to heavy-NP-shift, as Postal points out, the verbs combined with the following preposition cannot form a complex verb. If the NPs following the preposition in the active counterparts of the pseudo-passives could be objects of the complex verbs, it would be possible for them to undergo heavy-NP-shift. (9) shows that this is not the case:

(9) a. *Kim attended to last week all of the problems that had arisen since Christmas.
b. *Numerous explorers have sailed across for many years the ocean that once struck fear into every heart.

Fourth, *to*-infinitive phrases are required as complement in the passives of perceptual verbs and causative ones, while bare-infinitive phrases are needed in their active counterparts:

(10) a. Sandy made Kim (*to) wash the dishes.
b. Sandy saw Kim (*to) score two goals.
(11) a. Kim was made *(to) wash the dishes (by Sandy).
b. Kim was seen *(to) score two goals (by Sandy).

These indicate that the passive lexical rule (2) cannot allow passives of perceptual and causative verbs and thus requires an additional feature for them.

Finally, not only are there some active constructions which do not have their passive counterparts, as in (3), but some passive constructios do not have their active counterparts:

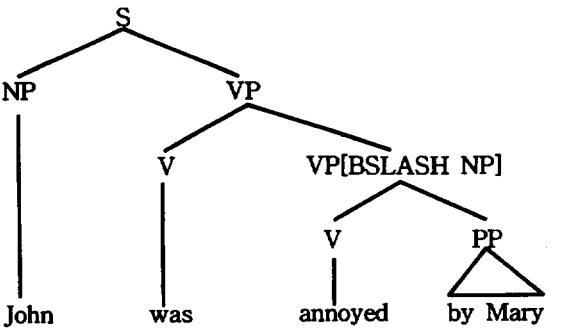
(12) a. Kim is said to be a good teacher.
b. Kim was alleged to be a spy.
c. Kim was reputed to be a genius.
(13) a. *They say Kim to be a good teacher.
b. *They alleged Kim to be a spy.
c. *They reputed Kim to be a genius.

3. Previous analyses without lexical rules

A number of alternative approaches to passive clauses have been developed without lexical rules. Zwicky (1987) proposes that passive

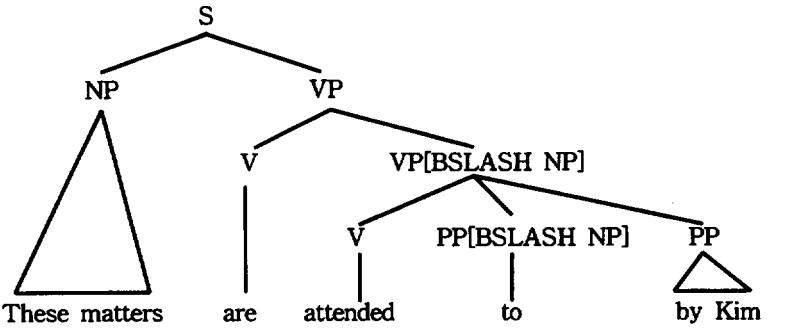
'be' takes as its complement a VP from which some constituent is missing. The fact that a constituent is missing is encoded by a category-valued feature BSLASH (back slash).

(14)

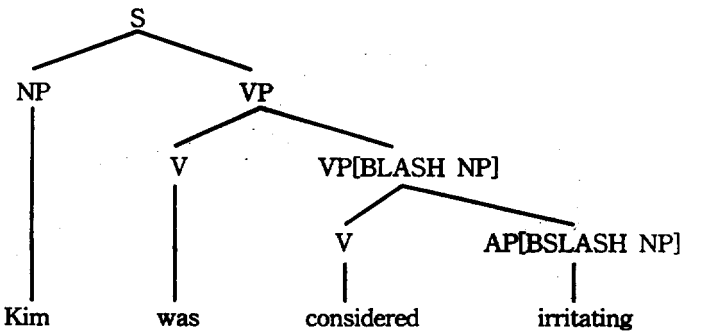


While Zwicky's proposal explains quite clearly pseudo-passives and passives of raising verbs, respectively, as in (15) and (16), it is hard to avoid examples like (17):

(15)



(16)



(17) *John was painted a picture of.

To prevent the generation of (17), stricter constraints should be imposed on the feature BSLASH.

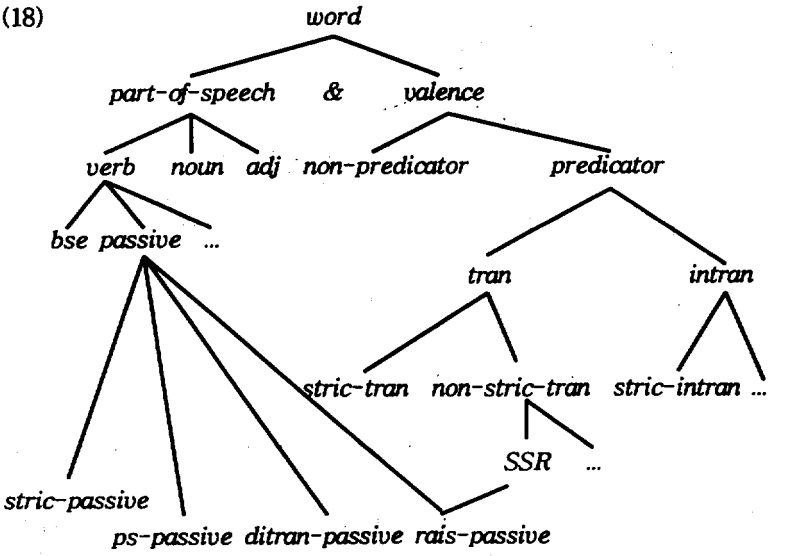
Another different approaches to passives are proposed in Pollard (1994), Kathol (1994), and Wechsler (1995). All of these approaches involve the assumption that passive subjects correspond to active objects, which is the common weakpoint of the analyses, as is indicated in Borsley (1996).

4. A new analysis

4.1. Lexical type hierarchy

This paper assumes that a lexical type *word* may have the hierarchy as in (18). A type *verb*, a subtype of a *part-of-speech* type, includes as one of its subtypes a *passive* type, which is not a type of output of PASSIVE LEXICAL RULE on a *bse* type but a type which is distinct from a *bse* type. Thus a unique constraint should be imposed on the *passive* type as in (19).

(18)



(19)

$$passive \Rightarrow \left[\begin{array}{l} \text{PHON fpas}(bse\text{-}verb) \\ \text{SYNSEM } \boxed{1} \left[\begin{array}{l} \text{HEAD}|\text{VFORM } pass \\ \text{ARG-S } \boxed{2} \ (\oplus \langle \left[\begin{array}{l}\text{PFORM } \boxed{3} \\ \text{MOD } \boxed{1}\end{array}\right] \rangle) \end{array}\right] \end{array}\right]$$

On the lexical type hierarchy and the constraint on the type *passive*, three things should be noted. First, passive verb forms are derived from the *bse-verb* type. The PHON value of *passive* type is a function mapping the PHON value of *bse-verb* type into that of *passive-verb* type.

Second, the underspecified value of PFORM of an adjunct explains idiosyncratic prepositions of some psyche verbs (e.g. interested in, surprised at, etc.) as well as the most general PP[*by*]. In standard HPSG, it is assumed that the PFORM value appears in the prepositinal phrases which are demanded as complements, not as adjuncts. However,

given the assumption of 'adjuncts as complements',[2] the PFORM value is possibly used in adjuncts. The crucial problem in dealing with PP[*by*] as an adunct, as indicated in Davis (1995), is that unlike other adjuncts, *by* owns various semantics in relation to the semantics of verbs combined with PP[*by*]. This paper argues that one solution is to regard PP[*by*] as an adjunct which the verbs modified by PP[*by*] select as their argument. Thus the semantics of PP[*by*] may depend on semantic types of its modified verbs. The realization of PP[*by*] in ARG-S also explicates the binding phenomena of passives.

Third, *passive* has nothing to do with transitive verb type except for the verb forms. There are some pieces of evidence for divergence of passives from actives. The lexical rule approach assumes that the passive lexical rule is applied to *tran* type of verbs, but besides English pseudo-passives, some languages such as German also have passivization of *intran* type, e.g. impersonal passives.

(20) Es wurde hier getanzt. (lit. 'it became here danced')

It has been assumed in vast linguistic literature that passive clauses have the identical semantics to active clauses. However, some active-passive alternations related to quantified phrases reveal that it is not always the case. (21a) is ambiguous, while (21b) is not:

(21) a. Every man loves a poem.
b. A poem is loved by every man.

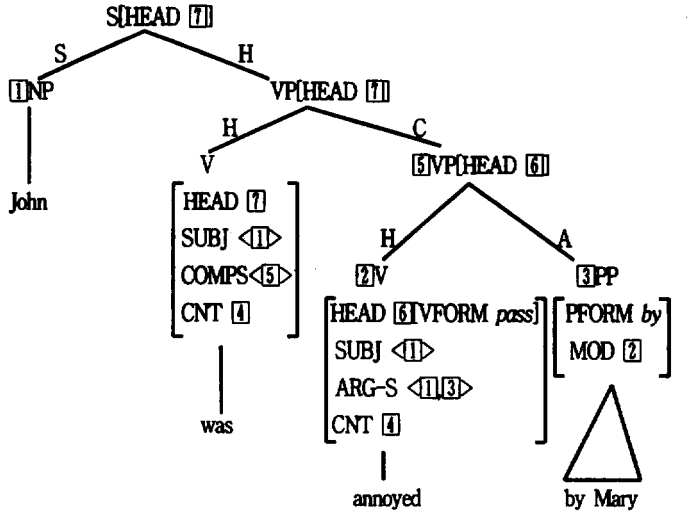
Another justification for separation of passives from actives is shown in conditions for the use of the passive which Jespersen (1924) suggests. Passives have their special uses for either syntactic or

2. For more detailed discussion of 'adjuncts as complements', see Przepiorkowski (1997a, 1997b).

semantic or pragmatic reasons independently of actives.

On the basis of the constraint on the *passive* type in (19), strict passive constructions are instantiated like the following:

(22)



This representation shows the interaction among HPSG principles such as Head Feature Principle (HFP), Valence Principle (VALP) as well as the constraint on *passive*. Whereas the lowest V (*annoyed*) takes as its argument its adjunct sister PP via the constraint (19), the second lowest V (*was*) takes as its complement its complement sister VP via the lexical constraint on the verb *was*, which functions like raising verbs as shown in the following constraint:

(23) was

$$\begin{bmatrix} \text{HEAD } \textit{verb} \\ \text{SUBJ } \boxed{1} \\ \text{COMPS } \langle \text{X}[\text{SUBJ } \boxed{1}, \text{ CNT } \boxed{2}] \rangle \\ \text{CNT } \boxed{2} \end{bmatrix}$$

And also note here that the PFORM value of PP depends on the lexical constraint on its head sister verb *annoyed*.

4.2. Pseudo-passives

Pseudo-passives have been regarded as strong evidence against standard HPSG approach to passives.

(24) Kim was laughed at (by Sandy).

Grover (1995) suggested the lexical rule for pseudo-passives. But the lexical rule approach to pseudo-passives has a shortcoming to demand another lexical rule, e.g., MOLR (Missing Object Lexical Rule) for a stranded preposition.

By our type hierarchical approach, pseudo-passive clauses might be explained quite clearly. On the basis of the lexical type hierarchy (18), we suggest that a constraint be imposed on *ps(eudo)-passive* type as in the following:

(25)

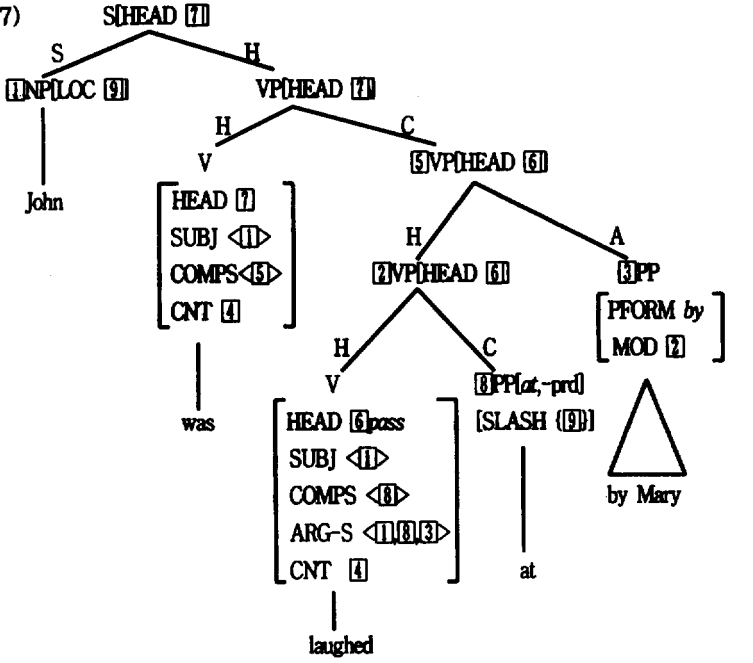
$$\textit{ps-passive} \Rightarrow \begin{bmatrix} \text{SUBJ} \langle \text{NP}[\text{LOC } \boxed{1}] \rangle \\ \text{COMPS} \langle \begin{bmatrix} \text{HEAD} \begin{bmatrix} \textit{prep}[-\text{prd}] \\ \text{PFORM } \boxed{2} \end{bmatrix} \\ \text{SLASH } \{\boxed{1}\} \end{bmatrix} \rangle \end{bmatrix}$$

The constraint (25) reveals that the complement of PP which is a complement of a pseudo passive verb is coindexed with a LOC value of the subject of that verb. With the HEAD value in the constraint, the following passive clauses are ruled out:

(26) *The kitchen was eaten in (by the children).

Based on the constraint on *ps-passive* type in (25), pseudo passive constructions are illustrated like the following:

(27)



In this illustration, note that a *ps-passive* type is a subtype of a *passive* type, and thus pseudo passive constructions do not only inherit the constraint on *passive* as in (19) but also keep the constraint in (25). And both the constraints on *passive* and *ps-passive* and the lexical constraint on *laughed* interact to guarantee the lowest V's selection of the slashed PP[*at*,-prd].

4.3. Ditransitive passives

Ditransitive passive verbs differ from other passive verbs in that they

require one more complement.

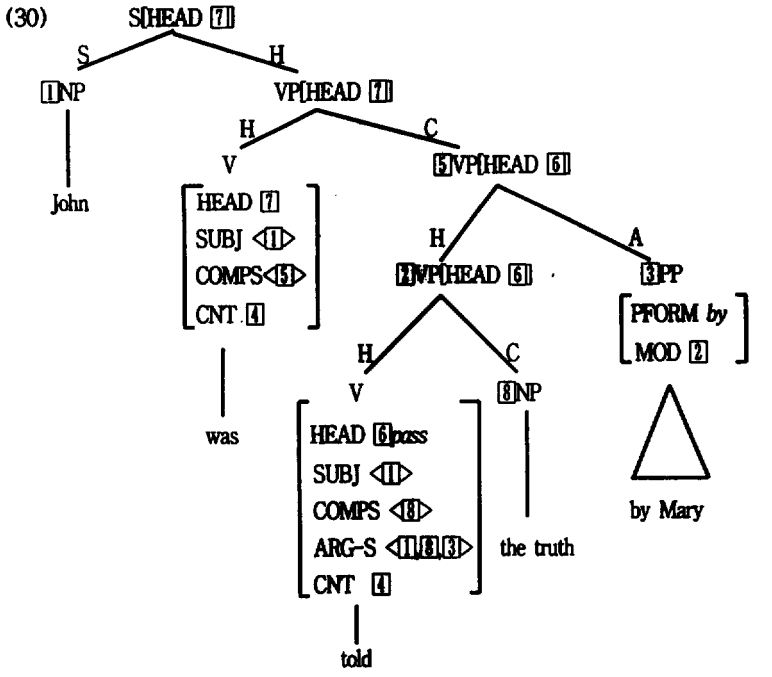
(28) a. John was sent to China (by the government).
b. John was told the truth (by Mary).

Constraint on *ditran-passive* type is formalized like the following:

(29) *ditran-passive* ⇒ [COMPS <NP ∨ PP>]

Based on the constraint on ***ditran-passive*** type in (29), ditransitive passive constructions are represented like the following:

(30)



In this illustration, note that a *ditran-passive* type is a subtype of a *passive* type, and thus ditransitive passive constructions do not only inherit the constraint on *passive* as in (19) but also keep the constraint in (29). And both the constraints on *passive* and *ditran-passive* and the lexical constraint on *told* interact to guarantee the lowest V's selection of its sister NP.

4.4. Raising passives

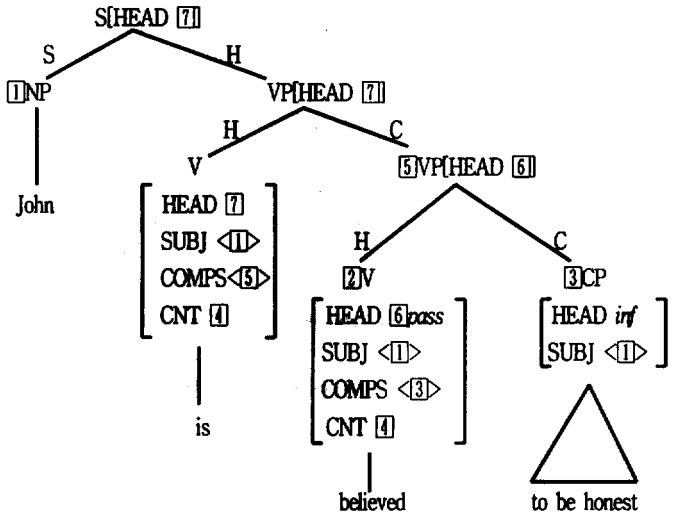
Passive-only verbs (e.g., *alledged*) and passive verbs which require *to*-infinitives as their complement (e.g., causative and perceptual verbs and raising verbs) belong to the type *raising-passive*. Raising-passives are explained to be a subtype of both *SSR* and *passive* and hence inherit the constraints from both types.

(31) *SSR* ⇒ $\begin{bmatrix} \text{SUBJ } \boxed{1} \\ \text{COMPS } \langle[\text{SUBJ } \boxed{1}]\rangle \end{bmatrix}$

(32) *rais(ing)-passive* ⇒ [COMPS <CP[inf]>]

Based on the constraints (31) and (32), raising passive constructions are illustrated like the following:

(33)



It is noteworthy that the coindexation of SUBJ values of the head verb *believed* and its complement sister *to be honest* is guaranteed by the constraint on *SSR* type in (31)

5. Conclusion

In this paper English passive clauses have been analyzed through multiple inheritance hierarchy approach. This type hierarchy appoach to passives can also be extended to impersonal passives, reflexive passives, periphrastic passives, etc. for other languages as well as the English language. We will leave open here the binding and semantics of passives.

References

Borsley, R. D. 1996. *Modern Phrase Structure Grammar*, Blackwell.
Bouma, G. 1997. Valence Alternation without Lexical Rules, ms.

Bresnan, J. 1982. 'The passive in the lexical theory' in J. Bresnan (ed.), *The Mental Representation of Grammatical Relations*, MIT Press, Cambridge, MA, 3-86.

Grimshaw, J. 1990. *Argument Structure*, MIT Press, Cambridge, MA.

Grover, C. 1994. 'Rethinking some empty categories: Missing objects and parasitic gaps in HPSG', PhD dissertation, University of Essex.

Kathol, A. 1994. 'Passives without lexical rules', in J. Nerbonne, K. Netter and C. Pollard (eds), *German Grammar in HPSG*, CSLI, Stanford, 237-72.

Pollard, C. 1994. 'Towards a unified account of passive in German', in J. Nerbonne, K. Netter and C. Pollard (eds), *German Grammar in HPSG*, CSLI, Stanford, 273-96.

Pollard, C. and I. Sag. 1987. *Information-Based Syntax and Semantics, vol. 1: Fundamentals*, CSLI, Stanford.

Pollard, C. and I. Sag. 1994. *Head-Driven Phrase Structure Grammar*, University of Chicago Press, Chicago.

Postal, P. M. 1986. *Studies of Passive Clauses*, State University of New York Press, Albany.

Przepiorkowski, A. 1997a. On Case Assignment and "Adjuncts as Complements". ms.

Przepiorkowski, A. 1997b. Quantifiers, Adjuncts as Complements, and Scope Ambiguities. ms.

Siewierska, A. 1984. *The Passive: A Comparative Linguistic Analysis*, Croom Helm, New Hampshire, Dover.

Wechsler, S. M. 1995. *The Semantic Basis of Argument Structure*, CSLI, Stanford.

Zwicky, A. M. 1987. 'Slashes in the passive', Linguistics 25, 639-69.

340-18 Chungheung-Dong, Puk-Ku
Kwangju 500-042, Korea
E-mail: kimsjae@nuri.net
Fax: +82-686-53-2799