

Multiple Inheritance and English Locative Inversion

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Chan Chung. 2001. Multiple Inheritance and English Locative Inversion. *Language and Information* 5.1, 55-71. One of the controversial issues in English locative inversion (LI) construction (e.g., *Under the tree sat a woman*) has been the functional status of preverbal PP and postverbal NP, i.e., whether they are a subject, a complement, or a filler (topic). Based on the distributional parallelisms between the PP and NP on the one hand and an ordinary subject and filler on the other, this paper proposes that the PP has a dual function as a subject and filler, while the NP also has some subject properties that the PP does not have. These mixed functional properties are analyzed in the theory of HPSG, especially with the versions recently developed by Sag (1997), Manning and Sag (1999) and Ginzburg and Sag (to appear). This analysis claims that the LI construction needs to satisfy two general, independent constraints, *head-subject-phrase* and *head-filler-phrase*. This position suggests that the English LI construction is an instance of the peripheral phenomena whose construction specific constraint is inherited from more general core constraints. (Dongseo University)

1. Introduction

A typical example of the locative inversion (henceforth LI) construction is in (1):

- (1) In front of the tree sat a man.

This paper has two goals. One is to explore the functional status of the preverbal PP and the postverbal NP in the LI construction. Regarding this matter, three types of analyses have been suggested: (i) the preverbal-PP subject hypothesis (Levine (1989), Bresnan (1994), Levine and Culicover (2001)); (ii) the postverbal-NP subject hypothesis (Emonds (1976), Iwakura (1978), Rochemont and Culicover (1990), and Kathol and Levine (1992)); and (iii) the expletive-*there*/empty-category subject hypothesis (Gazdar and Pullum (1982), Coopmans (1989), and Postal (1977)). Based on the distributional parallelisms between the preverbal PP and postverbal NP on the one hand and the ordinary subject and filler on the other hand, this paper takes a middle road and proposes that in LI, the preverbal PP functions as both the subject and “filler” at the valence

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level, whereas the postverbal NP serves as the subject at a “deeper” argument structure level.

The other goal is to explore how the mixed functional analysis can be achieved in the HPSG theory. Sag (1997), Manning and Sag (1999) and Ginzburg and Sag (to appear) provide a foundation for the dual function analysis with the notions of multiple inheritance and dissociation between the argument and valence structures. I propose that two general constraints on *head-subject-phrase* and *head-filler-phrase* need to be simultaneously satisfied in LI through the multiple inheritance mechanism, i.e., the combination of two general construction types results in a more specific LI construction type.

This paper is organized as follows. Section 2 discusses some general properties of LI. In section 3, the mixed functional properties of the preverbal PP and postverbal NP are discussed. Section 4 proposes a new analysis within the HPSG framework and discusses its consequences. Section 5 is the conclusion.

2. General Properties of the LI Construction

2.1 LI vs. Presentational-*there* inversion

There have been studies proposing that LI is derived from the Presentational-*There* Inversion (henceforth PTI) (e.g., (2)), or treating either of them as an instance of the other (Gazdar and Pullum (1982), Coopmans (1989), and Postal (1977)). However, there are several studies opposing the position mentioned above, which convincingly argue that LI and PTI are two different kinds of constructions, and thus that LI cannot be derived from PTI (Iwakura (1978), Green (1985), Levine (1989), Rochemont and Culicover (1990) and Bresnan (1994)). This paper takes the later position based on the observations on (2)-(4) below.

The presentational-*there* inversion (PTI henceforth) construction in (2) requires the postverbal NP to be heavy or indefinite, while LI does not, as illustrated in (3).

- (2) a. There still stands on his desk the bowling trophy he won last year. (Aissen (1975))
 b. There ran into the garden *Kim/*the cat/?? the orange cat/an orange cat. (Green (1985))
 c. Into the garden there ran *Kim/*the cat/?? the orange cat/an orange cat. (Green (1985))

- (3) Into the garden ran Kim/the cat/an orange cat. (Green (1985))

As pointed out by Green (1985) and Bresnan (1994), we can easily find cases where the LI behaves differently from the PTI:

- (4) a. Into the game now is the fullback Jenkins.
 b. *There is the fullback Jenkins/a halfback I don't recognize into the game.
 c. *There is into the game the fullback Jenkins.
 d. *Into the game there is the fullback jenkins.

These observations show that LI cannot be derived from PTI.

2.2 Unaccusativity

The contrast between (5) and (6) shows that LI cannot occur with a verb with a direct object (Coopmans (1989) with some slight modifications):

- (5) a. Into the room rolled a ball.
 b. Onto the track ran a horse.
 c. Down the street walked a black dog.
- (6) a. *Into the room rolled a ball John.
 b. *Onto the track ran a horse a man.
 c. *Down the street walked a black dog an old woman that I didn't know.

Coopmans (1989) argues that verbs triggering LI such as *lie*, *run*, *walk*, etc. are 'unaccusative' verbs, and that these verbs have a VP-internal subject and locative PP complement. Furthermore, the locative PP fronted to COMP allows the VP-external subject position to be occupied by an empty expletive. According to this analysis, each sentence in (6) with a direct object is ungrammatical since it has a non-expletive VP-external subject (e.g. *John*, *a man*, and *an old woman that I didn't know*) in addition to an VP-external expletive empty subject.

Supporting his argument, Coopmans uses the *without . . . ing* construction. According to Postal (1977), the controller of the . . . *ing* form must be the subject of the main verb, and thus the ill-formedness of (7) is evidence for the nonsubjecthood of the postverbal NP.

- (7) a. Two sheiks lay near the oasis without PRO talking.
 b. ?/* Near the oasis lay two sheiks without PRO talking.

Coopmans argues that in (7b), the postverbal NP is internal within the VP headed by the unaccusative verb *lay* and cannot be the controller of *talking*. He concludes that the real subject of LI is not the postverbal NP but the VP-external empty subject.

One difficulty with this analysis is that the contrast in (7) provides no conclusive evidence for the null subject hypothesis in LI, i.e., the non-subject property of the postverbal NP does not necessarily entail the null subject in the English LI since the preverbal PP can be assumed to be the subject in that case. Regarding this matter, Bresnan (1994), and Kathol and Levine (1992) pointed out that the existence of unaccusative constructions in Dutch does not guarantee a null subject in the English LI, that the LI lacks a plausible expletive source, and that a null subject leads to a loss of generalization over subject extractions.

2.3 Freezing Effect

It has been observed that syntactic rules such as *wh*-extraction, topicalization, subject-aux-inversion do not apply to the LI construction and thus nothing moves in the LI except the preverbal PP. This phenomenon is called the "freezing effect" (Gazdar and Pullum (1982), Rochemont (1986), Rochemont and Culicover (1990), among others):

- (8) a. *Who(m) did he say into the room walked ____?
 b. *The woman, into the room walked ____.
 c. *Did into the room walk the woman?
 d. *Which room did he say into ____ walked John?

According to Rochemont (1986), the LI construction is one of the structural focus constructions where focus lies on the postverbal NP. Similarly, Green (1985) proposes that in LI, the preverbal PP provides background information, while the postverbal NP introduces a new participant to the established background.

To account for the freezing effect, Rochemont (1986) assumes that the focus construction are derived by stylistic rules, which apply after the S-structure, and thus that

syntactic rules such as *wh*-extraction, topicalization and subject-aux-inversion cannot apply in this construction. However, Levine and Culicover (2001) claims that the preverbal PP in the LI induces amelioration of the weak cross-over effect, as shown in (9), which suggests that the placement of the PP is not simply a matter of stylistic rules:

- (9) a. *Into every dog_i's cage its_i owner peered.
 b. Into every dog_i's cage peered its_i owner.

Another account of the freezing effect is the adjunction analysis proposed by Rochemont and Culicover (1990): the placement of the postverbal NP to the right adjunction position. However, as pointed out by Levine and Culicover (2001), this proposal is problematic in that it needs to assume the rightward movement. See papers in Beerman et al. (1997) for the problems with rightward movement analyses in a movement theory in general.

3. Mixed Functional Properties in the LI Construction

The arguments in LI seem to have mixed functional properties. The preverbal PP in LI has "some" properties of a subject as well as of a filler (topic), whereas the postverbal NP has some "other" subject properties that the preverbal PP does not have. The purpose of this section is to discuss these mixed properties.

3.1 Preverbal PP as a Subject

First, a piece of evidence for the subjecthood of the locative PP arises from the raising fact in (10) since only a subject can be raised in English.

- (10) a. Under the tree seemed to sit a woman with long blond hair.
 b. On that hill appears to be located a cathedral. (Bresnan (1994))

Second, a tag question in (11) suggests that the preverbal PP is the subject (Bowers 1976):

- (11) a. In the garden is a beautiful statue, isn't there?
 b. *In the garden is a beautiful statue, isn't it?

Third, as shown in (9) in section 2, the preverbal PP in the LI induces amelioration of the weak cross-over effect. It suggests that the PP be in an A-position and thus be a subject.

Fourth, when the preverbal PP in LI is extracted from an embedded clause, an overt complementizer cannot occur as shown in (12), and this *that*-trace effect also occurs in ordinary subject extraction as shown in (13):

- (12) a. Under which tree do you think sat the woman?
 b. *Under which tree do you think that sat the woman?

- (13) a. Which dog do you think sat under the tree?
 b. *Which dog do you think that sat under the tree?

Fifth, the following coordination constructions also indirectly support the subjecthood of a preverbal PP in LI:

- (14) a. [In that garden]_i stands an elegant fountain and dwells an interesting dwarf
 —_i. (Levine (1989))
 b. *[In that garden]_i stands an elegant fountain and an interesting dwarf dwells
 —_i.

(14a) suggests that the preverbal PP and the rest of the sentence form separate constituents. If we assume the preverbal PP is a filler and the postverbal NP a subject, then we may explain the grammaticality of (14a) due to both conjuncts being sentences with a PP gap. Under this assumption, however, it is not clear how the ungrammaticality of (14b) is explained, i.e., under this assumption, both conjuncts are still sentences with a PP gap as in the case of (14a), but (14b) is ungrammatical. It might be argued that (14b) is ill-formed since it is a disharmonic coordination in a sense that one of the conjuncts is inverted, but the other is not. However, this argument lacks strength since that kind of coordination is actually possible:

- (15) In that garden stands an elegant fountain, and an interesting dwarf dwells in that fountain.

Under the PP-subject hypothesis, however, (14b) is ill-formed because the conjuncts are a VP and an S with a PP gap.¹

3.2 Preverbal PP as a Filler

First, the preverbal PP in the LI cannot appear at the beginning of a non-finite clause, as illustrated in (16) and (17). Ordinary topicalization does not also occur in a nonfinite clause, as shown in (18) and (19).

- (16) What did Mary expect?
 a. What Mary expected was for Kim to sit under the tree.
 b. *What Mary expected was for under the tree to sit Kim.
- (17) a. The guard standing before the throne, Charles felt secure.
 b. *Before the throne standing six heavily armed guards, Charles felt safe.
- (18) a. What Mary expected was for Kim to eat an apple.
 b. *What Mary expected was for an apple_i, Kim to eat _____i.
- (19) a. With Kim directing the project, it was impossible to make any headway.
 b. *With the project_i, Kim directing _____i, it was impossible to make any headway.
 c. *The project_i, with Kim directing _____i, it was impossible to make any headway.

Second, the preverbal PP, as shown in (20), always occurs at the beginning of a finite clause, as a filler always does in the ordinary topicalization construction (e.g., (21)).

- (20) a. *[_S Mary believed under the tree to sit a woman with long blonde hair].
 b. [_S Under the tree Mary believed ____ to sit a woman with long blonde hair].
- (21) a. *[_S Mary tried [the man]_i to kill _____i].
 b. [_S [The man]_i, Mary tried to kill _____i].

Third, the fillerhood of the postverbal PP is supported by the distribution of the complementizer. When LI or topicalization occurs in an embedded clause, the overt complementizer *that* must exist, as shown in (22) and (23):

1. Levine and Culicover (2001) propose that the raising and subject extraction in the preverbal PP are allowed only when the postverbal NP bears focus stress or it is heavy. They consider these LIs structurally different from the genuine LIs. I do not address the differences in this paper since it is beyond the scope of this paper. Instead, I simply assume that they all belong to the same construction, but some freezing effects—non-applicability of the raising and subject extraction—arise more strongly when the postverbal NP does not bear focus stress or heaviness.

- (22) a. Mary said [that under the tree sat a woman].
 b. *Mary said [under the tree sat Mary].
- (23) a. Mary said [that the dog, the man kicked].
 b. *Mary said [the dog, the man kicked].

The parallelisms in grammaticality patterns between ordinary topicalization and LI shown above suggest that they should be viewed as instances of the same construction.²

3.3 Postverbal NP as a Subject

Even though the preverbal PP has subject properties in some respects, as shown in section 3.1, it does not seem to have the full distribution of the typical subject. Kathol and Levine (1992) propose that the postverbal NP, rather than the preverbal PP, is the real subject.

Pronouns usually do not occur as a postverbal NP in LI since they are not appropriate to bear presentational focus, yet they do occur in LI in some contexts. Kathol and Levine (1992) argue that when a pronoun is allowed in a postverbal position, nominative case is much preferred, as shown in (24):³

- (24) Under the tree sat I/*me (waiting for my friends to appear).

Second, The subject-verb agreement shown in (25) also seems to show the subjecthood of the postverbal NP, i.e., the verb agrees with the postverbal NP, suggesting that even though the postverbal NP does not appear at the subject position in LI, it still plays the role of subject in the subject-verb agreement.

- (25) a. Under the tree sits/*sit a woman.
 b. Under the tree *sits/sit two women.
 c. Under the tree seems/*seem to sit a woman with long blonde hair.
 d. Under the tree *seems/seem to sit two women with long blonde hair.

Third, let us consider the "Subject Gap in Finite clauses" (SGF) coordination construction, illustrated in (26), which is another argument against the subjecthood of the preverbal PP in Kathol and Levine (1992).

- (26) Into the woods went the hunter and shot a hare.

2. We may consider that the preverbal PP in LI is simply a subject, and that some of the phenomena discussed in section 3.2 are due to a constraint on a root clause. However, even if we assume the root constraint, as we do in section 4.2 below, we will still need to consider the preverbal PP a type of filler or to stipulate it somehow as the first element in a clause in order to account for the contrast in (20), and the lack of SAI in (8c).

3. However, case assignment may not be crucial evidence for the subjecthood of the postverbal NP, because some speakers actually prefer accusative case to nominative case. Moreover, in examples like (i), accusative case is suggested to be more natural than nominative case. Rochement and Culicover (1990) consider (ib) marginally acceptable.

(i) a. Among the guests of honor was sitting HER [pointing]. (Bresnan (1994))
 b. ?Into the room walked them all. (Rochement and Culicover (1990))

I do not presently have a clear account of this case alternation, but my suggestion is that either nominative or accusative case can be assigned to the postverbal NP at the level of syntax, where the preference for the nominative, if any, may come from other factors such as influence of prescriptive grammar. This case alternation seems to be reminiscent of the case alternation in *It's I* and *It's me*.

The special property of SGF is that the second conjunct is controlled by the postverbal NP of the first conjunct, *the hunter*. Yet the preverbal PP of the first conjunct, *into the woods*, does not have scope over the second conjunct. If we consider SGF as an instance of an ordinary coordinate construction, my analysis on LI incorrectly rules out (26). The SUBJ and SLASH values of the coordinated node—[[*went the hunter*] and [*shot a hare*]]—are the preverbal PP (*into the woods*), whereas the SUBJ and SLASH values of the second conjunct—[*shot a hare*]]—must be the postverbal NP (*the hunter*) and an empty set, respectively. According to the coordination principle in Pollard and Sag (1994), (26) is ruled out since the second conjunct daughter cannot be an extension of the mother.

Fourth, the following binding fact also suggests that the postverbal NP is a real subject since in the LI, it binds the anaphor *each other* within the preverbal PP as shown in (27):

- (27) a. Two handsome young boys sat beside each other.
 b. Beside each other sat two handsome young boys.

4. A New Analysis

4.1 Dissociated Argument Realization and Multiple Inheritance Hierarchy

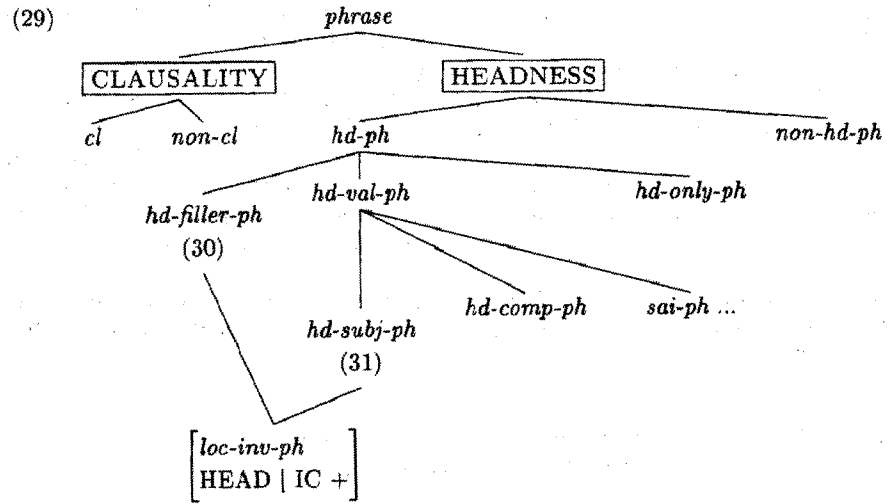
To provide an account of the mixed functional properties within the theory of HPSG, I propose the following lexeme specific constraint for LI verbs:⁴

$$(28) \quad loc\text{-}inv\text{-}lexm \Rightarrow \left[\begin{array}{l} \text{SUBJ} \langle \boxed{2} \rangle \\ \text{COMPS} \langle \boxed{1} \rangle \\ \text{SLASH} \{ \boxed{3} \} \\ \text{ARG-ST} \langle \boxed{1} \text{ NP}, \boxed{2} \text{ PP}[+\text{LOC}, \text{LOCAL}\boxed{3}] \rangle \end{array} \right]$$

(28) states the following: (i) a locative inversion verb has an NP and a locative PP as its ARG-ST value in that order; (ii) the first argument (NP) is realized as a complement; (iii) the second argument (PP) is realized as a subject (as in accusative verbs in ergative languages (Manning and Sag (1999))); and (iv) the LOCAL value of the PP is realized as a slash value.

Following Sag (1997) and Ginzburg and Sag (to appear), the present analysis assumes the multiple construction type inheritance hierarchy that is used to capture the fact that instances of some construction types seem to resist being uniquely categorized in a natural way. In my analysis, the preverbal PP has properties of both a filler and a subject, and the mixed functional properties can be captured naturally under the multiple inheritance approach. To this end, this paper proposes the multiple construction type inheritance hierarchy in (29), where the *loc-inv-phrase* is a subtype of both the *head-filler-phrase* and *head-subject-phrase*, and it has only one construction specific constraint: the *loc-inv-ph*'s head has the feature [IC +].

4. The constraint in (28) needs to override more general constraints such as the argument realization and SLASH amalgamation constraints.



The *hd-filler-ph* and *hd-subj-ph* in (29) have their own constraints in (30) and (31) (Bouma et al. (2001)):

(30)

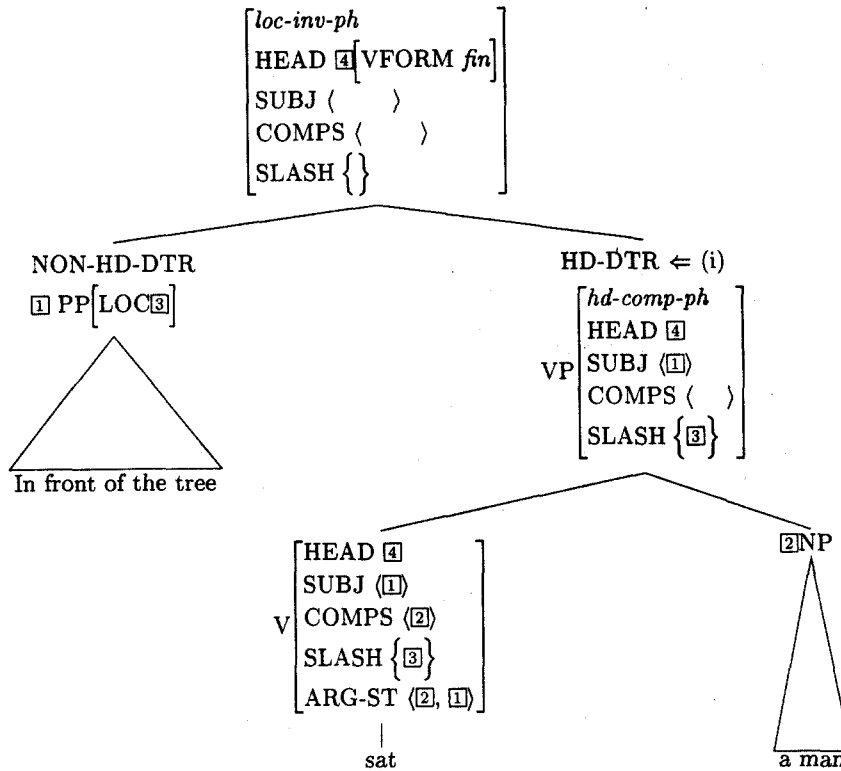
$$hd\text{-}filler\text{-}ph \Rightarrow \left[\begin{array}{l} \text{HEAD } verb \text{ [VFORM } fin] \\ \text{SUBJ } \langle \quad \rangle \\ \text{SLASH } \text{②} \\ \text{HD-DTR } [\text{SLASH } \{ \text{①} \} \text{②}] \\ \text{NON-HD-DTR } \langle \text{LOC} \text{①} \rangle \end{array} \right]$$

(31)

$$hd\text{-}subj\text{-}ph \Rightarrow \left[\begin{array}{l} \text{SUBJ } \langle \quad \rangle \\ \text{HD-DTR } \left[\begin{array}{l} phrase \\ \text{SUBJ } \langle \text{①} \rangle \end{array} \right] \\ \text{NON-HD-DTR } \langle \text{①} \rangle \end{array} \right]$$

In this analysis, the typical LI example in (1) is analyzed as in (32)

(32)

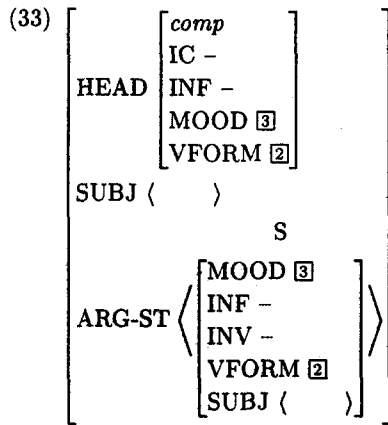


Here local tree (i), licensed by the *loc-inv-ph*, simultaneously satisfies the constraints in (30) and (31). It satisfies (30) because the non-head daughter's local value is the same as that of the head daughter's SLASH value, and thus the mother's SLASH value is empty. The VFORM value is *finite*. It also satisfies (31) because the non-head daughter's synsem value is the same as the SUBJ value of head daughter, and thus the mother's SUBJ value is empty.

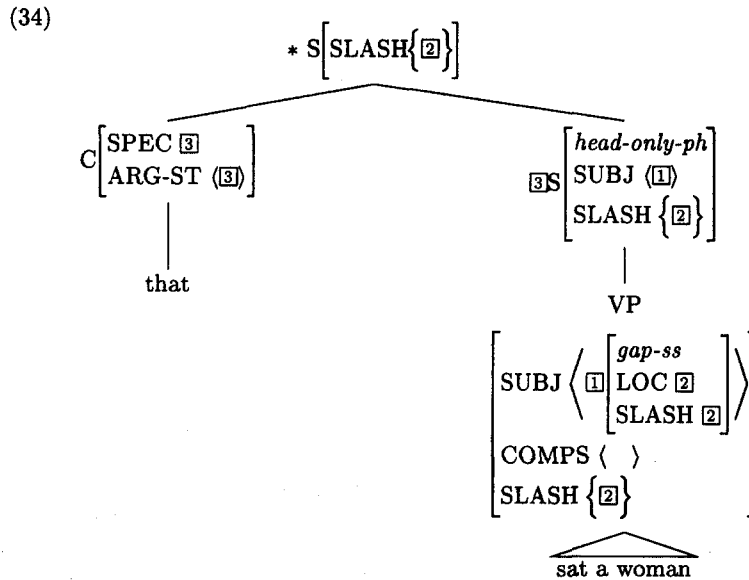
4.2 Consequences

In this section, I will discuss how the examples given in previous sections are explained in my analysis. Let us consider the ones in section 3 first. (9), (10) and (11) are accounted for by the assumption that the PP is the subject.

The *that*-trace effect in (12b) is accounted for by the constraint on complementizer *that* in (33) (Bouma et al. (2001) and Ginzburg and Sag (to appear))



One of the constraints stated in (33) is that the complement clause of *that* must have an empty SUBJ list. In my analysis, the *that*-clause “*that sat the woman*” in (12b) has the structure in (34), following the traceless analysis in Bouma et al. (2001):



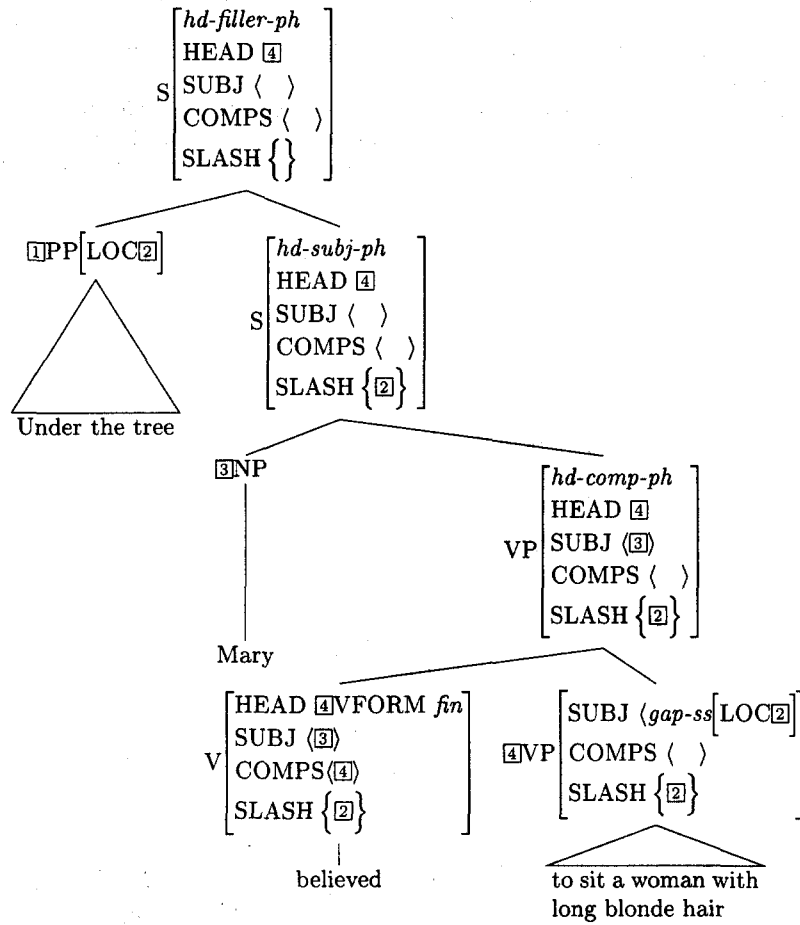
Here the complement clause of *that* has a non-empty SUBJ list, SUBJ <gap-ss> rather than SUBJ <>, which violates the constraint in (33).⁵

5. However, the following example is acceptable:

(i) This is the tree that I said [that [just yesterday] *t* had resisted my shovel]. (Culicover 1993)

The acceptability of (i) cannot be accounted for by the empty SUBJ constraint in (33) since here the embedded clause has [SUBJ <gap-ss>]. We may need an LP constraint: a complementizer cannot immediately precede a verb. This LP constraint may apply at a more superficial structure level such as the level of DOMAIN structure in Reape (1994) and Kathol (1995)

(36)



Note that the constraint on the finiteness in my analysis is imposed not by the lexemic constraint in (28) but by the *head-filler-ph* in (30), and thus the inverted non-finite [4]VP in (36) can be licensed by (28).

The contrast between (22a) and (22b) are accounted for by the constraint on complementizer in (33): the complementizer *that* itself is specified as [IC -] while the IC value of its complement is left unspecified. It allows 'main clause phenomena' in an embedded clause only when *that* is present. That is, a *that*-less complement clause has [IC -] assigned by the governing verb. When the verb takes a CP as its complement, however, the embedded clause can have either [IC +] or [IC -] simply because its value is not specified. Then the *loc-inv-ph*'s constraint, [IC +], in (29) guarantees that the LI occurs in an embedded clause only when the complementizer *that* exists and the IC value of its complement is selected to be 'plus.'

Note that the complement clause of the complementizer *that* has [INV -] in (33), which is specified so in order to account for the lack of subject-aux-inversion in an embedded clause. It does not cause any problem in my analysis because INV feature itself is not needed at all.

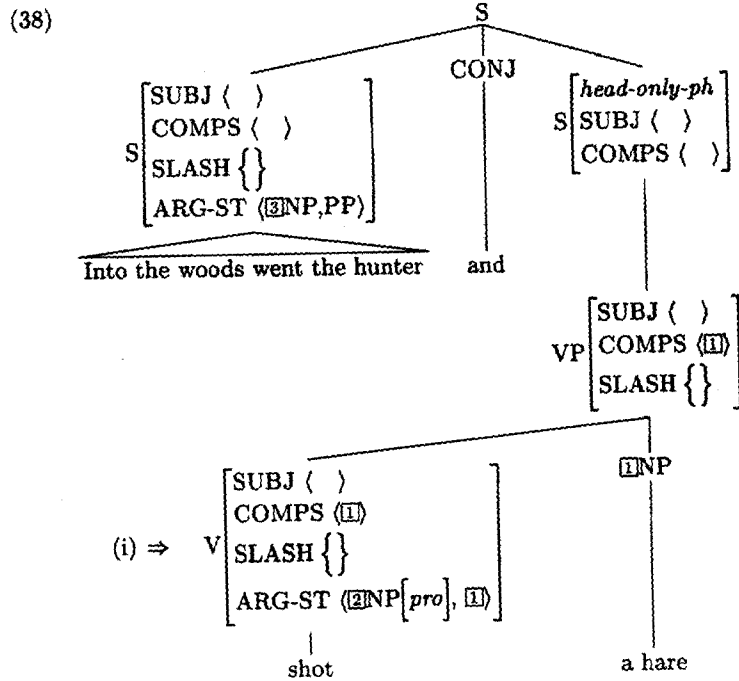
The nominative case assignment to the postverbal NP in (24) will be simply accounted for if we assume that case assigned at the level of ARG-ST, following Przepiórkowski (1998). In his case theory, nominative case is assigned to the first NP in the ARG-ST, and accusative case to the rest NPs. As shown in (28), my analysis proposes that the postverbal NP is still the first NP at the ARG-ST level even though it is a complement at the valence level. Thus nominative case is predicted to be assigned to the postverbal NP.

My analysis may account for the subject-verb agreement facts in (25a,b) if the agreement is considered to be triggered by the first element in the ARG-ST, rather than by the SUBJ element, as the case assignment is explained at the ARG-ST level above. However, this account cannot be straightforwardly extended to the raising construction in (25c,d) because here the agreement suffix *-s* is attached to the raising verb *seem*, rather than to the locative inversion verb *sit*. Here the problem is that in the current HPSG's raising theory, only the element in the SUBJ list can be raised in English, and thus there is no way to raise the postverbal NP that is in the COMPS list.

To account for the subject-verb agreement in the LI, Bresnan (1994) proposes that the preverbal PP in the LI behaves like the existential *there* with respect to agreement, in a sense that the PP itself does not carry the agreement features such as NUMBER and PERSON. Following her proposal and the HPSG's analysis on *there* construction, I propose that the preverbal PP's NUMBER feature is identical to that of the postverbal NP. To this end, the *loc-inv-lexeme* in (28) is revised into (37):

$$(37) \quad \text{loc-inv-lexm} \Rightarrow \left[\begin{array}{l} \text{SUBJ } \langle \textcircled{2} \rangle \\ \text{COMPS } \langle \textcircled{1} \rangle \\ \text{SLASH } \{ \textcircled{3} \} \\ \text{ARG-ST } \langle \textcircled{1} \text{ NP}[\text{NUM } \textcircled{4}], \textcircled{2} \text{ PP } \left[\begin{array}{l} +\text{LOC, NUM } \textcircled{4} \\ \text{LOCAL } \textcircled{3} \end{array} \right] \rangle \end{array} \right]$$

Presently we do not have a generalized theory of the SGF coordination in (26). However, we propose that it is an instance of a *pro*-drop phenomenon, i.e., the subject of the second conjunct is a *pro*. Following Manning and Sag (1999), the *pro*-drop phenomenon is accounted for by the dissociation between the ARG-ST value and the VALENCE value, i.e., as shown in (i) in (38) below, the ARG-ST list of the verb *shot* has an NP[*pro*] as its first element, but the *pro* is not realized in the SUBJ list, and thus the verb has an empty SUBJ list:



In (38), the [2]NP[*pro*] is bound by a most salient element of the first conjunct, namely the first element (*the hunter*) of the verb *went*. Also note that in this analysis, each conjunct's SUBJ and SLASH values are all empty, and thus that the coordination principle is not violated.

It is controversial whether English has a *pro*-drop phenomenon in a finite clause. However, examples such as (39) and (40) suggest that *pro* occurs in English at least in some limited contexts.

- (39) A: What did the boy do?
B: (*pro*) Kicked the can over the fence.

- (40) (*pro*) Leaves it feeling soft and smooth. (advertisement for the soap "Dove")

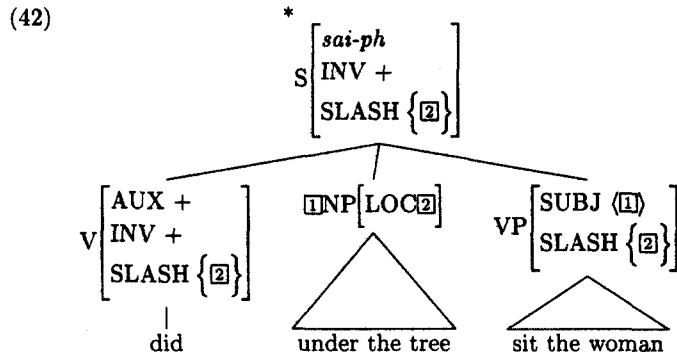
The anaphor binding fact in (27) is also explained because binding is generally assumed to occur at the level of ARG-ST (Manning and Sag (1999)). The postverbal NP is less oblique than the preverbal PP at the ARG-ST, and thus the former can bind the latter.

This paper considers the postverbal NP a complement (direct object) of the LI verb. This analysis predicts the grammaticality in (41) because no adverbs or parentheticals can intervene between a verb and its direct object.

- (41) a. Into the room strode Robin boldly.
b. *Into the room strode boldly Robin. (Kathol and Levine (1992))

In my analysis, the freezing effect in (8) is explained by syntactic and discourse factors. Let us discuss the syntactic ones first. The subject-aux inversion in (8c) is not

allowed because the filler PP here does not occur at the beginning of the sentence, and thus its SLASH value cannot be discharged, violating the *root* constraint: a root clause must have an empty SLASH value (Ginzburg and Sag (to appear)). The structure of (8c) is as in (42):⁶



(8d) is not allowed either under the PP-subject hypothesis because generally nothing can be extracted out of a subject. (Huang's (1982) Conditions on Extraction Domain).

Finally let us consider the rest of the freezing effect, (8a) and (8b). In my analysis, the postverbal NP is a complement at the valence level, and thus there is no reason why it cannot be *wh*-extracted or topicalized at least at the level of syntax. However, the ill-formedness of (8a) and (8b) seems to arise from a discourse factor. According to Rochemont (1986), the LI is one of the structural focus constructions where focus lies on the postverbal NP. Similarly, Green (1985) and Bresnan (1994) propose that in the LI, the preverbal PP provides background information, while the postverbal NP introduces a new participant to the established background. In this approach, the postverbal NP cannot be replaced by a *wh*-phrase (e.g., (8a)) because it does not make sense to introduce a new participant by a *wh*-phrase. The ill-formedness of (8b) is also predicted by a similar reason. Focus is supposed to be inherently given to the postverbal NP, *the woman*, in the LI, but in (8b), the NP is topicalized. It causes a conflict in the value of the information structure, i.e., in terms of Engdahl and Vallduvi (1996), the NP is simultaneously the value of FOCUS as well as LINK.

I will conclude this section with discussing an overgeneration problem with my proposal. In my analysis, a single PP is the value of two different attributes, the SUBJ and SLASH. Then a question arises as to how the analysis prevents sentences like (43), in which the PP *under the tree* is realized as both a subject and a filler?

- (43) a. *[Under the tree] Mary believed [under the tree] to sit a man.
 b. *[Under the tree] did [under the tree] sit a woman?

In (43), the SLASH value at the top node in (35) and (42) is discharged due to the existence of the filler PP, and the sentences do not violate the root constraint anymore. To rule out these examples, we may consider Binding Condition C. However, it does

6. The lack of subject-aux inversion in the LI has nothing to do with the categorial status of the subject, PP, since a genuine PP subject can be subject-aux inverted:

- (i) a. Under the bed is a good place to hide a toy.
 b. Is under the bed a good place to hide a toy?

not work in the current HPSG framework because the ARG-ST, which is assumed to be the locus of binding, has only one PP as shown in (37). My conjecture is that the ill-formedness of these examples is due to a general constraint that distinct constituents must have distinct LOCAL values in a sentence in order to avoid spurious structural ambiguity. For example, we cannot say *She thinks she is smart*, in which the LOCAL values of *she* in the main clause is the same as that of *she* in the embedded clause. This is because we do not want two interpretations of this sentence, one where the two tokens of *she* have the same LOCAL value and one where they do not. This account may be considered as a generalized version of Binding Theory C.

5. Conclusion

In the English LI construction, the preverbal PP and postverbal NP have mixed functional properties. These mixed properties are directly explained through two general constraints on ordinary clause formations ("subject + VP" and "filler + S") due to multiple inheritance and dissociation between the argument and valence structures. In this analysis, the English locative inversion construction is considered an instance of the peripheral phenomena whose construction-specific constraints are inherited from more general core constraints. This analysis also suggests that it is pointless to argue which element is the real subject in the LI since they both have the properties of the subject, i.e., the PP is the subject at the valence structure level, whereas the NP is the subject at the argument structure level.

My proposal is similar to Bresnan's (1994) in a sense that, in her analysis, the preverbal locative PP in LI is a filler in the c-structure, but it is "interpreted" as indirectly filling the subject position in the f-structure by means of topicalization.

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