

## Differences between Light and Heavy Inversions: An HPSG Approach

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### 1. Introduction

- light NP vs. heavy NP (Culicover and Levine 2001)

- light NP: a Det + N or proper noun with no focal stress
- heavy NP: a complex NP or proper noun with focal stress

Heavy NP shift:

- (1) a. \*Kim put \_\_\_ [on the table] [the book]  
b. Kim put \_\_\_ [on the table] [the book he brought in Vienna]].  
c. Kim put \_\_\_ [on the table] . . . [THAT BOOK] (not this book).

- light inversion vs. heavy inversion (Culicover and Levine 2001)

- light inversion: no heavy NP shift

- (2) a. Into the room walked Robin/a woman carefully.  
b. \*Into the room walked carefully Robin/a woman.

- heavy inversion: heavy NP shift

- (3) a. Remember Robin? Well, into the room walked carefully, . . . ROBIN.  
b. Into the room walked carefully the students in the class who had heard about the social psych experiment that we were about to perpetrate.

### 2. Similarities between Light and Heavy Inversions

- Both types place restrictions on the types of the main predicate (Coopmans 1989, Bresnan 1994, and others):

- not possible with transitive verbs:

LI:

- (4) a. \*Into the room rolled John the ball.

b. \*Into the room rolled the ball John.

HI:

- (5) a. \*Into the room rolled the man with long blond hair the ball. (HI)  
b. \*Into the room rolled the ball the man with long blond hair. (HI)

- possible with some intransitive verbs such as *sit*, *fall*, *jump*, etc, but not possible with other intransitive verbs such as *knit*, *spit*, *excrete*, etc.

- (6) a. In the room was sitting Robin. (LI)  
b. In the room was sitting a man with long blond hair. (HI)

- (7) a. \*In the room was knitting Robin. (LI)  
b. \*In the room was knitting a woman with long blonde hair. (HI)

• Both types exhibit freezing effects (Rochemont 1986, Levine 1989, and others)

LI:

- (8) a. \*What does in the garden stand \_\_\_?  
b. \*Which room did he say into \_\_\_ walked John?  
c. \*Did into the room walk a woman?

HI:

- (9) a. \*Which one of the students majoring in linguistics does in the garden stand \_\_\_?  
b. \*Which room did he say into \_\_\_ walked one of the students majoring in linguistics?  
c. \*Did into the room walk one of the students majoring in linguistics?

• focus properties of the postverbal NP

- presentational focus (Green 1985, Rochemont 1986, Bresnan 1994, and others)

- (10) A: I am looking for my friend Rose.  
B: #Among the guests of honor was sitting Rose.

- (11) A: I am looking for my friend Rose.  
B: #Among the guests of honor was sitting Rose wearing big sunglasses.

- pronominal restriction

- (12) #Rose, among the guests of honor was sitting she/her.

- contrastive focus

LI:

- (13) a. On the wall hung canvases, but not paintings.  
b. #On the wall hung canvases, but not on the easels.

HI

- (14) a. On the shelf sat a pink rabbit with a blue ribbon, but not the black one with a red ribbon.  
b. # On the shelf sat a pink rabbit with a blue ribbon, but not on the table.

- negation

LI:

- (15) a. \*On the wall never hung a painting.  
b. On the wall hangs not a painting but a photo.
- (16) a. \*On the wall never hung a picture of US Grant.  
b. On the wall hangs not a picture of US Grant but one of Jefferson Davis.

• topic properties of the preverbal PP

- indefinite PP (Schachter 1992)

- (17) a. A child was found somewhere.  
b. \*Somewhere was found a child. (LI)  
c. \*Somewhere was found a child who seemed to be kidnapped a few months ago. (HI)

- root phenomenon

- (18) a. \*Bill asked if such books John only reads at home.  
b. \*Bill asked if near John's house lies buried treasure. (LI)  
c. \*Bill asked if near John's house lies buried treasure that was hidden by the pirates. (HI)

- (19) a. Mary said [that under the tree sat a woman]. (LI)  
b. \*Mary said [under the tree sat a woman]. (LI)  
c. Mary said [that under the tree sat a woman with long blonde hair]. (HI)  
d. \*Mary said [under the tree sat a woman with long blonde hair]. (HI)

- (20) a. Mary said [that the dog, the man kicked].  
b. Mary said [the dog, the man kicked].

• subject properties of the postverbal NP

- agreement

- (21) a. Under the tree sits/\*sit a woman. (LI)

- b. Under the tree \*sits/sit two women. (LI)
- c. Under the tree sits/\*sit a woman with long blonde hair. (HI)
- d. Under the tree \*sits/sit two women with long blonde hair. (HI)

### 3. Differences between Light and Heavy Inversions (Culicover and Levine 2001)

- Only LI allows the amelioration of the weak cross-over effects.

LI:

- (22) a. \*Into every dog<sub>i</sub>'s cage its<sub>i</sub> owner peered.  
b. Into every dog<sub>i</sub>'s cage peered its<sub>i</sub> owner.

HI:

- (23) a. In every dog<sub>i</sub>'s cage hung its<sub>i</sub> collar.  
b. \*In every dog<sub>i</sub>'s cage hung on a hook its<sub>i</sub> most attractive and expensive collar.

- HI appears to rather freely allow the raising of the PP.

- (24) a. \*Into the room appeared to be walking Robin slowly (LI)  
b. Into the room appeared to be walking slowly a very large caterpillar. (HI)

- Only HI allows the PP to be long extracted out of a finite clause

- (25) a. \*Into the room I claim/believe walked Robin. (LI)  
b. Into the room I claim/believe walked a ravenous horde of angry Tolstoy scholars.  
(HI)

- Only HI allows the PP to be long extracted out of a non-finite complement.

- from infinitivals

- (26) a. \*Into the room I expected \_\_\_ to walk Robin. (LI)  
b. From this pulpit I expected \_\_\_ to preach a close associate of the great Cotton Mather. (HI)

- from gerundives

- (27) a. I decided to let no one into the room; in fact, \*into the room I prevented \_\_\_ from walking Robin. (LI)  
b. I decided to allow no one to do anything in this church; in fact, from this pulpit I even prevented \_\_\_ from preaching a close associate of the great Cotton Mather.  
(HI)

- Only HI licenses a floated quantifier.

- (28) a. \*Into the cafeteria have both gone the students, I think. (LI)  
 b. From this pulpit have both preached Cotton Mather's two closest and most trusted associates. (HI)

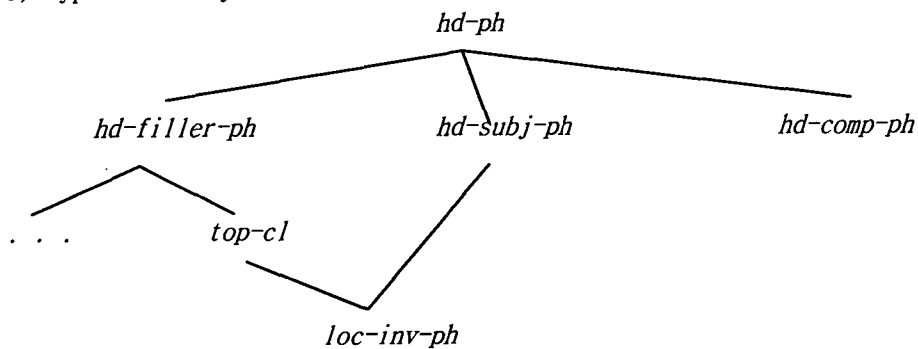
• Only HI allows the PRO control.

- (29) a. \*Into the room \_\_\_ expected PRO to walk Robin. (LI)  
 b. From this pulpit \_\_\_ expected PRO to preach a number of close associates of the great Cotton Mather himself. (HI)

#### 4. An Analysis

##### Phrasal Constructions and Multiple Inheritance

##### (30) Type Hierarchy



##### (31) *head-subject-ph*

[SUBJ <>] → [1], H  $\left[ \begin{array}{l} \textit{phrase} \\ \text{SUBJ } \langle [1] \rangle \end{array} \right]$

##### (32) *head-filler-ph*

[ ] → [LOC [2]], H  $\left[ \begin{array}{l} \text{HEAD } \textit{verb} \\ \text{SLASH } \{ [2] \} \end{array} \right]$

##### (33) *topic-cl*

[ ] → [1][LINK [1]], H  $\left[ \begin{array}{l} \text{VFORM } \textit{fin} \\ \text{IC } + \end{array} \right]$

##### (34) constraints on *loc-inv-ph* which are inherited from the supertypes

[ ] → [1]  $\left[ \begin{array}{l} \text{LOC } [2] \\ \text{LINK } [1] \end{array} \right]$ , H  $\left[ \begin{array}{l} \text{SUBJ } \langle [1] \rangle \\ \text{VFORM } \textit{fin} \\ \text{IC } + \end{array} \right]$

• Predictions

(35) \*Bill asked if such books John only reads at home.  
 \*Mary tried the man to kill \_\_\_\_.

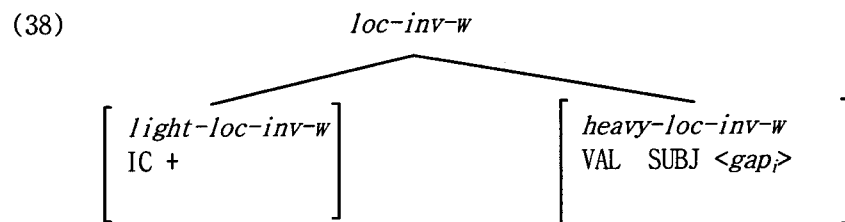
(36) \*Mary said [under the tree sat Mary]. (not IC)  
 \*I expect on this wall to be hung a portrait of our founder (nonfinite)

- general constraints on *loc-inv-w*

(37) 
$$loc\text{-}inv\text{-}w \Rightarrow \left[ \begin{array}{l} VAL \left[ \begin{array}{l} SUBJ <[2]> \\ COMPS <[1]> \end{array} \right] \\ \\ ARG\text{-}ST <[1]NP_i, [2]PP_j> \\ INFO\text{-}ST \mid FOC [1] \end{array} \right]$$

Claim: Dissociations occur between valence and argument structure when a constructional focus is assigned to the first argument NP. That is, when we need to assign the NP a focus we realize the PP as the grammatical subject and the NP as the grammatical complement.

Capturing the differences between the LI and HI, we propose that the *loc-inv-w* has two subtypes as represented in the hierarchy:



Note: These two subtypes will inherit all the constraints its supertype *loc-inv-w* has, in addition to bearing its own constraints.

4.1 Accounts of the Similarities

• Key Point:

The similarities are captured by the assumption that the light and heavy inversion verbs belong to the same supertype, *loc-inv-w*. The constraints on the supertype are inherited to the subtypes except when there is a conflict. In case of the conflict, the subtype constraints override the supertype constraints: e.g., SUBJ <[2]> vs. SUBJ <gap>

- restriction on the head verb:

(39) \*Into the room rolled John the ball

- by the ARG-ST

- freezing effect:

(40) a. \*What does in the garden stand \_\_\_?

b. \*Which room did he say into \_\_\_ walked John?

c. \*Did into the room walk a woman?

- by the presentation focus (e.g., (40a))

- by the topic island (e.g., (40b))

- by the root constraint in Ginzburg and Sag (2001) (e.g., (40c): with the PP slashed in the lexicon

- focus properties of the postverbal NP:

(41) A: I am looking for my friend Rose.

B: #Among the guests of honor was sitting Rose.

(42) #Rose, among the guests of honor was sitting she/her.

(43) a. On the wall hung canvases, but not paintings.

b. #On the wall hung canvases, but not on the easels.

(44) a. \*On the wall never hung a picture of US Grant.

b. On the wall hangs not a picture of US Grant but one of Jefferson Davis.

- by the FOCUS value

- topic properties of the preverbal PP:

(45) \*Somewhere was found a child.

(46) \*Bill asked if near John's house lies buried treasure.

(47) a. Mary said [that under the tree sat a woman].

b. \*Mary said [under the tree sat a woman]

- by constraints on the *topic-cl*: LINK and [IC +] (Chung and Kim 2002)

- subject properties of the postverbal NP:

(48) Under the tree sits/\*sit a woman.

- by the ARG-ST.

#### 4.2 Accounts of the Differences

- Key point:

The differences are accounted for by the assumption that the light inversion verbs and heavy inversion verbs are separate subtypes, and that they have their own lexical constraints.

- Week Cross-Over effects, distribution of floated quantifiers, and PRO control:

(49) a. Into every dog;<sub>i</sub>'s cage peered its<sub>i</sub> owner.

b. \*In every dog;<sub>i</sub>'s cage hung on a hook its<sub>i</sub> most attractive and expensive collar.

(50) a. \*Into the cafeteria have both gone the students, I think.

b. From this pulpit have both preached Cotton Mather's two closest and most trusted associates.

(51) a. \*Into the room \_\_\_ expected PRO to walk Robin.

b. From this pulpit \_\_\_ expected PRO to preach a number of close associates of the great Cotton Mather himself.

- by the different SUBJ value: PP subject vs. NP gap subject.

- Raising and extractabilities out of a finite clause/non-finite complement

(52) a. \*Into the room appeared to be walking Robin slowly

b. Into the room appeared to be walking slowly a very large caterpillar.

(53) a. \*Into the room I claim/believe walked Robin.

b. Into the room I claim/believe walked a ravenous horde of angry Tolstoy scholars.

(54) a. \*Into the room I expected \_\_\_ to walk Robin.

b. From this pulpit I expected \_\_\_ to preach a close associate of the great Cotton Mather.

(55) a. I decided to let no one into the room; in fact, \*into the room I prevented \_\_\_ from walking Robin.

b. I decided to allow no one to do anything in this church; in fact, from this pulpit I even prevented \_\_\_ from preaching a close associate of the great Cotton Mather.

- by the different specification of [IC +]: lexical vs. constructional (Chung 2001)



## 5. Conclusion

In terms of lexical properties, we have assumed that *loc-inv-w* has two subtypes, *light-loc-inv-w* and *heavy-loc-inv-w*. The multiple inheritance system makes sure that each subtype word inherits the constraints on their supertype while keeping its own constraints. The similarities between the light and heavy inversions are partly captured by the constraints on the supertype word, while the differences are captured by the constraints on each subtype word. Dissociations between the argument structure from the valence structure are also due to the lexical constraints, which captures the mixed properties of the preverbal PP and postverbal NP.

In terms of constructional properties, we have assumed that *loc-inv-ph* is cross-classified as a subtype of both *head-subj-ph* and *top-cl*. Again, the multiple inheritance system makes sure that the phrase inherits the constraints on these two subtypes while having its own constraints. This cross-classification accounts for discourse properties and root phenomena in the light and heavy inversions.

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