

Deriving Dependent Right Adjuncts in English

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0. Introduction

In this paper we will be concerned with the properties of right adjuncts in English that are in some sense dependent for their interpretation on a position elsewhere in the sentence, e.g., relative and result clause extraposition and rightmost heavy NPs. Such constructions seem to be the strongest cases in English for rightward movement. We have argued in previous work that this is not the correct account of extraposition constructions. On the basis of contrasts between these constructions and rightmost heavy NP constructions, we have argued that only the latter are derived by rightward movement.

We will review the arguments in favor of these conclusions. Comparing several alternative leftward movement analyses in each of these cases, we reconfirm our conclusion that the extraposed constituents undergo no movement in the course of the derivation. The facts about extraposition can be fully accommodated on a leftward movement account in which the extraposed constituent achieves its rightmost position through the leftward movement of other elements in the sentence. We will show that it is also possible to provide a leftward movement analysis of the rightmost heavy NPs that is fully compatible with the data that we consider. In both cases we will show that a successful leftward movement account must have certain characteristics that hold also of successful accounts that are compatible with rightward movement or adjunction.

1. Properties of extraposition constructions

1.1. Relative clause extraposition

The fundamental issue is where the extraposed clauses are adjoined. What evidence bears on the site of attachment of an extraposed clause? (i) can it be construed with a given antecedent, (ii) constituency, (iii) c-command. Evidence that we have developed suggests the following generalization: the interpretation and acceptability of an extraposed relative clause is determined by the S-structure position of its antecedent (Culicover and Rochemont 1990, henceforth **CR**). What this means, modulo a particular analysis, is that a relative

clause related to an object (OX) is attached closer to its antecedent than is a relative clause related to a subject (SX). A relative clause related to a subject is attached closer to its antecedent than is a relative clause related to an antecedent in COMP (WhX).

Here is the data. For clarity of presentation we will illustrate using classical assumptions regarding phrase structure and linear order. Note that we are abstracting from questions of movement. We are looking just at the site of attachment of the phrase at S-structure. We'll also suppose that X-bar theory permits structures with rightward adjunction, regardless of how that is achieved. The first type of evidence involves simply relative linear order, which in standard phrase structure terms corresponds to relative height of attachment. These examples show that OX is attached closer to the direct object than is SX.

(i)ia. a man entered the room last night that I had just finished painting who had blond hair

ib. *a man entered the room last night who had blond hair that I had just finished painting

(Rochemont and Culicover 1990 (RC))

The next examples show that SX is attached closer to the subject than is WhX (from an object); cf. the examples in (ia). Note that what is relevant is the **surface** position of the antecedent; cf. (iia).

(ii)iia. (?) which room did a man enter last night who had blond hair that you had just finished painting

iib. *which room did a man enter last night that you had just finished painting who had blond hair

(iii)iiia. ? which man entered which room last night that you had just finished painting who had blond hair

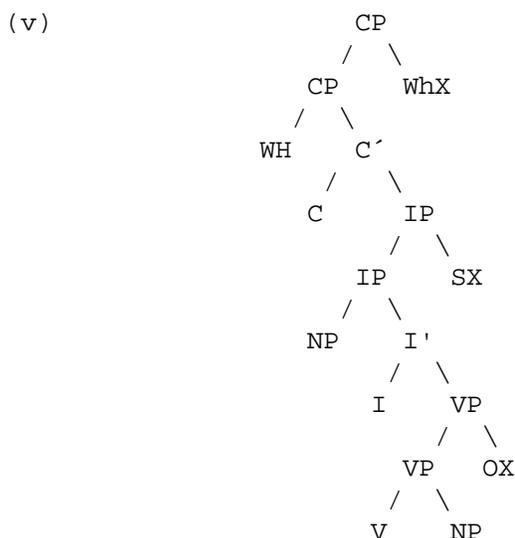
iiib. *which man entered which room last night who had blond hair that you had just finished painting

Finally, consider (iva), which shows that SX is attached closer to an object than is WhX.

(iv)iva. which article did you find on a table yesterday that was in the living room

that you claimed was written by your best friend
 ivb.*which article did you find on a table yesterday that you claimed was written
 by your best friend that was in the living room

A classical structure that will yield these results is given in (0).



Constituency tests such as VP Ellipsis, VP Topicalization, and pseudo-cleft give results that are consistent with this structure, but they are consistent with plausible alternatives, so we will not discuss them here.

Finally, the potential for coreference under Condition C of the Binding Theory is compatible with the same differences in adjunction positions.

(vi)*She_i invited many people to the party that Mary_i didn't know.

(vii)vii.a.I sent her_i many gifts last year that Mary_i didn't like.

vii.b.*I sent her_i many gifts that Mary_i didn't like last year.

(CR)

Example (0) shows that the subject c-commands OX. Example (0) shows that a direct object does not c-command OX, while the same direct object does c-

command the unextraposed relative clause in (0).¹ It is not possible to construct a relevant example test whether the subject c-commands SX, because the subject itself would have to be pronominal.

The following show that the subject does not c-command WhX.

(1)a.*She_i [_{VP}[_{VP}invited several people to the party] [_{CP}that Mary_i didn't like]].

¹ As pointed out to us by Bob Levine, our account of (0) presupposes that there cannot be any "vacuous" extraposition, in which the relative clause is adjacent to the head noun but adjoined to the VP. Levine also notes that there may be some question as to the ungrammaticality of (0), in view of the relatively greater acceptability of examples such as the following.

(1)I offered her_n many gifts from Central Asia that Mary_i didn't like

In these examples, it appears that the PP internal to NP is sufficient to permit coreference. If this is the case, then it is not clear that a similar effect is not in effect in (0). Hence it is possible that vacuous extraposition is possible. Note that this possibility cannot be ruled out on the account of Culicover and Rochemont (1990).

An alternative hypothesis is that a dative pronominal does not c-command to the right in VP. This possibility would appear to be falsified by examples such as the following.

(2)a.*I told her_n that Mary_i would win
 b.*I offered her_n Mary_i's favorite food
 c.*I gave her_n some flattering pictures of Mary_i

The contrast between the examples in (a) and (0), and recalls the contrast between arguments and adjuncts noted by Lebeaux (1988) in connection with anti-reconstruction effects, as in (a).

(3)a.which gifts from Central Asia that Mary_i didn't like did she_i try to sell to someone else
 b.?which of Mary_i's favorite foods did she_i prefer
 c.*which pictures of Mary_i did she_i like best

Lebeaux' observation is that pronominal subjects appear to produce condition C effects with R-expressions in fronted arguments but not adjuncts. The facts in (0) and (a) suggest that dative pronouns produce condition C effects in R-expressions to the right of them that are in argument position, but not those that are in adjuncts. A related point is made in footnote **Error! Bookmark not defined.**

b. How many people did [_{IP}she_i invite to the party] [_{CP}that Mary_i didn't like]?
(based on CR)

Now let us show that the distance between the relative clause and its antecedent is bounded. (0) shows that a higher subject c-commands OX on an embedded object, while (0) shows that a higher subject c-commands WhX on an embedded interrogative. (0) shows that a higher subject c-command SX on an embedded subject. So an extraposed relative clause cannot appear adjoined to a clause that contains the antecedent.

(2)a.*[She_i said [that I sent her_i many gifts last year]][that Mary_i didn't like]
 b.*[She_i wondered [how many people [_{IP}she_i invited to the party]]][_{CP}that Mary_i didn't like]
 c.*[He_i said [that a man came into the room]][that John_i didn't like]
 (based on CR)

We emphasize that it is the surface position of the antecedent that is relevant; compare (0) with (0).²

(1) Which man did he_i say came into the room that John_i didn't like

² Bob Levine has pointed out to us that the absence of a Condition C violation in (0) appears to parallel the anti-reconstruction facts discussed by Lebeaux (1988) (see also footnote **Error! Bookmark not defined.**).

(1)a. which man that John_i didn't like did he_i say came into the room
 b.*whose claim that John_i was a spy did he_i refuse to acknowledge
 (2)a. which man did he_i say came into the room that John_i didn't like (= (0))
 b.*whose claim did he_i refuse to acknowledge that John_i was a spy

If the adjuncthood of the relative clause is responsible for the absence of a Condition C violation in (0), and not its adjunction site, then our argument is somewhat weakened. On the other hand, it is possible that in (0) the extraposed complement is adjoined above the subject, but because it is an argument it undergoes reconstruction, which feeds Condition C.

In this case, the higher adjunction of the complement would not be sufficient to allow it to avoid Condition C, while the higher adjunction of the relative clause would be.

And *wh in situ* cases are determined by the surface position of the *wh*-phrase.

- (2) a. *Who told her_i that Sam was taking a student to the dance [_{CP}that the teacher_i liked]?
- b. *Who told her_i that Sam was taking [which student] to the dance [_{CP}that the teacher_i liked]?
- (CR)

1.2. Result clauses

Continuing to make the same assumptions about phrase structure, we can show from the coreference data that result clauses also have their boundedness determined by the position of their antecedent. In this case, however, the antecedent is *so* in its LF position. In the following examples, we show that the subject pronoun fails to c-command ROX (a result clause with an object *so* antecedent).

- (3)a. *she_i met few people at the party who Mary_i upset
- b. she_i met so few people at the party that Mary_i was upset
- (based on Guéron and May 1984 (GM))

In fact, ROX, and RSX can be higher than a pronominal in a higher clause.

- (4)a. *I told her_i that the concert was attended by many people last year that made Mary_i nervous.
- b. I told her_i that the concert was attended by so many people last year that I made Mary_i nervous.
- (GM)

- (5)a. *She_i told me that the concert was attended by many people last year that made Mary_i nervous.
- b. She_i thought that the concert was attended by so many people last year that Mary_i decided not to go this year

Different LF attachments of *so* turn out to correlate with different surface attachments of the result clause.

- (6) Mary believes that Harry_i is so crazy that he_i acted irrationally

(GM)

This sentence is ambiguous. It can mean either that Mary has the belief that Harry is so crazy that he acted irrationally, or the extent that Mary believes that Harry is crazy is such that he acted irrationally. Now consider coreference. If the result clause contains an NP that is coreferential with a pronominal subject of *believes*, the ambiguity will disappear, since to get this coreference relation, the result clause **must** be adjoined to the higher clause.

(7)She_j believes that Harry_i was so crazy that Mary_j left him_i

If *so* is contained within an LF island, and the result clause is outside that island, then the example should be strictly ungrammatical, which it is.

(8)a.[[That so many people ate cheesecake] that we had to order more] surprised
us

b.*[That so many people ate cheesecake] surprised us that we had to order more
(RC)

In the next example, the *wh*-island blocks extraction of *so* to the higher clause, so the result clause can only be attached to the lower clause; hence there is no ambiguity (cf. (0)).

(9)Mary wondered who_i was so crazy that he_i acted irrationally

Adding coreferentially restricts the possible locations of RX in expected ways.

(10)a.She_i claimed that so many people left that Mary_i must have been lying

b.*She_i made the claim that so many people left that Mary_i must have been lying

(11)a.She_i tried to do so many pushups that Mary_i hurt herself

b.*She_i bent to do so many pushups that Mary_i hurt herself

(12)She_j hurried out after eating so much food that Mary_i must have been sick

(RC)

In all of these cases the coreference requires that the result clause be outside of the clause that contains the *so*, because it has to be higher than the pronominal. If

so is prevented from moving, ungrammaticality or unambiguity results.

On the basis of these data, we can state the following generalization: **The height of attachment of an extraposed phrase is determined by the position of its S-structure or LF antecedent.** This means that the extraposed clause can be no higher in the tree than its antecedent, and it must be at least as high as its antecedent. The precise interpretation of "high" depends on independent assumptions about what the structures actually are. Given classical assumptions, the extraposed clause must be adjoined to the lowest maximal projection that contains the antecedent; given other assumptions, which we will discuss, the generalization would be implemented somewhat differently, consistent with the differences in attachment that we have noted.

2. The Complement Principle

Let us now consider the question of what regulates the height of attachment of extraposition. Assume a movement analysis. That the extraposed constituent must be adjoined at least as high as the antecedent follows directly from Proper Binding. That the extraposed constituent can be adjoined no higher than the maximal projection that contains the antecedent does not follow from any independent constraints on movement. Subjacency allows in principle for unbounded movement, and is therefore too weak. Ross's Right Roof Constraint is also too weak, in that it does not guarantee that a clause extraposed from an object will adjoin no higher than to VP (Baltin 1981). It is also too strong, in that it prevents result clauses from being adjoined high enough, in cases where the *so* antecedent escapes from its clause at LF (cf. (0)).³ Given these difficulties, Guéron and May (1984) propose, adapting Guéron (1980), that the height of attachment of an extraposed phrase is regulated by a principle that requires a local relation between the extraposed phrase and its S-structure or LF antecedent. This principle is referred to by Culicover and Rochoment (1990) as the Complement Principle. For present purposes, the CP has the following formulation.

(i) *Complement Principle*: An extraposed phrase must be adjoined to the minimal maximal projection that contains its antecedent.

³ These observations motivate Baltin's (1981) Generalized Subjacency.

3. Extraposition is not rightward movement

Once we have a principle such as the CP that guarantees the bounding effect for extraposed constituents, the question then arises as to what purpose is served by a movement analysis of extraposition. Note that under classical assumptions, an adjunct can be freely generated to the right, subject only to the condition that it be given a proper interpretation at LF (PFI, Chomsky 1986). This condition is satisfied by the CP, and so it relates the bounding effects for extraposition to the need for full interpretation.

The argument against movement is reinforced by the observation that a movement analysis is incompatible with well-established restrictions on movement. In particular, extraposition from subject violates Subjacency / CED. Result clause extraposition can violate the Right Roof Constraint, and result clause extraposition is sometimes unbounded, while relative clause extraposition never is.

Given that there is no need for a rightward movement analysis in order to capture the bounding properties and the interpretation of extraposed clauses (independently accomplished by the CP), Culicover and Rochment (1990) argue from Occam's Razor that a base-generation analysis of extraposition constructions is to be preferred.

4. Leftward movement

Having eliminated rightward movement of extraposition constructions, let us now consider some leftward movement alternatives to base generation. We will see that all of these alternatives share with the base generation analysis the property that the extraposed constituent does not undergo movement into its S-structure position. On all of these alternatives we will assume that there can only be "cascade" structures (using Pesetsky's terminology) with strict binary right branching.

The following three requirements will be used to test these alternatives. (i) On any analysis, it must be the case that a dative indirect object fails to c-command a clause extraposed from a direct object (cf. (0)). (ii) For WhX, on any analysis, it must be the case that a subject fails to c-command a clause extraposed from a *wh*-phrase in its COMP. (iii) For RX, on any analysis, it must be the case that a result clause is not c-commanded by the subject of the clause that its *so*-

antecedent takes scope over.

4.1. Stranding

On the first alternative, extraposed relatives originate within the NP and are stranded by leftward movement of the rest of the NP, on a par with Sportiche's (1988) analysis of Q-Float in French. We call this the Stranding Analysis.

The Stranding Analysis violates requirement (i). This is so, because an indirect object always c-commands a direct object in a double object construction.

Under the Stranding Analysis the direct analysis must c-command the stranded (extraposed) relative. (Cf. (viia)).

(ii)...

NP_{IO}

NP_{DO}

[t_{DO} EX] ...

Hence a pronominal IO will always c-command a relative clause in the DO, whether it is stranded or not.

Requirement (ii) appears to raise a similar difficulty for this analysis, if the stranded relative is stranded in an argument position that was occupied by the *wh*-phrase and c-commanded by the subject.

Requirement (iii) would appear to be irrelevant to the Stranding Analysis. We can see no way in which a result clause can be stranded under leftward movement of an antecedent.

There is a further argument against the Stranding Analysis. As shown by the following examples, it is possible to extrapose a relative clause from the NP complement of an L-marked PP (Baltin 1978).

(iii)iiia. I found the article in a magazine yesterday that was on the coffee table.

iiib. John talked to several people at the party who have blond hair.

On the Stranding Analysis, the preposition and the antecedent of the relative clause must form a constituent that undergoes leftward movement while

excluding the relative clause. That is, the bracketing would have to be something like that in (0).

(iv)[_{VP} found [_{NP} the article] [_{PP} in [_{NP} a magazine]]][that was on the coffee table]]

But such a bracketing, where P-NP is a constituent, is clearly not correct, as shown by the following. P-NP without the extraposed clause does not undergo leftward movement.

(v)va.*In which magazine did you see it which was on the table?
vb.*I noticed the mistake in a picture suddenly that had been taken of Ronald Reagan.

(Example (0) is taken from Baltin (1978:82).)

While there may be other problems with the Stranding Analysis (for example, how to capture the relative ordering of the extraposed relative and other VP constituents), we consider the violation of requirement (i) sufficient reason to reject this alternative.

4.2. Low adjunct

On the second alternative, an extraposed constituent originates as a low, relatively rightmost adjunct in a Larsonian-type cascade structure. We call this the Low Adjunct Analysis (LAA). This analysis can readily generate both relative and result clause extraposition. However, it faces the same difficulties as the Stranding Analysis. Every argument that precedes the extraposed phrase must c-command it, in violation of requirements (i), (ii) and (iii).

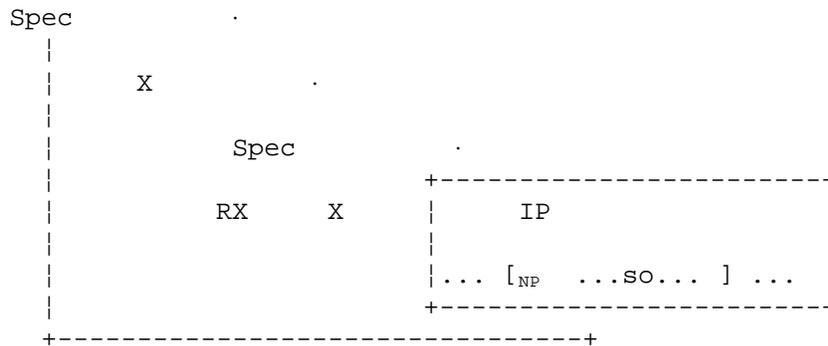
(vi) ...



4.3. High specifier

On the third alternative, an extraposed phrase originates in a specifier position higher than a specifier position that is the ultimate landing site of its antecedent. We call this the High Specifier Analysis. The phrase containing the antecedent then raises, perhaps to a still higher Specifier position. (0) illustrates for the RX case.

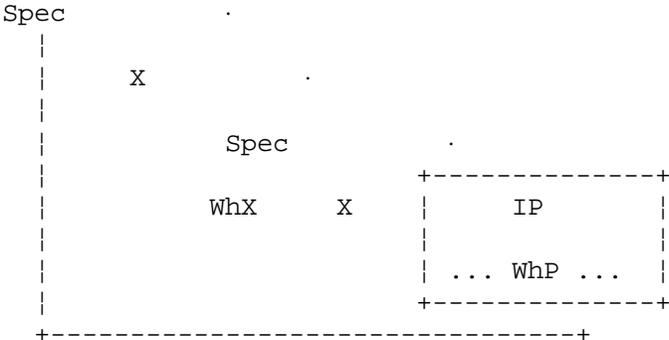
(vii) ...



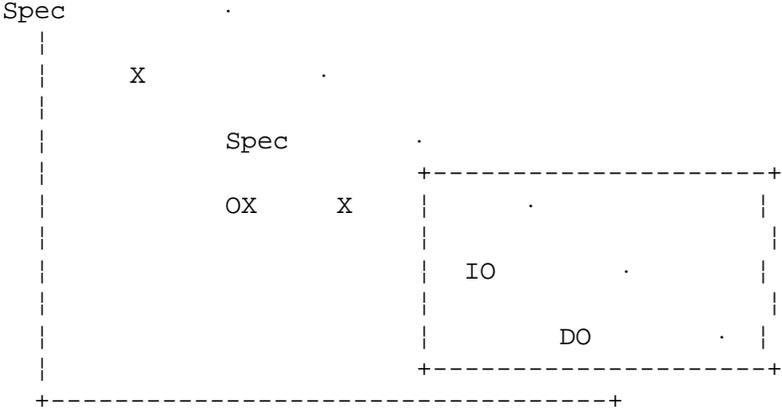
A variant of this analysis is one in which the moved constituent adjoins to the Specifier containing the extraposed phrase. What is crucial in either alternative is that the extraposed clause actually originates higher and **to the left** of its antecedent, and a phrase containing the antecedent moves to the left of the extraposed clause.

We must assume that some principle like the CP guarantees the proper interpretation of the result clause, and that the structure in (0) appears at the appropriate level of clausal embedding. Comparable structures have to be assumed for extraposed subject and object relatives, *mutatis mutandis*.

(viii) ...



(ix) ...



One virtue of this analysis is that it readily captures the relative order of relative clauses and other extraposed constituents. It also satisfies our three requirements. Since the relevant arguments will always be contained in a projection that excludes the extraposed constituent (the boxed constituent in each structure), they will always fail to ccommand the extraposed constituent. In effect, leftward movement is producing the mirror image of the underlying order

without disturbing the crucial c-command relations. We say "crucial" because certainly the structure in this case is different from the adjunction structure that we assumed in the classical approach. But it is possible to define a type of c-command such that the Specifier containing the extraposed clause c-commands the constituent containing the antecedent.

Of the three alternatives that we have considered, this last one is the only one that seems viable given the evidence that we have discussed. We emphasize that while this is a leftward movement analysis, as opposed to base generation, it too requires a version of the CP. This analysis remains incomplete, of course, without (a) some account of why the boxed phrase must move, (b) independent motivation for the structures assumed, and (c) an explanation of what licenses the required movements, e.g. movement of IP across RX into a higher Spec in (0).

5. HNPS and PTI

5.1. Properties

We cite here six properties of Heavy NP Shift (HNPS) and Presentational There Insertion (PTI) that are consistent with the heavy NP (HNP) moving to a right-adjoined A' position. First, HNP is an adjunct, as shown by the fact that nothing can be extracted from it, either in PTI or HNPS.

(x)xa.*Which famous actor did there appear in the newspaper a picture of?

xb.*Which famous actor did a picture of appear in the newspaper?

(xi)xia.John noticed a picture of his mother on the wall.

xib.John noticed on the wall a picture of his mother.

xic.Who did John notice a picture of on the wall?

xid.*Who did John notice on the wall a picture of?

(xii)xiaa.Who did John sell Mary a picture of?

xiib.*Who did John sell to Mary a picture of?⁴

(Wexler and Culicover 1980; Rochemont and Culicover 1991)

Second, an NP in indirect object position cannot undergo HNPS, just as a *wh*-

⁴ There are those who do not share our judgments about this example. To us the difference in grammaticality illustrated here is very sharp.

phrase in this position cannot undergo *wh*-Movement (Larson 1988:354). This suggests that HNPS, like *wh*-Movement, is A'-movement. A-movement of the dative NP is possible, of course.

- (i)ia. Bill gave John t yesterday the book that he was looking for
- ib. What did Bill give John t yesterday
- ic. *Bill gave t the book yesterday anyone who wanted it
- id. *Who did Bill give t the book yesterday
- (ii) Bill was given the book

Third, in HNPS, the HNP licenses a parasitic gap, which suggests that it is in an A' position.⁵

- (i) I filed t without reading pg [all of the reports that you gave me]

Fourth, HNPS and PTI appear to "freeze" the constituent from which the HNP is "shifted", as shown by the following.

- (ii)ia. Who did John give the picture that was hanging on the wall to t?
- iib. *Who did John give to t the picture that was hanging on the wall?
- (iii)iiia. *Which room did there enter t a man with long blond hair?
- iiib. *I don't remember which room there walked into t a man with long blond hair.
- iiic. (*) Did there walk into the room a man with long blond hair?
- iiid. *This is the room that there walked into a man with long blond hair.

In RC we argue that HNPS does not freeze the entire VP, because of examples like the following.

- (iv)iva. For whom did Bill purchase t last week an all expense paid ticket to Europe?
- ivb. I don't remember for which of his sisters Bill bought in Europe t a Fourteenth Century gold ring.
- ivc. This is the woman from whom Bill purchased t last week a brand new

⁵ PTI cannot in principle license a parasitic gap because the HNP is a subject.

convertible with red trim.

But as Bresnan (1994) observes, we did not consider the possibility that the extracted phrase is moved from a position following the HNP. Therefore, let us provisionally accept the proposal originally made by Wexler and Culicover (1980) that HNPS freezes the VP.⁶ Given this, the important point is that the freezing effect in PTI is different from that in HNPS, since in PTI, the entire clause is frozen, while in HNPS only the VP is frozen, as extraction of the subject and SAI show in (ia).

- (i)ia. Which of these people purchased from you last week an all expense paid ticket to Europe?
 ib. Did Bill buy for his mother anything she really liked?

Note that in comparison, extraposition of relative clauses from PP is possible (cf. (iia)).

It should be clear how these four properties will follow directly from a rightward adjunction account. There are two additional properties of a somewhat different character that also suggest that HNPS and PTI involve movement. First, HNPS out of a PP is impossible (Ross 1967).

- (ii)ia. *I found the article in t yesterday [the magazine that was lying on the coffee table].
 iib. *John talked to t at the party [several people who had blond hair].
 (Rochemont 1992)

And HNPS and PTI are clause-bounded.

⁶ Bob Levine (p.c.) points out that Johnson (1985) argues against Bresnan's point using examples such as the following.

- (i) Robin is a person [at whom]_i I consider t_j excessively angry t_i [a whole gang of maniacal Tolstoy scholars]_j.

Here, the PP must originate to the left of the shifted NP, yet the VP does not appear to be frozen. If sentences such as these are in fact generally grammatical, then the difference adduced in the text between PTI and Heavy NP Shift in terms of freezing does not exist.

- (iii)iii.a. It was believed by everyone that Mary bought t for her mother [an ornate gold ring]
 iiib.?It was believed that Mary bought t for her mother [an ornate gold ring] by everyone
 iiic.*It was believed that Mary bought t for her mother by everyone [an ornate gold ring]
 (iv)iva. It was believed by everyone that there walked into the room [a man with long blond hair]
 ivb.?It was believed that there walked into the room [a man with long blond hair] by everyone
 ivc.*It was believed that there walked into the room by everyone [a man with long blond hair]
 (Rochemont 1992)

Rochemont and Culicover 1990 account for the boundedness illustrated by these properties with a version of the Rightward Movement Constraint. Unlike Ross' (1967) Right Roof Constraint, which accounts only for clause-boundedness, our constraint requires that rightward movement be phrase-bounded.

5.2. Problems with leftward Movement

5.2.1. Predicate raising

Let us consider how these properties could be accounted for on a leftward movement account. On the first alternative, which we will call Predicate Raising (PR), the heavy NP remains *in situ* in a Specifier position, and the predicate consisting of the verb and other VP constituents moves into a higher empty V position (Larson 1988;1990). There is a natural extension of this analysis to PTI (in unpublished work by Larson).

- (v)va. Sam [_v stored] all the things he valued t_v in a vault
 vb. Sam [_v stored in a vault] all the things he valued t_v
 (vi)there [_v entered the room] a man with a funny hat t_v

The difference between HNPS and PTI is that in former case, the subject NP moves to a Specifier position to the left of the verb and the HNP remains *in situ*,

while in PTI the subject NP itself is the HNP that remains *in situ*.

A virtue of this analysis is that it captures the fact that HNPS out of a PP is impossible. A predicate can be formed from a verb and its L-marked PP; there is no predicate that consists solely of the verb and the preposition of that PP (Larson 1988a).

The HNP in cases of PR ((0) and (0)) is in its canonical argument position. It cannot therefore be an adjunct, since extraction from this position is generally possible (cf. (xia)-(xiia)). Thus PR does not account for the first property noted above. It does account for the impossibility of HNPS of an indirect object in the double object construction on Larson's (1988) analysis; on this analysis, the constituent containing the verb and the direct object contains the trace of the indirect object, and is hence thematically saturated. The structure is given in (0).

(vii) [VP [V' [V ?] [VP Mary_i [V' [V' send t_i] a book]]]]

As a consequence, it cannot be reanalyzed as a V for the purposes of PR. But on this analysis it is not clear how to derive HNPS of the direct object.

(viii) I sent Mary t at Christmas [a book that I had bought]

On Larson's analysis, there is no V'-constituent that contains just *send Mary* that can undergo PR, stranding the direct object (see (0)).

Under the classical analysis of parasitic gaps, it would appear that the third property would not be correctly characterized by such an account. So a leftward movement account would have to either reanalyze the cases of parasitic gaps (Larson 1988b), or show that they are not true parasitic gaps (perhaps along the lines of Postal 1994).

Consider now the freezing effects. The PR analysis, which creates a complex predicate from the material that precedes the HNP at S-structure, predicts some but not all of these effects. It correctly predicts that the VP will be frozen in HNPS (Larson 1988a). However, it predicts that **only** the VP will be frozen in PTI, which is not the case.

In fact, if a PP is in "rightward scrambled" VP-final position, it too resists extraction.

(ix)ixa. Who did you buy a picture of Einstein for t last week

ixb. *Who did you buy last week for t a picture of Einstein

ixc.*Who did you buy last week a picture of Einstein for t

On an analysis in which the "shifted" constituents are *in situ* regardless of whether they are in VP-final or VP-internal position, it is not clear how to capture the differences in extraction possibilities.

So in summary, there are four problems with this version of a leftward movement analysis. First, it does not capture the adjunct status of the shifted NP. (In fact, it does not capture the adjunct status of a shifted PP, either.) Second, it does not explain the fact that HNPS cannot apply to an indirect object but can apply to a direct object. Third, it does not account for the fact that parasitic gaps are licensed in HNPS. And fourth, it does not capture the full range of freezing effects in HNPS and PTI (see (iia)-(ia) above).

5.2.2. Movement to high Specifier

There is a conceivable leftward movement account that might overcome all of the difficulties with the PR account. The basic problem with the PR account is that it cannot represent the "shifted" phrase as an adjunct. Let us suppose, therefore, that the "shifted phrase" moves leftward to a higher A' Specifier position, and that the phrase that it raises out of subsequently moves leftward to a still higher Specifier position. Again, a variant of this analysis is one in which the latter constituent adjoins to the Specifier containing the HNP.

(x)

Spec

NP_s X

Spec

X

Spec

V

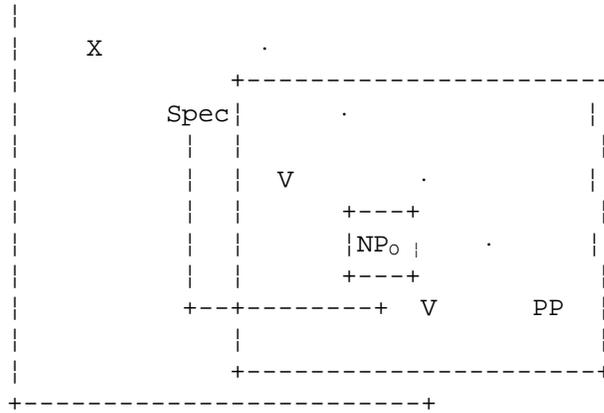
+---+

|NP_o|

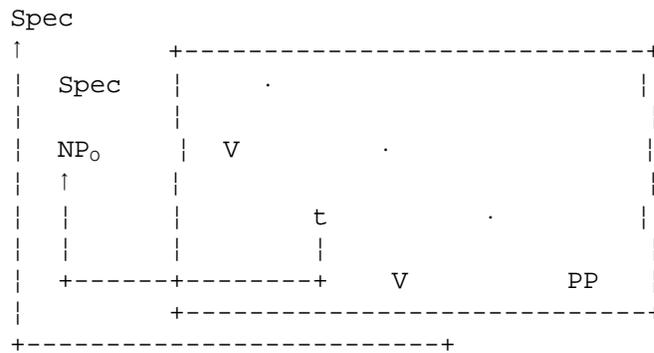
+---+

V

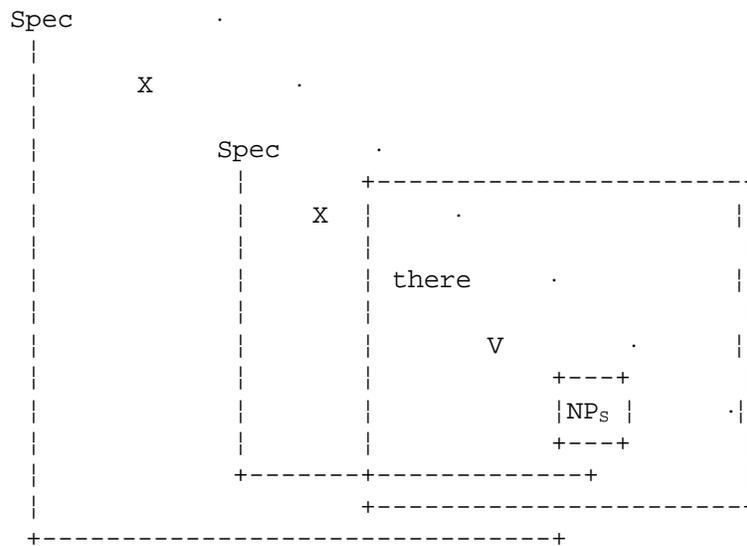
PP



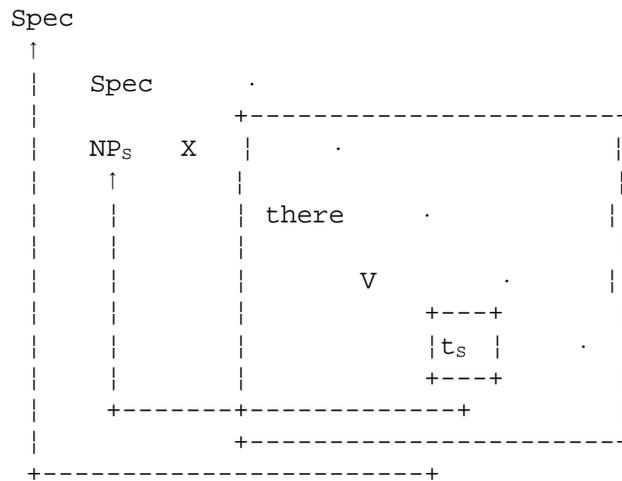
(xi)



(xii)



(xiii)



By treating HNPS as essentially an A' movement, this analysis directly captures the failure of extraction from the HNP, the possibility for parasitic gaps, the extractability of a direct object but not an indirect object, and the freezing of the constituent from which the HNP has been extracted, since after it undergoes leftward movement it, too, is an adjunct.

5.3. Phrase bounding

The Movement to High Specifier account faces some difficulties not encountered on the PR analysis. It fails to block HNPS from a PP, since in English, leftward movement from PP is not blocked. It also fails to block long extraction of the HNP. These are exactly the properties that on a rightward movement account are attributed to the Rightward Movement Constraint. Seen from this perspective, the rightward movement account and the MHS account have the same weakness: they must both provide for some means of phrase bounding that is thus far not independently motivated by any property of leftward movement. The equivalent of the Rightward Movement Constraint on

the MHS analysis must be a principle whose effect is to guarantee that the requisite functional structures to which the HNP and its containing phrase move are immediately above the containing phrase. Thus the cost of properly characterizing bounding appears to be equivalent in both accounts. There do not appear to be any empirical differences between the two, at least none that are tied to configuration. Our comparison of the leftward movement and rightward movement accounts shows that it is possible to reproduce on the leftward movement account the essential properties of the structures that would result from rightward movement. In principle, it appears that the two are notational variants of one another, *mutatis mutandis*, and there can be no empirical basis for choosing between them. Questions that remain open on the leftward movement account concern independent motivation of the required functional structure and the triggering and licensing conditions on the movements.

For example, in the structures that we proposed on the MHS analysis of HNPS, there is an open question as to whether and how the trace of the HNP is properly bound (see (0)), since the HNP does not c-command its trace. A parallel question arises in the licensing of parasitic gaps in HNPS, where the HNP fails to c-command the parasitic gap. In this account, we must suppose that neither proper binding nor the licensing of parasitic gaps makes reference to c-command. One can conceive of an equivalent notion to which these licensing conditions could make reference, e.g. the HNP will be in some type of *sister* relation to the constituent containing the trace or the parasitic gap. The sort of sister relation that might qualify is one in which the two sisters are dominated by all of the same lexical, but not functional, projections (Chomsky 1986:13).

6. Conclusion

Let us review. First, the language internal facts from English, at least, do not bear on the question of whether there is rightward and leftward movement, or just leftward movement. In fact, there is no empirical reason why there cannot be strict leftward branching, with rightward movement deriving all of the ordering and relative height facts, essentially the converse of the MHS analysis.

Second, the facts **do** bear on the question of what form such an analysis must take. For example, an account invoking leftward movement must be of the High Specifier type for both extraposition and heavy NPs. In particular, neither the Stranding analysis of extraposition nor the Predicate Raising analysis of HNPS under a leftward movement analysis give rise to an empirically adequate account,

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unless of course they involve movement to a high specifier as part of the derivation.

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