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# Asymmetries in Reconstruction

*Caroline Heycock*

It has been observed that reconstruction/connectivity appears to be obligatory for predicates, but optional for arguments. Huang (1993) has argued that this is because moved predicates obligatorily contain a trace of the subject; it follows that subjects must be generated within the smallest maximal projection of the predicate. This article argues, however, that the argument/predicate contrast is just a subcase of a referential/nonreferential contrast in reconstruction. Nonreferential phrases, including predicates, must take narrow scope at LF, whereas referential phrases can remain in their displaced positions. Assuming that the binding conditions apply at LF, the observed asymmetries are explained.

*Keywords:* reconstruction, connectivity, binding, VP-internal subjects, referentiality

## 1 Introduction

There is now a substantial body of work dealing with constructions where a fronted phrase may behave with respect to binding theory as though occupying some position lower than the one in which it appears at S-Structure: this is the phenomenon known as *reconstruction* or (more neutrally) *connectivity*.<sup>1</sup> There have been three main types of approach to this phenomenon. One class of analyses relies on literal reconstruction—lowering of a moved phrase, or some part of a moved phrase, at LF (Langendoen and Battistella 1982, Guéron 1984, Van Riemsdijk and Williams 1986, Clark 1992). A variant of this approach that uses a copy theory of traces and deletion, rather than lowering, is found in Chomsky 1993. A second class makes use of the traces left by movement to account for reconstruction effects on the basis of the S-Structure configuration (Guéron 1979, 1984,<sup>2</sup> Cinque 1982, Koster 1982, Hornstein 1984, Barss 1986, 1988). Finally, a

I am indebted to the anonymous *LI* reviewers for their helpful criticisms; to Bob Frank, Michael Hegarty, Anthony Kroch, Fred Landman, and Beatrice Santorini for discussion and judgments; and to the members of the Jersey Syntax Circle and audiences in Paris, in Ithaca, and at WCCFL XII for their comments and suggestions.

<sup>1</sup> Recent work has adopted *reconstruction* as the term to describe this phenomenon, even when literal reconstruction is not proposed as the analysis. In this article I will follow this practice, attempting to avoid confusion by using the term *reconstruction effects* as a neutral description when the context might not disambiguate.

<sup>2</sup> The analysis in Guéron 1984 proposes both literal reconstruction (for Condition C violations) and trace-mediated binding (for binding of anaphors and pronouns).

third class proposes that the binding conditions apply (at least) at some level or levels before *wh*-movement (Van Riemsdijk and Williams 1981, Lebeaux 1988, 1990, 1991).

As pointed out by Cinque (1984), Barss (1986, 1988), and, most recently, Huang (1993), reconstruction appears to affect arguments and predicates differently: the latter, but not the former, behave with respect to the binding conditions as though obligatorily reconstructed to their D-Structure positions. Huang goes on to use this distinction as an argument for a particular version of the VP-internal subject hypothesis: the subject originates within the smallest maximal projection of the predicate, which therefore always contains a trace of it if the subject is forced to move for Case or other reasons.

In this article I will argue, however, that this contrast between arguments and predicates is part of a more general pattern of contrast between referential and nonreferential phrases, in the sense of "referential" that has been shown by Comorovski (1989), Kroch (1989), Rizzi (1990), Cinque (1990), and Longobardi (1991) to be relevant to extraction possibilities. I will argue that the contrast comes about because the relevant part of a nonreferential phrase is forced to reconstruct—to lower—at LF in order for the sentences to receive the correct interpretation. It follows from this analysis that LF lowering feeds Condition C of the binding theory, as suggested independently by Clark (1992). It will also be seen to follow that the behavior of predicates with respect to reconstruction does not constitute evidence for the necessary existence of a trace in the specifier position of the fronted predicate, and, moreover, that there are data inconsistent with this analysis.

## 2 Apparent Predicate/Nonpredicate Asymmetries

### 2.1 *The Asymmetries and Proposed Accounts*

Cinque (1984) and Barss (1986) note an apparent predicate/argument asymmetry in reconstruction effects: essentially, fronted predicates, unlike arguments, behave with respect to binding theory as though obligatorily moved back to their D-Structure positions. Thus, although an anaphor contained in an argument fronted out of a subordinate clause can find its antecedent either in the matrix or in the subordinate clause, an anaphor contained in a predicate can only be bound by the subject of the clause in which it originates.

- (1) a. [Which pictures of himself<sub>*i*/j</sub>]<sub>*k*</sub> did John<sub>*i*</sub> think that Bill<sub>*j*</sub> admired *t<sub>k</sub>*?
- b. [Pictures of himself<sub>*i*/j</sub>]<sub>*k*</sub>, John<sub>*i*</sub> thinks that Bill<sub>*j*</sub> is unlikely to admire *t<sub>k</sub>*.
- (2) a. [How proud of herself<sub>*\*i*/j</sub>]<sub>*k*</sub> did Alice<sub>*i*</sub> think that Barbara<sub>*j*</sub> should be *t<sub>k</sub>*?
- b. [Criticize herself<sub>*\*i*/j</sub>]<sub>*k*</sub>, Alice<sub>*i*</sub> thinks that Barbara<sub>*j*</sub> will not *t<sub>k</sub>*.

Similarly, whereas an R-expression embedded in a fronted argument may be coindexed with a phrase that c-commands the trace of the displaced phrase, an R-expression embedded in a fronted predicate may not.

- (3) a. [Which allegations about John<sub>*i*</sub>]<sub>*j*</sub> do you think he<sub>*i*</sub> will deny *t<sub>j</sub>*?
- b. [Those allegations about John<sub>*i*</sub>]<sub>*j*</sub>, I think he<sub>*i*</sub> will deny *t<sub>j</sub>*.

- (4) a. \*[How proud of John<sub>i</sub>]<sub>j</sub> do you think he<sub>i</sub> is t<sub>j</sub>?  
 b. \*[Proud of John<sub>i</sub>]<sub>j</sub>, I don't think you can accuse him<sub>i</sub> of being t<sub>j</sub>.

The grammaticality of examples like those in (3) constitutes the *antireconstruction* effect discussed by Van Riemsdijk and Williams (1981).

## 2.2 Binding Paths and the Thematic Completeness Requirement

This contrast between arguments and predicates has been accounted for in three principal ways. Barss (1986, 1988) argues against a literal interpretation of the term *reconstruction*. To account for the pattern of anaphor binding, he proposes a revision of binding theory that determines possible antecedents for expressions by defining sequences of nodes in a tree—*binding paths*—such that a possible antecedent must be a sister to some node in a binding path.<sup>3</sup> In order to prevent VPs and other predicates from defining binding domains (and also to capture the limitations on binding associated with movement of predicates), Barss adds a *Thematic Completeness Requirement* that restricts binding paths so that no node with an unsaturated  $\theta$ -grid may be part of a binding path P unless the node at which the grid is saturated is also part of P. To get some idea of the effect of this, consider the following sentence:

- (5) \*John wonders [<sub>AP</sub> how proud of himself]<sub>j</sub> Mary<sub>i</sub> is [<sub>AP</sub> t<sub>i</sub> [<sub>AP</sub> t]<sub>j</sub>].

The AP node of the fronted constituent containing the anaphor is necessarily part of the binding path for the anaphor. Since this node has an unsaturated  $\theta$ -grid (the subject  $\theta$ -role is not assigned), the embedded IP must also be part of the path. Because of an additional constraint on minimality (which captures a locality requirement similar to the idea of *minimal CFC* in the system of Chomsky 1986) this in turn entails that the only possible antecedent is *Mary*. Now consider (6).

- (6) John wonders [<sub>NP</sub> which pictures of himself]<sub>j</sub> Mary saw [<sub>NP</sub> t]<sub>j</sub>.

In this example the embedded IP is not required to be part of every well-formed binding path for the anaphor, since the NP node of the fronted constituent does not have an unsaturated  $\theta$ -grid. This has the result that there is a well-formed minimal path where the matrix subject *John* is a possible antecedent. Thus, the Thematic Completeness Requirement has the effect that anaphors contained within moved predicates will always behave as though occupying their D-Structure positions.

In Barss 1988 there is no discussion of how Condition C should be reformulated in terms of binding paths. The initial proposal in Barss 1986 is a reformulation of Condition C according to which an R-expression X can be coindexed with another expression Y

<sup>3</sup> There are some changes in terminology between Barss 1986 and Barss 1988. I am using here the terms from the later paper.

so long as there is *some* binding path from X to the root node of the matrix,<sup>4</sup> no node in which is sister to Y. This formulation allows an R-expression in a fronted argument to corefer with a pronoun that c-commands the trace of movement, while disallowing this in the case of an R-expression inside a fronted predicate (Barss 1986:243). Later in the same work, however, and in his 1988 paper, Barss subsumes Condition C under the *Chain Obviation Condition (COC)*, which essentially states that the head of a chain may not bind an element that c-commands any member of the chain (Barss 1986:346). This condition still allows R-expressions properly contained within fronted arguments to corefer with elements that c-command the trace of the movement (antireconstruction), but it does not appear to distinguish between this case and that of fronted predicates, thus losing an account for the failure of R-expressions in fronted predicates to so corefer.

One might of course consider retaining both the COC and the reformulation of Condition C in terms of binding paths/accessibility sequences.<sup>5</sup> Such a proposal would capture the distinction between arguments and predicates. There is, however, a conceptual problem. Consider the examples in (7) and (8).

- (7) a. \*Him<sub>i</sub>, John<sub>i</sub> admires.  
 b. \*How proud of him<sub>i</sub> is John<sub>i</sub>?  
 c. \*He<sub>i</sub> admires John<sub>i</sub>.  
 d. Whose stories about him<sub>i</sub> does John<sub>i</sub> enjoy most?
- (8) a. \*John<sub>i</sub>, he<sub>i</sub> admires.  
 b. \*How proud of John<sub>i</sub> is he<sub>i</sub>?  
 c. \*He<sub>i</sub> admires John<sub>i</sub>.  
 d. Which stories about John<sub>i</sub> does he<sub>i</sub> enjoy most?

Under the account in Barss 1988 (7a–c) are all ruled out by the reformulated Condition B (a pronominal is disjoint in reference from all minimally accessible NPs);<sup>6</sup> (7d) is grammatical because the only NP minimally accessible to the pronoun is *whose*. Now let us consider (8), under the assumption that we are retaining both the COC and the reformulated Condition C. (8a) is ruled out by the COC (but not by Condition C); (8b)

<sup>4</sup> Barss actually requires that the binding path (accessibility sequence, in the 1986 terminology) extend to the matrix IP node, but he appears at this point in the text to be assuming that fronted expressions are immediately dominated by IP, rather than CP, so that the matrix IP node is the root node of the matrix.

<sup>5</sup> As suggested by an anonymous reviewer, this may have been Barss's own intention. Barss does, however, state that the COC "allows the elimination of Condition C as a separate principle of the grammar" (p. 260), and he later considers and explicitly rejects the possibility that Rizzi's (1982) Local Binding Condition on chains (the basis of the COC) and Higginbotham's (1985) Condition C\* (a reformulation of Condition C in terms of obviation rather than disjoint reference) should be retained as separate principles, given the redundancy resulting from their overlap (pp. 343–347); the COC is proposed as a combination of both.

<sup>6</sup> Examples like (7a) and (8a) are of course both examples of "strong crossover" and might therefore be argued to be ungrammatical because the NP in subject position binds the trace of *wh*-movement—a violation of Condition C, under the assumption that the trace of *wh*-movement is an R-expression. Barss argues strongly against this assumption, however, partly on the basis of the grammaticality of examples like (i) and the ungrammaticality of examples like (ii).

- (i) Himself<sub>i</sub>, John<sub>i</sub> likes *t<sub>i</sub>*.  
 (ii) \*[Which picture of which man<sub>i</sub>]<sub>j</sub> did he<sub>i</sub> like *t<sub>j</sub>*?

is ruled out by Condition C (but not by the COC); (8c) is ruled out both by Condition C and by the COC; (8d) is grammatical because it violates neither. This lack of parallelism between the reformulated Condition B and the proposed reformulation of Condition C—in particular, the fact that Condition B rules out (7a), whereas Condition C does not rule out (8a)—seems to be a weakness of this approach.

### 2.3 Predicate-Internal Traces

Huang (1993) argues that the distinction between arguments and predicates follows from the obligatory presence of the trace of a subject in the latter, as illustrated in (9).

- (9) a. \* $[_{VP} t_i [_{V'} \text{criticize John}_i]]_j$ , I said  $he_i$  should not  $t_j$ .  
 b. \* $[_{AP} t_i [_{A'} \text{how proud of John}_i]]_j$  do you think  $he_i$  should be  $t_j$ ?  
 c.  $[_{AP} t_j [_{A'} \text{how proud of himself}_{i/j}]]_k$  does  $Bill_i$  think that  $John_j$  is  $t_k$ ?

The argument goes as follows: the trace of the subject within the fronted phrase is the only possible antecedent for an anaphor contained within the phrase (and it also, evidently, c-commands any R-expression within the phrase); in addition, the trace must be co-indexed with the embedded subject in order to transmit a  $\theta$ -role to it. Consequently, an anaphor in a fronted predicate will always have to be coindexed with the embedded subject (via coindexation with the trace) and an R-expression will always have to be conindexated with it (via conindexation with the trace).

Given that the presence of the trace in the fronted constituent is crucial for this explanation, Huang argues that examples of VP-fronting like (9a) provide evidence that subjects are generated in a position that is internal to the smallest maximal projection of VP, since if they were generated as sisters to a maximal projection (as suggested, for example, in Koopman and Sportiche 1991), it should be possible to front this projection, leaving behind the trace of the subject.

- (10)  $[_{VP} \text{Criticize John}_i]_j$ , I said  $he_i$  should not  $[_{VP} t_i t_j]$ .

If this representation were possible, under Huang's analysis the fronted VP would be predicted to pattern just like an argument, contrary to fact.<sup>7</sup>

Huang notes also that fronted non-VP predicates behave exactly like fronted VPs. His examples (21b–c) are repeated here.

<sup>7</sup> It is of interest to note that Barss considers appealing to the presence of the trace of a subject in the fronted predicate, as Huang observes. Barss assumes that small clauses are adjunction structures, and he concludes, just as Huang does, that if this is the case, then there is no principled way of guaranteeing that the fronted constituent is not the smallest maximal projection—a projection that does not include a trace of the subject. Huang's solution is to retain the idea of binding by the trace of the subject, and hence to reject the assumption that the subjects of small clauses (in particular, the subjects of VPs) are base-generated as sisters of maximal projections; Barss's solution is to retain the assumption that small clauses are adjunction structures, and hence to reject the crucial use of a trace of the subject. What is lacking from Barss's argument is evidence in favor of the base generation of small clause subjects in positions outside the smallest maximal projection; this evidence is supplied, as will be shown below, by the existence of DP small clauses with filled specifier positions.

- (11) a. How proud of himself do you think John should be?  
 b. \*How proud of yourself do you think John should be?

This pattern obtains also in small clause constructions.

- (12) a. How proud of himself do you consider John?  
 b. \*How proud of yourself do you consider John?

Under Huang's assumptions this entails that the subject of the small clause must have originated in the specifier position of the predicative XP.

#### 2.4 Problems for the Predicate-Internal Trace Account

The proposal that the apparently obligatory reconstruction of predicates is due to the presence of a trace of the subject within the fronted predicate is attractive, but it handles only a subset of the predicate/argument contrasts that can be observed. Further, in some cases it predicts coreference to be impossible where it is in fact permitted.

*2.4.1 DP Predicates* The first type of contrast that poses a problem for the predicate-internal trace account involves predicate nominals. DPs with filled specifier positions can act as predicates.

- (13) a. His parents consider [<sub>DP</sub> Sally [<sub>DP</sub> Bill's best friend]].  
 b. Many pundits considered [<sub>DP</sub> Clinton [<sub>DP</sub> his own worst enemy]].

The important point about these examples in the present context is that not only is the subject of the small clause exterior to a maximal projection of Det at S-Structure, it cannot have been generated within the maximal projection of Det either, since the possessor phrase occupies the unique specifier position of DP (Fukui 1986, Abney 1987). Since there is therefore no trace of the subject of the small clause within the minimal DP, Huang's analysis predicts that a fronted DP predicate of this type should have the same reconstruction possibilities as a fronted argument. This prediction is not borne out.<sup>8</sup>

<sup>8</sup> An anonymous reviewer raises the objection that predicates such as *Bill's best friend* in (13a) may in fact have empty specifier positions available for base generation of a subject. Under this view presumably the possessive must be a modifier of some kind, in the same kind of position as a preverbal adjective; the reviewer points out that in Italian the possessive can cooccur with a determiner.

- (i) Gianni è il mio amico.  
 Gianni is the my friend  
 'Gianni is my friend.'

However, work such as that of Fukui (1986) has shown that languages may differ precisely in whether possessives occupy [Spec, DP] or some other position; the hypothesis that the possessive phrase in English does occupy this position and is licensed by a Case-assigning abstract Det accounts for its initial position, its complementary distribution with other (non-Case-assigning) determiners, and its uniqueness within the DP. If we assume an analysis where the possessive in examples like (13) is in the same type of position as an adjective, we lose all of these advantages, and we no longer have an account of the contrast between English and, for example, Japanese, with respect to all the features just noted.

A different objection that might be made to the structure given for (13) is that the subject of the small clause is in an adjoined position. I have argued elsewhere in favor of this analysis (Heycock 1991, 1994); however, for the purposes of the argument here it is not important whether the subject of the small clause is in fact adjoined to the DP or occupies the specifier position of some functional head. The important point here is that it did not originate within the minimal DP.



We cannot use anaphor binding as a diagnostic for reconstruction possibilities, since DPs with filled specifier positions do not in general allow binding from outside.

- (14) a. Kathryn<sub>i</sub> is always painting pictures of herself<sub>i</sub>.  
 b. ?Kathryn<sub>i</sub> didn't much like those pictures of herself<sub>i</sub>.  
 c. ?\*Kathryn<sub>i</sub> didn't much like Graeme's pictures of herself<sub>i</sub>.

Condition C effects can, however, be used. As illustrated in (3), fronting of an argument containing an R-expression at some level of embedding over a c-commanding coindexed phrase remedies Condition C effects, suggesting that reconstruction is not forced in this case.

- (15) a. \*She<sub>i</sub> would never betray Sally<sub>i</sub>'s worst enemy.  
 b. ?[Sally<sub>i</sub>'s worst enemy]<sub>j</sub>, she<sub>i</sub> would never betray t<sub>j</sub>.

The antireconstruction effect exhibited by (3a–b) and (15b) will be discussed in more detail below; here the crucial observation is that if the fronted DP is a predicate, there is no comparable improvement.<sup>9</sup>

- (16) a. \*I would never consider her<sub>i</sub> Sally<sub>i</sub>'s own worst enemy.  
 b. \*[Sally<sub>i</sub>'s own worst enemy]<sub>j</sub>, I would never consider her<sub>i</sub> t<sub>j</sub>.

Compare the acceptability of parallel examples without the Condition C violation.

- (17) a. I would never consider Sally<sub>i</sub> her<sub>i</sub> own worst enemy.  
 b. ?[Her<sub>i</sub> own worst enemy]<sub>j</sub>, I would never consider Sally<sub>i</sub> t<sub>j</sub>.

The structure of (16b) is as follows:

- (18) \*[<sub>DP</sub> Sally<sub>i</sub> [<sub>D'</sub> 's [<sub>NP</sub> own worst enemy]]]<sub>j</sub> I would never consider [<sub>DP</sub> her<sub>i</sub> t<sub>j</sub>]

Since the fronted predicate is a maximal projection, there is no reason why it should not front on its own, leaving the larger maximal projection containing the trace behind. Consequently, an explanation for the behavior of predicates in terms of a trace in the smallest maximal projection of the predicate does not extend to this contrast.<sup>10</sup>

<sup>9</sup> I owe these examples to Anthony Kroch.

<sup>10</sup> The examples in (15)–(17) are perhaps somewhat awkward. If it is agreed that the possibility of DP predicates with filled specifier positions indicates that the subject of a DP small clause *never* originates in the specifier position of the minimal DP, even when there is no possessor phrase occupying that position, then the same point can be made with the contrast in (i).

- (i) a. \*I consider her<sub>i</sub> the best judge of Sally<sub>i</sub>'s actions.  
 b. \*The best judge of Sally<sub>i</sub>'s actions, I do not consider her<sub>i</sub>.  
 c. The best judge of her<sub>i</sub> actions, I do not consider her<sub>i</sub>.

An anonymous reviewer points out that R-expressions in questioned adverbials show the same antireconstruction effect.

- (ii) \*How much faster than John<sub>i</sub> did he<sub>i</sub> see Mary running?

There is no obvious analysis of such examples in which the fronted adverbial contains a trace of the matrix subject; as the reviewer notes, these cases are therefore also seriously problematic for an account of the predicate/argument asymmetry along the lines proposed by Huang (1993).

2.4.2 *Obviation from the Matrix Subject* The second type of apparent predicate/argument contrast that is problematic for the predicate-internal trace account involves successive-cyclic movement. Since what forces noncoreference is the trace of the subject of the moved predicate, an R-expression inside a moved predicate is predicted to be free to corefer with the subject of any higher clause. This prediction is incorrect.

- (19) ?\*[How afraid of Margaret<sub>i</sub>]<sub>j</sub> do you think she<sub>i</sub> expects John to be t<sub>j</sub>?

In contrast, an argument moved from a lower clause may contain an R-expression coreferential with the subject of a higher clause.

- (20) [Which jokes about Margaret<sub>i</sub>]<sub>j</sub> do you think she<sub>i</sub> expects John to object to t<sub>j</sub>?

This point was already made in Barss 1986:242.<sup>11</sup>

2.4.3 *Unexpected Cases of Coreference* The final problem with the predicate-internal trace account is that there are grammatical cases of coreference that it rules out. Consider the following examples:

- (21) a. How pleased with the pictures Pollock<sub>i</sub> painted in his youth do you think he<sub>i</sub> really was?  
b. How afraid of the people Gore<sub>i</sub> insulted years ago do you think he<sub>i</sub> is now?

Under Huang's analysis, there must be a trace of the subject *he<sub>i</sub>* in the fronted predicate in both of these examples.

- (22) a. [<sub>t<sub>i</sub></sub> how pleased with the pictures Pollock<sub>i</sub> painted in his youth]<sub>j</sub> do you think he<sub>i</sub> really was t<sub>j</sub>?  
b. [<sub>t<sub>i</sub></sub> how afraid of the people Gore<sub>i</sub> insulted years ago]<sub>j</sub> do you think he<sub>i</sub> is t<sub>j</sub> now?

As discussed above, this is what is argued to account for the ungrammaticality of examples like those in (23).

- (23) a. \*How pleased with Pollock<sub>i</sub> do you think he<sub>i</sub> really was?  
b. \*How afraid of Gore<sub>i</sub> do you think he<sub>i</sub> is now?

But clearly, on this analysis, the coindexation in (21)–(22) should be just as bad as the coindexation in (23), just as the coindexation in (24) is no better than that in (25).

- (24) a. \*He<sub>i</sub> really was pleased with the pictures Pollock<sub>i</sub> painted in his youth.  
b. \*He<sub>i</sub> is afraid of the people Gore<sub>i</sub> insulted years ago.  
(25) a. \*He<sub>i</sub> was pleased with Pollock<sub>i</sub>.  
b. \*He<sub>i</sub> is afraid of Gore<sub>i</sub>.

<sup>11</sup> The Predicate Opacity Condition proposed by Williams (1980) lends itself to an account of the distinction between predicates and nonpredicates with respect to anaphor binding that is largely equivalent to Huang's. The problem posed by DP predicates with filled specifier positions is avoided in Williams's system, since binding is mediated by an index on the predicate, rather than by a trace. However, the problem posed by (19) remains.

The acceptability of the examples in (21) constitutes strong evidence that the approach adopted by Huang (1993) cannot be on the right track.

We have seen, then, that there are a number of unresolved problems for the proposal that the predicate/argument asymmetry is due to the presence of a trace of the subject in each predicate. The third approach to the contrast between arguments and predicates is that proposed by Reinhart and Reuland (1993); this will be discussed in the next section.

### 3 Antireconstruction

The phenomena discussed in section 2.4 involve Condition C of binding theory, rather than Condition A. That is to say, what is at issue is the circumstances under which an R-expression in a fronted phrase may or may not corefer with a pronoun c-commanding the trace of the movement, rather than the circumstances under which an anaphor can be bound. For the remainder of this article, we will be concerned only with such Condition C effects.

The reason for temporarily putting aside the issue of anaphor binding is that recent research has indicated that there may be a crucial difference between reflexives that are arguments of a predicate and all other reflexives (Pollard and Sag 1992, Reinhart and Reuland 1993). If these authors are correct, then a large proportion of what have been thought of as predicate/argument contrasts in the reconstruction of reflexives should in fact be attributed to the types of anaphora involved. Consider for example the contrast between (1a) and (2a), repeated here as (26a) and (26b).

- (26) a. [Which pictures of himself<sub>i/j</sub>]<sub>k</sub> did John<sub>i</sub> think that Bill<sub>j</sub> admired  $t_k$ ?  
 b. [How proud of herself<sub>\*i/j</sub>]<sub>k</sub> did Alice<sub>i</sub> think that Barbara<sub>j</sub> should be  $t_k$ ?

Barss (1986, 1988) and Huang (1993) attribute the more restricted binding possibility in (26b) to the fact that it is a predicate, rather than an argument, that has been moved. However, note that in (26a) the anaphor and the subject of the embedded clause are not coarguments of a single predicate, whereas in (26b) they are. Under either of the analyses in Pollard and Sag 1992 or Reinhart and Reuland 1993, this fact alone will result in the anaphor in (26b) being obligatorily bound by the subject of the embedded clause, whereas the anaphor in (26a) will have a greater choice of antecedents. Crucially, this contrast is found in contexts where there is no movement. The following examples are cited from Reinhart and Reuland 1993:(45b), (26b):

- (27) a. Lucie<sub>i</sub> thought that a picture of herself<sub>i</sub> would be nice on that wall.  
 b. \*Max boasted that the queen invited himself for a drink.

Reinhart and Reuland argue that the anaphor in (27a) is functioning logophorically, an option not available in (27b), where the anaphor must be bound within the embedded clause. In (28) we see examples of argument versus predicate fronting where this distinction is controlled for.

- (28) a. [Which pictures of himself<sub>i/j</sub>]<sub>k</sub> did John<sub>i</sub> think that Bill<sub>j</sub> admired  $t_k$ ?  
 b. [How sick of those pictures of himself<sub>i/j</sub>]<sub>k</sub> did John<sub>i</sub> think that Bill<sub>j</sub> had become  $t_k$ ?

Although binding by the matrix subject does not seem as good in (28b), where the anaphor is contained inside a predicate, as it is in (28a), it appears to be possible.<sup>12</sup> Given the facts pointed out by Reinhart and Reuland and by Pollard and Sag, any discussion of predicate/argument contrasts in reconstruction for the purpose of anaphor binding will have to be based, not on the clear contrast in (26), but on the much weaker contrast in (28).

Reinhart and Reuland's proposal can account both for the pattern in (26) and for the type of contrast illustrated by (3a) and (4a), repeated here in (29).

- (29) a. [Which allegations about John<sub>i</sub>]<sub>j</sub> do you think he<sub>i</sub> will deny  $t_j$ ?  
 b. \*[How proud of John<sub>i</sub>]<sub>j</sub> do you think he<sub>i</sub> is  $t_j$ ?

They argue that a predicate can be reflexive—have two identical arguments—only if it is *reflexive-marked*. A predicate is reflexive-marked iff either its grid is reflexive (that is, it is specified in the lexicon as a reflexive relation) or one of its arguments is a morphologically complex reflexive like English *herself/himself*. Under these assumptions (29b) is ruled out independently of Condition C: since under the desired indexing *proud* has two identical arguments, one of them is forced to be a reflexive. Thus, (29b) is ruled out, not so much because *John* is an R-expression, but because it is not a reflexive. Notice, however, that Reinhart and Reuland's account will not cover the cases of predicate/argument distinctions that we considered in sections 2.4.1 and 2.4.2. In (16b) and (19), repeated here as (30a–b), the R-expression and the pronoun with which it is co-indexed are not coarguments of a single predicate, and so they are predicted to be free to corefer, contrary to fact.

- (30) a. \*[Sally<sub>i</sub>'s own worst enemy]<sub>j</sub>, I would never consider her<sub>i</sub>  $t_j$ .  
 b. ?\*[How afraid of Margaret<sub>i</sub>]<sub>j</sub> do you think she<sub>i</sub> expects John to be  $t_j$ ?

Similarly, there is a contrast between (31a) and (31b), even though the R-expression in the fronted predicate in (31b) is not a coargument with the coindexed pronoun.

- (31) a. [Which question Gore<sub>i</sub> hadn't prepared for]<sub>j</sub> do you think he<sub>i</sub> messed up on the worst  $t_j$ ?  
 b. ?\*[How afraid of some question Gore<sub>i</sub> hasn't prepared for]<sub>j</sub> do you think he<sub>i</sub> is  $t_j$ ?

Thus, there is a significant distinction between the behavior of R-expressions embedded in arguments and those embedded in predicates that Reinhart and Reuland's proposal does not extend to. It is with these Condition C effects that this article will be concerned.

<sup>12</sup> Examples comparable to (28) are discussed by Huang (1993:fn. 6), who attributes the observation to Richard Oehrle.

As framed so far, the question is then why R-expressions contained within fronted arguments behave as though Condition C is operating on the S-Structure configuration alone, whereas R-expressions contained within fronted predicates generally behave as though Condition C is operating on some other level of representation, one at which the fronted phrase is in the position occupied at S-Structure by its lowest trace.

The contrast between arguments and predicates is of course not the only interesting problem for the distribution of R-expressions in displaced phrases. It has been known at least since Van Riemsdijk and Williams 1981 that the position of the R-expression within the displaced phrase affects the possibilities of coreference. Freidin (1986) and Lebeaux (1988, 1990, 1991) have argued that the crucial distinction is between R-expressions contained in complements and those contained in adjuncts, as illustrated by the contrast in (32).

- (32) a. \*Which claim that John<sub>i</sub> was asleep was he<sub>i</sub> willing to discuss?  
 b. Which claim that John<sub>i</sub> made was he<sub>i</sub> willing to discuss?

In (32a) the R-expression that corefers with the pronoun is contained within the complement to the N<sup>0</sup> *claim*; in (32b) it is contained within a relative clause, which is presumably a type of adjunct.<sup>13</sup>

In Lebeaux's analysis, adjuncts need not appear at D-Structure but can be added at any point in the derivation up to S-Structure; consequently, (31a) and (32b) are not Condition C violations because there is a derivation in which the relative clause containing the R-expression is added after the *wh*-phrase is fronted out of the c-command domain of the pronoun.

I will assume that Lebeaux's approach is essentially correct, assuming in particular that Condition C applies throughout the derivation; if its structural description is met at

<sup>13</sup> The contrast between (32a) and (32b) is fairly robust for most speakers, although an additional factor may be involved, given that (32a), and examples like it, are not very plausible questions (thanks to an anonymous reviewer for pointing this out). Further, Van Riemsdijk and Williams (1981) claim that (i) is significantly degraded (the judgment given here is theirs): this would follow under Lebeaux's account if the *of*-phrase is a complement to *picture*, as is often assumed.

- (i) ??[Which picture of John<sub>i</sub>]<sub>j</sub> does he<sub>i</sub> like t<sub>j</sub>?

However, many examples of this type seem to me to be quite good: (i) itself improves significantly if *best* is added.

- (ii) ?[Which picture of John<sub>i</sub>]<sub>j</sub> does he<sub>i</sub> like t<sub>j</sub> best?

It is possible that the *of*-phrase here is ambiguous between complement and adjunct status. Notice that clear adjuncts can intervene between it and the head N<sup>0</sup>.

- (iii) a. That picture that you bought of John isn't very good.  
 b. The pictures from last year of John aren't very good.

Although it might be argued that the order in (iii-a-b) is the result of rightward movement of the complement past the adjunct (Fukui 1993), note that the equivalent order in (iv-a-b) seems much worse, suggesting that true complements cannot in fact move to the right within the DP.

- (iv) a. ?\*That fan that you met of Madonna wasn't very smart.  
 b. ?\*The fans from Ohio of Madonna weren't very smart.

This clearer case of a complement does seem to me to be worse with the intended coreference.

- (v) ??[Which fan of Madonna<sub>i</sub>]<sub>j</sub> did she<sub>i</sub> like t<sub>j</sub> best?

any point in the derivation, then the sentence is ungrammatical (Lebeaux 1991:219).<sup>14</sup> Notice, however, that this approach does not of itself provide an answer to the predicate/argument asymmetries that we have considered. Although, as we have seen, it can explain the grammaticality of (31a), it does not, as it stands, explain the ungrammaticality of (31b), since here too the R-expression is contained in an adjunct that could be added after *wh*-movement has taken place, and thus there is apparently no stage in the derivation at which the R-expression is c-commanded by the coindexed pronoun.

#### 4 Referential/Nonreferential Asymmetries

##### 4.1 The Asymmetries

So far we have been following Barss (1986, 1988) and Huang (1993) in considering predicate/argument asymmetries. However, it turns out that some arguments pattern together with predicates in behaving as though obligatorily reconstructed to their D-Structure position. Consider the contrasts in (33) and (34).

- (33) a. [Which stories about Diana<sub>i</sub>]<sub>j</sub> did she<sub>i</sub> most object to *t<sub>j</sub>*?  
 b. \*[How many stories about Diana<sub>i</sub>]<sub>j</sub> is she<sub>i</sub> likely to invent *t<sub>j</sub>*?
- (34) a. [Which lies aimed at exonerating Clifford<sub>i</sub>]<sub>j</sub> did he<sub>i</sub> expect *t<sub>j</sub>* to be effective?  
 b. \*[How many lies aimed at exonerating Clifford<sub>i</sub>]<sub>j</sub> is he<sub>i</sub> planning to come up with *t<sub>j</sub>*?

In each case, in the (a) example coreference is possible, whereas in the (b) example it is not. In all of the examples the R-expression is contained in an adjunct, which, under Lebeaux's assumptions, could be added into the derivation after the phrase to which it is attached is moved out of the c-command domain of the coindexed pronoun; consequently, it is the ungrammaticality of the (b) examples that is unexpected. These sentences do not, however, involve fronted predicates; clearly, something other than the predicate/argument distinction is relevant here.<sup>15</sup>

The crucial difference between the (a) and the (b) examples in (33)–(34) is that the *wh*-phrases in the (b) examples are *nonreferential* in the sense of Comorovski (1989),

<sup>14</sup> The possibility that Condition C applies *only* at LF, as suggested by Chomsky (1993), will be discussed in section 6.

<sup>15</sup> One possible explanation is that the fronted DPs in the (b) examples contain PRO subjects that are obligatorily coindexed with the subject of the clause in which the DP originates (Edwin Williams, personal communication). This would explain the impossibility of coreference in the (b) examples, along the same lines as Huang's (1993) analysis of predicates: the PRO would move along with the DP and would c-command any R-expression within it, resulting in Condition C violations. Notice, however, that in the following examples the intended coreference is also excluded (Ken Safir, personal communication):

- (i) a. \*[How many stories about Diana<sub>i</sub>]<sub>j</sub> does she<sub>i</sub> want Charles to invent *t<sub>j</sub>*?  
 b. \*[How many lies aimed at exonerating Clifford<sub>i</sub>]<sub>j</sub> does he<sub>i</sub> want you to come up with *t<sub>j</sub>*?

If there were a PRO in the fronted phrase in these examples, it would have to corefer not with the matrix subject but with the subject of the embedded clause. Consequently, there would be no reason to expect the given coindexation to be excluded. Thus, we must look for some other explanation.

Kroch (1989), Rizzi (1990), Cinque (1990), and Longobardi (1991). Because of the semantics of *which*, the (a) examples presuppose the existence of a set of entities of the type specified by the NP complement to *which*: a set of stories about Diana, and lies aimed at exonerating Clifford, in (33) and (34) respectively (see Engdahl 1981). The listener is asked to pick out from this set, knowledge of which is assumed by the speaker, the subset of entities with some additional property. Thus, (33a) could be paraphrased as follows:

- (35) There is a set of stories about Diana; what subset of that set did she most object to?

The (b) examples, however, do not presuppose the existence of a set of entities of the type specified by the NP contained in the *wh*-phrase. Rather, what is being quantified over is amounts. (33b) could be paraphrased as follows:

- (36) There is a number such that Diana is likely to invent that number of stories about Diana; what is that number?

This is the reading that has been referred to as the *nonreferential* reading of amount quantification by the authors cited above and others.<sup>16</sup>

Not all *how many* phrases are unambiguously nonreferential. Consider for example (37).

- (37) [How many people]<sub>j</sub> did she decide to hire *t<sub>j</sub>*?

This sentence is at least two-ways ambiguous. One reading is the nonreferential reading in which what is quantified over is amounts. This reading does not presuppose the existence of any actual job applicants: the questioner must simply believe that the employer has made a decision about a particular *number/amount*, perhaps as some kind of goal for the year ahead. There is, however, another reading, on which the questioner must believe that there is an actual set of people about which the employer has made a decision. This reading could be paraphrased as follows:

- (38) There is a set of people that she decided to hire: what is the cardinality of that set?

Following previous usage, I will refer to the type of interpretation in (38) as the *referential* reading.

Amount phrases that can receive this referential reading do not behave as though obligatorily reconstructed. Consider the contrast between the (b) examples in (33) and (34), repeated here as (39a–b), on the one hand, and (40a–b), on the other.

<sup>16</sup> As pointed out by Kroch (1989), *nonreferential* is not really an appropriate term: the crucial point here is that the quantification is over amounts, rather than other types of entities. One reviewer of this article suggests the introduction of a more accurate term, such as *nonextensional*. However, I have not adopted this suggestion, simply for the sake of continuity with the literature cited. I hope that the text will make the nature of the relevant readings sufficiently clear to avoid confusion.

- (39) a. \*[How many stories about Diana<sub>i</sub>]<sub>j</sub> is she<sub>i</sub> likely to invent  $t_j$ ?  
 b. \*[How many lies aimed at exonerating Clifford<sub>i</sub>]<sub>j</sub> is he<sub>i</sub> planning to come up with  $t_j$ ?
- (40) a. ?[How many stories about Diana<sub>i</sub>]<sub>j</sub> was she<sub>i</sub> really upset by  $t_j$ ?  
 b. [How many lies aimed at exonerating Clifford<sub>i</sub>]<sub>j</sub> did he<sub>i</sub> claim that he<sub>i</sub> had no knowledge of  $t_j$ ?

Thus, as far as reconstruction is concerned, the cut is not between *which*-questions and amount questions, but between questions with referential and with nonreferential interpretations of the *wh*-phrase.

#### 4.2 The Representation of Nonreferentiality

In the previous section we have observed that the type of *wh*-question involving amount quantification illustrated in (39) shows no antireconstruction effect. Let us consider parallel examples in which there is no potential violation of Condition C.

- (41) a. [How many stories]<sub>j</sub> is Diana likely to invent  $t_j$ ?  
 b. [How many lies]<sub>j</sub> do you think Clifford may come up with  $t_j$ ?

The crucial property of these examples is that they are unambiguous. The meaning of the embedded verb, together with the modal context, makes the nonreferential reading of the amount quantifier the only one available. That is to say, the questions do not presuppose the existence of a set of stories or lies, but only of an amount. It has been argued, for quite independent reasons, that this nonreferential reading of amount quantifiers follows from an LF representation where only the *wh*-head is in [Spec, CP] at LF: the remainder of the fronted phrase must be in its base position (see in particular Dobrovie-Sorin 1992). Thus, the LF representation for an example like (41a) is as follows:

- (42) how many<sub>i</sub> is Diana likely to invent [ $t_i$  stories]

This may be viewed as the LF counterpart of the type of rule operating at S-Structure in French (Obenauer 1984, Rizzi 1990, Dobrovie-Sorin 1992).

- (43) Combien<sub>i</sub> as- tu [lu  $t_i$  de livres]?  
 how much have you read of books  
 'How many books have you read?'

In contrast, an ambiguous example like (44a) has (at least) two possible LF representations. One is the nonreferential one, parallel to (42) and (43); this is given in (44b). In addition, however, there is a reading where the questioner presupposes the existence of an actual set of people: this is the referential reading we saw in (38). The LF representation is given in (44c).

- (44) a. How many people did she decide to hire?



- b. *Nonreferential*  
how many<sub>i</sub> did she decide to hire [<sub>t<sub>i</sub></sub> people]
- c. *Referential*  
[how many people]<sub>i</sub> did she decide to hire <sub>t<sub>i</sub></sub>

Similarly, the LF representation in (45) is available for the example in (40a).

- (45) *Referential*  
[how many stories about Diana]<sub>i</sub> was she<sub>i</sub> really upset by <sub>t<sub>j</sub></sub>

Given these LF representations, Lebeaux's analysis of reconstruction allows a very simple account of the Condition C effects exhibited by the examples in (39) and others like them. Recall that in this analysis Condition C is assumed to be an "everywhere" condition: that is to say, if a violation of Condition C occurs at any point in the derivation, the sentence is ruled out. R-expressions contained in adjuncts that are part of fronted expressions may evade Condition C because adjuncts can be attached at any point in the derivation: crucially, they need not be present before S-Structure. Examples like those in (39) seemed to present a problem for this analysis, since if the adjuncts are attached at S-Structure, there is no Condition C violation up to this point. However, we now have an explanation for their behavior: in order to receive a coherent interpretation, the relevant part of the fronted phrase must be lowered at LF, resulting in a violation at this level. The LF representations for (39a–b) are as follows:

- (46) a. \*how many<sub>j</sub> [is she<sub>i</sub> likely to invent [<sub>t<sub>j</sub></sub> stories about Diana]<sub>i</sub>]  
b. \*how many<sub>j</sub> [is he<sub>i</sub> planning to come up with [<sub>t<sub>j</sub></sub> lies aimed at exonerating Clifford]<sub>i</sub>]

In all of these representations the R-expression contained in the lowered phrase is c-commanded by a coindexed pronoun, in violation of Condition C.

## 5 Degree Phrases

So far we have considered only amount quantification. Let us now return to the questioning of predicates. Consider first the following contrasts:

- (47) a. [Which friends that Baird<sub>i</sub> confided in]<sub>j</sub> did she<sub>i</sub> subsequently avoid <sub>t<sub>j</sub></sub>?  
b. \*[How eager for a friend that Baird<sub>i</sub> might confide in]<sub>j</sub> has she<sub>i</sub> become <sub>t<sub>j</sub></sub>?
- (48) a. [Which question that Gore<sub>i</sub> hadn't prepared for]<sub>j</sub> do you think he<sub>i</sub> messed up on <sub>t<sub>j</sub></sub> the most?  
b. \*[How afraid of some question Gore<sub>i</sub> hasn't prepared for]<sub>j</sub> do you think he<sub>i</sub> is <sub>t<sub>j</sub></sub>?

The degree questions in the (b) examples exhibit the same reconstruction effects that we have seen in amount quantification. Under the proposed analysis this would follow if the LF representations were as in (49).

- (49) a. \* $\text{how}_j$  has she<sub>i</sub> become [ $t_j$  eager for a friend that Baird<sub>i</sub> might confide in]  
 b. \* $\text{how}_j$  do you think he<sub>i</sub> is [ $t_j$  afraid of some question Gore<sub>i</sub> hasn't prepared for]

These representations are parallel to the ones proposed for the nonreferential readings of amount questions.

- (50) \* $\text{how many}_j$  do you think she<sub>i</sub> is likely to invent [ $t_j$  stories about Diana<sub>i</sub>]

The hypothesis that these two types of question have similar LF representations receives independent support from their behavior with respect to islands. It is known that the nonreferential interpretation of amount quantification is blocked by weak islands (Cinque 1989, 1990, Rizzi 1990, Kroch 1989, Dobrovie-Sorin 1992). Thus, for example, whereas (51a) is ambiguous between a referential and a nonreferential reading for the amount quantifier, (51b) is not. That is to say, (51a) can be interpreted as a question either about the cardinality of a set of existing books about which the publisher has plans, or as a question about the publisher's goals, established without any specific books in mind; (51b) can only have the first of these two interpretations.

- (51) a. How many books did she decide to publish this year?  
 b. How many books did she wonder whether to publish this year?

As we would expect, cases where only the nonreferential reading is possible are unacceptable when embedded in a *wh*-island, since the only possible reading is blocked.

- (52) a. ?\*How many books did Charles wonder whether Diana might write?  
 b. ?\*How many lies do you wonder whether he may come up with?

Now observe that degree questions are also unacceptable out of a *wh*-island, as pointed out by Rizzi (1990:130), citing Baltin (1989) and Roberts (1988).

- (53) a. \*How intelligent did she wonder whether he was?  
 b. \*How eager did her campaign staff wonder whether she was?  
 c. \*How afraid of dogs did they ask if he was?

Since, as discussed above, the difference between referential and nonreferential interpretations of amount quantification is not associated with any relevant S-Structure difference, the unavailability of the nonreferential reading in island contexts must derive from some property of the LF representation. Following Kroch (1989), I assume that the nonreferential reading is not available for extractions out of *wh*-islands because of pragmatic incoherence (for a related proposal, see Szabolcsi and Zwarts 1990). As we have seen, the nonreferential reading does not involve wide scope quantification over a set of objects; rather, what has wide scope is a quantifier over amounts. This is the interpretation associated with LF representations where only *how many* remains in [Spec, CP]. Thus, as argued by Kroch, on the nonreferential reading the question in (54a) has the type of presupposition given in (54b).

- (54) a. How many books did she decide to publish?  
 b. There is an amount (of books) such that she decided to publish that amount of books.

The presupposition for the nonreferential reading of the question in (55a), where the extraction is out of a *wh*-island, is given in (55b).

- (55) a. \*How many books did she wonder whether to publish?  
 b. There is an amount (of books) such that she wondered whether to publish that amount of books.

Kroch points out that although this presupposition is semantically well formed, it makes the sentence "unusable under most discourse circumstances" (p. 8).<sup>17</sup>

The unacceptability of the degree questions in (53) can be accounted for in exactly the same way if we assume that degree questions always have LF representations parallel to those for the nonreferential reading of amount quantifiers.

- (56) a. How intelligent is he?  
 b.  $\text{how}_i$  is he [ $t_i$  intelligent]  
 (57) a. \*How intelligent did she wonder whether he was?  
 b. \* $\text{how}_i$  did she wonder whether he was [ $t_i$  intelligent]

This representation corresponds to quantification over degrees.<sup>18</sup> Thus, the presupposition of (57) will be roughly as in (58).

<sup>17</sup> Since I adopt Kroch's analysis that long movement of nonreferential *wh*-phrases results in pragmatic infelicity rather than ungrammaticality, examples such as (52), (53), (55a), and others to follow should be marked with the symbol "#" rather than "\*"; I retain the asterisk just for consistency with the authors cited.

An anonymous reviewer objects that Kroch's analysis may not extend to the other two types of weak island discussed by Cinque (1990): factive islands and extraposition islands. Since the particular analysis of weak islands is not essential to my argument (the crucial point is that the extraction of predicates is blocked by the *same* weak islands as the extraction of nonreferential *wh*-phrases), I will not discuss this issue at length, except to note that the blocking effect of factive and extraposition islands also appears to be subject to some variation: the examples in (i) and (ii) are virtually perfect, although *know* and *realize* are factive verbs, and the examples in (ii) are extrapositions with predicates parallel to those discussed by Cinque (1990:chap. 1).

- (i) a. How much did he know that he would have to weigh (to qualify as a bantamweight)?  
 b. How rich did he realize he would have to be (to win the hand of the sultan's daughter)?  
 (ii) a. How many mistakes is it normal that a novice should make before mastering the technique?  
 b. How rich is it necessary to have become to get into *Forbes*?

<sup>18</sup> An anonymous reviewer points out that this type of representation possibly causes problems for an analysis of degree questions on adnominal adjectives.

- (i) How big a house did John buy?

The problem is that here the AP appears to have moved to an initial position within the DP; if the *wh*-head then has to move out of the DP at LF, this would involve movement from the left branch of a left branch. I do not at present know how to resolve this problem, since the structure of examples like (i) is quite unclear (note that this construction is not unique to questions, but is, on the other hand, limited to DPs with the determiner *a*).

- (ii) a. I have never seen that /this/so big a house.  
 b. How big a house did John buy?  
 c. I have never seen that /this/so big \*houses/\*the house.  
 d. How big ?\*houses/\*the house did John buy?

- (58) There is a degree (of intelligence) such that she wondered whether he was intelligent to that degree.

This presupposition is implausible in just the way that (55b) is. It is very hard to construct a context in which there is some specific degree of intelligence about which someone might wonder whether a person is intelligent to exactly that degree; that is, it is very hard to find a context where a degree quantifier can be interpreted as having wide scope over *wonder*.

Kroch shows, however, that if the context is set up in such a way that the presupposition of the question is plausible, extraction of nonreferential amount quantifiers is possible out of weak islands. For example, (59) (Kroch's (21a)) is acceptable in the context given.

- (59) How many points are the judges arguing about whether to deduct?

Context: . . . [t]he rules of the sport specify fixed point deductions for various infractions and . . . the judges are arguing about whether to call an infraction from a class requiring the deduction of a certain number of points. They have decided what class of infraction is involved but not whether actually to deduct the point. Then, if a spectator is interested only in the number of points to be deducted and not in the nature of the infraction, he/she might ask the question in [(59)]. (Kroch 1989:8)

Parallel examples are rather hard to construct for degree questions, but the following sentence is a great improvement over the examples in (53), presumably because it is possible to come up with a plausible scenario in which there could be specific heights that the candidates might have in mind:

- (60) ?[How tall]<sub>i</sub> did each applicant ask [whether he would be expected to be *t<sub>i</sub>*]?

To sum up: degree questions have interpretations similar to the nonreferential readings of amount questions: in the latter case quantification is over amounts; in the former, over degrees. Consistently with this, they are generally unacceptable in *wh*-island contexts but can be rescued by the same type of context setting. We therefore have independent motivation for the proposal that their LF representations are similar, a proposal that allows us to account for the reconstruction effects in degree questions exactly as we have done in nonreferential amount questions.

Degree questions do, however, raise an interesting additional point. Whereas (47b) and (48b), repeated in (61), show the effects of obligatory lowering, (21a) and (21b), repeated in (62), are relatively acceptable.

- (61) a. \*[How eager for a friend that Baird<sub>i</sub> might confide in]<sub>j</sub> has she<sub>i</sub> become *t<sub>j</sub>*?  
 b. \*[How afraid of some question Gore<sub>i</sub> hasn't prepared for]<sub>j</sub> do you think he<sub>i</sub> is *t<sub>j</sub>*?
- (62) a. [How pleased with the pictures Pollock<sub>i</sub> painted in his youth]<sub>j</sub> do you think he<sub>i</sub> really was *t<sub>j</sub>*?

- b. [How afraid of the people Gore<sub>i</sub> insulted years ago]<sub>j</sub> do you think he<sub>i</sub> is <sub>j</sub> now?

The difference between the examples in (61) and those in (62) is that in the latter the R-expression is contained in a relative clause on a definite NP, whereas in (61) the relative is on a nonspecific indefinite. This contrast can perhaps be accounted for if we assume that the definite NPs to which the relatives are attached can be raised out of the *wh*-phrase at LF and are therefore not reconstructed (for treating definites as quantifiers, see for example Russell 1905, Jacobson 1977, Higginbotham and May 1979, 1981, Reinhart 1991, Clark 1992, Neale 1992). If this happens to the definite NPs in (62), the R-expressions contained in the relatives can continue to evade Condition C, even though the AP is lowered. The LF representation for (62a), then, will look something like (63).

- (63) [the people Gore<sub>i</sub> insulted years ago]<sub>k</sub> how<sub>j</sub> do you think he<sub>i</sub> is [<sub>t<sub>j</sub></sub> afraid of <sub>t<sub>k</sub></sub>]

No such escape route is possible for the examples in (61), since allowing the indefinite NPs contained within the *wh*-phrases to raise out of the *wh*-phrases would have scopal repercussions: they would no longer be able to be interpreted with narrow scope with respect to the predicates inside the relatives, as the context dictates that they must.

Note that the acceptability of the examples in (62) is quite incompatible with the proposal that moved predicates must always contain a trace of the subject, as mentioned in section 2.4.3. It is, on the other hand, entirely compatible with the approach taken by Reinhart and Reuland (1993), since the R-expression is not a coargument with the coreferential pronoun. What remains unexplained under the latter account, however, is the contrast between the examples in (62) and those in (61).<sup>19</sup>

<sup>19</sup> An anonymous reviewer points out that the following examples of degree questions also allow for coreference:

- (i) a. How much longer than your yacht<sub>i</sub> (actually) is did John think it<sub>i</sub> was?  
b. How much more intelligent than John<sub>i</sub> (actually) is did he say he<sub>i</sub> was?

These examples are problematic for an analysis in terms of predicate-internal subject traces, since such a trace would presumably c-command the R-expression.

- (ii) [<sub>t<sub>i</sub></sub> how much longer than your yacht<sub>i</sub> (actually) is]<sub>j</sub> did John think it<sub>i</sub> was <sub>t<sub>j</sub></sub>?

The reviewer notes that these examples pose a (somewhat more indirect) problem for the analysis presented in this article, however, since they suggest that reconstruction of all but the *wh*-head in degree questions is not in fact forced; but in this case an LF representation parallel to (50) might be expected to be available for a degree question like (49a), in which case the Condition C violation would be unexplained.

- (iii) \*[How eager for a friend that Baird<sub>i</sub> might confide in]<sub>j</sub> has she<sub>i</sub> become <sub>t<sub>j</sub></sub>?

Examples like those in (i) are however more complex, in that they involve two instances of quantification over degree/extent (of length or intelligence): under discussion are both the length of the yacht/degree of John's intelligence and also (and this is the focus of the question) the extent of the difference between this length/degree and something else. I assume that although the existential quantifier associated with the first instance of quantification must raise to some position outside the scope of the intensional verb, the question still necessarily involves an LF representation in which only the *wh*-head associated with the second instance of quantification remains in [Spec, CP] at LF.

Note that this type of question is equally unacceptable out of a *wh*-island.

- (iv) a. \*How much longer than his yacht is did John wonder whether it was?  
b. \*How much more intelligent than he is did you wonder whether he was?

## 6 Does Condition C Apply Only at LF?

As stated in section 3, I have so far been assuming that Lebeaux (1988, 1991) is correct in assuming that Condition C is an “everywhere” condition that will result in ungrammaticality if violated at any point in the derivation. In all the cases that we have considered so far, however, all the violations of Condition C have been incurred at LF. This raises the question of whether Condition C might not apply only at LF, as proposed by Chomsky (1993).

The most obvious case we can look at to settle this question is one in which an R-expression is c-commanded at S-Structure by a coindexed pronoun but would, under the analysis proposed here, be outside the c-command domain of the pronoun at LF. Consider the following multiple *wh*-question:

(64) Who wanted John to destroy how many pictures that he had painted?

There are two possible interpretations of this sentence, depending on whether the second, unmoved *wh*-phrase receives a referential or a nonreferential interpretation. On the referential interpretation, the question presupposes that there is a (possibly singleton) set of people, for each of whom there is a specific set of pictures that he or she wanted John to destroy. This is the referential reading of the amount question, which, under the analysis adopted here, requires that the entire phrase *how many pictures that he had painted* be outside the scope of the intensional verb *want* at LF.

(65) [how many pictures that he had painted]<sub>j</sub> who<sub>i</sub> [<sub>IP</sub> *t*<sub>i</sub> wanted John to destroy *t*<sub>j</sub>]

On the nonreferential reading, each person is not presupposed to have specific sets of pictures in mind, only an intention with regard to an overall number of pictures. This requires that only *how many* be in [Spec, CP] at LF.

(66) [how many]<sub>j</sub> who<sub>i</sub> [<sub>IP</sub> *t*<sub>i</sub> wanted John to destroy [<sub>j</sub> pictures that he had painted]]

Now consider (67).

(67) \*Who wanted him<sub>i</sub> to destroy how many pictures that John<sub>i</sub> had painted?

This sentence is clearly ungrammatical with the given coindexation. On the nonreferential reading of the second *wh*-phrase, this is as expected, since on this reading the R-expression will be c-commanded by the coindexed pronoun at LF. The LF representation is parallel to that in (66).

(68) \*[how many]<sub>k</sub> who<sub>i</sub> [<sub>IP</sub> *t*<sub>i</sub> wanted him<sub>j</sub> to destroy [<sub>k</sub> pictures that John<sub>j</sub> had painted]]

However, on the referential reading the LF representation should be parallel to that in (65), and in this representation the R-expression is not c-commanded by the pronoun at LF.

- (69) [how many pictures that John<sub>j</sub> had painted]<sub>k</sub> who<sub>i</sub> [<sub>IP</sub> t<sub>i</sub> wanted him<sub>j</sub> to destroy t<sub>k</sub>]

If Condition C holds only at LF, then we would expect the sentence to be grammatical on this interpretation, but it is not.

One might attempt to account for these facts as follows. Chomsky (1993) proposes that there is a “preference principle for reconstruction” (p. 41). The content of this principle is roughly that the restriction of the operator in [Spec, CP] should be minimal. Now, (68) is one possible LF output of the sentence whose S-Structure is (67), and it has a more minimal restriction of the operator in [Spec, CP] than the LF representation in (69); it might then be proposed that (69) is blocked by this preference principle. But note that if this were the explanation for the ungrammaticality of (67), then the LF output of (64) given in (65) should be blocked in exactly the same way, leading us to expect only the nonreferential reading to be available for (64). This is not, in my judgment, a correct prediction: the sentence does allow a referential reading for the amount quantifier.

The ambiguity of (64) and the ungrammaticality of (67) could, however, be given a consistent interpretation within Chomsky’s (1993) assumptions if we disregard the preference principle, but instead adopt his proposal that there is no LF movement of *wh*-phrases to [Spec, CP]: “the LF rule that associates the in-situ *wh*-phrase with the *wh*-phrase in [Spec, CP] need not be construed as an instance of Move  $\alpha$ ” (p. 26).<sup>20</sup> What would be required in this case would be an LF rule that could associate either the bare amount quantifier (for the nonreferential reading) or the entire *wh*-phrase (for the referential reading) with the *wh*-phrase in [Spec, CP].

This solution, however, would not extend to the complement/adjunct asymmetry noted by Freidin (1986) and Lebeaux (1988, 1990, 1991). Lebeaux explains the contrast between R-expressions contained in complements (which do not exhibit antireconstruction effects) and those contained in adjuncts (which do) by two principles: first, that adjuncts can be added into the derivation at any point whereas complements must be present at D-Structure; second, that Condition C is an “everywhere” condition. Thus, R-expressions contained in complements must not corefer with anything that c-commands their D-Structure position, or they will violate Condition C at that level. If Condition C holds only at LF, clearly this explanation is not available; this is the motivation for Chomsky’s proposal of the preference principle for reconstruction discussed above. Thus, the ungrammaticality of (32a), repeated here as (70a), is to be attributed to (the equivalent of) forced reconstruction of all but the *wh*-head, resulting in a violation of Condition C at LF, rather than to the configuration at D-Structure.

- (70) a. \*Which claim that John<sub>i</sub> was asleep was he<sub>i</sub> willing to discuss?  
 b. Which claim that John<sub>i</sub> made was he<sub>i</sub> willing to discuss?

The grammaticality of (70b) is due to the fact that there is a derivation where the adjunct

<sup>20</sup> Thanks to Yuji Takano for pointing this out.

is added to the *wh*-phrase after movement; as a result, the copy of the *wh*-phrase will not include a copy of the adjunct, so the LF representation will look like the S-Structure representation.

Under the analysis proposed here, however, the kind of forced reconstruction proposed to account for the ungrammaticality of (70a) results in a distinct interpretation, at least in the case of amount questions. That is, we would (incorrectly) expect amount questions containing complements to allow only the nonreferential reading.

- (71) a. How many fans of Madonna did the manager want to kick out of the theater?  
 b. ?\*How many fans of Madonna<sub>i</sub> did she<sub>i</sub> want to kick out of the theater?

(71a) allows for the referential reading; but on the analysis proposed here this necessarily involves an LF representation where there is no reconstruction, and (71b) would therefore be predicted to be grammatical. In my judgment, however, coreference in (71b) is at best marginal. The exact analogue of this problem does not arise for the cases considered by Chomsky (1993), because no distinct interpretation is proposed for the two different types of LF representation of *wh*-phrases.

It thus appears that some problems remain for the proposal that the binding conditions apply only at LF. Of course, it is possible to carry information about earlier violations of the binding conditions forward, to be checked at LF; all that is required is some type of indelible marking of a violation as it occurs, along the lines of the  $\gamma$ -marking proposed for recording violations of proper government by Lasnik and Saito (1984) (Michael Hegarty, personal communication). This would enable us to retain the idea that all well-formedness conditions can be checked only at interface levels, the relevant one in this case being LF. Whether there is any way of accounting for the pattern of judgments without importing this much information is a question that remains for further research.

## 7 Conclusion

In this article I have shown that fronted phrases that can only be interpreted nonreferentially do not show antireconstruction effects: that is, in contrast to other fronted phrases, they behave with respect to Condition C as though occupying their D-Structure positions. Predicates, I have argued, are a subset of the nonreferential expressions that exhibit this behavior, which is due to the LF lowering necessary to obtain the nonreferential interpretation. Whereas Lebeaux's (1988, 1991) evidence concerns differences in grammaticality arising from different derivations up to S-Structure, however, the argument presented here relies on differences arising after S-Structure and thus in addition provides support for the proposal that Condition C applies at LF.

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