Superiority and Head Government

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The superiority facts discussed in Chomsky 1973 have been claimed to fall under ECP at LF (Chomsky 1981, Jaeggli 1982, Huang 1982, Lasnik and Saito 1984). Consider the ungrammatical (1).

(1) *What did who buy?

The assumption is that the S-structure of (1), given in (2), is mapped onto the LF representation (3) by Wh-Raising, and that in this representation, ej violates the ECP, since it is neither lexically governed nor antecedent-governed.

(2) \[S'[\text{Comp what} \text{ did}] [S \text{ who buy e}_j]\]
(3) \[S'[\text{Comp who} \text{ what} \text{ did}] [S \text{ e}_j \text{ buy e}_j]\]

The failure of antecedent government is attributed to the fact that Comp inherits the index from what and can thus only serve as an antecedent for e_j, not for e_i. Different implementations of this idea are presented in Aoun et al. (1980), Lasnik and Saito (1984), Stowell (1986), and Aoun et al. (1987).\(^1\)

The main problem with this account is that it makes the wrong predictions for sentences like (4), which, although structurally parallel to (1), are perfectly grammatical, a fact first pointed out by Kayne (1981).

(4) Which books did which students read?

Since the subject wh-phrase which students is not lexically governed, it can only comply with ECP at LF via antecedent government. But this is not possible, since Comp inherits the index of which books.

Pesetsky (1987) has dealt with the contrast between (1) and (4) in terms of the notion D(iscourse)-linking. Under his approach, D-linked phrases like which students do not undergo Wh-Raising at LF, so there is no ECP violation.\(^2\) Phrases like which

(1) All of these proposals assume a pre-Barriers structure of clauses based on Bresnan's (1972) rule (i).

\[(i) \quad S' \rightarrow \text{Comp S}\]

It is not clear how they would translate to the current analysis where S' is a regular X-bar projection of C (Chomsky 1986).

(2) For Pesetsky the relevant principle is not ECP but his Path Containment Condition, which prohibits 'crossing A' dependencies'.

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students are considered D-linked because they presuppose previous mention of 'students'.

There are empirical problems with this account which have been pointed out by Hornstein and Weinberg (1987, 1990). While it makes sense to consider a phrase like which students D-linked, the same is not true of phrases like whose mother or what type of car, which also fail to induce superiority violations, as shown in (5), from Hornstein and Weinberg (1987).

(5)  a. What did whose mother buy?
    b. What type of book does what type of man read?

Hornstein and Weinberg (1987) tackle the contrast between (1) and (4) within the Generalized Binding framework of Aoun (1986). Their crucial assumption is that pied-piping is disallowed at LF, so that in phrases like which students only which undergoes Wh-Raising. The different behavior of a raised who versus that of which is then accounted for because only the former has a binding domain and can, therefore, violate principle A of Generalized Binding. The latter, which has no domain, induces no such violation. For details, see Hornstein and Weinberg (1987) and (1990).

It is beyond the scope of the present paper to give a detailed critique of Hornstein and Weinberg's interesting proposal. There is one fact, however, that justifies the exploration of other alternatives, namely that their basic assumption to the effect that there is no pied-piping at LF is in conflict with well-supported claims to the contrary by Choe (1984), Hasegawa (1985, 1986), Nishigauchi (1984), and Pesetsky (1987).

The analysis I will propose here is neutral with respect to this question. My basic assumptions are as follows:

(6)  Who, what are structurally parallel to which students, which books respectively. They consist of a functional head wh of category D and an empty complement N'.

(7)  Nonpronominal empty categories must be canonically head-governed at S-structure (Stowell 1986, Rizzi 1989).

The intention, then, is to claim that (1) violates the Head Government Requirement (HGR) at S-structure, while (4) does not.

There is an independent argument in favor of the analysis of who and what suggested here. As is well known, quantification in natural language is always restricted (contra Hornstein and Weinberg 1987). This is informally represented in LF structures like the following:

(8)  Wx, x a person [John saw x]

In 'heavy' wh-phrases like which girls, the N' girls specifies the domain over which the quantifier W ranges. In this respect, 'light' wh-forms like who and what seem to be exceptional, since they contain no separate lexical item to serve as 're-

(3) I am thus adopting the DP hypothesis of Abney (1987) and Fukui and Speas (1986).
strictor'. However, the LF representation of a who or a what question must be parallel to that of a question containing an overt N', since they also quantify over restricted domains. This poses a problem for the rule that maps a question like (9) onto its LF representation (8), since apparently the rule must introduce material not present at S-structure.

(9) Who, did John see e? 

It is clearly undesirable to allow inter-level mappings of this sort. It seems reasonable, instead, to extend the commonly accepted restriction (10) proposed by Lasnik and Kupin (1977) to the mapping between S-structure and LF.

(10) Rules relating D-structure and S-structure can only involve substitution or right or left adjunction.

Once this is done, we are forced to analyze who and what as syntactically complex, to avoid inserting new material in the mapping between S-structure and LF.

The analysis presented here raises the question of the status of null N'. Assuming Chomsky's (1982) analysis in terms of the features +/- pronominal and +/- anaphor, we can identify null N' by its behavior with respect to the Binding Theory. Consider structure (11).

(11) [IP [QP Three students from New York] [TP VP challenged [QP two [N' e] from Peoria]]]

Since the N' students, responsible for the interpretation of the empty N', does not c-command it, the null N' is free. This means it must be [-anaphor], but it could be either [+pronominal] or [-pronominal]. To decide this matter, consider the following structure

(12) *[QP Three students from [DP1 [DP2 a town] that [QP two [N' e] detest]]]

Presumably, this structure is ill-formed because the null N' is bound by students. This binder, however, is outside the governing category for the null N', which, under any reasonable definition, could not extend beyond DP1. The natural conclusion is that (12) violates principle C, not principle B, of the Binding Theory. For this to be the case, the null N' must be [-pronominal].

This brief demonstration is intended to show that by analyzing who and what as containing a null N' we are not adding a new type of empty category to Chomsky's (1982) system.

We must now identify the licensing conditions for null N'. Consider the following examples:

(4) An implicit assumption, irrelevant for the point under discussion, is that numerals are functional heads of category Q.

(5) This implies rejecting the identification of the feature complex [-anaphor, +pronominal] with the notion 'variable', a position that various linguists have provided support for. See, for instance, Koopman and Sportiche (1982), and Safr (1984).
(13) a. Since two [N' e] have been sold, we only have five chairs left.
b. Since the first pick is gone, we'll have to take the second [N' e].
c. Talking about students, I think many [N' e] are overworked and underpaid.

These sentences show that numerals and other quantifiers, which we may take to be functional heads, following Abney (1987) and Fukui and Speas (1986), license a null N'. Other functional heads, like the and every, do not license a null N', as shown in (14).6

(14) a. *the students that I know and the [N' e] that I don't know
b. *every student that Bill knows and every [N' e] that Mary knows

The Spanish definite article contrasts with the English one in that it does license a null N', as in (15), the Spanish version of (14a).

(15) Los estudiantes que conozco y los [N' e] que no conozco

If the structures in (14) are disallowed as violations of the Head Government Requirement, a reasonable hypothesis, we must recognize two types of functional heads: a) head governors, like two, second, many, and Spanish los; b) non head governors, like the and every.

Looking beyond the nominal system, we find an additional type of functional category represented by to, an I° which may or may not be a legitimate head governor for a null VP (Lobeck 1986, Zagona 1982, 1988). Consider the following examples from Zagona (1988):

(16) a. John persuaded Mary to leave, and Fred persuaded Jane to [VP e].
b. *John runs to stay fit, and Bill swims to [VP e].

Zagona (1988) accounts for this contrast on the basis of the following requirement:

(17) Null VP must be Tense-governed.

She shows that to can only Tense-govern a null VP if to occurs in a complement clause, not in an adjunct clause.

We could view (17) as a subcase of the Head Government Requirement, and assume that to is a head governor only if it gets Tense features from a higher clause.

I would like to suggest that the functional head wh is similar to to in that it can only head-govern a null N' under certain conditions.

Consider sentence (18), with S-structure (19).

(18) Who saw what? (19) [CP [DP wh1 e1], [IP t; saw [DP wh2 e2]]]

It is reasonable to assume that wh2 can head govern e2 because it is itself head-governed by saw. This parallels the behavior of to sketched above.

(6) For further discussion, see Contreras (1989).
(7) e' and e differ in the feature specification for +/-human.
What allows \(wh\) to head-govern \(e\)? If we assume Fukui and Speas’ (1986) framework, CP is headed by \([+WH]\), a functional head with an F-feature to discharge to its specifier position. The structure is as in (20).

(20) 

\[
\text{CP} \\
\text{DP} \\
\text{D} \quad \text{N'} \quad \text{C} \quad \text{IP} \\
\text{wh} \quad e \quad +WH
\]

Under standard assumptions, the F-feature assigned to DP by \([+WH]\) trickles down to the head of DP. I will claim that this is what enables \(wh\) to be a head governor for the null \(N'\).

Combining these two cases, we arrive at the following generalization:

(21) \(wh\) can be a head governor iff (a) or (b):

(a) it is lexically governed; (b) it carries an F-feature.

If these considerations are correct, the contrast between (1) and (4) follows without stipulation. Consider the structure of (1).

(22) \([CP \text{ What}_1 \text{ did } [IP \text{ DP wh e] buy } t_j]\)?

Since \(wh\) is neither lexically governed nor assigned an F-feature, it cannot be a head governor for \(e\). In contrast, the DPs in (4) contain no empty \(N'\) categories, so there is no violation of the Head Government Requirement.

(23) \([CP \text{ DP Which books} \text{ did } [IP \text{ DP which students] read } t_j]\)?

Hendrick and Rochemont (1982) have pointed out some cases which are problematic for ECP-based accounts of Superiority:

(24) a. *What does Mary expect who to buy?
    b. *What did Mary force who to buy?

The problem is, of course, that \(who\) is lexically governed, and consequently failure of antecedent-government at LF should not matter.

Some recent versions of ECP fare better in this respect than the older (disjunctive) version we have been assuming so far. Consider, for example, Rizzi's (1989) proposal:

(25) ECP

A nonpronominal EC must be (a) canonically head governed, and (b) antecedent-governed or theta-governed

Let us assume that the structures for (24) are as in (26).

(26) a. \([CP \text{ What}_1 \text{ does } [IP \text{ Mary expect } [IP \text{ who to buy } t_j]]]\)
    b. \([CP \text{ What}_1 \text{ did } [IP \text{ Mary force } [DP \text{ who}][CP \text{ PRO to buy } t_j]]]\)

(8) The trace of \(which books\) is, of course, head governed.
(9) For the notion 'theta-governed' see Chomsky 1986.
In (26a), who is head-governed by expect, but it is not theta-governed. Consequently, its trace at LF must be antecedent-governed. This is not possible because the Spec (CP) is filled by what. Structure (26a) is not a problem, then, for Rizzi's version of the ECP.

Structure (26b), on the other hand, remains problematic, because who is both head-governed and theta-governed by force.

Let us now consider how our approach fares with respect to these structures, which I assume must be as in (27).

(27) a. [CP What; did [IP Mary expect [IP [DP wh e] to buy t]]]
   b. [CP What; did [IP Mary force [DP wh e] [CP PRO to buy t]]]

Recall that in order for who to be a head governor, it must be either lexically governed or carry an F-feature. Since neither is the case in (27a), who is not a head governor for e, and the structure is disallowed.

In (27b), on the other hand, who is lexically governed by force, so we predict incorrectly that the structure should be well formed.

So in terms of accounting for the Hendrick and Rochemont cases, our analysis is equivalent to an LF account based on Rizzi's (1989) version of the ECP. The same is true of Hornstein and Weinberg's (1987) proposal.

H&S suggest that if (27b) is reanalyzed to conform to Kayne's (1984) binary-branching restriction, their account will extend to it. Under that revised analysis, who would be the subject of the clause to buy t. If this suggestion is correct, (27b) is not a problem for the present proposal either, since who would no longer be lexically governed by force.

In conclusion, I have shown that the superiority facts can be accounted for in terms of failure of Head Government at S-structure. This provides an immediate account of Kayne's (1981) observation that 'heavy' wh-phrases like which students show no superiority effects. The analysis is easily extendable to other 'light'/ 'heavy' pairs like why/for what reason and how/in which manner, which exhibit a comparable difference with respect to superiority, as shown by Huang (1982). Our account has also enabled us to identify the following typology of functional heads: a) 'intrinsic' head governors (three, some, Spanish los, etc.); b) non head governors (the, every); c) 'contingent' head governors (to, who).

References
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