

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, e_j violates the ECP, since it is neither lexically governed nor antecedent-governed.

- (2) [S' [_{Comp} what_i did] [_S who buy e_i]]

- (3) [S' [_{Comp} who_j what_i did] [_S e_j buy e_i]]

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_i , not for e_j . 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) S' → 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'.

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'.³
- (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_i did John see e_i?

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] [_Γ[_{VP} challenged [_{QP} two [_{N'} e] from Peoria]]]]⁴

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] [_{CP} 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].⁵

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 Safir (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 I⁰ 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).

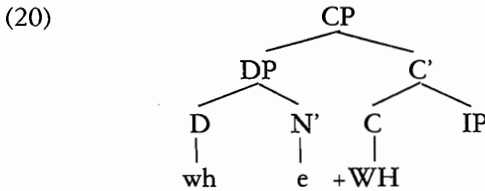
- (18) Who saw what? (19) [_{CP} [_{DP} wh₁ e¹]_i [_{IP} t_i saw [_{DP} wh₂ e²]]]

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) e¹ and e² differ in the feature specification for +/-human.

What allows wh_1 to head-govern e^1 ? 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).



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} What_i did [_{IP} [_{DP} wh e] buy t_i]]?

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.⁸

- (23) [_{CP} [_{DP} Which books]_i did [_{IP} [_{DP} which students] read t_i]]?

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-governed⁹

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

- (26) a. [_{CP} What_i does [_{IP} Mary expect [_{IP} who to buy t_i]]]
 b. [_{CP} What_i did [_{IP} Mary force [_{DP} who]] [_{CP} PRO to buy t_i]]

(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_i did [_{IP} Mary expect [_{IP} [_{DP} wh e] to buy t_i]]]
 b. [_{CP} What_i did [_{IP} Mary force [_{DP} wh e] [_{CP} PRO to buy t_i]]]

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

In (27b), on the other hand, *wh* 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 *wh* 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, wh*).

References

- Abney, S., 1987, *The English Noun Phrase in Its Sentential Aspect*. Doctoral dissertation. MIT.
 Aoun, J., 1986, *Generalized Binding*. Dordrecht: Foris.
 ———, N. Hornstein, and D. Sportiche, 1980, 'Some Aspects of Wide Scope Quantification'. *Journal of Linguistic Research* 1, 69-95.
 ———, ———, D. Lightfoot, and A. Weinberg, 1987, 'Two Types of Locality', *LI* 18, 537-577.
 Bresnan, J., 1972, *Theory of Complementation in English Syntax*. Doctoral dissertation. MIT.
 Choe, J-W., 1984, 'LF Wh-Movement: a Case of Pied-Piping?'. Ms. University of Massachusetts, Amherst.
 Chomsky, N., 1973, 'Conditions on Transformations'. In S. Anderson and P. Kiparsky (eds.) *A Festschrift for Morris Halle*. New York: Holt, Rinehart and Winston.
 ———, 1981, *Lectures on Government and Binding*. Dordrecht: Foris.

- , 1982, *Some Concepts and Consequences of the Theory of Government and Binding*. Cambridge, Mass.: MIT Press.
- , 1986, *Barriers*. Cambridge, Mass.: MIT Press.
- Contreras, H., 1989, 'On Spanish Empty N' and N.' In C. Kirschner and J. DeCesaris (eds.) *Studies in Romance Linguistics*. Amsterdam: John Benjamins Publishing Co. 83-95.
- Fukui, N. and M. Speas, 1986, 'Features and Projection'. *MIT Working Papers in Linguistics* 8, 128-172.
- Hasegawa, N., 1985, 'More Arguments for the Pied-Piping Analysis of Wh-Questions in Japanese'. Ms. University of Massachusetts, Amherst.
- , 1986, 'Wh-Questions, Weak Crossover, and Null Pronouns in Japanese'. In M. Brame, H. Contreras, and F. Newmeyer (eds.) *A Festschrift for Sol Saporta*. Seattle: Noit Amrofer.
- Hendrick, R. and M. Rochemont, 1982, 'Complementation, Multiple WH and Echo Questions'. Ms. University of North Carolina and University of California, Irvine.
- Hornstein, N. and A. Weinberg, 1987, 'Superiority and Generalized Binding'. *NELS* 17, 311-324.
- , ———, 1990, 'The Necessity of LF'. *The Linguistic Review* 7, 129-267.
- Huang, J., 1982, *Logical Relations in Chinese and the Theory of Grammar*. Doctoral dissertation. MIT.
- Jaeggli, O., 1982, *Topics in Romance Syntax*. Dordrecht: Foris.
- Kayne, R., 1981, 'On Certain Differences between French and English', *LI* 12, 349-371.
- , 1984, *Connectedness and Binary Branching*. Dordrecht: Foris.
- Koopman, H. and D. Sportiche, 1982, 'Variables and the Bijection Principle'. *The Linguistic Review* 2, 139-160.
- Lasnik, H. and J. Kupin, 1977, 'A Restrictive Theory of Transformational Grammar', *Theoretical Linguistics* 4, 173-196.
- , and M. Saito, 1984, 'On the Nature of Proper Government', *LI* 15, 235-289.
- Lobeck, A., 1986, *Syntactic Constraints on VP Anaphora*. Doctoral dissertation. University of Washington.
- Nishigauchi, T., 1984, 'Japanese LF: Subjacency vs. ECP'. Ms. Shoin College, Japan.
- Pesetsky, D., 1987, 'Wh-in-situ: Movement and Unselective Binding'. In E. Reuland and A. ter Meulen (eds.) *The Representation of (In)definiteness*. Cambridge, Mass.: MIT Press.
- Rizzi, L., 1989, *Relativized Minimality*. Cambridge, Mass.: MIT Press.
- Safir, K., 1984, 'Multiple Variable Binding', *LI* 15, 603-638.
- Stowell, T., 1986, 'Null Antecedents and Proper Government', *NELS* 16, 476-493.
- Zagona, K., 1982, *Government and Proper Government of Verbal Projections*. Doctoral dissertation. University of Washington.
- , 1988, *Verb Phrase Syntax: A Parametric Study of Spanish and English*. Dordrecht: Kluwer Academic Publishers.