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Government Relations and the Distribution of Empty Operators

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GOVERNMENT RELATIONS AND THE DISTRIBUTION OF EMPTY OPERATORS*

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0. It has been argued in recent work that the Case Visibility Principle plays a role in Universal Grammar by restricting the occurrence of lexical NPs to governed positions only:

(1) Case Visibility Principle (CVP) (Levin, 1983)

Case is only visible under government.

The CVP requires that an NP be governed in order for its Case to be visible to the Case Filter:

(2) Case Filter (J.-R. Vergnaud; Chomsky, 1981)

*NP if NP has phonetic content and has no Case.

The CVP was adduced to account for the particular grammaticality differences between sentences such as those in (3) and (4), and the general prohibition of overt bare wh-words in the COMP of infinitival relative clauses.

(3) a. I know $[_{\bar{S}}\ [_{COMP}\text{who}_i][_S$ PRO to tickle $\underline{e}_i]]$

b. I know $[_{\bar{S}}\ [_{COMP}\text{who}_i][_S$ PRO to talk to $\underline{e}_i]]$

(4) a. *I know $[_{NP}[_{NP}$the man$][_{\bar{S}}[_{COMP}\text{who}_i][_S$PRO to tickle $\underline{e}_i]]]$

b. *I know $[_{NP}[_{NP}$the man$][_{\bar{S}}[_{COMP}\text{who}_i][_S$PRO to talk to $\underline{e}_i]]]$

It was argued that COMP in the embedded $\bar{S}$'s in (4) is ungoverned. The head N^0 of the relative clause cannot govern out of the NP it heads, and there is no governor of COMP internal to the $\bar{S}$ itself.[1] Thus, even though the wh-word in COMP may be inherently Case-marked, or receive Case from the variable it binds, its ungoverned status blocks Case visibility and the structure is ruled out by the Case Filter.[2] By contrast, in (3), the wh-word in COMP is governed by the matrix verb. The verb know subcategorizes for an $\bar{S}$ and in this instance selects a [+WH] complement. It governs this $\bar{S}$, and government percolates to the head of $\bar{S}$, which in the absence of AGR/TENSE is COMP.

In this paper, the CVP will be integrated into the general theory of Chains and Case-Linking proposed by Brody(1983) in an attempt to account for the global distribution of empty operators, that is, empty categories in $\bar{A}$-positions which head chains and bind variables. To accomplish this, Brody's account will be extended to define Case-Linking in $\bar{A}$-Chains. Within this approach, empty categories are viewed as inherently [-Case], while lexical NP's are inherently [+Case]. Empty operators, as heads of chains must be Case-linked. As empty categories which are inherently [-Case], they will be Case-linked if and only if they are ungoverned, thus deriving their ungoverned status. This ungoverned status will then be linked with the exclusive occurrence of such operators in structures of predication, such as those discussed by Williams(1980). The theory of category licensing outlined in Chomsky (1983, class lectures) will be adopted. Within this model, any $\bar{S}$ which is not subcategorized for, must be in a predication relation with some other element in order to be licensed. Clauses headed by empty operators are never subcategorized for, since subcategorization would involve government of $\bar{S}$, and by percolation, government into COMP, which would then violate the principle that all heads of chains be Case-linked. Thus, it follows that clauses headed by empty operators will never be subcategorized, but rather that they will always occur in predication configurations. Under this analysis, infinitival relative clauses,purposive clauses, and tough constructions are all predicted to involve $\bar{S}$'s in ungoverned positions which may function as open predicates.[3] Such an account provides a preliminary explanation for the seeming complementary distribution of lexical versus empty operators in COMP.

1. With the CVP imposing government as a necessary condition for Case Visibility, it follows that structures with ungoverned lexical NP's will always be rejected by the Case Filter. Thus, we are able to derive the fact that lexical NP's can occur in governed positions only. But we still have no way of predicting that empty categories such as the operators in COMP in (5) cannot occur in governed positions, as illustrated in (6).[4]

(5) a. I know $[_{NP}[_{NP}$the man$][_{\bar{S}}[_{COMP}\underline{e}_i][_S$ PRO to tickle $\underline{e}_i]]]$

b. I know $[_{NP}[_{NP}$the man$][_{\bar{S}}[_{COMP}\underline{e}_i][_S$ PRO to talk to $\underline{e}_i]]]$

(6) a. *I know $[_{\bar{S}}[_{COMP}\underline{e}_i][_S$ PRO to tickle $\underline{e}_i]]$

b. *I know $[_{\bar{S}}[_{COMP}\underline{e}_i][_S$ PRO to talk to $\underline{e}_i]]$

One might argue that the sentences in (6) are out by dint of the general principle which states that a [+WH] COMP must be filled by a [+WH] element at LF, and that in English, this requirement must also be met at S-structure (cf. Lasnik and Saito, to appear). Then, assuming that know selects a [+WH] head in (6), one could hypothesize that the ungrammaticality of these sentences is due to the fact that the empty categories in COMP in these constructions are [-WH]. However, given the fact that know can also select a [-WH] COMP, the sentences in (6) cannot be ruled out straightforwardly.

For empty categories in argument positions which head chains, it is their status as "PRO", that is, as [+pronominal, +anaphoric] empty categories which derives their ungoverned status. Within classical Government and Binding theory (Chomsky,1981), the ungoverned status of PRO follows as a theorem of the Binding theory: since this element will come under both conditions A. and B. of the Binding theory, it must be both bound and free in its governing category. To avoid this paradox, it cannot have a governing category, i.e. no governor.

The PRO theorem will not extend to empty categories in COMP such as $\underline{e}_i$ in (5) unless one stipulates that (1) such categories are [+pronominal, +anaphoric], and (2) that such elements, unlike other elements which appear in $\bar{A}$-positions, are subject to the Binding theory.[5] To the extent to which such stipulations fail to adequately account for the parallel distribution of empty categories in A- and $\bar{A}$-positions, (i.e. $\underline{e}_j$ and $\underline{e}_i$ in (7)), we are moved to investigate alternatives to the PRO theorem.

(7) The rabbit is fun $[_{\bar{S}}[_{COMP}\underline{e}_i][_S\underline{e}_i$ to play with $\underline{e}_j]]$

One such proposal, that of Brody(1983), derives "PRO"s ungoverned status from an extended theory of Chains and Case-Linking in which empty categories are intrinsically [-Case], and lexical NP's are intrinsically [+Case].[6] The principles of Brody's theory, which involves Case-checking, not Case assignment, are given in (8) and (9).

(8) Chains (Brody,1983)

A chain $C(\alpha_1 \ldots \alpha_n)$ is a maximal sequence of categories such that:

A. α_1 is an NP

B. α_i locally binds α_{i+1}

C. For $i \neq 1$, α_i is an empty category[7]

(9) Case-Linking (Brody,1983)

A. i. A lexical NP has Case

ii. An empty category has no Case

B. NP_α is Case-linked iff α is the head of a chain.

C. NP_α is Case-linked (to β) iff α has Case iff α is governed (and governed by β).

D. If α is Case-linked to β, then α must be Case-matched to β.

Given (8)C., it follows that every lexical NP heads a chain. If this is so, then by (9)B. every lexical NP must be Case-linked, which is defined in (9)C. for lexical NP's, which are by definition [+Case], as being governed. With no distinction drawn between NP's in A or Ā-positions, it will follow that lexical NP's in COMP must also head chains, be Case-linked, and thus governed. Looking back at relative clause structures like those in (10), we see that the wh-word in COMP heads the chain ($\underline{\text{who}}_i$, $\underline{e}_i$) and so, by (9)B. it must be Case-linked.

(10) a. *$[_{NP}[_{NP}$the man$][_{\bar{S}}[_{COMP}$who$_i][_S \underline{e}_j$ to tickle $\underline{e}_i]]]$

b. *$[_{NP}[_{NP}$the man$][_{\bar{S}}[_{COMP}$who$_i][_S \underline{e}_i$ to tickle Nick$]]]$

c. $[_{NP}[_{NP}$the man$][_{\bar{S}}[_{COMP}\underline{e}_i][_S \underline{e}_j$ to tickle $\underline{e}_i]]]$

d. *$[_{NP}[_{NP}$the man$][_{\bar{S}}[_{COMP}\underline{e}_i][_S \underline{e}_i$ to tickle Nick$]]]$

e. $[_{NP}[_{NP}$the man$][_{\bar{S}}[_S \underline{e}_i$ to tickle Nick$]]]$

Who$_i$ is lexical, therefore it has Case, but in (10)a.,b. it is not governed and therefore not Case-linked. This violates principle (9)B., and so such structures are ruled out. In (10)c., both e_i and e_j head chains. They are both empty, thus [-Case], and they are both ungoverned, thus they are both Case-linked and all is well. (10)d.,e. illustrate a very interesting theorem of this theory of Case-linking: namely that there is no such category as a Case-linked variable. This is another way of saying, in the standard sense, that variables must be governed. How is this so? If, in (10)d., the two empty categories form a chain as illustrated, then the second element in the chain will not be head of a chain, and thus, by (9)B. it cannot be Case-linked. But here we have an empty category in an ungoverned position, so it is Case-linked, ruling the structure out. The only possible status for an empty category in an A-position which heads a chain will be that in (10)c.,e. where we see that the gap in subject position is not a variable.

If we now look at the sentences in (11), we see that it is not enough to define Case-linked as in (9)C., since in these examples, the lexical NP in COMP is governed by an element to which it is not Case-linked.[8]

(11) a. $[_{\bar{S}}[_{COMP}\text{who}_i][_S\ e_i$ likes David$]]$

b. $[_{\bar{S}}[_{COMP}\text{who}_i$ does$][_S$ David like $e_i]]$

c. *I wonder $[_{\bar{S}}[_{COMP}\text{who}_i][_S\ e_i$ to tickle Nick$]]$

d. I wonder $[_{\bar{S}}[_{COMP}\text{who}_i][_S\ e_j$ to tickle $e_i]]$

Principle (9)C. will give the wrong results for (11), since who$_i$ will be Case-linked to the governing element in INFL in (11)a.,b. and to the governing verb wonder in (11)c.,d. Clearly however, the wh-words are Case-linked with respect to the positions of the variables which they bind.[9] Thus, it seems necessary to reformulate (9)C. in such a way as to properly Case-link elements in $\bar{A}$-positions. We will do this by replacing (9)C. with the definition in (12):

(12) NP$_\alpha$ is Case-linked (to γ) iff α has Case iff α is governed (by β).

Given β, to find γ: find the first element of the chain $(\alpha_1 \ldots \alpha_n)$ which is Case-checked. The governor of this position is γ.

For the case of A-chains, γ will trivially equal β. For $\bar{A}$-chains, a lexical NP will be Case-linked with the element which governs the variable it binds, at least in the case of English. Notice however that in a language like Hungarian (Horvath,1981) where verbs may Case-check (i.e. assign Case) into COMP, an NP in an

Ā-position which heads a chain might be Case-linked to a verb which governs and Case-checks an intermediate COMP.[10] Non-lexical heads of Ā-chains will be Case-linked by (12) if and only if they are not governed, regardless of the Case-linking properties of other elements in the chain. In (11)b. then, $\underline{\text{who}}_i$ will be Case-linked to the verb like, since this is the first position in the chain ($\underline{\text{who}}_i$,$\underline{e}_j$) which is Case-checked by a governor. Likwise, $\underline{\text{who}}_i$ will be Case-linked to the governor tickle in (11)d., even though it is Case-linked in COMP by virtue of the fact that it is governed by the verb wonder.

At this point is might be fruitful to ask if the CVP, posited earlier, has any independent status given a theory of Case-linking like that outlined above.[11] The answer to this question appears to be yes. Looking back at the definition of chain given in (8), we see that it is necessary to stipulate that if an element does not head a chain, then it must be empty (=(8)C.). However, this is essentially a result of principle (9)B. That is, given (9)B., a non-head of a chain cannot be Case-linked, and thus if it is empty it must be governed , and if it is lexical it must be ungoverned. But given a model which already involves Case-matching, it seems reasonable to state (8)C. in a more principled fashion if possible, such that it is seen to be a result of the theory of Case itself. Replacing (8)C. by the CVP will have just the desired result, provided that (9)A.i. reads "A lexical NP has Case, and Case must be visible". This will disallow a lexical NP as a non-chain head, since such a lexical NP cannot be Case-linked and thus must be ungoverned, but being ungoverned its Case will not be visible and (9)A.i. will be violated. In this way, (9)C. is also given a more comprehensible status, since Case-visibility of chains to ensure θ-role assignment is encoded as a Case-linking requirement on chain-heads. The revised principles of Case-linking Theory appear in (13)-(15).

(13) Chains: A chain $C(\alpha_1 \ldots \alpha_n)$ is a maximal sequence of categories such that:

A. α_1 is an NP
B. α_i locally binds α_{i+1}

(14) CVP: Case is only visible under government

(15) Case-linking:

A. i. A lexical NP has Case, and Case must be visible.
ii. An empty category has no Case.

B. NP_α is Case-linked iff α is the head of a chain.

C. NP_α is Case-linked (to γ) iff α has Case iff α is governed (by β).

Given β, to find γ: find the first element of the chain $(\alpha_1 \ldots \alpha_n)$ which is Case-checked; the governor of this position is γ.

D. If NP_α is Case-linked to γ, then NP_α must be Case-matched to γ.

2. With the CVP incorporated into a theory of Case-linking, we are now in the position to posit a preliminary account of the limited distribution of empty operators of the type seen in (5) and (7) above. Before proceeding, it will be helpful to summarize certain descriptive generalizations which hold of particular relevant relations.

(16) A. If an X^0 subcategorizes a category YP, then it governs YP.

B. No X^0 subcategorizes or selects for a clause headed by an empty operator (in contrast to verbs which select [±WH], [±FIN], etc.).

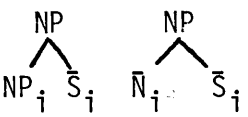
C. If an element is not licensed by θ-theory, then it must be licensed by predication theory (Chomsky, class lectures).

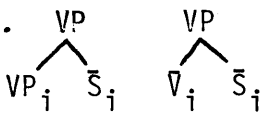
D. Predication involves mutual c-command (Williams,1980).

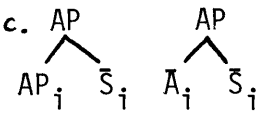
Within the theory of Case-linking described above, it happens that empty operators cannot be governed. Though at this point stipulatory in nature, the general principle in (17) will be proposed to account for the fact that empty operators occur precisely where they do:[12]

(17) X^0 governs the head of YP iff X^0 subcategorizes YP. (X≠INFL)

Given (17), a verb could never select for an empty category in COMP, since it would then govern into this COMP and prohibit the empty category from being Case-linked. (16)C. would then predict that clauses headed by empty operators must be predicated of some element or category, since otherwise they will not be licensed. Thus, we are lead to two predictions: (1) that $\bar{S}$'s headed by empty operators will occur in predication structures only; and (2) that such empty operators must be protected by some maximal projection from external government. In (18) we see possible configurations in which an empty operator could appear in COMP.

(18) a. 

b. 

c. 

In all cases, the $\bar{S}$ must be [-FIN] to prevent COMP from being governed internal to $\bar{S}$. Mutual c-command is met, as required by (16)D. Furthermore, the maximal projection immediately dominating the $\bar{S}$ protects it from outside governors, in particular TENSE/AGR. (18)a. is the common case of infinitival relative clauses, some of which we have already examined. (18)b. seems a plausible structure for purposive clauses like those in (19).

(19) a. I bought TRX's $[_{\bar{S}}[_{COMP}\underline{e}_i][\underline{e}_j$ to run in $\underline{e}_i]]$

b. I bought Converse $[_{\bar{S}}[_{COMP}\underline{e}_i$ for$][_S$Marc to play ball in $\underline{e}_i]]$

c. The candy was too rich $[_{\bar{S}}[_S\underline{e}_i$ to be digested $\underline{e}_i$ properly$]]$

d. *I chewed the candy $[_{\bar{S}}[_{COMP}\underline{e}_i][_S\ \underline{e}_i$ to be digested $\underline{e}_i$ well$]]$

e. I chewed the candy $[_{\bar{S}}[\underline{e}_j$ to make it$_i$ last$]]$

Here again we see that (19)d. is out by Case-linking, since the empty category in subject position is Case-linked but not head of a chain. The subject of the embedded clause, if empty, must be interpreted as the head of a chain, thus as a "PRO" subject to control theory, not a bound variable. Thus, (19)d. is fine without $\underline{e}_i$ in COMP, but in that case, the empty embedded subject is interpreted as coreferential with the matrix subject, with an admittedly bizarre meaning in this instance. In each of these cases, the $\bar{S}$ appears to be predicated of the entire VP and thus the "purposive" interpretation of such predicates. A choice between the alternate structures given in (18) will depend on the formal definition of government adopted. If one adopts the Aoun-Sportiche(1981) definition of government in which a governor and governee share all maximal projections, then the first of each of these structures must be posited for empty operator constructions in order to bar government into COMP. However, if, as proposed by Stowell(1980), subcategorization is a necessary condition for lexical government, then the second structure of each pair will be a possible configuration in which an empty operator could occur in COMP.

(20) I $[_{VP}[_{VP_k}$ bought TRX's$][_{\bar{S}_k}[_{COMP}\underline{e}_i][\underline{e}_j$ to run in $\underline{e}_i]]]$

The maximal VP in (20) will prevent INFL of the matrix clause from governing into COMP, since government of this VP will percolate to the head of VP, which will be V^0. VP_k will block the verb bought from governing out of its maximal projection.

A structure like that in (18)c. is posited as the cannonical Tough-movement case, illustrated in (21)a.

(21) a. Nick is $[_{AP}[_{AP}$easy$][_{\bar{S}}[_{COMP}\underline{e}_i][_S\underline{e}_j$ to tickle $\underline{e}_i]]]$

b. It is $[_{AP}[_{\bar{A}}$easy for me$][_{\bar{S}}[_S\underline{e}_j$ to tickle Nick$]]]$

c. Nick is $[_{AP}[_{AP}$easy$][_{\bar{S}}[_{COMP}\underline{e}_i$ for$][_S$me to tickle $\underline{e}_i]]]$

d. It's $[_{AP}[_{\bar{A}}$fun for me$]][_{\bar{S}}$for$[_S$Don to tickle Nick$]]$

e. *Nick is $[_{AP}$fun$][_{PP}$for me$][_{\bar{S}}[_{COMP}\underline{e}_i$ for$][_S$Don to tickle $\underline{e}_i]]$

A relation of predication holds between the $\bar{S}$ and AP in question. Semantically, it seems that the AP is actually predicated of the VP, and that the subject NP basically comes along for the ride. This could follow from Chomsky's theory of licensing. Since a VP is a predicate, it must be predicated of some argument, and NP/S must occur. In the non-tough-movement cases such as (21)b., no predication takes place. The tough-adjective merely subcategorizes a for-NP PP which functions as an overt or implicit argument controlling the embedded subject position. The $\bar{S}$ in these cases is an external argument. As shown in (21)c.,d., the subject position of both embedded clauses can be lexical as one would expect.[13] The ungrammatical status of (21)e. follows from the lack of mutual c-command which is required for the predication relation.

A similar analysis is easily extendable to too-Adjective constructions such as that in (22):

(22) Don is $[_{AP}[_{AP}$too heavy$][_{\bar{S}}[_{COMP}\underline{e}_i][_S\underline{e}_j$ to carry $\underline{e}_i]]]$

3. In summary, though preliminary in many ways, the "adjunct" status of clauses headed by empty operators has been captured by deriving their ungoverned status from the Case Visibility Principle in conjunction with an extended theory of Case-Linking(Brody,1983). The statement in (17) allows one to come to the conclusion that the only structural environment in which empty operators will occur is precisely in that of predication, for this is the only configuration in which the clauses they head will be licensed and they will be ungoverned. The Case Visibility Principle, on the other hand, essentially restricts lexical NP's in COMP to governed positions only. Thus, the complementary distribution of lexical versus non-lexical chain-heads in A-positions as well as $\bar{A}$-positions is captured.

FOOTNOTES

*I thank M. Brody, N. Chomsky, D. Pesetsky, L. Rizzi, and P. Speas for valuable discussion of these ideas.

[1]The arguments in Levin(1983) and the present work go through regardless of whether it is AGR, TENSE, or $\pm$PAST which is assumed to be the governing element in INFL.

[2]Or, by the θ-criterion, should one argue, following Chomsky(1981), Stowell(1981) that Case visibility is a necessary condition for θ-role assignment. Then both the CVP and the Case Filter are ultimately reducible to the θ-criterion.

[3]In certain cases, such as the tough-movement constructions, the $\bar{S}$ may be seen to function both as an open predicate, predicated of the subject NP, and as a predicee, since the AP may be seen to be predicated of the open $\bar{S}$.

[4]The proposal that empty operators such as those in (5) must be ungoverned raises questions as to the status of COMP in tensed relative clauses such as the following:

i. $[_{NP}[_{NP}$the man$][_{\bar{S}}\ e_i[_{S}$Nick tickled $e_i]]]$

ii. $*[_{NP}[_{NP}$the man$][_{\bar{S}}\ e_i[_{S}\ e_i$ tickled Nick$]]]$

The present proposal forces an analysis of both of these structures as ill-formed S-structures. We must assume then that that-deletion somewhere between S-structure and PF gives rise to i. Such deletion is blocked in ii. for reasons that are not obvious. See Stowell(1981) for a discussion of that-deletion in COMP.

[5]Such a position could perhaps be taken within the Generalized Binding theory of Aoun(1982), however, I have not yet investigated all the ramifications of such an analysis.

[6]I believe this set of statements was originally proposed by Bouchard(1982).

[7](6)C. as we will see shortly, is a way of encoding a subset of the phenomena covered by the CVP into Chain theory.

[8]As defined by Levin(1983), COMP of a [+FIN] clause will always be governed internal to $\bar{S}$ by the governing element within INFL. In the absence of such an element, COMP will act as head of $\bar{S}$ and thus, government from outside of $\bar{S}$ will percolate to COMP. For an analysis of inversion in English as satisfying a proper government condition on certain elements in COMP (as in (11)b.) see Speas(1983).

[9]This is not entirely clear in English where morphological case-marking is almost non-existant.

[10]Even the definition in (12) is not entirely satisfactory, given various facts about Case heirarchy in Hungarian, and non-matching free relative constructions in Gothic and Ancient Greek, where two positions in the $\bar{A}$-chain are case-checked by two different governors, and one wins out for little understood reasons.

[11]L.Rizzi (p.c.) has recently suggested evidence for the CVP outside the realm of NP's in COMP. His argument centers around Free Inversion facts in Italian like the following (abstracting away from Heavy NP-shift effects which can occur in such construction):

i. ?Ha scritto la lettera Giorgio.
ii. La ha scritto e Giorgio.
iii. $[_{NP}$La lettera che ha scritto e Giorgio$]$

The post-verbal NP in i.-iii. is inherently [+CASE] in our terms, or Case-marked in the relevant sense. However, contiguity between

the post-verbal NP/S and the verb seems to be required for case "visibility". Thus, Rizzi posits a version of the CVP which states:

> CVP(revised): Case is visible on β only if there is some γ such that γ governs β, and γ is adjacent to β.

Incorporation of this adjacency condition on government as it relates to the CVP is entirely compatible with Levin(1983) provided that INFL is base-generated in COMP.

[12]This statement follows in spirit the proposals of Stowell(1980), (1981), and is due to a suggestion of L. Rizzi.

[13]At first glance there seem to be problems with (21)c. since COMP is branching and c-command does not hold between the $\bar{A}$-binder and its bindee, nor between for and the subject NP. For arguments that such structures are non-problematic, and that adjacency rather then c-command is relevant to government see Cinque(1983).

[14]Other possible empty elements in COMP differ crucially from the empty operators under discussion in two respects: (1) they do not bind variables; and (2) they are not associated to any c-commanding NP in an A-position (through predication). Such possible "empty" or "abstract" operators are discussed by Speas(1983) in relation to subject-AUX inversion in root sentences in English. COMP's in these constructions according to Speas must be properly governed, thus coming under the ECP. Given the two differentiating characteristics above, it is tempting to relate the ungoverned vs. properly governed status of the two distinct types of empty operators to the status of "PRO" vs. "pro". However, it is clearly too early to speculate on such issues.

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