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ON A LEXICAL PARAMETER IN THE GOVERNMENT-BINDING THEORY

Howard Lasnik

The 'Government-Binding' theory of Chomsky's recent work provides the outlines of general theories of abstract case, and of binding. Implicitly, the theories make a variety of parameters available within universal grammar. It will be the purpose of the present paper to explore the nature of certain of these parameters with the goal of determining how it is possible for the language learner to 'fix' them. In the course of the discussion, it will become evident that markedness is crucially involved.

The heart of case-theory is the requirement that a lexical NP have case.

- (1) *NP

$$\left[\begin{array}{l} +\text{lexical} \\ -\text{case} \end{array} \right]$$

NP will receive case when governed (i.e. minimally c-commanded) by an appropriate lexical category. Additionally, there are a variety of special case marking rules available, such as the ones for genitives in English, and the second NP in a double object construction. The final relevant property of the system is that S (as well as NP) is an absolute barrier to government, and hence to case marking. Thus, a special rule, which will be examined at length below, is needed for constructions in which an infinitival complement to the verb has a lexical subject.

The same notion of government is central to the theory of binding. Definitions relevant to the theory are as follows. An (argument) NP is bound if c-commanded by a coindexed argument, free otherwise. The governing category for an NP is the minimal NP or S in which that NP is governed.

(2) Binding Theory

- (A) If NP is lexical or a bound variable (i.e. trace of wh-movement), then it is free.

- (B) If NP is pronominal (a lexical pronoun, or a phonetically null pronoun = PRO), it is free in its governing category.
- (C) If NP is an anaphor (reciprocal, reflexive, NP[e], PRO) it is bound in its governing category.

Given the requirements of (1) and (2), we have such paradigms as the following:

- (3) a. They tried [\bar{S} [S PRO to win]]
- b. They tried [\bar{S} [S Bill to win]] *by (1), since \bar{S} is a barrier to government, and hence, to case-marking.
- c. They tried [\bar{S} [S each other to win]] *by (1)

The paradigm of the want class of verbs is more problematic, as examples analogous to (3b) and (3c) are grammatical. This sort of 'exceptional case marking' can be described in terms of \bar{S} deletion, an option available with want, but not with try (otherwise (3b, c) could not be excluded).¹ All of the possibilities are presented in (4).

- (4) a. They₁ wanted [\bar{S} [S PRO₁ to win]]
O.K. ²
- a'. They₁ wanted [S PRO₁ to win]
*because PRO is governed, and hence must be both free (2b) and bound (2c) in its governing category — a contradiction.
- b. They₁ wanted [\bar{S} [S Bill₂ to win]]
*by (1)
- b'. They₁ wanted [S Bill₂ to win]
O.K.
- c. i. They₁ wanted [\bar{S} [S each other₁ to win]]
*by (1)
- ii. They₁ wanted [\bar{S} [S each other₂ to win]]
*by (1)³
- c'. i. They₁ wanted [S each other₁ to win]
O.K.
- ii. They₁ wanted [S each other₂ to win]
*by (2c)

What properties must the rule of \bar{S} deletion have? Since \bar{S} is a barrier to government, and the examples above illustrate that government is possible, somehow the \bar{S} boundary must be eliminated. One proposal (due to Chomsky) is that in the complements of verbs taking \bar{S} deletion, \bar{S} is changed to S . This apparently suffices for the cases at hand. Note that when \bar{S} dominates just S , we wind up with S , which is identical

to S in a theory of phrase structure such as the one in Chomsky (1955) or Lasnik and Kupin (1977). Though the operation is rather different from syntactic transformations, it must nonetheless be in the syntactic component: assuming the organization of the grammar in e.g., Chomsky and Lasnik (1977), it is clear that effects of \bar{S} deletion must be available to both the 'Logical Form' rules of binding and to the 'Phonetic Form' rules assigning and checking morphological case.

Thus far, we have two cases: verbs like try which do not allow \bar{S} deletion at all; and verbs like want for which \bar{S} deletion is optional.⁴ Given this, the learnability account is straightforward. Try must constitute the unmarked case. If the child's initial assumption is that there is never \bar{S} deletion, he will have guessed right for try, and will quickly receive disconfirming evidence for want in the form of grammatical sentences such as (4b'). On the other hand, if want is taken as the unmarked case, the only evidence that try is different is the ungrammaticality of such instances as (3b, c). But, as has been widely discussed, 'negative data' of the required sort does not seem to be available to the child.

The situation is not quite this simple, however. There are infinitival complement taking verbs different from both try and want. Try allows only PRO as its complement subject. Want allows everything: PRO, lexical NPs, pronouns, lexical anaphors. Believe is the opposite of try. It allows everything except PRO. One way of accounting for this is to make \bar{S} deletion obligatory for believe. This results in (5).

- (5) a. They believe [_S PRO to be intelligent]
 *by (2b, c), as in (4a')
- b. They believe [_S Bill to be intelligent]
 O.K.
- c. They₁ believe [_S each other₁ to be intelligent]
 O.K.

Note that for none of the three verbs considered can the complement subject be a pronoun coindexed with the matrix subject. With try, the complement subject cannot be lexical at all. With want, there are two cases: if \bar{S} remains, the pronoun would be ungoverned and hence lack case; if \bar{S} deletes, a coindexed pronoun would violate (2b).⁵ The latter possibility for want is, by hypothesis, the only possibility for believe, since \bar{S} deletion is

obligatory in this latter case. Here too a coindexed pronoun is impossible.

With three lexical possibilities, the learnability story is somewhat more complicated. As before, a verb like *want* taking optional \bar{S} deletion must be the most marked case, since it is the most 'permissive'. There will be positive evidence for each of its divergences from the unmarked. It is not immediately as clear whether *try* (no \bar{S} deletion) or *believe* (obligatory \bar{S} deletion) constitutes the unmarked case. Since the properties of the two are completely complementary in the relevant domain — compare (3) with (5) — whichever assumption the child begins with will be disconfirmed by positive evidence in the appropriate places. Thus, if *believe* is mistakenly hypothesized initially not to undergo \bar{S} deletion at all, examples like (5b,c) will not be generable. When they turn up in the data, it will be evident that the hypothesis was wrong. Crucially, the replacement hypothesis cannot be that deletion is optional, or else the child will mistakenly assume that (5a) is possible. It is not clear how he could ever discover that he is wrong. Under this account, we have (6):

- (6) a. unmarked case - no \bar{S} deletion
 b. when a. fails -- obligatory \bar{S} deletion
 c. when a, b both fail -- optional \bar{S} deletion

The matter is not settled, though, since an alternative theory of grammar reversing (6a) and (6b) would be equally as effective in handling these facts. Suppose the child begins by assuming that all (infinitival) complement taking verbs undergo obligatory \bar{S} deletion. For *believe* this works, but data such as (3a) immediately disconfirm the hypothesis for *try*. As before, *want*, the verb with the widest range of positive evidence, will have to be the most marked.

So far, we have no basis for choosing between theory (6) and theory (7).

7. a. unmarked case - obligatory \bar{S} deletion
 b. when a. fails -- no \bar{S} deletion
 c. when a, b both fail -- optional \bar{S} deletion

There are, however, reasons to believe that (7) is not correct. First, (7) does not capture the fact that 'exceptional case marking' — that into a lower clause — is indeed exceptional. In fact, (7) would make this choice the most highly valued. Further, there are languages, Vietnamese is one,⁶ that have verbs like *try* and verbs like *want* but none like (infinitival complement taking) *believe*.

There are certain seemingly problematic aspects of obligatory \bar{S} deletion. Consider first the behavior of *believe*, illustrated in paradigm (5) above. Essentially, *believe* differs from *want* only in disallowing (5a), the example in which PRO is the complement subject. Since it is an immediate theorem of (2) above that PRO must be ungoverned, with obligatory \bar{S} deletion PRO in (5a) will necessarily be governed and we have an account of the ungrammaticality of the example. To see the

apparent limitations of this account, we must first briefly look at the behavior of NP[e] — the trace of NP movement. For our present purposes, the core requirement on NP[e] is (8).

(8) NP[e] must be governed.

(8) is one part of Chomsky's Empty Category Principle (ECP).

Just as \bar{S} deletion is involved in case assignment and binding via the properties of government, it is similarly involved in the theory of movement. (8) along with the principle (or theorem) that case-marked NP[e] is a bound variable entails that movement is possible only from a governed position that is not governed by a case assigning verb.⁷ Some movement paradigms are as follows:

- (9) a. J believes [\bar{S} [_S e to be intelligent]]
 *by (8)
- b. J believes [_S e to be intelligent]
 *because NP[e] + case must be a bound variable
- (10) a. J is believed [\bar{S} [_S e to be intelligent]]
 * by (8)
- b. J is believed [_S e to be intelligent]
 O.K. ([V] en is not a case assigner)
- (11) a. J is certain [\bar{S} [_S e to win]]
 *by (8)
- b. J is certain [_S e to win]

Important questions are raised by attempted nominalizations of the above. None of the nominalizations are grammatical.

(12) *J's belief [e to be intelligent]

(13) *J's certainty [e to win]

Regardless of whether \bar{S} is deleted, the traces in (12) and (13) will not be case-marked, hence will not have to be bound variables. Nor do these examples violate functional uniqueness. The burden thus falls on the ECP for ruling them out. But if \bar{S} is allowed to delete in (12) and (13), NP[e] will be governed. Thus, even though the morphological sources of belief and certainty allow \bar{S} deletion, the nouns themselves apparently must not. This suggests that (14) is a principle of grammar:

(14) Nouns do not allow \bar{S} deletion in their complements.

(14) then provides an account for the much discussed fact that there are no nominalizations of Raising constructions.⁸ (14) is also suggestive evidence that it is correct to regard \bar{S} deletion as a marked phenomenon. Given (14), however, a new problem arises. So far, the only thing blocking (5a) is the stipulation that \bar{S} deletion is obligatory with believe. Now we have just seen that \bar{S} deletion is impossible with belief, yet (15) is still ungrammatical.

(15) *John's belief [\bar{S} [_S PRO to be intelligent]] ...

Contrast (15) with the grammatical (16).

(16) John's desire [\bar{S} [_S PRO to win the race]]

In fact, the only work done by obligatory \bar{S} deletion in the theory is to rule out (5a). Yet the analogous *(15) is generated. Apparently, it must be stipulated that belief cannot take PRO as its complement subject. But it would be no more costly — and perhaps less costly — to extend this stipulation to the entire lexical entry of BELIEVE. This done, the motivation for the lexical parameter of obligatory \bar{S} deletion disappears.

Special stipulations involving the properties of PRO are not unique to the case discussed. For example, it must somehow be stated that promise takes subject control while persuade takes object control. Further, eager takes subject control, while important takes arbitrary reference. Presumably, some of these properties will ultimately turn out to be theorems. But the same might be said of the want - believe difference.

There is one further argument that \bar{S} deletion is best regarded as a special marked option. Consider the behavior of a verb such as like.

- (17) a. I like for you to do that
b. I like you to do that

(18) I like PRO to do that.

Note that though like can generally passivize, and although (17b) indicates that \bar{S} deletion is possible, (18) is still ill-formed.

(19) *J is liked [e to do that]

One way to describe this is to state that the property of allowing \bar{S} deletion does not carry over from like to like EN. Then the subject trace is in violation of the ECP (8). The property does carry over from believe to believe EN, as (10b) illustrates. The generalization appears to be that verbs taking for complements do not extend \bar{S} deletion to their passive forms. More generally, no adjectives taking for complements allow \bar{S} deletion:

- (20) *J is eager [e to do that].
important

Interestingly, the reverse case also exists -- verbs like *say* allow \bar{S} deletion in the passive, but not in the active. (J. is said to be intelligent/*We said J. to be intelligent). How to capture this is not clear, but it is one further example of unexpected applicability of the rule.⁹

In the theory developed in Chomsky (1979) and explored here, an ungoverned lexical anaphor has no binding requirement, as pointed out in footnote 3 above. In effect, case theory is required to guarantee that a lexical anaphor will always have an antecedent. This works because whenever an NP is ungoverned, it will be caseless as well. Seen in this light, certain facts of Vietnamese are surprising. Consider paradigm (21).

- (21) a. John muon [Bill di]
John wants Bill to go
- b. John muon [PRO di]
John wants PRO to go
- c. *Ho muon [nhau di]
They want each other to go

(21b) indicates that \bar{S} may be retained; (21a) indicates that \bar{S} may be deleted.¹⁰ Yet (21c) seems to indicate that \bar{S} must be retained. Given the above arguments that \bar{S} deletion is a marked lexical choice, one might consider the possibility that some languages don't 'choose' the option at all. If VN is such a language, (21b, c) are easily accounted for, but (21a) is still problematic. There is, however, some reason to believe that VN lacks (1), the case filter. Unlike English, VN has N-NP as well as N-PP constructions, possibly indicating that lexical NP's need not have case. This would then be another parameter made available by the theory. Counting against this proposal, however, is the fact that 'infinitival' complements to certain nouns may have PRO, but not lexical NP, as subject. This suggests that the case filter is indeed operative, and also that (14) obtains in Vietnamese as well as in English. The marked property of Vietnamese would then be that N is added to the class of case assigning categories. Like V, however, N would not be able to assign case across an \bar{S} boundary.

Assuming optional \bar{S} deletion, (21a, b) are now accounted for, but (21c) becomes a mystery. Either *Nhau, each other*, has no governing category and needs no case, under the assumption that Vietnamese lacks filter (1); or else \bar{S} deletes and *nhau* gets case and is bound in its governing category (the larger S). Hence, (21c) should be grammatical. All of this might indicate that in Chomsky's analysis of English, case theory is doing too much of the work of binding theory. It is reasonable to assume that regardless of the case properties of a given language, anaphors will still have to be bound. A statement of

this requirement could be (22).

(22) An anaphor must be bound in its minimal S .

(21b) would now appear to be problematic, if we assume that PRO is in fact an anaphor. Though that assumption is made in the Government-Binding theory, it might be dispensable. As we have seen, lexical properties of matrix predicates are heavily involved in the requirements of complement PRO. As an alternative to regarding PRO as an anaphor in the technical sense of the theory, we might treat it as simply a pronoun for binding theory, but a pronoun that requires an antecedent in certain lexical constructions. Under these assumptions, part of the binding theory in (2) could be replaced in English as well. The relevant principle would be (23):

(23) An anaphor must be bound in its minimal \bar{S}

This looser requirement would be motivated by the grammaticality of the English analogue of (21c). This difference between English and Vietnamese would then represent another parameter, interestingly one involving the choice of S vs. \bar{S} just as Rizzi's analysis of subadjacency (Rizzi (1977)) does. Further, in both cases, choice of S , the stricter requirement, would have to constitute the unmarked case.

Footnotes

* I am indebted to Lan-Anh Dang for many helpful discussions, and for the Vietnamese data.

¹ Even with \bar{S} deletion, there must be limitations on exceptional case marking, as is evident from the behavior of seem — *It seems John to be intelligent' — even though 'J seems [e to be intelligent]' indicates that \bar{S} has deleted (or the Empty Category Principle would be violated). Thus, seem must be specified as not assigning case.

² Interestingly, binding theory does not require that PRO be bound here, as it has no governing category. Since it is clear that PRO must pick up its reference from they rather than being 'arbitrary' in reference, an additional stipulation on structures of this sort is needed.

³ Note that contrary to what one might expect, this example does not also violate principle (2c) of the binding theory. Since each other here is not governed, it has no governing category, and hence no binding requirement.

⁴ Presumably \bar{S} deletion will be inapplicable when for is present as the complementizer for the want class. In such cases as (a)

- (a) I want very much [\bar{S} for [S you to leave]]

for must assign case to you, and by implication govern it.

- (b) *I want very much [\bar{S} for [S PRO to leave]]

bound anaphors other than PRO should be grammatical in these complement subject positions, since the governing category will be the larger S. (Recall that \bar{S} is not a possible governing category.) Unfortunately, the relevant data, as in (c) is rather unclear.

- (c) ? We want very much [\bar{S} for [S each other to win]]

⁵A coindexed pronoun will also be impossible when for is present as in fn. 4.

- Bill₁ wants very much [\bar{S} for [S him₁ to win]]

Again, the governing category of him is the larger S (even though the governor is for.) Him is then bound in its governing category violating (2B).

⁶Vietnamese is uninflected, yet the central differences between finite and infinitive clauses that are apparent in English show up in this language as well. Apparently, the relevant notions are quite abstract. See Dang (forthcoming) for examples and discussion.

⁷An alternative, and perhaps more natural, constraint is the Functional Uniqueness principle of Freidin (1978:536, fn. 25). This principle prohibits a lexical NP from filling more than one argument position in the logical form of a sentence.

⁸A possible alternative is suggested by certain observations in Anderson (1979). In effect, Anderson suggests that a preposed NP within an NP must bear a very specific semantic relation to the head noun. In the NPs considered above, there is of course no semantic relation. Why NPs should have this strong requirement that Ss lack is not clear.

⁹Chomsky (class lectures 1980) has re-examined these facts involving NP preposing and suggested a different approach. He argues that \bar{S} deletion is impossible for want, as it is for try. The difference is that complementizer for is available as an option with want and can assign case (prior to complementizer deletion). If for is not selected in the base, (19) will be out directly by ECP. If for is selected, there is a problem. (a) can be ruled out by the for - to filter of Chomsky and Lasnik (1977):

- (a) *J is liked [\bar{S} for [S e to do that]]

But if *for* is selected and later deleted, the filter is not violated. Further, the deleted *for* would be present in LF apparently saving (a) from the effects of ECP. It must apparently be stipulated under this approach that although complementizer *for* counts as a governor for case-assignment, it does not count as a governor for ECP. The subject trace would then be ungoverned. A possible alternative, suggested by observations of Anderson and Dang (1979) is that both \bar{S} and \bar{S} are bounding nodes for subjacency when COMP is filled.

¹⁰Note that Chomsky's alternative to \bar{S} deletion for want-class verbs in English (see fn. 9) is not available in Vietnamese. No complementizer ever shows up in the complement of *muon*.

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