On the Syntactic Representation of English Ellipsis

Miyoko Ikawa

0. Introduction

The government and binding (GB) theory standardly assumes two types of base-generated empty category (i.e., PRO and *pro*) as well as empty categories created under movement (i.e., traces). Attempts have been made to capture their restricted distributions in terms of principles such as the Empty Category Principle (ECP) and the Binding Theory. This study will investigate whether or not syntactic empty categories should be posited in elliptical sentences such as (1):

(1) Mary introduced John to everyone that he did.

In Fiengo and May (1991), an empty category is postulated after the auxiliary *did* and its content is reconstructed at LF. They argue that the representation after reconstruction is crucial to the explanation for binding and other facts and thus it is a syntactic representation. If they are correct, the derivation of such a representation from S-structure must be governed by syntactic constraints just as the mapping of S-structure from D-structure is, but they say nothing on this matter. This paper will show that it is impossible to formulate such syntactic constraints, which means that representations Fiengo and May assume cannot be regarded as syntactic and that there is no motivation for positing an empty category in elliptical sentences like (1).

1. Fiengo and May (1991)

Fiengo and May (1991) (F&M) analyze (1) as follows:[1]

(2) a. Mary [$_{VP}$ introduced John to [everyone that he did [$_{VP}$ e]]]
b. [everyone that he did [$_{VP}$ e]]$_1$ [Mary [$_{VP}$ introduced John to e_1]]
c. [everyone that he [$_{VP}$ introduced John to e_1]]$_1$ [Mary [$_{VP}$ introduced John to e_1]]

Reconstructing the empty VP in S-structure (2a) will lead to an infinite regress since it is part of its antecedent VP. Applying QR to the NP headed by *everyone* at LF will produce (2b), where the empty VP is no longer part of its antecedent VP and its reconstruction can be successfully done, as indicated in (2c). Since the antecedent VP contains the variable e_1 as a result of the application of QR in (2b), the copied VP also contains e_1 in (2c), which is to serve as a variable for the abstract operator assumed in the relative clause.

One piece of evidence for giving LF representation (2c) to (1) comes from the coreference possibility of the pronoun *he*. In particular, *he* cannot be coreferential with *John*, though in (2a) it is free in its governing category (i.e., the relative clause). If the Binding Theory applies to (2c) rather than (2a), the absence of the coreferential reading can be explained as a violation of the BT(C): the R-expression *John* in the reconstructed VP will be incorrectly bound by *he* if they share the index.

In pursuing this line of argument, they recognize the necessity to allow some change in syntactic form under reconstruction. For one thing, they claim that differences in agreement features should be ignored in reconstructing the second conjunct of (3):

(3) I turned in my assignment, but most of the other students didn't.

The missing VP should be *turn in their assignments* rather than *turned in my assignment.*

They must also allow an R-expression to be changed into its corresponding pronoun to explain examples such as (4a):

(4) a. Mary loves John$_1$, and he$_1$ thinks that Sally does too.
b. Mary loves John$_1$, and he$_1$ thinks that Sally loves him$_1$ too.
c. *Mary loves John$_1$, and he$_1$ thinks that Sally loves John$_1$ too.
d. Mary loves John$_1$, and he$_1$ thinks that Sally loves John$_1^{P}$ too.

(4a) can have the same reading as that of (4b): the understood embedded object of the second conjunct can be coreferential with the subject. Simple reconstruction of the empty VP in (4a), however, will produce (4c), which ought to be a violation of the BT(C). To overcome this problem, they propose the rule changing the R-expression *John* to its corresponding pronoun, which is represented as *John*^{P} in (4d). Then, it is not surprising that (4a), with (4d) as its LF representation, can have the same interpretation as that of (4b).

The afore-mentioned rule will also apply to an empty R-expression (i.e., a variable). For example, (5a) has LF-representation (5b) after the application of QR and reconstruction:

(5) a. Oscar talked to everyone who wanted him to.
b. [everyone who$_1$ e$_1$ wanted him to talk to e$_1$]$_1$ [Oscar talked to e$_1$]
c. *Who$_1$ e$_1$ wanted him to talk to e$_1$
d. [everyone who$_1$ e$_1$ wanted him to talk to e$_1^{P}$]$_1$ [Oscar talked to e$_1$]

(5b) should violate the BT(C) as (5c) does, but it does not. If the second variable in (5b) is changed into its pronominal counterpart as in (5d), the BT(C) becomes irrelevant and no violation of the Binding Theory, in particular of the BT(B) is induced.[2]

2. Derivational Problems with Empty Variables

If discrepancies between S-structure and the post-reconstructive representation are restricted to the cases discussed in the preceding section, their account should be regarded as quite plausible. Unfortunately, more radical modifications on S-structure seem to be required if cases of IP deletion (i.e., Sluicing in Ross (1969)) are taken into account. For instance, (6a) would have LF representation (6b) in F&M's analysis:

(6) a. We're going to leave soon, but exactly when is unclear. (Lobeck (1986: 60))
b. [$_{IP}$ We're going to [$_{VP}$ leave soon]], but [$_{CP}$ exactly when$_1$ [$_{IP}$ we're going to [$_{VP}$ leave e_1]]] is unclear.

The first conjunct in (6b) contains the adverb *soon*, while the second conjunct contains the variable bound by *exactly when*. This shows that the rule changing the adverb to the variable is necessary. Alternatively, if the variable is base-generated in the second conjunct, what is to be copied from the first conjunct is the non-constituent *we're going to leave.*[3] Syntax should not allow such an operation.

A similar problem arises in (7a):

(7) a. I don't know where the payoff took place, but I do know when. (adapted from Wasow (1979: 95) with modifications)
b. I don't know [$_{CP}$ where$_1$ [$_{IP}$ the payoff [$_{VP}$ took place e_1]]], but I do know [$_{CP}$ when$_2$ [$_{IP}$ the payoff [$_{VP}$ took place e_2]]]

The LF representation of (7a) in F&M would be (7b), where the first conjunct contains the variable bound by *where*, whereas the second contains the variable bound by *when*. F&M must resort to the rule changing the content of the variable, or if the second trace is base-generated, to the copy-

ing of the non-constituent *the payoff took place.* In this way, the operation of reconstruction is much more radical than F&M assume.

In this connection, Levin (1982: 592～593) observes that *wh*-words in Sluicing constructions correspond to (i) indefinite expressions; (ii) covert or implied arguments; or (iii) adjuncts that are not mentioned at all. The three cases are exemplified below:

(8) a. Someone loves Janet, but I don't know who.
b. Jenny was eating, but nobody knew what.
c. John knows that I went, but his wife doesn't know where/when/why/how.

(6a) seems to be grouped together with (8a). As for (8a), F&M would claim that raising *someone* by QR will produce its trace, which is to serve as the source of the variable for *who*. The same approach, however, is hardly tenable for (6a) since *soon* is unlikely to be subject to QR so that *exactly when* has no variable to bind. Similarly, the first conjunct in (8b) contains no syntactic element to be copied as the variable for the operator *what* in the second conjunct; the post-verbal position in the first conjunct allows none of the syntactic empty categories assumed in the standard GB theory.[4] Lastly, (8c) involves basically the same problem as (7a): the variables for the operators in the elliptical second conjunct have no source in the first conjunct.

In sum, F&M's QR-based analysis of (1) appears to work well simply because it involves the quantified expression *someone*, which is standardly assumed to be subject to QR. As Levin (1982) correctly points out, however, what is crucial to ellipsis is not the existence of a quantified expression but that some aspect of the antecedent clause is vague and it is meaningful to clarify it in the following elliptical question. The vague expression in (1) happens to be *someone* but in the other examples discussed so far, their vague aspects have nothing to do with QR.[5]

Next, F&M regard (9a) as a subjacency violation, assuming its LF representation to be (9b):[6]

(9) a. *Dulles suspected everyone who Angleton wondered why Philby did.
b. [everyone [$_{CP}$ who$_1$ [$_{IP}$ Angleton wondered [$_{CP}$ why [$_{IP}$ Philby suspected e_1]]]]]$_1$ Dulles suspected e_1

They claim that empty categories created under reconstruction may show bounding effects just as traces created under movement do as in (10a):

(10) a. *Who did Angleton wonder why Philby suspected?
b. [$_{CP}$ Who$_1$ did [$_{IP}$ Angleton [$_{VP}$ e_1 [$_{VP}$ wonder [$_{CP}$ why [$_{IP}$ Philby [$_{VP}$ e_1 [$_{VP}$ suspected e_1]]]]]]]]

In the framework of *Barriers* in Chomsky(1986), (10a) is represented as (10b). The offending trace is e_1 adjoined to the embedded VP, which is within a *wh*-island (i.e., the embedded CP). If (8a) is to be filtered out on the same ground, its exact representation should be (11) rather than (9b), as briefly mentioned in F&M:

(11) [everyone [$_{CP}$ who$_1$ [$_{IP}$ Angleton [$_{VP}$ e_1 [$_{VP}$ wondered [$_{CP}$ why [$_{IP}$ Philby [$_{VP}$ e_1 [$_{VP}$ suspected e_1]]]]]]]]]$_1$ Dulles suspected e_1

The third e_1 is the copy of the trace of the quantified NP headed by *everyone*, while the first and the second e_1 should be the intermediate traces of *who*, which has not moved from anywhere. It is not clear how to guarantee these intermediate traces without movement operation.

The acceptable example below presents the same difficulty:

(12) a. Dulles suspected everyone that Angleton believed that Philby did.

b. [everyone [CP op_1 that [IP Angleton [VP e_1 [VP believed [CP e_1 that [IP Philby [VP e_1 [VP suspected e_1]]]]]]]]]$_1$ Dulles suspected e_1

The fourth e_1 in the raised NP is the copy of the trace of that NP; while the preceding three should be the intermediate traces of op_1. Note that stipulating VP not to be a barrier (cf., Lasnik and Saito (forthcoming)) will make the VP-adjoined traces unnecessary. Still, the presence of e_1 in the specifier of the CP after *believed* must be ensured to circumvent a subjacency violation.

One might argue that the necessity to create intermediate traces without movement operation poses only a technical problem to F&M's analysis. Nonetheless, there is evidence to show that their analysis is empirically inadequate. Consider first the example below:

(13) a. John accused a man who teaches at an Ivy League university, but I don't know which university. (Wasow (1979:115))
b. I don't know [CP which university$_2$ [IP John accused [NP* a man [CP* who$_1$ [IP e_1 teaches at e_2]]]]]
c. *John accused a man who teaches at an Ivy League university, but I don't know [CP which university$_2$ [IP John accused [NP* a man [CP* who$_1$ [IP e_1 teaches at e_2]]]]]

(13a) is acceptable, unlike (9a), which is surprising if its LF representation after reconstruction involves (13b).[7] (13b) should be ill-formed just as sentence (13c) is; e_2 is in a *wh*-island (i.e., CP*) within a complex NP (i.e., NP*), so that they both should be subjacency violations.

The same point can be made on the basis of the following data from Levin (1982: 604):

(14) a. I heard the claim that he bit someone, but I don't remember who.

b. *..., but I don't remember [$_{CP}$ who$_1$ [$_{IP}$ I heard [$_{NP}$* the claim [$_{CP}$ that [$_{IP}$ he bit e_1]]]]]

(15) a. They asked where we bought one of our cars, but I don't remember which one.

b. *...,but I don't remember [$_{CP}$ which one$_1$ [$_{IP}$ they asked [$_{CP}$* where [$_{IP}$ we bought e_1]]]]

NP* in (14b) and CP* in (15b), containing e_1, should induce a subjacency violation.[8]

F&M might posit (16a-c) as alternative LF representations for (13a), (14a) and (15a), respectively:

(16) a. ..., but I don't know which university$_2$ [$_{IP}$ e_1^p teaches at e_2]

b. ..., but I don't remember [$_{CP}$ who$_1$ [$_{IP}$ he bit e_1]]

c. ..., but I don't remember [$_{CP}$ which one$_1$ [$_{IP}$ we bought e_1]]

In (16a-c), the embedded IP in NP* or CP* rather than the matrix clause is copied, so that no subjacency violation will result. Note that e^1 in the second conjunct of (16a) has been changed into the pronoun; therefore, the fact that e_1^p fails to be bound by *who* does no harm, as it is no longer an empty variable. Therefore, (13a) with its LF representation (16a) is not problematic to F&M's analysis. Nonetheless, (16b,c) cannot be regarded as the LF representations of (14a) and (15b) because they do not represent their meanings properly. In particular, (14a) does not necessarily imply that he actually bit someone, though (16b) does. Similarly, (16c) obviously does not represent the meaning of (15a).

The account of (13a) in terms of (16a) should be abandoned for another reason. Notice that well-formed LF representation (16a) is available to (13a) since it involves an embedded IP. There are acceptable elliptical sentences without an embedded IP:

(17) a. Bill likes John's pictures of some contestants, but I don't know which contestants.
b. ?John is talking to Bill and someone, but I don't know who.
c. ?John says that for me to meet someone would be very dangerous, but he won't say who. (Wasow (1979: 116,125))
d. ??Irv and someone were dancing together, but I don't know who. (Ross (1969: 276))[9]

The LF representations of (17a-d) should have basically the same structures as the corresponding full sentences given in (18a-d), which are all unacceptable:

(18) a. *I don't know which contestants$_1$ Bill likes John's pictures of e_1.
b. *I don't know who$_1$ John is talking to Bill and e_1.
c. *I don't know who$_1$ for me to meet e_1 would be very dangerous.
d. *I don't know who$_1$ Irv and e_1 were dancing together.

Clearly, the explanation for the contrast between (13a,c) presented above cannot apply here. Note that changing the trace into the pronoun does not help because the following are as bad as (18a-d):

(19) a. *I don't know which contestants$_1$ Bill likes John's pictures of them$_1$.
b. *I don't know who$_1$ John is talking to Bill and him/her$_1$.
c. *I don't know who$_1$ for me to meet him/her$_1$ would be very dangerous.
d. *I don't know who$_1$ Irv and him/her$_1$ were dancing together.

Why, then, are (17a-d) acceptable unlike (9a)? The reason seems to be that the following paraphrases can be made based on their S-structures:

(20) a. Bill likes John's pictures of some contestants, but I don't know which contestants they are.
b. John is talking to Bill and someone, but I don't know who (s)he is.
c. John says that for me to meet someone would be very dangerous, but he won't say who (s)he is.
d. Irv and someone were dancing together, but I don't know who (s)he was.

(13a), (14a) and (15a) can be paraphrased analogously, as in (20a-c):

(21) a. John accused a man who teaches at an Ivy League university, but I don't know which university it is.
b. I heard the claim that he bit someone, but I don't remember who (s)he was.
c. They asked where we bought one of our cars, but I don't remember which one it was.

The expression *Philby did* in the S-structure of (9a) prevents it from being paraphrased with the form *wh*-word + pronoun + *be*.

If (13a) is to be treated on a par with (17a-d), its acceptability in contrast to (9a) should not be attributed to LF representation (16a), but to the possibility of paraphrasing it as (21a). In other words, (9a) is unacceptable not because (9b) as its LF representation involves a subjacency violation but because it cannot have a paraphrase analogous to (20a-d) and (21a-c) due to its S-structure. Of course, (20a-d) and (21a-c) can hardly be regarded as the LF representations systematically deriving from S-structures (17a-d), (13a), (14a) and (15a), respectively; there is no syntactic isomorphism between them.[10] In conclusion, F&M's LF-based account for (9a) does not stand, given the acceptability of (13a), (14a), (15a) and (17a-d).

3. Non-syntactic Nature of Reconstruction

It has been amply demonstrated that the representations F&M assume to pursue their arguments are not LF representations; they cannot be systematically mapped from the corresponding S-structures. Moreover, the operation of reconstruction F&M assume affects elements in a variety of configurations, while syntactic operations or relations, if Hornstein (1984) is correct, should involve only elements in the c-command relation. In (2b), (5b), and (9b), neither the antecedent VP nor the empty VP c-commands the other. Reconstruction applies even across a sentence-boundary in (4a) and the following:

(22) A: Sally seems to be irritated with the rumor that Tom met someone secretly.
B: *Do you know who she wonders why he did?

F&M would argue that (22B) is a subjacency violation just as (9a) is. The representation they need to pursue this syntactic argument is to be built up based on discourse-level information from (22A), which is strange.

Ellipsis is similar to pronouns in that both allow a sentence-internal interpretation and a discourse-dependent interpretation:

(23) John$_1$ thinks that he$_{1,2}$ is honest.

The pronoun *he* may be coreferential with the matrix subject *John* or somebody else referred to in the discourse. Syntax is not concerned with this type of distinction as far as the pronoun satisfies the requirement of disjoint reference imposed by the Binding Theory. As Wasow (1979: 81) observes, ellipsis is subject to the same requirement of disjoint reference:

(24) a. John$_1$ dropped out after he$_1$ tried LSD.
b. After John$_1$ tried LSD, he$_1$ dropped out.
c. After he$_1$ tried LSD, John$_1$ dropped out.

d. *He$_1$ dropped out after John$_1$ tried LSD.

(25) a. John tried LSD after Bill did.
b. After Bill tried LSD, John did.
c. After Bill did, John tried LSD.
d. *John did after Bill tried LSD.

(24d) is ungrammatical since the R-expression *John* is c-commanded by the coreferential pronoun in the matrix subject position. Similarly, (25d) is ungrammatical as the antecedent VP *tried LSD* is c-commanded by the elliptical VP *did*.[11] It can be said that the coreferential possibility of an elliptical expression is outside the scope of syntax just as that of a pronoun is, as claimed by Williams (1977).

4. The Distribution of Empty Categories in Ellipsis

The discussion so far has proved it difficult or almost impossible to derive LF representations F&M would need in their theory. Another serious drawback is the fact that empty categories they postulate are different from any of the four empty categories standardly posited in the GB theory. Lobeck (1986) and Zagona (1982, 1988) try to explain the distribution of such empty categories in terms of the ECP, which governs the distribution of traces. Empty categories in ellipses and traces, however, show totally distinct distributions. The following contrast clearly proves this point:

(26) a. What did John become?
b. John is respected.
c. *He became a member, since she became.
(Quirk et al. (1972: 538))

Extraction is possible in the post-verbal position; while ellipsis is not.

It is obvious that under the framework of the GB theory, any analysis, if positing a syntactic empty category, must present a principle governing its distribution; otherwise, the θ-criterion would always be satisfied and its explanatory force would be lost. For instance, (26c) is filtered out as the internal θ-role of *become* is not discharged. This account, however, could not be sustained if it were analyzable as (27a):

(27) a. He became [a member]$_1$, since she became e_1
b. He became a member, since she became a member.

(27a) would satisfy the θ-criterion just as (27b) does.

5. Concluding Remarks

F&M assume an empty category in elliptical sentences such as (1) because it will trigger the reconstruction operation at LF, through which the representations necessary to account for the facts they have noted can be derived. The foregoing discussion has shown that this derivation is too unrestricted to regard as syntactic, that the reconstruction of ellipsis involves elements that are not in the c-command relation, and that the distribution of empty variables assumed in ellipsis cannot be reduced to the ECP. It can be concluded that empty categories should not be postulated in (1) and other similar examples to maintain the explanatory force of the overall theory. It may be true that the examples F&M discuss reflect some effects of syntactic principles such as the binding and bounding conditions, but their alleged LF representations cannot be justified as such.

Notes

1. Strictly speaking, F&M assume a structured empty category without any justification. May (1991:344), realizing its problem, assumes an unstructured empty VP.

The arguments in this paper apply to either analysis.
2. Unlike the reconstructed representation (5b), (5c) cannot be saved since F&M argue that an R-expression can be changed into a pronoun only under reconstruction.
3. It is unlikely that the adverb *soon* is positioned outside the VP. Moreover, if the whole sentence is copied, the reconstructed form will be 'Exactly when we're going to leave soon,' which sounds strange. The same is true with e_1 and e_2 in (7b) below.
4. PRO may not appear in the position governed by *eat*. English does not allow *pro*. Traces cannot appear without antecedents.
5. Rothstein (1991) correctly points out that one of the most serious problems with QR is that it is not clear which element can and must be subject to QR.
6. F&M's LF representation (9b) does not contain a variable for *why*, which should lead to a violation of the principle of no vacuous quantification.
7. In deriving (13b) from (13a), F&M would apply QR to the NP *an Ivy League university* to make a variable that is to be copied as a variable for *which university*.
8. The complex NP constraint observed in (14b) is rather complicated to subsume under Chomsky's (1986) theory, but this issue is irrelevant to the discussion here.
9. The grammatical judgments of (17a-d) are the authors' mentioned in the text.
10. Our account is based on the paraphrasability at the non-syntactic level. Levin (1982: 646) makes essentially the same claim that phrase structure representations are not important in the interpretation of sluiced constructions, which is strongly supported by the data in the text and the example below:
(i) a. Bill mentioned his plan to go on vacation, but he didn't say where.
b. *..., but he didn't say where his plans to go on vacation.
c. ..., but he didn't say where it is.
(ia) contains an NP with the propositional nature, which is incompatible with the *wh*-word *where*, as shown in (ib). Incidentally, paraphrase (ic) sounds natural.
11. It does not matter whether the adverbial clause is positioned within VP or directly under IP, as far as the notion of c-command is defined in terms of maximal projection.

References

Chomsky, N. (1986) *Barriers*. Cambridge, Massachusetts: The MIT Press.
Fiengo, R. and R. May (1991) "Anaphora and ellipsis." ms.
Hornstein, N. (1984) *Logic as Gramar*. Cambridge, Massachusetts: The MIT Press.
Lasnik, H. and M. Saito (forthcoming) *Move α*. Cambridge, Massachusetts: The

MIT Press.

Levin, L.S. (1982) "Sluicing: A lexical interpretation procedure." In J. W. Bresnan (1982) (ed.) *Mental Representation of Grammatical Relations.* Cambridge, Massachusetts: The MIT Press.

Lobeck, A. C. (1986) *Syntactic Constraints on VP Ellipsis.* Ph. D. dissertation, University of Washington.

May, R. (1991) "Syntax, semantics, and logical form." In A. Kasher (ed.) *The Chomskian Turn.* Oxford and Cambridge, Massachusetts: Basil Blackwell.

Quirk, R., S. Greenbaum, G. Leech, and J. Svartvik (1972) *A Grammar of Contemporary English.* London: Longman.

Ross, J.R.(1969) "Guess who?" In R. I. Binnick et al. (eds.)(1969) *CLS 5.* Chicago Liguistic Society, pp.252～286.

Rothstein, S. (1991) "LF and the structure of grammar: comments." In A. Kasher (ed.) *The Chomskian Turn.* Oxford and Cambridge, Massachusetts: Basil Blackwell.

Wasow, T. (1979) *Anaphora in Generative Grammar.* Ghent: E.Story-Scientia.

Williams, E. (1977) "Discourse and logical form." *Linguistic Inguiry* 8 (1), 101～139.

Zagona, K. (1982) *Government and Proper Government of Verbal Projection.* Ph. D. dissertation, University of Washington.

—— (1988) "Proper government of antecedentless VP in English and Spanish." *NLLT* 6, 95–128.