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ECONOMY, THE COPY THEORY, AND  
ANTECEDENT-CONTAINED  
DELETION  
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This squib investigates the nature and syntactic placement of the restriction of quantificational determiners under the copy theory of movement and presents a brief argument from the interaction of antecedent-contained deletion (ACD) and Principle C that although relative clauses in ACD must be deleted from their base positions, complements and adjuncts in NP need not be, and hence must not be.

I would like to thank Danny Fox, Jim McCloskey, and the two anonymous reviewers for helpful comments, as well as the audience at TABU-Dag, University of Groningen, June 1998. The main argument presented here has been independently discovered by Uli Sauerland (see Sauerland 1998). This work was supported by a Fulbright grant to the author.

## 1 Background

The paradigm in (1) has been discussed by Fiengo and May (1994) and Fox (1995). These authors note, following Chomsky (1981) among many others, that R-expressions in relative clauses on quantificational DPs trigger Principle C effects with respect to c-commanding pronouns, as in (1).<sup>1</sup>

- (1) a. ??I introduced him<sub>1</sub> to every guy Peter<sub>1</sub> found attractive.  
 b. ??I sent her<sub>2</sub> every sweater Sheila<sub>2</sub> saw in the brochure.

This has traditionally been taken as an argument that LF movement does not bleed Principle C of the binding theory, that is, that Principle C must apply at S-Structure. However, Chomsky (1995), who argues that the binding theory applies only at LF, reinterprets this fact to indicate that the restriction of the quantificational DP deletes from the moved constituent and remains in situ at LF, as in (2), motivating this selection by economy considerations: his Preference Principle. In such a representation the name will still be c-commanded by the pronoun, triggering a Principle C violation at LF, after QR and deletion.

- (2) [every  $x$ :  ~~$x$  guy Peter<sub>1</sub> found attractive~~] I introduced him<sub>1</sub>  
 to [ $x$  guy Peter<sub>1</sub> found attractive]

However, as pointed out by Fox (1995), requiring the restrictions of QRed constituents to remain in situ in all cases would be problematic for the account of ACD cases like (3).

- (3) I talked to every guy you did.

If the restriction is left in situ, the appropriate antecedent for resolving the ellipsis cannot be found, since the ellipsis site is still contained within its antecedent (the matrix) VP (the antecedent VP is enclosed in angled brackets, and the elliptical VP is in boldface).

- (4) [every  $x$ ] I ⟨talked to [ $x$  guy you did **talk to  $x$** ⟩

Fox therefore argues that in the case of ACD the only converging derivation is the one in which the moved restriction remains and the in-situ one deletes, yielding (5).<sup>2</sup> In this representation the antecedent

<sup>1</sup> The status of examples like (1a–b) has been the source of some debate. The traditional discussion of bleeding of Principle C by QR has been largely limited to cases where the c-commanding pronoun was in subject position, as in (i).

(i) \*He<sub>1</sub> liked every guy I introduced Peter<sub>1</sub> to.

No one disputes the ungrammaticality of examples like (i). The evidence is less clear with double object cases like (1a–b), however. Many speakers find the indicated coreference in examples similar to (1a–b) grammatical; see Kennedy 1997:685–686, fn. 22, and Fox 1995:116–118, 1999:185, fn. 50, for discussion. The argument in this squib is valid regardless of the status of such examples: everyone agrees that (at least) in ACD constructions, Principle C is apparently not violated.

<sup>2</sup> This account assumes, as I will here, that QR is phrasal movement at LF; see Wilder 1997 for discussion especially with respect to ACD.

containment is eliminated, and the matrix and embedded VPs are identical, satisfying the licensing condition on ellipsis.

- (5) [every  $x$ :  $x$  guy you did **talk to  $x$** ] I ⟨talked to  $x$ ⟩

This modification of the application of the deletion algorithm has an additional interesting consequence: if the restriction must be eliminated from its base position for independent reasons, the Principle C effect noted above for (1) should be obviated, since in these cases the R-expression will be interpreted at LF only in its higher position.

Indeed, this is exactly right. As noted by Fiengo and May (1994), in cases such as (6) the indicated coreference is possible, in contrast to (1).

- (6) I introduced  $him_1$  to every guy  $Peter_1$  wanted me to.

This sentence will have (7) as its only licit LF representation, with the in-situ restriction eliminated to allow ellipsis resolution. In this structure the R-expression  $Peter_1$  is no longer c-commanded by the pronoun  $him_1$  in the matrix clause.

- (7) [every  $x$ :  $x$  guy  
        $Peter_1$  wanted me to **introduce  $him_1$  to  $x$** ]  
       I ⟨introduced  $him_1$  to  $x$ ⟩

Hence, QR *can* bleed Principle C, if ACD is involved.<sup>3</sup>

## 2 The Extent of Deletion in Restrictions

The above discussion assumed that the deletion of the restriction of a moved quantificational DP is an all-or-nothing affair: the entire restriction either deletes or is retained. However, nothing forces this conclusion; in fact, as Nunes (1995) and Fox (1999) have argued, we should expect deletion to be costly by the economy metric, up to interpretability. Economy should in fact favor representations with minimal deletion in both positions, yielding (8b) for a simple case of quantification like (8a) (see Fox 1999 for suggestions and references on how to interpret such LF representations).

<sup>3</sup> This bleeding effect does not hold for coindexed pronominal subjects, however, as the data in (i) indicate.

- (i) a. \* $He_1$  liked most (of the) guys I wanted  $Peter_1$  to.  
       b. \* $She_2$  read (us) every story  $Beth_2$ 's mom did.  
       c. \* $She_3$  didn't give me a single book  $Beth_3$  promised to.

These examples show that the grammaticality of (6) does not arise from Principle C's being "turned off" in ACD or the like—rather, the contrast between (6) and (i) shows that the landing site for QR (in (i), of the object DP) must be in the c-command domain of the subject (either via a segment theory of m-command as in May 1985 if QR targets IP, or because QR here targets a position below the subject as in Fox 1995, Merchant, to appear, and Johnson and Tomioka 1998). For reasons of simplicity, I will ignore this complication in what follows and continue to represent the adjunction site of QR as above the subject, as in (7).

- (8) a. Abby read every book.  
 b. [every  $x$ :  $x$  book] Abby read [ $x$  book]

Since the restriction does not delete in the lower occurrence, the above explanation for Principle C effects at LF succeeds under this modification, as the cases in (9) and their associated LF representations in (10) show. (9a–b) demonstrate this for nominal arguments, and (9c–d) for adjuncts.

- (9) a. \*I gave him<sub>2</sub> every evaluation of Bob<sub>2</sub>.  
 b. \*I gave him<sub>2</sub> every report on Bob<sub>2</sub>'s division.  
 c. \*I reported her<sub>3</sub> to every cop in Abby<sub>3</sub>'s neighborhood.  
 d. \*I showed her<sub>3</sub> every picture from Abby<sub>3</sub>'s mantelpiece.
- (10) a. [every  $x$ :  $x$  evaluation of Bob<sub>2</sub>] I gave him<sub>2</sub> [ $x$  evaluation of Bob<sub>2</sub>]  
 b. [every  $x$ :  $x$  report on Bob<sub>2</sub>'s division] I gave him<sub>2</sub> [ $x$  report on Bob<sub>2</sub>'s division]  
 c. [every  $x$ :  $x$  cop in Abby<sub>3</sub>'s neighborhood] I reported her<sub>3</sub> to [ $x$  cop in Abby<sub>3</sub>'s neighborhood]  
 d. [every  $x$ :  $x$  picture from Abby<sub>3</sub>'s mantelpiece] I showed her<sub>3</sub> [ $x$  picture from Abby<sub>3</sub>'s mantelpiece]

Although this effect of minimizing deletions is harmless (if semantically redundant) in the general case, it is exactly in ACD structures that deletion must apply, noneconomically, in order to satisfy parallelism; as Fox (1999:183) puts it, “the problem of ACD is solved only if the restrictor is eliminated from the base position.”

The assumption so far has been that when ACD requires deletion, the deletion is complete, yielding a simple variable as in (5). Combining this assumption with the ability of ACD to bleed Principle C, we expect that an R-expression that is embedded *anywhere* in the restriction of a quantificational DP in ACD structures will evade Principle C, since it will be deleted at LF. Surprisingly, however, this prediction is not borne out.

- (11) a. \*I gave him<sub>2</sub> every report on Bob<sub>2</sub>(’s division) you did.<sup>4</sup>  
 b. \*I reported her<sub>3</sub> to every cop in Abby<sub>3</sub>'s neighborhood you did.  
 c. \*I showed her<sub>3</sub> every picture from Abby<sub>3</sub>'s mantelpiece you did.

<sup>4</sup> Ungrammaticality here is caused by the c-commanding pronoun; compare the following examples, where the ungrammatical (ia) contrasts both with the grammatical (ib), where the c-commanding pronoun is absent, and with (ic), where the pronoun is not coindexed with *Bob*:

- (i) a. \*I gave him<sub>2</sub> back every report on Bob<sub>2</sub>(’s division) he<sub>2</sub> wanted me to.  
 b. I gave back every report on Bob<sub>2</sub>(’s division) he<sub>2</sub> wanted me to.  
 c. I gave him<sub>3</sub> back every report on Bob<sub>2</sub>(’s division) he<sub>3</sub> wanted me to.

If in such cases the entire restriction in the lower occurrence of the raised DP were to delete, we would derive the following LF representations:

- (12) a. [every  $x$ :  $x$  report on Bob<sub>2</sub>(’s division)  
 you did **give him<sub>2</sub>  $x$** ]  
 I ⟨gave him<sub>2</sub>  $x$ ⟩
- b. [every  $x$ :  $x$  cop in Abby<sub>3</sub>’s neighborhood  
 you did **report her<sub>3</sub> to  $x$** ]  
 I ⟨reported her<sub>3</sub> to  $x$ ⟩
- c. [every  $x$ :  $x$  picture from Abby<sub>3</sub>’s mantelpiece  
 you did **show her<sub>3</sub>  $x$** ]  
 I ⟨showed her<sub>3</sub>  $x$ ⟩

But in these LF representations the relevant R-expression no longer is c-commanded by the coindexed pronoun. Although this is the correct result for cases like (6), where ACD does bleed Principle C, it is the incorrect result for these cases.

The difference between (6) (which is representative of the data examined in Fiengo and May 1994 and Fox 1995, 1999) and the data in (11) lies in the position of the R-expression that triggers the Principle C violation. In the bleeding cases the offending R-expression is in the relative clause that contains the VP-ellipsis, whereas in the present cases the R-expression is an argument or adjunct inside the NP, but outside the relative clause. The fact that R-expressions in adjuncts pattern with those in arguments prevents any explanation of these facts that depends on the adjunct nature of the relative clause. Instead, I would like to suggest that the reason that such R-expressions continue to trigger Principle C violations, even in ACD, is that they belong to a part of the restriction that is not deleted.

In order to satisfy parallelism (in PF deletion or semantic approaches to ellipsis resolution; see Merchant 1999 for one such system and references) or avoid regress (in LF copying approaches; see Chung, Ladusaw, and McCloskey 1995 for references), it is only necessary to delete the part of the structure that contains the ellipsis site—any further unmotivated deletion violates economy considerations. The relevant LF representations for (11), then, are not those in (12), but apparently those in (13). In these structures the offending R-expression remains in situ, triggering the Principle C violation.

- (13) a. [every  $x$ :  $x$  report on Bob<sub>2</sub>(’s division)  
 you did **give him<sub>2</sub>  $x$** ]  
 I ⟨gave him<sub>2</sub> [ $x$  report on Bob<sub>2</sub>(’s division)]⟩
- b. [every  $x$ :  $x$  cop in Abby<sub>3</sub>’s neighborhood  
 you did **report her<sub>3</sub> to  $x$** ]  
 I ⟨reported her<sub>3</sub> to [ $x$  cop in Abby<sub>3</sub>’s neighborhood]⟩
- c. [every  $x$ :  $x$  picture from Abby<sub>3</sub>’s mantelpiece  
 you did **show her<sub>3</sub>  $x$** ]  
 I ⟨showed her<sub>3</sub> [ $x$  picture from Abby<sub>3</sub>’s mantelpiece]⟩

But such structures do not satisfy parallelism. In (13) the brack-

eted antecedent VP is not the same as the elided VP in boldface. The apparent problem comes from the implicit assumption that the relative operator can only bind a simple variable. But if we assume that QRed constituents can bind ‘‘restricted’’ variables as in (8b), there is no reason not to expect this mechanism to extend to the binding of ‘‘restricted’’ variables by relative operators as well.<sup>5</sup> A simple ACD construction like (14a), then, will have the LF representation in (14b), where the restriction of the QRed DP has been only partially deleted.

- (14) a. I talked to every guy you did.  
 b. [every  $x$ :  $x$  guy Op you did **talk to [ $x$  guy]**  
 I (talked to [ $x$  guy])

In particular, only the relative clause must delete in the lower occurrence, since it is the relative clause that contains the ellipsis site. The remaining material in the NP (here the descriptive content *guy*) is subject to the same economy considerations brought to bear above: since it need not delete to resolve the ellipsis, it may not. Whether the additional material is an argument or an adjunct is thus irrelevant: since these phrases do not contain the ellipsis, they may not delete.<sup>6</sup>

Given this line of reasoning, one may wonder whether the entire relative clause itself need delete, that is, whether partial deletion (better obeying economy) internal to the relative clause may be possible. Perhaps, for example, the absolutely minimal amount of deletion would target only the regress-inducing VP, yielding (15).

<sup>5</sup> In fact, under head-raising analyses of relative clauses like that of Kayne (1994), the traces of relative operators would seem to be exactly what is proposed in the text for the ACD cases, where the relative operator’s trace is supplied by the trace of a QRed constituent. However, it is unclear whether the head-raising analysis is correct (see Platzack 1997, Borsley 1997). Certainly the logic in the text with respect to Principle C considerations cannot be extended generally to the traces of relative operators, since R-expressions in the external head of a relative clause (the bracketed material in (i)) do not trigger Principle C violations.

- (i) a. I have a [report on Bob<sub>1</sub>(’s division)] that he<sub>1</sub> won’t like.  
 b. I read every [report on Bob<sub>1</sub>’s division] he<sub>1</sub> ever submitted.

If the trace of the relative operator contained a copy of the external head and was not deleted, the LF representation of the relative clause in (ia) would be that in (ii), and we would expect a Principle C effect, contrary to fact.

- (ii) . . . that he<sub>1</sub> won’t like [ $x$  report on Bob<sub>1</sub>(’s division)]

See Munn 1994 and Safir 1999 for discussion.

<sup>6</sup> This logic should apply also in stacked relatives: if the offending R-expression is not in the same relative clause as the ellipsis site, we should retain a Principle C effect. Unfortunately, the relevant data, given in (i), are not judged reliably by informants, perhaps owing to their complexity. As a result, I am wary of drawing any firm conclusions from them.

- (i) a. \*I sent her<sub>2</sub> [every book [Abby<sub>2</sub> wrote] [that you wanted me to]].  
 b. ??I discussed her<sub>2</sub> with every psychiatrist who saw Abby<sub>2</sub> (that you did).  
 c. ??I dissed her<sub>2</sub> to every guy Abby<sub>2</sub> was dating (that you told me to).

- (15) [every  $x$ :  $x$  guy  
 Op you did **talk to [ $x$  guy Op you did]**  
 I ⟨talked to [ $x$  guy Op you did]⟩

However, this LF representation suffers from the multiple defect that two of the three relative operators present have no variables to bind, “restricted” or otherwise. We can thus conclude that when the relative clause contains the ellipsis site, the entire relative clause must delete to avoid regress.<sup>7</sup>

Under this conception of licit deletion targets, the LF representations for the examples in (11) will be like that in (16b), given for (11a), repeated here as (16a).

- (16) a. \*I gave him<sub>2</sub> every report on Bob<sub>2</sub>(’s division) you did.  
 b. [every  $x$ :  $x$  report on Bob<sub>2</sub>(’s division)  
 Op you did **give him<sub>2</sub> [ $x$  report on Bob<sub>2</sub>(’s division)]**  
 I ⟨gave him<sub>2</sub> [ $x$  report on Bob<sub>2</sub>(’s division)]⟩

In this structure the offending R-expression *Bob<sub>2</sub>* remains in situ, correctly triggering the Principle C violation.

With this revision to the theory of deletion in mind, let us reexamine the original cases examined by Fiengo and May (1994) and Fox (1995), in which Principle C is bled by ACD-driven QR. Under the current proposal the relevant example, (6), repeated here in (17a), will have the LF representation in (17b).

- (17) a. I introduced him<sub>1</sub> to every guy Peter<sub>1</sub> wanted me to.  
 b. [every  $x$ :  $x$  guy  
 Peter<sub>1</sub> wanted me to **introduce him<sub>1</sub> to [ $x$  guy]**  
 I ⟨introduced him<sub>1</sub> to [ $x$  guy]⟩

Here, Fox’s explanation remains unaltered, since what is left of the restriction in situ does not contain the R-expression.

One final case must be considered under the present proposal. One might wonder whether a Principle C violation could arise at LF, owing to the ellipsis resolution, if the relative clause contained a pronoun *c*-commanding the ellipsis site, and the restriction contained an

<sup>7</sup> Though the discussion in the text establishes this conclusion only for cases where QR is needed to provide a variable for the relative operator to bind, the conclusion is completely general and extends to cases of ACD, discussed by Hark (1987) and Fiengo and May (1994), where the relative operator already is supplied with a variable, as in (i).

- (i) I talked to every guy who wanted me to.

Since argument structure may not change under ellipsis (see Chung, Ladusaw, and McCloskey 1995 for extensive justification), every element in the ellipsis site will have to preserve the number and kind of arguments its overt counterpart exhibits, ruling out non-meaning-preserving partial deletions like that in (ii).

- (ii) \*[every  $x$ :  $x$  guy  
 who wanted me to **talk to [ $x$  guy who wanted me]**  
 I ⟨talked to [ $x$  guy who wanted me]⟩

R-expression coindexed with that pronoun. However, in such configurations no Principle C effect arises.

(18) I read every report on Bob<sub>2</sub>(’s division) he<sub>2</sub> wanted me to.

This sentence should have the LF representation in (19), parallel to those seen above.

(19) [every  $x$ :  $x$  report on Bob<sub>2</sub>(’s division)]  
 he<sub>2</sub> wanted me to **read [x report on Bob<sub>2</sub>(’s division)]**  
 I ⟨read [x report on Bob<sub>2</sub>(’s division)]⟩

Although there is no Principle C violation in the matrix, the fact that the relative clause is not elided in the higher occurrence of the raised quantifier means that the R-expression *Bob<sub>2</sub>* is c-commanded by the subject of the relative clause. This apparent violation of Principle C at LF is not unique to the current proposal, though. It forms part of a large body of evidence presented in Fiengo and May 1994 that indicates that R-expressions can be equivalent to pronominals under certain conditions in elliptical structures. Fiengo and May dub this equivalence *vehicle change* and use it to account for facts like that in (20a) (their (100a), p. 275), which would seem to have the LF representation in (20b).<sup>8</sup>

(20) a. Mary introduced John<sub>1</sub> to everyone that he<sub>1</sub> wanted her to.

b. [every  $x$ :  $x$  one  
 that he<sub>1</sub> wanted her to **introduce John<sub>1</sub> to [x one]**  
 Mary ⟨introduced John<sub>1</sub> to [x one]⟩

This LF representation has the same defect seen above: the R-expression *John<sub>1</sub>* comes to be c-commanded by a coindexed pronoun in the relative clause after ellipsis resolution. By virtue of vehicle change, however, the overt R-expressions in these cases correspond to pronouns in the ellipsis site; the actual representation of these structures, then, is that in (21a–b).

(21) a. [every  $x$ :  $x$  report on Bob<sub>2</sub>(’s division)]  
 he<sub>2</sub> wanted me to **read [x report on him<sub>2</sub>(his<sub>2</sub> division)]**  
 I ⟨read [x report on Bob<sub>2</sub>(’s division)]⟩

b. [every  $x$ :  $x$  one  
 that he<sub>1</sub> wanted her to **introduce him<sub>1</sub> to [x one]**  
 Mary ⟨introduced John<sub>1</sub> to [x one]⟩

The fact that there is no Principle C violation under ellipsis in (18) is thus independent of the proposal made here. Vehicle change, which applies only in ellipsis, will not be able to ameliorate the violations found in the matrix clauses of examples like (11), however.

<sup>8</sup> In Merchant 1999 I show that we can dispense with an operation of vehicle change as such: the effects of interest here follow from defining the parallelism condition on ellipsis in semantic terms, instead of structural ones as in Fiengo and May 1994.

### 3 Conclusion

We have seen that a surprising asymmetry in sensitivity to Principle C in ACD configurations can be simply accounted for if the restrictions of QRed DPs in ACD are subject to the same economy considerations that are assumed to hold for non-ACD QRed DPs: as much of the restriction must be left as is compatible with parallelism. In general, this will mean that the entire restriction is left in situ, except in ACD cases, where the relative clause must be deleted to prevent regress. The parts of quantificational DPs in ACD that do not contain the ellipsis site, however, do not delete, and they trigger Principle C effects exactly like their non-ACD counterparts.

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AN EXPERIMENTAL INVESTIGATION  
OF SYNTACTIC SATIATION  
EFFECTS

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It is often reported anecdotally that over time, certain types of sentences that were initially judged ungrammatical begin to sound increasingly acceptable. This phenomenon is sometimes referred to as “linguists’ disease,” or a “syntactic satiation effect.” Indeed, many linguists admit that they can no longer perceive the (presumed) ungrammaticality of certain syntactic violations and that they have simply memorized the judgments that are standard in the linguistics literature.

Pursuing a line of inquiry initiated in Stromswold 1986, this study examines whether syntactic satiation effects can be induced experimentally. Moreover, the study addresses the following key questions: Is syntactic satiation found to a comparable degree for all ungrammatical sentence types, or are there specific types of ungrammatical sentences that are especially susceptible? In the latter case, which types of violations “sate” most easily? Finally, does syntactic satiation “carry over” when lexical items are changed, or is it lexically specific?<sup>1</sup>

### 1 Method

Subjects (22 paid MIT undergraduates) were asked to provide a yes/no judgment of grammaticality for a series of 58 sentences, presented

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<sup>1</sup> For a comprehensive review of psycholinguistic research on grammaticality judgments, see Schutze 1996.