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# Ellipsis and Reconstruction in Relative Clauses

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## 1. A Challenge for Copy Theory

The recently revamped copy theory of movement provides an elegant way of implementing reconstruction. Ideally, this should be the exclusive means by which phenomena associated with reconstruction are dealt with. Unfortunately, there are several known constructions that are recalcitrant to this treatment. One such case is that of relative clauses of the kind in (1).

- (1)a. [<sub>DP</sub> D° [<sub>NP</sub> [<sub>NP</sub> *part of herself*] [<sub>CP</sub> *that Sue likes* \_\_\_ ] ] ]  
b. [<sub>DP</sub> D° [<sub>NP</sub> [<sub>NP</sub> *friend of Bob*] [<sub>CP</sub> *whose sister he loves* \_\_\_ ] ] ]

(1a) and (1b) illustrate the effects of Principles A and C, respectively. These cases would require the reflexive pronoun in (1a) and the name *Bob* in (1b) to be reconstructed into the relative clause (RC) gap; but this cannot be accomplished by means of copy theory since these items are part of a constituent distinct from that which undergoes A-bar movement in the RC.

One way to handle the cases in (1) is by adopting a Barss-style mechanism of “Chain-Binding”, as recently suggested by Cecchetto and Chierchia (1997). A key feature of this approach is that the Binding Theory can be checked without having to “lower” the reflexive or the name in any manner. This approach, however, runs into problems with cases like (2), where the reflexive pronoun is interpreted as a bound variable:

- (2) (D°) *part of herself that (I know) every woman likes* \_\_\_

Here the pronoun must be in the scope of the RC subject. Since it is generally assumed that QR is clausebound, we should not be satisfied with raising *every woman* outside of the RC. The interpretation of (2) thus seems to require some form of reconstruction of the pronoun.

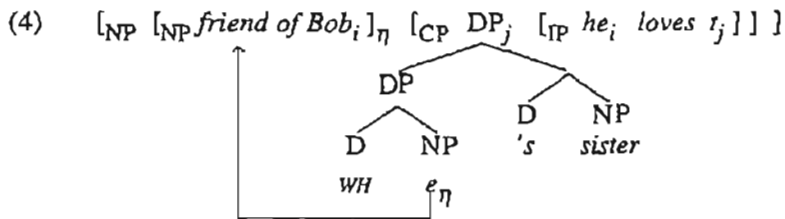
Another case which would not be accounted for by a Barss-style analysis is that of reconstructed *de dicto* descriptions such as those in (3).

- (3)a. *the son he thought he had left behind*  
 b. *a friend that every guy would like to have*

(3a), in particular, is a “real life” example. It was uttered in a context where a certain man had been convinced by his lover that a baby boy had resulted from their relationship; the man in question, then, had returned to his lover’s Country and was about to meet a boy who would pose as his son. Thus (3a) describes the person who *he* (the man in question) thought was his son, and who he had left behind. The noun *son* in this case is dependent on the embedded verb *thought*; hence it must be bound by the world variable binder introduced by this verb. In other words, the external head of the relative must be interpreted inside of it.

## 2. The Raising Analysis

Several authors have proposed that the (external) head of the relative clause can be reconstructed into the relative by means of copy theory, simply because the surface order is derived by movement from the RC-internal position. I illustrate what is perhaps the most plausible version of this option in (4) below, which roughly depicts the derivation of (1b):



In the derivation above, the relation between  $DP_j$  and  $t_j$  is one of movement; thus, according to copy theory, the relative CP contains (at least) two copies of this DP, as shown in (5).

- (5)  $[_{CP} [_{DP} \textit{WH friend of Bob}_i\textit{'s sister}] [_{IP} \textit{he}_i \textit{loves} [_{DP} \textit{WH friend of Bob}_i\textit{'s sister}]]]$

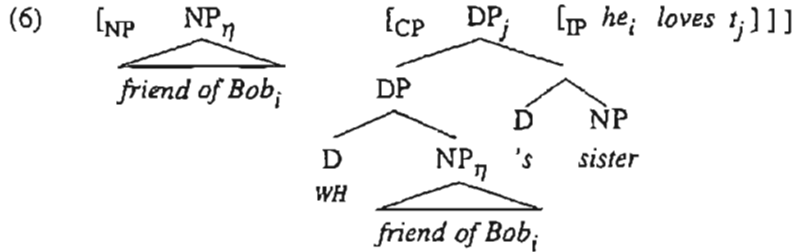
In addition, the NP inside the higher copy of this DP moves out of the DP and lands in the external head position. In other words,  $[_{NP} \textit{friend of Bob}]_{\eta}$  is assumed not to be an independent constituent; rather, (in terms of copy theory) this NP is copied into the external head position as a “clone” of the NP in the relative CP.

It must be stressed that this latter hypothesized movement is not of a familiar kind. In particular, the landing site for the NP—the external head of the relative clause—is what we could call a “lexical” element. If we accept this kind of movement as legitimate, we will have to explain why it does not seem to be productive—e.g., why languages don’t appear to have constructions such as *\*Sam told every drugstore that Bob went to the*. But even aside from this consideration, there are several other problems with this kind of analysis, which I will discuss in sections 4 and 5.

## 3. The Matching/Ellipsis Analysis

The raising analysis is not the only way to account for reconstruction effects in these cases. One can assume that, in deriving the relative clause, there is no particular movement occurring besides the usual *wh*-movement to CP inside the relative. What accounts for the

reconstruction, then, is a kind of ellipsis which targets material that “matches” the external head of the relative, according to certain LF criteria. Below I illustrate the derivation of (1b) according to this latter method:



Here the relation between  $DP_j$  and  $t_j$  is still one of movement, but the relation between the two  $NP_\eta$  is not. The external head  $NP_\eta$  is generated independently of the RC modifier. According to this analysis, the relative CP, before deletion applies, is also as in (5), hence the question of how to interpret (5) is the same for both the raising and the matching/ellipsis analyses. The difference between these two approaches, then, will reside in the hypothesized relation between the  $NP_\eta$ 's—a distinction that I will concentrate on in the following sections. For now, however, I would like to focus on the interpretation of relative CPs under copy theory.

I will start with the simpler example in (1a). According to the standard approach, the relative in this example is interpreted as a nominal modifier of type  $\langle e, t \rangle$  (ignoring intensions), where the *WH* operator is translated as a lambda operator that binds the variable in the position of the gap. Thus the highest NP in (1a) is interpreted roughly as in (1a'):

$$(1a') \quad \llbracket NP \rrbracket = \lambda x [ \lambda z. \text{part-of}(z, \text{her}_1)(x) \ \& \ \lambda z. \text{likes}(\text{Sue}_1, z)(x) ]$$

This implies that the gap in the relative CP is translated as a nonrestricted variable—i.e., it is assumed that the RC gap contains no reconstructed descriptive material. This approach may be viable for cases like (1a), but it definitely fails to account for the bound-variable cases such as (2).

If, on the other hand, we can reconstruct the external head (either by raising or by matching), we can potentially account for cases like (2). We need to make sure, however, that the structures in question are interpretable. The interpretive procedure that I propose is compatible with both the raising and the matching analyses. I assume that the silent determiner in the RC gap generates a Heimian indefinite—i.e., a free variable restricted by the reconstructed descriptive material. (1a) is then analyzed as follows:

(7)a.  $\llbracket NP \langle \text{part of herself} \rangle \rrbracket [CP \text{ WH } \langle \text{part of herself} \rangle [TP \text{ Sue likes WH } \langle \text{part of herself} \rangle ]]$   
 $\downarrow \qquad \qquad \qquad \downarrow$   
 b.  $\llbracket NP \langle \text{part of herself} \rangle \rrbracket [CP \lambda x \langle \text{part of herself} \rangle [TP \text{ Sue likes } \delta_x \langle \text{part of herself} \rangle ]]$   
 where  $\llbracket \delta_x \rrbracket = \lambda P \lambda Q [ Px \wedge Qx ]$   
 c.  $\llbracket CP \rrbracket = \lambda x [ \text{part-of}(x, \text{her}_1) \ \& \ \text{likes}(\text{Sue}_1, x) ]$

The interpretation in (7c) is equivalent to that in (1a') in most respects. There is, however, an important difference in the interpretive strategy that applies in these two cases. In fact, if we apply the method in (1a') to the example in (2) we fail to capture the required bound-variable interpretation of (2). If, on the other hand, we apply the CP-internal interpretation strategy in (7c), we account for this interpretation with no extra speculations.<sup>1</sup>

#### 4. Raising vs. Matching

As mentioned earlier, the raising analysis posits a rather odd kind of movement which, if generalized, might open up a powerful generative mechanism which seems unattested so far. In the following I will provide a number of arguments both in favor of a matching/ellipsis analysis of relative clauses and against a raising analysis of such structures.

##### 4.1. Independently Occurring NP Ellipsis

One kind of argument which may favor one approach to a phenomenon over another is whether the former, but not the latter, is motivated independently of the phenomenon in question. I would like to argue here that the kind of ellipsis I am proposing for relative clauses is a productive, independently occurring aspect of natural language, while the putative movement assumed under the raising analysis of relatives is not.

In Cresti (1999) I proposed a NP-matching/ellipsis analysis for constructions involving the clitic *ne/en* in some Romance languages, and *ones/Ø*-anaphors in English. Below I give a couple of examples from Italian and English:

- (8)a. *Lucia ha due cappelli rossi e io ne ho uno verde* \_\_ .  
'Lucia has two red hats and I have a green one.'
- b. *Anna mi ha mandato sei foto di suo figlio, ma Gino me ne ha mandate solo due* \_\_ .  
'Anna sent me six pictures of her son, but Gino sent me only two.'
- (9)a. *I have two red hats and Bob has a green one* \_\_ .  
b. *I'll tell a story about my childhood, and then you tell one* \_\_ .

It is clear that the gaps in these constructions are not simply silent pronouns—or, more specifically, elements of type *e* (or *et, t*). In (8a), for instance, the second conjunct can be paraphrased simply as "I have a green hat," and not, e.g., "I have a green one of the two red hats that Lucia has." The gap in (8a) is therefore not a referential element or E-type pronoun, nor is it a quantifier; rather, it is simply *hat-*, a predicate unmarked for number (and possibly other features as well). Furthermore, the *ne/ones*-anaphor exhibits ambiguities of a kind commonly found in predicate anaphors. For instance, the second conjunct of (9b) can be paraphrased either as "you tell a story about *your* childhood," or as "you tell a story about *my* childhood"—a strict/sloppy ambiguity of a kind familiar in VP-ellipsis constructions. This suggests that NP ellipsis might share a number of interesting properties with the better known English VP-ellipsis construction:

<sup>1</sup> In Cresti (1995) I proposed a general method of "θ-grid saturation" which allows an in situ interpretation of quantifiers. This system would apply straightforwardly to cases like (2), and even (1b), under the assumption the object DP is interpreted roughly as *the sister of WH friend of Bob*. I don't think this assumption is strictly necessary, however, for the purposes of the discussion above. All we need for an appropriate interpretation of (2) is a standard version of QR where the DP *every woman* has adjoined to its own IP.

- (10)a. *I have two red hats and Bob does too* \_\_\_\_ .  
 (Cf. "I have two red hats and Bob has two \_\_\_\_ (as well).")
- b. *I'll tell a story about my childhood, and you will too* \_\_\_\_ .

If we hypothesize that reconstruction in relative clauses also involves NP ellipsis, then we might expect to find some properties of this more general construction in the case of relatives. This expectation appears to be borne out to some extent, as we will see in 4.3. In contrast, it does not seem to me that there are any genuine cases of (well-formed) NP movement into "lexical" NP positions.

#### 4.2. Borsley's Case Facts

Another problem for the raising analysis arises in connection with case marking inside relative clauses. Borsley (1997) provides some relevant examples from languages where morphological case marking is overt. A couple of his examples from Polish are given below:

- (11)a. *To, kogo Maria widziała jest tajemnica.*  
 That-NOM who-ACC Maria saw is secret  
 'Who Maria saw is a secret.'
- b. *Widziałem tego pana, co zbił ci szybę.*  
 Saw-1SG the-ACC man-ACC what broke your-SG glass-ACC  
 'I saw the man who broke your glass.'

In (11a) the DP *To, kogo Maria widziała* is in subject position, and accordingly the head *to* bears nominative case. At the same time, this head is associated with the relative pronoun *kogo*, which in turn is related to the gap in the object position of *widziała* inside the relative CP. The relative pronoun, however, bears accusative case. In (11b) the DP *tego pana, co zbił ci szybę* is in object position, and the external head *tego pana* is marked with accusative case; this same head, however, is associated with the subject position of *zbił*, which we don't expect to be marked accusative; in fact, it is the other argument of this verb, *ci szybę*, which bears accusative case.

Now, if the head of the RC were moved from inside the relative, we would expect it to bear the same case as the relative pronoun, contrary to fact. Under the matching analysis, however, there is no conflict. Recall that NP-ellipsis affects a constituent which is not even marked for number; thus there is no reason to expect that morphological case should be part of the anaphoric relation in question.

#### 4.3. Safir's Argument from Crossover

According to many current theories of reconstruction, the phenomenon known as strong crossover is nothing more than a violation of Principle C of the Binding Theory. All one needs to make this interesting prediction is to assume that the Binding Theory (or at least Principle C) applies at LF, where all movement is "undone" as much as possible. Thus a case of strong crossover such as *Who<sub>i</sub> does she<sub>i</sub> like?* is actually something like (*Who<sub>i</sub> ...*) *she<sub>i</sub> like who<sub>i</sub>* at LF, a straightforward Principle C violation. This, of course, is a welcome result for a theory of grammar, because a particular productive phenomenon (strong crossover) is accounted for by a general principle (Principle C) rather than by some *ad hoc* constraint. If this analysis is correct, we should expect that all

configurations involving strong crossover are Principle C violations. It is somewhat puzzling, then, (and perhaps frustrating!) that this is not always the case in relative clauses. The relevant facts are discussed by Safir (1998) and Sauerland (1999). For visual ease, I have added the hypothesized reconstructed versions of the examples in (12) through (14).

- (12)a. *The relative of John<sub>j</sub> that he<sub>j</sub> likes lives far away.*  
 ... he<sub>j</sub> likes *<relative of John<sub>j</sub>>* ...
- b. \**The letters by John<sub>j</sub> to her<sub>i</sub> that he<sub>j</sub> told every girl<sub>i</sub> to burn were published.*  
 ... he<sub>j</sub> told every girl<sub>i</sub> to burn *<letters by John<sub>j</sub> to her<sub>i</sub>>* ...
- c. *The letters by him<sub>j</sub> to her<sub>i</sub> that John<sub>j</sub> told every girl<sub>i</sub> to burn were published.*  
 ... John<sub>j</sub> told every girl<sub>i</sub> to burn *<letters by him<sub>j</sub> to her<sub>i</sub>>* ...

Sauerland's examples in (12) show that, in the relevant kind of configuration, relative clauses do not always give rise to Principle C violations. Thus (12a) is judged grammatical despite possible expectations. On the other hand, (12b) would appear to be ungrammatical precisely as a consequence of Principle C, given that the minimally different (12c) is good.

According to Sauerland, the facts in (12) can be explained if we assume that both the raising and the matching analyses are available. Sauerland proposes that the raising analysis is the preferred option in cases which involve certain interpretive requirements; one such general case is that of (12b-c), where the head contains a variable bound by a lower constituent (in other words, we need to reconstruct the binding relation between *every girl<sub>i</sub>* and *her<sub>i</sub>* in these examples). In other cases, such as (12a), the matching strategy is forced (or at least is available) to avoid a Principle C violation; in these latter instances, then, we might expect some of the properties observed in matching structures, such as VP ellipsis. If we hypothesize that (12a) is a case of matching/ellipsis, we can then account for the absence of a Principle C violation by assuming that the DP *John<sub>j</sub>* is affected by what Fiengo and May (1994) call "vehicle change." Thus the reconstructed relative would actually be something like (12a').

- (12)a' ... he<sub>j</sub> likes *<relative of his<sub>j</sub>>* ...

Note that strong crossover (and weak crossover) does not pattern with Principle C in these cases. In (13) below, there is no bound variable (or other known factor) that, in Sauerland's terms, would indicate that these cases involve raising. Yet, when the crossover configuration is present the result is ungrammatical:

- (13)a. \**Mary exhibited the picture of every boy<sub>i</sub> that he<sub>i</sub> /his<sub>i</sub> sister brought.*  
 ... he<sub>i</sub> /his<sub>i</sub> sister brought *<picture of every boy<sub>i</sub>>* ...
- b. *Mary exhibited the picture of every boy<sub>i</sub> that was brought by him<sub>i</sub> /his<sub>i</sub> sister.*  
 ... *<picture of every boy<sub>i</sub>>* was brought by him<sub>i</sub> /his<sub>i</sub> sister ...

In fact, Sauerland argues, even when a matching/ellipsis strategy is "forced" by Principle C, as in the examples below, the result will still be ungrammatical when strong crossover is

present (cf. *her<sub>i</sub> ... any woman<sub>i</sub>* in (14a)); in the absence of strong crossover (as with *any woman<sub>i</sub> ... her<sub>i</sub>* in (14b)), the result is fine.

(14)a. \**The Times will generally publish pictures of any woman<sub>i</sub> visiting Clinton<sub>j</sub> that he<sub>j</sub> told her<sub>i</sub> about .*

... *he<sub>j</sub> told her<sub>i</sub> about (pictures of any woman<sub>i</sub> visiting Clinton<sub>j</sub>) ...*

b. *The Times will generally publish pictures of any woman<sub>i</sub> visiting Clinton<sub>j</sub> that he<sub>j</sub> thinks will offend her<sub>i</sub>.*

... *he<sub>j</sub> thinks (pictures of any woman<sub>i</sub> visiting Clinton<sub>j</sub>) will offend her<sub>i</sub> ...*

Thus a matching analysis can apparently “rescue” these constructions from a Principle C violation but not from a crossover violation. There are interpretive considerations which affect vehicle change, which is apparently blocked from affecting the DP *any woman* in (14) because this DP contains a variable

By assuming that both the raising and matching strategies are possible, Sauerland is able to give an accurate account for the facts in (12). According to my proposal, however, the raising strategy is never available for these NPs. Thus (12a) is unproblematic under my account; in fact, (12a) strengthens the claim that relative clause reconstruction involves an independently attested kind of ellipsis—i.e., NP- or VP-ellipsis. On the other hand, my proposal so far fails to explain why (12b) is ungrammatical. If ellipsis is involved in this case as well, something more must be said about it. Descriptively, one could say that those cases which putatively “force the raising analysis” must have something in common that does not allow vehicle change. My feeling is that we must look further into the conditions that “license” vehicle change, which should be related with some kind of recoverability of interpreted material. For the moment, however, I do not have a satisfactory account of all the fact in (12); nevertheless, I think there are enough reasons to be suspicious of the raising analysis

#### 4.4. Parallelism in ATB Extraction.

It is known that extraction out of two or more conjoined clauses must create a gap in each conjunct. There is a parallelism constraint on this kind of across-the-board (ATB) extraction that requires the gap in situ to be “the same” in terms of argumenthood or casemarking across conjuncts (for details on this constraint see Williams 1978).

(15)a. *Who did John see and Mary meet?*

b. *Who saw John and met Mary?*

c. \**I know who John saw and met Mary.*

d. \**Who did John see and like Mary?*

Relative clauses, however, seem to be immune to this constraint, as shown in the examples in (16) (from Moltmann 1992).

(16)a. *I know the man that Mary likes and we hope will win.*

b. *Mary wore a dress that Ungaro designed and cost a fortune.*

But are these true exceptions, or is there something more going on? Consider the following variants of (16a):



- (17)a. *I know the man that Mary likes and that we hope will win.*  
 b. *?\*I know the man whose mother Mary likes and we hope will win.*  
 c. *I know the man whose mother Mary likes and who we hope will win.*

(17a) differs minimally from (16a) in that the two relative modifiers are explicitly CPs, due to the presence of an overt complementizer in the second modifier (viz. *that we hope will win*). It seems to me that the structure of (16a) is exactly like that of (17a), both cases involving conjoined (or stacked) CPs—as opposed to IPs in the examples in (15). The difference between these two types of conjunction, I claim, is that if two CPs are conjoined, they involve separate extractions and not ATB extraction. Thus there is no reason to expect a parallelism constraint in these cases.

If my claim is correct, we might expect that relative clauses are not in fact exceptional with regard to constraints on ATB extraction. We simply have to make sure that we have ATB extraction in the first place. What would happen if we forced an IP-level conjunction in these relatives? (17b) might be such a case. According to everyone I have spoken to, (17b) is definitely ungrammatical under the interpretation corresponding to the reconstructed *...we hope (WH's mother) will win*. In this case, the constituent *whose mother* is shared by two IP-level conjuncts; thus we have true ATB extraction, and the parallelism violation reappears. Those people who find (17b) acceptable admit that the interpretation they assign to it is one involving CP-level conjunction, as in (17c).

Other cases which should force IP-level conjunction are those where the interpretation involving CP-level conjunction is semantically or pragmatically odd:

- (18)a. *\*Which picture did Mary take and came out overexposed?*  
 b. *the picture that Mary took (and) that came out overexposed*  
 c. *??the picture that Mary took and came out overexposed*  
 d. *\*the guy whose picture Mary took and came out overexposed*
- (19)a. *??the man whose son I thought I had met and would have been 8 years old*  
 b. *the son he thought he had left behind that would have been 8 years old*

The examples in (18) are similar to those in (17), except that it is odd to interpret (18d) in a way similar to that in (17c), since “guys” don’t “come out overexposed” (at least not under the salient reading of *overexposed*). Thus IP-level coordination is forced in (18d), as opposed to (18b) and perhaps (18c), and the result is ungrammatical. (19a) is a similar case. Once again, the second conjunct does not readily allow the interpretation corresponding to *...⟨WH man⟩ would have been 8 years old*, which would indicate CP-level conjunction. (19b), however, is easy to interpret as involving CP-level conjunction, and accordingly is perfectly acceptable.

These facts strongly suggest that my hypothesis is correct: relative clauses are not immune to the ATB parallelism constraint; the appearance of immunity is due to the fact that coordination in a relative may occur either at the CP level, in which case we simply don’t have ATB extraction; or coordination may occur at the IP level, in which case we do have ATB extraction, and no immunity to the parallelism constraint.

The above analysis is perfectly compatible with the assumption that relative clauses systematically involve a matching/ellipsis relation between the external head and the RC-internal gap(s). If, however, we assume the raising approach, we lose the explanation of the facts above, since under this approach there is a unique (external) head position to move to (viz. NP<sub>η</sub> in (20a-b)), and all relative clauses are analyzed as involving ATB extraction.



(23) *What (every student's car) will block a policeman is (every student's car).*

Now, the problem with the above structures is that, as Cecchetto observes,<sup>2</sup> there is nothing in the grammar that prevents QR in (22), given that the postcopular IP is not distinct from an unclefted IP of the kind that allows QR. Thus one would need an *ad hoc* rule that is somehow capable of distinguishing the relevant IP from other unclefted IPs, and then blocking QR in these particular cases.

But suppose now that the copies of *(every student's car)* in (22)-(23) are not movement related. Suppose that each copy exists independently. We know that ellipsis blocks QR, as illustrated in Fox's examples in (24).

- (24)a. *Some boy admires every teacher.* OK  $\forall > \exists$   
 b. *Some boy admires every teacher and Mary does too.* \*  $\forall > \exists$

To be sure, the kind of ellipsis putatively occurring in (22)-(23) is not quite the same as the VP-ellipsis in (24), since in (22)-(23) it is the leftmost occurrence of *(every student's car)* that is elided; but aside from this, the ellipsis analysis of these cleft constructions seems to be more viable than a movement analysis in light of Cecchetto's facts.

## 5.2. Toward An Updated Syntactic Treatment of E-Type Pronouns

The interpretation I have proposed for reconstructed material inside relative clauses relies on the assumption that indefinites and RC-internal gaps are interpreted in the style of Heim (1982). If one assumes this kind of interpretive procedure, one might hope that this procedure could account for the interpretation of E-type pronouns without resorting to a "disguised definite description" interpretive strategy. Nevertheless, it may turn out that both these strategies may be necessary to explain all the relevant facts. If this is the case, the ellipsis account that I propose could suggest a possible implementation of a syntactic treatment of E-type pronouns. The way this might work is as follows. Consider the anaphoric element *He* in (25) below:

(25) *A man came in. He sat down.*

If we want to interpret this pronoun according to a syntactic "disguised definite description" strategy, we will need to construct the DP *The man that came in* to put in place of *He* in (25). In what follows, I will illustrate a possible syntactic approach to the interpretation of E-type pronouns, which was originally inspired by the work of Chung et al. (1995). I must note, however, that this idea is so to speak a "backwards" implementation of an ellipsis analysis, in the sense that a copy of the anaphoric material is inserted (where there is none) rather than being deleted (when there is more than one copy). I think the work of Romero (1998) might provide a more straightforwardly ellipsis-based approach to these cases, but the basic intuitions should be clear in any case.

Chung et al. (1995) analyze sluicing constructions as involving a process of "IP Recycling" which allows (26) to be interpreted on the LF in (27):

(26) *She's reading something. I can't imagine [CP what \_\_\_]*

<sup>2</sup> I am not entirely sure that Cecchetto is referring to structures like those in (22)-(23) when he makes this argument, though if I understand him correctly, this should be reasonably close to what he means.

(27) *I can't imagine* [<sub>CP</sub> *what<sup>x</sup>* [<sub>IP</sub> *she's reading something<sup>x</sup>* ] ]

According to Chung et. al., the interpretation of *something<sup>x</sup>* is Heimian, so that the indefinite can be appropriately bound by *what<sup>x</sup>* in the specifier of CP. The "hook" on which the IP is attached is the element *what* itself, which heads an empty CP.

In the same spirit, an E-type pronoun could be viewed as a [+definite] D<sup>o</sup> that can act as a "hook" for restrictive predicates supplied by preceding IPs that contain indefinites, and thus, by hypothesis, contain at least one free variable:

- (28)a. A man came in. ~> *man<sup>x</sup>* & *came-in<sup>x</sup>*  
 b. [<sub>DP</sub> [+def] [<sub>IP</sub> *wh*     ] ] *sat down*.  
 c. [<sub>DP</sub> [+def] [<sub>IP</sub> λ*x* [<sub>IP</sub> *man<sup>x</sup>* & *came-in<sup>x</sup>* ] ] ] *sat down*.

Although this is a somewhat sketchy treatment of E-type pronouns, I think it is suggestive enough to warrant a mention. At the very least, it illustrates some of the potential that an ellipsis-based analysis of the kind I have proposed brings with it.

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