Obligatory Reconstruction and the Meaning of Traces

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Abstract

This paper argues that parts of the lexical content of an A-bar moved phrase must be interpreted in the base position of movement—it obligatorily reconstructs. The argument is based on a study of ellipsis of a phrase that contains the base position of movement. I show that a phrase that contains the base position of A-bar movement of a DP, but not the landing site, can be elided under conditions that take into account what I call the core NP of the moved phrase. This evidence comes from wh-movement in questions, quantifier raising, and wh-movement in relative clauses. I also demonstrate that focus percolation in a chain can obviate the interaction between ellipsis and reconstruction in some cases. The results of this paper corroborate and extend conclusions based on Condition C reconstruction in work by Chomsky and Fox.

1 Introduction

Suppose you’re given two identical glass containers. One is filled with air, the other contains a vacuum. Your task it find out which one contains air. One way of solving the task is to put the two containers on opposite scales of a pair of beam scales. The heavier one contains air. By comparing two apparent nothings, you can distinguish them. This paper applies this idea to the interpretation of moved phrases. In this case, the two apparent nothings are the base positions of two instances of movement. The pair of beam scales to compare these is ellipsis. Ellipsis indicates whether two phrases mean the same or not.

Consider the interpretation of moved phrases. It’s well known that some aspects of the contribution of a moved phrase to the sentence meaning are determined by its base position, and other aspects are determined by its landing site. In what follows, I’ll mainly be concerned with A-bar movement (wh-movement in questions and in relative clauses and quantifier raising). Quantifier raising and wh-movement are illustrated in (1).

(1) a. A boy is riding every bike. (quantifier raising)
   b. Which book is Kai reading? (wh-movement)

For A-bar movement, specifically, the thematic aspects of interpretation are determined by the base position, while the scopal aspects are determined the moved position. The classical understanding is that A-bar movement is interpreted as an operator-variable structure. This proposal for the interpretation of an A-bar movement structure is illustrated by the schema in (2) (see e.g. Heim and Kratzer 1998).

(2) $[D \quad NP|_{DP} \quad [XP \ldots t_{DP} \ldots]]$
    $[Quantifier \; Restrictor] \lambda_x \; Scope \; (x)$

1With overt wh-movement there are cases with complex quantifiers like how many, which is interpreted as for what N are there N-many that allow the many-part to take scope lower the moved position, but still the interrogative quantifier for what N takes scope in the moved position (Cresti 1995, Rullmann 1995).
The moved phrase in (2) consists out of a determiner, which is interpreted as a generalized quantifier, and its NP-complement, which is interpreted as the restrictor of the quantifier\(^2\). The base position is in the XP that the moved quantificational DP adjoined to and is interpreted as a plain variable that is bound by a lambda abstractor that takes scope over the result of interpreting XP. The predicate this λ-abstract provides serves as the scope of the quantificational determiner.

On this view, the movement in the examples in (1) receives the interpretation shown in (3) ((3b) incorporates some aspects of the interpretation of questions that are irrelevant to present concerns).

\[(3)\]
- a. [every apple] \(\lambda_x \) a boy is eating \(x\)
- b. [which book] \(\lambda_x \) \(p = \ ^\wedge[\text{Kai is reading }x]\)

Structure (2) has two attractive properties: In the case of overt movement, the observed word order is the same as that in (3), so assuming (2) might lead to a simpler overall theory of grammar. Secondly, the interpretation of structure (2) uses only independently required mechanisms (For example, (2) fits easily in the general interpretation procedure developed by Heim and Kratzer (1998).) Still, (2) straightforwardly captures the role both the base position and the landing site of movement play for the interpretation.

However, there’s also a well-known problem with (2). Namely, the binding properties of moved phrases don’t receive a straightforward explanation based on the representation (2). In particular, I’ll be concerned with Condition C of the binding theory in what follows. Often material in the moved phrase behaves with respect to binding theory as if it occupied the base position, and not the landing site (Riemsdijk and Williams 1981 and others). This is illustrated by the fact that (4) doesn’t allow coreference between the pronoun *him* and the R-expression *John.*

\[(4)\] *Which relative of John’s did he visit.*

Because Condition C judgements interact with other properties of interpretation (Reinhart 1983, Heim 1998, Fox 1999a), it’s generally assumed that the coreference constraint Condition C is applies to the same representation that other interpretive processes also apply to. Specifically, Condition C blocks coreference of an R-expression with a pronoun that it is in the scope of.\(^3\) But, in the structure (2) all moved material occupies the landing site, and is interpreted there, and therefore no Condition C violation is expected in (4). For this reason Chomsky (1993) proposes that moved material always leaves a copy in the base position, which is interpreted there. This approach is called *Syntactic Reconstruction.* It proposes semantic representations like the sketch (5) indicates.\(^4\)

\(^2\)The only critique of the assumption that the quantificational determiners must be restricted by their NP-complement I know of is Herburger (1997). She points out that (i) (her (6)) can be paraphrased as *A great proportion of the applicants were cooks* and proposes a semantics where indeed the *VP* applied restricts *many* interpreted as a proportional quantifier.

\(^3\)Condition C effects also arise in some cases when one R-expression is in the scope of another one. But, since the judgements are sharpest when an R-expression is in the scope of a pronoun, I focus on this case.

\(^4\)The idea to interpreted the restrictor twice is due to Fox (1999a). Cases like (i), where the restrictor contains an anaphor that is bound only in the landing site position are not straightforwardly interpretable on either of the two approaches sketched here.
Instead of a plain variable in the trace position, the semantic representation in (5) contains an indexed definite determiner. Furthermore, parts of the lexical content of the restrictor are represented in the base position in (5) restricting this determiner. Specifically for the examples in (1), the semantic representations are those in (6).

(6)  
   a. [every apple] $\lambda x$ a boy is eating the$_x$(apple)  
   b. [which book] $\lambda x$ p = $\wedge$[Kai is reading the$_x$(book)]

Stating generally how structures like (5) are interpreted requires some restriction on which parts of the restrictor can occur in the base position. Otherwise, consider for example what would happen if, for the interpretation of which former senator, only senator was interpreted in the base position. Since the predicates former senator and senator are contradicting each other, I don’t see any way the predicate senator in the base position could contribute anything to the meaning of the sentence. To block such cases, I assume that only such parts of the restrictor can be interpreted in the base position that are interpreted as predicates which denote supersets of the entire restrictor. Consider for example, the restrictor made up of the NP boy and the NP-modifier who John likes, which is interpreted by intersecting the two predicates $\lambda x$.boy(x) and $\lambda y$.likes(John)(y). Then I assume that only the NP boy or the relative clause who John likes or both or neither can be interpreted in the base position. I assume that it’s impossible to interpret, for example, just parts of the relative clause in the base position. I believe that the actual restriction one structures like (5) follows from syntactic principles (Sauerland 1998, Fox 2000), but the restriction suggested here is sufficient for my present concerns.

With the suggested restriction on what parts of the restrictor can occur in the trace position, the interpretation of (5) follows from independent principles. As semantic lexical entry for the indexed determiner the$_x$, I assume (7), which depends on the assignment function $g$.

(7) $[[\text{the}_x(P)]]_g = g(x)$ if $[P]_g(g(x))$ is true  
   otherwise $[[\text{the}_x(P)]]_g$ is undefined

This lexical entry is independently motivated by the possibility of bound epithets as in (8).

(8) One teacher of every boy called the boy’s mother.

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5 Of course, empirical evidence from Condition C bears on the question of what material of the fronted phrase is represented in the base position of movement. I discuss relevant evidence from Condition C in section 4.2.

6 As stated in the previous footnote, I’m not considering the possibility that the restrictor may contain a bound variable. In Sauerland (1998), I attempted to account for all cases of structures like (5), including those with bound variables, in a uniform way, but unfortunately discovered later with the help of Makoto Kanazawa (p.c.) that the account makes incorrect predictions for certain examples. For simplicities sake, I assume here that in the cases of wh-movement like the one in the previous footnote a further mechanism applies. This considerably simplifies the task of interpreting such structures.
Under these assumptions, the predicates initiated by $\lambda x$ in the classical representation (2) and the syntactic reconstruction structure in (5) receive the same interpretation for any individual $a$ that satisfies the restrictor of the moved quantifier. Therefore, as Fox (1999a) points out, the interpretation of (5) is the same as that of (2) for conservative quantifiers. Under the assumption that all determiner quantifiers in natural language are conservative (Barwise and Cooper 1981), the interpretation of (5) will then never differ from that of (2).

The syntactic reconstruction approach is frequently challenged (Sharvit 1999, Sternefeld 2000, Cecchetto 2000, and others), though I’m not aware of any alternative with its empirical coverage.\(^7\) In this paper, I present new, independent evidence for syntactic reconstruction. The evidence comes from the interaction of movement and ellipsis. Ellipsis, as is well known, has a requirement that the elided constituent be identical in meaning to an antecedent.\(^8\) Now, consider a case where a phrase moves out of both the elided constituent and the antecedent. This structure is sketched in (9).

\[(9) \quad \text{XP} \ldots \ldots \text{t}_{\text{XP}} \ldots \ldots \text{YP} \ldots \ldots \text{t}_{\text{YP}} \ldots \]

I show that whether or not ellipsis is possible in (9) depends (among other things) on the lexical content of the restrictors of XP and YP. Namely, if certain parts of the restrictor of XP mean the same as the corresponding parts of the restrictor of YP, ellipsis is possible, but not otherwise. Since we independently know that the elided phrase must be identical in meaning to the antecedent, the requirement on the restrictors of XP and YP follows from the syntactic theory of reconstruction. This argument then is entirely independent of the usual binding theoretic argument, but lends equally strong support to the idea of obligatory syntactic reconstruction feeding semantic interpretation. Strengthening the point, I also show that binding theory and ellipsis identity lead to the same generalization as to what parts of the restrictor are obligatorily reconstructed to the base position.

2 Double headed ACD

A major part of this paper concerns the analysis of a restriction on ACD (Antecedent Contained Deletion) that was first systematically studied by Kennedy (1994). The restriction is demonstrated in (10a), where ACD is blocked.

\[(10) \quad \text{\textasciitilde Polly visited every town in every country Eric visited (visit).} \]

The elided VP in (10) cannot be interpreted as visit—the interpretation indicated in angular brackets. Kennedy argues that (10) is blocked because it involves ellipsis—if the VP is not elided the sentence is grammatical as shown in (11).

\[(11) \quad \text{Polly visited every town in every country Eric visited} \]

\(^7\)Specifically, none of the three alternative accounts mentioned accounts for the argument/adjunct asymmetry of Freidin (1986) and Lebeaux (1988) (see section 4). On the other hand, the binding data with pseudocleft and clitic left dislocation structures of Sharvit (1999), Sternefeld (2000), and Cecchetto (2000) is very interesting, but beyond the scope of my present paper.

\(^8\)Identity of meaning is only an approximation to the condition I actually assume antecedent and elided VP must satisfy (see sections 3.1 and 5.2). I use it for convenience only, until it becomes necessary to be more precise.
One property that distinguishes (10) from grammatical, standard ACD examples such as (12), is the following: In (12), the DP in the matrix VP, which occupies the position that corresponds to a trace in the elided VP in the ACD-relative clause is also the head of the relative clause. In (10), the DP that occupies the position in the matrix VP that corresponds to a trace in the elided VP is every town with its modifiers. This DP is different from the head of the relative clause every country.

(12) Polly visited every town Eric did (visit).

I’ll call constructions like (10) Double Headed ACD because two different DPs are involved in the ACD-structure. For the two DPs involved, I’ll use the terms relative clause head (RC-head) and QR-head. These two heads are indicated in (13) for (10).

(13) *Polly visited every town in every country Eric did (visit).

Some further evidence that double headed ACD is illformed is given in (14). Both (14a) and (14b) contrast with the standard, single-headed ACD example in (14c) in that they don’t allow an interpretation of the elided VP as visit.10

(14) a. *Polly visited every town in a country Eric did (visit).
   b. *Polly visited every town that’s in a country Eric did (visit).
   c. Polly visited every town Eric did (visit).

Why is the restriction on double headed ACD surprising? To see this consider first the textbook analysis of single headed ACD. The problem of ACD within a theory of VP ellipsis is that the antecedent VP seems to contain the elided VP, but then the elided VP cannot be identical to the antecedent VP. As argued by numerous people (Sag 1976, May 1985, Larson and May 1990, Kennedy 1997), ACD involves movement of a DP containing the ACD-relative clause to a position outside of the antecedent VP. Hence, the every town-DP in (14c) must undergo movement to resolve ACD. A candidate for the resulting representation is shown in (15) (For ease of presentation, the landing site of movement in (15) is shown higher than the subject).

(15) [every town, Op$_y$ Eric visited [y]] $\lambda_x$ Polly visited [x]

Under the assumption that the difference between the indices of the two traces, $x$ and $y$ in (15) is not relevant for ellipsis identity, VP-ellipsis is licensed (15).

But, consider the representation (16) that results from (14a) by quantifier raising of the every town-DP.

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9Except for the relative clause, of course, which is part of the object DP, but not usually considered part of the relative clause. In what follows, we’ll see that this difference is important, but at the moment my concern is to establish a useful terminology.

10Example (14a) can marginally be construed as single headed ACD with the every country DP being both the QR-head and the relative clause head. Then the elided VP is interpreted as visit every town in. (14b) doesn’t allow this interpretation.
Both the elided VP and the antecedent VP in representation (16) are the same as in (15). If ellipsis is licensed in (15), it’s incorrectly predicted to be possible in (16) as well.

The illformedness of double headed ACD argues, hence, that some assumption going into the derivation of (15) and (16) must be wrong, and that somehow the interpreted representations for (14) must be different. It’s virtually forced that the point where the representations (15) and (16) are mistaken are the traces: Kennedy (1994) shows that the explanation of (14) must be a constraint on ellipsis, as mentioned above. The only constraint on ellipsis usually assumed is an identity (or parallelism) condition. And, the only place where a difference could be made between the two VPs in (14) are the traces. Therefore, I assume that (14) is evidence for a condition on the identity of traces that distinguishes (14a) from (14c). This assumption underlies all approaches to double headed ACD I know of, namely that of Kennedy (1994) and Heim (1997a) and the one developed here. The question where my approach disagrees from the others is: What makes the traces in (14a) different, whereas those in (14c) are identical?

2.1 The Index Identity Approach

The basic intuition of the index identity approach is that there are restrictions on the use of variable indices that distinguish between single and double headed ACD.

Sag (1976:66,103) first suggested that traces are only identical for the purposes of VP-ellipsis if their binders are the same. Sag also develops a particular way to implement this suggestion. Namely, he proposes a restriction on the procedure that indexes variables and their binders, that bans ‘vacuous’ coindexing. Heim (1997a:202) states this as the condition in (17).

\[
(17) \text{If an LF contains an occurrence of a variable } v \text{ that is bound by a node } \alpha, \text{ then all occurrences of } v \text{ in this LF must be bound by the same node } \alpha.
\]

If the indices of the variables in corresponding positions of antecedent and elided VP need to be identical for VP-ellipsis to be licensed, neither representation (15) nor (16) licenses VP-ellipsis. For double headed ACD in (16) this is actually the desired result. And indeed, (17) forces the relative clause internal variable and the variable left by QR in (16) to be different.

For single headed ACD, on the other hand, the opposite result is arguably achievable. Both Kennedy (1994) and Heim (1997a) develop Sag’s idea in this direction. Specifically, Heim (1997a) suggests a restatement of the semantics of variable binding such that the quantificational determiner binds both the variable in the relative clause and the one in the base position of QR in the matrix clause. This change allows Heim to propose (18) instead of (15) as the representation of single headed ACD.

\[
(18) [\text{every}_x \text{ town}(x) \text{ Eric visited } [x]] \text{ Polly visited } [x]
\]

Since a representation where both relevant base positions are interpret as a variable with the same index is blocked for double headed ACD, index identity accounts for the impossibility of VP-ellipsis in (14a). However, Heim (1997b) points out two problems for the index identity account that she doesn’t know how to account for. Consider ACD with a partitive relative clause head in (19a) and ACD in a comparative clause in (19b).

\[
(19) \text{a. Eric visited two towns of all the towns Polly did.}
\]
b. Eric visited more towns than Polly did.

The structure of the partitive (19a) seems to be that of double headed ACD with the two heads being *two towns* and *all the towns*. However, ACD is possible in (19a). To satisfy index identity, (19a) would have to be analyzed as involving one quantifier that binds into both the relative clause and the matrix clause. This requires the structure in (20) for the partitive DP in (19a).

\[(20) \quad \text{[two towns of the]} \times \text{[towns}(x) \text{ [Polly visited } x\text{]]}\]

However, the syntactic constituency of partitives differs from (20). For example, German allows fronting of the PP *of the cities* in example (21).

\[(21) \quad \text{[Von welchen Städten], hat Eric [zwei } t_i\text{ besichtigt?] of which towns has Eric two visited}\]

The problem with the comparative (19b) is even more difficult. The standard semantics of comparatives relies on representations similar to (22) for (19b) (see Heim 2000 for a recent defense of this view). Clearly, coindexing in (22) is blocked by condition (17).

\[(22) \quad \text{more (} \lambda_n \text{ Polly visited } n\text{-many towns) (} \lambda_m \text{ Polly visited } m\text{-many towns)}\]

But, even independently of the assumptions going into (22), it’s hard to see what an account of (19b) should look like that is compatible with index identity. Since the number of towns Polly and Eric visited are different when (19b) it true, it is hard to imagine a representation for (19b) where these two numbers have the same index.

Jacobson (1998b) points out another type of example that is problematic for the index identity account. Namely, examples with pied piping in the relative clause like (23) allow ACD.

\[(23) \quad \text{Eric visited every country whose embassy Polly did.}\]

Independently of the semantics of pied-piping, it’s again difficult to imagine an account of (23) assuming the index identity account to ACD. On such an account, the arguments of *visit* in the matrix and in the relative clause would have to be bound by the same node. But, (23) expresses that Eric visited countries and Polly visited embassies.

### 2.2 The Effect of Lexical Content

This section presents a new argument against the index identity account that points towards a quite different account of the acceptability of double headed ACD. Namely, I’ll argue that the index identity account cannot account for the contrast in (24).

\[(24) a. \quad \text{Polly visited every town that’s near the one Eric did (visit).}\]

\[b. \quad \text{“Polly visited every town that’s near the lake Eric did (visit).}\]
Both examples in (24) have the same structure. The only difference between (24a) and (24b) is the head of the relative clause. Since this difference isn’t expected to affect the indexation possibilities, the index identity approach predicts (24a) and (24b) to have the same status; namely, both should be ungrammatical. This prediction is wrong: (24a) is clearly better than (24b), for everyone I consulted.

Most speakers in fact find an equally clear contrast in (25), where the same noun is repeated in (25a).

\[(25)\]
\[
a. \quad \text{John visited every town that’s near a town Mary did (visit).}
\]
\[
b. \quad *\text{John visited every town that’s near a lake Mary did (visit).}
\]

Another set of examples making the same point is shown in (26).

\[(26)\]
\[
a. \quad \text{Jon ordered a drink that’s more expensive than the drink Martin did (order)}
\]
\[
b. \quad \text{Jon ordered a drink that’s more expensive than the one Martin did (order)}
\]
\[
c. \quad *\text{Jon ordered a drink that’s more expensive than the dish Martin did (order)}
\]

Double headed ACD also improves in the examples in (27a) and (27b) as compared to the double headed ACD interpretation of (27c). In all sentences in (27), though, the interpretation of the elided clause as visited every town near is marginally available. This, however, is a form of single headed ACD.

\[(27)\]
\[
a. \quad \text{John visited every town near a town Mary did (visit).}
\]
\[
b. \quad \text{John visited every town near the one Mary did (visit).}
\]
\[
c. \quad *\text{John visited every town near a lake Mary did (visit).}
\]

Partitives and Comparatives are special cases of the generalization that double headed ACD is acceptable whenever the lexical content of the two heads is identical. Consider again the two examples in (28) (repeated from (19)), which were problematic for the index identity account.

\[(28)\]
\[
a. \quad \text{Eric visited two towns of all the towns Polly did.}
\]
\[
b. \quad \text{Eric visited more towns than Polly did. (19b)}
\]

It’s evident that the partitive example (29a) fits into the generalization about the lexical content. For (29b) consider the paraphrase of the semantic representation (22) given in (29). (The third problem mentioned above, the pied piping example (23) I address in (72) below.)

\[(29)\]
\[
\text{Eric visited a number of towns greater than the number of towns Polly did.}
\]

The observation that the lexical content of the two heads in a double headed ACD construction affects the acceptability of the construction cannot be captured by structural conditions on the indices used, and therefore argues strongly against the index identity account. In the next section, I show that the observation argues for syntactic reconstruction.

\[^{11}\text{For some speakers, the contrast in (25) isn’t very clear, though it’s clear for most speakers I consulted. I assume that the speakers that don’t perceive a clear contrast in (25), don’t like repetition of the same noun. For those speakers that accept (25a) it requires a particular pronunciation—namely, the second occurrence of town must be destressed. This is discussed below in footnote 14.}\]
3 A Copy Identity Account of Double Headed ACD

My approach to the Double Headed ACD is based on the idea that traces aren’t plain variables, but contain lexical material. Specifically, I assume that the base positions contain copies of some of the lexical material of the moved phrases. Furthermore, I assume that ellipsis is only possible, if the lexical material in the base positions is identical. I call this approach the Copy Identity Approach.

Consider example (25b). My idea is that the representation of (25b) is essentially like (30), where the head noun of the antecedent is repeated in the trace positions both in the relative clause and in the trace of quantifier raising.

\[ \lambda z \text{Polly visited town} \]

Since in (30), the antecedent is different from the elided VP—one has lake in the position where the other has town—ellipsis is expected to be impossible. In the acceptable example (25a), where the two heads are lexically identical, however, the lexical material in the two trace positions will be identical, and therefore ellipsis is predicted to be possible.

And, similarly, in the case of single headed ACD the lexical material in the two trace positions is identical, because the antecedent of the two traces is the same DP. This is sketched in (31).

\[ \lambda z \text{Polly visited town} \]

Representing the head of the moved phrase in the base position is nothing but syntactic reconstruction. The idea of relating double headed ACD to syntactic reconstruction straightforwardly explains the effect of the lexical content noted in section 2.2. In fact, the acceptability of double headed ACD provides an argument for syntactic reconstruction that’s entirely independent of binding theory. Section 2.2 showed that for the well-formedness of ACD the lexical content of the two head NPs must be the same. Why would there be such a requirement? The only independently motivated identity requirement is that on the elided VP and its antecedent. Therefore, the simplest

\[ \lambda z \text{Polly visited town} \]

\[ \lambda z \text{Polly visited town} \]

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12 The copy identity approach shares the prediction (25) with—at least a benevolent interpretation of—a proposal of Lappin (1984). Lappin proposes, in effect, that two traces or pronouns are identical if they can be naturally interpreted as having the same intended range of possible values. (Lappin 1984:(10)) He, however, doesn’t discuss contrasts like (25) and his proposal is too vague to be sure of this prediction. There are other differences between the copy identity approach I’m developing and Lappin’s proposal. For one, Lappin doesn’t derive the identity condition from properties of the semantic representation in the way it’s done here, but suggests that the condition is pragmatic which, as far as I can see, he presents no motivation for. Secondly, Lappin’s condition applies to all traces and bound pronouns, which isn’t true of the copy identity approach pursued here (see also section 5). The examples in (ib) and (iib), which are just as acceptable as Lappin’s (ia) and (iia), show that this aspect of Lappin’s (1984) proposal makes wrong predictions (see also Fiengo and May 1994:229).
assumption is that the head nouns are represented in the elided VP and its antecedent, respectively. And, the only part of the two VPs related to the head nouns are the traces. Hence, it’s natural to assume that, if anywhere, the head nouns are represented in the trace positions. Therefore, double headed ACD argues that the head noun of a QR-chain is represented in the trace position, and that the head noun of the relative clause external head is represented in the relative clause internal head position.

3.1 Sensitivity to Meaning

The Ellipsis Identity requirement didn’t need to be spelled out very precisely to account for the evidence for Copy Identity considered so far. For the evidence in the previous section, any requirement that is satisfied by the pairs *town-town* and *drink-drink*, and not satisfied by that pairs *town-lake* and *drink-dish* would be sufficient for the account to go through.\(^{13}\) For example, the evidence so far would follow from a theory requiring identity of the lexical items and syntactic structure for elided VP and antecedent as Rooth (1992b) proposes. Of course, it also follows from that assumption that identity of meaning is required as I have been doing.

The double headed ACD examples in (32) and (33) indicate that the copy identity requirement is sensitive not to lexical identity, but to identity (or rather similarity) of meaning.

(32) a. John lives in a city that’s close to a city Mary used to (live in).
   b. John lives in a city that’s close to where Mary used to (live).
   c. John lives in a city that’s close to a town Mary used to (live in).
   d. John lives in a city that’s close to a castle Mary used to (live in).

(33) a. Jon ordered a drink that’s more expensive than the drink Sue did (order)
   b. Jon ordered a drink that’s more expensive than what Sue did (order)
   c. Jon ordered a cocktail that’s more expensive than the beer Sue did (order)
   d. Jon ordered a drink that’s more expensive than the dish Sue did (order)

The examples in (32b), (32c), (33b), and (33c) show that double headed ACD constructions are quite acceptable even when the two heads are not identical, but instead close in meaning. This judgement only obtains if the relative clause head isn’t focussed.\(^{14}\) The acceptability is slightly greater for (32b) and (33b) than for (32c) and (33c). This corresponds to another difference between the b) and the c) examples: The RC-head in the examples (32b) and (33b) denotes a superset of the QR-head. In (32c) and (33c), the RC-head doesn’t denote a superset of the QR-head, but a set from the same semantic field.

I show now that the facts in (32) and (33) can be explained on a theory of ellipsis identity that relies on meaning alone. Tancredi (1992), Fox (1999b), Merchant (1999) propose ellipsis licensing conditions that rely on meaning alone.\(^{15}\) The distinction between these accounts is that Tancredi

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\(^{13}\)The examples like (24a) showed the pair *town-one* must be considered identical if *one* is interpreted as *town*. However, it’s not clear whether *one*-anaphora are analyzed as NP-ellipsis (Lakoff 1968) or NP-pronouns (Jackendoff 1977:58-60). If *one*-anaphora involve ellipsis, facts like (24a) are just as unenlightening as to the nature of the identity requirement, as the other facts considered above.

\(^{14}\)Also the cases with identity (32a) and (33a) require destressing of the relative clause head. Furthermore, some of my informants find (32d) and (33d) marginally acceptable, when they don’t stress the relative clause head. Whether the relative clause head is stressed or destressed indicates the semantic relationship to the QR-head: If the RC-head is focussed it contrasts with the QR-head, and the interpretation of the two heads must be different, even if they have the same lexical content.

\(^{15}\)As Heim (1997a) points out, the idea to assume only a semantic identity requirement is attributable to Sag (1976), who ultimately rejects it though.
(1992) and Merchant (1999) assume identity of meaning, while Fox’s (1999b) account predicts there to be a few cases, where rather than identity of meaning, it’s sufficient that the meaning of the antecedent VP entail the meaning of the elided VP. Tancredi and Merchant’s identity of meaning requirement would rule out the b) and c) examples above. But, since especially (32b) and (33b) are quite good, I adopt Fox’s (1999b) account.16

Fox argues that that there are cases of Indirect Identity, where the elided material isn’t identical to an antecedent in the discourse, but to an antecedent that is accommodated from the discourse. Furthermore, he argues that indirect identity is restricted to case where destressed material surrounding the elided VP indicates what accommodation is required. Fox’s condition explains the superset examples (32b) and (33b) straightforwardly. I assume here with Schwarzschild (1999) that entailment relations hold among constituents that aren’t interpreted as propositions when they hold amongst the existential closure of them. The existential closure is derived by prefixing existential quantifiers to bind all unbound variables of constituent. Using this assumption, (34) indicates how indirect identity is satisfied in (32b).

\begin{align*}
  \text{Example (34a) shows the existential closure of the matrix VP after ACD has been resolved. Furthermore I assume that (34b) is an entailment of (34b), and equivalent to (34c). Then indirect identity is satisfied, and since the head of the relative clause indicates that accommodation to (34b) is required for indirect identity, Fox’s constraint on indirect identity is satisfied as well. The entailment from (34a) to (34b) and the equivalence of (34b) and (34c) holds if binding of an indexed definite description by existential closure is equivalent to an existential quantifier restricted by the content of the definite description. But, this follows from the semantics in (7), since an indexed definite } \text{ the}_x P \text{ presupposes that the individual assigned to the index } x \text{ have property } P. \\
  \text{This account doesn’t carry over to the cases where the two heads are from the same semantic field. Since these are slightly more marked than the superset cases, this is a desirable result. I suggest that when the two heads are from the same semantic field, this marginally licenses the accommodation of an ellipsis antecedent that isn’t an entailment, but rather is an alternative, closely related topic. This is shown in (35).} \\
  \text{(35) a. discourse: } \exists x \exists y: y \text{ lives in } [\text{the}_x \text{ city}] \quad \text{“Somebody lives in some city”} \\
  \text{ b. accommodation: } \exists y: y \text{ lives in some place} \quad \text{“Somebody lives in some place”} \\
  \text{ c. elided VP: } \exists x \exists y: x \text{ lives in } [\text{the}_x \text{ place}] \quad \text{“Somebody lives in some place”} \\
  \text{The evidence presented in this subsection has an important implication for the theory of syntactic reconstruction. The facts at the beginning of the subsection have shown that the grammaticality of double headed ACD is affected by the semantic relationship of the two heads involved. As we have seen before, the relevance of the two heads for ellipsis licensing follows from the assumption that the two heads are represented in the base positions inside the elided VP and its antecedent. Therefore, the effect of the semantic relationship, argues that the material in the base positions makes a contribution to the interpretation of the VPs, and in particular affects the range of entailments that can be drawn from such VPs. This argues that syntactically reconstructed material is interpreted in the base position.} \\
\end{align*}

16\text{See also Rooth (1992b) for an argument against semantic identity.}
4 The Lexical Content of Traces

The previous section showed that some lexical material of the moved phrases seems to be relevant for the licensing of VP-ellipsis in the base position. This section investigates more precisely which parts of the moved phrase are implicated to be in the base position. The best result would be that for ellipsis licensing exactly the same material is implicated to be in the base position as for Condition C of the binding theory. If this is the case, we can conclude that ellipsis identity and Condition C are sensitive to structures the same level of grammar, and that at this level of grammar some lexical content of moved phrases is represented in the base position. The evidence in this section indeed supports this best view, as I show.

The empirical generalization I argue for in this section is the following: overt wh-movement and movement resolving ACD reconstruction of the highest NP of this DP is forced, but excluding all adjuncts to this NP. I call this phrase the core NP (of both the NP or the DP, as occasion arises). The tree in (36) illustrates how the term is intended.

(36)  

Two movements types with different reconstruction properties are A-movement and purely scopal covert movement. The former requires no reconstruction, while the latter requires reconstruction of at least the entire NP-complement of the moving D.

The best known observation about Condition C reconstruction is the so-called argument/adjunct contrast (Freidin 1986, Lebeaux 1988). This contrast is illustrated in (37).

(37) a. *[Which argument that John\textsubscript{i} was wrong\textsubscript{j}] did he\textsubscript{i} accept t\textsubscript{j} in the end?  

b. [Which argument that John\textsubscript{i} had criticized\textsubscript{j}] did he\textsubscript{i} accept t\textsubscript{j} in the end?

In my terms, the (37) shows that the R-expression John in (37a), where it’s part of the core NP of the wh-phrase, must reconstruct for Condition C, while the R-expression John in (37b), which isn’t part of the core NP need not reconstruct.

The argument/adjunct distinction might be relevant in several respects for the copy identity account of double headed ACD, as well. Consider again example (38) (repeated from (24)).

(38) Polly visited every town that’s near the one Eric did visit.

---

17 Most of the examples discussed in the work of Freidin and Lebeaux have been argued to be poorly controlled (Lasnik 1998, Kuno 1997). More controlled examples like (37), however, corroborate the conclusions reached by Freidin and Lebeaux (Heycock 1995, Fox 1999a).
In (38), ellipsis identity indicates that reconstruction of *town* and *one* is obligatory. Does this fit the claim that it is the core NP that must reconstruct? It does since *town* is the core NP of the DP that undergoes QR for the resolution of ACD, and *one* is the core NP of the relative clause head.18

Examples (37) and (38) constitute the first argument that the core NP is relevant for both Condition C and ellipsis identity. However, the structure of the examples (37) and (38) is greatly different: (37) involves overt *wh*-movement, while (38) involves a relative clause and covert movement for ACD resolution. The following sections corroborate my claim that the core NP is relevant for both Condition C and ellipsis identity with evidence from different types of movement.

4.1 Argument/Adjunct Contrasts I: The Relative Clause Head
First consider Condition C reconstruction in ACD-constructions. I have followed the standard assumption that the movement resolving ACD is a form of covert quantifier raising (QR). There’s, however, a difference between ACD-resolving QR and purely scopal QR with respect to binding theory. Namely, Fiengo and May (1994:274) and Fox (1995b) show that the movement that resolves ACD can obviate Condition C. A contrast between ACD-resolving QR and non-ACD resolving QR is shown in (39).

(39)  a. Someone introduced him, to everyone John, wanted her to.

    b. “Someone introduced him, to everyone John wanted you to meet.

ACD resolution in (39a) requires QR of the *everyone*-NP to a position above VP. Similarly, QR to such a position must take place in (39b) at least when *everyone* takes scope above the subject. Nevertheless there’s a difference with respect to Condition C.

Both Fiengo and May (1994) and Fox (1995b) propose for (39a) that Condition C applies to the representation generated after QR adjoins the *everyone*-DP to the VP and leaves a bare variable in the base position. (They differ though in their account for (39b).) This representation in shown in (40).

(40) \[everyone \text{ John} \text{ wanted her to introduce him to} \] \(\lambda x \text{ someone introduced him to} \, x\)

Representation (40) is not fully compatible with the copy identity account of double headed ACD of section 3. But, actually the Condition C evidence (39a) only shows that the relative clause isn’t represented in the trace position. A representation like (41) rather than (40) is therefore also compatible with the evidence in (39).19

(41) \[everyone \text{ John} \text{ wanted her to introduce him to} \] \([x, \text{ one}]\)

In (41), the head noun is represented in the trace position, as it was also argued to be the case for ellipsis identity.

In fact, there’s evidence from Condition C that the representation like (41) is correct. This observation was made independently by Merchant (2000) and myself (Sauerland 1998). Consider the contrast in (42).

(42)  a. “In the end, I did ask him, to teach the book of David, ’s that Irene wanted me to (ask him to teach).

18I discuss reconstruction into relative clauses in more detail in section 4.3 below.
19I’m not considering representations where there relative clause is split between the base position and the landing site, since I wouldn’t know how to interpret such representations.

13
b. In the end, I did ask him to teach the book of Irene’s that David wanted me to (ask him to teach).

The difference between (42a) and (42b) is whether the R-expression David occurs in the ACD relative clause as in (42b) or somewhere else in the QR DP as in (42a). The fact that Condition C is not obviated in (42a) shows that the core NP must be represented in the base position of QR in ACD-examples, while the ACD-relative isn’t. The representation that (42a) must have when Condition C applies is shown in (43).

(43) \[
\alpha y \text{ Irene}, \text{ wanted me to ask him to teach } [y, \text{ book of David’s}] \lambda x I \text{ asked him, to teach } [x, \text{ book of David’s}] \]

This shows that there is the claimed match between the Condition C evidence and the Ellipsis Identity evidence in the case of ACD.

To explain the difference between ACD-resolving QR and purely scopal QR, I follow Fox (1995b) that usually QR requires reconstruction of the entire moved phrase, but that ACD somehow blocks syntactic reconstruction of the relative clause. Specifically, one could assume that QR involves copying of the entire DP to the landing site. Representations like (41) and (43) are then derived by deleting parts of the copied material.\(^{20}\) Fox proposes that deletion of material is uneconomical, and therefore only occurs in the case of ACD where it’s forced. Therefore, the entire moved DP is represented in the base position if QR doesn’t take place for ACD-resolution.\(^{21}\)

The match between Condition C and Copy Identity can be strengthened even further in this case with further evidence from ellipsis identity. In the examples of double headed ACD considered so far, the core NP was always a single head noun. The contrast between (44a) and (44c) shows that double headed ACD is also blocked when the two core NPs differ not in their head noun, but in the arguments of the head noun ((44b) is independently awkward because of the repetition of the complex core NP).

(44) a. Bill gave a description of Mary that’s similar to the one John did (give)

b. Bill gave a description of Mary that’s similar to the description of Mary John did (give)

\(^{20}\)Deletion alone is actually not enough. The determiner must be deleted in the base position, and replaced with a definite determiner that is coindexed with the binder the moved phrase is the argument of. This predicts that Condition C should be obviated even with QR that doesn’t resolve ACD if the R-expression is part of the determiner of the DP that undergoes QR. The contrast in (i) shows that this prediction is borne out.

(i) a. Someone must’ve fed him, John’s every move over earphones.

b.rel*Kasparov must’ve fed him, John’s every move over earphones.

\(^{21}\)Fox (2000) has developed a different account of the reconstruction of the relative clause with QR and presents interesting arguments for this account. However, the account derives exactly the same LF-representations, and therefore I don’t discuss it here.

\(^{22}\)The relative acceptability of (i) shows that different adjuncts of the two relevant core NPs don’t block double headed ACD. This might be taken to represent another correlation between Copy Identity and Condition C. However, (i) also involves items from the same semantic field and is therefore independently expected to be acceptable as shown in 3.1.

(i) John visited a town near Madrid that had signs for the one near Rome Bill did (visit).
c. *Bill gave a description of Mary that’s similar to the description of Sue John did (give)

4.2 Argument/Adjunct Contrasts II: Position of the Elided VP

The claim that reconstruction of the elided VP is forced has implications for ACD structures. Consider again example (45) of single headed ACD.

(45) Polly visited every town Eric did (visit).

Ellipsis identity can be satisfied here, because the relative clause that contains the elided VP is not reconstructed to the base position of QR.

The account predicts that ACD is blocked whenever the relative clause is part of the core NP. The examples in (46) show one case where the prediction is borne out: ACD is impossible when the elided VP occurs in an argument of the head noun, rather than a relative clause adjunct.

(46) a. *John found a proof that Bill never does (find a proof).
b. *Mary asked the question which question Sue did (ask t).

Example (46a) doesn’t allow the indicated reading where the *that clause is an argument of *proof. At the same time, (46a) allows an interpretation where the *that clause is a relative clause with the paraphrase as *the Bill never finds t. Similarly, (46b) doesn’t allow the indicated interpretation of the elided VP.23

Further evidence of the relevance of the core NP comes from cases where the elided VP is contained in an adjunct, but this adjunct is part of the core NP. This is shown by the examples of double headed ACD in (47).

(47) *Jonathan visited every relative of the relative Danny did (visit).

In (47), the head relative of the relative clause is itself an argument of the higher occurrence of relative and therefore part of the core NP of the DP that moves for ACD resolution. (48) makes the same point, showing a contrast between a argument and an adjunct to the higher occurrence of the noun picture.24

(48) a. *John is planning to paint many pictures of the one Dali is (planning to paint)
b. John is planning to paint many pictures showing the one Dali is (planning to paint)

Finally the contrast in (49) makes the same point.

(49) a. *John’s filing a report that Mary knows the report Bill is (filing)
b. John’s filing a report according to which Mary knows the report Bill is (filing)

The claim that adjuncts inside the core NP must reconstruct is not widely accepted for Condition C reconstruction.25 To my knowledge, it has only been discussed by Tada (1993) who

23I don’t a discussion of examples like (46) in the literature. These examples also provide an (additional) argument against the account of ACD as ellipsis of just a verb, which was suggested by Cormack (1984). Ellipsis of the verb should not be sensitive to the argument/adjunct difference.

24For the judgement, imagine that John’s profession is to paint pictures of Dali’s pictures. One day, John meets Dali and Dali tells John about his plan for a new painting. John likes the plan a lot, and immediately makes his own plans based on Dali’s plan.

25For example, Takano (1995), and Heycock (1995) seem to assume the opposite. One of their arguments for obligatory reconstruction of predicates is based on examples like (i), where a Condition C effect is found.

(i) *The type of girl that hates John, he, said Mary is. (Takano 1995:(12d))
argues that the claim is true for Japanese, but has doubts about English. The contrast in (50) indicates that Tada’s claim also holds for English.

(50) a. *Which book of the woman Billi admires did hei give to hisi parents?
   b. Which book about the woman Billi admires did hei give to hisi parents?

4.3 Relative Clause Internal Traces

The relation of relative clause internal movement to the relative clause head is a subject of great debate. Some relevant evidence from binding theory is discussed by Munn (1994), Saflr (1999) and Sauerland (1998). Munn (1994) claims that Condition C provides no evidence for reconstruction into relative clauses, in contrast to wh-movement in questions. This is confirmed by the contrasts in (51) and (52).

(51) a. Which is the picture of Johni that hei likes?
   b. *Which picture of Johni does hei like?

(52) a. I have a report on Bob’s division he won’t like. (Merchant 2000: fn. 5)
   b. *Which report on Bob’s division will hei not like.

The absence of Condition C reconstruction in relative clauses is puzzling given that Ellipsis identity indicated reconstruction of the relative clause head into an internal position. However, there’s also evidence for reconstruction into relative clauses. Namely, Saflr (1998) observes that in example (53) a strong crossover effect is observed.

(53) *Pictures of anyone, which hei displays prominently are likely to be attractive ones.

Takano and Heycock assume that since the R-expression John is contained in a relative clause, (i) shows that predicates differ from argument DPs with respect to reconstruction. However, the R-expression John isn’t contained in an adjunct to the core NP of the fronted DP, but rather in an adjunct inside of the core NP. Therefore, I would claim that (ii) requires reconstruction even if the fronted DP is interpreted as an argument.

26Tada (1993: fn. 25) doubts the existence of a difference between modifiers to the core NP and modifiers internal to the core NP for English because of (ia) (attributed to Noam Chomsky, p.c.). In (ia), Condition is obviated even though the relative clause containing the R-expression John is adjoined to the lower NP book. This argument doesn’t convince me, though, because the for-PP itself is a modifier to book. The obviation of Condition C in (iia) shows that the for-PP is an adjunct, as does the separability in the copular paraphrase in (iib) (see Schütze 1995 for argument/adjunct tests for DP-internal PPs).

(i) a. The award for the book that Johni wrote, hei never received.
   b. The award for the book that Johni received, hei never cashed.

(ii) a. Which award for Titanic, did everybody agree iti deserved.
   b. The award was for the book.

27I leave aside here cases with bound variable pronouns like (i), since I argue (Sauerland 1998, 2000) that the relative clause receives a different analysis in such examples.

(i) The picture of himself, every boy, brought annoyed hisi mother.
I assume with Chomsky (1981) and Reinhart (1997) that strong crossover is an instance of Condition C (or the principles underlying Condition C) triggered by the trace of A-bar movement. I assume that that anyone in (53) must QR. However, the trace left by anyone in (53) is not c-commanded by the pronoun he in the relative clause external position. It would only be c-commanded in the relative clause external trace position.

Therefore, I suggest that the trace position in a relative clause also contains lexical material. However, while in normal movement relationships material in a chain must be strictly identical, I suggest that the material in the relative clause internal position need only be identical in meaning as other elided material (Safir 1999 suggests that in all chains, the lower chain position contain an elided copy of the moved NP, rather than the moved NP itself. His position cannot explain the contrasts in (51) and (52).)

Consider now again the contrast between wh-movement and relative clauses. With wh-movement the moved material that is represented in the trace position must be exactly identical to the moved material. Since the NP is required to be represented in the base position, it must be represented as picture of John and triggers Condition C. In the relative clause internal trace position also the NP must be represented, however, it’s sufficient that a pronoun that means the same occupy the same position. I assume that the NP-pronoun one can refer to any one-place predicate, and therefore the lexical material inside the relative clause can consist of just one.

In Safir’s example (53), however, the pronoun one is excluded from the relative clause internal trace position for the following reason. In (53), anyone takes scope outside of the relative clause head. After anyone underwent QR, the relative clause head is picture of x with x bound by anyone. Since there’s no one-place predicate the pronoun one cannot mean the same as the relative clause head in this example. Therefore, the material in the relative clause internal position must be pictures of x or one of x, both of which are predicted to cause a Condition C/Strong Crossover violation.

\[
\begin{align*}
\text{(54) } & \quad \text{anyone } \lambda_x \left[ \text{pictures of the}_2(\text{one}) \left[ \text{which picture of the}_3(\text{one}) \right] \lambda_y \text{he}_x \right. \\
& \quad \left. \text{prominently the}_2(\text{pictures of the}_3(\text{one})) \right] \text{ are likely to be attractive ones.}
\end{align*}
\]

Evidently for ellipsis identity it is irrelevant whether the lexical material in the relative clause is the RC-head, or some material that is identical to the RC-head for the purposes of ellipsis identity (in other words, ellipsis identity is a transitive relation.) Therefore, the view of relative clauses of Sauerland (2000), synthesizes the evidence from Condition C, Strong Crossover and Ellipsis Identity (see also Bhatt 2000, Cresti 2000, and Kennedy 2000).

4.4 Overt Wh-Movement resolving ACD

The standard evidence showing the argument/adjunct distinction with Condition C concerns reconstruction of overt wh-movement. This section shows that there’s corresponding evidence from ellipsis identity showing that reconstruction of the core NP is obligatory with overt wh-movement: Jacobson (1998a) points out that the ungrammaticality of Kennedy’s examples is also found in cases like (55a), where ACD is resolved by overt wh-movement rather than by covert movement. The improvement with (55b) and (55c) shows that it is the difference in lexical content that causes the ungrammaticality of Jacobson’s example.

\[
\begin{align*}
\text{(55) } & \quad \text{a. } *\text{Do you know which town near a lake Mary did (visit) John visited?} \\
& \quad \text{b. Do you know which town near a town Mary did (visit) John visited?}
\end{align*}
\]
c. Do you know which town near the one Mary did (visit) John visited?

The account of (55) is straightforward: Reconstruction of the core NP is required for overt wh-
movement and therefore the ellipsis identity requirement requires in particular identity of the core NPs of the wh-phrase and the relative clause head.

The examples in (56) show that the judgements don’t change if the other VP is elided—the one that contains the trace of wh-movement (again Jacobson (1998a) already observes examples like (56a)).

(56) a. *Do you know which town near a lake Mary visited John did (visit)?
  b. Do you know which town near a town Mary visited John did (visit)?
  c. Do you know which town near the one Mary visited John did (visit)?

4.5 A/A-bar Contrasts

As is well known, A-movement in contrast to A-bar movement doesn’t require Condition C reconstruction if the moved DP takes scope in the landing side. This is illustrated by the contrast in (57).

(57) a. [One relative of Kai’s] seemed to him to like Kazuko.
   b. *[Which relative of Kai’s] did he say likes Kazuko.

Again, the same contrast is observed using ellipsis identity as a test. The example in (58) shows a contrast between topicalization (A-bar-movement) and passivization (A-movement).

(58) a. The town near the lake that was visited by vandals seems to have been visited by vandals, as well.
   b. *The town near the lake they did visit, the vandals seem to have visited, as well.

The contrast between A and A-bar movement in (58) matches the Condition C data. There is, however, a slight awkwardness associated with the A-movement example (58a) as well. In fact, Kennedy (1994) and Heim (1997a) report examples where ellipsis identity seems to indicate obligatory reconstruction of A-movement. These are shown in (59).

(59) a. Every man who said George would buy some salmon did (buy some salmon) (Kennedy 1994:(2b))
   b. *A proof that God exists does (exist) (Wasow 1972:93)

---

28 Fox (1999a), Romero (1997), and Sportiche (1996) show that the entire A-moved DP reconstructs when it takes narrow scope.
29 The same contrasts obtain if the other VP, the one in the matrix clause, is elided. This is shown by (i).

(i) a. The town near the lake that was visited by vandals seems to have been (visited by vandals), as well.
   b. *The town near the lake they visited, the vandals seem to have (visited), as well.
As Kennedy (1994:fn. 3) notes and Heim (1997a) discusses in detail, the grammaticality of examples like in (59a) improves for many speakers with the addition of focus particles like too, as well, or instead, which is not the case for examples with A-bar movement like (14). Hence, I reject the conclusion that the examples in (59a) should receive a similar explanation as double headed ACD structures. The actual explanation of (59a), however, I have to leave for future research.

In example (59b), the A-movement revolving the overlap of elided VP and its antecedent is A-movement of the subject of the predicate exist. Since the subject is naturally interpreted existentially, it must be interpreted in a VP internal position as Diesing (1992) and Kratzer (1989) argue. But, if the subject occupies a VP-internal position, actually A-movement hasn’t resolved antecedent containment after all. But, since the elided VP in (59b) is contained in the core NP, ACD in (59b) cannot be resolved by A-bar movement as was shown by the examples in (46).

5 Mechanisms to overcome Copy Identity

There are constructions where ellipsis is possible even when the elided VP contains traces with different lexical content (Evans 1988, Jacobson 1992)\(^{30}\)—constructions where the copy identity requirement is overcome. Two examples are given in (60): in (60a), the elided VP and its antecedent both contain a trace of *wh*-movement; in (60b), both VPs contain a trace of relative clause internal movement.

\[(60) \quad \text{a. I know which cities Mary visited, but I have no idea which lakes she did (visit).}\]
\[\text{b. The cities Mary visited are near the lakes Bill did (visit).}\]

This section shows that copy identity is expected to be obviated in certain cases. Specifically, I show that independently know properties of focus and ellipsis predict that there are mechanisms that overcome the copy identity requirement in cases like (60). At the same time, I show that these mechanism cannot obviate copy identity in the double headed ACD constructions discussed in the previous section.

A strong confirmation of the approach developed in this section comes from a construction other than ACD where the copy identity requirement reemerges. Namely, I show that my account predicts the asymmetry in (61).

\[(61) \quad \text{a. I know the cities Mary visited, but I would like to know which lakes she did (visit).}\]
\[\text{b. *I know which cities Mary visited, but I would like to know the lakes she did (visit).}\]

In (61a), the antecedent contains a trace of relative clause internal movement and the elided VP a trace of *wh*-movement. In (61b), however, the antecedent contains a *wh*-movement trace and the elided VP a relative clause internal trace. I show in section 5.4 that my account correctly predicts that copy identity is obviated in (61a), but must be fulfilled in (61b).

\(^{30}\text{Sag (1976:63–67) and Williams (1977:130–31) claim based on examples like those in (i) that *wh*-extraction from an elided VP is impossible. The examples in the text falsify this general claim and the examples in (i) are probably ruled out for irrelevant reasons: In (ia), since the verb moves to Comp, the elided VP is in the complement position of an empty head, which is generally impossible (Lobeck 1995). (ib) and (ic), as Fiengo and May (1994:244) suggest, indicate a preference to delete as much material as possible once material is deleted (See also footnote 12).}\]

\[(i) \quad \text{a. What did Harry take a picture of?}\]
\[\text{What did Bill? (Sag 1976:(1.3.18))}\]
\[\text{b. *John who Bill saw and who Bob did, too. (Williams 1977:(93))}\]
\[\text{c. *We finally got in touch with John, who my brother Al tried to visit, but who he couldn’t (visit) (Sag 1976:(1.3.22))}\]
5.1 Why Not Pseudogapping?

Danny Fox and Jon Nissenbaum (p.c.) ask why Pseudogapping doesn't obviate the copy identity requirement. This is a valid question and the answer points towards a different account of pseudogapping than the most widely held one. Consider the examples of pseudogapping in (62).

(62) a. While some visited cities, others did (visit) lakes.
   b. While some people advised Mary to visit cities, others did (advise Mary to visit) lakes.

Evidently, if pseudogapping were to apply leaving a trace instead of an overt DP as a remnant, the same sequence of words results, as it would from VP-ellipsis. And, since the remnant DP is not subject to any identity condition (shown by (62)), this might be expected to predict that the copy identity requirement could always be obviated by pseudogapping. Of course, this prediction is empirically wrong, as ungrammatical examples of double headed ACD show. The question is why the prediction doesn't arise. I propose the answer lies in the correct analysis of pseudogapping.

Three recent analyses of pseudogapping (Jayaseelan 1990, Lasnik 1995, Johnson 1996) conclude that pseudo-gapping is actually VP-ellipsis preceeded by rightward movement of the object to a position outside of VP. This means that, even in pseudo-gapping, the elided VP always contains a trace.

As section 4.5 showed, A-bar traces have lexical content, while A-traces don't. So, whether copy identity is predicted to apply to the VP-internal trace left in pseudogapping constructions depends on whether the rightwards movement in pseudogapping is A or A-bar movement. The recent analyses of pseudogapping by Jayaseelan, Lasnik and Johnson disagree about the type of movement involved in pseudogapping. Jayaseelan (1990) proposes heavy NP shift, Lasnik (1995) advocates object shift analogous to what is found in Scandinavian languages, and Johnson (1996) opts for a movement analogous to Dutch scrambling. At least Lasnik's and Johnson's analyses point in the direction of A-movement; object shift is always A-movement and scrambling in Dutch is A-movement in many cases (Déprez 1990). However, the objective of all three papers is to account for the locality restrictions of the movement and restrictions on the type of object that can occur. Therefore the argument for A-movement is only indirect: the movement in pseudogapping shows restrictions reminiscent of restrictions on A-movement some other languages exhibits.

The fact that copy identity effects exist in potential pseudogapping constructions at all argues that pseudogapping must involve A-bar movement, rather than A-movement. I show that copy identity is obviated in (62) because the remnant DPs can be focussed, so the grammaticality of (62) is compatible with an A-bar movement analysis of pseudo-gapping.

Evidence corroborating my claim that pseudo-gapping involves A-bar movement of the remnant DP comes from the Condition C data in (63) and (64).

(63) a. *I gave her, a book and you did (give her,) a picture of Mary,
   b. *While some told her, to paint a portrait of John, others did (tell her, to paint) a picture of Sue.

The data in (63) show, that movement of the remnant in pseudogapping doesn’t obviate Condition C. The contrast in (64) is parallel to the argument/adjunct contrast of Freidin (1986) and Lebeaux (1988) (see section 4). If the R-expression occurs in a modifier adjoined to the object-DP that moves in pseudogapping as in (64b), it doesn’t cause a Condition C effect.

(64) a. *While some believed him, everything, others did (believe him,) only the story that John, had met aliens.
b. While some believed him, everything, others did (believe him) only the story that John had evidence for.

The A-bar movement analysis implies that pseudo-gapping can never obviate the identity requirement that’s imposed on the lexical content of A-bar traces. This is the desired result for ACD structures.

5.2 Focus and Wh-Traces

One property of the examples where copy identity is obviated is that the core NP of the moved DP is focussed. (65) shows the pronunciation (60a) requires, where capitalization indicates pitch accent.

(65) I know which CITies Mary visited, but I have NO idea which LAkes she did (visit).

I want to show that focus indeed predicts that ellipsis is possible obviating copy identity in (65). Furthermore, I argue that this isn’t the case in relative clause constructions.

I adopt the theory of focus developed by Jackendoff (1972), Rooth (1985, 1992b), Kratzer (1991) and others. In particular, I assume that focus is indicated in the syntactic representation by F-marks on certain constituents (see also Selkirk 1995). The account then is based on the assumption that a Presuppositional Skeleton [XP] is defined for any constituent XP in addition to its standard truth conditional meaning [XP]. I adopt the recursive definition of [XP] in (66) from Rooth (1992b).

(66) a. [[X]f] = Dα if [X] is of type α, where Dα is the domain all possible semantic entities of type α
b. [[X]] = {[[X]]} if X is semantic not complex
c. otherwise: [[X Y]] = {C(x, y) | x ∈ [[X]], y ∈ [[Y]]}, where C represents the function that assigns to [X'] and [Y'] the semantic value [X' Y'] for any X' of the same semantic type as X and any Y' of the same semantic type of Y

Focus doesn’t play any role in most cases of ellipsis licensing, since there’s no way to indicate focus on elided material in these cases. I claim, though, that it does play a role when an elided VP contains a trace of movement. Fox (1995a) and Romero (2000) also provide evidence for this assumption. Consider example (67) modeled after Fox’s (1995a) example (27).

(67) An American swimmer seems to Bill to have won a gold medal, and a [RUSsian RUNner]F did too.

Fox points out that (67) allows narrow scope of the indefinite subjects below seem. That argues that the subjects in (67) occupy a position in the elided VP and the antecedent respectively, when the sentence is interpreted. Nevertheless, VP-ellipsis is possible in (67), if the NP Russian runner is focussed as indicated.

That ellipsis is licensed in (67) follows from the focus sensitive ellipsis identity condition in (68). (Fox (1999b) and Romero (2000) show how (68) is related to the destressing licensing condition of Rooth (1992a).)

(68) Ellipsis of VP is licensed if [[VP']] ∈ [[VP]] for a suitable antecedent VP'
Condition (68), in a sense, requires identity in interpretation except for the contribution of the focussed parts of the elided VP. The question is now under what conditions the lexical content of a trace can be focussed. I argue in the following two sections that with overt wh-movement a focus on the moved material can be represented in the trace position as well, while the relationship between a relative clause head and the relative clause internal trace doesn’t allow this.

5.2.1 Focus in Wh-Chains

There’s independent evidence that the trace in overt wh-movement chains can be focussed. Namely, Selkirk (1995) argues that traces can inherit the F-marking of their antecedents: F-marking of a constituent licenses the F-marking of its trace (Selkirk 1995:559). One of Selkirk’s (1995) arguments (based on work of Bresnan 1971, 1972) concerns focus projection from traces. It’s well known that the verb in English can be focussed when only the object bears a pitch accent. For example in (69), the verb is focussed, but only the object DP bears a pitch accent.

(69) I know that Helen read an article and that she [reviewed]_{F} \{the BOOK\}_{F}.

Selkirk (1995) points out that focus projection from the object to the verb is possible even when the object undergoes wh-movement as in (70).

(70) a. I know Helen read an article, but please tell me:...
   b. \{[Which BOOK]_{F}\}_{F}, did Helen [review]_{F} [t_{1}]_{F}? (Selkirk 1995:(24))

The simplest account and indeed the one Selkirk (1995) proposes is that the focus on the fronted wh-phrase is also represented in the trace position, as it is indicated in (70b). Only then can focus projection be treated as a completely local procedure, where the verb inherits the focus marking of its complement.

Consider now example (60a) again, which is repeated in (71a).

(71) I know which cities Mary visited, but I have [NO]_{F} idea which [LAkes]_{F} she did [visit].

If Selkirk (1995) is right, material that’s focussed in the wh-moved phrase is (or at least can be) also focussed in the base position of movement. In (71), therefore, the core NP in the base position of wh-movement is focussed, and therefore ellipsis identity is satisfied.\(^{31}\)

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\(^{31}\)The account makes a prediction for examples like (i) (repeated from (56a)). Since the elided VP contains a trace of wh-movement in (i), focus percolation should from the wh-phrase should be possible, and the focus structure in (ib) should be result. But, then (i) should be acceptable with focus on town-phrase, since lake is a focus-alternative to town that would satisfy direct parallelism. This prediction seems factually incorrect.

(i) a. "Do you know which town near a lake Mary visited John did (visit)?
   b. which [town]_{F} near a lake λ_{y} Mary visited [y, lake] | λ_{z} John did visit [z, [town]_{F}]

The structure of (iib) resembles that of the A-movement examples like (59) discussed at the end of section 4, where the ellipsis site also contained a trace of overt movement. However, in contrast to the A-movement cases, the addition of focus particles doesn’t seem to lead to an improvement of (ia) as (ii) attests. While I suspect that a better understanding of what are possible focus structures will provide an explanation for (ia), at this point, I have to leave the matter open.

(ii) "Do you know which town near a lake that Mary visited John did instead.
5.2.2 Focus in Relative Clause Chains

As already mentioned in section 4.3, I assume an analysis of relative clauses where, internal to the relative clause, there’s an elided NP the antecedent of which is the external head of the relative clause (Sauerland 1998, Sauerland 2000). Since the elided NP is not focussed, the material in the relative clause internal trace also cannot be focussed. This prediction is confirmed by the ungrammaticality of double headed ACD examples with different heads. If the content of the trace position could be focussed, such examples would be predicted to be acceptable.

On this approach, it’s expected that material in the relative clause that isn’t elided can be focussed. This is the case for pied-piped material surrounding the wh-word in a relative clause. Jacobson (1998b) points out the examples in (72) that confirm this prediction.

(72) a. Mary visited every country the [EMbassy] of which [BILL] did (visit).
    b. John greeted every boy whose [MOther] [Sue] did (greet).
    c. Sue voted for every candidate the [FAther] of whom [BILL] had (voted for) (Jacobson 1998b:(1a))

5.3 Sloppy Copies

While my assumptions about relative clauses make the right prediction for double headed ACD, they also predict that, in (60b), which is repeated in (73), the material in the relative clause internal trace position is not focussed. Therefore, focus alone doesn’t obviate copy identity in (73). I show now that (73) is acceptable because the elided NPs in the relative clauses can be bound variables.

(73) The cities Mary visited are near the lakes Bill did (visit).

Schwarz (1999) expanding work by Kratzer (1991) argues that elided phrases can be bound variables. His argument is based on the fact that (74) allows the indicated interpretation.

(74) When I whistle you say I shouldn’t (whistle), but when I sing you don’t (say I shouldn’t sing).

32 I’m actually simplifying things a bit. In Sauerland (1998, 2000), I argue that there are also relative clause where the head is moved to its surface position from a position inside of the relative clause. This is the so-called raising or promotion analysis (Schachter 1973, Vergnaud 1974, Kayne 1994, Bianchi 1995). I argue, though, that this analysis requires an amount interpretation of the relative clause in the sense of Carlson (1977).

The account presented in the text together with this analysis of relative clauses predict that double headed ACD should be acceptable with amount relative clauses. The contrasts in (i) and (ii) indicate that this prediction is correct.

(i) a. *John visited towns that are near the LAKes Mary did (visit).
    b. John visits towns that are much nicer than the LAKes Mary does (visit).

(ii) a. *Jon ordered a drink that’s more expensive than the DISH Martin did (order).
    b. John orders drinks that are more expensive than the DISHes Martin does (order)

33 The examples in (72) are interesting because the variables in antecedent and elided VP aren’t bound from parallel positions, which is usually required (Fiengo and May 1994). Jacobson takes this to argue against the standard account of binding assumed here. However, Danny Fox (p.c.) points out that this follows from the fact that the clause containing the antecedent VP in each case has an entailment that fulfills the parallel dependencies requirement. Therefore, I assume the data in (72) indeed corroborate my analysis.
It seems that the second elided VP in (74) doesn’t have a suitable antecedent, since the elided VP inside the corresponding VP in the first clause receives a different interpretation. Schwarz proposes that the indicated interpretation of (74), involves binding of the elided VP in the first conjunct by its antecedent, and parallel binding of the lower VP node in the second conjunct by the VP sing. For our purposes, this can be captured by the representation in (75).  

\[(75) \text{ [whistle] } \lambda_V P \text{ when I } t_V P \text{ you say I shouldn’t } pro_V P \]

\[(76) \text{ [cities] } NP \text{ the } t_{NP} \lambda_x \text{ Mary visited the } x \text{ pro}_{NP} \text{ are near [lakes] } NP \text{ the } t_{NP} \lambda_x \text{ Mary visited the } x \text{ pro}_{NP} \text{ are near} \]

Schwarz already shows that not only bound VPs can be elided, but also other bound XPs, especially bound NPs. But, then the following account of ellipsis in (73) is available: I propose that (73) has an analysis where the relative clause internal NPs are both bound NP pronominals. This structure is shown in (76).

\[(77) \text{ *Polly visited every town that’s near a lake Eric did (visit).} \]

5.4 The Reemergence of Copy Identity

The preceding two sections explained the possibility of VP-ellipsis in case the antecedent VP contains a trace of the same type: either two wh-movement traces, or two relative clause internal traces. Consider now cases where the two traces are of different types: If the trace in the elided VP is focussed, it will satisfy the ellipsis identity condition even if a non-focussed trace sits in the corresponding position of the antecedent. Therefore, ellipsis of a VP including a wh-trace is predicted to be licensed even when the antecedent contains a relative clause internal trace. The other way round, however, ellipsis of a VP with a relative clause internal trace should only be licensed if the the antecedent also contains a trace that is a bound variable. This isn’t the case, when the antecedent contains a wh-movement trace. Therefore, we expect that ellipsis including a relative clause internal trace when the antecedent contains a wh-movement trace will only be possible when copy identity is fulfilled. This prediction is borne out by the facts in (78) and (79).

\[(78) \]

a. I know the cities Mary visited, but I would like to know which lakes she did (visit).

b. *I know which cities Mary visited, but I would like to know the lakes she did (visit)

c. I know the cities Mary visited, but I would like to know which cities Bill did (visit).

d. I know which cities Mary visited, but I would like to know the cities Bill did (visit)

34 Representation (75) can only derived by quantifier raising out of an adjunct clause. As Schwarz discusses, Tomioka (1999) presents numerous examples like (i) where the antecedent of the sloppy pronoun doesn’t c-command the pronoun, but a sloppy interpretation is nevertheless possible.

\[\text{(i) a. The policeman who arrested John, read him, his, rights and the policeman who arrested Bill, did (read him; his, rights) too.} \]

Tomioka (1999) offers an account for (ii) without appeal to QR out of the relative clause island, and this analysis also explains sloppy interpretations with VP without QR out of an island (see Schwarz 1999).

35 In Sauerland (1998), I argued that the parallel dependencies requirement of Fiengo and May (1994) also blocks this interpretation. I still believe that this is correct, but chain identity is sufficient and more convenient to present.
(79)  
   a. We know which is the house Marlyse bought, but not which car Paul did (buy)  
   b. *We know which house Marlyse bought, but not which car is the one Paul did (buy)  
   c. We know which is the house Marlyse bought, but not which house Paul did (buy)  
   d. We know which house Marlyse bought, but not which is the house Paul did (buy)  

In particular, the contrast between (78b) and (78c) and also between (79b) and (79c) displays the predicted asymmetry. In (78b) the antecedent contains a *wh*-movement trace, while the elided VP contains a relative clause internal trace. As predicted, both a sloppy NP-structure in the antecedent and focus projection into the elided VP are impossible, and therefore ellipsis is blocked in (78b). In (78c), on the other hand, the antecedent contains a relative clause internal trace, while the elided VP contains a *wh*-movement trace. Here, the trace can be focussed and therefore the acceptability of (78c) is predicted.

The facts in (78) and (79) seem to be a remarkable discovery, since they essentially recreate the double headed ACD paradigm without antecedent containment. It is, I believe, no small achievement of the account developed here, that is predicts the entire paradigms in (78) and (79) correctly.

6 Conclusion

The main result of this paper is the novel support it provides for the idea of syntactic reconstruction. Syntactic reconstruction is the idea of Chomsky (1993) that in A-bar movement chains the base position of movement must contain certain lexical material of the moved phrase, which is interpreted in this position. (Chomsky proposes that movement is really a copying operation followed by phonological deletion.)

Previous work arguing for syntactic reconstruction (Chomsky 1993, Fox 1999a) has relied on evidence from Condition C, and shown that the complex data in this domain follow from a set of assumption about the representation of lexical material in the base position of movement. This paper has provided an entirely novel argument for syntactic reconstruction. The argument came from cases of ellipsis where both the elided phrase and its antecedent contain a trace, as is sketched in (80).

(80)  
  \[\overbrace{X \ldots t_X \ldots}^{\text{antecedent}} Y \ldots t_Y \ldots\] ^\text{elided}\]

Ellipsis is licensed in (80) if the elided phrase is identical to its antecedent. If there’s obligatory reconstruction of parts of the moved phrases into their base positions, it’s predicted that the reconstructed material must be identical for the antecedent phrase and the elided phrase. I have shown that this prediction is borne out in some instances of structure (80) (namely, double headed ACD in section 2 and the examples (78b) and (79b)) and for independent reasons expected to be obviated in all other instances of structure (80).

I have furthermore argued in section 4 that the data from ellipsis and the data from Condition C establish exactly the same generalization as to what material must be syntactically reconstructed into the base position of movement. Namely, both tests argue that what I have called the core NP—the NP-complement of the D-head of a moving DP excluding all adjuncts to this NP—must be represented in the base position of movement.

Finally, the data in section 3.1 strongly support the claim that syntactically reconstructed material is indeed interpreted in the base position of movement. The data showed that the extent to which ellipsis is degraded in double headed ACD is predictable from the semantic relationship of the syntactically reconstructed material. Despite the the two remaining problems (footnote 31 and
I believe to have established therefore that obligatory syntactic reconstruction is obligatory in the semantic representation of A-bar movement. Syntactic reconstruction is frequently cast into doubt by work on pseudoclefts and also clitic left dislocation (Cecchetto 2000, Sharvit 1999, Sternefeld 2000). In this paper, I have not addressed these constructions since I know of no good account assuming just syntactic reconstruction. However, I believe to have made the case for syntactic reconstruction with three core classes of A-bar movement (wh-movement in question, wh-movement in relative clauses, and quantifier raising) considerably stronger. Maybe then two mechanisms are required, syntactic reconstruction in some cases and an enrichment of the semantic mechanisms for the other cases. However, such a system would contain a severe degree of redundancy. My hope is therefore that this work will inspire new work extending the reach of syntactic reconstruction account to other reconstruction phenomena.

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