Intricacies of Identity
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1 Introduction:

Conditions B and C of the Binding Theory were originally developed in order to explain a certain pattern of judgments regarding when two terms in a given sentence can and cannot stand in a certain type of identity\(^1\) relation. Various terms have been employed to describe the identity relation in question, including “coreference”, “intended coreference”, “(anaphoric) dependence”, “antecedence” and “common reference” among others. What the exact nature of this identity relation is has been a question of some debate. Some authors (e.g. Chomsky (1976), Lasnik (1976)) have argued that it is purely a pragmatic relation, i.e. that the grammar of English, for example, never determines that any two terms stand in this relation. Under such analyses, the basic function of expressions such as pronouns and names is to enable a speaker to refer to people, objects, etc., the only restriction imposed by the grammar on this function being that of enforcing certain pairs of expressions to be used to refer to distinct objects. Other authors (e.g. Evans (1977, 1980), Higginbotham (1983), Reinhart (1983)) have argued in opposition to this view that in at least some cases of pronominal interpretation, a pronoun must be determined by the grammar to be (in some sense) bound up with another expression. On this view, the only restriction on the use of expressions to refer is an indirect one -- two expressions standing in this special relation must be interpreted identically, and so whatever one is used to refer to (if anything) the other must be used to refer to as well. Restrictions on “identity” are then attributed to grammatical restrictions on this special relation. Still others (e.g. Chomsky (1981)) have extended this type of view further by arguing that not only pronouns but names, traces of various types, and perhaps even the operators that bind them such as WH-expressions and quantified phrases potentially stand in this relation, and that in all cases the relation in question is grammatically determined and grammatically restricted.

Tied up with the question of when two expressions should be determined by the grammar to stand in some identity relation (or not to do so) is the question of how (if at all) this relation should be represented. Various mechanisms have been proposed to capture this relation, including the indexing systems of Chomsky (1980), (1981) and Fiengo and May (1992), as well as the linking representation of Higginbotham (1983). Within the analysis of Chomsky (1980), syntax directly encodes relations of identity as well as anti-identity. This analysis is abandoned in Chomsky (1981) in favor of an analysis which only allows for a single syntactic determination of identity, and none of anti-identity. Higginbotham (1983) argues for a refined versions of such a theory which (among other things) replaces identity relations with antecedence relations. Finally, Fiengo and May argue for a differentiation among types of syntactic identity relations, allowing for both Chomsky-like identity relations and Higginbotham-like antecedence relations.

The analyses referred to above all share the common goal of explicating the types of relations which can and do obtain among expressions of natural language, including in particular names, pronouns and quantified phrases. The analyses differ in detail depending first on which such relations are taken to be syntactic and which are not, as well as on which such relations are taken to be the same within the grammar and which different. As a point of departure, I will examine this problem from the perspective of when two expressions can and when they cannot be used with the intention that they be interpreted in an identical fashion. Whenever two expressions are appropriately used with such an intention, I will say that the two expressions stand in a relation of intended identity. Following Higginbotham (forthcoming), I take the main problem to be addressed as that of determining what relation if any obtains between intended identity and the syntactic representation of identity. The most restrictive assumption one can make regarding this relation is that made by Fiengo and May(?), that whenever two expressions are intended identically they must be syntactically represented as identical as well. Under such an assumption, all restrictions on intended identity can in principle be reduced to restrictions on syntactic representations. In this paper I will argue contra Higginbotham (forthcoming) that such an assumption can in fact be supported. I will further show, however, that in order to support such an assumption the grammar must minimally include two distinct representations of syntactic identity.

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\(^1\) Here and throughout the first sections of this paper, I will use the term identity relation as a cover term minimally for cases of intended coreference, anaphoric dependence, and variable binding. Since this notion of identity will play no role in the analysis I develop below, I will make no attempt to make the notion precise, and in specific will not attempt to specify what it is that is assumed to be identical.
2 The General Problem:

I take the kinds of problems outlined in the preceding section to fall within the purview of Binding Theory, remaining neutral for the moment just what this theory is a theory of. Furthermore, as noted above, I take the most central problem that Binding Theory has to address to be the problem of how to account for perceived restrictions on when one can felicitously utter a sentence with the intention that two of the terms contained therein be interpreted identically. In this regard, it has been noticed that for sentences such as (1) it is perfectly natural to intend all occurrences of the expressions *John*/his/him to be interpreted identically (and to be taken to so intend), while in the sentences in (2) it is much less natural to do so. (Here and throughout, I indicate intended identity between two expressions by underlining those expressions.)

(1)  
a. John’s mother loves John.  
b. John’s mother loves him.  
c. John thinks Mary loves him.

(2)  
c. He thinks Mary loves John.

While the phenomenon itself is indisputably real and in many cases quite clear, how to account for the intuitive distinction between these two classes of cases has proved to be a highly recalcitrant problem. In this section I will sketch two broadly syntactic approaches to the problem which can be seen as forming the heart of most current analyses. The first of these, which I refer to as the symmetric approach to binding, I model after Chomsky (1981). The second, which I refer to as the asymmetric approach to binding, I model after Higginbotham (1983). In both cases I will be interested primarily in the question of whether or not it is possible within the confines of the representational system assumed to reduce intended identity directly to syntactic identity. To answer this question I will take the approach of assuming that intended identity does reduce to syntactic identity to see what form the representation of syntactic identity must take if this assumption is correct.

2.1 Symmetric Syntactic Identity

Consider first a purely symmetric approach to binding such as that in Chomsky (1981). Using indices to represent a symmetric relation of syntactic identity, the distinction between the examples in (1) and those in (2) is accounted for by restricting the distribution of indexed expressions. Chomsky formulates such restrictions as Conditions B and C of the Binding Theory given below, where the class of R-expressions is taken to minimally include names.2

(3)  
Condition B: A pronominal is free in its binding category  
Condition C: An R-expression is free.

An expression is free just in case it is not bound, where binding is defined as in (4).3

(4)  
α is bound by β if and only if α and β are coindexed and β c-commands α.

Assuming an appropriate characterization of the notion binding category4, these conditions serve to rule ungrammatical the following representations for the sentences in (2) above.

(5)  
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>John_i loves him_j.</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>John_i loves John_j.</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>He_k thinks Mary loves John_l.</td>
<td></td>
</tr>
</tbody>
</table>

Under the restrictive assumption we are currently entertaining that intended identity between two expressions obtains if and only if those expressions are syntactically identical, the unacceptability of intended identity between the relevant occurrences of *John*/his/him in (2) follows directly from the ungrammaticality of

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2 While Chomsky also extends this general analysis to account for the distribution of anaphoric expressions such as *himself*, I will not be concerned with such an extension in this paper and hence will ignore questions relating to his Condition A.

3 I will only be concerned with ‘A-binding’ throughout, and so take α and β in (4) to be in A-positions.

4 For the purposes of this paper, it will suffice to define the binding category of an expression as the minimal NP or S containing that expression. Since the precise formulation of this notion is immaterial to the discussion in this paper, I will not attempt to make any further refinements to the (somewhat simplified) formulation given here.
these representations. In (5a), the pronoun him is coindexed with and c-commanded by the R-expression John, and hence by the definition in (4) is bound by John. Taking the binding category of the pronoun to be the matrix sentence, (5a) directly violates Condition B in (3) above. Similarly, in (5b) and (5c), the object occurrence of the R-expression John is bound by the first occurrence of that expression and by the pronoun he respectively, in violation of Condition C in (3).

While an analysis along the lines of Chomsky (1981) accounts for the simple cases considered in (2), phenomena known at least since Evans (1977, 1980) pose a serious problem when larger contexts are considered. (6) is taken from Evans (1980), upon which the following examples are modeled.

(6) What do you mean John loves no one? He loves JOHN.

(7) If anyone likes John,
   a. JOHN likes John.
   b. HE likes John.
   c. JOHN likes him.
   d. HE likes him.

The problem examples such as these pose for Chomsky’s analysis under our present assumptions is clear. In all of the examples in (6) and (7), it is possible to utter the italicized sentences in the context given intending identity between the subject and object NPs and to be readily understood as so intending. If the only way we have available for representing this intention is to coindex the expressions in question, then all of these examples should violate either Condition B or Condition C from (3), on a par with the parallel sentences in (2) uttered contextually, and should thus be unacceptables under an intended identity reading.

The problem posed by the examples in (6) and (7) can be circumvented under a syntactic analysis which treats identity symmetrically if we allow individual expressions to bear more than one index. In this way, identity between the two occurrences of John/He/him in each of (7a-d), for example, can be represented indirectly, each expression being directly coindexed with the occurrence of John from the preceding clause, but bearing a distinct index from the other occurrence of John/He/him in the same clause. This possibility is illustrated in (8) below for (7d).

(8) If anyone likes John, HE likes him.

Allowing for such an analysis of syntactic identity is perfectly consistent with the view that syntax encodes identity symmetrically, and thus is well within the spirit if not the letter of Chomsky’s (1981) analysis. By continuing to treat syntactic restrictions on identity such as Binding Condition B in terms of the actual index used, as in the formalization given in (3) above, we could admit (8) as a representation in which he and him are syntactically determined to be identical via transitivity of identity without such representations thereby being ungrammatical.

While a modification along the lines just sketched may well be called for, consideration of the examples in (9) indicates that at the very least something more needs to be said.

(9) a. *John said he likes him.5
    b. *John told him he’s brilliant.

(10) a. John,j said he, likes him.
    b. John,j told him,j he,’s brilliant.

The representations of (9) given in (10) are identical to (8) above in that John/He/him are all determined by the syntax to be identical while the syntactic representation of this identity satisfies the Binding Conditions in (3). These examples are distinct from the previous examples considered, however, in that in (9), under a normal pronunciation, intended identity between these three expressions is unacceptable. If we are to maintain the restrictive assumption that intended identity reduces to syntactic identity, and if we further wish to maintain that the syntax includes a single, symmetric mechanism for encoding syntactic identity, given the acceptability of the examples in (6) and (7) we need to give a principled explanation for the unacceptability of (9) which is not stated directly in terms of restrictions on representations of identity per se. While it is difficult to see how such a principled explanation can be given in purely structural terms, noticing that the examples in (6) and (7) differ from those in (9) in their focus properties, an explanation in terms of focus would appear plausible. I turn now to considering the possibility of constructing such an explanation.

5 This example is taken from Higginbotham (1983).
2.1.1 Focus and Intended Identity

The observation that focus affects the possibility of intended identity between two expressions has recently been brought to bear on the question of what role grammar plays in restricting relations of identity in Higginbotham (forthcoming). (Cf. similar observations in Chomsky (1976), ...) As Higginbotham observes, in every case in which intended identity is possible between two expressions one of which would appear to violate a disjointness condition such as Condition B or C of the Binding Theory, at least one of the two expressions must be focused. This observation is supported by the examples considered earlier, and can be substantiated even more forcefully with the examples in (11), where focus is indicated with CAPITALIZATION, intended identity with underlining as before, and deaccenting with small italics.6

(11) If anyone likes John,
   a. JOHN/*john\ HATES John.
   b. HE/*he\ HATES John.
   c. JOHN/*john\ HATES him.
   d. HE/*he\ HATES him.

As these examples illustrate, in order to allow intended identity between the two occurrences of John/he/him in the consequent clause in (11), focus on the subject of that clause is not merely optional but obligatory. Similar examples can be constructed in which it is the object which needs to be focused in order for a subject and object in the same clause to be intended as identical, as also noted in Higginbotham (forthcoming) and illustrated below.

(12) If John likes anyone,
   b. he HATES JOHN/*John.
   c. John HATES HIM/*him.
   d. he HATES HIM/*him.

In both sets of examples it is clear that focal properties play an important role in allowing intended identity between two expressions which would not otherwise allow of such an interpretation. Indeed, we can even exploit this effect to distinguish between an acceptable reading and an unacceptable reading of the examples given originally in (2), as indicated in (13) below.

(13) a. JOHN LOVES HIM/*him.
    b. JOHN LOVES JOHN/*John.
    c. HE thinks Mary LOVES JOHN/*John.8

Given this relation between focus and intended identity, one might hope to make the required distinction between the examples in (8) and (9) in terms of their focus structure rather than solely in terms of syntactically represented identity relations.

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6 I have chosen to use the examples in (11) in order to avoid irrelevant objections which would arise from using the examples from (7) above. In particular, I have changed the verb from the deaccented verb love to the focused verb hate in (11). If this change weren’t made, then the examples would still be unacceptable without focus on the subject, but for entirely different reasons. First, as argued by Pierrehumbert (1980) and Selkirk (1984), every intonation phrase (and consequently every sentence) must contain some focused expression. Since the only focused expression in the relevant sentences in (7) is the subject, simply removing this accent would result in a sentence without any focus, in violation of this constraint. Second, as argued for in Tancredi (1992), (1993), if a θ-assigning expression and one of its arguments are both deaccented in a sentence, then those same two expressions must be present in the previous discourse in that same thematic relation. Since the matrix verb of the relevant sentences in (7) is already deaccented, deaccenting the subject in addition would make it necessary for the same subject-verb combination to occur in the previous discourse context, a situation which clearly does not obtain in the examples under consideration. Since there is no simple way of modifying Evans’ example in (6) in such a way as to overcome such irrelevant objections, I have chosen not to include that example here, though Higginbotham’s observations are equally valid for that example as well.

7 The asterisk in these examples is intended to indicate the unavailability of the particular reading in question, i.e. that in which all occurrences of John/he/him are intended identically. There is another perfectly acceptable interpretation of the examples in (11b-d) in which he or him is taken to be identical with anyone, and on this interpretation the starred pronouns is perfectly acceptable. Since I am currently entertaining the hypothesis that intended identity is coextensive with syntactic identity, and since intended identity has been indicated here with underlining, marking the relevant examples ungrammatical is appropriate.

8 In order to obtain the intended reading in (13c) with a focused occurrence of John, it appears necessary to be able to assign an interpretation to the pronoun he independently of the occurrence of John in the same sentence, perhaps via a preceding context in which John is salient. Assuming such a context also facilitates a similar reading for the sentence containing the deaccented occurrence of John, though there does appear to be a contrast between the two examples.
2.1.1.1 Focus Exemption

A first attempt to account for the effects of focus structure on intended identity would be to simply exempt all focused expressions from participating in syntactic disjointness conditions. Intended identity between expressions could still be captured syntactically on such an account, though the disjointness conditions would be selectively blind to any such representations involving focused expressions. However, the following examples (as well as the examples given in (13)), considered context initially, strongly militate against such a solution.

(14)  
   a.  *JOHN HATES him.  
   b.  JOHN’s MOTHER HATES him.  
   c.  JOHN HATES himself.

In (14a) we have the exact same sentence with the exact same focus structure that we found to be felicitous under an intended identity reading in the context of (11). If we take the sentence to be uttered context initially, however, we encounter typical Condition B type effects – it is unacceptable to intend the subject and object to be identical. While one might be tempted to account for these facts by arguing that the focus structure itself is unacceptable context initially, consideration of the examples in (14b,c) makes such an approach implausible. These examples have essentially the same focus structure as (14a) and yet are perfectly acceptable context initially with intended identity between John and him(self). If focused expressions simply failed to participate in disjointness conditions, the unacceptability of a context initial occurrence of (14a) under an intended identity reading would be unexplainable.

2.1.1.2 Deaccenting Enforced Identity

A second approach that might be considered would be to concentrate not on the expressions which are focused but rather on those which are deaccented. It is argued in Tancredi (1992, 1993) that a sentence containing a deaccented expression is only felicitous if the context contains another expression identical to the deaccented expression at the point at which this latter expression is processed.9 If we assume that two pronouns and/or R-expressions are identical for the purposes of deaccenting only if they each bear an occurrence of the same index, then such a constraint has the effect of forcing a deaccented occurrence of one of these expressions to be coindexed with another such expression occurring previously in the context.

To illustrate how such an analysis can combine with a syntactic analysis of identity to restrict intended identity, consider the contrast between the unacceptable example in (2a) and the acceptable example in (7c), repeated below as (15) with the relevant aspects of focus structure implicitly assumed earlier made explicit.

(15)  
   a.  JOHN LOVES him.  
   b.  If anyone likes John, JOHN likes him.

In each of these sentences, deaccenting of the pronoun him will be felicitous only if there is some expression in the context preceding the pronoun which is coindexed with it. Taking these examples to occur context initially, in (15a) there is only one expression which can possibly satisfy this requirement, the subject occurrence of John. In (15b), on the other hand, there are two separate expressions which can satisfy this requirement, the subject occurrence of John in the same clause as the pronoun, and the object occurrence of John in the conditional clause. Partial representations of (15) which satisfy the identity requirement imposed by deaccenting of the pronoun are illustrated in (16).

(16)  
   a.  JOHN, LOVES him.  
   b.  i.  If anyone likes JOHN, JOHN likes him.  
   ii.  If anyone likes JOHN, JOHN likes him.

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9 The specific formulation of this constraint is stated in such a way as to be able to license deaccenting of one expression by the presence of another expression within the same sentence. This is accomplished in Tancredi (1993) by identifying the domain of application of restrictions on deaccenting as the intonation phrase, and taking the relevant context to include not only previously occurring sentences but previously occurring intonation phrases as well. By using focus structure in this way to constrain the representation of pronouns and R-expressions, I am in an obvious way making the analysis of the sentences presented in this paper dependent upon whatever the correct formulation is of constraints on deaccenting of the sort examined in Tancredi (1993). I restrict myself here to what I take to be the most basic constraint on deaccenting, that the licensing material must precede the deaccented material, so as to make the present analysis as independent as possible from any particular treatment of deaccenting, though the discussion could just as easily be made within the specific framework of Tancredi (1993).
The representations in (16a) and in (16b.i) directly violate Binding Condition B as formulated in (3) above. Since (16a) is the sole representation available for (15a) which satisfies the requirement imposed by deaccenting the pronoun, the unacceptability of (15a) follows directly. In the case of (15b), on the other hand, we have an additional, formally distinct way of satisfying the identity constraint imposed by deaccenting the pronoun, that represented in (16b.ii). Since it is possible under our current working assumption to coindex the two occurrences of John without thereby coindexing the second occurrence of John with the pronoun, it follows that all three expressions can be determined to be identical without violating Binding Condition B by representing (15b) as in (17).

\[ \text{(17)} \text{ If anyone likes } \text{JOHN}_{i,j} \text{ JOHN}_{i} \text{ likes him.} \]

The solution just sketched to account for the difference in acceptability between (15a) (=2a)) and (15b) (=7c)) can readily be applied to account for the unacceptability of the second of our problematic examples considered in (9) above, repeated here as (18) with relevant aspects of focus structure again made explicit.

\[ \text{(18) a. } \ast \text{John said he LIKES him.} \]
\[ \text{b. } \ast \text{John told him he's BRILLIANT.} \]

If we assume that the pronouns in (18) are all deaccented, then here as in (15) this deaccenting will force the pronouns to be coindexed with some preceding expression in the discourse. In the case of (18b), this forces him to be coindexed with the matrix subject John, just as it did in (15a), but this coindexing violates Condition B in (3). The unacceptability of this example thus follows straightforwardly. When we look at (18a), however, we see the limitations of appealing to focus structure to help salvage a symmetric syntactic analysis of identity. In (18a), the identity restriction imposed by deaccenting of the pronouns can be satisfied in a way in which no Condition B violation results by assigning indices as in (19) below, and yet the example is clearly unacceptable on the intended reading.

\[ \text{(19) John} \text{ said he likes him.} \]

Here, each of the deaccented pronouns is coindexed with a preceding expression (namely John) as required, but they are not coindexed with each other. Since coindexing between the pronouns and John does not violate Condition B in (3), appeal to constraints imposed by deaccenting does nothing to help us account for the unacceptability of (18a).

The two possibilities examined for using focus structure to salvage a syntactic analysis which employs a single, symmetric identity relation to account for restrictions on intended identity are clearly not exhaustive of the range of possibilities one might explore. Perhaps a better understanding of the role that focus (rather than deaccenting) plays in grammar will point to a solution to the above paradigm stated entirely in terms of a single, symmetric notion of syntactic identity. In the absence of such a solution, however, reducing intended identity to a single, symmetric notion of syntactic identity does not appear feasible. We will see further indication in section ?? below when we consider bound variable pronouns that such a reduction is likely to be impossible. Before turning to complications introduced by quantification, however, I would like to first explore the possibility of accounting for the problems considered above in terms of an asymmetric syntactic identity relation.

### 2.2 Asymmetric Syntactic Identity

Evans (1977, 1980) was the first to argue for an asymmetric approach to binding in order to get around the problems posed by examples like (6). This approach to syntactic identity is pursued further in Higginbotham (1983), upon which I base the present discussion. One of the central theses of Evans and Higginbotham is that semantic interpretation of one expression is often dependent upon that of another expression, with the one expression picking up its interpretation from the other. They furthermore suggest that this relation of semantic dependency be represented directly in the syntax by way of an asymmetric identity relation. Taking this suggestion to an extreme, suppose we take such an asymmetric identity relation

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10 Alternatively, we could retreat to the original analysis of Chomsky (1981) in which names and pronouns all bear unique indices. The deaccenting of he and him would in the example under consideration in (18a) then lead directly to a condition B violation as desired. However, such a move would only bring us right back to our original problem of accounting for the apparent exceptions to condition B brought to light by Evans, since the only way of capturing intended identity in those examples would be with co-indexing all around.
to be the *only* means available for representing identity syntactically.\(^{11}\) Whether intended identity can be reduced to syntactic identity will then depend upon whether it is possible to capture restrictions on intended identity such as those seen in (2), (9) etc. above while simultaneously allowing for intended identity in examples such as (6) and (7) employing only an asymmetric identity relation. Following Higginbotham (1983), I will indicate this relation by using headed arrows to link one expression (the *dependent* expression) to another (the *antecedent* expression). If intended identity is to be reduced to this asymmetric syntactic identity relation, then for two expressions to be intended identically they will have to be connected either directly or indirectly by links.\(^{12}\)

To evaluate the feasibility of such an approach, consider first the (context initial) examples from (13), repeated here, where the sole factor distinguishing between the acceptable examples and the unacceptable ones is whether the object *John/him* is focused or deaccented.

\[(13)\]
\[\begin{align*}
a. & \quad \text{JOHN LOVES HIM/*him.} \\
b. & \quad \text{JOHN LOVES JOHN/*john.} \\
c. & \quad \text{HE thinks Mary LOVES JOHN/*john.}
\end{align*}\]

Here as above it is not possible to account for the contrast simply by excluding focused expressions from participating in conditions on disjointness, since the matrix subject in these examples is uniformly focused. However, it is possible to adopt the deaccenting approach sketched earlier to give an account of the contrast. Since the interpretation we are concerned with in each of these sentences is that in which the two occurrences of *John/he/him* are intended to be identical, by hypothesis these two expressions must be connected by links. Assuming each of these sentences to occur context initially, we have exactly two possible representations for each sentence satisfying this condition, illustrated in (20) below.

\[(20)\]
\[\begin{align*}
a. & \quad \text{John likes him.} \\
b. & \quad \text{John likes John.} \\
c. & \quad \text{He thinks Mary likes John.}
\end{align*}\]

In order to account for the possibility of intended identity between the matrix subject and a focused object in (13) on the assumption that intended identity reduces to linking, at least one representation in each pair of representations given in (20) must be grammatical. We can account for the unacceptability of these same sentences when the object is deaccented by assuming that the other representation in each pair is ungrammatical, and by further assuming that deaccenting of the object is only compatible with the ungrammatical representation.

To formalize this analysis, assume that an R-expression or pronoun can be deaccented only if it is linked to another R-expression or pronoun in the preceding context. For the sentences in (13) containing a deaccented object NP, only the representations in (20a-c) will satisfy this restriction. We can then exclude these representations with a simple modification to Chomsky’s Binding Conditions from (3) (repeated here) by redefining the notion of *bound* (and hence also the notion of *free*) so as to make reference to linking rather than to coindexing, as in (21).

\[(3)\]
\[\begin{align*}
\text{Condition B:} & \quad \text{A pronominal is free in its binding category} \\
\text{Condition C:} & \quad \text{An R-expression is free.}
\end{align*}\]

\[(21)\]  
\[\alpha\] is bound by \(\beta\) if and only if \(\beta\) c-commands \(\alpha\) and \(\alpha\) is linked to \(\beta.\)^{13}\n
\(^{11}\) Neither Evans nor Higginbotham adopt this extreme position. Though I too will conclude that such an extreme position cannot be maintained, adopting this position for the moment is convenient for exploring the limitations of an asymmetric analysis of identity.

\(^{12}\) Higginbotham (1983) does not attempt to reduce intended identity to syntactic identity, and hence is not committed to such a restriction. Indeed, since Higginbotham allows two R-expressions to be intended identically but explicitly prohibits R-expressions from being linked to any other expression, he can be seen as rejecting the possibility of reducing intended identity to linking.

\(^{13}\) To simplify discussion, I assume following Higginbotham that linking is a transitive relation, so that if an expression \(a\) is linked to \(b\) and \(b\) is linked to \(c\), \(a\) counts as linked to \(c\). This assumption will preclude a third logical potential representation for (7) in which \(\text{him}\) is linked to \(\text{John}\) and \(\text{John}\) is linked to \(\text{he}\), since by transitivity of linking \(\text{him}\) would be linked to \(\text{he}\) in violation of Binding Condition B. I will also assume that expressions can be directly linked to at most one other expression. Again this assumption is not a necessary one, though it helps to simplify definitions and discussion.
In each of the examples in (20a-c), some expression is illicitly bound under this revised interpretation of the Binding Conditions in (3), him in (20a), and John in (20b,c), thus accounting for the unacceptability of the relevant examples from (13). Those cases in (13) in which both the matrix subject and the object are focused can escape the Binding Conditions in (3) since these can be represented as in (20a’-c’), where no such illicit binding relations occur. While an analysis which allows such “backward” linking as in (20a’-c’) lacks the intuitive appeal of Evans’ and Higginbotham’s original proposals in that linking no longer correlates with any notion of dependence, formally it makes possible an analysis of restrictions on intended identity in purely syntactic terms, at least in the simple cases considered in (13).

With the above analysis, we can give an account of the contrast found earlier between the acceptable examples in (6) and (7) and the unacceptable examples in (9). In order for any of these examples to be grammatical, it must be possible to represent them in such a way that (i) every deaccented expression contained within the example is linked to some preceding expression, (ii) each occurrence of John/he/him is linked (directly or indirectly) with the others, (iii) no occurrence of he/him is bound in its binding domain, and (iv) no occurrence of John is bound at all. For each of the examples in (6) and (7) there are at least two representations which satisfy these requirements (excluding representations containing redundant links). I illustrate in (22) with the example from (7d).

(22) a. If anyone likes John, HE kes him

For the example in (18a), on the other hand, there is only one such representation, given in (23), while for (18b) there is no representation which satisfies all of these requirements simultaneously.

(23) John said he SAW h

We can account for the distinction between (6) and (7) on the one hand and (18a) on the other by excluding the representation in (23), while allowing for at least one of the representations in (22). This can be accomplished straightforwardly by incorporating a restriction on co-linking such as that argued for in Higginbotham (1983) directly into our definition of the notion bound.

(24) α is bound by β if and only if β c-commands α and
   i: α is linked to β, or
   ii: there is some γ such that α and β are linked to γ and neither of α, β is linked to the other.

By the revised definition of bound given in (24), in both (22a) and in (23) the embedded pronoun him is bound within its binding category by the pronoun he. While in neither case is him linked to he, in both cases he c-commands him, and in both cases there is another expression (John) to which each of the pronouns is linked. Thus by part (ii) of the definition in (24), him is bound by he, and by Binding Condition B both representations are ungrammatical. Since we have previously eliminated all other potential representations for (18a), excluding (23) as we have gives us the desired result that there is no grammatical representation of (18a) in which John, he and him are connected by links, and we consequently derive the fact that intended identity is impossible between these three expressions. In contrast, in the case of (7d) we have eliminated one further potential representation in which John, he and him are connected by links -- that given in (22a) -- though we have not eliminated every such representation. In particular, the representation in (22b) remains, leading to the correct prediction that intended identity between John, he and him should be possible. By availing ourselves of an asymmetric syntactic identity relation, we have thus tentatively been able to maintain a reduction of intended identity to syntactic identity.

As mentioned earlier, the analysis of linking given above does an extreme injustice to the original intuition which led Evans (1977,1980) and Higginbotham (1983) to an asymmetric analysis of syntactic identity. In particular, while for some cases in which an expression x is linked to another expression y we would be intuitively satisfied with saying that x is (interpretationally) dependent upon y, in a large number of cases hypothesized to be acceptable above, linking has no evident connection with any such notion of dependence. This does not refute the analysis sketched above, though it does force one to reconsider the underlying motivation for adopting an asymmetric analysis of syntactic identity, and in particular forces one to question what relation -- if any -- obtains between such a representation and the intuitive notion of referential dependence which originally figured largely in its formulation. If the notion of referential dependence is to be encoded syntactically, since not all links give rise to referential dependence, some further syntactic device must be incorporated into the grammar in addition to an asymmetric identity relation to do
so. Looked at from a slightly different perspective, if certain links are taken to syntactically encode referential
dependence and others not, then what we have represented as a uniform syntactic notion of asymmetric
identity must be admitted to collapse at least two distinct notions under one notation -- dependency and non-
dependent identity.

3 Toward Multiple Syntactic Identity

In the preceding sections, I have been concerned with the question of whether it is possible to reduce
the notion of intended identity to a single notion of syntactic identity. The tentative conclusion reached there
was that such a reduction might be possible, but only if the notion of syntactic identity adopted is
asymmetrical. The analysis reached accounts for all of the facts considered above, which represent in some
sense the core cases of identity relations which need to be explained. However, the explanation comes at a
fairly significant cost. The original appeal of adopting an asymmetric identity relation in syntax came in large
part from the transparent relation which such a relation allowed for between the syntactic representation of
identity and the corresponding semantic notion that expressions are often dependent upon other expressions
for their interpretation. In capturing the notion of intended identity with an asymmetric syntactic identity
relation, we have lost this transparency. That is, explaining our intuitions regarding identity has come at the
cost of explaining those regarding dependency. From a broad theoretical perspective, then, it is not at all
clear whether anything has been gained in the “reduction”.

While the above objection is significant, it does not in itself force us to abandon the analysis
developed in the preceding section, provided some other explanation can be given of the intuitive notion of
referential dependence. Before pursuing such an explanation, however, I will argue that the analysis reached
in the previous section is in fact empirically inadequate. Since this analysis was argued above to provide the
only potential way of reducing intended identity to a single notion of syntactic identity, in rejecting this
analysis I am explicitly arguing that no such reduction is possible. If a reduction of intended identity to
syntactic identity is at all feasible, it must be based upon more than one notion of syntactic identity.

3.1 A Deeper Look at Deaccenting

Much of the central data used to argue for the analysis of section 2 was based upon differences in
acceptability of sentences containing focused expressions and parallel sentences containing deaccented
expressions. To make the argument against a symmetric analysis of syntactic identity and for an asymmetric
analysis, I took advantage of only the most elementary property of deaccenting, that a deaccented expression
requires an antecedent in its local context with which it is in some sense identical. As argued for in Tancredi
(1992, 1993), however the conditions which must be satisfied in order for deaccenting to be licensed are mor
complicated than this. When we take a more detailed look at these conditions, we find that it becomes
necessary to extend the analysis arrived at in section 2 to account for potential variation in pronominal
interpretation.

The property I intend to exploit in arguing against the analysis reached in section 2 is what I will refer
to as the *combinativity of deaccented expressions*. As shown in detail in Tancredi (1992, 1993), when two or more
expressions in a (sub-)sentential domain $D^{14}$ are deaccented, the sentence containing $D$ is only felicitous if the
local context in which $D$ occurs contains all of those expressions *standing in the same thematic relations that they
stand in within $D$*. Put differently, two deaccented expressions in a sentence act as if they *combine* syntactically
whenever they stand in a direct thematic relation, and in order for a sentence to be felicitous in a given
context, every partial syntactic structure which results from such syntactic combination must be present in
the context.

This combinativity of deaccented expressions can be illustrated with the simple sentence in (25).$^{15}$

\[(25)\quad \text{MARY likes Bill.}\]

In this sentence, both the verb *likes* and the object *Bill* have been deaccented. Accordingly, each of these
expressions must be present in the local context in which (25) is uttered if the sentence is to be felicitous.

$^{14}$ In Tancredi (1993), I argue that the relevant domain is the *intonation phrase*. Here I will remain neutral on the question
of how to properly characterize such a domain. In what follows, the precise characterization of such a domain will not
play a significant role.

$^{15}$ The examples I use to illustrate the combinativity of deaccenting could all be analyzed as containing deaccented VPs,
obliterating the need for anything but standard compositional rules applying within a single constituent. However, as
shown in Tancredi (1992, 1993), combinativity of deaccenting cannot be restricted to applying to entire constituents since
a deaccented subject and transitive verb show identical combinativity effects. For detailed discussion, I refer the reader to
the works cited.
However, mere inclusion of these expressions in the context is not a sufficient condition for (25) to be felicitous, as can be seen by considering (25) in each of the two contexts below.

(26)  
a. Sue doesn’t like Bill. However, MARY likes Bill.
  b. Bill doesn’t like Sue. However, #MARY likes Bill.

Each context contains the verb like as well as the NP Bill, and yet the sentence from (25) is only felicitous in the context in (26a), and not in that in (26b). This distinction can be explained in terms of the combinativity of deaccenting since only in the former is the thematic relation these expressions stand in identical in both the context and in (25).

As we just saw, when a verb and its object are deaccented within a simple sentence, in order for that sentence to be felicitous, that same verb plus object combination must occur in the context preceding the sentence. Consider now what happens when the object is a pronoun, as in (27).

(27)  MARY likes him.

Here as well as with (25), the sentence is only felicitous in contexts which contain a verb-object combination identical to that in the VP likes him. We see from the contexts below that the relevant notion of identity is not mere identity of form, but rather something related to identity of interpretation. (27) can be felicitous only in contexts containing an expression of the form like x, where the interpretation of the deaccented pronoun him is identical to the interpretation of x.

(28)  a. John doesn’t like him (said pointing to Bill). However, MARY likes him.
    b. John doesn’t like Bill. However, MARY likes him.

That identity of form is not a necessary condition for deaccenting of a pronoun can be seen in (28b), where the antecedent for the pronoun is a name. That it is not a sufficient condition for licensing deaccenting is evident from the fact that the deaccented pronoun him in the second sentence of (28a) cannot differ in its interpretation from that of the same pronoun in the context sentence. If the pronoun in the context sentence is interpreted as indicating Bill, then the deaccented pronoun in the second sentence must also be so interpreted. This same identity of interpretation similarly constrains the interpretation of the deaccented pronoun in (28b), where again the deaccented pronoun must be interpreted identically to the object of the context sentence, Bill.

We now have all of the pieces in place that we need to refute the analysis arrived at in the end of section 2. Recall the central premise underlying that analysis, namely that all instances of intended identity must be represented syntactically, where the sole syntactic identity relation is an asymmetric one, represented by linking. The asymmetry of this syntactic identity relation was crucially exploited in stating restrictions on deaccenting -- a pronoun or R-expression was argued to be deaccentable only if it is linked to some other expression. If we incorporate into this analysis the notion of combinativity of deaccented expressions, we derive as a theorem the following:

(29)  For a sentence S which contains two expressions x and y, where x and y are directly thematically related and y is a pronoun or R-expression, S is felicitous in a context C only if C contains two expressions x' and y' such that x' is identical to x, x' and y' stand in the same thematic relation to each other as x and y, and y is linked to y'.

This theorem can be seen to correctly explain all of the examples considered in (26) and (28) above by allowing representations parallel to (30a) while excluding those parallel to (30b) below.

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16 Here and throughout I am assuming as argued for in Tancredi (1992,1993) that deaccenting is licensed by true identity. There is a fairly large class of felicitous instances of deaccenting which would appear on the surface to be inconsistent with such an analysis of the felicity of deaccenting, an extreme case based upon an example from Lakoff (19??) illustrated below:

i:  John called Mary a republican, and then BILL insulted her.

Here the VP insulted her has been deaccented, felicitously so, and yet the context does not contain any expression which is identical in any specifiable sense with this VP. To handle such cases, I argue in Tancredi (1992), (1993) that such cases of deaccenting force one to increment the local context with some expression containing a VP identical to the deaccented VP, with the content being added to the context constrained by Gricean principles. To do full justice to the analysis here would take me too far afield from the present discussion, however, so I refer the interested reader to the works cited. For the remainder of this paper I will continue to assume that the relevant licensing condition for deaccenting is true syntactic identity, restricting examples to those in which the question of whether such identity obtains can be given a clear and obvious answer.
In both examples, the deaccented verb *likes* is identical to the verb in the context sentence. In (30a), the deaccented object of this verb *Bill/him* is additionally identical to (or more specifically linked to) the corresponding object of the context sentence, in conformity to the theorem in (29), and so the sentence containing the deaccented expressions is acceptable. In contrast, the deaccented object of the verb *likes* in (30b) is not identical with the corresponding object in the context sentence, in violation of the theorem in (29), and correspondingly the second sentence in the example is unacceptable.

Consider now the predictions that the analysis makes when an expression *x* is linked to another expression *y*, which is in turn linked to a third expression *z*. Since syntactic identity under the proposed analysis entails intended identity, and since all of *x*, *y*, and *z* are in such a circumstance syntactically represented as being identical, it follows that they must also be intended identically. This prediction, however, can straightforwardly be falsified with examples such as the following.

(31)  
John thinks Mary LIKES him. BILL thinks SUE likes him.

Since a pronoun is according to the analysis under consideration only allowed to be deaccented if it is linked to some preceding expression in the context, taking the example in (31) to occur context initially, it follows that the deaccented pronoun *him* in the first sentence of this example must be linked to *John*. The pronoun *him* in the second sentence is likewise deaccented, and so it too needs to be linked to a preceding expression in the context. However, unlike the pronoun in the first sentence, this pronoun is directly thematically related to another deaccented expression within the same sentence, the verb *likes*. According to the theorem in (30), then, the only way for this second sentence to be felicitous is for the pronoun of the second sentence to be linked to that in the first sentence. That is, the only representation of the example in (31) which should lead to felicity is that given in (32) below.

(32)  
John thinks Mary LIKES *him*. BILL thinks SUE likes *him*.

We predict, then, that the only interpretation available for the pronoun in the second sentence is one in which it is intended as identical with the interpretation of the pronoun in the first sentence. But this pronoun, being linked to *John*, must be intended as identical to *John*. It follows that the only interpretation predicted to be available for the pronoun in the second sentence is one in which it is intended as identical to *John*.

While the above analysis accounts correctly for one of the interpretations intuitively allowed for the example in (31), that in which the pronoun of the second sentence is given a “strict”, or “invariant” interpretation, (31) also admits of a “sloppy”, or “co-variant” interpretation in which the pronoun is taken as intended identically to *Bill*. However, under the analysis developed in section 2, there is no way of capturing this second reading. In order to simultaneously capture the identity between the first pronoun and *John* on the one hand and that between the second pronoun and *Bill* on the other, there would have to be some representation in which the two expressions within each pair are connected by links. Since *Bill* cannot presumably be intended as identical to *John*, it further follows that neither expression in either pair can be connected by links to either of the expressions in the other pair. The only representation which could potentially give rise to the intended interpretation and which would simultaneously satisfy the constraints assumed in section 2 to hold on deaccented expressions would then be that in (33) below.

(33)  
John thinks Mary LIKES *him*. BILL thinks SUE likes *him*.

However, we have already seen in (30b) that such a representation cannot be allowed, since it violates the combinatorial requirements of deaccented expressions: there is no suitable antecedent expression for the deaccented verb-object pair *likes him* in the second sentence, and so the representation in (33) violates the theorem in (29).
3.2 From Reference to Bound Variables

The problem posed by examples such as (31) is reminiscent of the problem of interpreting pronouns within VP deletion contexts (cf. Sag (1976, 1977) and Williams (1977), amongst others). And if the problem is familiar, the standard solution to this problem is equally familiar. The standard solution involves assigning pronouns in English two distinct types of interpretation -- a referential-like interpretation and a bound variable-like interpretation -- and correlating these interpretations of pronouns with strict and sloppy identity readings respectively. While arguments in support of this view of pronouns are convincing, however, such a view cannot be coherently expressed within a syntax which only contains a single means of representing identity. To show this, suppose that we re-analyze the sentences in (31) by taking the names to be quantified expressions which raise at LF as in (34).

(34) \[ \text{John } t \ \text{thinks Mary LIKES him.} \quad \text{BILL } t' \ \text{thinks SUE likes him.} \]

Assuming that linking serves uniformly to establish syntactic identity relations, the restrictions on deaccenting argued for in section 2 force the pronoun \textit{him} in the first sentence to be linked to the trace \textit{t}. Furthermore, this trace cannot be linked to its quantified antecedent since such linking would force identity of interpretation between the pronoun \textit{him} and the QR\'ed expression \textit{John}, leading to the very problem from the previous section that we are trying to overcome. Consequently, combined with the arguments from the preceding section regarding the linking of the second occurrence of \textit{him}, the only representation available for (34) is (35) below.

(35) \[ \begin{array}{c}
\text{John } t \\
\text{thinks Mary LIKES} \quad \text{BILL} \\
\text{t'} \\
\text{thinks SUE}
\end{array} \]

But now we are at an impasse. The linking in the first sentence can plausibly be taken to identify the interpretation of the pronoun with that of the trace \textit{t} left behind by QR of \textit{John} properly leading to a bound variable interpretation for that pronoun. However, the linking of the second pronoun does nothing to identify it with the trace \textit{t'} left behind from applying QR to \textit{BILL}. At most this pronoun can be identified with \textit{t}, i.e. with the trace of \textit{John}. If linking is our only way of establishing syntactic identity, and if syntactic identity between a pronoun and a variable is necessary for interpretation of that pronoun as bound by the same quantified expression as the variable, then the representation given in (35) will be uninterpretable. The pronoun \textit{him} in the second sentence is forced via its linking to be interpreted as a variable, and yet within its sentence it is not bound.

Implicit in the above argument is the assumption that the trace left behind by QR of \textit{Bill} in the second sentence of (34) cannot be linked to the pronoun \textit{him} in that sentence. However, nothing at present forces us to adopt this assumption, and indeed according to the analysis arrived at in section 2 such linking should be perfectly possible, as represented in (36).

(36) \[ \begin{array}{c}
\text{John } t \\
\text{thinks Mary LIKES} \quad \text{BILL} \\
\text{t'} \\
\text{thinks SUE}
\end{array} \]

We are now ready to see, however, that such linking must be prohibited. Consider the following example, taken from Higginbotham (forthcoming).

(37) \text{Every professor admires HIM.}

As noted in section 2 above, expressions which are focused appear to be able to get around Binding Theory constraints in a way in which deaccented expressions cannot. As the present example illustrates, this is even possible when the interpretation of a pronoun is identical to that of a quantifier bound variable. Continuing on our assumption that linking is constrained by Binding Theory (using the modified definition of \textit{bound} given in (24) above), and assuming further that in order for a pronoun to be interpreted as a variable bound by a quantified expression it must be co-linked with the trace left behind by raising of that quantified expression, the only possible LF representation of (37) which satisfies Conditions B and C and in which the pronoun can be interpreted as a bound variable is that given in (38) below.

\[ \begin{array}{c}
\text{John } t \\
\text{thinks Mary LIKES} \\
\text{BILL} \\
\text{t'} \\
\text{thinks SUE}
\end{array} \]

\[ \text{Every professor admires HIS.} \]

While such linking could conceivably be rendered semantically coherent for the example under consideration, in the case in which the antecedent expression is truly quantificational, as in the sentence \textit{Every boy loves his mother}, linking between the trace of QR and the quantified antecedent would have to be excluded in principle, since in such examples the trace and the quantified expression are necessarily interpreted differently. Since sloppy identity interpretations are equally available when the context sentence contains a quantified antecedent, I assume that the same restrictions that apply to true quantified expressions apply to names treated quantificationally as well.
Every professor (t admires HIM
If there is no link connecting the trace t and the pronoun HIM, then by hypothesis these two expressions could not be interpreted as identical, i.e. the pronoun could not be interpreted as a bound variable. Furthermore, if HIM were linked to t instead of the other way around, we would have a straightforward Condition B violation since HIM would then be bound by t within its binding domain.

Consider now what happens when we combine the analysis of (37) just given in (38) with the analysis of sloppy identity given in (36) for the sentence in (31). The conclusion we are led to is clear: If (37) is embedded in a context containing a bound variable pronoun, it should be possible to deaccent the pronoun him in (37) while still interpreting it as a bound variable. Put from a different perspective, we predict that it should be possible for a deaccented pronoun to escape Condition B if it can be linked to a bound variable pronoun in a previous context. That is, we predict that the deaccented pronoun in the second sentence in (39) below should be interpretable as a variable bound by the quantified expression every professor, with the representation in (40). This prediction, however, is not borne out.

(39) (In this university,) No administrator thinks people admire him. (However,) #Every professor admires him.

(40) No administrator (t thinks people admire him. ) Every professor (t’ admires him. )

Regardless of the context in which (39) occurs, the deaccented pronoun in the second sentence can never receive a bound variable interpretation.18

Summarizing, we have seen that in order to generate a sloppy identity reading for the second sentence in (31) it is necessary to represent the two pronouns in the example as identical with the traces of the QR’ed matrix subjects of their respective sentences. It is furthermore necessary to link the second pronoun to the first, given the constraints on deaccenting argued for in (29). The only way of satisfying these requirements while maintaining the assumption that linked expressions must be linked to a unique antecedent is by allowing a trace of QR to be linked to a pronoun, as in the LF representation of the second sentence in (36). By allowing for such a possibility, however, we incorrectly predict that a bound variable interpretation should be available for the deaccented pronoun in the second sentence of (39). By assuming that syntax contains only a single, asymmetric means of representing identity, (31) and (39) thus place contradictory constraints upon the syntax, the former requiring traces of QR to be able to be linked to pronouns and the latter forbidding such a possibility. In the absence of an alternative analysis of the ungrammaticality of (39), it follows that the assumptions adopted in attempting to explain the grammaticality of (31) cannot all be correct.

3.3 One Last Try

While the arguments of the previous section suggest that identity relations in syntax cannot all be represented uniformly, they do not yet force this conclusion. The argument given shows only that the underlying assumptions made cannot all be correct. Since one of these assumptions was that syntax contains only a single, asymmetric representation of identity, that assumption is called into question. However, I have also been proceeding under the additional assumption that expressions can only be linked once. Before we can show that syntax needs to contain multiple distinct types of identity relations, it must first be shown that allowing for multiple linking of a single expression cannot resolve the problems encountered above.

The problem posed by the examples in (37) and (39) can be summarized as follows. In order to explain the possibility of having a bound variable interpretation for the pronoun in (37), it is necessary to allow for some identity relation between the pronoun and the trace of the quantified expression every professor. However, in order to block a bound variable interpretation for the pronoun in the context of (39), we must disallow that same identity relation from obtaining in that context. Since for (37) there are only two ways of identifying the pronoun and the trace via linking, and since we saw with respect to examples such as (14) that it is independently necessary to prohibit linking of a pronoun in object position to the subject of the same clause, it follows that the representation in (38) in which the subject trace is linked to the object pronoun is the only potentially well-formed representation which can yield a bound variable interpretation for the pronoun. Allowing expressions to be multiply linked does nothing to change this fact, since the trace and the

18 On the assumption that the context provided is exhaustive, in the present example the pronoun him is in fact uninterpretable.
pronoun each have only one other expression to which they can plausibly be linked. When seen from this perspective, it becomes clear that allowing multiple linking of any of the expressions in (39) can do nothing to alleviate the problem posed by this example, since allowing for extra links can only increase the number of potentially well-formed representations, and can do nothing to eliminate the representation for (39) given in (40).[[??]]

At this point, we have seen that current analyses of Binding Theory based upon the assumption that syntax contains a single notion of identity are incapable of explaining a systematic range of exceptional binding behavior. We have furthermore argued that none of these analyses can be extended to cover the full range of facts under consideration while maintaining this central assumption. If we are to continue in our quest to account for constraints on intended identity within the syntax, it would appear that our only remaining option at this point is to abandon this assumption, and to develop an alternative analysis based upon a syntax which admits multiple types of syntactic identity. It is to this task that I now turn.

4 Dual Identity Syntax

The data examined in the preceding sections are summarized schematically in (41) through (43), where the first expression is assumed to c-command the second, square brackets indicate the binding domain of the second expression, and all expressions are intended identically.

(41) (Null Context)
   a. [JOHN/HE ... JOHN/HIM] (cf. (13))
   b. *[JOHN/HE ... john/him]

(42) (Context = ... John ...)
   a. [JOHN/HE ... john/him] (cf. (7), (11))
   b. [John/he ... JOHN/HIM] (cf. (6), (12))
   c. *[John/he ... john/him] (cf. (11), (12), (18a))

(43) (Any Context)
   a. [EVERY PROFESSOR ... HIM] (cf. (37))
   b. *[EVERY PROFESSOR ... him] (cf. (39))

If intended identity is to be reduced to syntactic identity, then all of the expressions within each of these examples must be syntactically represented as identical. An analysis which admits only a single syntactic identity relation which is symmetric is incapable of accounting for the pattern of acceptability exhibited in (41) and (42). A single syntactic identity analysis in which the identity relation is asymmetric fairs better with (41) and (42), but falters when it comes to accounting for the examples in (43) as well. The minimum extension we can make to account for intended identity in these examples, then, is to admit two distinct identity relations into the syntax. Once we do so, accounting for restrictions on intended identity within the syntax turns out to be fairly straightforward.

Looking at the summary of data given in (41) through (43), some distinction needs to be made between focused expressions and deaccented expressions. Two generalizations can be made from these examples. The first is that a Binding Theory type of violation occurs only when the “bound” expression is deaccented, as in (41b), (42d), and (43b), and second is that such a violation results only when the deaccented expression cannot “escape” being identified directly with its antecedent. In (41b) this is the case since deaccenting forces identity with some preceding expression and the only such expression available is the c-commanding subject within its binding domain. In (42d) this will also be so on the assumption that any two deaccented expressions which are identified with the same antecedent will themselves necessarily be identical. Since the context contains only a single occurrence of John, identification of each of the deaccented expressions with this occurrence of John will thus make it impossible for the two expressions to escape being identified with each other. Finally, in (43b), while deaccenting of the pronoun can be licensed by the occurrence of a (bound variable) pronoun in the previous context, the deaccented pronoun still must be identified with the trace bound by the quantified expression (at LF) in order to be interpreted as a variable bound by that expression.

19 I exclude here a fourth logical possibility, namely that in which the example in (41a) is embedded within the context given in (42). This example was not given in the previous sections, and adds nothing of substance to the constraints on possible analysis motivated by the other examples, though for completeness I illustrate this pattern below:

i: John thinks most people like Bill, though JOHN likes HIM.
The informal comments of the previous paragraph together with the data schematically represented in (41) through (43) put some clear constraints on the form that the analysis of the facts in question must take. The first of these is the following:

(44) The identity relation required to hold between a deaccented expression and some other expression in the preceding context is the same as the identity relation which is constrained by Binding Theory.

The second and equally important constraint justified by the data is that given in (45) below:

(45) Focus licenses an alternative means for identifying expressions, one which is not constrained by Binding Theory, and which furthermore is not available for deaccented expressions.

Finally, from the distinction found in (43) together with standard cases of long distance binding of a pronoun by a quantified antecedent (in which the pronoun is typically deaccented), it would appear that the following holds as well:

(46) Either type of identity relation is capable of giving rise to a bound variable interpretation of a pronoun.

While there are several conceivable ways of satisfying these constraints and hence of accounting for the data under consideration, for concreteness I propose the following analysis, predicated on one symmetric identity relation (represented by coindexing) and one asymmetric identity relation (represented by linking).

I: An expression \( x \) is i-bound if and only if there is some expression \( y \) such that \( x \) and \( y \) are co-indexed and \( y \) c-commands \( x \).
   An expression which is not i-bound is i-free.

II: An R-expression or pronoun \( x \) can be deaccented only if it is coindexed with some other expression \( y \) contained in the active context preceding \( x \).

III: An R-expression or pronoun \( x \) can be linked to some other expression \( y \) only if \( x \) is focused (and \( y \) precedes \( x \)).

IV: Condition B: A pronoun must be i-free in its binding domain.

V: Condition C: An R-expression must be i-free everywhere.

VI: A pronoun \( p \) is interpreted as a variable bound by a quantified expression \( Q \) if and only if \( p \) is c-commanded by \( Q \) at LF (or perhaps by the quantifier contained in \( Q \)), and
   i: \( p \) is linked to the trace left by raising \( Q \); or
   ii: \( p \) is coindexed with the trace left by raising \( Q \).

This analysis accounts for the examples illustrated schematically in (41) through (43) as follows. By principle III, linking is only possible from focused expressions. Coindexing is presumably available for relating any two expressions, though it is required by principle II to relate a deaccented expression to some preceding expression. These constraints make possible only the following (presumably LF) representations for (41) and (42), of which those excluded by Condition B or C of the Binding Theory are marked with an asterisk (*). (The arrow pointing to the left in the representations in (48a.ii) and (48b.ii) is intended as a link to the occurrence of John, in the context.)

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20 I label these relations i-bound and i-free to indicate their dependence on indices. A similar definition could be given for an asymmetric relation as follows.
   An expression \( x \) is l-bound by an expression \( y \) if and only if \( y \) c-commands \( x \) and
   i: \( x \) is linked to \( y \); or
   ii: for some \( z \), \( x \) and \( y \) are l-bound by \( z \).
   An expression which is not l-bound is l-free.

While such notions are clearly definable, it is not clear at present whether they play any role within the syntax, and so I have not included them above. If an analysis were to switch the correlations between the two types of identity relations and their respective functions, such a definition would of course become necessary, though I will not pursue this alternative here.

21 See Kripke (1992) and Tancredi (1992) for the relevant characterization of the notion active context.
Within the outlines of the analysis instantiated in principles I - IV, sloppy identity type interpretations for sentences such as the following fall out directly:

i: Every professor thinks students admire him, but no administrator thinks students admire him.
Deaccenting of the first pronoun forces it to be coindexed with the trace left behind by QR of Every professor, and deaccenting of the second pronoun forces it to be coindexed with the first. Since the second pronoun is not in the scope of Every professor at LF, such identification will at most serve to identify the second pronoun as a variable. In order for this pronoun to be interpretable, it still requires a binder of its own. In (i) this binder can be taken to be the quantified expression no administrator by assuming that the pronoun is also coindexed with its QR trace, yielding the representation in (ii).

ii: Every professor [t_i thinks students admire him_i] but no administrator [t_i thinks students admire him_i]

While such a representation may appear somewhat confusing to those accustomed to associating indices with interpretations, reusing the same index in this fashion is no more problematic than reusing the same variable within the scope of different quantifiers in logical expressions, as for example in $\forall x[\phi(x)] \lor \forall x[\neg\phi(x)]$. An analysis of sloppy identity along these lines can be found in Tancredi (1992).
expressions and these subjects, however, will yield a straightforward Condition B/C violation, and thus the sentences are predicted to be unacceptable, as indeed they are.\textsuperscript{23}

In addition to making possible a reduction of intended identity to syntax, the analysis outlined above furthermore extends the range of data which can be accounted for in a principled fashion by formalizing aspects of the relation between sentences and discourse contexts. The analysis makes crucial use of two formal notions of syntactic identity (syntactic in the sense that they operate directly on abstract representations rather than on real world correlates of such representations). Both of these notions of identity, however, can and in certain cases must be taken to hold both between expressions within a single sentence as well as between expressions in distinct sentences, as is clear from the analysis given in (48) for the examples in (42). By bridging sentence internal syntax and what could be called inter-sentential syntax in this fashion, it becomes possible -- at least in a limited fashion -- to predict some of the effects that a discourse context will have on acceptability, and in certain cases on grammaticality.

As an illustration of the kinds of benefits which can result from this type of marriage of sentence internal and sentence external syntax, consider the following paradigm of examples, all intended context initially.

\begin{enumerate}[a.]
\item John went to see "Jaws". Then, BILL \textit{went to see a movie.}
\item John went to see a movie. Then, #BILL \textit{went to see "Jaws".}
\item John Smith’s mother \textit{LIKES} \textit{him.}
\item (pointing) #His mother \textit{LIKES} John Smith.\textsuperscript{24}
\end{enumerate}

In the examples in (51a,b) we see that deaccenting of a less specific expression in the context of a more specific expression is acceptable, while the reverse is not. The phenomenon in question is clearly a discourse phenomenon in that the expressions being compared occur in separate sentences. However, by allowing these same discourse processes to occur within a sentence, the otherwise puzzling array of restrictions on

\textsuperscript{23} On an intuitive basis, the analysis just outlined is admittedly unconvincing, and will likely have to be abandoned after closer examination of copular constructions. While it is undeniable that the two expressions flanking a copula are in some sense identical, the type of identity involved has a different character from either of the other types of identity examined earlier. In particular, for the other cases of identity, understanding the identity would appear to be a \textit{prerequisite} to understanding the proposition conveyed, whereas in the case of copular sentences this does not appear to be the case. Rather, for copular sentences like those in (50), the existence of an identity relation appears to be entirely part of the assertion the sentences are typically used to make.

\textsuperscript{24} This same sentence has often been claimed to be acceptable, in opposition to the following sentence which differs only in its focus structure.

\begin{enumerate}[i.]
\item His mother \textit{LIKES} JOHN SMITH.
\end{enumerate}

While there is clearly a difference between these sentences, however, I am loath to attribute these differences to binding distinctions, especially given the fact that neither of the relevant expressions c-commands the other. Note that the acceptability of (51d) differs depending on whether a context is supplied (or accommodated) containing mention of John Smith. For example, the following discourse is perfectly acceptable with his and John Smith intended identically throughout.

\begin{enumerate}[i.]
\item A: Tell me something about John Smith.
\item B: Well, for one thing, \textit{his} mother \textit{LIKES} John Smith.
\end{enumerate}

On the present analysis, this behavior is not at all surprising. In (ii), both \textit{his} and \textit{John Smith} within B’s response can be legitimately deaccented, each licensed by the occurrence of \textit{John Smith} in A’s request. The resulting identity between the two expressions is in conformity with Binding Conditions, and so no unacceptability is predicted. The more problematic case under the present analysis is that of (i). As the analysis stands, it predicts that intended identity between \textit{his} and \textit{John Smith} should be possible even context initially, since \textit{John Smith} is focused and hence should be able to be linked to \textit{his}. However, such intended identity does not appear to be possible. We can overcome this problem if we assume that linking is a discourse process constrained in the (some of) the same ways that deaccenting is constrained. In particular we could assume that linking to a less specific expression is illicit much as deaccenting licensed by a less specific expression is illicit. Such an extension of the present analysis would make it possible not only to explain the contrasts found in (51d), (i) and (ii), but would furthermore correctly predict the acceptability of (iii) as a context initial sentence.

\begin{enumerate}[i.]
\item John Smith’s mother \textit{LIKES} JOHN SMITH.
\end{enumerate}

Whether this extension can be worked out in detail remains to be shown, though the approach looks promising.

A further issue arises when we consider sentences such as (i) embedded within larger contexts as in (iv).

\begin{enumerate}[i.]
\item A: What’s John Smith’s mother like?
\item B: Well, \textit{his} mother \textit{LIKES} JOHN SMITH (so she must be at least a little strange).
\end{enumerate}

Here, as in (ii) above, we find that embedding in a discourse context improves the sentence on an intended identity reading. This offers further support for the extension outlined above. This discourse also serves to make a much needed distinction between simple intended identity and bound variable like interpretations involving pronouns. For while it is possible to save sentences like (ii) by embedding them in discourses like (iv), it is never possible to derive a reading equivalent to (v) by so doing.

\begin{enumerate}[i.]
\item (Only) for \textit{x} \textit{John Smith} (\textit{x}’s mother \textit{likes} \textit{x})
\end{enumerate}

That is, while identity can be established in a variety of different ways, weak cross-over violations involving bound variable interpretations of pronouns never go away as a result.
“coreference” brought out clearly in Lasnik (1987) and illustrated in (51c,d) can be handled straightforwardly in the exact same way as the distinction between (51a,b) is handled. 25 Here, deaccenting of the less specific expression him can be licensed by the more specific John Smith, while deaccenting of the latter licensed by the former is impossible. [[Does Lasnik deal only with binding cases or does he also deal with cases like 51 too?]]

If the above comments are on the right track, they indicate that a new division of labor is in order between a purely sentence internal binding theory and an inter- and intra-sentential theory of discourse deaccenting. From the discussion of examples such as (43), it appears that at least some vestige of binding theory must remain intact in order to handle restrictions on bound variable pronouns which are independent of restrictions on deaccenting. Beyond this, however, the question remains open of where to draw the line between Binding Constraints and Deaccenting Constraints in accounting for data traditionally considered to lie exclusively in the realm of Binding Theory. In the following section, I will attempt to make clear some of the specific consequences of the above analysis for several recent treatments of binding-related phenomena.

6 Comparison with Other Theories

6.1 Higginbotham (1983)

Higginbotham (1983) argued that restrictions on relations between pairs of arguments as well as between arguments and operators are best handled in terms of syntactic links connecting one of these expressions to the other. This approach is appealing from a conceptual point of view in that it makes explicit in the syntactic representation relations of dependency felt intuitively to hold between expressions. This was accomplished by interpreting links directly as dependency relations -- if a is linked to b, then a is dependent on b. Further indirect dependency relations are then definable in terms of combinations of links, whereby if a is linked to b, and (some expression contained in) b is linked to c, then a is indirectly dependent on c, a result which again accords well with intuition.

While it is possible to duplicate these conceptual advantages within the theory developed in section 4, given the separation of identity relations into two types, it is not possible to simply adopt Higginbotham’s analysis unmodified. The reason for this is clear -- what for Higginbotham is a single relation of antecedence represented via linking has here been split into two separate relations, only one of which has the same formal properties as Higginbotham’s links. The distinction was motivated by differences in the behavior of focused expressions and deaccented expressions with respect to restrictions on intended identity. However, the intuitive notion of one expression being dependent upon another would appear to be independent of focal properties of the expressions involved. Thus, what for Higginbotham could be given a uniform formal syntactic characterization must be analyzed here minimally as two separate phenomena, one involving only focused expressions (expressed in terms of linking) and one potentially involving any type of expression (expressed in terms of coindexing). For the purposes of discussion, I will consider three sub-cases of dependency corresponding to the three formal relations specified in (52i-iii):

(52) An expression x will appear to be dependent upon another expression y whenever
i. x is linked to (an expression containing) y,
ii. x is interpreted as a variable bound by (an expression containing) y, or
iii. x is deaccented, and the deaccenting of x is licensed by (an expression containing) y.

This characterization of dependency is in several ways obviously different from that of Higginbotham. The first and perhaps most important difference is that (52) has no status as an independent principle of grammar; it is merely a description of syntactic relations which one is apt to identify as involving

25 For a particular analysis of these types of effects based upon absolute identity between deaccented expressions and their antecedents, see Tancredi (1992, 1993). The analysis there requires that the context be enriched whenever the “licensing” expression contained in the actual context differs in syntactic form from the deaccented expression. Context enrichment is taken to be constrained by general conversational principles, with a proposition only qualifying to be added to a context if that proposition can be calculated as an implicature of the statement uttered in that context. Since calculation of an implicature can only proceed from propositions to propositions, it follows from this analysis that such implicatures can only be added to a context essentially between sentences, and never within a sentence. If this analysis is to be extended to the present case, clearly this aspect of the analysis must be discarded. That is, the occurrence of John Smith in (51c) must be sufficient to allow addition of a pronoun to the context via some process similar to that involved in calculating implicatures, though applying within a sentence. That some such process is needed independently is indicated by the following sentence internal cases of deaccenting, which parallel the examples in (51). (Commas are used to separate intonation phrases. Cf. Pierrehumbert (1980), Selkirk (1984), and Tancredi (1993.).)
dependency. This characterization leaves open the question of how expressions instantiating each of the separate sub-cases in (52i-iii) are to be assigned a semantic interpretation, and in particular allows for the possibility that each of the expressions is interpreted independently of the other, with the syntactic representation of identity functioning merely as a filter on the interpretation which results. This contrasts sharply with Higginbotham’s notion of dependency, which takes the “interpretations [of linked expressions] ... to be understood as derived ... through the content of their antecedents” (p.403, italics mine).

Indication that a separation is called for between the intuitive notion of dependency and a semantic notion of dependent interpretation comes from consideration of deaccented R-expressions. Under the present analysis, nothing prohibits either linking or deaccenting of R-expressions and so these can be characterized according to (52) as dependent just as pronouns can. Higginbotham, on the other hand, explicitly disallows linking of R-expressions on the basis that the interpretation of an R-expression is dependent upon its lexical content. Since Higginbotham uses linking to express dependency of semantic interpretation, linking of an R-expression would result in that expression’s receiving its interpretation in two separate ways, a situation which Higginbotham suggests cannot arise. When we compare occurrences of deaccented pronouns with parallel occurrences of deaccented R-expressions as in (53) below, however, we find that they both intuitively involve a dependency of the deaccented expression on the expression which serves to license the deaccenting.

(53) (both sentences assumed to occur context initially)
   a. John Smith’s mother thinks Mary LIKES him.
   b. John Smith’s mother thinks Mary LIKES John.

Under the present analysis, both the relation between John Smith and him in (53a) and that between John Smith and John in (53b) can be identified as (intuitive) dependency relations under (52i-ii). However, for Higginbotham only the former can be seen as involving a formal dependency relation since only in that example is it possible for the deaccented expression to be semantically dependent on John Smith. To the extent to which the formal notion of dependency is intended as an exhaustive characterization of the intuitive notion, Higginbotham’s characterization of this notion is left wanting.

While Higginbotham’s linking analysis does not directly provide the means for identifying the full range of dependency relations intuitively felt to hold between expressions, the more substantive motivation for the theory comes not from its intuitive appeal as a means of capturing such dependency relations formally, but rather from the role which dependency relations are seen to play in making possible a unified analysis of crossover phenomena, encompassing not only standard strong crossover examples such as (54) but more complicated examples such as (55) and (56) as well.

(54) #Who did he see?
(55) #Which biography of which artist do you think he wants to read?
   (cf. Which biography of which artist do you want to read to him?)
(56) #Which man who admires his wife does she try to please?
   (cf. Which man who admires his wife tries to please her?)

The analysis of such violations is stated directly in terms the notion of dependency, which as we have just seen for Higginbotham reduces directly to the syntactic relation of linking. If the analysis presented in the preceding section is to be maintained, it will at the very least have to be able to match Higginbotham’s analysis in terms of empirical coverage. As will be seen below, this can be accomplished by restating Higginbotham’s analysis not in terms of dependency in general, but rather in terms of an extension of the particular sub-case of dependency relations characterized in (52ii), that which obtains between a variable and the operator which binds it.26

The solution Higginbotham offers to the paradigm of examples illustrated in (54) - (56) rests on a notion of formal variable and the derivative notion V-chain, which Higginbotham characterizes as follows.

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26 Note that this relation is distinct from the relations characterized in (52i,iii) in that it does not involve a direct relation of identity between the dependent expression and the expression it is dependent upon. Thus, while the pronoun he is according to (52ii) dependent upon the quantified expression everyone in one interpretation of the sentence Everyone thinks he’s a genius, interpretationally identifying he with everyone would lead to the sentence being mistakenly interpreted identically to Everyone thinks everyone’s a genius. [[I believe I owe this observation to Irene Heim (class lectures).]]
His analysis of the unacceptability of (the relevant interpretation of) the sentences in (54) - (56) is then summarized in one condition, which I will refer to as the accessibility condition. (p.410 -- the label “accessibility condition” is mine.)

(57) By a formal variable I shall mean an empty category that occurs in an argument position and is linked to a nonargument; the operator to which a formal variable is linked will be called its binder. A sequence \((v_1, ..., v_n)\) of formal variables such that each \(v_i\), \(1 \leq i \leq n-1\), is contained in the binder of \(v_{i+1}\) will be called a V-chain. (p.409)

(58) Accessibility Condition: If a pronoun \(P\) is dependent upon a formal variable \(v\), then \(P\) is \([=\text{must be CDT}]\) accessible to \(v\).

The definition of accessibility is stated relative to a V-chain \((v_1, ..., v_n)\) containing a formal variable \(v\), and is given below:

(59) \(P\) is accessible to \(v\) if \(v_c\)-commands \(P\); and \(P\) is not accessible to \(v\) if \(P\) c-commands \(v_v\).

The impossibility of a bound variable like reading for the pronouns in (54) - (56) derives from the fact that such interpretations can only be obtained from the following (LF) representations in which the pronoun is (formally) dependent upon a variable that it is not accessible to. 27

(60) \[ \text{Who} [\text{did he see t}] \]

(61) \[ [[\text{Which artist}] [\text{which biography of t'}] \text{do you think he wants to read t'}] \]

(62) \[ [[\text{Which man} [[\text{who} t \text{ admires [his wife]]}] \text{does she try to please t'}] \]

Each of these representations is required in order to generate the desired reading, but each violates the accessibility condition in (58). In (60) the pronoun \(he\) is directly linked to and hence dependent upon the formal variable \(t\). Since this is the sole formal variable in the sentence, it forms a trivial V-chain with itself as sole member. In order for the pronoun to be accessible to this variable, by (59) it must not c-command the variable. Since it does c-command the variable, the representation violates the accessibility condition. (61) and (62) differ from (60) in containing the non-trivial V-chains \((t',t)\) and \((t,t')\) respectively. In (61), the pronoun \(he\) is directly linked to and hence dependent upon the formal variable \(t'\). Since the pronoun \(c\)-commands the final member \(t\) of the V-chain \((t',t)\), however, it is not accessible to any member of this V-chain, including \(t'\). The representation in (61) thus also violates the accessibility condition. Finally, in (62) we have a further extension of the paradigm in which the dependency between the pronoun \(she\) and the formal variable \(t\) is indirect -- the pronoun is directly linked to and hence dependent upon the expression \(his\ wife\). This expression contains the pronoun \(his\) which itself is linked to the formal variable \(t\), making the pronoun \(she\) indirectly dependent upon the variable \(t\). As in the previous cases, such a dependency is admissible only if \(she\) is accessible to the variable \(t\). However, since \(she\) c-commands the final variable \(t'\) of the V-chain \((t,t')\), \(she\) is not accessible to \(t\), and so the representation in (62) as well violates the accessibility condition.

Within the analysis developed in section 4, the representations given in (60) - (62) are not available for the sentences in (54) - (56), since this analysis takes linking to be a strict identity relation which for semantic reasons cannot obtain between a WH-operator and its trace (cf. footnote 23xx), and since presumably none of the linked expressions is focused. 28 If Higginbotham’s account of these examples is to be adapted to fit within the framework of assumptions adopted in section 4, then that account will have to be restated in terms of representations equivalent to the following. (Co-superscripting is used here to indicate operator-variable binding relations.)

(63) \[ \text{Who}\] [\(\text{did he see t}\)]

(64) \[ [\text{which artist}]^{x} [\text{which biography of t}^{x} \text{do you think he wants to read t'}] \]

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27 Higginbotham excludes direct linking of a pronoun to an operator (such as who in (60)) by stipulation.

28 More accurately, the sentences in (54) - (56) all prohibit the readings in question when the pronouns are not focused, a fact which cannot be explained under the present analysis in terms of representations involving linking of the pronouns.
(65)  [Which man who* [ t \^ 6 admires [his\_wife\_i] ]]^v [ does she\_i try to please t^v ]

To do so, we must eliminate all reference to linking in the definitions and conditions given earlier, reformulating these in terms of symmetric identity and operator-variable binding. We can do this for the definition of V-chains simply by changing our characterization of formal variables as in (66). The definition of V-chain itself can then remain unchanged, and is simply repeated for ease of reference in (67).

(66)  A formal variable is an empty category that occurs in an argument position and is bound by (\(= c\)-commanded by and co-superscripted with) a nonargument.

(67)  A sequence (\(v_1, ..., v_n\)) of formal variables such that each \(v_i, 1 \leq i \leq n-1\), is contained in the binder of \(v_{i+1}\) is a V-chain.

Reformulating the accessibility condition is a more complicated affair since this condition was originally stated in terms of a formal notion of dependency for which there is no counterpart in the present theory. To overcome this problem, let us construct a formal notion which can take over the role played by dependency for Higginbotham. For this purpose, I give a recursive definition of the relation constrained by, modeled after Higginbotham’s definition of dependency.

(68)  An expression \(x\) is constrained by another expression \(y\) if
(i) \(x\) is coindexed with \(y\),
(ii) \(x\) is coindexed with an expression which contains \(y\), or
(iii) for some \(z\), \(x\) is constrained by \(z\) and \(z\) is constrained by \(y\).

Given this definition, the accessibility condition can be reformulated by replacing the words dependent on with the words constrained by, as in (69) below.

(69)  Accessibility Condition (revised): If a pronoun \(P\) is constrained by a formal variable \(v\), then \(P\) is accessible to \(v\).

The definition of accessibility can remain unchanged, and is repeated here for ease of reference (defined as before relative to the definition of V-chain in (67)).

(70)  \(P\) is accessible to \(v\) if \(v_a\) c-commands \(P\); and \(P\) is not accessible to \(v\) if \(P\) commands \(v_a\).

The analysis just derived will straightforwardly account for the impossibility of all of the representations given in (63) - (65) in essentially the same way that Higginbotham’s original analysis did. In (63) and (64), the pronoun he is coindexed with and hence constrained by the formal variable \(t\) but is not accessible to that variable. In (65), the pronoun she is constrained by the variable \(t\), since she is coindexed with his wife and the occurrence of his contained therein is coindexed with \(t\), but she is not accessible to \(t\). The analysis stated purely in terms of coindexing would thus appear to constitute an adequate reformulation of Higginbotham’s original analysis.

While simply translating Higginbotham’s results into the present framework of assumptions suffices to explain the behavior of deaccented pronouns, the bifurcation of syntactic identity within the present analysis raises the question of whether both types of identity relations are constrained in the same way. Since asymmetric identity is assumed on the present analysis to only be able to relate focused expressions to other (not necessarily focused) expressions, this question reduces to the question of how focused pronouns behave with respect to dependency-like relations with formal variables. We saw earlier that focused pronouns can act as bound variables, and argued that such a bound variable interpretation has to be able to be generated from a representation in which the focused expression is linked to, and not coindexed with, a c-commanding formal variable. The argument was based upon the observation from Higginbotham (1992) that while the interpretation of deaccented pronouns is invariably constrained by Condition B, focused pronouns do not obey this same constraint. When we consider versions of the sentences in (54) - (56) in which the “offending” pronoun is focused, we find once again that focused pronouns behave differently from their non-focused counterparts. Each of the sentences in (71) - (73) allows the covariant interpretation of the focused pronoun excluded for the corresponding non-focused pronoun in (54) - (56).

(71)  Who did HE see?\(^{29}\)

\(^{29}\) This example seems markedly worse than the two that follow on a covariant reading of the pronoun for reasons that are not clear to me. There does none the less appear to be a clear distinction between this example and (54) (in which the pronoun is not focused). I unfortunately must put aside consideration of the cause of these distinctions until a later date.
(72) Which biography of which artist do you think HE wants to read?

(73) Which man who admires his wife does SHE try to please?

Since focused expressions under the present analysis have an additional means of being identified syntactically with another expression beyond that available for non-focused expressions, it is possible to formally distinguish between the cases in (54) - (56) which exclude a covariant reading of the pronouns from those in (71) - (73) which allow for such a reading. Indeed, the analysis developed in (66) - (70) makes the necessary distinctions without further modification, since it only places syntactic restrictions on symmetric identity, leaving the special case of asymmetric identity available only for focused expressions unconstrained. For Higginbotham (1983) on the other hand, who does not formally distinguish between the relations that focused and non-focused pronouns can enter into, the distinction between these two types of cases cannot be accounted for at all.30

In discussing Higginbotham’s linking analysis, I have left aside many issues raised by that analysis as well as many of its advantages. For our present purposes, however, there is one distinction made by that analysis which is directly relevant to the present proposal, which is the distinction between a pronoun’s being dependent upon (here constrained by) a formal variable and its being dependent upon (constrained by) any other type of expression. That this distinction is important can be seen by comparing the following examples.

(74) a. #Which biography of which artist do you think he wants to read?
   b. Which biography of Picasso do you think he wants to read?

The position of the expression that the pronoun he is dependent upon/constrained by is identical in each of the two sentences. The only difference between the sentences would appear to be the type of expression which occupies this position, a formal variable in (the LF representation of ) (74a) and a name in (74b). Since the accessibility condition only restricts the cases in which a pronoun is dependent upon/constrained by a formal variable, it makes the required distinction between these two cases.

6.2 Chomsky (1992)

While the contrast illustrated in (74) appears real, it has been suggested recently in Chomsky (1992) that sentences structurally parallel to the relatively acceptable (74b) are in fact ungrammatical. The example Chomsky uses as a basis for his discussion is given together with his judgment below.

(75) *John wondered which picture of Tom he liked t

Chomsky analyzes (75) as involving a Binding Theory Condition C violation, by forcing the R-expression Tom to appear in a position at LF where it is c-commanded by the pronoun he, as in (76). (Cf. Chomsky (1992) for details.)

(76) *John wondered which he liked [t picture of Tom ]

Following the same line of reasoning, we should expect (74b) as well to involve a Condition C violation. This result would appear, however, to be incorrect.

There are of course several syntactic differences between these two examples which could be utilized in constructing a revised version of Chomsky’s analysis. However, the differences found between the two examples appear to be reconstructable in near minimal pairs. Thus, compare (75) with:

(77) John wondered which biography of Picasso he liked

which seems to be closer in acceptability to (74b) than to the structurally identical (75). I take this to suggest that the relative unacceptability of (75) should not be given a purely syntactic characterization, and in particular should not be characterized as a violation of Condition C.

30 It should be noted at this point that Higginbotham’s (1992) exemption of focused expressions from participating in syntactic constraints on binding could naturally be extended to the present cases as well, though as was shown earlier such a blanket exclusion of focused expressions from binding constraints is not tenable. The analysis of section 4 can be seen as a way of formally capturing Higginbotham’s insight that focused expressions and non-focused expressions behave differently with respect to syntactic constraints while avoiding the unwanted consequences of his particular proposal. Application of the analysis of section 4 to the present case can then also be seen as an extension of this insight.
Support for this view comes from the behavior of sentences like (75) within larger contexts. In arguing in sections 1-3 for the need to employ multiple identity relations within the syntax, it was concluded that the type of identity required to license deaccenting is identical to that which is syntactically constrained by Binding Theory. This explained the observation that intended identity is constrained by Binding Conditions only when such identity needs to be represented in order to meet independent constraints imposed by deaccenting. Turning to the case of (75), if the unacceptability of this example were due to a violation of Condition C as claimed by Chomsky, then that unacceptability should persist when Tom and he are both deaccented, licensed by the same token occurrence (e.g. of the name Tom Smith) in the context. We find, however, that just the opposite occurs -- the acceptability of the example improves greatly in such a situation, as seen in (78a). This contrasts with the case of a “surface” Condition C violation like that in (78b) which remains unacceptable in such a context, as expected.

(78) a. A: Mary just started taking an interest in Tom Smith.
   B: She wonders which pictures of Tom he likes.

b. A: Mary just started taking an interest in Tom Smith.
   B: #She wonders whether he likes pictures of Tom.

If the arguments from the first sections of this paper are correct, we must conclude that whatever it is that makes (75) appear unacceptable, it is not Binding Condition C.

While this result is significant, it still leaves us with the problem of explaining the data in (74b), (75) and (77). I propose that the distinctions indicated among these examples arise from purely pragmatic considerations, to be spelled out below, which are independent of any of the constraints on syntactic identity argued for so far in this paper. I follow Chomsky in analyzing each of the examples as basically unacceptable, though I differ from him in not attributing the unacceptability to any violation of syntactic principles. This will make it possible to explain variation in acceptability without having to posit radically different syntactic analyses for sentences which appear to be syntactically identical.

I take the main problem in each of the sentences in question to be the question of whether or not the pronoun contained therein can be felicitously deaccented.31 Recalling the licensing conditions for deaccenting taken from Tancredi (1992,1993), the pronouns in each of the examples in (74b), (75) and (77) should only be able to be deaccented if the local context for the pronoun contains an expression which is identical to it. The obvious candidate expressions for satisfying this requirement would be Picasso, and Tom. However, when we look at other cases of deaccenting which are structurally similar to these examples, it would appear that these expressions cannot directly license the deaccenting of the pronoun. To see why not, consider the following contrast.

(79) a. What men who think John likes Picasso [ don’t like Picasso ]?
   b. *What men who think John likes Picasso [ does(n’t) John like ]?
   c. What men who think John likes Picasso [ I asked who ]?

All sentences in (79) are assumed to occur contextually. In all three, the fronted WH phrase contains an expression which satisfies the identity requirements for licensing the deaccenting of the sentence final deaccented expression. However, only in the first and third sentences is such deaccenting felicitous. We can account for the distinction between these three sentences by hypothesizing that an expression in operator position (such as what men who think John likes Picasso above) is interpreted for contextual purposes as if it were in the position of its trace.32 If we adopt this hypothesis, then in (79a,c) the occurrence of John likes Picasso contained in the fronted WH phrase will contextually precede the second occurrences of like Picasso and John likes respectively, and hence the former can be used to license deaccenting of the latter and the sentences are correctly predicted to be acceptable. In (79b), on the other hand, the fronted WH phrase will be contextually final in the sentence, despite being phonetically (and perhaps syntactically) initial, and hence cannot be used to license the deaccenting of John like in that sentence, from which the unacceptability of this example follows. Returning to the sentences in (74b), (75) and (77), since the occurrences of Picasso and Tom in these sentences are all contained in operators which bind a trace following the pronoun he, it follows according to the above hypothesis that deaccenting of the pronoun cannot be licensed by any of these expressions.

31 If this pronoun is focused, all of the sentences become acceptable, as the reader can verify.
32 Note that this assumption is independent of the question of where the phrase is interpreted for syntactic purposes. If we maintain that the entire fronted WH-phrase is interpreted in operator position, we can still derive the desired context-relative effects by treating operator-variable chains as single, indivisible syntactic objects and then restricting context incrementation to syntactic objects (as opposed to sub-parts of such objects).
Since deaccenting of an expression requires the presence of a previous expression in the active context in order to be licensed, and since we have just argued that none of the sentences in (74b), (75) and (77) can supply the necessary context for licensing the deaccenting of the pronouns contained therein, it follows that in order for any of these examples to be judged acceptable some context containing an appropriate licenser for the pronoun must be able to be made available implicitly. The problem of judging these examples to be acceptable then turns on that of being able to supply such a context. If we take such context incrementation to be restricted along the lines argued for in Tancredi (1992), then a suitable expression can only be added to the context to the extent that it can be calculated as an implicature of the sentence uttered in the context of utterance. Calculation of an implicature minimally allows reference to three things: the expression uttered, other expressions in the active context, and common ground. (Cf. Stalnaker (1977), Kripke (1992) and Grice (1992) for discussion of these notions.) None of the sentences in question differ with respect to the first two of these. In each case the sentence was assumed to be a context-initial utterance. However, there are clear differences in the two sentences with respect to common ground, the most important of which is that while the name Picasso immediately conjures up in the memory a certain artist, the name Tom has no such specific association (or at least no clear favorite among such associations for the average speaker). If the name Picasso is added to the active context (as part of a sentence) through a process akin to accommodation, the person making the accommodation has no question who it is who is being talked about, and hence such accommodation is fairly unproblematic. Adding the name Tom to the active context, however, still leaves the question of the person’s identity open, and is hence that name is much less open to accommodation.

(6.3) Fiengo and May (1990)

Problems of strict and sloppy identity of pronouns, or what Higginbotham more aptly refers to as problems of co-variant versus invariant interpretations of pronouns, were first given a formal treatment in Sag (1976) and Williams (1977). The central observation which these authors used as a basis of a theory of pronominal interpretation is the observation that sentences containing a deleted VP appear to be systematically ambiguous when the antecedent VP which licenses deletion contains a pronoun identical with a subject outside that VP, as illustrated below.

\[(80)\] John thinks he’s brilliant. Bill does too.
   a. Bill thinks Bill is brilliant (sloppy/co-variant)
   b. Bill thinks John is brilliant (strict/invariant)

As indicated in the informal interpretations given in (a) and (b), the second sentence in (80) allows for two distinct interpretations. As observed in Tancredi (1992), this same distinction surfaces not only in sentences with deleted expressions but also with parallel sentences containing a deaccented copy of the antecedent VP as in (81).

\[(81)\] John thinks he’s brilliant. Bill thinks he’s brilliant too.

Sag and Williams showed that this distinction can be accounted for by allowing pronouns to be assigned one of two distinct types of interpretation, corresponding roughly to a variable interpretation and an individual interpretation. By restricting VP deletion (and deaccenting) to expressions identical to some antecedently occurring expression (Sag) or by deriving the interpretation of a deleted VP by copying from some antecedently occurring expression (Williams), the distinct interpretations given in (80a,b) can be explained by interpreting the pronoun in the first sentence as a variable or an individual respectively.

While such an explanation is appealing on several grounds, Fiengo and May (1990) argue that it is empirically inadequate. They show this by posing 4 puzzles for which the analysis makes an incorrect prediction, referred to as the Eliminative Puzzles of Ellipsis. They then use these puzzles to argue for a distinction between types of identity relations available within the syntax. In allowing for multiple types of identity relations, their analysis resembles that developed in this paper. In this section, however, I will show that such a resemblance is only superficial -- to the extent to which the distinctions made by Fiengo and May are required in order to solve the puzzles, they are required in addition to, and not in place of, the distinctions argued for in section 4. I will then go on to argue that the puzzles can be solved without any of the complications introduced by Fiengo and May. I will finally argue that the analysis Fiengo and May propose

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33 The use of which in each of these examples likewise indicates the presence of a covert but necessarily assumed context.
does not solve the puzzles at all without making some ad hoc restrictions on interpretation within their proposed semantics.

The Puzzles

The Eliminative Puzzles of Ellipsis all take roughly the same form. Each consists of a full sentence containing a VP with one or more pronouns whose interpretations are intended as in some sense identical to some other expression in the sentence. (While not explicitly stated, the pronouns in this first sentence appear to be implicitly assumed to be deaccented, an assumption which I will adopt here.) That sentence is then followed by one or more other sentences presumably containing identical VPs which have been deleted or, as in the examples to be discussed here, deaccented. In each puzzle, Fiengo and May argue that the number of interpretations available for the sentences containing deleted or deaccented VPs is systematically less than the number one might expect if the pronouns contained within the VP are interpreted freely along the lines suggested by the analyses of Sag and Williams.

The first of the puzzles is the Many Pronouns Puzzle. In this puzzle, the first sentence contains two pronouns intended to be identical to some third expression, and is illustrated in (82) below.

(82) John said he thinks he’s a genius. Then Bill said he thinks he’s a genius.

If each of the underlined pronouns in the first sentence in (82) could be assigned its interpretation independently as either a variable or an individual, then the second sentence in that example should be potentially four ways ambiguous, with a different reading substantiated by each of the following situations.

(a) Bill said Bill thinks Bill’s a genius.
(b) Bill said Bill thinks John’s a genius.
(c) Bill said John thinks Bill’s a genius.
(d) Bill said John thinks John’s a genius.

As Fiengo and May observe, however, the third of these reading (= (82c)) appears not to be available for that sentence.

In the second of the puzzles, the Many Clauses Puzzle, we have a single sentence followed by two other sentences with deleted or deaccented VPs. Here, under an analysis which treats pronouns as ambiguous, since deaccenting or deletion of each of the VPs has the same source, the three sentences taken together should allow for only two possible interpretations, one in which each of the pronouns is given an invariant interpretation and one in which they are each given a co-variant interpretation. In a simple case such as (84), this is exactly what we find. The second and third sentences of this example can only have the interpretations corresponding roughly to (a) and (b).

(84) John thinks he’s a genius. Bill also thinks he’s a genius. However, Tom doesn’t think he’s a genius.
   a. Bill thinks John’s a genius. Tom thinks John’s a genius.
   b. Bill thinks Bill’s a genius. Tom thinks Tom’s a genius.

However, with a slight variation, Fiengo and May claim it is possible to produce a parallel example which allows of a third reading, one in which the deaccented/deleted pronoun of the second sentence is given a co-variant interpretation with respect to the pronoun in the first but in which that of the third sentence is given an invariant interpretation with respect to that of the second. An illustrative example is given in (85), with the additional interpretation indicated in (c).

(85) John thinks he’s a genius. Bill also thinks he’s a genius. However, his father doesn’t think he’s a genius.
   c. Bill thinks Bill’s a genius. Bill’s father doesn’t think Bill’s a genius.

The Analysis

To account for the puzzles, Fiengo and May follow Sag and Williams in analyzing pronouns in two different ways, though the particulars of the analyses are significantly different. Like all expressions, pronouns are assumed to be able to be assigned an independent semantic valuation directly. However, in distinction to most other expressions, pronouns are also assumed to be able to be assigned a dependent valuation, whereby assigning a semantic value to such a pronoun is only possible if that value can be taken from some other expression bearing the same index. This distinction is encoded in terms of index types -- an expression bearing an \( \alpha \)-occurrence of an index is independently valued, while one bearing a \( \beta \)-occurrence
is dependently valuated. While these two mechanisms of valuation are distinct, since the values assigned are ultimately determined by the index itself, either method of valuation can lead to two expressions being syntactically determined to have the same semantic value. However, by making the distinction between the two types of valuation visible within the syntax, it is possible to exploit the distinction in restricting rules of deletion or deaccenting, which is just what Fiengo and May do.

The way they account for the puzzles is by revising the conditions under which two expressions A and B containing pronouns a and b respectively count as identical for the purposes of processes of deletion and deaccenting. In order for such expressions to be identical, each of the pronouns must meet the conditions given below:

(87) Expressions A and B, containing pronouns a and b respectively, are identical only if
i: a and b bear the same index type (α or β);
ii: if a and b bear α-occurrences of an index then the value of the index is identical; and
iii: if a and b bear β-occurrences of an index then they enter into identical dependency relations.

To see how they accomplish this task, consider first their formal characterization of valuation. Values are assigned to expressions with respect to a sequence (of indices) $\sigma = <1, \ldots, i, \ldots, j, \ldots, n>$. An index in $\sigma$ can either have an individual as its value or it can have no value. For convenience, Fiengo & May line up the indices so that all of the indices from 1 to i have an individual as their value, while all the indices from $j$ to $n$ do not. 1 - i is then the assigned portion of $\sigma$, while $j - n$ is the unassigned portion of $\sigma$. Expressions bearing indices are assigned values in different ways depending on the type of index they bear as follows:

(86) a. $\text{Val}(x, \text{NP}_\alpha, \sigma)$ iff $x = \sigma(k)$
b. $\text{Val}(x, \text{pro}_\beta, \sigma)$ iff $\text{Val}(x, \text{NP}_\alpha, \sigma)$

R-expressions: Must have $\alpha$-occurrence of an index. value of index must be between 1 and i.
QR variables: Must have $\alpha$-occurrence of an index. value of index must be between $j$ and $n$.

pronouns: Can have either an $\alpha$-occurrence of an index or a $\beta$-occurrence.
If $\alpha$, then value of index must be between 1 and i.
If $\beta$, then there is no restriction on the value of the index.

The Problem of Focused Pronouns
An Alternative Analysis of the Puzzles
A Re-inspection of the Semantics

6.4 Higginbotham (forthcoming)

Connection between focus and demonstratives
Which biography of which artist does THAT ARTIST / ?HE/*he like?
I wonder which pictures of Tom he wants to throw away.
(Reference to Higginbotham's refutation of Fiengo & May -- focus problem)
Dependency = coindexing forced by deaccenting.
Linking still a wild-card.
What relation holds between a quantified expression and its trace? (Heim)

34 This formula is to be read as follows: “x is the value of NP$^\alpha$ with respect to the sequence $\sigma$ if and only if x is the value associated with the $k^{th}$ position of $\sigma$. “
Whence weak crossover?
Every boy respects the person who gave birth to him, though # the person who gave birth to him DISTRUSTS every boy.)
**BIBLIOGRAPHY**

Evans, G. (1977)
Lasnik (1989?)
Schmerling, S. (1976) *Aspects of English Sentence Stress*, University of Texas, Austin.