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Asymmetries in the application of Binding Theory in the Minimalist Program*

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1 Introduction

The Minimalist Program proposed by Chomsky (1995) takes the two interface levels LF and PF as the only conceptually necessary representational levels. LF interfaces with the semantic-conceptual systems of cognition and PF is connected to the articulatory-perceptual modules. One of the major changes in the move to the Minimalist Program is that principles either apply at the interface levels of LF and PF or at every step of the derivation. In particular, Binding Theory, which is typically thought of as a condition on representations, is now assumed to apply at (and only at) LF. Yet, since Belletti & Rizzi (1988) and Lebeaux (1988, 1991) it has been generally assumed that there is some asymmetry in the Binding Theory. The so-called “negative” Condition C holds at all stages in the derivation, whereas the “positive” Condition A can be satisfied at any point in the derivation. This raises the question of how one should incorporate this asymmetry of the binding conditions into the minimalist framework. As discussed by Epstein et al. (1998), there are several problems for this “single-level” approach to binding relations. They all concern binding relations that cannot be simultaneously represented at the single level LF. Considering these problems, Epstein et al. (1998) propose a strictly derivational theory of binding. In this paper I present some facts from quantifier scope and an additional asymmetry between Conditions A and C which are both problematic for the assumption that Binding Theory applies only at LF. To account for these problems, I propose an alternative Binding Theory which applies in the course of derivation.

The paper is organized as follows: Section 2 presents a brief introduction to the copy theory of movement in the Minimalist Program and to the reconstruction phenomena which Chomsky applies the theory to. Section 3 presents three problems with this LF-only Binding Theory. In Section 4, an alternative analysis is proposed which is based on a derivational approach to Binding Theory.

2 Copy theory of movement and binding reconstruction

In the Minimalist Program, it is assumed that the trace left behind by a movement operation is a full copy of the moved element, deleted by a principle of the PF component in the case of overt movement. But at LF the copy remains, providing the material for “reconstruction”. In the MP, derivations must converge at LF, and in order for a derivation to converge, its LF output must be constituted of “legitimate objects”. Possible candidates for the class of legitimate LF objects are

heads, arguments, modifiers, and operator-variable structures. Chomsky further claims that under the copy and deletion theory, reconstruction reduces to LF deletion of some material to form a legitimate LF object, rather than actual lowering of the moved material back to the trace position.

One of these reconstruction phenomena is the so-called multiple binding effect discussed extensively by Barss (1986). It shows that syntactic movements can extend the binding domain for an anaphor. One of the well-known cases is that involving *wh*-movement, which is illustrated in (1a).

- (1) a. John₁ wondered which picture of himself_{1/2} Bill₂ saw *t*.
 b. John₁ wondered where Bill₂ saw which picture of himself_{*1/2} yesterday.

While the anaphor *himself* in (1b) can take only *Bill* as its antecedent, the anaphor in (1a) can take either *John* or *Bill* as antecedent. This suggests that the anaphor can be interpreted either in the trace position or in the landing site of the moved *wh*-phrase. Under the copy theory of movement, the actual form of (1a) is (2) with a copy of the moved element in the trace position.

- (2) John wondered [_{wh} which picture of himself][Bill saw [_{wh} which picture of himself]]

The LF principles map (2) to either (3a) or (3b).

- (3) a. John wondered [[which picture of himself]_{wh} *t*][Bill saw [[which picture of himself]_{wh} *t*]]
 b. John wondered [which [_{wh} *t* picture of himself]][Bill saw [which [_{wh} *t* picture of himself]]]

In order to get an operator-variable structure, everything but the operator must delete in the operator position. And in the trace position, the copy of what remains in the operator position deletes. This yields the convergent LF representations (4a) and (4b).

- (4) a. John wondered [which *x*, *x* a picture of himself] [Bill saw *x*] (LF-1)
 b. John wondered [which *x*] [Bill saw [*x* picture of himself]] (LF-2)

(4a) is the LF representation of (1a) for the case that *himself* refers to the matrix subject *John*, and (4b) for the case of *himself* = *Bill*.

Now consider the example (5).

- (5) *John wondered [which picture of Tom₁] [he₁ liked *t*]

In (5), *Tom* and *he* cannot be coreferential. The puzzle is why there is no option for *Tom* to stay in the landing site of *wh*-movement at LF, escaping the violation of Condition C. Note that this option was possible for the anaphor in (4a). This contrast shows that reconstruction for Condition A is optional, whereas reconstruction for Condition C is obligatory. In order to explain the obligatory reconstruction effect for Condition C, Chomsky proposes the *Preference Principle* for reconstruction.

- (6) *Preference principle for reconstruction*
Do it when you can, i.e., try to minimize the restriction in the operator position.

Given the Preference Principle, (5) is converted to the following LF-representation (7) with the restrictor for the *wh*-operator showing up in the trace position.

- (7) John wondered [which *x*] [_{he₁} liked [_{*x*} picture of Tom₁]]

The Preference Principle, however, does not prefer (4b) over (4a) because the two LFs have different interpretations, depending on the antecedent for the anaphor. Given that the Preference Principle makes the correct predictions for examples (1) and (5), Chomsky argues that Binding Theory can apply only at LF.

3 Problems

This section presents three problematic cases facing the minimalist assumption that Binding Theory applies only at LF.

3.1 Conflicting binding requirements – BT(A) and BT(C)

Certain data involving interactions between binding conditions cannot be handled by the minimalist analysis that Binding Theory applies only at the single level of LF. Brody (1995) presents (8) to show that the analysis of binding in the Minimalist Program is problematic.

- (8) Mary wondered [which claim that pictures of herself disturbed Bill] he made. (Brody 1995: 134)

The anaphor *herself* takes *Mary* as antecedent, but *he* cannot take *Bill* as its antecedent. Condition A requires the associate *x claim that pictures of herself disturbed Bill* to occupy the non-reconstructed position, and hence the Preference Principle cannot cause reconstruction to enable the proper application of Condition C. As Brody correctly points out, no matter which position the associate occupies, a problem arises. If it is in the higher position, then Condition

C cannot apply correctly (*he = Bill* should then be okay); if it is in the lower, reconstructed position, then the anaphor-antecedent relation becomes illegitimate. This shows that Conditions A and C cannot apply at one and the same level.

Based on this, Brody argues that at the level where the interpretative constraints (including Binding Theory) apply, both the antecedent and the trace positions need to contain a full copy of the moved phrase. Brody's LF structure for (8) looks like (9).

- (9) Mary wondered [which claim that pictures of herself disturbed Bill] he made [which claim that pictures of herself disturbed Bill]

Conditions A and C can now apply to this representation without contradiction. Condition C excludes an R-expression that is coreferential with a category that c-commands it (in any of the positions in the chain) – hence coreference between *he* and *Bill* is correctly excluded. Condition A requires a local antecedent for the anaphor in at least one of its positions and therefore the matrix subject *Mary* can be a legitimate antecedent of the anaphor in (9). Note that we find an asymmetrical character of the Condition A versus Condition C. While an R-expression has to be free in every link of the A'-chain containing it, an anaphor is licensed if it is bound by a local antecedent in at least one link of the chain containing it.¹

Considering the asymmetry between the so-called “negative” Condition C and the “positive” Condition A, Lebeaux (1991) argues that an anaphor is licensed if it is bound at some point of the derivation, but an R-expression has to be free at all points of the derivation. And following Lebeaux's insight, Epstein et al. (1998: 62) suggest a strictly derivational approach to binding relations (10), dispensing with the LF mediation requirement.

- (10) The application of “disjoint” interpretive procedures occurs at every point of the derivation, whereas the application of the “anaphoric” interpretive procedures occurs at any single point of the derivation.

3.2 Quantifier scope and Binding Theory

We observe that there exists a similar conflict between binding relations and scope relations, which is problematic for the LF-only Binding Theory in Minimalist Program.

It is pointed out by several researchers that *how many* questions like (11) are ambiguous between two readings depending on whether the quantificational DP *n many NP* has wide or narrow scope with respect to the modal verb *want* (see Kroch 1989, Frampton 1990, Higginbotham 1993, Cresti 1995, Rullmann 1995). The interrogative expression *how many pictures* is split into an interrogative operator *how* having the whole question as its scope and an existential quantifier *many pictures* having multiple scope possibilities. A *how many* question asks for

an integer n , such that n many individuals of a certain sort satisfy a certain property. When a scope-sensitive element (like the modal verb in (11)) intervenes between the final landing site of the moved constituent and its trace position, the scope of the quantificational DP can be construed either above or below this element (see Fox 2000 for a recent discussion on this issue). (11) can mean either (11a) or (11b), and (11a') and (11b') are the corresponding LF representations.

- (11) How many pictures did Chris want to send t to Mary?
- a. What is the number n , such that there are n many pictures x , such that Chris wanted to send x to Mary?
 - a'. [_{CP} how _{n} [_{IP} [n many pictures] _{x} [_{IP} Chris wanted to send x to Mary]]] (many > want)
 - b. What is the number n , such that Chris wanted to send n many pictures to Mary?
 - b'. [_{CP} how _{n} [_{IP} Chris wanted to send [n many pictures] to Mary]] (want > many)

Consider now the more complicated case (12). It is also ambiguous between the wide scope reading and the narrow scope reading of n many NP.

- (12) How many pictures of himself₁ do you think Bill₁ should show t to Mary?ⁱⁱ
- a. [_{CP} how _{n} [_{IP} [n many pictures of himself₁] _{x} [_{IP} you think Bill₁ should show x to Mary]]] (many > think)
 - b. [_{CP} how _{n} [_{IP} you think Bill₁ should show [n many pictures of himself₁] to Mary]] (think > many)

What is relevant to our discussion is that the anaphor *himself* can take *Bill* as its antecedent independently of which scope the quantificational expression [n many pictures of himself] takes. If Binding Theory applies only at LF, however, we would expect that only (12b) would be the possible scope interpretation. In the LF-representation (12a), the anaphor is outside the c-command domain of its antecedent. But, given the ambiguity of (12), one cannot argue that there is a strong correlation between quantifier scope and binding relations.

Consider now the sentences in (13). (13a) is ambiguous with respect to the scope of the quantifiers. However, when the object quantifier is topicalized, as in (13b), the sentence becomes unambiguous; the topicalized QP takes only wide scope over the quantifier in the subject position (cf. Guéron 1984). This means that the topicalized quantifier is not reconstructed to its trace position at LF.

- (13) a. Everyone introduced John₁ to two of his₁ distant relatives.
(\forall > two, two > \forall)
- b. To two of his₁ distant relatives, everyone introduced John₁.
(* \forall > two, two > \forall)

Consider now the following sentences.

- (14) a. *Everyone introduced him₁ to two of John₁'s distant relatives.
 $(\forall > two, two > \forall)$
- b. *To two of John₁'s distant relatives, everyone introduced him₁.
 $(*\forall > two, two > \forall)$

(14a,b) show the same quantifier scope relations as (13a,b). The topicalized quantifier can take only wide scope over the subject quantifier. What is interesting to us is that both (14a) and (14b) have the status of a Condition C violation. If we follow the general assumption that LF is the level where the scope relations of quantifiers are represented (May 1985, Hornstein 1995, Fox 1999), a puzzle arises. In (14b), the R-expression which is contained in the topicalized quantifier would be outside of the c-command domain of the co-indexed pronoun at LF. If Binding Theory applies only at LF, as claimed in the Minimalist Program, we wouldn't expect any Condition C violation in (14b).

3.3 ACD and asymmetries between Conditions A and C

Based on the observation by Fiengo & May (1994) that certain cases of LF movement such as quantifier raising (QR) affect Binding Theory, Fox (1999, 2000) presents some evidence that Condition C must apply *only* at LF. It has been generally assumed that LF operations do not affect Binding Theory (see discussions in Lasnik 1993, 1997). However, Fiengo & May (1994) show contrary evidence from antecedent-contained deletion (ACD) constructions. They discovered that QR which is needed for ACD resolution can obviate a Condition C violation. This is illustrated by the contrast between (15a) and (15b).

- (15) a. ^{??/*} You introduced him₁ to everyone John₁ wanted you to meet.
 b. You introduced him₁ to everyone John₁ wanted you to.ⁱⁱⁱ

(15a) is ungrammatical due to a Condition C violation. But the ACD construction (15b), which is structurally very similar to (15a) regarding the position of the R-expression, is grammatical under the co-indexation between *him* and *John*. Fox (1999) suggests the LF (16) for (15a), leaving the copy of the restrictor at the tail of the QR-chain. He assumes that general principles of economy prefer this option to the other which deletes the whole copy of the QR element. (16) involves fewer operations of deletion on (15a) and is thus preferred.

- (16) you [everyone that John₁ wanted you to meet]_x
 [_{VP} introduced him₁ to *x* one that John₁ wanted you to meet]

In the LF representation (16), we get a Condition C violation. The second occurrence of *John* is bound by the pronoun *him*.

The sentence (15b), however, involves antecedent-contained deletion and thus ends up with the LF in (17), which does not violate Condition C.

- (17) you [everyone that John₁ wanted you to <introduce him₁ to x>]_x
[_{VP} introduced him₁ to x]

(17) involves phrasal movement of the quantifier phrase and the whole copy of the raised phrase is deleted. If we don't eliminate the restrictor in the trace position, the antecedent VP would still contain a copy of the elided VP and ACD resolution could not take place. In the LF (17), the R-expression *John* is not bound by the co-indexed pronoun. Since the contrast in grammaticality between (15a) and (15b) is only attributable to their LF-representations (16) and (17), Fox argues that this provides empirical evidence that Condition C applies only at LF, as assumed in the Minimalist Program.

Consider now the following examples from Barss (1994: 32).

- (18) a. Sam wants the students₁ to remember every fact about themselves₁ that Oscar does.
b. ?*The students₁ want Sam to remember every fact about themselves₁ that Oscar does.

(18a) is a perfect sentence, but (18b) has the status of a Condition A violation. This is, however, the opposite of what would be predicted by Fox's analysis of ACD. (18a) and (18b) would have the LFs (19a) and (19b), respectively.

- (19) a. Sam [every fact about themselves₁ that Oscar <wants the students₁ to remember x>]_x [_{VP} wants the students₁ to remember x]
b. the students₁ [every fact about themselves₁ that Oscar <wants Sam to remember x>]_x [_{VP} want Sam to remember x]

In (19a), the anaphor *themselves* is outside of the c-command domain of *the students*, while in (19b) the anaphor is locally c-commanded by this NP. Were the Binding Theory apply to these LF representations, we get the wrong result. The coreference between *the students* and *themselves* should be impossible in (19a), and it should be possible in (19b). Barss's examples show that Condition A of the Binding Theory cannot apply at LF. It is interesting to note that there is some asymmetry between Conditions A and C in the ACD constructions. Fox (1999) presents evidence that QR needed for ACD resolution can have a bleeding effect for Condition C. But on the other hand, the examples in (18) show that the same QR process which is needed for ACD resolution does not have a feeding effect for Condition A. The question is how this asymmetry is to be represented in the minimalist framework which assumes that all binding conditions apply only at LF.

3.4 Summary

In this section, I presented some problems with the LF-only Binding Theory in the Minimalist Program. I have shown that conflicting binding requirements BT(A) and BT(C) cannot be simultaneously represented at LF, and further that binding relations and quantifier scope cannot always be simultaneously represented at LF. Additionally, QR which is needed for ACD resolution can have a bleeding effect on Condition C, but not a feeding effect on Condition A. Faced with these problems, an alternative analysis is in order.

4 Alternative analysis

This section proposes an alternative Binding Theory (20) which applies in the course of derivation (cf. Lebeaux 1991, Kim 1996, Epstein et al. 1998), and shows how this derivational analysis solves the problems mentioned in section 3.

- (20) Revised Binding Theory
- a. An anaphor must be bound in a local domain D at some point of the derivation.
 - b. A pronominal must be free in a local domain D at every point of the derivation.
 - c. An R-expression must be free at every point of the derivation.

The motivation for Chomsky's proposal of the Preference Principle was to explain the obligatory reconstruction at LF for Condition C effects. As Binding Theory now applies in the course of derivation, the Preference Principle becomes unnecessary.

Other researchers have commented on the fact that from a semantic point of view, the idea of reconstructing the NP-restrictor to the trace position is rather strange. As Higginbotham (1993) and Reinhart (1997) point out, the quantificational expression *which NP* must be understood as restricted, with the variable ranging over things that in fact satisfy the restriction expressed by NP. This is supported by the examples like (21) (Higginbotham 1993: 200).

- (21) Which philosophers would you be annoyed if we invited?

As Higginbotham correctly points out, we never have an interpretation that would "reconstruct" the NP within the scope of the modal verb, giving a meaning like that of (22).

- (22) For which x would you be annoyed if x was a philosopher and we invited x ?

See also Reinhart (1997) for further discussion on problems with unrestricted quantification.

4.1 Conflicting binding requirements

Consider first the case (8) showing conflicting binding requirements, which is repeated as (23).

(23) Mary wondered [which claim that pictures of herself disturbed Bill] he made.

The derivation of (23) will look as follows (*TR* = trace).

- (24) a. [_{IP} he made [which claim that pictures of herself disturbed Bill]]
(*he* ≠ *Bill*)
 b. [_{CP} [which claim that pictures of herself disturbed Bill] [_{IP} he made
[_{TR} which claim that pictures of herself disturbed Bill]]]
 c. Mary wondered [_{CP} [which claim that pictures of herself_{Mary} disturbed
 Bill] [_{IP} he made [_{TR} which claim that pictures of herself disturbed
 Bill]]] (*herself* = *Mary*)
 d. Mary wondered which claim that pictures of herself disturbed Bill he
 made (PF)

At the point of derivation (24a), the pronoun c-commands the R-expression *Bill*. According to Condition C of the Binding Theory proposed in (20), *he* cannot be coreferential with *Bill* (R-expressions must be free at every point of derivation). The anaphor *herself* is bound by the matrix subject *Mary* at a later point of derivation (24c), thus satisfying Condition A of the Binding Theory. The LF for (23) would then look like (25).

(25) Mary wondered [_{CP} [which claim that pictures of herself_{Mary} disturbed
 Bill]_x [_{IP} he made *x*]] (LF)

The binding relations are checked during the derivation. At LF, the *wh*-operator with its restrictor will stay in the operator position, and this LF representation provides us with the right input for interpretation.

4.2 Quantifier scope and Binding Theory

Following many other researchers (e.g., May 1985 and Hornstein 1995), we also assume that LF is the level of linguistic representation at which all grammatical structures relevant to semantic interpretation are provided. So, relative quantifier scope is grammatically reflected at LF in terms of asymmetric c-command.

Consider the scopally ambiguous sentence (12), repeated here as (26).

(26) How many pictures of himself₁ do you think Bill₁ should show *t* to Mary?

(27) is the (simplified) derivation of (26).

- (27) a. Bill should show [how many pictures of himself_{Bill}] to Mary
b. you think Bill should show [how many pictures of himself_{Bill}] to Mary
c. [How many picture of himself_{Bill}] do you think Bill should show [how many pictures of himself_{Bill}] to Mary
d. How many pictures of himself do you think Bill should show to Mary?

The anaphor is bound by *Bill* at the derivational point (27a), satisfying Condition A. At LF, the quantifier phrase can be reconstructed either to the matrix IP or to the trace position, yielding two different LFs (28a) and (28b).

- (28) a. [_{CP} how_n [_{IP} [*n* many pictures of himself₁]_x [_{IP} you think Bill₁ should show *x* to Mary]]] (*many* > *think*)
b. [_{CP} how_n [_{IP} you think Bill₁ should show [*n* many pictures of himself₁] to Mary]] (*think* > *many*)

As the Binding Theory applies in the course of derivation, we can represent the scope ambiguity of (26) at LF independently of the binding relation between the anaphor and its antecedent. Under this analysis, there arises no conflict between scope representation and binding representation.

Now consider the topicalisation case (14b), repeated here as (29).

- (29) *To two of John₁'s distant relatives, everyone introduced him₁.
(* \forall > *two*, *two* > \forall)

(29) is ungrammatical for the R-expression *John* is bound by *him* before topicalisation takes place, although the topicalized quantifier stays in a higher position than the subject quantifier at LF. According to Condition C of the Revised Binding Theory (20), an R-expression must be free at every point of the derivation. So in this case, too, our derivational Binding Theory can account for the ungrammaticality of (29), whereas the LF-only Binding Theory has problems with it.

4.3 ACD and asymmetries between Conditions A and C

Fox's (1999) argument for LF Binding Theory based on the bleeding effect of QR for Condition C in ACD constructions, due to the contrasting examples (15), repeated here in (30), seems to be a real problem to the derivational approach to binding relations.

- (30) a. ^{??/*} You introduced him₁ to everyone John₁ wanted you to meet.
 b. You introduced him₁ to everyone John₁ wanted you to.

In (30b), the R-expression *John* is bound at surface structure. Thus, according to our Binding Theory in (20), (30b) should be ungrammatical just like (30a). But on the other hand, we also observed that the same QR process which is needed for ACD resolution does not have any effect on Condition A, as we have seen in (18), repeated in (31).

- (31) a. Sam wants the students₁ to remember every fact about themselves₁ that Oscar does.
 b. ^{??*}The students₁ want Sam to remember every fact about themselves₁ that Oscar does.

So, even if we adopt Fox's analysis of ACD constructions and assume that Binding Theory applies only at LF, a puzzle still remains: Why does a certain QR operation at LF have an effect on Condition C, but not on Condition A?

A way to account for the asymmetry would be to assume a PF deletion analysis of ACD construction, as proposed in Tancredi (1992) and Wyngaerd & Zwart (1999). Tancredi (1992) observes that VP-ellipsis is semantically indistinguishable from VP-deaccenting. Ellipsis is just an extreme form of deaccenting, where the targeted segments are not just destressed but completely deleted at surface structure. It is interesting to note that VP-deaccenting constructions behave just like VP-ellipsis constructions with respect to Condition C (see Fox 2000: 184).

- (32) a. I introduced him₁ to everyone John₁ wanted me to. (VP-ellipsis)
 b. I introduced him₁ to everyone John₁ wanted me to *introduce him₁ to*.
 (VP-deaccenting)
 c. ^{??/*} I introduced him₁ to everyone John₁ wanted me to meet.

We see that both the ACD construction (32a) and the antecedent-contained deaccenting construction (32b) contrast with the standard quantificational structure (32c). The lack of Condition C effects in (32a) is accounted for by the special QR operation described in section 3.3. However, the VP-deaccenting construction in (32b) also shows an obviating effect for Condition C, even though only normal QR applies, which also in fact applies to (32c). So in terms of the interpretations derived by the QR operations, (32b) should pattern with (32c), which is the incorrect prediction. This shows that from the binding facts in ACD constructions, no strong argument supporting the LF Binding theory can be derived. Wyngaerd & Zwart (1999) convincingly argue that the reconstruction process involving QR for ACD resolution faces several problems even within the minimalist framework, and argue that ACD, and VP-ellipsis more generally,

involves deletion at PF of a VP which is fully present in both overt and covert syntax. If the PF deletion theory of ACD is on the right track, the absence of a Condition C effect in (32a) in contrast to (32c) should be explained in a different way.

If we take the PF-deletion analysis of ACD, which does not involve QR, Barss's examples in (31) can be explained by our derivational Binding Theory. In the ungrammatical case (31b), the anaphor *themselves* would never land in a position where the matrix subject would be the next accessible antecedent for it.

5 Conclusion

In this paper, I have presented some problems with the minimalist assumption that Binding Theory applies only at LF. To account for these problems, a derivational approach to Binding Theory was proposed, which incorporates the asymmetry between Conditions A and B/C.

Notes

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ⁱ Note that Brody's LF representation (9) does not satisfy the minimalist requirements for LF. Further operations are required in order for correct operator-variable structures to be derived, and Binding Conditions A and C apply differently in this LF.

ⁱⁱ (12) is actually three-ways ambiguous. However, I ignore the intermediate scope reading (*think* > *many* > *should*) here.

ⁱⁱⁱ ACD constructions such as (15b) are standardly assumed to require QR, either in order to create parallelism between the elided VP and its antecedent, or to avoid infinite regress when the antecedent VP is copied into the empty VP at LF (see May 1985, Fiengo & May 1994, Kennedy 1997 for discussion).

References

Barss, Andrew. 1986. *Chains and Anaphoric Dependence: On Reconstruction and Its Implications*. Doctoral dissertation, MIT.

Barss, Andrew. 1994. Derivations and reconstruction. *Studies in the Linguistic Sciences* 24:19-38.

Belletti, Adriana, and Luigi Rizzi. 1988. Psych-verbs and theta theory. *Natural Language and Linguistic Theory* 6:291-352.

Brody, Michael. 1995. *Lexico-Logical Form: A Radically Minimalist Theory*. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, Mass.: MIT Press.

Cresti, Diana. 1995. Extraction and reconstruction. *Natural Language Semantics* 3:79-122.

- Epstein, Samuel David, Erich M. Groat, Ruriko Kawashima, and Hisatsugu Kitahara. 1998. *A Derivational Approach to Syntactic Relations*. Oxford: Oxford University Press.
- Fiengo, Robert, and Robert May. 1994. *Indices and Identity*. Cambridge, Mass.: MIT Press.
- Fox, Danny. 1999. Reconstruction, binding theory, and the interpretation of chains. *Linguistic Inquiry* 30:157-96.
- Fox, Danny. 2000. *Economy and Semantic Interpretation*. Cambridge, Mass.: MIT Press.
- Frampton, John. 1990. The fine structure of *wh*-movement and the proper formulation of the ECP. Ms., Northeastern University.
- Guéron, Jacqueline. 1984. Topicalisation structure and constraints on coreference. *Lingua* 63:139-74.
- Higginbotham, James. 1993. Interrogatives. *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, ed. by Kenneth Hale and Samuel Jay Keyser, 195-228. Cambridge, Mass.: MIT Press.
- Hornstein, Norbert. 1995. *Logical Form: From GB to Minimalism*. Oxford: Blackwell.
- Kennedy, Chris. 1997. Antecedent-contained deletion and the syntax of quantification. *Linguistic Inquiry* 28:662-88.
- Kim, Shin-Sook. 1996. Bindungsrekonstruktion vs. Skopusrekonstruktion. *Linguistische Berichte* 165:401-31.
- Kroch, Anthony. 1989. Amount quantification, referentiality, and long *wh*-movement. Ms., University of Pennsylvania.
- Lasnik, Howard. 1993. *Lectures on Minimalist Syntax*. University of Connecticut Working Papers in Linguistics, Occasional Papers Issue 1, University of Connecticut.
- Lasnik, Howard. 1997. Levels of representation and the elements of anaphora. *Atomism and Binding*, ed. by Hans Bennis, Pierre Pica, and Johan Rooryck, 251-268. Dordrecht: Foris Publications.
- Lebeaux, David. 1988. *Language Acquisition and the Form of the Grammar*. Doctoral dissertation, University of Massachusetts, Amherst.
- Lebeaux, David. 1991. Relative clauses, licensing, and the nature of the derivation. *Perspectives on Phrase Structure: Heads and Licensing*, ed. by Susan Rothstein, 209-239. New York: Academic Press.
- May, Robert. 1985. *Logical Form: Its Structure and Derivation*. Cambridge, Mass.: MIT Press.
- Reinhart, Tanya. 1997. Quantifier scope: How labor is divided between QR and choice functions. *Linguistics and Philosophy* 20:335-397.
- Rullmann, Hotze. 1995. *Maximality in the Semantics of Wh-Constructions*. Doctoral dissertation, University of Massachusetts, Amherst.

Tancredi, Christopher. 1992. *Deletion, Deaccenting, and Presupposition*. Doctoral dissertation, MIT.

Wyngaerd, Guido Vanden, and Jan-Wouter Zwart. 1999. Antecedent-contained deletion as deletion. *Linguistics in the Netherlands 1999*, ed. by Renée van Bezooijen and René Kager, 203-216. Amsterdam: John Benjamins.