A Binding Theory Paradox in the Minimalist Program

Shin-Sook Kim, University of Konstanz, Germany

Introduction

Some minimalist assumptions (Chomsky 1995)

- The Minimalist Program assumes only the two interface levels LF and PF as conceptually necessary representational levels.
- Principles either apply at the interface levels of LF and PF or at every step of the derivation. And Binding Theory, which is typically thought of as a condition on representations, is now assumed to apply at (and *only* at) LF.
- The copy theory of movement provides an account of the "reconstruction effects". Reconstruction as an additional syntactic operation can be eliminated.

Proposal

- There is evidence against the minimalist claim that Binding Theory applies *only* at LF.
- I propose an alternative Binding Theory which applies in the course of derivation.

Copy Theory of Movement and Reconstruction

Multiple binding effect:

(1) John$_1$ wondered [which picture of himself$_{1/2}$] [Bill$_2$ saw *t*]
  a. John wondered [$_{wh}$ which picture of himself] [Bill saw [$_{wh}$ which picture of himself]]
  b. John wondered [which *x*, *x* a picture of himself] [Bill saw *x*] (LF-1)
  c. John wondered [which *x*] [Bill saw [*x* picture of himself]] (LF-2)

BT(C) and Preference Principle:

(2) a.* John wondered [which picture of Tom$_1$] [he$_1$ liked *t*]
  b. John wondered [which *x*] [he$_1$ liked [*x* picture of Tom$_1$]] (LF)

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

Complement vs. adjunct : Adjuncts can adjoin late (Freidin/Lebeaux Generalization).

(4) a.* Which claim [that John$_1$ was asleep] was he$_1$ willing to discuss *t* ?
  b. Which claim [that John$_1$ made] was he$_1$ willing to discuss *t* ?

Problems

1. Conflicting Binding Requirements - BT(A) and BT(C)

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

herself = *Mary*, but *he* ≠ *Bill:* This binding requirement cannot be represented properly at LF.

2. Quantifier Scope and Binding Theory

(6) How many pictures does Chris want to send *t* to Mary?
  a. What is the number *n* such that there are *n* many pictures that Chris wants to send to Mary?
  a'. [$_{CP}$ how$_n$ [$_{C'}$? [$_{IP}$ [*n* many pictures]$_x$ [$_{IP}$ Chris want to send *x* to Mary]]]] (*many* > *want*)
  b. What is the number *n* such that Chris wants it to be the case that there are *n* many pictures that he sends to Mary?
  b'. [$_{CP}$ how$_n$ [$_{C'}$? [$_{IP}$ Chris wants to send [*n* many pictures] to Mary]]] (*want* > *many*)
(cf. Kroch 1989, Frampton 1990, Rullmann 1995)

(7) How many pictures of himself$_1$ does Chris$_1$ want to send *t* to Mary? (*many* > *want*, *want* > *many*)
  a. [$_{CP}$ how$_n$ [$_{C'}$? [$_{IP}$ [*n* many pictures of himself$_1$]$_x$ [$_{IP}$ Chris$_1$ want to send *x* to Mary]]]]
  b. [$_{CP}$ how$_n$ [$_{C'}$? [$_{IP}$ Chris$_1$ wants to send [*n* many pictures of himself$_1$] to Mary]]]

If Binding Theory applies at LF, we would expect only (7b) to be a grammatical LF (*himself* satisfying Condition A) and only the scope relation *want* > *many* to be possible. But *many* > *want* is also possible.

(8) ?* How many pictures of Chris$_1$ does he$_1$ want to send *t* to Mary?
  a. [$_{CP}$ how$_n$ [$_{C'}$? [$_{IP}$ [*n* many pictures of Chris$_1$]$_x$ [$_{IP}$ he$_1$ want to send *x* to Mary]]]]
  b. [$_{CP}$ how$_n$ [$_{C'}$? [$_{IP}$ he$_1$ wants to send [*n* many pictures of Chris$_1$] to Mary]]]

Only the LF representation (8b) violates Condition C of the Binding Theory. The question is why (8) is not grammatical with the scope interepretation in (8a).

(problems continued)

(10b) has the status of a Condition C violation, just like (10a), although the topicalized QP containing the R-expression takes wide scope over the subject QP at LF.

(9) a. Everyone introduced John$_1$ to two of his$_1$ distant relatives. (∀ > two, two > ∀)
  b. To two of his$_1$ distant relatives, everyone introduced John$_1$. (*∀ > two, two > ∀)
(10) a. *Everyone introduced him$_1$ to two of John$_1$'s distant relatives. (∀ > two, two > ∀)
  b. *To two of John$_1$'s distant relatives, everyone introduced him$_1$. (*∀ > two, two > ∀)

Q1: Does Binding Theory really apply at the same level where the quantifier scope is represented, namely at LF?

3. ACD and Asymmetries between Conditions A and C

QR needed for antecedent-contained deletion (ACD) resolution can obviate Condition C effects – Condition C applies *only* at LF (Fiengo & May 1994, Fox 1999, 2000).

(11) ??/* You introduced him$_1$ to everyone John$_1$ wanted you to meet.
(12) You introduced him$_1$ to everyone John$_1$ wanted you to.

LF representations controlled by the economy condition on deletion by Fox (2000):

(11') you [everyone that John$_1$ wanted you to meet]$_x$
[introduced him$_1$ to *x* one that John$_1$ wanted you to meet]
(12') you [everyone that John$_1$ wanted you to <introduce him$_1$ to *x*>]$_x$
[introduced him$_1$ to *x*]

But, the same QR process needed for ACD resolution does not have a feeding effect for Condition A.

(13) Sam wants the students$_1$ to remember every fact about themselves$_1$ that Oscar does.
(14) ?* The students$_1$ want Sam to remember every fact about themselves$_1$ that Oscar does.
(Barss 1994: 32)

LF Binding Theory gives us the wrong results: (13) would be ruled out as a Condition A violation, whereas (14) would be ruled in.

LF representations:

(13') Sam [every fact about themselves$_1$ that Oscar <wants the students$_1$ to remember *x*>]$_x$
[wants the students$_1$ to remember *x*]
(14') the students$_1$ [every fact about themselves$_1$ that Oscar <wants Sam to remember *x*>]$_x$
[want Sam to remember *x*]

Q2: How should one incorporate this asymmetry into the minimalist Binding Theory?

4. ACD and Covert Phrasal *Wh*-Movement

Pesetsky (2000): The movement that resolves ACD in (15) is covert phrasal *wh*-movement.

(15) a. Which girl invited [which student that John did [$_{VP}$ Δ]]
  b. [$_{CP}$ [[which student that John <invited *y*>]$_y$ which girl$_x$] [$_{IP}$ *x* [$_{VP}$ invited *y*]]] (LF)

Contra Pesetsky: If covert phrasal *wh*-movement resolves ACD and BT applies at LF, we would expect (16) to be grammatical under the given co-indexation.

(16) a. *Where did he$_1$ buy you which picture that John$_1$ wanted to [$_{VP}$ Δ]?
  b. *Where did he$_1$ buy you which picture that John$_1$ wanted me to [$_{VP}$ Δ]?

LF representation for (16a):

(16a') [$_{CP}$ [[which picture that John$_1$ wanted to <buy you *x*>]$_x$ where$_y$] [$_{IP}$ he$_1$ [$_{VP}$ bought you *x*] *y*]]
(The R-expression "John" is no longer c-commanded by the matrix co-indexed pronoun.)

Compare (16) with the grammatical sentence (17):

(17) Mary wonders [which report that John$_1$ revised] he$_1$ submitted.

Q3: Does ACD provide a reliable test for covert phrasal movement?

Summary

Problems with the minimalist claim that Binding Theory applies only at LF:

- Conflicting binding requirements BT(A) and BT(C) cannot be simultaneously represented at LF.
- Binding relations and quantifier scope cannot always be simultaneously represented at LF.
- Why does QR which is needed for ACD resolution have an effect on Condition C but not on Condition A?

Faced with these problems, an alternative analysis is in order.

Alternative Analysis

- Binding Theory applies in the course of derivation (cf. Lebeaux 1991, Epstein et al. 1998).
- We assume a PF deletion approach to ACD (following Tancredi 1992, Chomsky & Lasnik 1993, Wyngaerd & Zwart 1999). VP-ellipsis is an extreme case of VP-deaccenting.

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.

Conflicting binding requirements

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

Derivation of (5):

(5') 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)

LF for (5):

(5'') Mary wondered [$_{CP}$ [which claim that pictures of herself$_{Mary}$ disturbed Bill]$_x$ [$_{IP}$ he made *x*]]

Quantifier scope and Binding Theory

Binding Theory applies in the course of derivation, and quantifier scope is represented at LF.

(7) How many pictures of himself$_1$ does Chris$_1$ want to send *t* to Mary?

Derivation of (7):

(7') a. …
  b. Chris wants to send [how many pictures of himself$_{Chris}$] to Mary
  c. [how many pictures of himself$_{Chris}$] does Chris want to send
[$_{TR}$ how many pictures of himself$_{Chris}$] to Mary
  d. How many pictures of himself does Chris want to send to Mary? (PF)

LFs for (7):

(7'') a. [$_{CP}$ how$_n$ [$_{IP}$ [*n* many pictures of himself$_{Chris}$]$_x$ [$_{IP}$ Chris wants to send *x* to Mary]]]?
(*many* > *want*)
  b. [$_{CP}$ how$_n$ [$_{IP}$ Chris wants to send [*n* many pictures of himself$_{Chris}$] to Mary]?
(*want* > *many*)

ACD and Binding Theory

VP-deaccenting constructions behave just like VP-ellipsis constructions with respect to Condition C.

(18) a. You bought him$_1$ [every picture that John$_1$ wanted you to <buy him$_1$>]. (VP-ellipsis)
  b. You bought him$_1$ [every picture that John$_1$ wanted you to *buy him*$_1$]. (VP-deaccenting)
(Fox 2000: 184)

ACD construction does not provide evidence that Binding Theory applies at (and *only* at) LF. The absence of Condition C effects in (18) should be explained in a different way.

The derivational Binding Theory can explain Barss's examples (13) and (14).

If the movement that resolves ACD is indeed covert phrasal *wh*-movement as argued by Pesetsky (2000), Binding Theory should apply before LF.

Selected References

Barss, Andrew. 1994. Derivations and reconstruction. *Studies in the Linguistic Sciences* 24.1/2, 19-38.
Brody, Michael. 1995. *Lexico-Logical Form: A Radically Minimalist Theory.* Cambridge, Mass.: MIT Press.
Chomsky, Noam. 1995. *The Minimalist Program.* Cambridge, Mass.: MIT Press.
Chomsky, Noam, and Howard Lasnik. 1993. The theory of principles and parameters. In *Syntax: An International Handbook of Contemporary Research*, ed. Joachim Jacobs, Arnim von Stechow, Wolfgang Sternefeld, and Theo Vennemann, 506-569. Berlin: Walter de Gruyter.
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, 157-196.
Fox, Danny. 2000. *Economy and Semantic Interpretation.* Cambridge, Mass.: MIT Press.
Pesetsky, David. 2000. *Phrasal Movement and Its Kin.* Cambridge, Mass.: MIT Press.
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. In *Linguistics in the Netherlands 1999*, ed. Renée van Bezooijen and René Kager, 203-216. Amsterdam: John Benjamins.

E-mail: shin-sook.kim@uni-konstanz.de