Ellipsis Licensing via Alternatives

Nicholas Fleisher

University of Wisconsin–Milwaukee

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Overview

- Big question: how is VP ellipsis licensed?
- Pronominal binding as a diagnostic for ellipsis licensing
- Compulsory binding approaches and their discontents
- A syntactic re-implementation of Roothian contrast
- Standing principally on the shoulders of:
  Reinhart, Heim, Rooth, Fox, Büring, Roelofsen

Compulsory Binding…

Compulsory Binding…

In (1), is *his* bound by *John* or coreferential with it?

(1) John$_i$ loves his$_i$ mother.

a. John$_1$ $\lambda 2$ loves his$_2$ mother. (BINDING)

b. *John*$_1$ $\lambda 2$ loves *his*$_1$ mother. (COREFERENCE)

In (2), is *his* bound by *he* or by the structurally more distant *every man*?

(2) Every man$_i$ said that he$_i$ loves his$_i$ mother.

a. Every man $\lambda 1$ said he$_1$ $\lambda 2$ loves his$_2$ mother. (TRNS. BND.)

b. Every man $\lambda 1$ said he$_1$ $\lambda 2$ loves his$_1$ mother. (COBINDING)

- NB: I assume all subject DPs move, with the resulting λ-binder binding a coindexed subject trace (suppressed in representations here for space and legibility; no vacuous λ's)

Compulsory Binding…

Binding vs. coreference: when they yield the same interpretation, only binding is permitted

⇒ Rule I (Grodzinsky and Reinhart 1993) and antecedents

(3) John$_i$ loves his$_i$ mother.

a. John$_1$ $\lambda 2$ loves his$_2$ mother. (BINDING)

b. ~~*John*$_1$ $\lambda 2$ loves *his*$_1$ mother.~~ (COREFERENCE)

Compulsory Binding…

Local vs. nonlocal binding: when they yield the same interpretation, only local binding is permitted

⇒ Rule H (Fox 2000; after Heim 1993)

(4) Every man$_i$ said that he$_i$ loves his$_i$ mother.

a. Every man λ1 said he$_1$ λ2 loves his$_2$ mother. (TRNS. BND.)

b. ~~Every man λ1 said he$_1$ λ2 loves his$_1$ mother.~~ (COBINDING)

Compulsory Binding…

Rule I: when the presence of an operator like *only* makes binding and coreference semantically distinct, both LFs are permitted

(5) Only John$_i$ loves his$_i$ mother.

a. BINDING

(i) Only John$_1$ $\lambda 2$ loves his$_2$ mother.

(ii) 'John$_1$ $\lambda 2$ loves his$_2$ mother and no one else $\lambda 3$ loves his$_3$ mother.'

b. COREFERENCE

(i) Only *John*$_1$ $\lambda 2$ loves *his*$_1$ mother.

(ii) '*John*$_1$ $\lambda 2$ loves *his*$_1$ mother and no one else $\lambda 3$ loves *his*$_1$ mother.'

Compulsory Binding…

Rule H: when the presence of an operator like *only* makes local and nonlocal binding semantically distinct, both LFs are permitted

(6) Every man$_i$ said that only he$_i$ loves his$_i$ mother.

a. TRANSITIVE BINDING

(i) Every man $\lambda 1$ said only he$_1$ $\lambda 2$ loves his$_2$ mother.

(ii) 'Every man $\lambda 1$ said he$_1$ $\lambda 2$ loves his$_2$ mother and no one else $\lambda 3$ loves his$_3$ mother.'

b. COBINDING

(i) Every man $\lambda 1$ said only he$_1$ $\lambda 2$ loves his$_1$ mother.

(ii) 'Every man $\lambda 1$ said he$_1$ $\lambda 2$ loves his$_1$ mother and no one else $\lambda 3$ loves his$_1$ mother.'

Compulsory Binding…

To recap:

- Rule I: requires binding over coreference when they are semantically equivalent
- Rule H: requires local over nonlocal binding when they are semantically equivalent
- Have Local Binding! (HLB, Büring 2005) combines Rule I and Rule H: pronouns must be bound, and bound by the closest potential antecedent, on a given interpretation

…and Its Discontents

…and Its Discontents

Licensing ellipsis:

(7) John$_i$ loves his$_i$ mother and Bill$_j$ does too.

a. Antecedent LF: binding only (per Rule I/HLB)

(i) John$_1$ $\lambda 2$ loves his$_2$ mother

(ii) ~~*John*$_1$ $\lambda 2$ loves *his*$_1$ mother~~

b. Ellipsis LF: binding…or not

(i) Bill$_3$ $\lambda 4$ does <love *his*$_1$ mother> too (STRICT)

(ii) Bill$_3$ $\lambda 4$ does <love his$_4$ mother> too (SLOPPY)

- The binding LF in (7a) must be able to serve as antecedent for both the sloppy and strict ellipsis LFs in (7b)

…and Its Discontents

What assumptions are necessary in order to make Rule I/Rule H/HLB compatible with the ellipsis facts?

Fox 2000: Parallelism

(8) NPs in the antecedent and elided VPs must either:

a. have the same referential value (Referential Parallelism) or
b. be linked by identical dependencies (Structural Parallelism)

- For purposes of assessing Referential Parallelism, the "referential value" of a bound pronoun is the referential value of its binder (if any)
- Büring follows Fox in adopting Parallelism

…and Its Discontents

Parallelism win: Dahl's puzzle

(9) John$_i$ said that he$_i$ loves his$_i$ mother, and Bill$_j$ did too.

a. Bill said that John loves John's mother (STRICT–STRICT)

b. Bill said that Bill loves Bill's mother (SLOPPY–SLOPPY)

c. Bill said that Bill loves John's mother (SLOPPY–STRICT)

d. *Bill said that John loves Bill's mother (STRICT–SLOPPY)

…and Its Discontents

(10) Antecedent LF:
John$_1$ $\lambda 2$ said that he$_2$ $\lambda 3$ loves his$_3$ mother

(11) Ellipsis LFs:

a. Bill$_4$ $\lambda 5$ said *he*$_1$ $\lambda 6$ loves *his*$_1$ mother (STRICT–STRICT)
b. Bill$_4$ $\lambda 5$ said he$_5$ $\lambda 6$ loves his$_6$ mother (SLOPPY–SLOPPY)
c. Bill$_4$ $\lambda 5$ said he$_5$ $\lambda 6$ loves *his*$_1$ mother (SLOPPY–STRICT)
d. *Bill$_4$ $\lambda 5$ said *he*$_1$ $\lambda 6$ loves his$_5$ mother (STRICT–SLOPPY)

- Bound his$_5$ in the strict–sloppy reading is licensed neither by Referential Parallelism (since it's bound) nor by Structural Parallelism (since it's bound directly by the matrix subject, and Rule H prevents this in the antecedent)

…and Its Discontents

Parallelism fail: reverse Dahl effects (Roelofsen 2011)

(12) Every student$_i$ said that the professor$_j$ loved her$_i$ paper, and added that she$_i$ did too.

(13) Every student $\lambda 1$ said that
the prof$_2$ $\lambda 3$ loved her$_1$ paper
and added that
she$_1$ $\lambda 4$ did <love her$_4$ paper> too

a. Antecedent LF: her$_1$ bound by matrix subject
b. Ellipsis LF: her$_4$ bound by lower subject (per Rule H)

- No way to satisfy both Rule H and Structural Parallelism

…and Its Discontents

Back to binding vs. coreference: Parallelism predicts an asymmetry in the licensing of ellipsis

- Coreference LFs should license only strict readings
- Binding LFs should license both sloppy and strict readings

…and Its Discontents

Testing the predicted asymmetry: *only* cases

(14) Only John$_i$ loves his$_i$ mother.

a. Only John$_1$ $\lambda 2$ loves his$_2$ mother. (BINDING)

b. Only *John*$_1$ $\lambda 2$ loves *his*$_1$ mother. (COREFERENCE)

…and Its Discontents

Coreference in the antecedent licenses only the strict reading:

(15) Only *John*$_1$ λ2 loves *his*$_1$ mother. Bill$_4$ doesn't.

a. Ant.: '*John*$_1$ λ2 loves *his*$_1$ mother and no one else λ3 loves *his*$_1$ mother.'

b. Ell.:

(i) Bill$_4$ λ5 doesn't <love *his*$_1$ mother>. (STRICT)

(ii) *Bill$_4$ λ5 doesn't <love his$_5$ mother>. (SLOPPY)

- Strict reading is licensed by Referential Parallelism
- Sloppy reading is prohibited because Structural Parallelism can't be satisfied: no binding dependency in the antecedent LF

…and Its Discontents

Binding in the antecedent licenses only the sloppy reading:

(16) Only John$_1$ $\lambda 2$ loves his$_2$ mother. Bill$_4$ doesn't.

a. Ant.: 'John$_1$ $\lambda 2$ loves his$_2$ mother and no one else $\lambda 3$ loves his$_3$ mother.'

b. Ell.:

(i) *Bill$_4$ $\lambda 5$ doesn't <love *his*$_1$ mother>. (STRICT)

(ii) Bill$_4$ $\lambda 5$ doesn't <love his$_5$ mother>. (SLOPPY)

- Sloppy reading is licensed by Structural Parallelism
- Strict reading is intuitively unavailable…
- BUT it is licensed by Referential Parallelism!
  $\Rightarrow$ his$_2$ is bound by John$_1$
- :(

…and Its Discontents

- With binding in the antecedent, the sloppy reading follows as an entailment of the antecedent: if John is the only person who loves his own mother, it follows that Bill doesn't love his own mother
- Is the strict reading disfavored/blocked on independent grounds?

…and Its Discontents

Binding–strict is out even when there's no binding → sloppy entailment:

(17) Mary only said that JOHN$_i$ loves his$_i$ mother.
Alice added that Bill$_j$ does too.

(18) Ant. (binding LF):

a. Mary only said that JOHN$_1$ $\lambda 2$ loves his$_2$ mother.
b. 'Mary said that John$_1$ $\lambda 2$ loves his$_2$ mother and Mary didn't say that anyone else $\lambda 3$ loves his$_3$ mother.'

(19) Ell.: Alice added that…

a. *Bill$_4$ $\lambda 5$ does <love *his*$_1$ mother> too (STRICT)
b. Bill$_4$ $\lambda 5$ does <love his$_5$ mother> too (SLOPPY)

…and Its Discontents

The strict reading isn't impossible: it simply requires coreference in the antecedent

(20) Mary only said that JOHN$_i$ loves his$_i$ mother.
Alice added that Bill$_j$ does too.

(21) Ant. (coreference LF):

a. Mary only said that *JOHN*$_1$ $\lambda 2$ loves *his*$_1$ mother.
b. 'Mary said that *John*$_1$ $\lambda 2$ loves *his*$_1$ mother and Mary didn't say that anyone else $\lambda 3$ loves *his*$_1$ mother.'

(22) Ell.: Alice added that…

a. Bill$_4$ $\lambda 5$ does <love *his*$_1$ mother> too (STRICT)
b. *Bill$_4$ $\lambda 5$ does <love his$_5$ mother> too (SLOPPY)

…and Its Discontents

To recap:

- Rule I/HLB + Parallelism predicts an asymmetry in the licensing of ellipsis: coreference $\rightsquigarrow$ strict, binding $\rightsquigarrow$ sloppy or strict
- In cases where the difference between binding and coreference is semantically detectable, we get a systematic correlation between binding and sloppy identity
- This correlation is independent of the inferential relationship between the binding-LF antecedent and the sloppy reading
- Nothing in Rule I/HLB or Parallelism leads us to expect that binding antecedents will cease to license strict readings just in case a corresponding coreference LF for the antecedent happens to be available

Economy, Identity, Contrast

Economy, Identity, Contrast

Other economy-based approaches encounter the same problem:

- Roelofsen (2011): Free Variable Economy
  - Core idea: relevant economy metric is the number of free variables, not the locality of binding relationships
  - Has the same effect as Rule I for simple cases like *John*$_i$ *loves his*$_i$ *mother*: enforces binding
  - Thus relies on a theory of ellipsis licensing that countenances binding–strict configurations
- Kehler and Büring (2008): Be Bound or Be Disjoint!
  - Replaces Parallelism with QUD congruence + a presupposition that free pronouns are disjoint from their potential binders
  - Replicates effects of Rule I/H in a non-transderivational way
  - Still has to countenance binding–strict configurations

Economy, Identity, Contrast

What if we change our assumptions about ellipsis licensing?
Rooth (1992):

1. Syntactic condition: the antecedent and elided VPs must be structurally identical (modulo indices)
2. Semantic condition: the antecedent and elided VPs must be contained in (non-overlapping) constituents that contrast appropriately

Economy, Identity, Contrast

Semantic contrast for Rooth: the ordinary semantic value of the constituent containing the antecedent VP must be an element of the focus semantic value of the constituent containing the elided VP

(23) Semantic contrast condition of Rooth 1992:
$[\![\text{Ant.}]\!]^g_o \in [\![\text{Ell.}]\!]^g_f$, for arbitrary assignment g

Economy, Identity, Contrast

Does Rooth's theory rule out binding–strict configurations? No:

(24) Mary only said that JOHN$_i$ loves his$_i$ mother.
Alice added that [Bill$_j$]$_F$ does too.

(25) Binding–strict LFs:

a. Ant: John$_1$ $\lambda 2$ loves his$_2$ mother.
b. Ell: [Bill$_4$]$_F$ $\lambda 5$ does $<$love *his*$_1$ mother$>$
c. VPs identical modulo indices

(26) a. $[\![\text{Ant.}]\!]^g_o$ = that $g(1)$ loves $g(1)$'s mother
b. $[\![\text{Ell.}]\!]^g_f$ = {that x loves $g(1)$'s mother : $x \in$ D}
c. $[\![\text{Ant.}]\!]^g_o \in [\![\text{Ell.}]\!]^g_f$:(

- (NB: focus-marking on *John* omitted for legibility; interpreted at matrix VP level, ignored in calculation of $[\![\text{Ant.}]\!]^g_o$)

Economy, Identity, Contrast

Caveat: satisfaction of the Roothian contrast condition above depends on specific assumptions about what bears an index (cf. Heim 1993 for indices on referential NPs)

Even if we drop the assumption that names bear indices, we can produce the binding–strict problem by using a pronoun:

(27) Mary only said that HE_i loves his_i mother.
Alice added that $[\text{Bill}_j]_F$ does too.

(28) Binding–strict LFs:

a. Ant: he_1 $\lambda 2$ loves his_2 mother.
b. Ell: $[\text{Bill}_4]_F$ $\lambda 5$ does $<$love $\textit{his}_1$ mother$>$

(29) a. $[\![\text{Ant.}]\!]^g_o$ = that $g(1)$ loves $g(1)$'s mother
b. $[\![\text{Ell.}]\!]^g_f$ = {that x loves $g(1)$'s mother : $x \in \text{D}$}

Economy, Identity, Contrast

The problem for Roothian contrast:

- The mapping from LF to truth conditions can neutralize syntactic distinctions
- Rooth's contrast condition is stated on the truth conditions
- Ellipsis licensing appears to be sensitive to the presence of binding relationships **in the syntax**

Economy, Identity, Contrast

Possible ways forward:

1. Restate the syntactic identity condition so it refers to larger constituents
   - Can't be so large as to include the focused constituent/its correspondent in the antecedent (since these differ, by definition)
   - Anything smaller risks foundering on the predicates vs. formulas problem: not clear there's a constituent that includes the binding index (thus permitting satisfaction of the contrast condition) but excludes the binder (Heim 1997; Kennedy 2014)
2. Restate the contrast condition so it makes reference to syntactic structure

A Syntactic Contrast Condition

A Syntactic Contrast Condition

The core idea:

- State a Roothian contrast condition on LFs, not on truth conditions
- Implementation: formal alternatives (Fox and Katzir 2011)

(30) Rooth's semantic contrast condition:
$[\![\text{Ant.}]\!]^g_o \in [\![\text{Ell.}]\!]^g_f$

(31) Alternatives-based contrast condition:
$\text{Ant.} \in F(\text{Ell.})$

A Syntactic Contrast Condition

Ant. $\in F$(Ell.)

- Formal alternatives: structures created by replacing focus-marked constituents with constituents that are at most as structurally complex, or that are contextually available (Fox and Katzir 2011; Trinh and Haida 2015)
- Notation: x is at most as complex as y in context C: x $\lesssim_C$ y
- We will have to attend more carefully to the presence of focus-marking in clauses that contain ellipsis (mostly ignored above)
- NB: Ant. $\in F$(Ell.) is similar in spirit to a proposal by Drummond (2016), who takes Rooth's contrast condition and requires that alternatives satisfy Rule H; but this leaves the binding–strict problem in place

A Syntactic Contrast Condition

Ant. $\in F$(Ell.): *John$_i$ loves his$_i$ mother and Bill$_j$ does too*

(32) Strict reading:

a. Ell. $=$ $[\text{Bill}_4]_F$ $\lambda 5$ does $<$love his$_1$ mother$>$

b. F(Ell.) $=$ $\{x_a$ λb loves his$_1$ mother : x $\lesssim_C$ Bill$\}$

(33) a. Ant.$_1$ $=$ John$_1$ $\lambda 2$ loves his$_1$ mother

b. Ant.$_2$ $=$ John$_1$ $\lambda 2$ loves his$_2$ mother

(34) a. Ant.$_1$ $\in F$(Ell.)

b. Ant.$_2$ $\notin F$(Ell.)

A Syntactic Contrast Condition

Why Ant.$_2 \notin F$(Ell.)?

(35) a. F(Ell.) $=$ {x_a λb loves his$_1$ mother : x $\lesssim_C$ Bill}
b. Ant.$_2$ $=$ John$_1$ λ2 loves his$_2$ mother

- Ant.$_2$ contains an LF binding relationship (indicated by coloring here; indicated by arrows in many implementations)
- Ell. contains no such binding relationship; perforce neither do the elements of F(Ell.)
- Upshot: inclusion in F(Ell.) is sensitive to binding relationships
- If the above can be defended, then we will have a system that avoids licensing binding–strict configurations

A Syntactic Contrast Condition

Housekeeping: indices

- Does inclusion in $F(\text{Ell.})$ care about identity of indices?
- Rooth:
  - Syntactic identity condition permits variation: identity of VPs modulo indices
  - Semantic contrast condition prevents variation in free indices by requiring $[\![\text{Ant.}]\!]^g_o \in [\![\text{Ell.}]\!]^g_f$ for **arbitrary** g
- For us, two choices:
  1. Make Ant. $\in F(\text{Ell.})$ indifferent to indices, and add Rooth's $[\![\text{Ant.}]\!]^g_o \in [\![\text{Ell.}]\!]^g_f$ as a further condition
  2. Make Ant. $\in F(\text{Ell.})$ sensitive to indices, but permit variation for bound indices (and their λ-binders)

A Syntactic Contrast Condition

Conditions on inclusion in F(Ell.):

- Identity of free indices must be preserved (option 2 above)
- Binding relationships must be preserved (modulo indices)

A Syntactic Contrast Condition

Revised assumptions about binding:

- Binding vs. coreference: drop Rule I in favor of Reinhart (2006): roughly, coreference is permitted wherever binding is
- Local vs. nonlocal binding: keep Rule H
- With Rule I gone, HLB is also gone

Ant. $\in F$(Ell.): Core Cases

(36) John loves his mother, and Bill does too.

(37) COREFERENCE–STRICT

a. Ant. $=$ *John*$_1$ $\lambda 2$ loves *his*$_1$ mother

b. Ell. $=$ $[\text{Bill}_3]_F$ $\lambda 4$ does $<$love *his*$_1$ mother$>$

c. F(Ell.) $= \{x_a\ \lambda b$ loves *his*$_1$ mother : $x \lesssim_C \text{Bill}\}$

d. Ant. $\in F$(Ell.)

(38) BINDING–SLOPPY

a. Ant. $=$ John_1 $\lambda 2$ loves his_2 mother

b. Ell. $=$ $[\text{Bill}_3]_F$ $\lambda 4$ does $<$love his_4 mother$>$

c. F(Ell.) $= \{x_a\ \lambda b$ loves his_b mother : $x \lesssim_C \text{Bill}\}$

d. Ant. $\in F$(Ell.)

Ant. $\in F$(Ell.): Core Cases

- Licensing of strict and sloppy readings depends on the availability of **distinct** coreference and binding antecedents
- No BINDING–STRICT:
  John$_1$ $\lambda 2$ loves his$_2$ moth. $\notin$ {x$_a$ λb loves *his*$_1$ moth. : x $\lesssim_C$ Bill}
- No COREFERENCE–SLOPPY:
  John$_1$ $\lambda 2$ loves *his*$_1$ moth. $\notin$ {x$_a$ λb loves his$_b$ moth. : x $\lesssim_C$ Bill}

Ant. $\in F$(Ell.): Binding–Strict

- Binding–strict configurations are ruled out across the board
- This is good!
- Strict readings in basic cases are licensed in virtue of coreference in the antecedent
- Coreference antecedents, in turn, are made available because we have dropped Rule I

Ant. $\in F$(Ell.): Dahl's Puzzle

Dahl's Puzzle:

(39) John said that he loves his mother, and Bill did too.

a. Bill said that John loves John's mother (STRICT–STRICT)
b. Bill said that Bill loves Bill's mother (SLOPPY–SLOPPY)
c. Bill said that Bill loves John's mother (SLOPPY–STRICT)
d. *Bill said that John loves Bill's mother (STRICT–SLOPPY)

- LFs are constrained by Rule H (no nonlocal binding), but coreference is available provided local binding is respected

Ant. $\in F$(Ell.): Dahl's Puzzle

Antecedent LF possibilities:

(40)
a. *John*$_1$ $\lambda 2$ said *he*$_1$ $\lambda 3$ loves *his*$_1$ mother
b. *John*$_1$ $\lambda 2$ said *he*$_1$ $\lambda 3$ loves his$_3$ mother
c. John$_1$ $\lambda 2$ said he$_2$ $\lambda 3$ loves his$_3$ mother
d. ~~John$_1$ $\lambda 2$ said he$_2$ $\lambda 3$ loves his$_2$ mother~~
e. *John*$_1$ $\lambda 2$ said he$_2$ $\lambda 3$ loves *his*$_1$ mother
f. ~~*John*$_1$ $\lambda 2$ said *he*$_1$ $\lambda 3$ loves his$_2$ mother~~

Ant. $\in F$(Ell.): Dahl's Puzzle

Ellipsis LF possibilities:

(41)

a. $[\text{Bill}_4]_F$ $\lambda 5$ did $<$say *he*$_1$ $\lambda 6$ loves *his*$_1$ mother$>$

b. $[\text{Bill}_4]_F$ $\lambda 5$ did $<$say *he*$_1$ $\lambda 6$ loves his$_6$ mother$>$

c. $[\text{Bill}_4]_F$ $\lambda 5$ did $<$say he$_5$ $\lambda 6$ loves his$_6$ mother$>$

d. ~~$[\text{Bill}_4]_F$ $\lambda 5$ did $<$say he$_5$ $\lambda 6$ loves his$_5$ mother$>$~~

e. $[\text{Bill}_4]_F$ $\lambda 5$ did $<$say he$_5$ $\lambda 6$ loves *his*$_1$ mother$>$

f. $[\text{Bill}_4]_F$ $\lambda 5$ did $<$say *he*$_1$ $\lambda 6$ loves his$_5$ mother$>$

Ant. $\in F$(Ell.): Dahl's Puzzle

(42) STRICT–STRICT

a. Ant. = *John*$_1$ λ2 said *he*$_1$ λ3 loves *his*$_1$ mother

b. Ell. = [Bill$_4$]$_F$ λ5 did <say *he*$_1$ λ6 loves *his*$_1$ mother>

c. F(Ell.) = {x$_a$ λb said *he*$_1$ λc loves *his*$_1$ mother : x $\lesssim_C$ Bill}

d. Ant. $\in F$(Ell.)

Ant. $\in F$(Ell.): Dahl's Puzzle

(43) SLOPPY–SLOPPY

a. Ant. = John$_1$ $\lambda 2$ said he$_2$ $\lambda 3$ loves his$_3$ mother

b. Ell. = [Bill$_4$]$_F$ $\lambda 5$ did <say he$_5$ $\lambda 6$ loves his$_6$ mother>

c. F(Ell.) = {x$_a$ λb said he$_b$ λc loves his$_c$ moth. : x $\lesssim_C$ Bill}

d. Ant. $\in F$(Ell.)

Ant. $\in F$(Ell.): Dahl's Puzzle

(44) SLOPPY–STRICT

a. Ant. = *John*$_1$ $\lambda 2$ said he_2 $\lambda 3$ loves *his*$_1$ mother

b. Ell. = $[\text{Bill}_4]_F$ $\lambda 5$ did <say he_5 $\lambda 6$ loves *his*$_1$ mother>

c. F(Ell.) = $\{x_a\ \lambda b$ said $\text{he}_b\ \lambda c$ loves *his*$_1$ mother : $x \lesssim_C \text{Bill}\}$

d. Ant. $\in F$(Ell.)

Ant. $\in$ *F*(Ell.): Dahl's Puzzle

(45) STRICT–SLOPPY

a. Ell. = $[\text{Bill}_4]_F$ $\lambda 5$ did <say *he*$_1$ $\lambda 6$ loves his_5 mother>

b. *F*(Ell.) = $\{x_a$ λb said *he*$_1$ λc loves his_b moth. : x $\lesssim_C$ Bill$\}$

c. $x_a \rightsquigarrow$ *John*$_1$: ~~*John*$_1$ $\lambda 2$ said *he*$_1$ $\lambda 3$ loves his_2 mother~~

d. Not a possible Ant. LF: violates Rule H

e. Ant. $\notin$ *F*(Ell.)

- his_5 is bound by the matrix subject in Ell.
- This is fine in Ell., since the intermediate subject (*he*$_1$) isn't codetermined with them
- Replacing Bill_4 with *John*$_1$ yields an LF where the intermediate subject **is** codetermined with them
- This replacement violates Rule H, isn't a candidate LF for Ant.
- No actually available Ant. LF is in *F*(Ell.)

Ant. $\in F$(Ell.): Reverse Dahl Effects

Reverse Dahl effects:

(46) Every student$_i$ said that the professor$_j$ loved her$_i$ paper, and added that she$_i$ did too.

(47) Every student $\lambda 1$ said that
the prof$_2$ $\lambda 3$ loved her$_1$ paper
and added that
[she$_1$]$_F$ $\lambda 4$ did $<$love her$_1$ paper$>$ too

a. Ant. = the prof$_2$ $\lambda 3$ loved her$_1$ paper
b. Ell. = [she$_1$]$_F$ $\lambda 4$ did $<$love her$_1$ paper$>$ too
c. F(Ell.) = $\{x_a$ λb loved her$_1$ paper : x $\lesssim_C$ she$\}$
d. Ant. $\in F$(Ell.)

Ant. $\in F$(Ell.): Reverse Dahl Effects

Ant. = the prof$_2$ λ3 loved her$_1$ paper
Ell. = [she$_1$]$_F$ λ4 did <love her$_1$ paper> too

1. Structural complexity:
   - *the prof* is structurally more complex than *she*
   - But *the prof* is contextually salient (since it's the subject of the antecedent clause)
   - Thus: *the prof* $\lesssim_C$ *she*, for this C
2. Binding and indices:
   - No binding relationships within Ant. or Ell.
   - Both Ant. and Ell. contain pronouns bound from without
   - Bound by same outside binder $\rightarrow$ identical indices
   - Ellipsis licensed just like on a strict reading

Ant. $\in F$(Ell.): Reverse Dahl Effects

Every student $\lambda 1$...added that $[\text{she}_1]_F$ $\lambda 4$ did $<$love her_1 paper$>$ too

- Why is this LF permitted in the first place? It appears to violate Rule H
- Crucially, she_1 is focus-marked; *too* associates with it
- Presupposition of *too*, cobinding LF (this LF):
  $\exists x[x \neq \text{she}_1 \wedge x \text{ loved her}_1 \text{ paper}]$
- Presupposition of *too*, transitive binding LF:
  $\exists x[x \neq \text{she}_1 \wedge x \text{ loved } x\text{'s paper}]$
- As seen earlier, focus-marking on the intermediate subject makes cobinding semantically distinct from transitive binding
- Cobinding LF is available $\rightarrow$ ellipsis licensed as shown above

Ant. $\in F$(Ell.): Reverse Dahl Effects

Would transitive binding work here?

(48) Every student $\lambda 1$ said that
the prof$_2$ $\lambda 3$ loved her$_1$ paper
and added that
[she$_1$]$_F$ $\lambda 4$ did <love her$_4$ paper> too

- No: now there is a binding relationship in Ell., but not in Ant.
- F(Ell.) $= \{x_a\ \lambda b$ loved her$_b$ paper : x $\lesssim_C$ she$\}$
- Ant. $\notin F$(Ell.)
- Comports with intuition about the presupposition of *too* in this example: no presupposition that there is another own-paper-lover

Loose Ends…

Loose Ends

A few Dahl variants from Roelofsen 2011 that are problematic for us:

(49) Every student$_i$ said that she$_i$ loved her$_i$ paper, and added that the professor$_j$ did too.

(50) Every student $\lambda 1$ said that
she$_1$ $\lambda 2$ loved her$_2$ paper
and added that
[prof$_3$]$_F$ $\lambda 4$ did $<$love her$_1$ paper$>$ too

a. Ant. = she$_1$ $\lambda 2$ loved her$_2$ paper
b. Ell. = [prof$_3$]$_F$ $\lambda 4$ did $<$love her$_1$ paper$>$ too
c. F(Ell.) = $\{x_a\ \lambda b$ loved her$_1$ paper : $x \lesssim_C$ she$\}$
d. Ant. $\notin F$(Ell.) :(

Loose Ends

Every student $\lambda 1$ said that
she$_1$ $\lambda 2$ loved her$_2$ paper
and added that
[prof$_3$]$_F$ $\lambda 4$ did <love her$_1$ paper> too

- Rule H enforces transitive binding in the antecedent
- This causes a mismatch in the binding relationships between Ant. (lower subject) and Ell. (matrix subject)

Loose Ends

Another one:

(51) No student$_i$ said that he$_i$ liked his$_i$ paper, but every student$_j$ hoped that the professor$_k$ would.

(52) No student $\lambda 1$ said he$_1$ $\lambda 2$ liked his$_2$ paper, but every stu. $\lambda 3$ hoped the prof$_4$ $\lambda 5$ would $<$like his$_3$ paper$>$

- As above: Rule H requires local, transitive binding in the antecedent, but the elided pronoun is bound from higher up

Loose Ends

- Possible remedy: relax Rule H so as to permit cobinding in the antecedent:

(53) Every student $\lambda 1$ said that
she$_1$ $\lambda 2$ loved her$_1$ paper
and added that
[prof$_3$]$_F$ $\lambda 4$ did <love her$_1$ paper> too

- Roelofsen's FVE permits cobinding in these cases

Loose Ends

- Interestingly, so does Heim's 1993 precursor to Rule H:
  - Heim's system prohibits cobinding in cases where transitive binding would violate the binding conditions (in particular condition B):
    **Every student λ1 said that he_1 λ2 liked him_1*
  - Where transitive binding does not violate the binding conditions (as with possessives), cobinding is permitted:
    Every student λ1 said that he_1 λ2 liked his_1 paper
- Any such relaxation of Rule H still must bar binding across a coreferential potential binder, else we lose our explanation for the original Dahl puzzle

Loose Ends

(54) Every student $\lambda 1$ said that
she$_1$ $\lambda 2$ loved her$_1$ paper
and added that
[prof$_3$]$_F$ $\lambda 4$ did <love her$_1$ paper> too

a. Ant. = she$_1$ $\lambda 2$ loved her$_1$ paper
b. Ell. = [prof$_3$]$_F$ $\lambda 4$ did <love her$_1$ paper>

- On our assumptions, ellipsis is licensed here because:
  - cobinding is available in the antecedent and
  - the Ant. and Ell. pronouns are bound by the same operator and thus share an index (like a strict reading)

Loose Ends

(55) No student $\lambda 1$ said he_1 $\lambda 2$ liked his_1 paper, but
every stu. $\lambda 3$ hoped the $prof_4$ $\lambda 5$ would <like his_3 paper>

- Here, there are distinct binders and thus distinct indices on the Ant. and Ell. pronouns
- Ellipsis can't be licensed in the manner of a strict reading
- Ellipsis would be licensed if *no student* and *every student* bore the same binding index…

Loose Ends

(56) No student $\lambda 1$ said he_1 $\lambda 2$ liked his_1 paper, but every stu. $\lambda 1$ hoped the $prof_4$ $\lambda 5$ would $<$like his_1 paper$>$

- Appears to violate No Meaningless Coindexing (Heim 1993)
- Or does it? Acceptability is greatly degraded when we switch one of the NPs to something other than *student*:

(57) ???No $student_i$ said he_i liked his_i paper, but every $administrator_j$ hoped the $professor_k$ would $<$like his_j paper$>$.

Loose Ends

More fun: comparatives

(58) Only John$_i$ loves his$_i$ mother more than Bill$_j$ does.

a. COREFERENCE–STRICT:
Only *John*$_1$ $\lambda 2$ [more than [Bill$_3$]$_F$ $\lambda 4$ does $<$love *his*$_1$ mother$>$] loves *his*$_1$ mother

b. BINDING–SLOPPY:
Only John$_1$ $\lambda 2$ [more than [Bill$_3$]$_F$ $\lambda 4$ does $<$love his$_4$ mother$>$] loves his$_2$ mother

c. COBINDING:
Only John$_1$ $\lambda 2$ [more than [Bill$_3$]$_F$ $\lambda 4$ does $<$love his$_2$ mother$>$] loves his$_2$ mother

Loose Ends

In order for ellipsis to be licensed on the binding–sloppy configuration here, the *than*-clause needs to be higher than the matrix subject (else Ant. contains Ell.):

(59) [more than $[\text{Bill}_3]_F$ $\lambda 4$ does <love his_4 mother>] only John_1 $\lambda 2$ loves his_2 mother

Loose Ends

But to satisfy the Heim–Kennedy constraint, the matrix subject needs to move higher again:

(60) Only John$_1$ $\lambda 2$ [more than [Bill$_3$]$_F$ $\lambda 4$ does <love his$_4$ mother>] t_2 $\lambda 5$ loves his$_5$ mother

a. Ant. = t_2 $\lambda 5$ loves his$_5$ mother

b. Ell. = [Bill$_3$]$_F$ $\lambda 4$ does <love his$_4$ mother>

c. Ant. $\in F$(Ell.)

(61) No student$_i$ loves his$_i$ mother more than [his$_i$ neighbor]$_j$ does.

a. Permits a binding–sloppy reading

b. Matrix subject binds a pronoun in the *than*-clause

c. Sloppy ellipsis must be licensed with matrix subject above the *than*-clause at LF

Wrapping Up

Wrapping Up

- Strict readings are unavailable when the correspondent in the antecedent is bound: no BINDING–STRICT
- Compulsory binding approaches (and some variants) have trouble ruling out binding–strict configurations
- So does a Roothian contrast condition that's insensitive to syntactic binding relationships
- Recasting Rooth's contrast condition in terms of formal alternatives at LF derives the effects of Fox's Structural Parallelism (in a hopefully more principled way)
- We can do without the problematic Referential Parallelism
- Open questions about:
  - Proper formulation of Rule H (to say nothing of the binding conditions)
  - Multi-step movement to create a binding antecedent

Thanks! Questions?

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