Movement of properties and properties of movement

Ethan Poole
University of Massachusetts Amherst
ejpoole@linguist.umass.edu

1 Introduction

* The big question
What are the kinds of semantic representations (i.e. LFs) that a movement dependency can map onto?

* Claims made in this talk
This talk investigates movement that targets DPs with property denotations (semantic type \(\langle e, t \rangle\)). I make two specific claims towards answering the big question above:

- Movement cannot map onto \(\lambda\)-abstractions over properties:

  \[
  * \left[ \text{DP} \lambda f(e, t) \ldots \left[ \ldots \left[ f(e, t) \right]_1 \ldots \right] \right]
  \]

- Variables created by movement cannot be type shifted into property-type meanings (contra Partee 1986).

  \[
  * \left[ \text{DP} \lambda x e \ldots \left[ \ldots \left[ \text{SHIFT}([ x_e ]_1)_{(e, t)} \ldots \right] \right] \right]
  \]

- These claims provide a novel argument for the following economy hypothesis:

  (3) **No Higher-Type Variables Constraint**
Variables in the LFs of natural languages are only of individual types, e.g. entities (e), situations/worlds (s), and degrees (d).

  \[\text{Landman 2006; Chierchia 1984; Romero 1998; Fox 1999}\]

⇒ **Empirical window: II-positions**
The empirical motivation for these claims comes from a detailed investigation of an A-movement asymmetry in English discovered by Postal (1994), which has received little systematic attention in the literature:

(4) a. There is a potato in the pantry.

b. ʻWhat is there _____ in the pantry?\]

c. * [ A potato ], there is _____ in the pantry.

⇒ **Analysis in a nutshell**

- Movement that shifts scope leaves a trace of type e, which is incompatible with the property-requirement of a II-position:

  \(\left[ \text{DP} \lambda x e \ldots \left[ \ldots \left[ x_e \right]_{\Pi\text{-pos}} \ldots \right] \right]\)

  Scope shifting ⇒ II-positions

  \(\downarrow\text{type e trace}\)

- Movement that does not shift scope instead reconstructs. Therefore, if a DP would not ordinarily violate the property-type requirement of a II-position, then it will not do so under reconstruction either:

  \(\left[ \left[ \ldots \left[ \text{DP} \right]_{\Pi\text{-pos}} \ldots \right] \right]\)

  Reconstruction ⇒ II-positions

⇒ **Two novel generalizations**
I advance two novel generalizations about the II-position asymmetry:

1. **Property generalization**
DPs in II-positions denote properties (semantic type \(\langle e, t \rangle\)).

2. **Scope generalization**
Scope-shifting movement cannot target a II-position.

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  \(\left[ \text{DP} \lambda x e \ldots \left[ \ldots \left[ x_e \right]_{\Pi\text{-pos}} \ldots \right] \right]\)

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  \(\left[ \left[ \ldots \left[ \text{DP} \right]_{\Pi\text{-pos}} \ldots \right] \right]\)

  Reconstruction ⇒ II-positions

⇒ **Empirical window: II-positions**
The empirical motivation for these claims comes from a detailed investigation of an A-movement asymmetry in English discovered by Postal (1994), which has received little systematic attention in the literature:
• Some movement types, e.g. topicalization, are unable to target a Π-position because they cannot reconstruct, a property that can crucially be observed independently of Π-positions.

• I will argue that the ungrammaticality of scope-shifting movement targeting a Π-position entails that movement cannot create λ-abstractions over properties (i) nor can traces be type shifted into properties (ii), because either one of these would salvage scope-shifting movement if they were available.

Structure of this talk
1. I start by introducing Π-positions and the Π-position asymmetry.

2. I then advance the property and scope generalizations, which characterize the moving pieces involved in the Π-position asymmetry.

3. From these two generalizations, an analysis of the Π-position asymmetry naturally emerges in terms of reconstruction.

4. This analysis raises the question of why seemingly type-ε elements can occur in Π-positions in nonmovement contexts.

   – I observe that Π-positions also prohibit anaphoric definite descriptions.

   – I argue that this ban and the ban on scope-shifting movement are one and the same under the hypothesis of Trace Conversion.

   – Anaphoric definites cannot be type shifted, but other elements can be.

5. I conclude by discussing the ramifications of the Π-position asymmetry for the syntax–semantics interface, in particular why movement can only map onto λ-abstractions over individual types.

2 Π-positions

Terminology

– Π-position:
A syntactic position exhibiting Postal’s Π-position asymmetry.

– W-movement:
Movement that can target a Π-position, e.g. wh-movement.

– T-movement:
Movement that cannot target a Π-position, e.g. topicalization.

Section outline
1. Introduce Postal’s main observations about the Π-position asymmetry:
   – Four Π-positions: Existential constructions, change-of-color verbs, naming verbs, and predicate nominals
   – W-movement types: Wh-movement and restrictive RCs
   – T-movement types: Topicalization and appositive RCs

2. Briefly discuss controlling for topicalization over similar movement types.

3. Show that QR cannot target a Π-position (novel observation).

4. Review Postal’s (1994) analysis and discuss its shortcomings.

2.1 Existential constructions

• W-movements can target the postverbal position in an existential construction—called the pivot—, but T-movements cannot:

(7) a. Baseline
   There is a potato in the pantry.

   b. Wh-movement
   √What, is there ___1 in the pantry?

   c. Topicalization
   ∗[A potato], there is ___1 in the pantry.

   d. Restrictive RC
   √Gloria saw the potatoes, [that there were ___1 in the pantry].

   e. Appositive RC
   ∗Gloria saw the potatoes, [which there were ___1 in the pantry].

2.2 Change-of-color verbs

• W-movements can target the color term of a change-of-color verb, e.g. paint, turn, and dye, but T-movements cannot:

(8) a. Baseline
   Megan painted the house magenta.

   b. Wh-movement
   √[What color], did Megan paint the house ___1?
c. **Topicalization**
   * Magenta, Megan painted the house ____1.

d. **Restrictive RC**
   ✓ Jyoti liked the color, [ that Megan had painted the house ____1 ].

e. **Appositive RC**
   ✓ Jyoti liked that color, [ which Megan had painted the house ____1 ].

• T-movements can target color terms outside of change-of-color verbs:

   (9) a. **Topicalization**
   { Green / that color }1, he never discussed ____1 with me.

   b. **Appositive RC**
   He never discussed { green / that color }1 with me, [ RC which ____1 is his favorite color ].

⇒ The prohibition on T-movements targeting color terms applies exclusively to those color terms that are arguments of change-of-color verbs.

2.3 **Naming verbs**

• W-movements can target the name argument of a naming verb, e.g. *name, call, and baptize, but T-movements cannot:

   (10) a. **Baseline**
   Irene called the cat Snowflake.

   b. **Wh-movement**
   ✓ [ What name ]1 did Irene call the cat ____1 ?

   c. **Topicalization**
   ✓ Snowflake1, Irene called the cat ____1.

   d. **Restrictive RC**
   ✓ Helen disliked the nickname1 [ that Irene called the cat ____1 ].

   e. **Appositive RC**
   ✓ Helen disliked that nickname1, [ which Irene called the cat ____1 ].

• As with color terms, there is no general prohibition against T-movements targeting names:

   (11) a. **Topicalization**
   Raphael, we never discussed ____1 as a possible name for him.

   b. **Appositive RC**
   We never discussed Raphael1 as a possible name for him, [ RC which ____1 is my favorite name ].

2.4 **Predicate nominals**

• W-movements can target *predicate nominals*, but T-movements cannot:

   (12) a. **Baseline**
   Erika became a teacher.

   b. **Wh-movement**
   ✓ [ What (kind of teacher) ]1 did Erika become ____1 ?

   c. **Topicalization**
   ✓ [ A math teacher ]1, Erika became ____1.

   d. **Restrictive RC**
   ✓ Sue liked the kind of teacher1 [ that Erika had become ____1 ].

   e. **Appositive RC**
   ✓ Sue liked that kind of teacher1, [ which Erika had become ____1 ].

2.5 An aside on topicalization

⇒ **Perils of topicalization**

  The linear order achieved by topicalization is usually string-compatible with two other information-structure movements:

  – **Focus movement**
  Focus movement (also called “focus topicalization”) involves focus intonation and has a fairly limited distribution:

    (13) [ Macadamia nuts ], they’re called ____1.

  – **Y(iddish)-movement**
  Y-movement is dialectal, indicated with '%', but some uses have entered mainstream American English:

    (14) a. % [ A finger ], I wouldn’t lift ____1 for him!

    b. A: How’s your son?
    B: % Don’t ask! [ A sportscar ], he wants ____1!
• One mainstream use of Y-movement is so-called “contrastive topicalization” (mostly) with predicate nominals:1

(15) Donald may be a good golfer, but [a good politician], he is not ___.

∗ Controlling for topicalization
  - Topicalization, focus movement, and Y-movement differ in their prosody and their pragmatics (Gundel [1974], Prince [1981]).
  - Therefore, the puzzle as concerns II-positions is genuinely about movement types and not about linear order.
  - Luckily, we can control for these factors using question-answer scenarios that elicit partial answers. These are perfect environments for topicalization, but disallow focus movement and Y-movement.
  - Doing so here would take us too afar afield, but see the appendix. What the appendix confirms using these controlled environments is that topicalization indeed cannot target II-positions.

2.6 QR is a T-movement

⇒ Existential constructions
  It is well-known that QR cannot target the pivot of an existential construction (Williams [1984]). The pivot always takes lowest scope:

(16) a. There must be someone in his house.  ✓ must ⊃ 3, * 3 ⊃ must
    b. Someone must be in his house.    ✓ must ⊃ 3, * 3 ⊃ must

• A quick note on different
  - In the examples below, I use the adjective different to bias towards the inverse-scope reading of the universal quantifier.
  - The # -mark indicates that different is infelicitous if the sentence were uttered out-of-the-blue, because it lacks the distributed reading that QR could achieve.
  - There is still a felicitous reading of different in which different is interpreted as different with respect to something previously mentioned in the discourse. This reading is not relevant for our purposes.

⇒ Other II-positions prohibit QR
  I make the novel observation that QR cannot target any II-positions. Thus, the following examples all lack an inverse-scope reading:

(17) a. Change-of-color verbs ✓ a ⊃ every; * every ⊃ a
    A (#different) contractor painted the house every color.
    b. Naming verbs ✓ a ⊃ every; * every ⊃ a
    A (#different) child called the cat every nickname.
    c. Predicate nominals ✓ a ⊃ every; * every ⊃ a
    A (#different) student became every kind of teacher.

• For example, (17a) is true iff there is a single contractor, who incidentally did lots of painting, but not if there is a different contractor for each color.

• With change-of-color and naming verbs, QR of the DP in the II-position can be contrasted with QR of the object, which is indeed possible:

(18) a. Change-of-color verbs ✓ a ⊃ every; * every ⊃ a
    A (different) contractor painted every house that ugly green.
    b. Naming verbs ✓ a ⊃ every; * every ⊃ a
    A (different) child called every cat Garfield.

∗ Generalization
  QR is a T-movement, like topicalization and appositive RCs.

• Qualification
  We are only interested in the scope-shifting functionality of QR.
  - This functionality ordinarily coalesces with QR for interpreting quantifiers, but (17) shows that even though quantificational DPs can occur in II-positions, they do not enjoy the scopal mobility that QR would afford.
  - I assume that some non-QR mechanism is available to II-positions for interpreting quantifiers in situ, though I do not take up this issue here.

2.7 Postal’s [1994] analysis

• Antipronominality
  Postal (1994) observes that one common property of II-positions is that they reject pronouns like it, a property that he labels ANTIPRONOMINALITY:

(19) *There is it in the pantry.

1 This example is modeled after a quotation from Mitt Romney.
Postal’s proposal
He proposes that W-movements and T-movements differ in what they leave behind in the launching site of movement:

- W-movements leave a trace:

  \[ \text{What}_1 \text{ is there } t_1 \text{ in the pantry?} \]

- T-movements leave a covert resumptive pronoun:

  \[ \text{A potato}_1, \text{ there is } t_1 \text{ in the pantry.} \]

⇒ According to this analysis, T-movements cannot target a Π-position because what they leave behind, viz. a pronoun, violates antipronominality.²

Problem #1: Why are Π-positions antipronominal?
- There is no explanation for why Π-positions are antipronominal.
- This in turn calls into question accounting for the W/T-movement distinction in terms of pronouns when antipronominality lacks an explanation.
- Under Postal’s analysis, the set of Π-positions and the division of movement types are arbitrary and amount to little more than two lists.

Problem #2: Some pronouns are allowed
Antipronominality in Π-positions does not extend to strong pronouns like that (excluding existential constructions because of the Definiteness Restriction):

(22) a. Megan liked the color magenta, so she painted the house (*it / 'that).
    b. Irene liked the name Snowflake, and she called the cat (*it / 'that).
    c. Erika wanted to become a teacher, and she became (*it / 'that).

⇒ Thus, antipronominality is not as simple as a ban on pronouns.

Problem #3: Antipronominality does not entail being a Π-position
Postal himself observes that there are syntactic environments that block pronouns, but nevertheless allow both W-movements and T-movements:

(23) a. Baseline
   * Thuy attended the U of M, but Rodica did not attend it.
   b. Wh-movement
      \[ [\text{What university }], \text{ did Thuy attend } ____ _? \]
   c. Topicalization
      \[ [\text{The University of Minnesota }], \text{ Thuy attended } ____ _? \]

- If the reason that T-movements cannot target Π-positions is that they violate antipronominality, then (23c) should be ungrammatical.³

Looking ahead...
- The next two sections argue that Π-positions host property-type DPs and that movement cannot target Π-positions if it shifts scope.
- I argue that Π-positions require movement to reconstruct. T-movements cannot reconstruct and hence can never target a Π-position. Thus, the Π-position asymmetry has nothing to do with pronouns.
- Antipronominality is the result of weak pronouns not being able to denote properties. We will see that strong pronouns do not face this problem.

Property generalization
- This section argues that the common denominator unifying Π-positions is that they host DPs that denote properties:⁴

(24) Property generalization

DPs in Π-positions denote properties (semantic type \(\{e, t\}\)).

- The arguments for this generalization come from the respective literatures on each of the Π-positions introduced above. Therefore, the arguments are independent from the Π-position asymmetry.

² Stanton [2016] analyzes a similar set of facts in terms of antipronominality. She looks at temporal and locative PPs, where extraction stranding the preposition displays the W/T-distinction. Her analysis in terms of Wholesale Late Merger of NP does not extend to Postal’s [1994]’s observations. The analysis developed here, however, can extend to her cases if we assume that the DP complements of temporal and locative prepositions denote properties, e.g. sets of times or spatial coordinates.

³ Postal proposes that antipronominality is specifically a prohibition on covert resumptives and that this asymmetrically entails prohibiting overt pronouns. Robbing his analysis of its independent support, this amounts to little more than restating that T-movements cannot target Π-positions.

⁴ For simplicity, I treat properties in purely extensional terms, which reduces them to sets of entities.
• **Shortcuts**
  In the interest of time, I will take it for granted that:
  - The color term of a change-of-color verb denotes a property because these verbs are textbook examples of resultative constructions (e.g. Kratzer 2005).
  - Predicate nominals denote properties, as this is standard (e.g. Montague 1973, Williams 1983, Partee 1986).

3.1 **Existential constructions**

- **Definiteness Restriction**
  The pivot of an existential construction is famously subject to the Definiteness Restriction (DR) (Milsark 1974, 1977):

  (25) a. Acceptable pivots
      There is/are {a / two / many / no} potato(es) in the pantry.
  b. No quantificational DPs
      *There is/are {every / most / both} potato(es) in the pantry.
  c. No definite descriptions
      *There is {the potato / it / Mr. Potato Head} in the pantry.

- DPs that can occur as the pivot are **weak**, while DPs that cannot are **strong**.

- The standard approach to the DR to attribute the weak–strong distinction to a semantic property of determiners (e.g. Barwise & Cooper 1981, Keenan 1987).

- **Problems with standard approaches**
  1. They never explain why existential constructions care about a particular semantic property of determiners.
  2. There are well-documented counterexamples to an analysis of the DR in terms of determiner semantics, which I review below (McNally 1997, 1998).

1 **Quantifying over nonparticu-lars**

   A necessarily quantificational DP headed by a strong determiner can be the pivot if it quantifies over nonparticu-lars:

   (26) a. There was every kind of doctor at the convention.
   b. *There was every doctor at the convention. [McNally 1998:358]

2 **List existentials**

   Definite descriptions can also be the pivot in so-called "list existentials":

   (27) A: What shall we dig up this year?
   B: Well, there are the peonies. [McNally 1998:166]

   ⇒ Any analysis that outright bans certain determiners like every and the will undergenerate in (26)–(27).

   ⇒ **McNally’s analysis of existentials**
   McNally (1997, 1998) develops an analysis that solves these two problems:
   - She argues that the DR is about the meaning of the DP as a whole, not just the determiner. For her, the DR is part semantic and part pragmatic.
   - **Semantic restriction**
     The pivot must have a licit property-type denotation. An existen-itial construction means that the property denoted by the pivot is **instantiated**:

     (28) For all models $\mathcal{M}, [\text{NP}]^{\mathcal{M},g} \in ([\text{There be}]^{\mathcal{M},g} \iff [\text{NP}]^{\mathcal{M},g}$ is nonempty.

   - **Pragmatic restriction**
     The pivot must introduce a new discourse referent.

   - The pragmatic restriction prohibits definite descriptions. McNally argues that it is reasonable for a pragmatic requirement to be relaxed under special circumstances, e.g. in list existentials.

4 **Existential constructions → Property-denoting DP**

   The semantics of existentials requires that the pivot denote a property, which in turn restricts the kinds of quantificational DPs that can occur as the pivot because not every quantificational DP has a licit property-type denotation.

   - Achieving a property denotation via type shifting will be discussed below. For now, we can focus on its ramifications for the DR:

   (29) a. some NP $\Rightarrow_{\text{shift}} \checkmark_{\text{property denotation}} \Rightarrow_{(28)} \checkmark_{\text{pivot}}$
   b. every NP $\Rightarrow_{\text{shift}} \times_{\text{property denotation}} \Rightarrow_{(28)} \times_{\text{pivot}}$
   c. the NP $\Rightarrow_{\text{shift}} \checkmark_{\text{property denotation}} \Rightarrow_{(28)} \checkmark_{\text{pivot}}$

   - Under type shifting, weak determiners like some can head the pivot and strong determiners like every cannot, because some NP has a valid property denotation, but every NP does not.
3.2 Naming verbs

- While there has been a substantial amount of work on proper names, the empirical scope has been predominately limited to proper names in argument positions. However, proper names behave differently with naming verbs:

  (30) a. Irene called the cat Snowball.
  b. Helen nicknamed the dog Odie.
  c. The priest baptized the child Brigid.
  d. I am named Ethan.

- The italicized proper names in (30) do not refer to individuals with those names, but rather to the names themselves.

* Name argument → Property-denoting DP

Matushansky’s analysis of naming verbs

- Proper names are two-place functions that take an individual \( x \) and a naming convention \( R \) as its arguments:

  \[
  \text{[Odie]} = \lambda x \lambda R_{(e, (n, t))} \cdot R(x)((\text{owdij})
  \]

- Ordinarily, the naming convention is supplied contextually. However, with a naming verb, the naming convention is supplied by the verb itself:

  (34) Derivation of a naming verb

  Helen nicknamed the dog Odie.

\[
\begin{array}{c}
\text{VP} \\
\text{V} \\
\text{SC} \\
\text{DP} \\
\text{Odie}
\end{array}
\]

  a. \([\text{nickname}] = \lambda f_{(e, (n, t)), t} \lambda w \cdot \exists R(\text{nickname}(w)(R) \wedge f(R)]
  
  b. \([\text{SC}] = [\text{Odie}](\text{the dog}) = \lambda R_{(e, (n, t))} \cdot R(\text{the dog})(\text{owdij})
  
  c. \([\text{VP}] = [\text{nickname}](\text{SC})
  
  \text{[name]}(\text{the dog})((\text{owdij}))

\Rightarrow \text{In sum, the pivot of an existential construction and the name argument of a naming verb denote properties:}

  (35) Property generalization

  DPs in Π-positions denote properties (semantic type \((e, t))\).

4 Scope generalization

- This section argues that a given step of movement cannot target a Π-position if it shifts the scope of the moved DP:

  (36) Scope generalization

  Scope-shifting movement cannot target a Π-position.

  ~ Movement targeting a Π-position must reconstruct.
• What does it mean for movement to shift scope?
  – For movement to shift scope means that, at LF, the moved DP takes scope in
    the position achieved by movement, which, for all overt forms of movement,
    will be the DP’s surface syntactic position.

\[
\begin{array}{l}
\text{(37) Movement that shifts scope} \\
\left[ \begin{array}{c}
\checkmark \quad 1 \ldots \quad \checkmark \quad \ldots \quad 1 \ldots \quad \checkmark \quad 1 \ldots \\
\end{array} \right] \Rightarrow \text{Cannot target } \Pi\text{-positions}
\end{array}
\]

  – A check mark will be used to indicate where a DP takes scope at LF.

  – If movement does not shift scope, the scope of the moved DP at LF mis-
    matches its surface position in that it takes scope in its position prior to
    movement, i.e. its base-generated position.

\[
\begin{array}{l}
\text{(38) Movement that does not shift scope} \\
\left[ \begin{array}{c}
\quad 1 \ldots \quad \checkmark \quad \ldots \quad 1 \ldots \quad \checkmark \quad 1 \ldots \\
\end{array} \right] \Rightarrow \text{Can target } \Pi\text{-positions}
\end{array}
\]

• In the interest of time, I limit the discussion to topicalization and \textit{wh}-movement.
  The relevant facts also hold for relative clauses, but the judgements are more
  complex and involve scope-bearing adjectival modifiers like \textit{first} and \textit{only}
  (à la \cite{Bhatt2002}); see the appendix.

4.1 Topicalization
  * Generalization
    Topicalization obligatorily shifts the scope of the moved DP.
  * Baseline
    Consider the possible interpretations of the baseline sentence below, which
    has narrow-scope and wide-scope readings of \textit{a student} w.r.t to \textit{every teacher}:

\[
\begin{array}{l}
\text{(39) Every teacher likes a (different) student} \text{ in the first week.} \\
\text{a. Narrow-scope reading} \\
\text{ every } \gg a \\
\text{ For every teacher } x, \text{ there is a student } y \text{ such that } x \text{ likes } y.
\end{array}
\]

\[
\begin{array}{l}
\text{b. Wide-scope reading} \\
\text{ a } \gg \text{ every } \\
\text{ There is a single student } y \text{ such that for every teacher } x, x \text{ likes } y.
\end{array}
\]

• Crucially, in a scenario where the student is a different student for each
  teacher, only the narrow-scope reading is true.

• Target sentence
  Topicalizing \textit{a student} in (39) bleeds the narrow-scope reading:

\[
\begin{array}{l}
\text{(40) [ A (\#different) student], every teacher likes } \_1 \text{ in the first week.} \\
\text{"every } \gg a; \ast a \gg \text{ every}
\end{array}
\]

• The only interpretation of (40) is the wide-scope reading. Consequently,
  (40) is true iff there is a single student that every teacher likes. It is false if
  the student is a different student for each teacher.

\[ \Rightarrow \text{In sum, topicalization obligatorily shifts scope. According to the scope gen-
\]

eralization, this is the reason why it cannot target a \Pi-position:

\[
\begin{array}{l}
\text{(41) Topicalization} \\
\left[ \begin{array}{c}
\text{Topic} \checkmark \quad \text{Topic}^0 \quad \checkmark \quad \ldots \quad \checkmark \quad \ldots \quad \checkmark \quad \ldots \quad \checkmark \quad \ldots \\
\end{array} \right] \Rightarrow \text{Cannot target } \Pi\text{-positions}
\end{array}
\]

4.2 \textit{Wh}-movement
  * Generalization
    \textit{Wh}-movement optionally shifts the scope of the moved DP.
  * How many-questions
    In order to probe scope in constituent questions, we will use \textit{how many}-
    questions. In addition to the \textit{wh}-meaning component, \textit{how many}
    independently carries its own existential quantification that can vary in scope
    (Kroch \cite{Kroch1989}, Cinque \cite{Cinque1990}, Cresti \cite{Cresti1995}, Rullmann \cite{Rullmann1995}, Frampton \cite{Frampton1999}):

\[
\begin{array}{l}
\text{(42) [ How many books ]} \text{ should Nina read } \_1 \text{ this summer?} \\
\text{a. Wide-scope reading} \\
\text{ how many } \gg \text{ should} \\
\text{ For what number } n: \text{ There are } n\text{-many particular books } x \text{ such that Nina should read } x \text{ this summer.} \\
\text{ii. Possible answer: 'Three books, namely The Prisoner of Azka-
\}

ban, Slaughterhouse Five, and The Eye of the World.'}

\[
\begin{array}{l}
\text{b. Narrow-scope reading} \\
\text{ should } \gg \text{ how many} \\
\text{ For what number } n: \text{ It is necessary for there to be } n\text{-many books } x \text{ such that Nina reads } x \text{ this summer.} \\
\text{ii. Possible answer: 'Three books, any three.'}
\end{array}
\]

• The scope ambiguity in (42) is the result of the fact that \textit{wh}-movement only
  optionally shifts scope.

8
⇒ Wh-movement from a II-position cannot shift scope

Even though wh-movement can ordinarily shift scope, when it targets a II-position, scope shifting is rendered impossible:

(43)  a. Existential constructions  ‘h.m. ⇒ should; ‘should ⇒ h.m. [ How many books ], should there be ___1 on the table?

b. Change-of-color verbs  ‘h.m. ⇒ should; ‘should ⇒ h.m. [ How many colors ], should Nina paint the house ___1?

c. Naming verbs  ‘h.m. ⇒ should; ‘should ⇒ h.m. [ How many nicknames ], should Nina call the cat ___1?

d. Predicate nominals  ‘h.m. ⇒ should; ‘should ⇒ h.m. [ How many kinds of teacher ], should Nina become ___1?

• To appreciate this fact, let us take a closer look at existential constructions, which we can contrast with a corresponding copula construction:

(44)  Copula equivalent of (43a)  ‘h.m. ⇒ should; ‘should ⇒ h.m. [ How many books ], should ___1 be on the table?

• The difference in the available scopes for how many between (43a) and (44) is reflected in the felicitous answers to the respective questions:

(45)  a. Narrow-scope answer  ‘existential (43a); ‘copula (44)

Three, any three.

b. Wide-scope answer  ‘existential (43a); ‘copula (44)

Three, namely The Prisoner of Azkaban, Slaughterhouse Five, and The Eye of the World.

⇒ In sum, wh-movement can successfully target a II-position only when it does not shift scope. When wh-movement does shift scope, it patterns as a T-movement in that such extraction from a II-position is ungrammatical.5

(46)  Wh-movement

a. Reconstructed derivation

[ Q ___1 . . . [ . . . ✓1 . . . ] ]  ~ Can target II-positions

b. Scope-shifted derivation

[ Q ✓1 . . . [ . . . ___1 . . . ] ]  ~ Cannot target II-positions

5 Wh-islands have the special property that they force elements extracted out of them to take wide scope (Longobardi/1987; Kroch/1986; Cinque/1990; Rullmann/1995; Cresti/1995). Since II-positions force narrow scope and wh-islands force wide scope, the two should be mutually exclusive. This prediction is borne out: ‘How many books do you wonder whether there are on the table’.

5 Analysis

• Against the backdrop of these two novel generalizations, we are now in a position to account for the II-position asymmetry.

(47)  II-position Generalizations

a. Property generalization

II-positions host DPs that denote properties (e, t).

b. Scope generalization

II-positions cannot be targeted by movement that shifts scope.

• Interpreting movement

Let us first consider the standard interpretation of movement:

– Replace the launching site with a variable and insert a λ-abstraction binding this variable immediately below the landing site (e.g. Beck/1996; Heim & Kratzer/1998; Sauerland/1998):

(48)  [ every book [ λxe [ some student read xe ] ] ]  every ⇒ some

– The λ-abstraction will force the moved element to take scope in the landing site, e.g., for variable binding.

– As the variable left behind by movement is type e, if the moving element is a generalized quantifier, the λ-abstraction binding the type-e variable will force the quantification to have scope in the landing site of movement.

• Reconstruction

Movement that does not shift scope instead RECONSTRUCTS.

– Reconstruction means that the moved element behaves as if that movement has been undone at LF.
I will assume the copy-theoretic approach to reconstruction wherein reconstruction means that the lower copy but not the higher copy is interpreted at LF. This semantic-type mismatch in turn yields ungrammaticality, thereby precluding movement into a property-

\[ \text{(49) } \left[ \left[ \text{every book} \right] \left[ \text{some student read [ every book ]} \right] \right] \]

- **Scope shifting ⇒ II-positions**
  Turning to II-positions, the type-e trace required for scope-shifting movement is incompatible with II-positions because it does not provide the expected property meaning ((e, t)).

- This semantic-type mismatch in turn yields ungrammaticality, thereby preventing scope-shifting movement from targeting a II-position:

\[ \left[ \text{some student read [ every book ]} \right] \]

- **Reconstruction ⇒ II-positions**
  On the other hand, because movement that does not shift scope reconstructs, if a DP would not ordinarily violate the property-requirement of a II-position, then it will not do so under reconstruction either:

\[ \text{(50) } \left[ \text{some student read [ every book ]} \right] \]

- According to this analysis, II-positions are an instance where movement must reconstruct in order to avoid a semantic-type mismatch that would occur if the moved DP were not interpreted in its base-generated position.

  - T-movements are thus unable to target a II-position at all because they cannot reconstruct:

\[ \left[ \text{some student read [ every book ]} \right] \]

- W-movements, on the other hand, can target a II-position, but only when they reconstruct into that II-position:

\[ \text{(53) Wh-movement} \]

\[ \left[ \text{some student read [ every book ]} \right] \]

\[ \text{(54) II-position Restriction} \]

- **A simpler generalization**
  - The property and scope generalizations are in fact interconnected: It is precisely because II-positions host property-type DPs that they cannot be targeted by scope-shifting movement.

  - That is, the property generalization implies the scope generalization.

  - Therefore, the restriction on II-positions can be stated more generally as the constraint below:

\[ \text{(54) II-position Restriction} \]

- **Antipronominality is also about propertyhood**
  (54) has the advantage of being more general than a constraint on movement and thus also captures why II-positions are antipronominal:

  - Weak pronouns like it cannot denote a property and hence violate (54).

  - Strong pronouns like that, on the other hand, face no such problem because they can denote a property.
This fact can be observed independently using the verb consider, whose second argument must denote a property. While a weak pronoun is ungrammatical with consider, a strong pronoun is not:

(55) **Weak pronouns cannot denote a property**
Donald Trump thinks that he is a success, but no one else considers him { `that` / `it` }.

*Implications*
The ungrammaticality of scope-shifting movement targeting a Π-position indicates that movement cannot map onto a λ-abstraction–variable relation ranging over properties, where the moved DP denotes either a property or a generalized quantifier over properties:

(56) **Property traces are ungrammatical**

a. * [DP(e,t) λf_{(e,t)} [ . . . f . . . ]] 

b. * [DP((e,t),t) λf_{e,t} [ . . . f . . . ]]

We know that (56b) is unavailable because even in instances that involve quantification over properties, these quantifiers over properties cannot take scope over other scope-bearing elements in the sentence:

(57) a. There wasn’t *every kind of doctor* at the convention.

b. There wasn’t *only one kind of doctor* at the convention.

This unavailability of wide-scope is expected if (56b), where a generalized quantifier over properties has undergone QR, is unavailable:

(58) * [every kind of doctor] ((e,t),t) λf_{(e,t)} [ there be f_{(e,t)} at the convention]

Moreover, if a λ-abstraction over properties is unavailable in (56b), then we can generalize that it is also unavailable in (56a).

⇒ The syntax–semantics mapping does not permit movement to map onto a λ-abstraction over properties.

### Type shifting

#### Wait a minute!
At first glance, the Π-position Restriction appears to undergenerate because it is possible for seemingly type-e elements to occur in Π-positions:

(59) a. **Color verbs**
Megan painted the house *that* hideous shade of purple.

b. **Naming verbs**
Irene called the cat *that* dumb nickname.

c. **Predicate nominals**
Erika became *that* kind of teacher.

Answering why this is possible requires being more explicit about what it means for a DP to have a property-type denotation and in turn understanding how this process interacts with movement.

#### 6.1 Type shifting to property

*Answer in a nutshell*
DPs can obtain a property denotation via nominal type shifting.

*Partee Triangle*
- Partee ([1986]) argues that DPs have three types of denotations: entities (e), properties ((e,t)), and generalized quantifiers ((et,t)).
- She proposes a set of semantic type shifters that allow DPs to flexibly shift from one type to another.
The type shifters that are important for our purposes are \( \text{pred} \) and \( BE \).

\( \Rightarrow \) **Entity \( \rightarrow \) Property**

\( \text{pred} \) maps the entity-correlate of a property onto the corresponding property, e.g. *green* the noun into *green* the adjective ([Chierchia](1984))

- Not every property has an entity correlate, and not every entity corresponds to a property, so \( \text{pred} \) is of limited use.

\( \Rightarrow \) **Generalized quantifier \( \rightarrow \) Property**

\( BE \) is a homomorphism between \( \langle et, t \rangle \) and \( \langle e, t \rangle \). It applies to a generalized quantifier, finds all of the singleton sets therein, and collects the elements of these singleton sets into a set:

\[
BE = \lambda \mathcal{P}(et, t) \lambda x \in \mathcal{P}([\lambda y \cdot y = x]) = \lambda \mathcal{P}(et, t) \lambda x \in \mathcal{P} \{x\} 
\]

- Crucially, not every generalized quantifier has singleton sets in its domain. For such DPs, \( BE \) returns the empty set, a result which is degenerate.\(^6\)

To illustrate, consider the model in (61):

\[
(61) \begin{align*}
\mathcal{E} &= \{\text{Snowball} (s), \text{Mittens} (m), \text{Nekochan} (n), \text{Odie} (o)\} \\
\& \quad [\text{cat}] = \{s, m, n\} \\
\& \quad [\text{dog}] = \{o\}
\end{align*}
\]

Against the model in (61), the extensions of some quantificational DPs are given below, where the singleton sets are boxed.

\[
(62) \begin{align*}
[\text{every cat}] &= \{\{s, m, n, o\}, \{s, m, n\}\} \\
[\text{every dog}] &= \{\{o\}, \ldots\} \\
[\text{the dog}] &= \{\{o\}, \ldots\} \\
[\text{some cat}] &= \{\{s, m, n, o\}, \{s, m, n\}, \{s, m\}, \{s\}, \{m\}, \{n\}, \ldots\} \\
[\text{two cats}] &= \{\{s, m, n, o\}, \{s, m, n\}, \{s, m\}, \{s \oplus m\}, \{m \oplus n\}, \ldots\} \\
[\text{most cats}] &= \{\{s, m, n, o\}, \{s, m, n\}, \{s, m\}, \{s\}, \{m\}, \{n\}, \ldots\}
\end{align*}
\]

\( \Rightarrow \) **Weak DPs**

- *some cat* and *two cats* have singletons in their domains and hence have licit property-type denotations under \( BE \).

- Definite descriptions also have a singleton in their domain, i.e. their singleton generator, and thus have licit property-type denotations under \( BE \).

\( \Rightarrow \) **Strong DPs**

*every cat* and *most cats* never have singletons in their domains and hence do not have licit property-type denotations under \( BE \).

- An exception to this fact for strong DPs is when the domain of entities only contains one entity of the restrictor set:

  - In this case, *every NP* and *most NPs* will have a singleton in their domain.

  - However, in such a situation, there is something illformed about using *every NP* and *most NPs* instead of *the NP* ([Partee](1986:127)).

  - Whatever principle results in this illformedness presumably also rules out these DPs having a valid property-type denotation under \( BE \).

- Recall that *every NP* is allowed in \( \Pi \)-positions if it quantifies over properties, e.g. *every kind of doctor*, but why this is possible is set aside in this talk.

\[ \text{.................} \]

\( \star \) **Proposal**

DPs never start out denoting properties. A property-type denotation is always achieved by nominal type shifting from an individual denotation (\( e \)) or a generalized quantifier denotation (\( \langle et, t \rangle \)):

\[
(63) \begin{align*}
\text{a.} & \quad \text{Existential constructions} \\
& \quad \text{There is } [BE(\text{a potato})] \text{ in the pantry.} \\
\text{b.} & \quad \text{Color verbs} \\
& \quad \text{Megan painted the house } [\text{pred(magenta)}]. \\
\text{c.} & \quad \text{Naming verbs} \\
& \quad \text{Irene called the cat } [BE(\text{Snowflake})]. \\
\text{d.} & \quad \text{Predicate nominals} \\
& \quad \text{Erika became } [BE(\text{a teacher})].
\end{align*}
\]

\( \Rightarrow \) A \( \Pi \)-position requires a type shifter for the structure to semantically compose.

---

\(^6\) \(BE\) yields nontrivial results for DPs denoting proper principal filters (i.e. definite descriptions) and DPs classified by [Keenan](1987) as existential.
• **Taking stock and looking ahead...**
  
  – We now have an explanation for why seemingly type-e elements can occur in Π-positions: they are type shifted into property meanings.
  
  – However, thus far, nothing prevents these same type shifters from applying to traces. There is precedent for this idea in Partee (1986).
  
  – The next subsection introduces a third generalization about Π-positions: they prohibit anaphoric definite descriptions.
  
  – I argue that the ban on anaphoric definites and the ban on scope-shifting movement are one and the same under the hypothesis of Trace Conversion, wherein traces are in fact anaphoric definites.
  
  – I then propose a syntactic account of the complementarity of type shifting and the anaphoric definite determiner.

6.2 **Π-positions prohibit anaphoric definites**

* It is not the case that Π-positions allow all type-e elements (via type shifting). They only allow a proper subset of them. In particular, they prohibit definite descriptions that are anaphoric in nature:

(64) **Definite Generalization**

Π-positions prohibit anaphoric definite descriptions.

• **Reference to an indefinite**

  For example, a definite description in a Π-position cannot refer to a previously mentioned indefinite:

(65) John picked out a shade of red for the living room.
  
  a. #And Mary painted the room [ the shade ] Π-pos.
  
  b. But Mary thought that the shade was too dark.

⇒ **Covariance with a quantifier**

More convincingly, a definite description in a Π-position cannot covary with an indefinite in a quantificational context:

(66) **Existential constructions**

  In every hotel room with an ugly lamp, . . .
  
  a. #there is [ the lamp ] Π-pos on the dresser.
  
  b. the lamp is on the dresser.

(67) **Change-of-color verbs**

Every time Irene picks out a new color for the bathroom, . . .

  a. #Helen has to paint the room [ the color ] Π-pos.
  
  b. Helen complains that the color is too bright.

(68) **Naming verbs**

Every time that my mom found a new puppy name, . . .

  a. #she nicknamed the family dog [ the name ] Π-pos.
  
  b. my dad vetoed the name.

• While anaphoric definites are prohibited in Π-positions, ordinary definites satisfied purely by uniqueness are okay:

(69) A: What did you like about the fridge?
    B: Well, there was [ the spacious vegetable crisper ] Π-pos.

• **Two generalizations**

  We now have two generalizations about what is not allowed in a Π-position:

(70) a. **Scope generalization**

    Π-positions cannot be targeted by movement that shifts scope.
  
  b. **Definiteness generalization**

    Π-positions prohibit anaphoric definite descriptions.

* **Proposal**

These two generalizations are one and the same because “traces” are in fact anaphoric definite descriptions.

• The idea that traces are related to anaphoric definite descriptions is quite old; see Engdahl’s (1980, 1986) early work on the semantics of questions.

• **Trace Conversion**

  – However, the idea is probably best known now as the independently motivated copy-theoretic hypothesis of Trace Conversion (Sauerland 1998, 2004; Fox 1999, 2002, 2003).
  
  – In the interest of time, I will not review any of the independent evidence for Trace Conversion.
– Trace Conversion is an LF rule that renders the lower copies of a movement chain interpretable by inserting a variable, which is bound by the $\lambda$-abstraction created by movement, and replacing the determiner with a definite determiner.

(71) **Trace Conversion**

a. **Variable Insertion**
   $\text{(Det) Pred} \to \text{(Det) \ Pred \ [ \lambda y \ . \ y = g(n) \ ]}$

b. **Determiner Replacement**
   $\text{(Det) \ Pred \ [ \lambda y \ . \ y = g(n) \ ]} \to \text{the \ [ \lambda y \ . \ y = g(n) \ ]}$

⇒ The result of Trace Conversion is that traces are anaphoric definite descriptions, which allows the scope generalization to be subsumed under the definite generalization.

### 6.3 Complementarity of type shifting and anaphoric definites

**Question**

Why can anaphoric definite descriptions not be type shifted into property-type denotations so that they can occur in II-positions?

**Proposal in a nutshell**

Nominal type shifters and the (strong) definite determiner used in anaphoric definite descriptions are in complementary distribution such that a derivation can either apply Trace Conversion or apply a type shifter.

**Weak vs. strong definites**

– Anaphoric definites live under another name: strong definites.

– Schwarz’s (2009) argues that there are two definite determiners:

(72) **Schwarz’s (2009) weak and strong definite determiners**

a. $[\text{the}_{\text{weak}}] = \lambda s \lambda P \cdot \lambda x \ [P(x)(s)]$

b. $[\text{the}_{\text{strong}}] = \lambda s \lambda P \lambda y \cdot \lambda x \ [P(x)(s) \land x = y]$  

– The strong definite determiner is anaphoric because it has access to an index which can be bound or valued contextually.

– In some languages, the weak and strong definite determiners have unique realizations. For example, in German, the weak definite determiner contracts with prepositions, but the strong one does not:

   (73) **Weak and strong definites in German**

   In jeder Bibliothek, die ein Buch über Topinambur hat, sehe ich in dem Buch nach, ob man Topinambur grillen kann.

   Topinambur grill kann

   ’In every library that has a book about topinambur I check in the book whether one can grill topinambur.’  

   ⇒ **Trace Conversion → Strong definite**

   Crucially, Trace Conversion requires the strong definite determiner in order to establish a connection between the upstairs moved DP and the downstairs definite description.

**Proposed nominal structure**

I propose that the strong definite determiner and nominal type shifters are in complementary distribution because they compete for the same syntactic slot in the functional structure of a nominal:

– $\text{the}_{\text{strong}}$ occupies $D^0$.

– Nominal type shifters occupy $D^0$ as well.

– $\text{the}_{\text{weak}}$ occupies some lower functional head, say $n^0$.

(74)

\[
\begin{array}{c}
D \\
(\text{the}_{\text{strong/B}}) \\
\text{(the}_{\text{weak}}) \\
\end{array}
\]

– For one stipulation, this complementarity derives both the definite generalization and the scope generalization.

\[\text{Patel-Grosz & Grosz (to appear) argue that the personal–demonstrative pronoun distinction and the weak–strong definite distinction (in German) are one and the same. Their analysis might extend to English, but it is not immediately obvious how the English weak–strong pronoun distinction, which is based on being able to bear stress, fits into the weak–strong definite distinction.}\]
⇒ **Type-shifted definite → Weak definite**
First, a definite that has been type shifted is necessarily a weak definite:

\[
\begin{align*}
\text{a. } & \left[ \text{DP} \left( B \mathcal{E} \right) \left[ \text{np the}_{\text{weak}} \text{ NP} \right] \right] \leadsto \text{Weak def.}; \checkmark \text{type shifting} \\vspace{1em}
\text{b. } & \left[ \text{DP the}_{\text{strong}} \left[ \text{np n}^0 \text{ NP} \right] \right] \leadsto \text{Strong def.}; \times \text{type shifting}
\end{align*}
\]

⇒ **No Trace Conversion and type shifting**
Second, Trace Conversion and type shifting cannot apply to one and the same DP. Thus, in a Π-position, it is a lose-lose situation: either there is no binding (vacuous quantification) or there is no property-type denotation:

\[
\begin{align*}
\text{(76) } & \text{*DP}_1 \lambda x \ldots \left[ \left[ \text{DP} \left( B \mathcal{E} \right) \left[ \text{np the}_{\text{weak}} \text{ NP} \right] \right]_1 \right]_{\Pi \text{-pos}} \checkmark \text{Property} \checkmark \text{Quantification} \\vspace{1em}
\text{?? no variable to bind} \\vspace{1em}
\text{X Property} \checkmark \text{Quantification}
\end{align*}
\]

• **But why are they in complementary distribution?**
An idea that floats around in the literature is that *the* is an overt type shifter, i.e. an overt \( \iota \)-operator (e.g. [Partee 1986; Chierchia 1998].

- Imagine that this holds for the strong definite determiner. Then, it would compete for \( \text{D}^0 \) because it is itself a type shifter.

- This analysis might further render the weak definite determiner more like a Russellian definite that maps any singleton to itself and any non-singleton to the empty set.

- I leave exploring these ideas for future research.

7 **Conclusion**

• I have shown that a given step of movement cannot target a property-type DP if that movement shifts the scope of the moved DP.

⇒ In other words, movement that targets a property-type DP must reconstruct.

• A important consequence of this restriction is that some movement types are categorically precluded from targeting property-type DPs because they can never reconstruct.

⇒ This is what gives rise to the Π-position asymmetry.

• I argued that we can account for this reconstruction asymmetry using only the tools that are already independently needed for interpreting movement and reconstruction.

• The upshot of this theoretical austerity is that it shows that we can account for a complex set of facts with minimal theoretical acrobatics. Unlike [Postal 1994], I accounted for Π-positions without appealing to separate syntactic primitives for movement types.

• Moreover, the analysis developed here raised interesting questions about nominal type shifting and how this semantic process interacts with movement. I argued that traces belong to the class of strong definites and that it is strong definites that cannot be type shifted.

• **What did we learn?**
This investigation of movement targeting property-type DPs revealed that the syntax–semantics mapping lacks a way of interpreting moved properties as “semantically displaced”, either via abstracting over properties or via type shifting a type-\( \epsilon \) trace:

\[
\begin{align*}
\text{(78) } & \left[ \text{DP}_1 \lambda f_{(e,t)} \ldots \left[ \left[ f_{(e,t)} \right]_1 \right]_{\ldots} \right] \\
\text{(79) } & \left[ \text{DP}_1 \lambda x_{e} \ldots \left[ \ldots \text{shift}\left[ \left( x_{e} \right) \right]_{(e,t)} \right] \right]
\end{align*}
\]

• What Π-positions impart is a novel argument that movement can only map onto \( \lambda \)-abstractions over individual types, e.g. entities (\( e \)), situations/ worlds (\( s \)), and degrees (\( d \)) ([Chierchia 1984; Romero 1998; Fox 1999; Landman 2006].

• But why should such a restriction hold, especially given that our semantic machinery can generate such LFs?

- I would like to (briefly) speculate that this restriction is a manifestation of a more general interconnection between ’virtual conceptual necessity’ and economy ([Chomsky 1993 et seq]:

- Namely, the mapping between syntax (the generative component) and semantics (the interpretive component) that arises out of virtual conceptual necessity also happens to be the most economical mapping possible.

- Put more plainly, restricting \( \lambda \)-abstractions to be only over individual types is the most economical mapping that natural language could manifest to link together syntax with semantics.

\[\text{cf. Lechner 1998; Ruyts 2015}\]
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Appendix: Controlling for topicalization

⇒ Differences between topicalization, focus movement, and Y-movement

- Prosody
  All three have different intonational profiles. An easy way to distinguish topicalization prosodically is that it has two prosodic prominences, while both focus movement and Y-movement have only one (Gundel 1974; Prince 1981; Constant 2014).

- Pragmatics
  In topicalization, the moved element is given, while in focus movement and Y-movement, the moved element is new (Gundel 1974; Prince 1981).

- To control for topicalization, we can utilize question-answer scenarios, where topicalization is natural in the answer, but focus movement (and Y-movement) are not (scenarios based on Constant 2014):

  (80) What do you want on the hotdog and the hamburger?
  a. *I’ll take the hotdog with mustard. Baseline
  b. *The hotdog... I’ll take with mustard. Topicalization (given)
  c. #Mustard... I’ll take with the hotdog. Topicalization (new)
  ~ Fronted element not given
  d. #Mustard, I’ll take with the hotdog. Focus movement
  ~ Given element not stressed

- There is a preference to stress both the hotdog and mustard because the hotdog is given information signaling a partial answer and mustard is new information answering the question.

⇒ Thus, the only licit information-structure movement in these scenarios is topicalization, which requires that the moved element be given.

* We can use these scenarios to confirm that topicalization indeed cannot target II-positions, in particular by contrasting it with topicalizing another constituent in the construction:

(81) Context: Gloria is making a salad for lunch at her friend’s house, but does not know where everything is located in the kitchen.
A: What about a knife and a cutting board?
   Where can I find those?
B: *[A cutting board]... there is [on the table].

Appendix: Relative clauses and scope

- Restrictive RCs allow the nominal head to reconstruct, but appositive RCs do not (examples based on Bianchi 1999):

  (83) Restrictive RCs
  *two >> every; *every >> two
  I called the two patients, [RC that every doctor will examine ___1].

  (84) Appositive RCs
  *two >> every; *every >> two
  I called the two patients, [RC which every doctor will examine ___1].

- To create distinct low and high readings in restrictive RCs, we must turn to adjectival modifiers like first and only (Bhatt 2002):

  (85) the only book, [RC that John said that Tolstoy had written ___1]
  a. Low reading (reconstructed) say >> only the x such that John said that ‘x is the only book that Tolstoy wrote’
  b. High reading (scope-shifted) only >> say the only book about which John said that Tolstoy had written it

- Crucially, when a restrictive RC is formed on a Π-position, only the low reading of the adjectival modifier survives:

  (86) the only books, [RC that John said (that) there were ___1 on the table]
  a. Low reading (reconstructed) say >> only the x such that John said that ‘x are the only books that there are on the table’
  b. High reading (scope-shifted) only >> say the only books about which John said that there were on the table

* Thus, relative clauses conform to the scope generalization.