CRITERIA FOR DIAGNOSING COVERT MOVEMENT
(AND SOME REMARKS ON THE DUKE OF YORK)
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1. PRELUDE: OVERT MOVEMENT

Diagnostic (non-trivial) tests for overt movement of categories with descriptive content rely on the presence of an independent factor that systematically cooccurs with movement. The combinatorial options that arise from the possible combination of movement with this independent factor can be described in terms of Kiparsky’s (1971) typology of rule interaction:

\[
\begin{array}{c|c|c|c|c}
\text{Rule 1:} & \text{Feeding} & \text{Bleeding} & \text{Counter-feeding} & \text{Counter-bleeding} \\
A \rightarrow B & A \rightarrow B & B \rightarrow C & A \rightarrow C \\
B \rightarrow C & \text{A} \rightarrow \text{C} & A \rightarrow B & \text{A} \rightarrow B \\
\end{array}
\]

\[\text{Opacity} : \text{The observation that a system displays opacity effects provides argument for a derivational relation between levels, and against (strongly) representational theories (Brody 1995; Koster 1985, a.o.).}\]

1.1. DIAGNOSING OVERT MOVEMENT

Pretheoretically, without assuming Copy Theory of movement or similar devices, (anti)-reconstruction effects manifest cases of opacity.

Counter-feeding: movement destroys context for application of Principle C. Moreover, reversing the order - i.e. evaluating Condition C before moving - would induce (feed) disjoint reference effect.

\[
\begin{array}{c|c|c|c|c}
\text{(2) } & \text{[Which picture [near John] did he like?]} \\
\text{b. } & \hat{\alpha} \text{ cannot be evaluated for some interpretive principle in base position of } \alpha. \\
\text{d. } & \alpha \text{ has moved (and is spelled out in higher position).} \\
\end{array}
\]

Counter-bleeding: movement destroys context for evaluating Condition A. Reversing the order - i.e. moving first, then evaluating Principle A - would render impossible (bleed) anaphor licensing.

\[
\begin{array}{c|c|c|c|c}
\text{(4) } & \text{[Which pictures of himself did noone like?]} \\
\text{a. } & \alpha \text{ surfaces in derived position.} \\
\text{b. } & \alpha \text{ is evaluated for some interpretive principle in base position.} \\
\text{c. } & \alpha \text{ has moved (and is spelled out in higher position).} \\
\end{array}
\]

In the two cases above, opacity can be resolved by Copy Theory and Late Merge, though.

(6) a. There is an operation X that cannot affect \( \alpha \) in its base position.
b. \( \alpha \) surfaces in derived position.
c. Operation X may target \( \alpha \) in its derived position.
d. \( \alpha \) is evaluated for some interpretive principle in base position.
e. \( \dot{\alpha} \) has moved (and is spelled out in higher position).

Duke of York (DoY) configurations cannot be recast in representational terms (McCarthy 2003), and therefore present one of the strongest possible arguments for a derivational model.

1.2. ENTER THE DUKE OF YORK

○ Beck (1996): QP interveners block covert movement (intervener \textbf{bold}, covertly moved node \textit{italics}):

(7) a. Sie fragte, was wer wann verstanden hat
   She asked, what who when understood has
   “She asked, who understood what when”

\textbf{b.} *Sie fragte, was \textbf{niemand} wann verstanden hat \textit{niemand} is an intervener
   She asked, what nobody when understood has
   “She asked, what understood understood when”


(8) a. Sie fragte, wer nun Morgen \textit{über genau} diesen Vorfall sprechen will
   She asked, who particle tomorrow exactly about this incident spoken has
   “She asked, who will talk about this very incident tomorrow”

\textbf{b.} *Sie fragte, wer nun Morgen \textit{genau} \textit{über was} sprechen will
   She asked, who par. tomorrow exactly about what speak will

c. *Sie fragte, wer nun Morgen \textit{über genau was} sprechen will
   She asked, who par. tomorrow exactly about what speak will

d. (?)Sie fragte, wer nun Morgen \textit{über was genau} sprechen will
   She asked, who par. tomorrow about exactly what speak will
   “She asked, who tomorrow with exactly whom spoken has”

○ Sauerland & Heck observe that pied-piped interveners trigger Beck effects, too. This supports von Stechow’s (1996) covert movement analysis of the relative pronoun, as in (10):

(9) a. weil Maria über \textit{genau} diesen Vorfall sprach
   since Mary about exactly this incident talked

b. der Vorfall über (*\textit{genau}) den Maria sprach
   the incident about exactly which Mary talked
   “the very incident that Mary talked about”

(10) a. the incident [[PP (*\textit{exactly}) about which\textsubscript{1}]] Mary talked

b. LF: the incident [which \( \lambda\textsubscript{1} \) \textit{[PP about t\textsubscript{1}]] Mary talked \textbf{LF-movement of relative pronoun}}

c. LF: the incident [which \( \lambda\textsubscript{1} \) \textit{[PP exactly about t\textsubscript{1}]] Mary talked \textbf{exactly triggers}}
   \textit{intervention effect}
Duke of York derivations: In pied-piped infinitivals, movement of the containing CP₂ places relative pronoun in a position *above* the intervener (‘smuggling’ in the sense of Collins 2005). As a result, covert movement of the pronoun does not cross *nobody*, obviating a Beck effect.

(11) a. weil niemand₁ auch nur einem seiner₁ Freunde [genau dieses Buch] schenken wird since nobody will give this very book to even a single one of his friends
b. the Buch [CP₂ (*genau) das₃ [NPI auch nur einem seiner₁ Freunde] zu schenken] wohl the book which even only a single of his₁ friends to give particle niemand₁ t₃ wagen wird nobody dare will

“the very book OP₃ that nobody₁ will give t₃ [NPI to even a single one of his₁ friends]”

*Complication:* Relative pronoun and CP in (11)b might have moved independently (Haider 1985; van Riemsdijk 1985, a.o.). In this case, CP movement would not feed covert movement of relative pronoun, and the structure fails to instantiate a DoY context.

*Solution:* Further embedding of pronoun inside PP. Pied-piped PPs need to reconstruct into their base position (s. Sauerland & Heck 2003 for arguments). Thus, the scopal properties of the PP match the scopal properties of its local environment (CP₂ in (13)), and can therefore be used as a test for position of CP₂.

(12) a. PP reconstructs into its base position inside CP₂.
   b. Fronted CP is interpreted in reconstructed position (variable binding and NPI-licensing).
   c. PP is interpreted within lower copy of CP

(13) der Vorfall [CP₂ [PP über (*genau) den₃] mit [NPI auch nur einem einzigen seiner₁ Freunde] zu sprechen] wohl niemand₁ t₃ wagen wird speak particle nobody dare will

“the very incident OP₃ that nobody₁ would dare to talk about t₃ [NPI to even a single one of his₁ friends]”

(14) a. [Movement of PP into SpecCP of one of the two CPs not represented]
b. LF: ③ Reconstruction of CP, forced by three considerations:

\[
\begin{align*}
\text{CP} & \quad \lambda_3 \quad \text{TP} \\
\text{nobody}_1 & \quad \text{VP} \\
\end{align*}
\]

- Pronominal variable binding of his
- NPI-licensing of not even a single one
- CP₂ (property) must semantically combine with dare

\[
\text{[pp about } t_1] \text{[to NPI + his] to speak}
\]

(15) Conclusion I:
- Derivational DoY analysis correctly predicts that nobody does not trigger Beck effect.
- Representational theories cannot express contrast between well-formed structures (without intervening genau/‘exactly’) and ill-formed ones (with genau). In both cases, nobody intervenes between the relative pronoun and its trace inside the reconstructed CP.

\[\Rightarrow\text{ DoY provides a diagnostic for movement (evidence for derivations).}\]

(16) Conclusion II:

a. Movement of PP feeds movement of relative pronoun.
b. Relative pronoun moves covertly.
c. \[\therefore\text{ Total reconstruction cannot consist in PF-movement (Sauerland & Elbourne 1999).}\]

\[\Rightarrow\text{ Will become relevant again in the discussion of diagnostics for covert movement.}\]

Complication: In (14), relative pronoun moves out of higher copy of CP₂ only - movement out of lower copy induces Beck effect. How can it be ensured that the lower copy contains a variable bound by \(\lambda_3\)?

NB: It is not entirely clear whether intervention effects also show up in configurations that cannot be analyzed in terms of covert movement (Reinhart 1991; Pesetsky 2000: fn. 82).

(17) a. \(\exists f\) Who will be offended if we invite which philosopher?
b. \(\ast\exists f\) Who will be offended if nobody invites which philosopher?

Alternative choice function analysis? Pied-piping dilemma can also be resolved by choice functions (Sternefeld 2001a: 480; Sauerland & Heck 2003):

(18) a. \(\left[\text{CP } \exists f \text{ Whose mother} \right] \text{ did you see?}\)
b. \(\lambda p \exists f (\text{choice-function}(f) \land p = \left[\text{CP} \left[\text{DP } f[\text{whose mother}]\right]\right] \lambda x [\text{you see } x]) = \lambda p \exists f (\text{choice-function}(f) \land p = \left[\text{CP} \text{ you see } \left[\text{DP } f[\text{whose mother}]\right]\right])\)
c. \(\lambda p \exists x (p = \left[\text{CP} \text{ you see } \left[\text{DP } x^* \text{ mother}\right]\right])\)

A problem for choice functions: in (13), the pied-piped CP₂ contains material that must reconstruct at LF. On the choice function account, the content of the DP is only restored in semantics, though.
2. COVERT MOVEMENT

There are two classic diagnostics for covert movement of categories with descriptive content.

**Bleeding:** Late Merge and \textsc{Overt Covert Movement (OCM)}: OCM obviates disjoint reference effects, a.o. (On OCM see Bobaljik 1995; Fox \& Nissenbaum 1999; Pesetsky 2000; Nissenbaum 2000, a.o.):

(19) a. *I showed him every book that Sam wanted me to show him \quad \text{(Fox \& Nissenbaum 1999)}
    b. I showed him every book that Sam wanted me to \(\triangle\)
    c. I \([\text{VP} \text{showed him every book}] \text{every } \text{book} \quad \text{that Sam wanted me to } \triangle\)

**Feeding:** ACD and QR. QR is a precondition for ellipsis resolution (see literature).

2.1. DESIGNING A NEW DIAGNOSTIC

**Multiple movements:** If two categories move, the chains that these categories create are subject to arboreal well-formedness conditions. Depending on theory, the paths either need to be nested (reversing the order; Pesetsky 1982) or crossing (resulting in order preservation; Richards 2001; Williams 2003; a.o.).

(20) a. \(\alpha\) surfaces in base position.
    b. \(\beta\) combines semantically with parts of \(\alpha\).
    c. \(\beta\) is evaluated for some interpretive principle in position \textit{above} base position of \(\alpha\).
    d. \(\therefore\) \(\alpha\) has moved (and is spelled out in lower position).

**Feeding:** The new diagnostic for covert movement to be developed below involves multiple movements.

2.2. BINDING AND MOVEMENT

Movement results in binding (Heim \& Kratzer 1998): Movement includes a rule that separates the index from its host category and re-attaches it to the sister node of the host:

(22) a. \[\text{The dog}_{1} \quad [\text{vP} \quad t_{1} \text{ slept}]\]
    b. \[\text{IP} \quad \text{DP} \quad \text{vP} \quad \lambda_{1} \quad [\text{IP1}] = \lambda_{1}[\text{sleep}(t_{1})]\]

Two views on the relation between binding and movement:

(23) \textit{Hypothesis a}: All movement results in \(\lambda\)-binding (Heim \& Kratzer 1998)

\textit{Hypothesis b}: All \(\lambda\)-binding derives from movement \(\equiv\) possibly too strong

**Question:** Which types of \(\lambda\)-binding derive from movement? Identifying these types would provide new tests that are \textit{diagnostic of covert movement}.
Two types of binding:

(24) a. \textit{e-binding}

- Binding relation involves individual traces, or higher type (intensionalized) traces.
- The $\lambda$-operator binds traces denoting entities of type e, $\langle e, t \rangle$, $\langle \langle e, t, \rangle t \rangle, \ldots$ or intensionalized versions thereof.

b. \textit{s-binding}

- Binding relation involves a silent situation pronoun in the linguistic object language (Gallin 1975; von Fintel & Heim 2007; Percus 2000; Sauerland & Percus 2003, a.o.).
- The $\lambda$-operator binds a situation variable that denotes an entity of type s.

Referential opacity: s-binding is a standard device for analyzing \textit{de dicto/de re} ambiguities:

(25) I thought that your yacht was larger than it is. \quad \text{(Russell 1905)}

a. Consistent \textit{de re} reading: "The size that I thought your yacht was exceeds its actual size."

b. Contradictory \textit{de dicto} reading: "I thought that the size of your yacht exceeds its size."

(26) a. LF for \textit{de re}:

$$\lambda s_0 \left[ \text{I thought } \lambda s' \left[ \text{your yacht was larger-in-s'} \text{ than it is large-in-s_0} \right] \right]$$

For all worlds $s'$ that are compatible with my beliefs in $s_0$, it holds that the size that your yacht has in $s'$ is greater than its size is in $s_0$

$s$ is bound at a distance by $\lambda$-operator above \textit{think} (cf. non-local \textit{res}-movement)

b. LF for \textit{de dicto}:

$$\lambda s_0 \left[ \text{I thought } \lambda s' \left[ \text{your yacht was larger-in-s'} \text{ than it is large-in-s'} \right] \right]$$

For all worlds $s'$ that are compatible with my beliefs in $s_0$, it holds that the size that your yacht has in $s'$ is greater than its size is in $s'$

$s$ is locally bound by $\lambda$-operator below \textit{think}

\textbf{GOAL:} Establish a new diagnostics for movement in s-binding relations that is based on properties of multiple movement configurations.

(27) \textit{Structure of the argument}

a. There is a specific syntactic operation \textit{X}.

b. The combination of s-binding and operation \textit{X} behaves just like the combination of e-binding and operation \textit{X}.

c. e-binding is the result of movement.

d. $\therefore$ s-binding is the result of movement.

(28) \textit{Consequences}:

- Movement account of s-binding leads to a partial unification of restrictions on s-binding and restrictions on e-binding.
- These restrictions are best captured in terms of properties of \textit{movement}.
  - A diagnostic for movement of silent categories/categories that lack descriptive content.

\textit{Empirical domain}:

- DP-reconstruction and scope trapping for s-binding
  - Scope freezing with predicate fronting for Q-binding
3. Multiple Movements

Combining the assumption that s-binding is the result of movement of silent situation pronouns (Percus 2000; von Fintel & Heim 2007) with restrictions on multiple movement known from e-binding leads to a unified analysis of two previously unrelated phenomena: DP-reconstruction and Scope Freezing.

Outline of presentation:

Step 1. Background assumptions about DP reconstruction (see §3.1 and Appendices)
Step 2. A new generalization about DP reconstruction (§3.2)
Step 3. Constraints on DP-reconstruction resemble constraints on Scope Freezing (§3.3)

3.1. Background: DP-reconstruction

Reconstruction repairs level ordering conflicts:

(29) [Which pictures of himself1]2 did noone1 like t2?

Tests for reconstruction: the effects of DP reconstruction can be observed across three interpretive dimensions:

<table>
<thead>
<tr>
<th>Property</th>
<th>determined by</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Scope of quantificational determiner</td>
<td>position of determiner in logical meta language</td>
</tr>
<tr>
<td>II. e-binding and other c-command sensitive properties</td>
<td>position of restrictor in tree at LF</td>
</tr>
<tr>
<td>III. s-binding inside restrictor (de dicto/de re)</td>
<td>position of s-binder of the situation pronoun inside restrictor</td>
</tr>
</tbody>
</table>

(30) Logical syntax of quantification

In contexts involving reconstruction, these three properties can in principle be read off two positions: the surface position, and the reconstructed position inside the lower copy. This yields six logically possible ways of dissociating determiner scope, scope of the restrictor and opacity. Out of these 6 potential dissociations, only one appears to be actually empirically attested:

(31) A DP that reconstructs for scope does not have to reconstruct for binding.

(for details and data see Appendices A & B)
Evidence for generalization (31):

- Scope reconstruction does not need Principle C effect if restrictor is read *de re* (Sharvit 1998).

(33) How many students who like John, does he, think every professor talked to t1?

\[ \sqrt{\text{narrow scope *de re* without BT-reconstruction (Principle C)}} \]


(34) weil wir, [einige Freunde von einander.1231 alle Gäste.2 t1 vorstellen wollten

since we some friends of each other to all guests introduce wanted

\[ \sqrt{\text{inverse scope } (\forall > \exists)} \text{ without BT-reconstruction (Principle A)}} \]

Types of reconstruction: there are different strategies for repairing level ordering conflicts:

(35) SYNACTIC RECONSTRUCTION (SYNR): Reconstruction applies prior to verification of binding relations, NPI,...(Fox 1998; Romero 1998; a.o.)

SEMANTIC RECONSTRUCTION (SEMR): Reconstruction applies subsequent to verification of binding relations, etc... by \( \lambda \)-conversion into higher type trace (Cresti 1995; Rullmann 1995; Stechow 1991)

[D-SPLIT: Determiners are generated in scope position, restrictor is merged in foot position of chain. Restrictor moves to sister node of D. (Kratzer & Shimoyama 2002; Sportiche 2005)]

Analysis of (34) and (33): Binding relations are determined by LF, while scope is computed in semantics, subsequent to SemR. Postponing lowering to semantics results in high binding scope and narrow determiner scope.

\[ (31) \text{ provides evidence for a HYBRID SYNR/SEMR ACCOUNT (Sharvit 1998; Lechner 1996).} \]

3.2. DP-RECONSTRUCTION AND S-BINDING

Scope, e-binding and s-binding cannot be read off any copy. DP-interpretation is subject to the following generalization:

(36) E-binding and s-binding must be evaluated in the same copy.
According to (36), *de re* readings correlate with wide e-binding scope, while *de dicto* interpretations entail reconstruction for e-binding. The hybrid SynR/SemR theory accounts for (36) by adopting (37):

(37) a. Semantic reconstruction always results in narrow scope *de re* readings.
    $\Rightarrow$ No reconstruction for BT with *de re* readings

   b. Syntactic reconstruction always results in narrow scope *de dicto* readings.
    $\Rightarrow$ Obligatory reconstruction for BT with *de dicto* readings

In order to arrive at (37), the hybrid SynR/SemR theory needs to guard against overgeneration by excluding two contexts. Both involve fronted DPs that are given narrow determiner scope. Both instantiate cases in which e-binding and s-binding are not read off the same copy:

(38) Case 1: *de dicto* without reconstruction for BT $\Rightarrow$ blocked by A1 of (40)
Case 2: *de re* and reconstruction for BT $\Rightarrow$ excluded by A2 and A3 of (40)

(39) a. Unattested combination, case 1
b. Unattested combination, case 2

THREE ASSUMPTIONS

(40) A1. The types of DP-denotations do not include situation variables. Thus, e and <et,t> are possible types for traces, but not <s,<et,t>> or <<e,st>,st>>.
(Lechner 2007; s.a. Keshet 2008, chap. 3; see Appendix C for details)
$\Rightarrow$ SemR generates narrow scope *de re*, but not narrow scope *de dicto* interpretations
$\Rightarrow$ Narrow scope *de dicto* readings can only be derived by SynR.

A2. s-binding is the result of movement.

A3. Movement out of silent categories observes the MLC.

Analysis: In a two member chain, an s-pronoun may move in three different ways: ① local s-movement out of the lower copy; ② long s-movement out of the lower copy; ③ s-movement out of higher copy.

(41) (An American seemed to win)
Some combinations of DP- and s-movement are detailed in (42); relevant are I–III. and V.

(42)  
I. ✓ SynR and de dicto  
II. *SynR and de re  
III. ✓ No SynR and de re

I. Local s-movement out of lower copy (①), followed by DP-movement to a higher position: 
observer MLC w.r.t. $\lambda_2$ (and (43) below) $\Rightarrow$ derives reconstructed de dicto reading

II. Long s-movement out of lower copy (②), followed by DP-movement to a lower position: 
vioates MLC w.r.t. $\lambda_2$ (as well as (43)) $\Rightarrow$ blocks unattested reconstructed de re reading

III. DP-movement, then local s-movement out of higher copy (③): 
observer MLC (as well as (43)) $\Rightarrow$ derives de re reading without SynR

IV. DP-movement, then s-lowering: 
vioates ban on lowering $\Rightarrow$ blocks unattested de dicto reading without SynR

V. Duke of York (mysterious): like III., but lower copy is interpreted (de re and SynR; unattested)

VI. like III., but s-movement out of lower copy: violates cyle, on assumption that s moves overtly.

Hypothesis: Generalization A3 of (40) can be reduced to properties of movement, e.g. by adopting (43):

(43) \[\text{Extend}_{de}^\text{f}: \text{If } \alpha \text{ moves later than } \beta, \text{ then } \alpha \text{ lands above } \beta. \]  
\text{(s. Richards 2001; Abels 2007)}  
\Rightarrow \text{Movement is order preserving if lower category moves first (cyclic, type driven).}  
\Rightarrow \text{Movement is order reversing if higher category moves first (noncyclic, feature driven).}

In-situ DPs: In-situ DPs admit narrow scope de re readings (Fodor’s 3rd reading of Heim&Fintel 2007).

(44) $\lambda s_0 [\text{Mary wanted } \lambda s’ \text{ [to buy a [hat just like mine]}_{s_0}]$  
\text{(Fodor 1970)}  
\text{want } \sim \text{a hat just like mine}_{de re}$

(45) $\lambda s_0 [\text{Georg believes } \lambda s’ \text{ [that a [woman from Stuttgart], loves every [member of the VfB]}_{s_0}]$  
\text{(Bäuerle 1983)}  
\text{believe } \sim \text{a woman from Stuttgart}_{de dicto} \times \text{ every member of the VfB team}_{de re}$
A problem: Why can the subject in (46)b not bind anaphor at LF, and then undergo SemR?

(46)  a. Two women seemed to me to have talked with every senator \( \forall x \exists y \)
    b. Two women seem to each other to have talked with every senator \( \emptyset \forall x \exists y \)

(simplified from Lebeaux 1995)

Possible direction: If the subject reconstructs by SemR, it binds a higher type trace. On the assumption that anaphors denote reflexive relations between individuals, such configurations (which involve \( \lambda \)-binding over higher type entities) might not be suitable binders for anaphors.

3.3. PREDICATE FRONTING AND E-BINDING

Observation: The restrictions on s-binding out of DPs and the restrictions on e-binding in contexts of predicate fronting look alike. This parallelism supports a movement analysis of s-binding.

Scope Freezing: predicate fronting bleeds inverted scope readings (Barss 1986; Huang 1993; a.o.):

(47) .... and [vp teach every student], noone will \( \neg \exists x \forall y / \emptyset \forall y \neg \exists x \)

Analysis: There are three ways for object QR in contexts of VP-fronting: ① local QR out of lower copy; ② long QR out of lower copy; ③ QR out of higher copy. (NB: (48) is parallel to (41), except for ③)

(48)

I. Local movement of object (①), followed by order preserving subject raising and VP-fronting: observes MLC (as well as (43)) \( \Rightarrow \) derives narrow scope reading for object

II. Long movement of object (②), followed by local subject movement: violates MLC (as well as (43)) \( \Rightarrow \) blocks unattested object wide scope reading

III. Duke of York (mysterious): movement out of higher copy (③), but lower copy is interpreted. observes MLC (as well as (43)) \( \Rightarrow \) incorrectly predicts object wide scope

(49) a. Movement of DP blocks non-local s-movement out of the lower copy of the DP in (41). (no de re readings; Scope Trapping).

b. Movement of VP blocks non-local Q-movement out of the lower copy of the VP in (48). (no wide scope readings for quantifiers contained inside VP; Scope Freezing).

In both contexts, movement of XP renders the lower copy of XP ineligible for non-local subextraction.

\( \Rightarrow \) Towards a unified analysis (missing: why no movement from lower copies)
Scope out of *in-situ* VPs: By A3 of (40), derivation does not need to conform with MLC. As for (43), the two scope orders can be derived from two orders of movement. *Surface order:* OCM of object, followed by order preserving subject movement. *Inverse scope:* subject moves overtly, followed by object QR at LF. Crucially, the latter option is unavailable with VP-fronting.

*Prediction:* Inverse scope among (co-arguments) is contingent upon overt movement of the higher QP. As a result, internal arguments, are correctly predicted not to permute in scope:

(50) I gave a child each doll. \( \exists \forall^* \forall > \exists \)  
(Bruening 2001, (2a))

Alternative PF-movement analysis of Scope Freezing? The existence of DoY derivations for pied-piped infinitivals indicated that a PF-movement analysis of Scope Freezing (Sauerland & Elbourne 1999) is not general enough to capture all manifestations of total reconstruction (see (16)).

### 4. Extensions

#### 4.1. Intervention and Containment

Inverse Linking provides another context where (non-overt) movement of a node limits further movement of categories contained inside that node.

**Inverse linking** (Larson 1985; see Sauerland 2000 for discussion of MLC and LF):

(51) [Two policemen]₁ spy on [₂ someone from [₃ every city]]

(52) a. 2 > \( \forall \) > \( \exists \)
b. \( \forall \) > \( \exists \) > 2
c. \( *\forall \) > 2 > \( \exists \)

(53) *Generalization:* If \( \alpha \) moves across \( \gamma \) and \( \alpha \) contains \( \beta \), then \( \alpha \) and \( \beta \) cannot be separated by \( \gamma \).

(54)\[
\begin{array}{cc}
\text{XP} & \text{DP-reconstruction} & \text{Predicate fronting} & \text{Inverse linking} \\
\gamma & \alpha & \alpha: & \text{DP} & \text{VP} & \text{object QP} \\
\gamma & & \text{higher verb (} \lambda_2 \text{ in (41))} & \text{subject Q} & (\text{base of}) \text{subject QP} \\
\beta & \beta: & \text{s-variable} & \text{object QP} & \text{QP inside} \alpha \\
\end{array}
\]

#### 4.2. Intervention by C-Command

**Dream reports** (Percus & Sauerland 2003): Pronoun movement in dream reports is sensitive to Shortest/MLC even if no overt dislocation has occurred.

(55) a. John \( \lambda_2 \) dreamt that \( \lambda_1 \) he₁, John’s dream self was marrying his₂, John’s granddaughter
b. *John \( \lambda_2 \) dreamt that \( \lambda_1 \) he₂, John was marrying his₁, John’s dream self granddaughter

(56) a. ... \( \lambda_1 \) ... pronoun₁ ... pronoun₂  
Local movement of *pronoun₁* observes MLC
b. *... \( \lambda_1 \) ... pronoun₂ ... pronoun₁*  
Non-local movement of *pronoun₁* violates MLC
Dahl’s puzzle: A similar MLC effect can be observed with individual pronouns in elliptical VPs (Dahl’s Puzzle; Dahl 1974; Fiengo & May 1994: 130; Fox 2000).

(57) Max said he saw his mother and Oscar said he saw his mother, too.
  a. and Oscar said Oscar saw Max's mother sloppy strict
  b. and Oscar said Max saw Oscar's mother strict sloppy

(58) Max said he saw his mother and Oscar did, too. (∆ = say he saw his mother)
  a. and Oscar said Oscar saw Max's mother sloppy strict
  b. *and Oscar said Max saw Oscar's mother *strict sloppy

Analysis: Covert pronoun movement for sloppy readings (question: to position below or above say?):

(59) a. ... λ₁ ... pronoun₁ ... pronoun₂ Local movement of pronoun₁, observes MLC
  b. *... λ₁ ... pronoun₂ ... pronoun₁ Non-local movement of pronoun₁, violates MLC

Summary:

(60)                      MLC sensitive movement                        MLC insensitive movement
  a. s-movement out of reconstructed DPs s-movement out of in-situ DPs
  b. QR out of fronted VPs QR out of overt VPs
  c. QR out of DP that has moved [?] QR out of in-situ DP [?]
  d. Dahl’s Puzzle Pronouns in non-elliptical VPs
  e. Pronoun movement in dream reports [no correlate?]

Note that there are also crucial differences between contexts (60)a/b on the one hand, and those in (60)d/e on the other. Why?

Difference I: With DP-reconstruction, VP-fronting and in ellipsis contexts, MLC-sensitivity is the result of movement out of a containing, silent category. In dream reports, pronoun movement is governed by the MLC also in the absence of overt movement or ellipsis.

Difference II: Pronominal variable binding in ellipsis is sensitive to MLC only if competing structures are t-conditionally identical (Fox 2000). With DP-reconstruction and VP-fronting, the competing structures may differ in interpretation.
APPENDIX A: TAXONOMY OF RECONSTRUCTION

If a DP moves, there are six logically possible ways of dissociating e-binding, s-binding scope of the restrictor and determiner scope:

<table>
<thead>
<tr>
<th>(61)</th>
<th>Binding</th>
<th>Restrictor</th>
<th>Scope</th>
<th>Attested?</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>(Scrambling, how many Questions, A-movement)</td>
<td>✓ SynR/SemR with extensional T’s ✓ SynR</td>
</tr>
<tr>
<td>b.</td>
<td>✓</td>
<td></td>
<td>✗</td>
<td>Scope Trapping I</td>
<td>✓ SynR/SemR with extensional T’s ✓ SynR</td>
</tr>
<tr>
<td>c.</td>
<td></td>
<td>✓</td>
<td>✗</td>
<td>Scope Trapping II (✓ without movement)</td>
<td>✓ SynR/SemR: $\not=$ see below</td>
</tr>
<tr>
<td>d.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>not derivable by any combination of SynR and SemR</td>
</tr>
<tr>
<td>e.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓Scope Trapping III</td>
</tr>
<tr>
<td>f.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. OLD EVIDENCE FOR TRAPPING I + II: HOW MANY QUESTIONS (SHARVIT 1998)
Sharvit (1998): fronted DPs are exempted from Principle C if their restrictors are interpreted de re.

(62) How many students who hate Anton$_1$ does he$_1$ hope will buy him$_1$ a beer? $^*$de dicto/$\not=\$ de re

a. For what number n: in all of Anton’s bouletic alternatives s’ relative to s$_0$, there are n-many students who hate Anton in s$_0$ and who will buy him a beer in s’. narrow scope, de re

$\Rightarrow$ SemR (narrow scope determiner & de re) but no SynR in (62)a

b. *For what number n: in all of Anton’s bouletic alternatives s’ relative to s$_0$, there are n-many students who hate Anton in s’ and who will buy him a beer in s’. narrow scope, de dicto

2. NEW EVIDENCE FOR TRAPPING I + II: RAISING
Type I Trapping: (de dicto $\Rightarrow$ BT-reconstruction)
A nominal version Russell’s yacht-sentences: consistent interpretation is contingent on de dicto reading for raised subject (NB: perception reading for seem has to be excluded):

(63) a. John’s height$_{\text{de dicto}}$ seemed to us to exceed his (actual) height$_{\text{de re}}$. consistent reading
b. #John’s height$_{\text{de re}}$ exceeds his (actual) height$_{\text{de re}}$. contradictory reading

(64) a. [The height of the yacht]$_{\text{de dicto}}$ seemed to us to exceed its actual height$_{\text{de re}}$. consistent
b. [The height of the yacht]$_{\text{de re}}$ exceeds its actual height$_{\text{de re}}$. contradictory

Prediction: Consistent de dicto reading for subject is predicted to result in BT-reconstruction and a Principle C violation (= Scope Trapping I).
Result of preliminary study: speakers confirm contrast between a- and b-examples below, if sentences are assigned consistent interpretation. Thus, narrow scope subjects are necessarily interpreted *de dicto*:

(65)  
\[\text{a. } ??[\text{John}_1\text{'s height}]_{\text{de dicto}} \text{ seemed to him}_1 \text{ to exceed his actual height.} \quad \text{consistent} \]
\[\text{b. } [\text{His}_1\text{'s height}]_{\text{de dicto}} \text{ seemed to him}_1 \text{ to exceed his actual height.} \quad \text{consistent} \]

(66)  
\[\text{a. } ??[\text{The height of John}_1\text{'s yacht}]_{\text{de dicto}} \text{ seemed to him}_1 \text{ to exceed its actual height} \]
\[\text{b. } [\text{The height of his}_1\text{'s yacht}]_{\text{de dicto}} \text{ seemed to John}_1 \text{ to exceed its actual height} \]

**Conclusion:** (65) and (66) do not involve logically distinguishable differences in determiner scope. Thus, Trapping in A-movement should not link quantifier scope to binding (as held so far in the literature on A-movement) but binding and opacity (as in wh-movement).

**Type II Trapping:**  
(BT-reconstruction $\rightarrow$ *de dicto*)  
Embedding a reciprocal in the subject forces BT-reconstruction. (67) should therefore only admit the consistent interpretation (67)a, in which *each other's height* is construed *de dicto*.

(67)  
\[\text{[Each others}_1\text{'s height}] \text{ seemed to them}_1 \text{ to exceed their actual height.} \]
\[\text{a. } [\text{Each others}_1\text{'s height}]_{\text{de dicto}} \text{ seemed to them}_1 \text{ to exceed their actual height.} \quad \text{consistent} \]
\[\text{b. } [\text{Each others}_1\text{'s height}]_{\text{de re}} \text{ seemed to them}_1 \text{ to exceed their actual height.} \quad \text{contradictory} \]

It is not clear whether and how this prediction can be tested - reliable judgements are hard to obtain.

**APPENDIX B**

This appendix briefly retraces the evidence for keeping semantic and syntactic reconstruction apart, supporting a hybrid SynR/SemR theory (Lechner 1996/1998), and specifies assumptions about SemR.

1. **EVIDENCE FOR A HYBRID SYN R/S E M R THEORY I: RAISING**

1.1. Principle C:  
(narrow scope *de re* without BT-reconstruction)  
SynR/SemR approach predicts that it should be possible to combine a narrow quantifier scope reading with a *de re* construal for the restrictor without triggering Principle C violation.\(^1\)

(68)  
\[\text{a. } [\text{One American friend of John}_1] \text{ seemed to him}_1 \text{ to like every movie.} \]
\[\text{predicted: } \forall \forall > \exists_{\text{de dicto}} \]
\[\forall > \exists_{\text{de re}} \]
\[\text{b. } [\text{One of his}_1 \text{ American friends}] \text{ seemed to John}_1 \text{ to like every movie.} \]
\[\text{predicted: } \forall > \exists_{\text{de dicto/de re}} \]

Interfering factor: A-movement never seems to reconstruct for Principle C (s. Takahashi 2006):

(69)  
[Pictures of John\textsubscript{1}] seem to him\textsubscript{1} to be great.  
(Lebeaux 1998)  
Note however that it has not been tested yet whether (and to which extent) restrictor opacity has an influence on Principle C obviation.

\(^1\)Fox (1999: fn. 36) reports that similar structures were judged to be ill-formed by more than half of his informants. But crucially, the test did not control for opacity (Fox, p.c.).
1.2. Principle A: (narrow scope de re without BT-reconstruction)
A better test is based on Principle A. It should be possible to find contexts in which Principle A is satisfied in the higher copy, while the moved DP is construed with narrow scope de re.

(70) John₁ wonders [which picture of himself₁] seemed (to Mary₂) to have impressed every girl. 

predicted: pair - list or functional reading possible

2. EVIDENCE FOR A HYBRID SYN R / SEM R THEORY II: SCRAMBLING

2.1. Pronominal variable binding: If DO scrambled to the left of IO, the DO cannot contain a pronoun bound by the IO (Frey 1998, 1993, Haider 1993, a.o.):

(71) a. weil ich [jedem Angeklagten₂ seinen₂ Anwalt vorstellen wollte
   since I to every defendant his lawyer introduce wanted
   “since I wanted to introduce each defendant to his lawyer”

b. *weil ich [seinen₂ Anwalt] jedem Angeklagten₂ t₁ vorstellen wollte short scrambling
   since I his lawyer to every defendant introduce wanted

→ Short scrambling does not reconstruct for pronominal variable binding.

(72) Structure of the argument for SemR/SynR:

SemR  ⟷ QP₁ reconstructs below QP₂ for scope, resulting in QP₂ > QP₁
No SynR  ⟷ QP₁ does not reconstruct below QP₂ for variable binding

vP
   QP₁
     √SemR/*SynR  ➔ T₁
     vP
     variable₆₂
     QP₂

→ (73)b repeats the observation that scrambled objects do not undergo reconstruction for variable binding. Crucially, if the pronoun does not co-vary with the IO, as in (73)c, the DO can be interpreted within the scope of the IO to its right, attesting to the availability of SemR.

(73) Man beschuldigte die Staatsanwaltschaft₃ ...
one accused the District Attorney’s office

a. [jedem Angeklagten₂ [nur einen seiner₂ Anwälte] vorgestellt zu haben
   each defendant only one of his lawyers introduce wanted
   “The D.A.O₃ was accused of having introduced each defendant only to one of its₄ lawyers”

b. ??[nur einen seiner₂ Anwälte]₁ [jedem Angeklagten₂ t₁ vorgestellt zu haben
   only one of his lawyers each defendant introduce to have

   → DO undergoes SemR, but not SynR
2.2. Principle A: Reciprocals embedded inside DO can be bound by IO or subject ((74)a; Grewendorf 1984). If DO scrambles over IO, a DO-embedded anaphor can no longer be bound by IO it has crossed over (see (74)b) - only the subject may function as antecedent of each other (see (74)c):

(74) a. weil wir3 den Gästen2 [eine Freunde von einander2/3] vorstellen wollten since we to the guests some friends of each other introduced have
    “since we wanted to introduce some friends of each other to the guests”

    b. weil wir3 [eine Freunde von einander2/3], den Gästen1 t1 vorstellen wollten
       “since I wanted to introduce some friends of each other to the guests”

    c. *weil ich [eine Freunde von einander2], den Gästen1 t1 vorstellen wollte

⇒ Short scrambling does not reconstruct for Principle A (see §5 for analysis).

2.3. ∃-closure: Diesing’s (1992: 61f), Kratzer (1988/95): An NP that escapes the ∃-closure operator by overt movement out of vP loses its unselectively bound, existential reading. Scrambled objects are interpreted presuppositionally /’strong’/generically:

(75) a. weil er ja wohl ein Buch1 gelesen hat object existential/weak/cardinal
    “since he indeed a book read has”
    (Heim/Kamp/Lewis indefinite)

    b. weil er ein Buch1 ja wohl t1 gelesen hat object strong/presuppositional
    “since he a book indeed read has”
    (Generalized Quantifier)

(76) a. [ja wohl - ∃-closure .... ] [NPx ...] ⇒ existential
    [everybody [NPx ...] ⇒ existential

    b. [NPx [ja wohl - ∃-closure .... ] [t ...] ⇒ strong/*existential
    [everybody [NPx [t ...] ⇒ strong & narrow scope

⇒ Scrambling does not reconstruct for ∃-closure

• Adding a universal subject does not affect the interpretation of the object w.r.t. the strong/weak dichotomy. If the object follows ja wohl ((77)a) it is existential, if it precedes, it is necessarily interpreted as GQ (see (77)b). Crucially, (77)b can be read with inverse scope (∀ > ∃).

(77) a. weil ja wohl fast jeder2 ein Buch1 gelesen hat since indeed almost everybody a book read has
    “since almost everybody has read a book”

    b. weil [ein Buch]1 ja wohl fast jeder1 t1 gelesen hat since a book ‘indeed’ everybody read has
    “since almost everybody has read a book”

    (78) a. [ja wohl - ∃-closure .... ] [everybody [NPx ...] ⇒ existential
    [SemR/*SynR → ∃weak

    b. [NPx [ja wohl - ∃-closure .... ] [everybody [T ...] ⇒ strong & narrow scope
    [SemR/*SynR → ∀strong/*weak

⇒ DO undergoes SemR, but not SynR

APPENDIX C: SEMR AND TYPES OF HIGHER TYPE TRACES

Different assumptions w.r.t. the type of the trace entail different readings. The version presented below uses components that have already been discussed in the literature in isolation (see e.g. Fintel & Heim 2007: 71ff, 86ff). As far as I know, the specific combination to be proposed is new, though.
There are different types of higher type traces that can be employed by a theory of SemR. But only adopting a particular version - E-version below - correctly accounts for the generalization that narrow scope readings that do not display reconstruction effects for Binding Theory are always de re interpretations (see (37)).

**I-VERSION:** SemR utilizes intensional higher type trace, e.g. of GQ type $<$e,st>,st$>$ (Rullman 1995; ‘intensional’ in the sense that in the logical meta language, the expressions falling under this type take s-type arguments.)

(79) a. A friend seemed to be win
    b. $\lambda Q \exists x [\text{friend}(x)(s) \land Q(x)(s)]$ ⌜seemed$<$st$>,st$> T^*<e,st>\rightarrow \lambda 2 \lambda s \forall s' [R_{\text{seem}}(s)(s') \rightarrow T_2 (\lambda x \lambda s[\text{win}(t_1)(s)](s'))]

**Narrow scope de dicto by SemR:**

(80) a. $[(79)] = \lambda 2 \lambda s \forall s' [R_{\text{seem}}(s)(s') \rightarrow T_2 (\lambda_1 \lambda s[\text{win}(t_1)(s)](s'))]$

    $\lambda Q \lambda s \exists x [\text{friend}(x)(s) \land Q(x)(s)]$ ⌜seemed$<$st$>,st$> T^*<e,st>\rightarrow \rightarrow \lambda s \forall s' [R_{\text{seem}}(s)(s') \rightarrow T_2 (\lambda_1 \lambda s[\text{win}(t_1)(s)](s'))]

**Observation:** Derivation makes higher copy accessible for Binding at LF; de dicto and narrow scope are the result of $\lambda$-conversion in semantics. This option represents the unattested case (61)b.

**E-VERSION:** SemR utilizes ‘extensional’ higher type traces, the trace is of type $<$et,t$>$ (‘extensional’ in that the expressions falling under this type do not take s-type arguments).

(81) **ASSUMPTIONS:**
    - Each predicate takes silent situation pronoun as an argument (Percus 2000).
    - Situation pronouns are bound by movement of these pronouns, resulting in $\lambda$-abstraction (see e.g. Percus 2000; Sauerland & Percus 2003).
    - Situation/event argument of the verb is contributed by Asp (which
\[\lambda s_4 \rightarrow (83)\]

\[\lambda s_4 \quad TP \quad \rightarrow \lambda s_4 \forall s'[R_{\text{seem}}(s_4)(s') \rightarrow T_2(\lambda_3 [\text{win}(s')(t_1)])\]

\[\text{friend}_{<s,et>} \quad s_4 \quad \text{seemed}(s_4) \quad \text{TP}_{<st>} \quad \rightarrow \lambda s_3 T_2(\lambda_3 [\text{win}(s_3)(t_1)])\]

\[\lambda s_3 \quad TP_t \quad \rightarrow T_2(\lambda_3 [\text{win}(s_3)(t_1)])\]

**Extensional higher type trace**

\[\Rightarrow \text{TP}_{<et,t>} \quad \rightarrow \lambda_3 [\text{win}(s_3)(t_1)]\]

\[\lambda_3 \quad \text{AspP}_t \quad \rightarrow \text{win}(s_3)(t_1)\]

\[s_3 \quad [\text{VP win}_{<e,st>}\]

\[t_1 \quad [\text{VP win}_{<e,st>}\]

**(83) Narrow scope** de re reading by \(\text{SemR}\):

a. \[[(82)] = \lambda s_4 [\lambda_2 \forall s'[R_{\text{seem}}(s_4)(s') \rightarrow T_2(\lambda_3 [\text{win}(s')(t_1)])(\lambda Q \exists x [\text{friend}(s_4)(x) \land Q(x)])]\]

b. \[\lambda s_4 \forall s'[R_{\text{seem}}(s_4)(s') \rightarrow \lambda Q \exists x [\text{friend}(s_4)(x) \land Q(x)] (\lambda_3 [\text{win}(s')(t_1)])]\]

c. \[\lambda s_4 \forall s'[R_{\text{seem}}(s_4)(s') \rightarrow \exists x [\text{friend}(s_4)(x) \land \lambda_3 [\text{win}(s')(t_1)](x)]\]

d. \[\lambda s_4 \forall s'[R_{\text{seem}}(s_4)(s') \rightarrow \exists x [\text{friend}(s_4)(x) \land \text{win}(s')(x)]\]

\[\Rightarrow \text{derives attested narrow scope } \text{de re } \text{interpretation for raised subject } a \text{ friend}\]

**Observation:** Derivation makes higher copy accessible for Binding at LF; de re and narrow scope are the result of \(\lambda\)-conversion in semantics. This option is attested, and represents case (61)a.

**(84) Hypothesis:** \(\text{SemR}\) utilizes only extensional traces \(<e,t,>\). (Lechner 2007; s.a. Keshet 2008)

\[\Rightarrow \text{SemR always results in narrow scope } \text{de re } \text{reading for moved NP.}\]

\[\Rightarrow \text{Narrow scope } \text{de dicto} \text{ has to be derived by } \text{SynR}. \text{Thus, } \text{de dicto} \text{ readings automatically result in BT-reconstruction.}\]

**Question:** What excludes intensional T’s?

**Speculation:** The s-argument is the external argument of sentential predicates (i.e. VP is of type \(<e,st>\)), but serves as internal argument of the NP-restrictor (i.e. \(N^o\) is \(<s,et>\)). The \(<s,et>\) type might be basic, and \(<e,et>\) be derived by combining VP with an appropriate applicative \(v^o\) of type \(<st><e,st>\).  

**Further evidence for extensional traces:** Assume that all DPs are extensional (in the sense specified above). Assume furthermore that vPs (and CPs) denote propositions of type \(<s,t,>\). It follows that quantificational subjects (by hypothesis (84) of type \(<e,>\)) can never be interpreted in-situ.

\[\Rightarrow \text{derives ban on interpreting subjects } \text{in-situ} \text{ (Johnson & Tomioka 1997; Sauerland 2000)}\]

\[\Rightarrow \text{derives ban on reconstruction into small clause (given that small clauses are bare vPs)}\]
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