K&P 2018: Not all reconstruction effects are syntactic

LING 252 · Ethan Poole · 13 April 2020

1 Introduction

1.1 Empirical differences between SynR and SemR?

✳ Romero (1997, 1998) and Fox (1999) argue that scope reconstruction correlates with Condition C connectivity:

(1) **Quantifier–Condition C correlation (Q→C)**
Reconstruction for quantificational scope correlates with Condition C connectivity. [Romero 1997, 1998; Fox 1999]

- ***Recap of the relevant data***
  - The schematic test configuration, where Op is scope-bearing:

    (2) $[_{\text{DP}} \ldots [_{\text{RC}} \ldots \textbf{R-exp}_1 \ldots]]_2 \ldots \textbf{pron}_1 \ldots \text{Op} \ldots \_\_\__2 \ldots$

  - Romero and Fox claim that in this configuration, scope reconstruction is blocked:

    (3) [How many pictures [$_{\text{RC}}$ that **John**$_2$ took in Sarajevo]] does **he**$_2$ want the editor to publish ___ in the Sunday Special?

    a. **Wide-scope reading**
    ✓For what number *n*: There are *n*-many particular pictures *x* that John took in Sarajevo such that John wants the editor to publish *x*.

    b. **Narrow-scope reading**
    *For what number *n*: John wants the editors to publish in the Sunday Special (any) *n*-many pictures that John took in Sarajevo.

    [Romero 1998:96]

  - Crucially, when the R-expression and the pronoun are swapped, scope reconstruction becomes possible:

    (4) [How many pictures [$_{\text{RC}}$ that **he**$_2$ took in Sarajevo]] does **John**$_2$ want the editor to publish ___ in the Sunday special? [Romero 1998:96]

- They argue that Q→C is derived on SynR, but not SemR:

(5) **Reconstructed-scope reading of (3) on SynR**
*Q_n ~~[how$_n$ many pictures that John$_1$ took in Sarajevo]~~ **he**$_1$ wants [the editor to publish [how$_n$ many pictures that **John**$_1$ took in Sarajevo] in the Sunday special] ⇝ *Violates Condition C*

(6) **Reconstructed-scope reading of (3) on SemR**
✓Q_n [how$_n$ many pictures that **John**$_1$ took in Sarajevo] [$\lambda \mathcal{Q}_{\langle et,t \rangle}$ [**he**$_1$ wants [the editor to publish $\mathcal{Q}$ in the Sunday special]]]
⇝ *Does not violate Condition C*

⇒ ***Enriched versions of SemR***[1]

- Sternefeld (2001) and Ruys (2015) contend that Q→C does not *necessarily* favor SynR over SemR.
- They propose that enriched versions of SemR are in fact able to derive the generalization, with additional stipulations.

[1] For what it's worth, I have never found this argument very compelling. Even if SemR can be enriched to account for Q→C, it still does not *explain* Q→C in the same way as SynR. If Keine and Poole (2018) are right, though, it does not really matter …

1.2 Scope vs. intensionality?

✳ Sharvit (1998) and Lechner (2013, 2019) argue that Condition C correlates not with quantifier scope, but with reconstruction for referential opacity:

(7) **Intensionality–Condition C correlation (I→C)**
Condition C connectivity correlates with reconstruction for referential opacity, not with reconstruction for quantificational scope.
[Sharvit 1998; Lechner 2013, 2019]

⇒ The crucial piece of evidence for I→C comes from the paradigm in (8), which is attributed to Sharvit (1998):

(8) [How many students $[_{RC}$ who hate **Anton**$_1$]]$_2$ does **he**$_1$ *hope* [___ 2 will buy him$_1$ a beer]? [Sharvit 1998]

a. **Surface scope, transparent** *no reconstruction*
✓For what number n: There are n-many x that are students who hate Anton <u>in w_0</u> and in all of Anton's bouletic alternatives w' in w_0, x will buy him a beer in w'.

b. **Reconstructed scope, transparent** *reconstruction for scope*
✓For what number n: In all of Anton's bouletic alternatives w' in w_0, there are n-many x that are students who hate Anton <u>in w_0</u> and who will buy him a beer in w'.

c. **Reconstructed scope, opaque** *reconstruction for scope and opacity*
*For what number n: In all of Anton's bouletic alternatives w' in w_0, there are n-many x that are students who hate Anton <u>in w'</u> and who will buy him a beer in w'.

- ***Unpacking the readings in (8)***
  - **(8a):** It is assumed that there is a set of particular individuals who in the evaluation world are students who hate Anton—potentially unbeknownst to Anton—, such that Anton hopes they will buy him a beer. The question is asking how many such individuals there are.
  - **(8b):** The question is asking about the quantity of individuals who Anton hopes will buy him a beer, without having any particular individuals in mind. These individuals are students who hate Anton in the actual world, potentially unbeknownst to him.
  - **(8c)** (the absent reading): The question is asking about the quantity of individuals who Anton hopes will buy him a beer, without having any particular individuals in mind. These individuals are students who hate Anton in *Anton's bouletic alternatives*; they may not be students who hate Anton in the evaluation world.

- ***Potential problem with (8)?***
  The crucially absent opaque reading in (8c) is pragmatically dispreferred, because it ascribes to Anton the belief that there are students who hate him, but who will nonetheless buy him a beer.

∗ ***Putting it all together***

- Q→C and I→C are mutually incompatible, because they make contradictory statements about which types of reconstruction effects correlate with Condition C connectivity.
- This empirical uncertainty bears on the reliability of the analytical conclusions that have been drawn from Q→C.[2]

[2] Ruys (2015:479n27) speculates that the judgments underlying Q→C and I→C might reflect interspeaker variation. Crucially, there are individual speakers who exhibit all the relevant judgements cited in support of Q→C and I→C. We may therefore hope to find a more systematic resolution of this question.

1.3 Keine and Poole (2018) in a nutshell

- Novel data from Hindi-Urdu (henceforth Hindi) involving long scrambling provide compelling evidence in support of I→C and against Q→C.[3]
- These data require the hybrid approach to reconstruction developed independently by Lechner (1998, 2013, 2019):
  - SynR for referential-opacity reconstruction ⇝ Condition C connectivity
  - (SynR for pronominal-binding reconstruction ⇝ Condition C connectivity)
  - SemR for quantifier-scope reconstruction ⇝ Condition C connectivity
- The challenge for the hybrid approach is that restrictions must be placed on SemR so that higher-type traces cannot be used for referential-opacity reconstruction.
- Keine and Poole (2018) propose that these restrictions on SemR follow from the situation pronoun in the DP being an argument of the determiner and not the NP (à la Schwarz 2012).

[3] Judgements from: Sakshi Bhatia, Rajesh Bhatt, Bhamati Dash, and Anoop Mahajan.

2 The view from Hindi-Urdu

2.1 Background: Scrambling and scope

- Scrambling in Hindi can in principle be either A-movement or $\overline{\text{A}}$-movement:[4]
  - **A-scrambling**:
    not subject to weak crossover, cannot cross a finite-clause boundary
  - **$\overline{\text{A}}$-scrambling**:
    subject to weak crossover, may cross finite-clause boundary
- ***Terminology***
  - **Local scrambling**:
    Does not leave a finite clause → A-scrambling *or* $\overline{\text{A}}$-scrambling
  - **Long scrambling**:
    Leaves a finite clause → Always $\overline{\text{A}}$-scrambling

⇒ Crucially, A-scrambling and $\overline{\text{A}}$-scrambling exhibit different scope properties.[5]

[4] Mahajan (1990)

[5] Keine (2016, 2019, 2020)

⇒ ***Local scrambling may extend scope***
Local scrambling allows the moved DP to take wide scope in the landing site of movement:

(9) a. **Nonmovement baseline**
[*kisii vipakshii netaa-ne*] [**har samasyaa**] khadii kii hai
some opposition politician-ERG every problem cause did AUX
'Some opposition politician caused every problem.' ∃ ≫ ∀; *∀ ≫ ∃

b. **Local scrambling: Wide scope in landing site**
[**har samasyaa**]$_1$ [*kisii vipakshii netaa-ne*] ___$_1$ khadii kii
every problem some opposition politician-ERG cause did
hai
AUX
'Every problem, some opposition politician caused.' ∀ ≫ ∃

(10) **Scrambling out of nonfinite clause**
[**kitnii pictures**]$_1$ siitaa [$_{TP}$ ___$_1$ dikhaanaa] *caahtii* hai?
how.many pictures Sita show.INF want AUX
'How many pictures does Sita want to show?'
many ≫ *want*; *want* ≫ *many*

⇒ ***Long scrambling reconstructs for scope***
By contrast, long scrambling does not extend scope. Here, scope reconstruction is obligatory for most speakers:[6,7]

(11) [**har samasyaa**]$_1$ [*kisii vipakshii netaa-ne*] socaa hai
every problem some opposition politician-ERG thought AUX

[$_{CP}$ ki pradhaan mantrii-ne ___$_1$ khadii kii hai]
that Prime.Minister-ERG cause did AUX
'Every problem, some opposition politician thought that the Prime Minister had caused.' ∃ ≫ ∀; ?*∀ ≫ ∃

(12) [**kitnii pictures**]$_1$ siitaa-ne *tay* kar liyaa hai
how.many pictures Sita-ERG decide do take AUX

[$_{CP}$ ki vo ___$_1$ dikhaaegii]?
that she will.show
'How many pictures did Sita decide that she will show?'
decide ≫ *many*; ?**many* ≫ *decide*

- ***Note on the methodology***
  - Following Fox (1999), scope judgments for *how many*-questions were elicited by setting up a scenario in which the two interpretations yield distinct answers:

    (13) Sita wants to show slides from her recent trip to Kolkata at a party. She is an avid picture-taker and took about 500 of them. Sita decides to show a total of 100 pictures at the party. Now she has to pick the specific pictures that she wants to show. Sita goes through the pictures and decides for 52 of them that she wants to show them at the party. The remaining 48 pictures will be chosen at random at the time of the party.

[6] The exception is Anoop, who allows the wide-scope reading in long scrambling; the crucial reconstruction data hold for him nonetheless.

[7] The fact that (12) can have a matrix-question reading shows that $\overline{\text{A}}$-scrambling is at least partially LF-visible (Mahajan 1990; Dayal 1996). This rules out a "PF-movement" approach like that of Sauerland and Elbourne (2002).

– In this scenario, the '*many* ≫ *decide*' reading corresponds to the answer '52', whereas the '*decide* ≫ *many*' interpretation corresponds to the answer '100'.

– The answer '100' is readily accepted by consultants, while the answer '52' is judged impossible or degraded.

∗ ***Generalization***
Long scrambling (= $\overline{\text{A}}$-scrambling) reconstructs for quantificational scope.

2.2 Condition C and quantifier scope

- ***$\overline{\text{A}}$-scrambling obviates Condition C violations***

(14) a. **Nonmovement baseline**

* us-ne$_1$ socaa [$_{\text{CP}}$ ki siitaa-ne kal [$_{\text{DP}}$ **vo kitaab jo**
3SG-ERG thought that Sita-ERG yesterday that book that
raam-ko$_1$ **pasand thii**] bec dii thii]
Ram-DAT like AUX sell give AUX

'He$_1$ thought that Sita had sold the book that Ram$_1$ liked yesterday.'

b. **$\overline{\text{A}}$-scrambling**

[$_{\text{DP}}$ **vo kitaab jo** **raam-ko$_1$** **pasand thii**]$_2$ us-ne$_1$ socaa
that book that Ram-DAT like AUX 3SG-ERG thought
[$_{\text{CP}}$ ki siitaa-ne kal ___$_2$ bec dii thii]
that Sita-ERG yesterday sell give AUX

'The book that Ram$_1$ liked, he$_1$ thought that Sita had sold yesterday.'

- ***Predictions***
The properties of $\overline{\text{A}}$-scrambling provide a particularly clear domain in which to assess the empirical relation between scope reconstruction and Condition C connectivity:

– ***Q→C prediction***
Scope reconstruction should induce Condition C connectivity.

⇝ Because $\overline{\text{A}}$-scrambling (obligatorily) reconstructs for scope, $\overline{\text{A}}$-scrambling of a scope-bearing element out of a Condition C configuration should be outright ungrammatical.

– ***I→C prediction***
Scope reconstruction should be independent of Condition C connectivity.

⇝ $\overline{\text{A}}$-scrambling of a scope-bearing element out of a Condition C configuration should be grammatical and retain a reconstructed-scope reading.

⇒ ***No scope–Condition C connectivity***
As it turns out, scope reconstruction is possible—indeed still required—in a Condition C configuration:

(15) [$_{\text{DP}}$ **har kitaab** jo raam-ko$_1$ pasand hai]$_2$ us-ne$_1$ **kisii**
every book that Ram-DAT like AUX 3SG-ERG some
laṛkii-se kahaa [$_{\text{CP}}$ ki miinaa-ne kal ___$_2$ bec dii]
girl-INSTR said that Mina-ERG yesterday sell give

'Every book that Ram$_1$ likes, he$_1$ told some girl that Mina sold yesterday.'
∃ ≫ ∀; ?*∀ ≫ ∃

(16) [$_{DP}$ **kitnii** **pictures** jo [siitaa-ne$_1$] lĩĩ hãĩ]$_2$ [us-ne$_1$] **tay**
how.many pictures that Sita-ERG took AUX she-ERG decide
kar liyaa hai [$_{CP}$ ki vo ___ $_2$ dikhaaegii]?
do take AUX that she will show
'How many pictures that Sita$_1$ took did she decide that she$_1$ will show?'
decide ≫ *many*; ?**many* ≫ *decide*

⇒ Scope reconstruction is not affected by Condition C connectivity. This provides clear evidence against Q→C as a general constraint on reconstruction.

2.3 Condition C and intensionality

⇒ I→C makes a much stronger prediction than "Q→C is wrong": Condition C connectivity should block reconstruction for referential opacity. This prediction is borne out in Hindi:

(17) *Scenario:*
Pratap incorrectly believes that there exists a ghost in his backyard that is in love with Pratap. One day, Sangita sees some animal out of the corner of her eye in Pratap's backyard. Upon reporting this incident to Pratap, Pratap is convinced (incorrectly) that what Sangita saw was the ghost that he believes lives in his backyard.

a. **Non-movement baseline → Opaque reading possible**
[prataap$_1$] **soctaa** hai [$_{CP}$ ki sangiitaa-ne [$_{DP}$ ek **bhuutnii** jo
Pratap thinks AUX that Sangita-ERG a ghost that
[us-se$_1$] pyaar kartii hai] dekhii]
him-INSTR love do AUX saw
'Pratap$_1$ thinks that Sangita saw a ghost that loves him$_1$.'

b. **No Condition C configuration → Opaque reading possible**
[$_{DP}$ ek **bhuutnii** jo [us-se$_1$] pyaar kartii hai]$_2$ [prataap$_1$]
a ghost that him-INSTR love do AUX Pratap
soctaa hai [$_{CP}$ ki sangiitaa-ne ___ $_2$ dekhii]
thinks AUX that Sangita-ERG saw
'A ghost that loves him$_1$, Pratap$_1$ thinks that Sangita saw.'

c. **Condition C configuration → No opaque reading**
#[$_{DP}$ ek **bhuutnii** jo [prataap-se$_1$] pyaar kartii hai]$_2$ [vo$_1$]
a ghost that Pratap-INSTR love do AUX he
soctaa hai [$_{CP}$ ki sangiitaa-ne ___ $_2$ dekhii]
thinks AUX that Sangita-ERG saw
'A ghost that loves Pratap$_1$, he$_1$ thinks that Sangita saw.'
(entails actual existence of ghost)

- A more complex example is provided in (18), which contains (i) Condition C connectivity, (ii) scope interactions, and (iii) referential opacity (paralleling the English example in (8)). It demonstrates that Condition C connectivity travels with opacity, not quantifier scope:

(18) [$_{DP}$ **kitnii** **pictures** jo siitaa-ne$_1$ lĩĩ]$_2$ us-ne$_1$ **tay** kar
how.many pictures that Sita-ERG took she-ERG decide do
liyaa hai [$_{CP}$ ki vo$_1$ ___ 2 dikhaanaa caahtii hai]?
take AUX that she show.INF wants AUX
'How many pictures that Sita$_1$ took did she$_1$ decide she$_1$ wants to show?'

a. *__Surface scope, transparent__ *no reconstruction*
For what number n: There are n-many x that are pictures that Sita took in w_0 and in all of Sita's bouletic alternatives w' in w_0, Sita shows x in w'.

b. ✓__Reconstructed scope, transparent__ *reconstruction for scope*
For what number n: In all of Sita's bouletic alternatives w' in w_0, there are n-many x that are pictures that Sita took in w_0 and Sita shows x in w'.

c. *__Reconstructed scope, opaque__ *reconstruction for scope and opacity*
For what number n: In all of Sita's bouletic alternatives w' in w_0, there are n-many x that are pictures that Sita took in w' and Sita shows x in w'.

- ***Transparent reading of the moved DP in (18)***
For example: Sita is standing in front of a pile of pictures that she took, but Sita is not aware of who took the pictures. As a result, the description *pictures that Sita took* is true in the actual world, but not in Sita's bouletic alternatives.

- ***Opaque reading of the moved DP in (18)***
For example: Sita is standing in front of a pile of pictures that Ram took, but Sita incorrectly believes that these pictures were taken by herself. In this scenario, the description *pictures that Sita took* would be true only in Sita's bouletic alternatives.

- ***Digesting (18)***
  - ***(18a):*** $\overline{\text{A}}$-scrambling obligatorily reconstructs for scope → wide scope is impossible
  - ***(18b):*** Condition C connectivity does *not* block reconstruction for quantifier scope → reconstructed quantifier scope possible
  - ***(18c):*** Condition C connectivity blocks reconstruction for referential opacity → no opaque reading

⇒ This provides strong evidence for I→C:

(19) **Intensionality–Condition C correlation (I→C)**
Condition C connectivity correlates with reconstruction for referential opacity, not with reconstruction for quantificational scope.
[Sharvit 1998; Lechner 2013, 2019]

3 Account

3.1 The insufficiency of nonhybrid accounts

- ***Insufficiency of a SynR-only account***
  If SynR were the only reconstruction mechanism (Romero 1997, 1998; Fox 1999), scope reconstruction would universally correlate with Condition C. This is not the case. SynR-only is hence *too restrictive*.

- ***Insufficiency of a SemR-only account***
  - Unconstrained SemR would not only dissociate Condition C from scope reconstruction, but from reconstruction for referential opacity as well. It is hence *too permissive*.
  - Sternefeld (2001) and Ruys (2015) propose enriched versions of the SemR account that derive a correlation between Condition C and scope (like SynR). For the same reason as SynR, these accounts are *too restrictive*.

3.2 A hybrid account

✳ ***Proposal***
$\overline{\text{A}}$-scrambling in Hindi may be interpreted via either SemR or SynR:

(20) **Interpreting $\overline{\text{A}}$-scrambling in Hindi**

a. **SemR:** Translate the trace into an $\langle et, t\rangle$-variable

b. **SynR:** Interpret the copy in the launching site

- Because both SynR and SemR yield reconstructed scope, $\overline{\text{A}}$-scrambling never shifts scope:

(21) $\text{DP}_1 \ldots \text{Op} \ldots \_\_\__1 \ldots$
$\overline{A}$-*scr*

a. **Neglecting the higher copy (SynR)**
LF: [~~DP~~$_\text{T}$ [… Op … DP_1 …]] $\text{Op} \gg \text{DP}_1$

b. **Using a higher-type trace (SemR)**
LF: [DP_1 [$\lambda\mathcal{Q}_{\langle et,t\rangle}$ [… Op … $\mathcal{Q}$ …]]] $\text{Op} \gg \text{DP}_1$

- As we saw above, A-scrambling differs from $\overline{\text{A}}$-scrambling in this respect: it allows the moved DP to take scope in the landing site of movement.

(22) **Interpreting A-scrambling in Hindi**
Translate the trace into a variable of type e.

(23) $\text{DP}_1 \ldots \text{Op} \ldots \_\_\__1 \ldots \rightsquigarrow$ LF: [DP_1 [λx_e [… Op … x …]]] $\text{DP}_1 \gg \text{Op}$
A-scr

✳ ***The role of SemR***

– ***Reconstruction for scope***
Instances of licit scope reconstruction in the presence of a potential Condition C violation can only be accounted for via SemR:

(24) [$_{DP}$ **kitnii** **pictures** jo $\boxed{\text{siitaa-ne}_1}$ lĩĩ hãĩ]$_2$ $\boxed{\text{us-ne}_1}$ **tay**
how.many pictures that Sita-ERG took AUX she-ERG decide
kar liyaa hai [$_{CP}$ ki vo ___$_2$ dikhaaegii]?
do take AUX that she will show
'How many pictures that Sita$_1$ took did she decide that she$_1$ will show?'
decide ≫ *many*; ?**many* ≫ *decide*

(25) **LF of (24) with SynR**
*Q$_n$ ~~[how$_n$ many pictures that Sita$_1$ took]~~ **she**$_1$ decided [that
she$_1$ will show [how$_n$ many pictures that **Sita**$_1$ took]]
⇝ *Violates Condition C*

(26) **LF of (24) with SemR**
✓Q$_n$ [how$_n$ many pictures that **Sita**$_1$ took] [$\lambda\mathcal{Q}_{\langle et,t\rangle}$ [**she**$_1$ decided [
that **she**$_1$ will show $\mathcal{Q}$]]] ⇝ *Does not violate Condition C*

– ***No reconstruction for opacity***
Recall that Condition C connectivity does in fact correlate with reconstruction for referential opacity:

(27) #[$_{DP}$ ek **bhuutnii** jo $\boxed{\text{prataap-se}_1}$ pyaar kartii hai]$_2$ $\boxed{\text{vo}_1}$ **soctaa**
a ghost that Pratap-INSTR love do AUX he thinks
hai [$_{CP}$ ki sangiitaa-ne ___$_2$ dekhii]
AUX that Sangita-ERG saw
'A ghost that loves Pratap$_1$, he$_1$ thinks that Sangita saw.'
(entails actual existence of ghost)

– Because SemR does not induce Condition C connectivity, (27) reveals that SemR is unable to produce reconstruction for referential opacity.

– For now, we will take this as an assumption:

(28) Higher-type traces cannot produce reconstruction for binding of situation pronouns.

✳ ***The role of SynR***

– SemR alone is insufficient. Recall that reconstruction for referential opacity *is* possible if Condition C is not at play:

(29) [$_{DP}$ ek **bhuutnii** jo $\boxed{\text{us-se}_1}$ pyaar kartii hai]$_2$ $\boxed{\text{prataap}_1}$
a ghost that him-INSTR love do AUX Pratap
soctaa hai [$_{CP}$ ki sangiitaa-ne ___$_2$ dekhii]
thinks AUX that Sangita-ERG saw
'A ghost that loves him$_1$, Pratap$_1$ thinks that Sangita saw.'

– ***Reconstruction for opacity***
Because SemR cannot produce reconstruction for referential-opacity, the opaque reading in (29) must be the result of SynR:

(30) **LF of (29) with SynR**
[$\underline{\underline{\lambda s_0}}$ [~~[$_{\text{DP}}$ a ghost in $s_{0/2}$ that loves him$_1$]~~] **Pratap**$_1$ thinks in s_0
[$\underline{\underline{\lambda s_2}}$ [that Sangita saw in s_2 [$_{\text{DP}}$ a ghost in $\underline{\underline{s_{0/2}}}$ that loves **him**$_1$]]]]]
✓transparent; ✓opaque

– Crucially, because SynR induces Condition C connectivity, referential-opacity reconstruction is only possible when it would not yield a Condition C violation.

– When Condition C is at stake, e.g. in (27), reconstruction for referential-opacity is impossible via SynR, thereby forcing a SemR derivation, which only yields transparent readings:

(31) **Illicit LF of (27) with SynR**
*[$\underline{\underline{\lambda s_0}}$ [~~[$_{\text{DP}}$ a ghost in $s_{0/2}$ that loves Pratap$_1$]~~] **he**$_1$ thinks in s_0
[$\underline{\underline{\lambda s_2}}$ [that Sangita saw in s_2 [$_{\text{DP}}$ a ghost in $\underline{\underline{s_{0/2}}}$ that loves **Pratap**$_1$]]]]]
⇝ **Violates Condition C**

3.3 Restricting SemR

- Keine and Poole (2018) argue that because (i) reconstruction for referential opacity correlates with Condition C and (ii) SemR does not induce Condition C connectivity, the following must hold:

(32) Higher-type traces cannot produce reconstruction for binding of situation pronouns.[8]

[8] You can think of SITUATIONS as subparts of worlds. A world then is just a maximal situation. The distinction is terribly important for present purposes.

- ***What would it take for SemR to produce situation-pronoun binding?***
There are several analytical options, but here are two representative illustrations:

– ***Option #1: Extensional determiners***
Determiners are extensional. The situation pronoun in the NP is λ-abstracted over at the edge of the DP. Downstairs, a situation pronoun is fed into the higher-type trace before combining it with the predicate.

(33) [$\text{DP}_{\langle s,\langle et,t\rangle\rangle}$ [$\lambda\mathcal{Q}$ [… think [$\lambda w'$ [… $\mathcal{Q}_{\langle s,\langle et,t\rangle\rangle}(w')$ …]]]]]
a. $[\![\text{D}]\!] = \lambda \text{P}_{\langle e,t\rangle}\, \lambda \text{Q}_{\langle e,t\rangle}\, .\, \text{D}(\text{P})(\text{Q})$
b. [$_{\text{DP}}$ λs [D [NP s]]]

– ***Option #2: Intensional determiners***
Determiners are intensional, in a fully intensional semantics:

(34) [$\text{DP}_{\langle\langle e,st\rangle,st\rangle}$ [$\lambda\mathcal{Q}$ [… think [… [$\text{V}_{\langle e,st\rangle}$ $\mathcal{Q}_{\langle\langle e,st\rangle,st\rangle}$] …]]]
a. $[\![\text{D}]\!] = \lambda \text{P}_{\langle e,st\rangle}\, \lambda \text{Q}_{\langle e,st\rangle}\, \lambda s\, .\, \text{D}(\lambda x\, .\, \text{P}(x)(s))(\lambda x\, .\, \text{Q}(x)(s))$
b. $[\![\text{every}]\!] = \lambda \text{P}_{\langle e,st\rangle}\, \lambda \text{Q}_{\langle e,st\rangle}\, \lambda s\, .\, \forall x[\text{P}(x)(s) \rightarrow \text{Q}(x)(s)]$
c. $[\![\text{think}]\!] = \lambda p_{\langle s,t\rangle}\, \lambda x\, \lambda s\, .\, \forall w'[w' \in \text{ACC}_x(s) \rightarrow p(w')]$

⇒ If (33) or (34) were possible, they would produce such reconstruction irrespective of Condition C, contrary to (32). Thus, these possiblities must be blocked.

✳ ***High-level proposal***

All the analytical options that would allow SemR to produce reconstruction for referential opacity are ruled out if intensionality is represented with overt situation pronouns (Percus 2000) and the following two conditions are met:[9]

(35) a. The NP restrictor must be associated with a local situation pronoun.

b. Situation pronouns cannot be λ-abstracted over within the DP.

[9] Many thanks are due here to Winnie Lechner for discussion of all the analytical options.

- SemR combined with (35) has the effect that SemR cannot produce reconstruction for opaque readings because the situation pronoun associated with the NP is not in the scope of the modal operator:

(36) **LF of (27) with SemR**
[$\underline{\underline{\lambda s_0}}$ [[$_{\text{DP}}$ a ghost in $\underline{\underline{s_{0/*2}}}$ that loves **Pratap**$_1$] [$\lambda \mathcal{Q}_{\langle et,t\rangle}$ [**he**$_1$ thinks in s_0
[$\underline{\underline{\lambda s_2}}$ [that Sangita saw $\mathcal{Q}$ in s_2]]]]]] ✓transparent; *opaque

- ***Lechner's (2019) implementation*** ***"from the top"***
  - Lechner (2013, 2019) presents an analysis satisfying the criteria in (35). He proposes the axiom in (37):

    (37) Extensional Traces and Antecedents
    The denotation of quantificational DPs and their traces do not include situation variables.

  - (37) restricts the permissible semantic types for DPs to those that are extensional. Thus, quantificational DP and higher-type traces are $\langle et, t\rangle$, forcing the situation variable of the NP to be saturated DP-internally.
  - The intuition behind this proposal is that determiners are purely extensional, à la Barwise and Cooper (1981).

- ***Problem with Lechner's analysis***
  - Lechner's analysis forces determiners to combine with predicates ($\langle e, t\rangle$), rather than properties ($\langle e, st\rangle$).
  - Keine and Poole contend that this restriction is too strong (see below) and that (35) can be implemented without forcing DPs to be extensional.

✳ ***Our implementation (based on Schwarz 2012)*** ***"from the bottom"***

- Determiners are intensional; they combine with a situation pronoun that is subsequently fed into the NP restrictor:

(38) a. $[\![\text{every}]\!] = \lambda s_r\, \lambda \text{P}_{\langle e,st\rangle}\, \lambda \text{Q}_{\langle e,st\rangle}\, \lambda s\, .\, \forall x[\text{P}(x)(s_r) \rightarrow \text{Q}(x)(s)]$

b. [$_{\text{DP}}$ [D s] [NP]]

- Schwarz (2012) argues that such an analysis in (38) has two upshots.
- First, it derives the various restrictions on transparent interpretations for free, e.g. Generalization X and Generalization Z:

(39) **Generalization X**
The situation pronoun that a verb selects for must be coindexed with the nearest λ above it. [Percus 2000]

(40) **Generalization Z**
The situation pronoun selected for by a noun in a weak NP must be coindexed with the nearest λ above it. [Keshet 2008]

– Second, it seems to be necessary for a compositional analysis of donkey sentences, where the determiner must quantify over situations relative to the nominal predicate and to state minimality conditions (**?**):

(41) a. Every farmer who owns a donkey beats it.

b. For any situation s, (41a) is true in s iff
for every individual x and every situation $s' \leq s$
such that s' is a minimal situation
such that there is a donkey y
and x is a farmer who owns y in s'
there is a situation s'' such that $s' \leq s'' \leq s$
and x beats the unique donkey in s''.

c. $[\![\text{every}]\!] = \lambda s_r\, \lambda \mathrm{P}_{\langle e,st\rangle}\, \lambda \mathrm{Q}_{\langle e,st\rangle}\, \lambda s\, .\, \forall x \forall s_1 [(s_1 \leq s_r \wedge \textsc{ex}(\mathrm{P}(x))(s_1)) \rightarrow \exists s_2 [s_1 \leq s_2 \leq s \wedge \mathrm{Q}(x)(s_2)]]$

d. $\textsc{ex}(\mathrm{S})(s) \Leftrightarrow s$ exemplifies the proposition S

– This analysis crucially also satisfies the criteria in (35), but by specifying the location of the situation pronoun in a DP:

(42) $\underline{\underline{\lambda s_0}} \ldots [_{\mathrm{DP}} [\ \mathrm{D}\ \underline{\underline{s_{0/*2}}}\ ]\ [\ \mathrm{NP}\ ]\ ]\ [\ \lambda \mathcal{Q}_{\langle e,\langle s,t\rangle\rangle}\ [\ \ldots \underline{\underline{\lambda s_2}} \ldots \mathcal{Q} \ldots\ ]\ ]$

4 The resulting division of labor

(43) **Properties of SynR (higher-copy neglect)**
$\lambda s_0 \ldots \sout{[_{\mathrm{DP}}\ s\ \text{R-exp}_2\ ]} \ldots \text{pron}_{*2/3} \ldots \mathrm{Op} \ldots \lambda s_1 \ldots [_{\mathrm{DP}}\ s_{0/1}\ \text{R-exp}_2\ ] \ldots$
i. Reconstruction for scope
ii. Reconstruction for referential opacity
iii. Condition C connectivity

(44) **Properties of SemR (higher-type traces)**
$\lambda s_0 \ldots [_{\mathrm{DP}}\ s_{0/*1}\ \text{R-exp}_2\ ]\ [\ \lambda \mathcal{Q}_{\langle e,\langle s,t\rangle\rangle}\ [\ \ldots \text{pron}_{2/3} \ldots \mathrm{Op} \ldots \lambda s_1 \ldots \mathcal{Q} \ldots$
i. Reconstruction for scope
ii. No reconstruction for referential opacity
iii. No Condition C connectivity

- This division of labor derives the empirical generalization I→C:

(45) **Intensionality–Condition C correlation (I→C)**
Condition C connectivity correlates with reconstruction for referential opacity, not with reconstruction for quantificational scope.
[Sharvit 1998; Lechner 2013, 2019]

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