Reconstruction beyond English

Stefan Keine & Ethan Poole
USC & UCLA
keine@usc.edu, epoole@ucla.edu

1 Introduction: Two approaches to scope reconstruction

1.1 Syntactic and semantic reconstruction

- Moved constituents can often be interpreted in their premovement positions:

(1) *Reconstruction with A-movement*
Someone from NY is likely to win the lottery.

a. *someone* ≫ *likely*:
There is a (particular) person from NY who is likely to win the lottery.

b. *likely* ≫ *someone*:
It is likely that there is a person from NY who will win the lottery.

(2) *Reconstruction with $\overline{\text{A}}$-movement*
How many books did you want to read this year?

a. *many* ≫ *want*:
For what number n: There are n-many (particular) books x such that in all your bouletic alternatives, you read x this year.
Possible answer: Three, namely *Aspects*, *LGB*, and *the MP*.

b. *want* ≫ *many*:
For what number n: In all your bouletic alternatives, there exists n-many books such that you read x this year.
Possible answer: Twenty, that's my target for this year.

- See Barss (1986), Kroch (1989), Cinque (1990), Cresti (1995), Heycock (1995) Rullmann (1995), Romero (1997, 1998), Fox (1999), Frampton (1999), Sportiche (2006), and Lebeaux (2009), and many others.

- ***Wide-scope reading***
Interpret the moved element in its landing site and replace the trace position with a bound variable or a bound definite description (i.e. 'Trace Conversion'):

(3) [DP$_1$ … [Op … [… t_1 …]]]
$\rightsquigarrow_{\text{LF}}$ [DP$_1$ λx_e … [Op [… x_e …]]] (DP$_1$ ≫ Op)

- ***Reconstructed-scope reading***

1. **Syntactic reconstruction (SynR)**
Interpret the moved element in its launching site, either by lowering (Cinque 1990) or interpreting only the lower copy (Chomsky 1995). See Romero (1998), Fox (1999), and Poole (2017) for detailed proposals and discussion.

(4) [DP$_1$ … [Op [… t_1 …]]]
$\rightsquigarrow_{\text{LF}}$ [~~DP$_1$~~ … [Op … [… DP$_1$ …]]] (Op ≫ DP$_1$)

➩ The movement is effectively undone at LF.

2. **Semantic reconstruction (SemR)**
Interpret the moved element in its landing site, but translate the trace into a variable of type $\langle et, t\rangle$. See Cresti (1995), Rullmann (1995), Lechner (1998, 2013, to appear), Sternefeld (2001), and Ruys (2015).

(5) [DP$_1$ … [Op [… T$_1$ …]]]
$\rightsquigarrow_{\text{LF}}$ [DP$_1$ $\lambda \mathcal{Q}_{\langle et,t\rangle}$ … [Op [… $\mathcal{Q}_{\langle et,t\rangle}$ …]]] (Op ≫ DP$_1$)

➩ The moved element remains in its landing site at LF.

1.2 Questions

- There are two interconnected debates in the literature.

1.2.1 Question 1: Empirical differences between SynR and SemR?

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

(6) Quantifier–Condition C correlation (Q→C)
Reconstruction for quantificational scope correlates with Condition C reconstruction. (Romero 1998, Fox 1999)

- They argue that the correlation in (6) (Q→C) is derived on SynR, but not SemR.
  - ▷ ***SynR:***
    Because a SynR account involves putting the moved element back into its launching site at LF, a syntactic level of representation, Binding Theory treats the moved element as being in its premovement position:

    (7) $^{*}\cancel{[_{\text{DP}} \ldots \text{R-expr}_1 \ldots]} \ldots \text{pron}_1 \ldots [\ldots [_{\text{DP}} \ldots \text{R-expr}_1 \ldots] \ldots]$

    ⇨ *Scope reconstruction should feed Condition C connectivity.*

    ⇨ *Also: Condition C connectivity should bleed scope reconstruction.*

  - ▷ ***SemR:***
    On a SemR account, the moved element is solely evaluated and interpreted in its landing site. As a result, the moved element is evaluated for Binding Theory in its landing site:

    (8) $^{\checkmark}[_{\text{DP}} \ldots \text{R-expr}_1 \ldots]\ [\ \lambda \mathcal{Q}_{\langle et,t\rangle}\ [\ldots \text{pron}_1 \ldots \mathcal{Q}_{\langle et,t\rangle} \ldots]\,]$

    ⇨ *Scope reconstruction should **not** feed Condition C connectivity.*

    ⇨ *Also: Condition C connectivity should **not** bleed scope reconstruction.*

- Based on Q→C, Romero (1997, 1998) and Fox (1999) conclude that SynR is empirically supported over SemR.

- However, Sternefeld (2001) and Ruys (2015) contend that (6) does not ***necessarily*** favor SynR over SemR. They present supplemented versions of SemR that are able to derive (6).

1.2.2 Question 2: Scope vs. referentiality

- A second, related debate in the literature is whether the generalization in (6) is empirically correct to begin with.

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

(9) Intensionality–Condition C correlation (I→C)
Condition C reconstruction correlates with reconstruction for referential opacity, not with reconstruction for quantificational scope.
(Sharvit 1998, Lechner 2013, to appear)

- Q→C (6) and I→C (9) are based on distinct datasets. As far as we know, there has been no attempt to systematically adjudicate between the two.

- This empirical uncertainty bears on the reliability of the analytical conclusions that are drawn from (6), which relates to Question 1.

1.3 Claims in this talk

⁎ We present novel evidence from Hindi-Urdu (henceforth Hindi) that sheds light on these two questions about reconstruction.
  - ▷ In particular, we show that Hindi long scrambling provides compelling evidence in support of I→C and against Q→C.

⁎ We argue that this pattern requires the hybrid approach to reconstruction developed by Lechner (1998, 2013, to appear):
  - ▷ SynR for world-variable reconstruction ⇝ Condition C connectivity
  - ▷ SemR for quantifier-scope reconstruction ⇝̸ Condition C connectivity

⁎ We propose that the necessary restrictions on SemR follow from the situation pronoun in the DP being an argument of the determiner (à la Schwarz 2012).

- ***Roadmap***
  1. Arguments in favor of Q→C and I→C
  2. Novel evidence from Hindi in favor of I→C
  3. Hybrid account of reconstruction
  4. Reevaluating reconstruction in English

2 Scope, intensionality, and Condition C

- ***Background***
  It is well-known that $\bar{\text{A}}$-movement may obviate Condition C violations incurred in the absence of movement if the offending R-expression is embedded inside a relative clause (van Riemsdijk and Williams 1981, Lebeaux 1988):

(10) a. * **She$_1$** likes the pictures that **Lisa$_1$** saw best.

b. [Which pictures [$_{\text{RC}}$ that **Lisa$_1$** saw]]$_2$ did **she$_1$** like best ___$_2$?

⇒ ***Test configuration***
The crucial test configuration has the properties in (11): A DP containing an R-expression inside a relative clause is moved over both a coindexed pronoun and a scope-bearing operator:

(11) [$_{\text{DP}}$ . . . [$_{\text{RC}}$ . . . R-expr$_1$ . . .]]$_2$ . . . pron$_1$ . . . Op . . . ___$_2$ . . .

- ***Expectations***
  - ▹ Reconstruction that correlates with Condition C connectivity should be blocked in (11). That is, Op ≫ DP should be ***impossible***.
  - ▹ Reconstruction that does not correlate with Condition C connectivity should be possible in (11). That is, Op ≫ DP should be ***possible***.

- As mentioned above, two competing generalizations have been advanced in the literature:
  - ▹ ***Quantifier–Condition C correlation (Q→C):***
    Reconstruction for quantifier scope entails reconstruction for Condition C.
  - ▹ ***Intensionality–Condition C correlation (I→C):***
    Reconstruction for referential opacity entails reconstruction for Condition C.

2.1 Arguments for the Quantifier–Condition C correlation

- Romero (1997, 1998) and Fox (1999) present evidence that scope reconstruction is blocked in the configuration in (11) (examples from Romero (1998)):

(12) *Condition C connectivity forces wide scope*
[How many pictures [$_{\text{RC}}$ that **John$_2$** took in Sarajevo]]$_1$ does **he$_2$** want the editor to publish ___$_1$ 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.

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

(13) [How many pictures [$_{\text{RC}}$ that **he$_2$** took in Sarajevo]]$_1$ does **John$_2$** want the editor to publish ___$_1$ in the Sunday Special? (✓narrow, ✓wide)

- (12)–(13) show this correlation for $\bar{\text{A}}$-movement. Parallel facts hold for A-movement, in addition to a variety of other $\bar{\text{A}}$-movement configurations.

⁎ Based on data like these, Romero (1997, 1998) and Fox (1999) propose that scope reconstruction and reconstruction for Condition C are tightly linked:

(14) Quantifier–Condition C correlation (Q→C)
Reconstruction for quantificational scope correlates with Condition C reconstruction. (Romero 1998, Fox 1999)

- They argue that (14) provides evidence for SynR over SemR, because SynR derives the interaction with Condition C for free:

(15) *Reconstructed-scope reading of (12) on SynR account*
*[for what n]
~~[∃n-many pictures that John$_1$ took in Sarajevo]~~
he$_1$ wants [the editor to publish
[∃n-many pictures that **John$_1$** took in Sarajevo]
in the Sunday Special]

- SemR, on the other hand, does not itself derive the correlation between scope and Condition C and hence overgenerates:

(16) *Reconstructed-scope reading of (12) on SemR account*
$^{\checkmark}$[for what n]
[$\exists n$-many pictures that **John**$_1$ took in Sarajevo]
[$\lambda \mathcal{Q}_{\langle et,t\rangle}$ [**he**$_1$ wants [the editor to publish $\mathcal{Q}_{\langle et,t\rangle}$ ...]]]

- Sternefeld (2001) and Ruys (2015) follow the empirical generalization in (14), but they propose that enriched versions of SemR are in fact able to derive the generalization, with additional stipulations.

- As such, they contend that (14) does not empirically favor SynR (though see Romero 1998:108–114).

2.2 Arguments for Intensionality–Condition C correlation

- Sharvit (1998) and Lechner (2013, to appear) argue that Condition C connectivity does not correlate with quantifier scope, but rather with referential opacity.

- Consider the example in (17) from Sharvit (1998): Scope reconstruction is possible in spite of what would be a Condition C violation if the moved expression were interpreted in its premovement position at LF. What is blocked, however, is the *de dicto* reading (nonspecific+opaque) of the moved element.

(17) [How many students who hate **Anton**$_1$]$_2$ does **he**$_1$ hope [___$_2$ will buy him$_1$ a beer]?

a. $^{\checkmark}$*Wide scope, transparent* (*no reconstruction*)
For what number n: There are n-many x that are students who hate Anton $\underline{\text{in } w_0}$ and in all of Anton's bouletic alternatives w' in w_0, x will buy him a beer in w'.

b. $^{\checkmark}$*Narrow 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 $\underline{\text{in } w_0}$ and that will buy him a beer in w'.

c. **Narrow scope, opaque* (*reconstruction for 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 $\underline{\text{in } w'}$ and that will buy him a beer in w'.

- (17) indicates that Condition C blocks reconstruction for world-variable binding, which is necessary for the narrow-scope, opaque reading. It does not block reconstruction for just quantifier scope.

⁎ Sharvit (1998) and Lechner (2013, to appear) thus reject Q→C and conclude that the correct generalization is (18).

(18) Intensionality–Condition C correlation (I→C)
Condition C reconstruction correlates with reconstruction for referential opacity, not with reconstruction for quantificational scope.
(Sharvit 1998, Lechner 2013, to appear)

- Lechner (2013, to appear) further argues that neither SynR alone nor SemR alone is able to capture (18) and that a hybrid account of reconstruction is required (see also Lechner 1998), which we will return to later.

- ***Questions addressed in this talk***
  1. What is the empirical relation between Condition C, quantifier scope, and referential opacity?
  2. How does the answer to Question 1 inform our understanding of the mechanism(s) that yield reconstruction?

3 The view from Hindi-Urdu

- This section presents evidence from Hindi that sheds light on Question 1. We argue that this evidence provides striking support for I→C and against Q→C.

3.1 Background: A-scrambling and $\overline{\text{A}}$-scrambling in Hindi

- Scrambling in Hindi can in principle be either A-movement or $\overline{\text{A}}$-movement (see Déprez 1989, Mahajan 1990, 1994, Gurtu 1992, and Keine 2016).

(19) a. *A-scrambling*
(i) not subject to weak crossover
(ii) cannot cross a finite-clause boundary

b. *$\overline{\text{A}}$-scrambling*
(i) subject to weak crossover
(ii) 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

3.2 Setting the stage: Scrambling and scope

- Crucially, for our purposes, A-scrambling and $\overline{\text{A}}$-scrambling exhibit different scope properties, as noted by Keine (2016, 2017).

⇒ ***Local scrambling may extend scope***
Local scrambling allows the moved DP to take wide scope in the landing site of movement (Mahajan 1997):

(20) a. *Nonmovement baseline*

[*kisii vipakshii netaa-ne*] [**har samasyaa**] khadii kii
some opposition politician-ERG every problem cause did

hai
AUX

'Some opposition politician caused every problem.' (∃ ≫ ∀; *∀ ≫ ∃)

b. *Local scrambling: Wide scope in landing site*

[**har samasyaa**]$_1$ [*kisii vipakshii netaa-ne*] ___$_1$
every problem some opposition politician-ERG

khadii kii hai
cause did AUX

'Every problem, some opposition politician caused.' (∀ ≫ ∃)

- The same holds for scrambling out of nonfinite clauses, illustrated here with a *how many*-question:

(21) [**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 domains. Here, reconstruction is obligatory for most speakers:[1]

(22) [**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.' (∃ ≫ ∀; ?*∀ ≫ ∃)

(23) [**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*)

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

3.3 Condition C and quantifier scope

- ***$\overline{\text{A}}$-scrambling obviates Condition C violations***
Crucial for our purposes, $\overline{\text{A}}$-scrambling in Hindi can obviate Condition C violations:

(25) a. *Nonmovement baseline*

* $\boxed{\text{us-ne}_1}$ socaa [$_{CP}$ ki siitaa-ne kal [$_{DP}$ **vo kitaab**
3SG-ERG thought that Sita-ERG yesterday that book

jo $\boxed{\textbf{raam-ko}_1}$ **pasand thii**] bec dii thii]
that Ram-DAT like AUX sell give AUX

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

[1] One speaker who we have consulted allows the wide-scope reading in long scrambling, but the crucial reconstruction data hold for that speaker nonetheless.

b. *$\overline{\text{A}}$-scrambling*
[$_{\text{DP}}$ **vo** **kitaab** **jo** raam-ko$_1$ **pasand** **thii**]$_2$ us-ne$_1$
that book that Ram-DAT like AUX 3SG-ERG
socaa [$_{\text{CP}}$ ki siitaa-ne kal ___$_2$ bec dii thii]
thought 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 predictions (14)***
  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 predictions (18)***
  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:

(26) [$_{\text{DP}}$ **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.'
($\exists \gg \forall$; ?*$\forall \gg \exists$)

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

'How many pictures that Sita$_1$ took did she decide that she$_1$ will show?'
(*decide* $\gg$ *many*; ?**many* $\gg$ *decide*)

- ***Conclusion***
Scope reconstruction is not affected by Condition C connectivity. This provides clear evidence against Q→C (14) as a general constraint on reconstruction.

3.4 Condition C and intensionality

- We have seen so far that reconstruction for quantifier scope in Hindi is independent of reconstruction for Condition C. This provides evidence against Q→C and is compatible with I→C.

⇒ However, I→C makes a much stronger prediction: Condition C connectivity should block reconstruction for referential opacity (i.e. world-variable binding). This prediction is borne out:

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

'Pratap$_1$ thinks that Sangita saw a ghost that loves him$_1$.'

b. *Condition C configuration → No opaque reading*
#[$_{\text{DP}}$ ek **bhuutnii** jo prataap-se$_1$ pyaar kartii hai]$_2$ vo$_1$
a ghost that Pratap-INSTR love do AUX he
soctaa hai [$_{\text{CP}}$ 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*)

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

'A ghost that loves him$_1$, Pratap$_1$ thinks that Sangita saw.'

- A more complex example is provided in (29), which contains (i) Condition C connectivity, (ii) scope interactions, and (iii) referential opacity (paralleling the English example in (17)). It demonstrates that Condition C connectivity travels with opacity, not quantifier scope:

(29) [$_{DP}$ **kitnii** **pictures** jo $\boxed{\text{siitaa-ne}_1}$ lĩĩ]$_2$ $\boxed{\text{us-ne}_1}$ **tay**
how.many pictures that Sita-ERG took she-ERG decide
kar liyaa hai [$_{CP}$ ki vo$_1$ ___$_2$ dikhaanaa caahtii hai]?
do 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. * *Wide scope, transparent* (*no reconstruction*)
For what number n: There are n-many x that are pictures that Sita took <u>in w_0</u> and in all of Sita's bouletic alternatives w' in w_0, Sita shows x in w'.

b. ✓ *Narrow 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 <u>in w_0</u> and Sita shows x in w'.

c. * *Narrow scope, opaque* (*reconstruction for 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 <u>in w'</u> and Sita shows x in w'.

- ***Digesting (29)***
  - ▷ ***(29a):*** $\overline{\text{A}}$-scrambling obligatorily reconstructs → wide scope is impossible
  - ▷ ***(29b):*** Condition C connectivity does ***not*** block reconstruction for quantifier scope → reconstructed quantifier scope possible
  - ▷ ***(29c):*** Condition C connectivity blocks reconstruction for world-variable binding → no opaque reading

- ***Conclusion***
This provides strong evidence for I→C, repeated in (30):

> (30) INTENSIONALITY–CONDITION C CORRELATION (I→C)
> Condition C reconstruction correlates with reconstruction for referential opacity, not with reconstruction for quantificational scope.
> (Sharvit 1998, Lechner 2013, to appear)

4 Account

4.1 The insufficiency of non-hybrid accounts

- We propose that the Hindi evidence requires a hybrid account of reconstruction that includes ***both*** SynR and SemR as reconstruction mechanisms, as proposed on independent grounds by Lechner (1998, 2013, to appear).

- ***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 world-variable binding 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***.

4.2 A hybrid account

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

(31) *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 scope reconstruction, $\overline{\text{A}}$-scrambling never shifts scope:

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

$\xRightarrow{(31a)}$ LF$_1$: [DP$_1$ [$\lambda\mathcal{Q}_{\langle et,\,t\rangle}$ [... Op ... $\mathcal{Q}_{\langle et,\,t\rangle}$ ...]]] (Op ≫ DP$_1$)

$\xRightarrow{(31b)}$ LF$_2$: [$\cancel{\text{DP}}_{\text{T}}$ [... Op ... DP$_1$ ...]] (Op ≫ 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.

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

(34) A-scr
$\text{DP}_1 \ldots \text{Op} \ldots \underline{\quad}_1 \ldots$
$\overset{(33)}{\Longrightarrow}$ LF: [DP_1 [λx_e [$\ldots$ Op $\ldots$ x_e $\ldots$]]] ($\text{DP}_1 \gg \text{Op}$)

4.2.1 The role of SemR

- ***Reconstruction for scope***
Instances of licit scope reconstruction in the presence of a potential Condition C violation, such as (35), can only be accounted for via SemR:

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

(36) [for what n]
[∃n-many pictures that **Sita$_1$** took]
[$\lambda \mathcal{Q}$ [**she$_1$** decided [$_{\text{CP}}$ that [she$_1$ will show $\mathcal{Q}_{\langle et,t\rangle}$]]]]]
(*decide* ≫ *many*)

- ***No reconstruction for opacity***
Recall that Condition C connectivity does in fact correlate with reconstruction for world-variable binding to achieve opaque readings:

(37) #[$_{\text{DP}}$ ek **bhuutnii** jo $\boxed{\text{prataap-se}_1}$ pyaar kartii hai]$_2$ $\boxed{\text{vo}_1}$
a ghost that Pratap-INSTR love do AUX he
soctaa hai [$_{\text{CP}}$ 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*)

- Because SemR does not induce Condition C connectivity, (37) reveals that SemR is unable to produce reconstruction for world-variable binding.

- For now, we will take this as an assumption (38). Shortly below, however, we will argue that it can be ***derived*** from independently motivated assumptions about intensionality in the DP.

(38) SemR cannot produce reconstruction for world-variable binding.

⇒ ***Conclusion***

▹ SemR produces reconstruction for quantifier scope, but not reconstruction for world-variable binding.

▹ Because SemR does not induce Condition C connectivity, scope reconstruction is independent of Condition C, but reconstruction for referential opacity is not.

4.2.2 The role of SynR

- SemR alone is insufficient. Recall from (28c) above (repeated here as (39)) that reconstruction for referential opacity *is* possible if Condition C is not at play:

(39) [$_{\text{DP}}$ 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 [$_{\text{CP}}$ 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 world-variable binding, the opaque reading in (39) must be the result of SynR:

(40) [$\underline{\underline{\lambda w_0}}$ [~~[$_{\text{DP}}$ a ghost in $w_{0/2}$ that loves him$_1$]~~
Pratap$_1$ thinks in w_0 [$\underline{\underline{\lambda w_2}}$ [that Sangita saw
[$_{\text{DP}}$ a ghost in $\underline{\underline{w_{0/2}}}$ that loves **him$_1$**]
in w_2]]]] ($^{\checkmark}$*transparent;* $^{\checkmark}$*opaque*)

⇒ ***Conclusion***

▹ Because SynR can achieve an interpretation of the world variable in the lower clause, it is able to produce reconstruction for world-variable binding, and hence opaque readings.

▹ Crucially, SynR is subject to Condition C connectivity. The availability of such reconstruction hence correlates with Condition C.

- ***More evidence for SynR: Pronominal binding***
(41) shows that long scrambling in Hindi may also reconstruct for pronominal binding. Lechner (1998) and Romero (1998) argue that SemR does not feed pronominal binding. This entails that (41) must involve SynR.

(41) [$_{DP}$ **uske$_1$** bhaai-se$_1$] **har** **laṛkii$_1$** soctii hai [$_{CP}$ Kareena Kapoor ___$_2$ shaadii karegii]
her brother-INSTR every girl thinks AUX Kareena Kapoor marriage will do
'Her$_1$ brother, every girl$_1$ thinks that Kareena Kapoor will marry .'

(42) [[~~her$_1$ brother~~] [**every girl**] [λx [thinks [that Kareena Kapoor will marry [**her$_x$** brother]]]]]

- If reconstruction for pronominal binding necessarily involves SynR, then our account predicts that it induces Condition C connectivity. This prediction is borne out:

(43) a. [**uske$_1$** aise bhaai-se jise $\boxed{\text{vo}_2}$ jaanataa hai]$_3$ $\boxed{\text{raam-ne}_2}$ **har** **laṛkii-ko$_1$** kahaa [$_{CP}$ ki Kareena Kapoor ___$_3$ shaadii karegii]
her PRTCL brother-INSTR who he knows AUX Ram-ERG every girl-DAT told that Kareena Kapoor marriage will.do
'Ram$_2$ told every girl x that Kareena Kapoor will marry the brother of x who he$_2$ knows.'

b. *[**uske$_1$** aise bhaai-se jise $\boxed{\text{raam}_2}$ jaanataa hai]$_3$ $\boxed{\text{us-ne}_2}$ **har** **laṛkii-ko$_1$** kahaa [$_{CP}$ ki Kareena Kapoor ___$_3$ shaadii karegii]
her PRTCL brother-INSTR who Ram knows AUX he-ERG every girl-DAT told that Kareena Kapoor marriage will.do
Intended: 'He$_2$ told every girl x that Kareena Kapoor will marry the brother of x who Ram$_2$ knows.'

4.3 Restricting SemR

- Because (i) reconstruction for world-variable binding correlates with Condition C and (ii) SemR does not induce Condition C connectivity, we concluded the following:

(44) SemR cannot produce reconstruction for world-variable binding.

- ***What it would take for SemR to allow world-variable binding***
There are several analytical options, but here are two representative illustrations:[2]
  ▷ ***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.

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

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

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

- If (45) or (46) were possible, they would produce such reconstruction irrespective of Condition C, contrary to (44). Thus, these possiblities must be blocked.

⁎ ***High-level proposal***
All the analytical options that would allow SemR to produce reconstruction for world-variable binding are ruled out if intensionality is represented with overt situation pronouns (Percus 2000) and the following two conditions are met:

(47) a. The NP restrictor must be associated with a local situation pronoun.
b. Situation pronouns cannot be λ-abstracted over within the DP.

[2] We are indebted to Winnie Lechner for discussing all of these many analytical options with us and leading us towards the criteria in (47).

- SemR combined with (47) 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:

(48) $[\ \underline{\underline{\lambda w_0}}\ [_{\text{DP}}$ a ghost in $\underline{\underline{w_{0/*2}}}$ that loves **Pratap**$_1$ $]$
$[\ \lambda \mathcal{Q}\ [$ **he**$_1$ thinks in $w_0\ [\ \underline{\underline{\lambda w_2}}\ [$ that Sangita saw $\mathcal{Q}_{\langle et,t\rangle}$ in $w_2\ ]\ ]\ ]\ ]\ ]$

(✓*transparent; *opaque*)

- ***Lechner's implementation*** ***"from the top"***
  - ▷ Lechner (2013, to appear) presents an analysis satisfying the criteria in (47). He proposes the axiom in (49):

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

  - ▷ (49) 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 ($\langle e,st\rangle$).
  - ▷ We contend that this restriction is too strong (see below) and that (47) 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:

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

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

- ▷ Schwarz (2012) argues that such an analysis in (50) has two upshots.
- ▷ First, it derives the various restrictions on transparent interpretations for free, e.g. Generalization X and Generalization Z.
- ▷ 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 (Elbourne 2005):

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

  b. For any situation s, (51a) 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. $[\![\text{every}]\!] = \lambda s_r\, \lambda P_{\langle e,st\rangle}\, \lambda Q_{\langle e,st\rangle}\, \lambda s\,.\, \forall x \forall s_1[$
  $(s_1 \leq s_r \wedge \text{EX}(P(x))(s_1)) \rightarrow \exists s_2[s_1 \leq s_2 \leq s \wedge Q(x)(s_2)]\,]$

  d. $\text{EX}(S)(s) \Leftrightarrow s$ exemplifies the proposition S

- ▷ This analysis crucially also satisfies the criteria in (47), but by specifying the location of the situation pronoun in a DP:

  (52) $\underline{\underline{\lambda w_0}} \ldots [_{\text{DP}}\ [\ \text{D}\ \underline{\underline{w_{0/*2}}}\ ]\ [\ \text{NP}\ ]\ ]\ \lambda \mathcal{Q}_{\langle e,st\rangle} \ldots \underline{\underline{\lambda w_2}} \ldots \mathcal{Q}_{\langle e,st\rangle}$

4.4 The division of labor

(53) *SynR:*
λw_0 ~~[DP w R-expr$_3$]~~ … pron$_{*3/4}$ … Op … λw_1 … $[_{\text{DP}}\ w_{0/1}$ R-expr$_3$ $]$

i. Reconstruction for world-variable binding possible
ii. Reconstruction for pronominal-variable binding possible
iii. Reconstruction for quantifier scope
iv. Condition C connectivity

(54) *SemR:*
$\lambda w_0\ [_{\text{DP}}\ w_{0/*1}$ R-expr$_3$ $]\ \lambda \mathcal{Q}_{\langle et,t\rangle} \ldots$ pron$_{3/4}$ … Op … $\lambda w_1 \ldots \mathcal{Q}_{\langle et,t\rangle}$

i. No reconstruction for world-variable binding
ii. No reconstruction for pronominal-variable binding
iii. Reconstruction for quantifier scope
iv. No Condition C connectivity

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

(55) INTENSIONALITY–CONDITION C CORRELATION (I→C)
Condition C reconstruction correlates with reconstruction for referential opacity, not with reconstruction for quantificational scope.
(Sharvit 1998, Lechner 2013, to appear)

4.5 Aside: Extension to weak crossover

- The traditional contrast between A- and $\overline{\text{A}}$-scrambling is that $\overline{\text{A}}$-scrambling is subject to weak crossover, but A-scrambling is not (Mahajan 1990):

(56) a. *$\overline{\text{A}}$-scrambling: Weak crossover*

har	**laṛke-ko**$_1$	[**us-kii**$_{2/*1}$	bahin-ne]	socaa	[$_{\text{CP}}$	ki
every	boy-ACC	s/he-GEN	sister-ERG	thought		that

raam-ne	___$_1$	dekhaa	]
Ram-ERG		saw	

'His$_2$ sister thought that Ram saw every boy$_1$.' (*no bound reading*)

b. *A-scrambling: No weak crossover*

har	**laṛke-ko**$_1$	[**us-kii**$_1$	bahin-ne]	___$_1$	dekhaa
every	boy-ACC	s/he-GEN	sister-ERG		saw

'For every boy x, x's sister saw x.'

- This asymmetry follows from our account: $\overline{\text{A}}$-scrambling can be interpreted in two ways, SynR or SemR, both of which do not allow the moved DP to bind a pronoun from the landing site:

(57) *SemR: No binding*
[every boy [λ$\mathcal{Q}$ [his$_e$ sister thought [that Ram saw $\mathcal{Q}_{\langle et,t\rangle}$]]]]

(58) *SynR: No binding*
[~~[every boy]~~ [his$_e$ sister thought [that Ram saw [every child]]]]

- A-scrambling, by contrast, can be interpreted via an individual variable (as evidenced by the possibility of scope extension). This enables pronominal binding from the landing site.

5 Reevaluating English

- We have provided evidence that Condition C does not restrict scope reconstruction. An open question that remains is how to reconcile this conclusion with Romero's (1997, 1998) and Fox's (1999) English evidence (see section 2.1), which suggests the opposite.[3]

- We would like to suggest that the apparent connection between Condition C and scope in the English data is a byproduct of not controlling for intensionality. Once an appropriately controlled example is set up, the narrow-scope reading seems to reappear:

(59) *Scenario: John is picking out pictures to suggest to the editor for the Sunday Special. Unbeknownst to him, the pictures are the pictures that he himself took in Sarajevo. He intends to suggest 20 pictures, but has only picked out 10 of these 20.*

[How many pictures [$_{\text{RC}}$ that **John**$_1$ took in Sarajevo]]$_2$ does **he**$_1$ want the editor to publish ___$_2$ in the Sunday Special?

Answer: 20 (✓*narrow scope, transparent*)

- The availability of the narrow-scope reading is more easily detectable in Hindi, perhaps because it is the ***only*** available reading (given that wide scope is ruled out independently).

- In English, on the other hand, the availability of the wide-scope reading may mask the presence of the narrow-scope+transparent reading.

6 Conclusion

- We have provided novel evidence for I→C: Condition C correlates with reconstruction for referential opacity, not quantifier scope. In the absence of a Condition C configuration, reconstruction for referential opacity is possible.

- Accounts that encompass only SynR or only SemR are insufficient for this state of affairs. Instead, a hybrid account is called for (Lechner 2013, to appear).
  - ➩ Some, but not all instances of reconstruction amount to interpreting a lower copy.

[3] Poole (2017) provides additional evidence against higher-type traces (both generalized-quantifier and property) in English that is not based on Condition C connectivity. We do not yet have anything conclusive to say about these arguments.

- A crucial ingredient of the analysis is that SemR can achieve reconstruction for scope, but not for world-variable binding. This restriction is derived as long as the NP restrictor is associated with a local situation pronoun, which we proposed was an argument of the determiner (following Schwarz 2012).

- Moreover, the observation that $\overline{\text{A}}$-scrambling in Hindi reconstructs obligatorily provides evidence against Ruys' (2015) claim that type *e* traces are always available.

  ➩ Some movement chains require reconstruction.

Acknowledgements:
Many thanks to Sakshi Bhatia, Rajesh Bhatt, Bhamati Dash, and Anoop Mahajan for sharing their Hindi judgements. We are indebted to Winnie Lechner for helpful discussion and extensive comments, in addition to Itai Bassi, Rajesh Bhatt, Amy Rose Deal, Peter Jenks, Anoop Mahajan, Roumi Pancheva, Dominique Sportiche, Ekaterina Vostrikova, and audiences at NELS 48, UCLA, and UC Berkeley.

Barss, Andrew. 1986. Chains and anaphoric dependence. Ph.D. dissertation, MIT, Cambridge, MA.

Barwise, Jon, and Robin Cooper. 1981. Generalized quantifiers and natural language. *Linguistics and Philosophy* 4:159–219.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.

Cinque, Guglielmo. 1990. *Types of A-bar Dependencies*. Cambridge, MA: MIT Press.

Cresti, Diana. 1995. Extraction and reconstruction. *Natural Language Semantics* 3:79–122.

Déprez, Viviane. 1989. On the typology of syntactic positions and the nature of chains: Move α to the specifier of functional projections. Ph.D. dissertation, MIT, Cambridge, MA.

Elbourne, Paul. 2005. *Situations and individuals*. Cambridge, MA: MIT Press.

Fox, Danny. 1999. Reconstruction, Binding Theory, and the interpretation of chains. *Linguistic Inquiry* 30:157–196.

Frampton, John. 1999. The fine structure of wh-movement and the proper formulation of the ECP. *The Linguistic Review* 16:43–61.

Gurtu, Madhu. 1992. *Anaphoric Relations in Hindi and English*. New Delhi: Munshiram Manoharlal.

Heycock, Caroline. 1995. Asymmetries in reconstruction. *Linguistic Inquiry* 26:547–570.

Keine, Stefan. 2016. Probes and their horizons. Ph.D. dissertation, University of Massachusetts, Amherst, MA.

Keine, Stefan. 2017. Selective opacity. Ms., University of Southern California, to appear in *Linguistic Inquiry*.

Kroch, Anthony. 1989. Amount quantification, referentiality, and long *wh*-movement. Ms., University of Pennsylvania.

Lebeaux, David. 1988. Language acquisition and the form of the grammar. Ph.D. dissertation, University of Massachusetts, Amherst, MA.

Lebeaux, David. 2009. *Where Does Binding Theory Apply?*. Cambridge, MA: MIT Press.

Lechner, Winfried. 1998. Two kinds of reconstruction. *Studia Linguistica* 52:276–310.

Lechner, Winfried. 2013. Diagnosing covert movement: The Duke of York and reconstruction. In *Diagnosing Syntax*, eds. Lisa Cheng and Norbert Corver, 158–189. Oxford: Oxford University Press.

Lechner, Winfried. to appear. A calculus for reconstruction and anti-reconstruction. In *Reconstruction Effects in Relative Clauses*, eds. Mathias Schenner and Manfred Krifka. Berlin: Akademie Verlag. (available at: http://users.uoa.gr/~wlechner/Reconstruction%202012.pdf).

Mahajan, Anoop. 1990. The A/A-bar distinction and movement theory. Ph.D. dissertation, MIT, Cambridge, MA.

Mahajan, Anoop. 1994. Towards a unified theory of scrambling. In *Studies on Scrambling: Movement and Non-Movement Approaches to Free Word-Order Phenomena*, eds. Norbert Corver and Henk van Riemsdijk, 301–330. Berlin: de Gruyter.

Mahajan, Anoop. 1997. Rightward scrambling. In *Rightward Movement*, eds. Dorothee Beerman, David LeBlanc, and Henk van Riemsdijk, 185–213. Amsterdam: John Benjamins.

Percus, Orin. 2000. Constraints on some other variables in syntax. *Natural Language Semantics* 8:173–229.

Poole, Ethan. 2017. Movement and the semantic type of traces. Ph.D. dissertation, University of Massachusetts, Amherst, MA.

van Riemsdijk, Henk, and Edwin Williams. 1981. NP structure. *The Linguistic Review* 1:171–218.

Romero, Maribel. 1997. The correlation between scope reconstruction and connectivity effects. In *Proceedings of the Sixteenth West Coast Conference on Formal Linguistics (WCCFL 16)*, eds. Emily Curtis, James Lyle, and Gabriel Webster, 351–366. Stanford: CSLI Publications.

Romero, Maribel. 1998. Focus and reconstruction effects in *wh*-phrases. Ph.D. dissertation, University of Massachusetts, Amherst, MA.

Rullmann, Hotze. 1995. Maximality in the semantics of wh-constructions. Ph.D. dissertation, University of Massachusetts, Amherst, MA.

Ruys, Eddy. 2015. A minimalist condition on semantic reconstruction. *Linguistic Inquiry* 46:453–488.

Schwarz, Florian. 2012. Situation pronouns in determiner phrases. *Natural Language Semantics* 20:431–475.

Sharvit, Yael. 1998. *How-many* questions and attitude verbs. Ms., University of Pennsylvania.

Sportiche, Dominique. 2006. Reconstruction, binding, and scope. In *The Blackwell Companion to Syntax, Vol. IV*, eds. Martin Everaert and Henk van Riemsdijk, 35–93. Oxford: Blackwell.

Sternefeld, Wolfgang. 2001. Syntactic vs. semantic reconstruction. In *Linguistic Form and its Computation*, eds. Christian Rohrer, Antje Roßdeutscher, and Hans Kamp, 145–182. Stanford: CSLI.