Reconstruction two ways: Evidence from Hindi-Urdu

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 pre-movement 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 $\overline{A}$-movement*
How many books did you want to read this year?

a. *many* > *want*:
For what number n: There are n-many 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), 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 definite description (i.e. 'Trace Conversion'):

(3) $[\ \mathrm{DP}_1 \ldots [\ \mathrm{Op} \ldots [\ \ldots\ t_1 \ldots\ ]\ ]\ ]$
$\rightsquigarrow_{\mathrm{LF}} [\ \mathrm{DP}_1\ \lambda x_e \ldots [\ \mathrm{Op} [\ \ldots\ x_e \ldots\ ]\ ]\ ]$ ($\mathrm{DP}_1 \gg \mathrm{Op}$)

- ***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) $[\ \mathrm{DP}_1 \ldots [\ \mathrm{Op} [\ \ldots\ t_1 \ldots\ ]\ ]\ ]$
$\rightsquigarrow_{\mathrm{LF}} [\ \cancel{\mathrm{DP}}_{\mathrm{T}} \ldots [\ \mathrm{Op} \ldots [\ \ldots\ \mathrm{DP}_1 \ldots\ ]\ ]\ ]$ ($\mathrm{Op} \gg \mathrm{DP}_1$)

➪ 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 Chierchia (1995), Cresti (1995), Rullmann (1995), Lechner (1998, 2013, to appear), Sternefeld (2001), and Ruys (2015).

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

➪ 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 it as being in this position:

    (7) *~~[$_{DP}$ … R-expr …]~~ … pron$_1$ … [… [$_{DP}$ … R-expr$_1$ …]]

    - ➪ *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) $^{\checkmark}$[$_{DP}$ … R-expr$_1$ …] [λ$\mathcal{Q}_{\langle et,t\rangle}$ [… pron$_1$ … $\mathcal{Q}_{\langle et,t\rangle}$ …]]

    - ➪ *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.
  - ▷ In particular, we show that Hindi long scrambling provides compelling evidence in support of I→C and against Q→C.

- We then 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

2 Scope, Condition C, and transparency

- ***Background***
  It is well-known that $\overline{\text{A}}$-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 [$_{RC}$ that **Lisa$_1$** saw]]$_2$ did **she$_1$** like best t_2?

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

  (11) $[_{DP} \ldots [_{RC} \ldots \text{R-expr}_1 \ldots]\,]_2 \ldots \text{pron}_1 \ldots \text{Op} \ldots t_2 \ldots$

- ***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 (11):

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

- (12) shows this correlation for $\overline{\text{A}}$-movement. Parallel facts hold for A-movement, in addition to a variety of other $\overline{\text{A}}$-movement configuration.

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

> (13) *Quantifier–Condition C correlation (Q→C)*
> Reconstruction for quantificational scope correlates with Condition C reconstruction. (Romero 1998, Fox 1999)

- They argue that (13) provides evidence for SynR over SemR, because SynR derives the interaction with Condition C for free:

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

  (15) *Reconstructed-scope reading of (12) on SemR account*
  ✓ [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 (13), but they propose that enriched versions of SemR are in fact able to derive the generalization. As such, they contend that (13) does not empirically favor SynR.

2.2 Arguments for Intensionality–Condition C connectivity

- 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 (16) 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 pre-movement position at LF. What is blocked, however, is the *de dicto* reading (nonspecific+opaque) of the moved element.

(16) [How many students who hate **Anton$_1$**]$_2$ did **he$_1$** hope [t_2 will buy him$_1$ a beer]?

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

b. ✓ *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 in w_0 and who will buy him a beer in w'.

c. * *Narrow scope, opaque* (*reconstruction for world-variable binding*)
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 in w' and who will buy him a beer in w'.

➪ (16) 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 (17).

(17) *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) argues that neither SynR alone nor SemR alone is able to capture (17) and that a hybrid account is required, which we will discuss later (see also Lechner 1998).

- ***Questions addressed here***

1. What is the empirical relationship 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 Condition C and reconstruction: Evidence from Hindi

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

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

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

b. *$\overline{A}$-scrambling*
(i) subject to weak crossover,
(ii) may cross finite clauses

3.2 Setting the stage: The scope of scrambling

- 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 (i.e. scrambling that does not leave a finite clause) may extend scope (Mahajan 1997):

(19) a. *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. **har samasyaa$_1$** *kisii vipakshii netaa-ne* t_1 khadii kii
every problem some opposition politician-ERG cause did
hai
AUX
'Every problem, some opposition politician caused.' (∀ > ∃)

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

(20) **kitnii** **pictures$_1$** siitaa t_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 obligatorily reconstructs for scope***
By contrast, long scrambling does not extend scope domains. Here reconstruction is obligatory for most speakers:[1]

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

[$_{CP}$ ki pradhaan mantrii-ne t_1 khadii kii hai]
that Prime Minister-ERG cause did AUX

'Every problem, some opposition politician thought that the Prime Minister had caused.' (∃ > ∀; ?*∀ > ∃)

(22) **kitnii** **pictures$_1$** siitaa-ne *tay* kar liyaa hai [$_{CP}$ ki vo t_1
how many pictures Sita-ERG decide do take AUX that she
dikhaaegii]?
will show

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

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

[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.

3.3 Testing 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:

(24) a. * us-ne$_1$ socaa [$_{CP}$ ki siitaa-ne kal [$_{DP}$ vo kitaab
3SG-ERG thought that Sita-ERG yesterday that book
jo 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.'

b. [$_{DP}$ vo kitaab [jo raam-ko$_1$ pasand thii]]$_2$ us-ne$_1$
that book that Ram-DAT like AUX 3SG-ERG
socaa [$_{CP}$ ki siitaa-ne kal t_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 relationship between scope reconstruction and Condition C connectivity:

▷ *Q→C predictions* (13)
$\overline{\text{A}}$-scrambling of a scope-bearing element out of a Condition C configuration should be ungrammatical.

➪ Because $\overline{\text{A}}$-scrambling obligatorily reconstructs for scope (23), such configurations should invariably induce Condition C violations.

▷ *I→C predictions* (17)
If scope reconstruction is independent of Condition C, then scope reconstruction should not be affected by Condition C.

➪ $\overline{\text{A}}$-scrambling should be grammatical in a Condition C configuration with a reconstructed-scope reading.

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

(25) [$_{DP}$ **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 [$_{CP}$ ki miinaa-ne kal t_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.'
(∃ > ∀; ?*∀ > ∃)

(26) [$_{DP}$ **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 [$_{CP}$ ki vo t_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*)

- ***Conclusion***
  Obligatory scope reconstruction is not affected by Condition C connectivity. This provides clear evidence against Q→C (13) as a general constraint on reconstruction.

3.4 The Condition C–intensionality correlation

- 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:

(27) a. *Non-movement baseline → De dicto reading possible*

prataap$_1$ *soctaa* hai [$_{CP}$ ki sangiitaa-ne [$_{DP}$ 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 reconstruction for 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 t_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 → Reconstruction for opaque reading*

[$_{DP}$ ek **bhuutnii** jo us-se$_1$ pyaar kartii hai]$_2$
a ghost that him-INSTR love do AUX
prataap$_1$ *soctaa* hai [$_{CP}$ ki sangiitaa-ne t_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 (28), which contains (i) Condition C connectivity, (ii) scope interactions, and (iii) referential opacity. It demonstrates that Condition C connectivity travels with opacity, not quantifier scope:

(28) [$_{DP}$ **kitnii** **pictures** jo siitaa-ne$_1$ lĩĩ]$_2$ us-ne$_1$ *tay*
how many pictures that Sita-ERG took she-ERG decide
kar liyaa hai [$_{CP}$ ki vo$_1$ t_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 in w_0 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 in w_0 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 in w' and Sita shows x in w'.

- ***Explanation***
  - ▷ $\overline{\text{A}}$-scrambling obligatorily reconstructs → wide scope is impossible → (28a)
  - ▷ Condition C connectivity blocks reconstruction for world-variable binding → no opaque reading → (28c)
  - ▷ Condition C connectivity does **not** block reconstruction for quantifier scope → reconstructed quantifier scope possible → (28b)

- ***Conclusion***
  This provides strong evidence for I→C, repeated in (29):

  (29) *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 proposed on independent grounds by Lechner (1998, 2013, to appear).

- To establish this claim, we first briefly outline the pitfalls of SynR-only and SemR-only accounts.

- ***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***.

- ***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 hence ***too restrictive***.

4.2 A hybrid account

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

  (30) *Interpreting $\overline{A}$-scrambling in Hindi*
  a. *SemR:* Translate trace into $\langle et, t\rangle$-variable
  b. *SynR:* Interpret copy in launching site

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

  (31) $\overset{\overline{\text{A}}\text{-scr}}{\downarrow\!\!\ulcorner\!\!\urcorner}$
  $\text{DP}_1 \ldots \text{Op} \ldots t_1 \ldots$
  $\overset{(30a)}{\Longrightarrow}$ *LF₁:* [DP_1 [$\lambda \mathcal{Q}_{\langle et,\, t\rangle}$ [… Op … $\mathcal{Q}_{\langle et,\, t\rangle}$ …]]] (Op ≫ DP_1)
  $\overset{(30b)}{\Longrightarrow}$ *LF₂:* [~~DP_1~~ [… Op … DP_1 …]] (Op ≫ DP_1)

- As we saw above, A-scrambling differs from $\overline{\text{A}}$-scrambling in this respect: it allows scope extension.

  (32) *Interpreting A-scrambling in Hindi*
  Translation of the trace into a variable of type e is possible.

  (33) $\overset{\text{A-scr}}{\downarrow\!\!\ulcorner\!\!\urcorner}$
  $\text{DP}_1 \ldots \text{Op} \ldots t_1 \ldots$
  $\overset{(32)}{\Longrightarrow}$ LF: [DP_1 [λx_e [… Op … x_e …]]] (DP_1 ≫ Op)

4.2.1 The role of SemR

- ***Scope reconstruction***
  Instances of licit scope reconstruction in the presence of a potential Condition C violation, such as (34), can only be accounted for via SemR:

  (34) [$_{DP}$ **kitnii** **pictures** jo siitaa-ne$_1$ lii hãĩ]$_2$ us-ne$_1$
  how many pictures that Sita-ERG took AUX she-ERG
  tay kar liyaa hai [$_{CP}$ ki vo t_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*)

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

- ***No reconstruction for intensionality***
  Recall that Condition C connectivity does correlate with reconstruction for world-variable binding:

  (36) # [$_{DP}$ 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 t_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 operators can only bind variables in their scope, reconstruction for world-variable binding is possible only if there were a world variable in the embedded clause that were fed into the higher-typed trace:

  (37) [DP$_{\langle s,\langle et,t\rangle\rangle}$ [λ$\mathcal{Q}$ [… think [λw' [… $\mathcal{Q}_{\langle s,\langle et,t\rangle\rangle}(w')$ …]]]]]

- If (37) were possible, it would produce such reconstruction irrespective of Condition C. Therefore, it must be blocked.

- We propose, building on a suggestion by Lechner (2013, to appear), that this restriction follows from an analysis where intensionality is represented with overt world (or situation) pronouns, the so-called "Standard Solution" (Percus 2000, Keshet 2008, Schwarz 2012).

  (38) DPs cannot be of type $\langle s, \sigma\rangle$, for any type σ.

- ***Consequence***
  (38) rules out DPs of type $\langle s, \langle et, t\rangle\rangle$. The world variable associated with the DP must be saturated DP-internally by a world pronoun.[2]

- With this constraint, SemR is simply unable to produce reconstruction for world-variable binding:

  (39) *Intensional trace → Type mismatch*
  * [λw [$_{DP_{\langle et,t\rangle}}$ … w …] [λ$\mathcal{Q}$ [… think [λw' [… $\mathcal{Q}_{\langle s,\langle et,t\rangle\rangle}$ …]]]]]

  (40) *Extensional trace → World-variable bound in-situ*
  [λw [$_{DP_{\langle et,t\rangle}}$ … w …] [λ$\mathcal{Q}$ [… think [λw' [… $\mathcal{Q}_{\langle et,t\rangle}$ …]]]]]

- SemR combined with (38) thus has the effect that SemR cannot produce reconstruction for *de dicto* readings:

  (41) [λw_0 [$_{DP}$ a ghost in $w_{0/*2}$ that loves **Pratap$_1$**]
  [λ$\mathcal{Q}$ [**he$_1$** thinks in w_0 [λw_2 [that Sangita saw $\mathcal{Q}_{\langle et,t\rangle}$ in w_2]]]]]
  (✓*de re*; **de dicto*)

- ***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.

[2] Lechner (2013, to appear) develops an account that also rules out traces of type $\langle\langle e, st\rangle, st\rangle$, but it is not clear to us that this is necessary to achieve the desired result. It would unnecessarily rule out analyses where DPs but not VPs contain world pronouns (though both involve world arguments), such as Schwarz (2012). What is important is that the intensionality of the restrictor NP involves a world pronoun, which cannot be bound under SemR.

4.2.2 The role of SynR

- SemR alone is insufficient. Recall from (27c) above (repeated here as (42)) that reconstruction for referential opacity *is* possible if Condition C is not at play:

(42) [$_{DP}$ 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 t_2 dekhii]
thinks AUX that Sangita-ERG saw

'A ghost that loves him$_1$, Pratap$_1$ thinks that Sangita saw.'
(*opaque reading possible*)

- Because SemR cannot produce reconstruction for world-variable binding due to (38), the opaque reading in (42) must be the result of SynR:

(43) [$\underline{\lambda w_0}$ [~~[$_{DP}$ a ghost in $w_{0/2}$ that loves him$_1$]~~
Pratap$_1$ thinks in w_0 [$\underline{\lambda w_2}$ [that Sangita saw
[$_{DP}$ a ghost in $\underline{\underline{w_{0/2}}}$ that loves **him$_1$**]
in w_2]]]] (✓*de re*; ✓*de dicto*)

- ***Conclusion***
Because SynR achieves 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***
(44) 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 (44) must involve SynR.

(44) [**uske$_1$** bhaai-se$_1$] **har** **laṛkii$_1$** soctii hai [$_{CP}$ Kareena
her brother-INSTR every girl thinks AUX Kareena
Kapoor t_2 shaadii karegii]
Kapoor marriage will do

'Every girl$_1$ thinks that Kareena Kapoor will marry her$_1$ brother.'

(45) [~~[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 is indeed the case:

(46) a. [**uske$_1$** aise bhaai-se jise vo$_2$ jaanataa hai]$_3$
her PRTCL brother-INSTR who he knows AUX
raam-ne$_2$ **har** **laṛkii-ko$_1$** kahaa [$_{CP}$ ki Kareena Kapoor
Ram-ERG every girl-DAT told that Kareena Kapoor
t_3 shaadii karegii]
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 raam$_2$ jaanataa hai]$_3$
her PRTCL brother-INSTR who Ram knows AUX
us-ne$_2$ **har** **laṛkii-ko$_1$** kahaa [$_{CP}$ ki Kareena Kapoor
he-ERG every girl-DAT told that Kareena Kapoor
t_3 shaadii karegii]
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 Taking stock

- ***The division of labor***
The distinct empirical properties of SemR and SynR are summarized in (47) and (48):

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

i. Reconstruction for world-variable binding possible

ii. Reconstruction for quantifier scope

iii. Condition C connectivity

(48) *SemR:*
λw_0 [[$_{DP}$ $w_{0/*1}$ R-expr$_3$] [$\lambda \mathcal{Q}$ [pron$_{3/4}$ Op … [λw_1 [$\mathcal{Q}$ …]]]]]

i. No reconstruction for world-variable binding

ii. Reconstruction for quantifier scope

iii. No Condition C connectivity

- This division of labor derives the empirical generalization in (49).

(49) *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)

5 Returning to 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 reappears:

(50) *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 [$_{RC}$ that **John$_1$** took in Sarajevo]]$_2$ does **he$_1$** want the editor to publish t_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).

[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 to say about these arguments.

- 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 and implications

- 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.

  ➪ Some, but not all instances of reconstruction amount to interpreting a lower copy.

- A crucial ingredient of the analysis is that SemR can achieve reconstruction for scope, but not for world-variable binding. This restriction can be derived from Percus' (2000) Standard Solution, according to which world pronouns involved with DPs are saturated DP-internally (also Keshet 2008, 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 Rajesh Bhatt, Amy Rose Deal, Peter Jenks, Anoop Mahajan, Roumi Pancheva, Dominique Sportiche, Ekaterina Vostrikova, and audiences at UCLA and UC Berkely for helpful and insightful discussion.

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

Chierchia, Gennaro. 1995. Individual-level predicates as inherent generics. In *The Generic Book*, eds. Gregory Carlson and Francis Jeffry Pelletier, 176–223. Chicago: Chicago University Press.

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.

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.

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*.

Keshet, Ezra. 2008. Good intensions: Paving two roads to a theory of the *De re*/*De dicto* distinction. Ph.D. dissertation, MIT, Cambridge, MA.

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.