Intervention everywhere!

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GLOW 38
April 2015
The question

*Wh*-questions in English involve an **overt movement step**:

(1) *Who* did Mary introduce ____ to Fred?

    ________________

In **multiple** *wh*-questions, only **one** *wh*-phrase moves overtly.

(2) *Who* did Mary introduce ____ to *whom* ?

    ________________

☞ **How are in-situ *wh*-phrases interpreted?**
Two approaches to *wh*-in-situ

The covert movement approach:
*Wh*-phrases **must move to C** by LF for interpretability (Karttunen, 1977, among others).

(3) \[ \text{LF: } \textit{Who whom} \textit{C did Mary introduce } \underline{\text{____}} \text{ to } \underline{\text{____}} ? \]

The in-situ approach:
*Wh*-phrases **are interpreted in their base-positions**, through focus-alternative computation (Hamblin, 1973; Rooth, 1985, 1992, a.o.).

(4) \[ \text{LF: } \textit{Who C did Mary introduce } \underline{\text{____}} \text{ to whom } ? \]
**Wh-in-situ and intervention effects**

*Wh*-in-situ is sensitive to **intervention effects**.

(5) **Japanese: Intervention effects avoided through scrambling**

a. ✓ Hanako-\text{NOM} [\text{nani-o}] yon-da-no?
   ‘What did Hanako read?’

b. ?* Dare-\text{mo} [\text{nani-o}] yom-ana-katta-no?
   no-one what-\text{ACC} read-\text{NEG-PAST-Q}
   ‘What did no one read?’

c. ✓ [\text{nani-o}] dare-\text{mo} \underline{\text{what-ACC no-one read-\text{NEG-PAST-Q}}}
   ‘What did no one read?’

* data from Tomioka (2007)
**Wh-in-situ and intervention effects**

Intervention effects affect regions of alternative computation but not (overt or covert) movement (Beck, 2006; Beck and Kim, 2006; Kotek, 2014a,b; Kotek and Erlewine, to appear)

(6) The Beck (2006) intervention schema:

a. * $[CP \ C \ ... \ intervenер \ ... \ wh ]$

b. ✓ $[CP \ C \ ... \ wh \ intervenер \ ... \ t ]$

Different theories of what interveners/intervention is about:

- **Focus** (Beck, 2006; Beck and Kim, 2006)
- **Quantification** (Beck, 1996; Mayr, to appear)
- **Topics** (Grohmann, 2006)
- **Prosody** (Tomioka, 2007)
The new intervention schema

* \( C \ldots \lambda \ldots \text{wh} \)

Heim and Kratzer (1998): a \( \lambda \)-binder is introduced below the landing site of movement, abstracting over the trace.


Movement can’t target a region where focus alternatives are computed.
(7) The new intervention schema
* C ... λ ... wh

☞ Predict intervention in more places than previously thought.
☞ Predict more interveners than previously thought.

Today: Both of these predictions are correct.
The state of the art
Pesetsky (2000): intervention correlates with superiority

(9) a. Which student _____ read which book? obeying
    b. Which book did which student read _____? violating
    c. Which student didn’t _____ read which book? obeying
    d. * Which book didn’t which student read _____? violating

(cf Which book did which student not read _____?)
Syntax by Pesetsky (2000); Semantics by Beck (2006):

Superiority-obeying questions: *Wh*-in-situ covertly moves to C at LF.

(10) LF: *Which student* *which book* C _____ read _____?  

Predict: no intervention

Superiority-violating questions:  
*Wh* is truly LF-in-situ, interpreted via focus-alternatives computation.

(11) LF: *Which book* C did *which student* read _____?  

Predict: intervention!
Note: for many (perhaps all) speakers, intervention will be diagnosed by the loss of the pair-list reading of the question. A single-pair may survive.

(12) Who ate what?
   a. Fred ate the beans.  
      \textit{single-pair}
   b. Fred ate the beans, Mary ate the eggplant, and John ate the broccoli.  
      \textit{pair-list}

(This has been reported for superiority-violating questions in English and for German questions in footnotes in previous work (Beck, 2006; Pesetsky, 2000, cf also Beck 1996).)
Today

1. **New patterns of intervention**
   - A-movement chains trigger intervention
   - Turning non-interveners into interveners

2. **Breaking the superiority correlation**
   - Intervention in superiority-obeying questions
   - Avoiding intervention in superiority-violating questions

 Intervention happens whenever **movement and focus-alternatives** are computed in the same part of structure

3. **Some implications**
New patterns of intervention
The literature has several different ways of defining what interveners are (Beck, 1996, 2006; Grohmann, 2006; Tomioka, 2007; Haida, 2007).

Everyone agrees that indefinites, existentials, and definite descriptions, do not act as interveners.

However, they act as interveners if forced to take scope via movement.
A-movement and reconstruction

English subjects normally undergo A-movement from a vP-internal position to Spec,TP.

(13) Narrow syntax:

```
CP
  C  TP
    subject
      λ
      T
      vP
        v
        VP
          subject
              ... wh ...
```
English subjects normally undergo A-movement from a vP-internal position to Spec,TP.

(13) This causes intervention at LF:
Subjects which undergo A-movement from a vP-internal position to Spec,TP are normally able to reconstruct, avoiding intervention.

(14)  \textbf{Avoid intervention by reconstructing at LF:}

\[
\begin{align*}
\text{CP} & \quad \text{TP} \\
\text{C} & \quad \text{vP} \\
\text{subject} & \quad \text{v} \\
\text{VP} & \quad \ldots \text{wh} \ldots
\end{align*}
\]
Subjects of individual-level predicates must vacate vP (Diesing, 1992). Hence, the subject can’t reconstruct and we observe intervention:

(15)  a. ✓ *Which person are counselors available to discuss which issue with ____?  
      stage-level

b. *Which person are counselors careful to discuss which issue with ____?  
      individual-level
Reconstruction can also be prevented by binding from the subject into a pronoun or reflexive.

(16) **Context:** The lawyers seem to be likely to appeal different decisions to different courts.

a. ✓ *Which court* did **the lawyers** seem **to the reporters** to be likely to appeal *which decision* to ____?

a’. LF: *Which court* did __ seem **to the reporters** to be likely to **the lawyers** appeal *which decision* to ____?

b. * Which court* did **the lawyers** seem **to each other** to be likely to appeal *which decision* to ____?
A-movement chains intervene when the movement can’t reconstruct. Bare plurals and definite descriptions act as interveners.

Next: We can turn traditional non-interveners into interveners by forcing them to move.

(17)  a. The woman who said she would $\triangle$ bought the tuna.

b. The woman who said she would $\overset{\text{buy the tuna}}{\longrightarrow}$ $[t \overset{\text{did}}{\longrightarrow} \overset{\text{buy the tuna}}{\longrightarrow}]$.

NB: Definite descriptions like *the woman* can otherwise be interpreted without movement.
Non-interveners and Argument Contained Ellipsis

(18) **Baselines** *(obeying and violating)*:
   a. ✓ *Which boy did you tell someone to introduce _____ to which girl?*
   b. ✓ *Which girl did you tell someone to introduce which boy to _____?*

(19) **More elaborate baselines**:
   a. ✓ *Which boy did you tell [someone who (really) shouldn’t be here] to introduce _____ to which girl?*
   b. ✓ *Which girl did you tell [someone who (really) shouldn’t be here] to introduce which boy to _____?*

(20) **ACE test case**:
   a. ✓ *Which boy did you tell [someone who (really) shouldn’t △] to introduce _____ to which girl?*
   b. *Which girl did you tell [someone who (really) shouldn’t △] to introduce which boy to _____?
Non-interveners and Argument Contained Ellipsis

(21) This happens with other traditional non-interveners as well:
    a. ✓ Which boy did you tell [{the, a, some} man who (really) shouldn’t be here] to introduce _____ to which girl?
    b. ✓ Which girl did you tell [{the, a, some} man who (really) shouldn’t be here] to introduce which boy to _____?

(22) a. ✓ Which boy did you tell [{the, a, some} man who (really) shouldn’t △] to introduce _____ to which girl?
    b. * Which girl did you tell [{the, a, some} man who (really) shouldn’t △] to introduce which boy to _____?

ACE forces covert movement of an otherwise in-situ element.

As a result, we observe intervention effects in superiority-violating Qs.
Summary

干预由传统非干预者引起...

- 裸复数
- 定义描述
- 不定代词
- 存在量词

... 当重建被阻塞或移动被强迫时。

干预发生在任何时候，一个\(\lambda\)-绑定必须在一个使用焦点替代的区域中使用。

新干预方案

\[ * \quad C \quad \ldots \lambda \ldots \quad wh \]
Previous theories assume a fixed set of interveners, with different characterizations:

- **Focus** (Beck, 2006; Beck and Kim, 2006)
- **Quantification** (Beck, 1996; Mayr, to appear)
- **Topics** (Grohmann, 2006)
- **Prosody** (Tomioka, 2007)

However: anything that moves into a region of focus alternatives computation is an intervener.

This new characterization of interveners, is incompatible with all existing approaches to intervention effects.
Superiority, movement, and intervention effects
Recall: intervention correlates with superiority (Pesetsky, 2000)

(24)  

a.  Which student which book C didn’t _____ read _____? obeying

b.  * Which book C didn’t which student read _____? violating
**Correlation:** Superiority-obeying questions are not susceptible to intervention, but superiority-violating questions are.

**Following Beck (2006),** this is because superiority-violating questions must use focus-alternatives computation for the *wh*-in-situ.

[Correlation can be broken in both directions, in a way consistent with idea that what matters is regions of alternative computation.](#)
Kotek (2014a): covert movement in English superiority-obeying questions can be *partial*.
Kotek (2014a): *covert movement in English superiority-obeying questions can be partial.*
**Prediction:** If covert movement is restricted, intervention happens when interviener occurs **above highest possible landing site of movement.**

- *Wh can move up to the barrier* \(^{(25)}\)
  - No intervention in region where movement happens
- *Wh cannot move past barrier*
  - Intervention happens above the barrier, where focus alternatives must be used.
Movement and intervention effects: NPIs

NPIs are licensed in downward entailing contexts:

(26)  a. Mary *(didn’t) read any books.
    b. Which boy {didn’t give, *gave} which girl any flowers?

Prediction: NPI inside a wh-phrase can’t move out of the scope of negation. Negation is an intervener. Expect intervention effects.

(27)  a. ✓ Which boy didn’t read which book about some president?
    b. * Which boy didn’t read which book about any president?
A focused item cannot move out of the scope of its associated operator:

(28)  a.  * Mary$_F$, John only likes ____.
     Intended: ‘As for Mary, John only likes her$_F$ (he doesn’t like
     anyone else).’
     b.  ✓ John only likes Mary$_F$.

(29)  a.  * Who$_F$ do you only like ____?
     Intended: Who $x$ is such that you like only $x$?
     b.  ✓ You only like who$_F$?
**Prediction:** Focus inside a *wh*-phrase can’t move out of the scope of *only*. *Only* is an intervener. **Expect intervention effects.**

(30)  

a. **Baseline:** I can tell you [*which* student read *which* book].

b. **Context:** The students in the class were supposed to read one book *and* one article about syntax. However, everyone got confused and read one book *or* one article. I’ve been reading everyone’s squibs. I’ve finished all the ones about books, so:

* I can tell you [*which* student *only* read *which* book\(F\) (about syntax)].
Multiple questions with islands

Movement is sensitive to **syntactic islands** (Ross, 1967).

**Prediction:** No intervention inside the island, as the *wh* can move around the intervener, but **intervention predicted outside of the island**.

- *Wh* can move up to the barrier (31)
- No intervention in region where movement happens
- *Wh* cannot move past barrier
- Intervention happens above the barrier, where focus alternatives must be used.
Baseline: Multiple *wh*-questions with islands are grammatical.

(32) **Context:** The linguists at the conference are very picky about attending the conference dinner. However, each of them adores one philosopher and will certainly attend the dinner if that philosopher is invited. What I want to know is:

Q: *Which* linguist will come [if we invite *which* philosopher]?

A: ✓ **Pair-list answer:**
   - Chomsky will come if we invite Quine,
   - Kayne will come if we invite Lewis,
   - Labov will come if we invite Russell, ...

(based on Cheng and Demirdache 2010, citing Tancredi (p.c.))
Add interveners: here, *only*.

(33) **Context:** The linguists at the conference are looking forward to the conference dinner. However, each of them dislikes all but one philosopher and will attend the dinner just in case that philosopher alone is invited. What I want to know is:

Q: *Which* linguist will come [if we *only* invite *which* philosopher]?  
A: ✓ **Pair-list answer:**  
   Chomsky will come if we only invite Quine,  
   Kayne will come if we only invite Lewis,  
   Labov will come if we only invite Russell, ...

☞ Intervener *inside* the island is *grammatical*.
Add interveners: here, only.

(34)  **Context:** The linguists at the conference don’t really want to attend the conference dinner. However, each of them adores one philosopher and has said that they will come just in case that philosopher is invited. What I want to know is:

Q: *Which* linguist will **only** come [if we invite *which* philosopher]?

A: *Pair-list answer:
  Chomsky will only come if we invite Quine,
  Kayne will only come if we invite Lewis,
  Labov will only come if we invite Russell, ...

[Intervener above the island causes an intervention effect.]


We’ve seen three cases of intervention in obeying questions.

Recall the second half of the Pesetsky correlation: intervention happens in violating questions because *wh* is truly LF-in-situ.

(35) **LF:** *Which student C did Mary give which book to ____ ?*

Next: Three ways to avoid intervention in superiority-violating questions.
Prediction: Intervention can be avoided if the intervener is able to scope out of the question, so that it is no longer in the way.

(36) \( \checkmark \text{intervener } wh_2 \text{ C } ... \text{intervener } ... \text{wh}_1 ... t_2 \)

This is a property of universal quantifiers.
No intervention if intervener scopes out of question

(37)  Tell me *which book each kid* will try to persuade *which adult* to read _____.  

(Pesetsky, 2000)

**Only one reading attested:**

a.  ‘For each kid, which adult will she try to persuade to read which book?’  
\[
\forall > \text{book-adult pairs}
\]

b.  *‘What book-adult pairs are s.t. each kid will try to persuade the adult to read the book?’*  
\[
\text{book-adult pairs} > \forall
\]

Floating the quantifier fixes its scope, preventing it from moving out of the way of the in-situ *wh*, leading to intervention.

(38)  * Tell me *which book* the kids will *each* try to persuade *which adult* to read _____.  

(Pesetsky, 2000)
No intervention if intervener reconstructs below *wh*

**Prediction:** Intervention can be avoided if the intervener is able to reconstruct below the in-situ *wh*.

\[(39) \quad \checkmark wh_2 \ C \quad \ldots \ intervener \ldots \ wh_1 \ \ldots \ t_2 \ intervener\]
No intervention if intervener reconstructs below *wh*

**Prediction:** Intervention can be avoided if the intervener is able to reconstruct below the in-situ *wh*.

(40) **Context:** The first-year students took several classes this past semester, taught by different professors. Each professor thought that the students particularly enjoyed one topic that she taught. Tell me,

✓ *Which topic* did it seem to *which professor* that *all* of the students enjoyed ____?  

✓ *Which topic* did *all* of the students seem to *which professor* to have enjoyed ____?  

* *Which topic* did the students *all* seem to *which professor* to have enjoyed ____?  

✓ *Which topic* did the students seem to *which professor* to have *all* enjoyed ____?
Intervention avoided in superiority-violating questions if intervener scopes out of the question, or below *wh*-in-situ.

What matters is where the intervener scopes at LF, not the pronounced word-order.
Prediction: Intervention can be avoided if in-situ $wh$ can be given wide scope above an intervener through non-interrogative movement.

Right-Node Raising can feed exceptional wide scope of a $wh$ that is otherwise unavailable in questions (Bachrach and Katzir, 2009, a.o.):

(41)   a.  *Which book did John meet the man who wrote _____?  
   b.  ✓Which book did [John meet the man who wrote], and [Mary meet the man who published] _____?
No intervention when *wh* scopes above intervener

This exceptional wide scope in RNR is also able to escape intervention effects in superiority-violating questions:

(42) a. *Which book did only John allow which student to read* _____?
    b. ✓ *Which book did [only John allow], and [only Mary prohibit], which student to read* _____?
No correlation between superiority and intervention:
- Intervention in obeying Qs with restricted covert wh-movement
- No intervention in violating Qs, intervener scoped out of the question
- No intervention in violating Qs, intervener reconstructed below wh-in-situ
- No intervention in violating Qs, wh-in-situ given wide scope via RNR

However, the general intervention schema still applies:

\[
\text{The intervention schema} \quad \* C \quad \lambda \quad wh
\]

Intervention happens in regions where focus-alternatives are computed (Beck, 2006; Kotek, 2014a,b; Kotek and Erlewine, to appear), when it includes a $\lambda$-binder.
Some implications and open questions
Modals

Modals are not interveners:

All known interveners, as well as the new ones shown here, quantify over individuals. Quantification over worlds does not lead to intervention.

(44)  a. ✓ Which abstract should John assign _____ to which reviewer?
      b. ✓ Which reviewer should John assign which abstract to _____?

(45)  a. ✓ Which paper did John have to read _____ for which class?
      b. ✓ Which class did John have to read which paper for _____?

(46)  a. ✓ Which abstract were you forced to assign _____ to which reviewer?
      b. ✓ Which reviewer were you forced to assign which abstract to _____?
Modals

Modals are not interveners:

(47)  
  a.  Which paper was it necessary for you to assign _____ to which reviewer?
  b.  Which reviewer was it necessary for you to assign which paper to _____?

(48)  
  a.  Which paper may John read _____ for which class?
  b.  Which class may John read which paper for _____?

(49)  
  a.  Which paper must John read _____ for which class?
  b.  Which class must John read which paper for _____?

Modality must be represented without the use of lambda binders, e.g. though indices.
Notice that under this approach, intermediate landing sites of movement behave differently than the target position of movement.

Intermediate landing sites do not “count” for intervention!

(50) \[\textit{Which book} \lambda C \text{ did Jill think that } [cP \ t \ \not\lambda \ \textit{which kid read } t ]?\]

LF: \[\checkmark \textit{Which book} \lambda C \text{ did Jill think that } [cP \ \textit{which kid read } t ]?\]
Open questions

Why does adverb *only* intervene?
- Association with focus possible without movement (Rooth, 1985, a.o.)
- Explained if there is covert focus movement (Drubig, 1994; Krifka, 2006; Wagner, 2006; Erlewine and Kotek, 2014)
- Or if Beck (2006) is correct for at least some cases of intervention

Why does sentential negation intervene?
- Perhaps sentential negation moves and introduces a $\lambda$-binder
- Or we may need the Beck (2006) story again
Conclusion
Conclusion

• The intervention generalization: Movement cannot target a region where focus alternatives are computed

\[(51) \quad \textbf{The intervention schema} \]
\[
\begin{array}{c}
* \quad \mathcal{C} \quad \ldots \quad \lambda \quad \ldots \quad wh
\end{array}
\]

• A logical consequence of standard assumptions about structure building, interpretation:
  • Movement as in e.g. Heim and Kratzer (1998)
  • Focus alternatives computation (Rooth, 1985, 1992)
  • Intensional semantics with simple types

\(\lambda\)-abstraction not well-defined when computed over alternatives.

• Previous responses to this problem:
  • Shan (2004): Adopt a \textit{variable-free semantics} without movement
  • Rooth (1985); Poesio (1996); Novel and Romero (2009): Use a higher-typed ‘superintensional’ semantic system
• Today: Empirical evidence for the new intervention generalization

• **Support for standard assumptions** (syntactic movement interpreted using λ-abstraction, with simple semantic types)
  - *Wh*-in-situ requires both covert movement and focus alternatives for its interpretation
  - ... but abstraction and alternative computation cannot overlap

• Grammar does not solve the problem via higher semantic types or movement-less syntax, but via overt and covert movement.
Thank you! Questions?

I would like to thank Martin Hackl, David Pesetsky, Danny Fox, Irene Heim, Michael Yoshitaka Erlewine, Michael Wagner, Barbara Partee, audiences at MIT and McGill University, NSF Dissertation Improvement Grant #1251717, and the Mellon Foundation.


References II


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