Movement and alternatives don't mix: A new look at *wh*-intervention effects[1]

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1 Introduction

1.1 Interpreting *wh*-in-situ

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

(1) *Who* did Mary introduce ___ to Sue?

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

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

☞ **How are in-situ *wh*-phrases interpreted?**

1.2 Two approaches to *wh*-in-situ

The covert movement approach:[2]
Wh-phrases **must move to C** by LF for interpretability (Karttunen, 1977, among others).

(3) LF: *Who whom* C did Mary introduce ___ to ___?

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

(4) LF: *Who* C did Mary introduce ___ to *whom* ?

1.3 *Wh*-in-situ and intervention effects

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

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

a. ✓ Hanako-ga [*nani-o*] yon-da-no?
Hanako-NOM what-ACC read-PAST-Q
'What did Hanako read?'

b. ?* **Dare-mo** [*nani-o*] yom-ana-katta-no?
no-one what-ACC read-NEG-PAST-Q

c. ✓ [*Nani-o*] **dare-mo** ___ yom-ana-katta-no?
what-ACC no-one read-NEG-PAST-Q
'What did no one read?'

data from Tomioka (2007)

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[2]Throughout, solid arrows indicate overt movement, dashed arrows indicate covert movement, and curly arrows indicate areas of focus-alternatives computation. These arrows are used here as a notational convenience only.

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, 2016)

(6) **The Beck (2006) intervention schema:**

a. * [$_{CP}$ C ... **intervener** ... *wh*]

b. ✓ [$_{CP}$ C ... *wh* **intervener** ... *t*]

Different theories of what interveners/intervention are: **Focus** (Beck, 2006; Beck and Kim, 2006); **Quantification** (Beck, 1996; Mayr, 2014); **Topics** (Grohmann, 2006); **Prosody** (Tomioka, 2007).

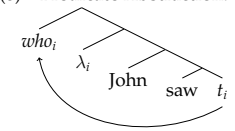
1.4 Summary of the proposal

(7) **The new intervention schema**

* C ... λ ... *wh*

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

(8) **Predicate Abstraction:**



Shan (2004, cf Rooth 1985, others): Predicate Abstraction is not well defined in region of alternative computation (in simple semantic models).

Movement can't target a region where focus alternatives are computed.

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

☞ Predict **more interveners** than previously thought.

Today: Both of these predictions are correct.

2 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 .

(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.[3]

3 New patterns of intervention

The literature has several different ways of defining what interveners are (Beck, 1996, 2006; Grohmann, 2006; Tomioka, 2007; Haida, 2007; Mayr, 2014).

☞ Everyone agrees **indefinites, bare plurals, existentials, definite descriptions, do not act as interveners**.

However, they act as interveners if forced to take scope via movement.

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

Q: Under the proposal I sketched here, why don't subjects always intervene?

A: Subjects are normally able to **reconstruct**, avoiding intervention.

Prediction: if reconstruction is blocked, we should observe intervention effects.

Subjects of individual-level predicates must vacate *v*P (Diesing, 1992). Hence, the subject can't reconstruct and we observe intervention:

(12) a. ✓ *Which* person are **counselors** available to discuss *which* issue with ___? *stage-level*
b. * *Which* person are **counselors** (λ) careful to discuss *which* issue with ___? *individual-level*

Reconstruction can also be prevented by **binding from the subject** into a pronoun or reflexive.

(13) 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** (λ) seem **to each other** to be likely to appeal *which decision* to ___?

☞ **Intervention caused by traditional non-interveners...**

- Bare plurals
- Definite descriptions
- (Indefinites)
- (Existential quantifiers)

... when **reconstruction is blocked** or **movement is forced**.

☞ **Intervention happens whenever a λ-binder must be used in a region where focus-alternatives are also used.**

(14) **The new intervention schema**
* C ... λ ... *wh*

[3] 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). See discussion in Kotek (2014a).

4 Superiority and intervention effects

4.1 Background

Recall: Superiority-obeying questions are not susceptible to intervention, but superiority-violating questions are.

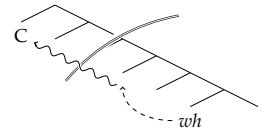
☞ **Correlation can be broken in both directions**, in a way consistent with idea that **what matters is regions of alternative computation**.

Intervention is avoided in superiority-obeying questions because *wh*-in-situ can covertly move above interveners.

Prediction: If covert movement is restricted, intervention happens when intervener occurs **above highest possible landing site of movement**.

- *Wh* can move up to the barrier
- ☞ No intervention in region where movement happens
- *Wh* cannot move past barrier
- ☞ Intervention happens above the barrier, where focus alternatives must be used.

(15) CP



4.2 Intervention in superiority-obeying questions

Using binding to restrict covert movement: bindee cannot move out of the scope of a binder.

(16) **Baselines, with binder underlined:**
a. *Which daughter* showed Trump *which picture of herself*?
b. *Which daughter* showed Trump *which picture of himself*?

Adding an intervener:

(17) **Baselines, with binder underlined:**
a. ? *Which daughter* showed **only** Trump *which picture of herself*?
b. * *Which daughter* showed **only** Trump *which picture of himself*?

Other ways to restrict covert *wh*-movement:

- focus association,
- NPI licensing,
- islands

☞ We observe intervention in superiority-obeying questions if we restrict covert *wh*-movement and force in-situ interpretation instead.

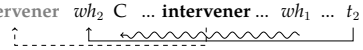
4.3 No intervention in superiority-violating questions

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

Three ways of avoiding intervention in superiority-violating questions:

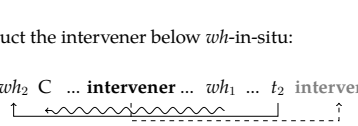
- Scope the intervener out of the question (Beck, 1996; Pesetsky, 2000):

  (18) ✓ **intervener** wh_2 C ... **intervener** ... wh_1 ... t_2



- Reconstruct the intervener below *wh*-in-situ:

  (19) ✓ wh_2 C ... **intervener** ... wh_1 ... t_2 **intervener**



- Give *wh* wide scope above the 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.):

(20) 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] ___?

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

(21) a. * *Which book* did **only Mary** allow *which student* to read ___?
b. ✓ *Which book* did [**only Mary** allow], and [**only Sue** prohibit], *which student* to read ___?

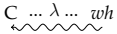
(See also Branan, ms.: data from extraposition, parasitic gap licensing)

4.4 Summary

☞ **No correlation between superiority and intervention.**
Instead, intervention correlates with movement possibilities for intervener and *wh*.

However, **the general intervention schema still applies:**

(22) **The intervention schema**
* C ... λ ... *wh*



☞ **Intervention happens in regions where focus-alternatives are computed** (Beck, 2006; Kotek, 2014a,b; Kotek and Erlewine, 2016), when it includes a **λ**-binder.

5 Some implications and conclusion

5.1 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.

(23) a. ✓ *Which abstract* **should** Mary assign ___ to *which reviewer*?
b. ✓ *Which reviewer* **should** Mary assign *which abstract* to ___?
(24) a. ✓ *Which paper* did Mary **have to** read ___ for *which class*?
b. ✓ *Which class* did Mary **have to** read *which paper* for ___?
(25) a. ✓ *Which abstract* were you **forced** to assign ___ to *which reviewer*?
b. ✓ *Which reviewer* were you **forced** to assign *which abstract* to ___?

(26) 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 ___?
(27) a. ✓ *Which paper* **may** Mary read ___ for *which class*?
b. ✓ *Which class* **may** Mary read *which paper* for ___?
(28) a. ✓ *Which paper* **must** Mary read ___ for *which class*?
b. ✓ *Which class* **must** Mary read *which paper* for ___?

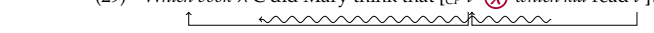
☞ **Modality must be represented without the use of lambda binders**, e.g. though indices.

5.2 Successive cyclic movement

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.**

(29) *Which book* λ C did Mary think that [$_{CP}$ *t* (λ) *which kid* read *t*]?



LF: ✓ *Which book* **λ** C did Mary think that [$_{CP}$ *which kid* read ***t***]?

5.3 Conclusion

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

  (30) **The intervention schema**
  * C ... λ ... *wh*

- **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

  λ-abstraction not well-defined when computed over alternatives.

- **Previous responses to this problem:**
  - Shan (2004): Adopt a **variable-free semantics** without movement
  - Rooth (1985); Poesio (1996); Novel and Romero (2009): Use a **higher-typed 'superintensional' semantic system**[4]

- **Today: Empirical evidence for the new intervention generalization**
- **Support for standard assumptions** (syntactic movement interpreted using λ-abstraction, focus alternatives, simple semantic types)
  - *Wh*-in-situ requires both covert movement and focus alternatives for its interpretation
  - ... but abstraction and alternative computation cannot overlap

[4]That is, the system is lifted so that—at the very least—instead of types *e* and *t*, we must use functions from pairs of assignment functions and worlds to individuals or truth-values.

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