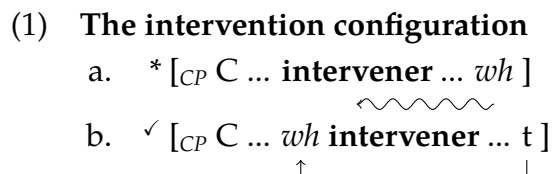# Intervention effects in English questions

1 A short reminder: Beck (2006)

An informal description of intervention effects: a linguistic structure is ungrammatical if a *focus-sensitive operator* (an **intervener**) occurs between an LF-in-situ *wh*-phrase and the complementizer that must interpret it.

(1) **The intervention configuration**

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

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

The Set of interveners we saw in German included: negative quantifiers, universal quantifiers, downward entailing quantifiers, subject *only*, subject *even*, time adverbials: *always*, *often*, *never*. (In Japanese and Korean we also saw: *also*, disjunction.)

2 Intervention in English: Pesetsky (2000)

At first glance, it appears that English is not sensitive to intervention effects.

(2) **No intervention in simple English multiple questions**

    a.   ✓ *Who* did Mary ____ introduce to *whom*?

    b.   ✓ *Who* did **only Mary** ____ introduce to *whom*?

Relevant fact: English allows for superiority violations with D-linked phrases, but not with simplex *wh*-pronouns.[1]

(3) **English allows superiority violations with D-linked *wh*-phrases**

    a.   *Who* ____ read *what*?   superiority-obeying

    b.   ?? *What* did *who* read ____ ?   superiority-violating

    c.   *Which* boy ____ read *which* book?   superiority-obeying

    d.   *Which* book did *which* boy read ____?   superiority-violating

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[1]Or, at least, questions with D-linking are much improved, depending on the speaker you ask.

Pesetsky (2000): Intervention is observed, but only in superiority-violating questions.

(4) **D-linked superiority-violating questions are subject to intervention**
    a.   *Which* boy ____ read *which* book?   sup.-obeying, no intervener
    b.   *Which* book did *which* boy read ____?   sup.-violating, no intervener
    c.   *Which* boy did**n't** ____ read *which* book?   sup.-obeying, intervener
    d. * *Which* book did**n't** *which* boy read ____?   sup.-violating, intervener[2]

Other operators that give rise to an intervention effect include **only**, **very few**, **never**, and **no one**, as shown in examples (5)–(8) below from Pesetsky (2000).

(5) **Intervention effect with *only* only affects superiority-violating question**
    a.   *Which* girl did **only** Mary introduce ____ to *which* boy?
    b. * *Which* boy did **only** Mary introduce *which* girl to ____?

(6) **Intervention effect with *very few* only affects superiority-violating question**
    a.   *Which* picture did **very few** children want to show ____ to *which* teacher?
    b. * *Which* teacher did **very few** children want to show *which* picture to ____?

(7) **Intervention effect with *never* only affects superiority-violating question**
    a.   *Which* student did he **never** claim ____ would talk about *which* topic?
    b. * *Which* topic did he **never** claim *which* student would talk about ____?

(8) **Intervention effect with *no one* only affects superiority-violating question:**
    a.   *Which* book did **no one** give to *which* student?
    b. * *Which* student did **no one** give *which* book to ____?

Like in German, we observe intervention with universal quantifiers. They are diagnosed by the loss of a narrow scope reading of the quantifier in superiority-violating questions.

(9) **Superiority-obeying question with *every* is ambiguous**
Which newspaper did **everyone** write to ____ about *which* book?
    a. Wide-scope answering pattern:
        Bill wrote to the New York Times about book X, Mary wrote to the Boston Globe about book Y, and Tom wrote to the Maquoketa Sentinel about book Z.
    b. Narrow-scope answering pattern:
        Everyone wrote to the New York Times about book X, everyone wrote to the Boston Globe about book Y, and everyone wrote to the Maquoketa Sentinel about book Z.

(10) **Superiority-violating question with *every* is unambiguous:**
Which book did **everyone** write to *which* newspaper about ____?
Only has answer pattern a, but not b.

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[2] I am marking the judgments for ungrammatical questions (that subject to intervention) with a *. Pesetsky marks these questions with [??], to indicate that the pair-list reading is always absent, but some (perhaps all) questions may have a remaining single-pair reading.

If the quantifier is trapped and is unable to scope out of the question, the superiority-obeying question becomes unambiguous and only has narrow scope for the quantifier.

Quantifier float disallows QR of the quantifier out of the question.

(11) **Floated quantifiers are restricted in scope to their surface position**
    a.   At least one teacher made **each student** sing the national anthem.
    b.   At least one teacher made the students **each** sing the national anthem.

$\forall > $ *at least* possible in a but not b.

(12a) may ask for adult-kid-book triplets, but (12b) is interpreted as a request for adult-book pairs, such that each kid in the group will persuade the adult to read the book:

(12) **Quantifier float restricts QR, sup.-obeying question becomes unambiguous**
    a.   Tell me *which* adult **each kid** will try to persuade ___ to read *which* book.
    b.   Tell me *which* adult the kids will **each** try to persuade ___ to read *which* book.

In the same configuration, the inability of the quantifier to QR out of the question causes the superiority-violating question to exhibit an intervention effect:

(13) **Quantifier float restricts QR, intervention re-emerges in sup.-violating question**
    a.   Tell me *which* book **each kid** will try to persuade *which* adult to read ___ .
    b.   * Tell me *which* book the kids will **each** try to persuade *which* adult to read ___ .

Finally, like in German, we find intervention in separation constructions in West Ulster English (data from Jim McCloskey, reported in Pesetsky (2000) as p.c.).

(14) **West Ulster *what all* separation**
    a.   *What all* did Mary get ___ on her birthday?
    b.   *What* did Mary get ___ *all* on her birthday?

Intervention happens when an intervener occurs between the stranded *all* and the *wh*.

(15) **Intervention effects in West Ulster *what all* separation**
    a. ?? *What* did Mary **not** buy ___ *all* up the town?
    b.   * *What* did **only Mary** get ___ *all* on her birthday?
    c.   *What* did **everybody** get ___ *all* on Christmas morning? [wide scope $\forall$ only]
    d.   * *What* did **almost everybody** get ___ *all* on Christmas morning?[3]
    e.   * *What* did **very few people** get ___ *all* for Christmas?

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[3]Pesetsky gives examples with *almost everyone* in (standard) English which I am skipping in the interest of time.

3 Intervention and superiority

We thus observe a correlation between superiority and intervention in English questions:

(16) **The correlation between superiority and intervention:**
Superiority-obeying questions are immune from intervention effects.
Superiority-violating questions are subject to intervention effects.

Idea: sup.-obeying questions allow *covert movement* of the surface-in-situ *wh*, but sup.-violating questions do not: in-situ *wh*s are truly LF-in-situ, hence subject to intervention.

This follows from the nature of Agree/Attract.

- English has an EPP feature: at least one *wh* must be pronounced in Spec,CP.

- English allows multiple Specs, with 'tucking in' (Richards, 1997): The highest base-generated *wh* occupies the highest Spec,CP. Other movements target inner specifiers.

- In that case, the *wh* in the outmost specifier is pronounced in the moved position, all other *wh*-phrases are pronounced in their base position.

- Superiority-obeying question: (a) C probes down, finds wh_1, agrees with it and moves it to Spec,CP. (b) C continues probing, finds wh_2 agrees with it, and (optionally) moves it, with tucking in. The result: (17a).

- Superiority-violating question: (a) C probes down, finds wh_1, agrees with it **but does not move it to Spec,CP** (or we end up with the wrong pronunciation, of a sup.-obeying question).[4] (b) C continues probing, finds wh_2 agrees with it, and moves it to C's outer Specifier. The result: (17b).

(17) **LF representations of superiority-obeying and superiority-violating questions:**
a. $[_{CP}\ wh_1\ wh_2\ [\ C\ [_{TP} ... \ t_1 ... \ t_2\ ]]]$ superiority-obeying
b. $[_{CP}\ wh_2\ [\ C\ [_{TP} ... \ wh_1 ... \ t_2\ ]]]$ superiority-violating
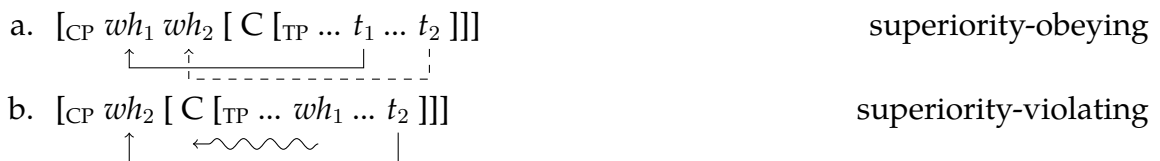
Now, if we assume that in-situ *wh*-phrases in English are interpreted using focus-alternatives, we can use Beck's (2006) theory of focus intervention effects to account for the English data.

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[4]Pesetsky (2000) models this as 'feature movement' and contrasts it with 'phrasal movement.' In more modern terms, we can just think of this as Agree vs. Agree+Move. See Kotek (2014b) for an implementation of this idea.

4 Intervention involves lack of movement: Kotek (2014)

Kotek (2014a) shows that the correlation between superiority and intervention is too simplistic: we observe intervention effects whenever a *wh*-phrase cannot move above an intervener, and intervention is avoided whenever the *wh* can be given wider scope than the *wh*. This normally correlates with superiority, but superiority itself does not play any role.

4.1 Restricting movement in superiority-obeying questions (islands)

(18) **Baseline: Lower *wh* inside CNP island: pair-list reading is available**
Context: The linguists at the conference are very suspicious of rumors. However, each of them believed one of the rumors going around that we invited a particular famous philosopher to the conference party. What I want to know is:
Q: *Which* linguist believed the rumor [that we invited *which* philosopher]?
A: Chomsky believed the rumor that we invited Quine,
Kayne believed the rumor that we invited Lewis,
Labov believed the rumor that we invited Russell, ...

When an intervener is placed in the structure, we observe intervention effects if the intervener is *above* the island, but not if it is *inside* the island.

(19) **Intervention *above* but not *inside* island**
  a. Context: The linguists at the conference are very gullible and believe lots of rumors. However, each of them is suspicious of one rumor about a philosopher that we supposedly invited to the conference party. What I want to know is:
  * *Which* linguist **didn't** believe the rumor [that we invited *which* phil.]?
  b. Context: The linguists at the conference are very suspicious of rumors. However, each of them believed the rumor that we failed to invite one philosopher to the conference party. What I want to know is:
  ✓*Which* linguist believed the rumor [that we **didn't** invite *which* phil.]?

It is explained if *wh* can move above the intervener inside the island, but cannot escape it.

4.2 Restricting movement in superiority-obeying questions (PLA)

Operators like *only* associate with focus within their c-command domain, and cannot evaluate alternatives in F-marked material outside of their scope.

(20) **F-marked constituent may not move out above *only*:**
  a. * *Who*$_F$ do you **only** like ____?
  Intended: Who x is such that you like only x?
  b. ✓ You **only** like *who*$_F$?

(21) **The Principle of Lexical Association (PLA) (Tancredi, 1990, p. 30):**
An operator like *only* must be associated with a lexical constituent in its c-command domain.

This also applies to covert movement (more in "Backwards Association" handout).

(22) **PLA restricts possible scope of QR (Aoun and Li, 1993):**
 a. Someone wants to meet [every boy$_F$ in the room]. $^\checkmark\exists > \forall, ^\checkmark\forall > \exists$
 b. Someone wants to **only** meet [every boy$_F$ in the room]. $^\checkmark\exists > \forall, ^*\forall > \exists$

We can use the PLA to restrict covert *wh*-movement in a question: if we have Association with Focus with *wh*-phrase, we know that the *wh* cannot move above its associate.[5]

(23) **PLA restricts covert movement of *wh*-in-situ:**
 a. I can tell you [*which* student read *which* book]. baseline
 b. Context: The students in the class were supposed to read one book *and* one article. 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$_F$].

The same effect is obtained if F-marking occurs in other parts of the *wh*-phrase.

(24) **F-marking on other parts of *wh* restricts covert *wh*-movement:**
 * I can tell you [*which* student **only** read [*which* book about binding$_F$]].

Although covert movement is usually possible for surface in-situ *wh*-phrases in sup.-obeying questions, here we restrict movement to a position below the intervener. We get an intervention effect, diagnosed by (at least) the loss of the pair-list reading of the question.

4.3   No intervention when intervener reconstructs below *wh*

Prediction of the Beck-style account: if we are able to reconstruct an intervener below the LF position of an in-situ *wh*, intervention should be avoided.[6]

This can be tested using universal quantifiers.

As we have seen, universal quantifiers are able to receive wide scope, a list-of-triples interpretation. Here we will be interested in the *narrow scope*, list-of-pairs reading.

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[5]At least with *only*, which we will use here. See Erlewine (2014) for discussion.

[6]This should only be possible with a subset of the known interveners—namely the ones that allow A-reconstruction. It won't work with sentential negation or with adverbials such as *always, often* or *never*. Furthermore, as it has been argued that negative DPs do not undergo A-reconstruction (see e.g. Lasnik, 1999; Iatridou and Sichel, 2011), this prediction also cannot be tested with interveners such as *no one*.

(25) is a baseline with *all* pronounced in an unraised position. This question has the reading that we are after: it is interpreted as a request for topic-professor pairs, such that the professor thought that all the students enjoyed that topic—that is, the list-of-pair reading.

(25) **Baseline: Superiority-violating question with a raising predicate and low *all*:**
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 ____?

Next we show that in this environment, a raised universal can reconstruct and take narrow scope below another operator.

(26) ***All* can reconstruct to base position, inverse scope possible:**
Context: The first-year students took several classes this past semester, taught by different professors. As their TA, I know that:
[**All of the students**]$_1$ seemed to *some* professor t_1 to have enjoyed learning about multiple questions. ✓$\forall > \exists$, ✓$\exists > \forall$

(27) provides a test-case. The question is judged as grammatical in the given context (which supports a list-of-pairs interpretation), despite the (surface) intervening quantifier:

(27) **Superiority-violating question with raised *all* can have reconstructed reading:**
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 **all** of the students seem to *which* professor to have enjoyed ____?

If the quantifier is floated, reconstruction is blocked, and intervention re-emerges.

(28) **Intervention effects reemerge with floated *all*:**
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 the students **all** seem to *which* professor to have enjoyed ____?

4.4   Exceptional movement in superiority-violating questions

Right-Node Raising (RNR, Ross 1967) constructions allow exceptional extraction of an element, the RN, across certain islands.

(29) **RNR feeds exceptional *wh*-movement (Bachrach and Katzir, 2009):**
    a.   * *Which* book did John meet the man who wrote ____ ?
    b.   ✓ *Which* book$_1$ did [John meet the man who wrote ____],
        and [Mary meet the man who published ____] t_1?

Movement can target part of the RN, and it receives wider scope above the conjuncts.

(30) **Movement can target just part of the RN:**
    Which animal$_1$ did John say that Mary knew [a man who wrote ____],
    and [a woman who published ____] an encyclopedia article about t_1?

We can use RNR to give the in-situ *wh*-phrase in a superiority-violating question exceptionally wide scop. If movement is outside (and above) shared material that contains an intervener, we exceptionally avoid an intervention effect.

(31) **_Wh_-phrase escapes intervention in sup.-violating question with RNR:**
    a.   * *Which* book did **only John** allow *which* student to read ____ ?
    b.   ✓ *Which* book$_1$ did [**only John** allow ____], and [**only Mary** prohibit ____], *which*
        student to read t_1?

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