

## FOCUS INTERVENTION EFFECTS: INFORMATION STRUCTURE IN ACTION

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### 1. Background: Intervention effects in questions

- Intervention effects arise when a certain type of semantic operator (=intervener) precedes a *wh*-phrase in a *wh*-question (1a)-(2a), leading to degradedness, or a disjunction in a question (3), resulting in the absence of an alternative question reading.
- (1) a. \*Minsu-man nuku-lûl po-ass-ni?  
Minsu-only who-ACC see-PAST-Q  
b. nuku-lûl Minsu-man po-ass-ni?  
who-ACC Minsu-only see-PAST-Q  
'Who did only Minsu see?' (Korean; Beck 2006:3)
- (2) a. ?\*daremo nani-o yom-ana-katta-no?  
anyone what-ACC read-NEG-PAST-Q  
b. nani-o daremo yom-ana-katta-no?  
what-ACC anyone read-NEG-PAST-Q  
'What did no one read?' (Japanese; Tomioka 2007b:1571)
- (3) Does only John like Mary or Susan?  
a. #Mary. [\*AltQ]  
b. Yes. [✓Yes/NoQ] (Beck & Kim 2006:167)
- (4) Is it Mary or Susan that only John likes?  
Mary. [✓AltQ]
- In the case of the *wh*-questions (1)-(2), the order in the (a) versions is the expected one, since these are SOV *wh*-in-situ languages. The effects are eliminated if the *wh*-phrase is scrambled over the intervener, as in the (b) versions.
  - In questions involving a disjunction (3) the effect can be eliminated inter alia via clefting (4).
- The core set of interveners consists of the operators corresponding to English *only*, *even*, and *also*, and negative polarity items (NPIs) (Beck 2006): *only*-type operators.
  - Intervention effects are found in Asante Twi, Bangla, Dutch, English, French, German, Hindi-Urdu, Hungarian, Japanese, Korean, Malayalam, Mandarin Chinese, Passamaquoddy, Persian, Thai, and Turkish (Kim 2002, Simpson & Bhattacharya 2003, Beck 2006, Beck & Kim 2006, Kobele & Torrence 2006).

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- Most analyses of intervention have been syntactic (Beck 1996, Hagstrom 1998, Pesetsky 2000, Kim 2005, a.o.) or semantic (Beck 2006, Beck & Kim 2006). Tomioka (2007a,b) has recently suggested that intervention effects are information structural in nature.
- "We may make an intuitive judgment that some linguistic expression is odd or deviant. But we cannot in general know, pretheoretically, whether this deviance is a matter of syntax, semantics, pragmatics, belief, memory limitations, style, etc." (Chomsky 1977:4)

## 2. What I hope to do today

- **Goal:** Argue for an information structural (IS) approach to focus intervention effects, according to which they reflect incompatibility between the IS categories available in a sentence and the elements making up the sentence.
- **Outline:**
  - ▶ Existing approaches to intervention effects
  - ▶ Support for the information structural approach: Questions
  - ▶ Support for the information structural approach: Declaratives
  - ▶ Conclusions and implications

## 3. Existing approaches to intervention effects

- Early work on intervention effects claimed that that they violate a syntactic well-formedness condition.
  - Beck (1996): an intervening quantifier blocks LF movement of an in situ *wh*-phrase.
  - Pesetsky (2000): a semantic restriction on a quantifier (including *wh*) may not be separated from that quantifier by a scope-bearing element.
  - Kim (2005): a focus operator with an interpretable focus feature blocks the Agree relation between  $C^0$  and the *wh*-phrase.
- Syntactic accounts suffer from a range of problems:
  1. They generally apply only to a subset of the data; Pesetsky (2000), for example, is specifically geared for *wh*-questions.
  2. *Wh*-phrases do not have to move for the purpose of licensing (Cole & Hermon 1998, Reinhart 1998), and movement is highly questionable in alternative questions (Beck & Kim 2006).
  3. It remains a mystery why the patterns observed differ from those triggered by other well-known syntactic constraints, such as islands: in the case at hand, only *covert* movement is proscribed.
  4. They fail to accurately define the set of interveners or make use of a definition which is essentially semantic.

- Beck (2006): Semantic theory which does not rely on movement
  - Interveners come with the focus operator  $\sim$  in the sense of Rooth (1992).
  - In intervention configurations, the focus operator applies to a complement containing a *wh*-phrase. Since *wh*-phrases lack an ordinary semantic value, the result is an undefined value, which ends up as the argument of the Q operator. The entire question is then undefined, uninterpretable, and hence ungrammatical.
  - **"... a *wh*-phrase may never have a focus-sensitive operator other than the Q operator as its closest c-commanding potential binder."** (p. 46)
  - Beck & Kim (2006): In alternative questions, the focus operator interferes with the evaluation of alternatives introduced by the disjunctive phrase. The yes/no reading is not affected because it does not involve alternatives to begin with.
  - **Appeals to the semantic notion of focus (i.e. the introduction of alternatives).**
  
- Tomioka (2007a,b): Structural approaches do not capture a number of properties:
  1. Interspeaker variability in judgments
  2. Distinctions within the class of interveners
  3. Difficulties in defining a property which uniquely identifies interveners
  4. Amelioration when the intervener is an embedded subject or not a subject
  - Intervention effects are the result of a mismatch between the properties of interveners and the informational articulation of *wh*-questions.
  
- Brief overview of information structure (roughly based on Vallduví 1990)
 

Ground

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  1. Focus: the informative part of the sentence – adds to or modifies the hearer's knowledge store
  2. Topic: "what the sentence is about" (Strawson 1964, Reinhart 1981) – points to the specific address in the hearer's knowledge store where the information contributed by the focus is to be entered
  3. Tail: complement to the topic in the ground – signals how the information is to be entered under a given address
  
- (5) [<sub>TOP</sub> The boss] [<sub>FOC</sub> HATES] [<sub>TAIL</sub> broccoli]. (cf. Vallduví 1990:64)
- (6) [<sub>FOC</sub> What] did [<sub>TOP</sub> John] get on the exam?
  
- What goes wrong in intervention configurations in questions?
  - The intervener cannot be the focus: A sentence contains one and only one IS focus (cf. Lambrecht 1994, Zubizarreta 1998).
  - The intervener cannot be the topic: Aboutness topics must be referential (cf. Reinhart 1981), as evidenced by the incompatibility between non-referential expressions and morphosyntactic topic marking (7)-(8).
  
- (7) \*John-mo-wa \*daremo-wa  
       John-also-TOP anyone-TOP (Japanese; Tomioka 2007b:1576)
  
- (8) a. El Joan va conèixer només la Maria.  
       the John PAST met only the Mary  
       'John met only Mary.'

b. \*Només la Maria, la va conèixer el Joan.  
 only the Mary her PAST met the John  
 'Only Mary, John met her.' (Catalan; Laia Mayol, p.c.)

- The intervener cannot be (part of) the tail: Tails must lack prosodic prominence (Vallduví 1990). Scrambling of the *wh*-phrase cancels intervention effects by placing the intervener in the phonologically reduced part of the sentence.

(9) [[Wh]<sub>i</sub> ...Int... t<sub>i</sub> ...]  
 FOCUS TAIL →

#### 4. Support for the information structural approach: Questions

Semantic approach	IS approach
1. <i>Only</i> -type operator should not be able to associate with <i>wh</i> -phrase	<i>Only</i> -type operator should be able to associate with <i>wh</i> -phrase
2. Semantic notion of focus	IS notion of focus
3. No context sensitivity	Context sensitivity
4. Sensitive to hierarchical relations	Insensitive to hierarchical relations

Table 1: Predictions of the Semantic vs. IS Approaches to Intervention

1. *Only*-type operators can associate with *wh*-phrases.

- The result in (10a) is acceptable because there is one and only one IS focus.

(10) a. ta zhi mai SHENME?  
 he only sell what

'What is the thing *x* such that he sells only *x*?'

b. \*/??ta zhi MAI SHENME?  
 he only sell what

'What is the thing *x* such that he only SELLS *x*?' (Chinese; Xie 2008:33)

- Explains interspeaker "variation": speaker A may give the judgment for (10a) while speaker B reports (10b). Contra Beck (2006), the acceptability of (10a) is not due to the ability of non-d-linked *wh*-phrases to undergo covert phrasal movement.

- Explains crosslinguistic variation: in Japanese, the domain of *only*-type operators does not extend beyond their NP host, so that (11a-c) only have the readings indicated, and *only*-type operators cannot attach directly to *wh*-phrases. Therefore, Japanese lacks the equivalent of (10a).

(11) a. John-dake-ga koko-de hon-o yon-da.  
 John-only-NOM here book-ACC read-PAST  
 'Only John read books here.'

b. John-ga koko-de-dake hon-o yon-da.  
 John-NOM here-only book-ACC read-PAST  
 'John read books only here.'

c. John-ga koko-de hon-o-dake yon-da.  
 John-NOM here book-ACC-only read-PAST  
 'John read only books here.' (Japanese; Kishimoto 2009:471)

- Casts serious doubt on the entire reasoning underlying the semantic approach: why would the evaluation of a *wh*-phrase by a focus operator be impossible, while association of the two is evidently not?

- The notion of focus relevant for intervention effects is the information structural one.
- Intervention effects can be ameliorated or eliminated in certain contexts.
  - When a potential intervener is provided in a context preceding the question the result is acceptable.

(12) \*Does only John like Mary or Susan?

(13) Context: The graduate students in linguistics took two preliminary exams, in syntax and phonology, last week. The results were surprising: there was one exam that all the students, including John, passed, but only John passed the other.

(14) Did only John pass syntax or phonology?

- (14) does not differ from (12) in its syntax or semantics, but rather only in the IS status of the potential intervener and its concomitant prosody.
- Once the potential intervener is backgrounded, it can be accommodated as (part of) the tail.

4. Intervention effects are not sensitive to the hierarchical relation (i.e. c-command) between the intervener and *wh*-phrase/disjunction.

- They may arise even when an intervener follows a *wh*-phrase or disjunction, i.e. when the allegedly necessary c-command relations do not hold.

(15) Did John or Susan invite only *Mary*? (Beck & Kim 2006:172)

(16) \*Did John or Susan invite only *MARY*?

- This effect in (15) is equivalent to that observed with scrambling above (cf. (9)). However, phonological reduction of the potential intervener comes "for free" in (15), because it follows the IS focus in the base structure.

<b>Semantic approach</b>	<b>IS approach</b>
× <i>Only</i> -type operator should not be able to associate with <i>wh</i> -phrase	✓ <i>Only</i> -type operator should be able to associate with <i>wh</i> -phrase
× Semantic notion of focus	✓ IS notion of focus
× No context sensitivity	✓ Context sensitivity
× Sensitive to hierarchical relations	✓ Insensitive to hierarchical relations

Table 2: Predictions of the Semantic vs. IS Approaches to Intervention – Results

## 5. Support for the information structural approach: Declaratives

### 5.1 The data

- If the ill-formedness of intervention configurations reflects basic constraints on the informational articulation of sentences, the effects should not be limited to questions.
- As expected, intervention effects also appear in declaratives: when an *only*-type operator which is not an IS focus precedes an IS focus, which can be the answer to a question (17) or a correction to a previous sentence (18).<sup>1</sup>

(17) a. What did only John drink?  
b. \*Only *John* drank only *BEER*.  
c. ??Only *John* drank *BEER*.

(18) a. \*It's not true that only John drank wine, only *John* drank only *BEER*.  
b. ??It's not true that only John drank wine, only *John* drank *BEER*.

- If the *only*-type operator which is not an IS focus follows the IS focus, the result is acceptable:

– When the IS focus is the subject (19)-(20).

(19) a. Who drank only beer?  
b. Only *JOHN* drank only *beer*.

(20) It's not true that Mary drank only beer, only *JOHN* drank only *beer*.

– When the structure reverses the order of the IS focus and *only*-type operator, placing the former before the latter: for example, via passivization (21) or a specificational copular construction (22) in English, and right-dislocation in Catalan (23).

(21) a. What did only John drink?  
b. Only *BEER* was drunk by only *John*.

(22) It's not true that only John drank wine, *BEER* was the only thing that only *John* drank.

(23) a. Què va beure només el Joan?  
what drank only the John  
'What did only John drink?'

b. \*Només el Joan va beure només cervesa.  
only the John drank only beer  
'Only John drank only beer.'

c. Només cervesa, va beure només el Joan.  
only beer drank only John  
'Only beer, only John drank.'

(Catalan; Laia Mayol, p.c.)

<sup>1</sup> I thank Tony Kroch for bringing the initial observations reported here to my attention.

- The parallelism between the declarative examples and the questions is clear:
    - The unacceptable baseline configuration and its acceptable variants are the same.
- (24) a. \*/??[...] *only* [...] [...] XP [...]
- b. [...] XP [...] [...] *only* [...]
- The set of interveners is the same: equivalents of *only* and NPIs.
- (25) a. daremo nom-ana-katta-no-wa nani-o desu-ka?  
 anyone drink-NEG-PAST-NML-TOP what-ACC COP-Q  
 'What is it that no one drank?'
- b. ??daremo biiru-o nom-ana-katta.  
 anyone beer-ACC drink-NEG-PAST  
 'No one drank beer.'
- c. biiru-o daremo nom-ana-katta.  
 beer-ACC anyone drink-NEG-PAST  
 'No one drank beer.' (Japanese; Satoshi Nambu, p.c.)
- The configurations in (24), dictated by IS well-formedness conditions, also have an effect on truth conditions.
- (26) a. Only John eats only rice. ↔ No one other than John eats rice.  
 b. Only rice is eaten by only John. → No one other than John eats rice.  
(Atlas 1991)
- Pace Atlas (1991), the difference between the sentences does not reflect a semantic distinction between the active and passive voice. Rather, (26a) and (26b) have different entailments because they can answer different questions under discussion (QUDs), in accordance with the configurations in (24).
- (27) a. QUD: Who eats only rice?  
 b. Only *JOHN* eats only *rice*. ↔ No one other than John eats rice.
- (28) a. QUD: What does only John eat? / What is eaten by only John?  
 b. \*Only *John* eats only *RICE*.  
 c. Only *RICE* is eaten by only *John*. → No one other than John eats rice.
- Evidence for the claim that the difference between the sentences is not a function of the active/passive distinction is provided in (29): this specificational construction has the same entailment as the passive in (26b).
- (29) *RICE* is the only thing that only *John* eats. → No one other than John eats rice.

## 5.2 An IS analysis

- The intervener cannot be the focus: A sentence contains one and only one IS focus (cf. Lambrecht 1994, Zubizarreta 1998).
- The intervener cannot be the topic: Aboutness topics must be referential (cf. Reinhart 1981).

- The intervener cannot be (part of) the tail: Subjects are default topics (Reinhart 1981, Lambrecht 1994, Erteschik-Shir 1997), and subjects preceding the nuclear stress are specifically incompatible with tailhood (Vallduví 1990).
- (30) De pa no en<sub>i</sub> MENJA, mon germà.  
of bread no OBJ eat.3S my brother  
'Bread he doesn't eat, my brother.' (Catalan; Vallduví 1990:135)
- If the potential intervener can be accommodated as (part of) the tail, the result is acceptable: when it is a direct/indirect object (31)-(33), in a *by*-phrase (34), or right-dislocated (35), when it is the subject in a *there*-existential sentence and therefore not a candidate for topichood (36), and when it is in a pseudocleft (37).
- (31) a. Who drank only beer? (=19)  
b. Only *JOHN* drank only *beer*.
- (32) a. What did Mary only give John?  
b. Mary only gave *John* (only) *A BOOK*.
- (33) a. I hear that John only gave *A BOOK* to Mary.  
b. True, but John only gave *a book* to MANY PEOPLE. (Dryer 1994:2)
- (34) a. What did only John drink? (=21)  
b. Only *BEER* was drunk by only *John*.
- (35) a. Què va beure només el Joan? (=23)  
what drank only John  
'What did only John drink?'  
b. Només cervesa, va beure només el Joan.  
only beer drank only John  
'Only beer, only John drank.'
- (36) a. Where are there only skyscrapers?  
b. There are only *skyscrapers* only in *TOKYO*.
- (37) a. What did only John drink?  
b. What only *John* drank was *BEER*.

### 5.3 Non-IS approaches

- Syntactic approaches to intervention are unable to account for the declarative data.
  - This is obvious for analyses which reduce intervention to the blocking of a necessary syntactic relation in questions (e.g. Beck 1996).
  - The declarative sentences with subject vs. object IS focus are syntactically identical: the idea of covert focus movement has been largely discredited (Newmeyer 2004).
- The semantic approach to intervention fares no better in explaining the declaratives.
  - Beck (2006) extends the semantic approach to all phenomena involving the evaluation of alternatives in the semantics (see Beck 2007, Beck and Kim 2006).

(38) General Minimality Effect MIN: The evaluation of alternatives introduced by an XP cannot skip an intervening ~ operator.

\*[  $Op$  [ ~C [  $\phi$  ... XP ... ] ] ] (Beck 2007:268)

(39) We only introduced [Marilyn]<sub>F</sub> to John Kennedy.

\*We also only introduced [Marilyn]<sub>F</sub> to [Bob Kennedy]<sub>F</sub>.

'Another person who we introduced only Marilyn to is Bob Kennedy.'

(40) [also<sub>C</sub> [only<sub>D</sub> [ $X$  introduced Marilyn<sub>F2</sub> to [Bob Kennedy]<sub>F1</sub>]]]

- Beck's General Minimality Effect does not distinguish the acceptable vs. unacceptable declarative examples because it only considers the semantic notion of focus.
- In fact, the declarative examples refute the existence of the General Minimality Effect: the same assumptions needed to rule out the original examples of intervention in *wh*-questions (41), as well as the unacceptable declarative in (43), also mark (45) as ill-formed, contrary to fact.

(41) \*Minsu-man nuku-lûl po-ass-ni? (=1)  
 Minsu-only who-ACC see-PAST-Q  
 'Who did only Minsu see?'

(42) [<sub>CP</sub> Q<sub>2</sub> [<sub>IP3</sub> only<sub>C</sub> [<sub>IP2</sub> ~C [<sub>IP1</sub> Minsu<sub>F1</sub> saw who<sub>2</sub>]]]]]

(43) \*Only *John* drank only *BEER*.

(44) [Q/A<sub>C</sub> [~C [only<sub>D</sub> [~D [only<sub>E</sub> [~E [John<sub>F2</sub> drank beer<sub>F1</sub>]]]]]]]]]

(45) Only *JOHN* drank only *beer*.

(46) [Q/A<sub>C</sub> [~C [only<sub>D</sub> [~D [only<sub>E</sub> [~E [John<sub>F2</sub> drank beer<sub>F1</sub>]]]]]]]]]

- Intervention effects in declaratives do not reduce to phonological well-formedness.
  - Rooth (2010) presents an example equivalent to the ill-formed sentences analyzed here as reflecting a focus intervention effect, and suggests that its status stems from a phonological constraint: a prohibition on adjacent pitch accents.

(47) a. Who does only John like?  
 b. ??Only *John* likes *MARY*. (Rooth 2010:27)

- To support this idea he provides the judgment in (48), where increasing the phonological distance between the two accents supposedly yields an acceptable sentence.

(48) a. Who does only Abernathy like?  
 b. Only *Abernathy* likes *MARY*. (Rooth 2010:27)

- I have been unable to replicate this judgment. In any case, the phonological constraint Rooth invokes does not exist in the form he assumes:

1. The focused elements are separated by the verb, which precludes a violation of the Clash Avoidance Requirement (49). This is the configuration which Middle English speakers used to avoid a clash: they placed an unstressed verb between two foci, in accordance with the V2 syntax of Middle English (cf. Speyer 2008).
- (49) The Clash Avoidance Requirement: If there is more than one focused element in a clause, at least one non-focused element must intervene. (Speyer 2008:161)
2. The focused elements are not of equal status in terms of prominence: the *only*-phrase is a second occurrence focus. If Rooth were right, a second occurrence focus should never be able to precede an IS focus, but this is precisely what we find in examples like (50)-(51), repeated from above.
- (50) a. What did Mary only give John? (=32)  
 b. Mary only gave *John* (only) *A BOOK*.
- (51) a. I hear that John only gave *A BOOK* to Mary. (=33)  
 b. True, but John only gave *a book* to MANY PEOPLE.

## 6. Conclusions and implications

- Most research into focus intervention effects has reduced this phenomenon to syntactic (Pesetsky 2000) or semantic factors (Beck 2006).
- This paper has shown that syntactic and semantic analyses are inadequate.
  - In *wh*-questions and alternative questions, these analyses incorrectly predict, among other things, that intervention effects should be triggered regardless of context (see Eilam 2010a for further arguments against syntactic and semantic analyses).
  - In the case of declarative sentences, syntactic analyses are inapplicable, while a semantic approach is unable to discriminate between ill-formed and well-formed structures.
- The data from declaratives is particularly detrimental to syntactic and semantic analyses: if only the informational articulation of two sentences, created by different preceding contexts and reflected in the prosody, tells them apart, only an IS approach can account for a distinction in their acceptability.
- **Intervention effects reflect failure to map a sentence onto a well-formed IS representation, due to the following IS well-formedness conditions:**
  - (52) A sentence contains one and only one IS focus.
  - (53) Aboutness topics must be referential.
  - (54) Tails must lack prosodic prominence.
  - (55) Prenuclear subjects resist serving as (part of) the tail.

- The existence of IS well-formedness conditions constitutes robust evidence for the claim that **IS is an autonomous level of organization of linguistic information** (cf. Vallduví 1990, Erteschik-Shir 1997, 2007).
    - These conditions, which mark certain configurations as illicit, indirectly motivate structural choices, and influence the truth conditions assigned to sentences, can only be stated in IS terms.
    - Despite the fact that the informational articulation of a sentence is indicated by cues which are not necessarily unique to it, we have managed to isolate these conditions as purely information structural.
    - In terms of the primitives making up the informational articulation of a sentence, we have found that the tripartite division proposed in Vallduví (1990) is both necessary and sufficient to explain intervention effects.
    - Multiple questions remain regarding the form of IS representations, the way in which they are derived, and their relations with other levels of representation.
  - This paper also highlights the need to distinguish between the semantic and IS notions of focus.
    - **A semantic focus, such as the associate of an *only*-type operator, is often, but not always, an IS focus.**
    - If semantic foci are identified with IS foci, it is impossible to account for:
      1. The difference between the licit and illicit declarative sentences: both should consist of two *only*-type operators which are also IS foci.
      2. The difference between alternative questions with vs. without a context backgrounding the potential intervener: speakers treat backgrounded semantic foci as non-IS foci.
    - **This favors pragmatic/strong approaches to focus (Vallduví 1990, Rooth 1992, Dryer 1994, Roberts 1996, Kadmon 2001), over semantic/weak theories (Rooth 1985, Krifka 1992).** The former recognize the distinction between semantic and IS foci, while the latter do not, since they argue that the IS focus alone provides the required quantificational structure for *only*-type operators.
    - Recent attempts by Rooth (1996) and Beaver et al. (2007) to adjudicate between pragmatic and semantic approaches using the phonetics of second occurrence foci (cf. (56)) are problematic. Their theoretical conclusions have been questioned (see Howell 2008, Eilam 2010b), and at any rate, the original case put forward by pragmatic approaches to focus does not rely only on phonetic evidence (see Vallduví and Zacharski 1994).
- (56) a. Everyone already knew that Mary only eats *VEGETABLES*.  
 b. If even *PAUL* knew that Mary only eats *vegetables*, then he should have suggested a different restaurant. (Partee 1999:215)

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