

Intervention, covert movement, and focus computation in multiple *wh*-questions

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1 Introduction

This paper examines the behavior of multiple *wh*-questions in which the in-situ *wh*-phrase is inside an island. The most often cited example of this type of structure is from Dayal (2002). Dayal argues that questions as in (1)—with the lower *wh* inside an adjunct island—only have a single-pair (SP) reading (1a) but not a pair-list (PL) reading (1b).

- (1) Which linguist will be offended if we invite which philosopher?
- a. Professor Smith will be offended if we invite Professor Brown. ✓SP
 - b. Professor Smith will be offended if we invite Professor Brown, and Professor King will be offended if we invite Professor White. #/* PL (Dayal judgment)

Dayal (2002) develops a theory of the readings of multiple *wh*-questions that is based on this judgment, crucially requiring *movement* of the lower *wh*-phrase to the question Complementizer in order to yield a pair-list reading. The single-pair reading is derived using a choice-function mechanism (Reinhart, 1998).

The judgment in (1) has recently been contested by Cheng and Demirdache (C&D, 2010), citing Chris Tancredi (p.c.). C&D offer the context in (2) with the judgment that a pair-list answer (2a) is forced in this case and the single-pair answer is deviant (2b).

- (2) Context: each of two philosophers will be offended if we invite one of two linguists.
What I want to know is:
- a. Which philosopher will be offended if we invite which linguist?
 - b. Quine will be offended if we invite Chomsky, and Lewis will be offended if we invite Kayne. ✓ PL
 - c. Quine will be offended if we invite Chomsky. #/* SP: (infelicitous due to context)

In what follows I adopt C&D's conclusion that pair-list readings are available across islands (in addition to the single-pair reading). I show novel data from the interaction of multiple *wh*-questions with islands with *focus intervention effects* (Beck 2006), whose explanation, I argue, requires a revision to current theories of the syntax and semantics of multiple *wh*-questions to allow both *movement* and *focus alternatives* to occur as part of the interpretation of a single *wh*-phrase in a multiple English question.

2 Focus Intervention Effects and the Semantics of In-Situ *Wh*-Phrases

Recent theories of question syntax/semantics adopt two strategies for the interpretation of in-situ *wh*-phrases: Covert Movement (CM), (3a), and Focus-Alternatives computation (FA), (3b). The availability of CM is assumed to be all-or-nothing: *wh* must move to the question Complementizer to be interpreted, or else stay *in-situ* and project Rooth-Hamblin focus alternatives which are interpreted by C.

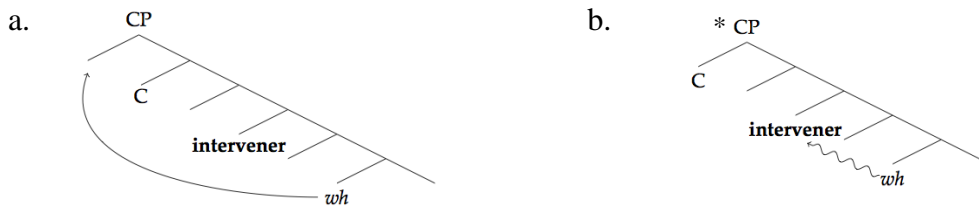
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(3) Interpretation of *wh* using CM and using FA¹



Beck (2006) argues that the FA strategy of interpreting *wh*-phrases is sensitive to *focus intervention effects*: if an *intervener*—an operator that uses focus-alternatives in its computation, such as *only* or negation—occurs between an in-situ *wh*-phrase projecting alternatives and the C that must interpret them, it will block the alternatives from reaching C and cause the derivation to crash, (4b). The CM strategy of interpreting *wh*-phrases is immune to focus intervention effects, (4a).

(4) FA, but not CM, is sensitive to intervention effects (Beck 2006)



Intervention effects only affect the PL reading of a question: Pesetsky (2000) reports that at least for some speakers, questions in potential intervention configurations as in (4) do not become ungrammatical but rather lose their PL reading. This is explained if SP readings can be derived through a choice-function mechanism that does not use focus-alternatives, but PL readings can't use a similar strategy (see discussion in Dayal 2002).

Following this logic, below I use intervention effects as a diagnostic for whether or not covert movement has occurred in a question: the presence of an intervention effect, detectable as a loss of a PL reading, will teach us that a (phonologically) in-situ *wh*-phrase must have been interpreted using FA, whereas the lack of an intervention effect will teach us that the *wh*-phrase must have moved above the scope of the intervener.

3 In-situ *wh*, Islands, and Intervention Effects

With the background on intervention in mind, let us return again to example (1), repeated below as the slightly modified (5).² As we saw in section 1, this question can have two felicitous readings: the single-pair reading and the pair-list reading. Since in this section we are only interested in the presence or absence of a pair-list reading of a given question, below I will restrict my attention to this reading. Note that all the examples in this section have felicitous single-pair readings.

¹ Here and throughout: straight arrows indicate movement, and curly arrows indicate areas of Rooth-Hamblin alternative computation.

² In this example, I have replaced the predicate *be offended* with *come*, since native speakers report that it is easier to judge the question with the latter predicate than with the former.

(5) **Lower *wh* inside adjunct island: pair-list reading is available**

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

A: Chomsky will come if we invite Quine,
Kayne will come if we invite Lewis,
Labov will come if we invite Russell, ...

We note that (5) has a felicitous PL reading in a relevant context (see (2) for such a context).³ Next, we introduce focus-sensitive interveners into these questions, as in (6) below. We find that an intervention effect occurs when an intervener (here: *only*, in bold) is placed *above* the island, but not when the intervener is *inside* the island.⁴

(6) **Lower *wh* inside adjunct island: intervener ungrammatical above island**

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

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

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

A: ✓ Chomsky will come if we only invite Quine,
Kayne will come if we only invite Lewis,
Labov will come if we only invite Russell, ...

4 Implications for Theories of Question Syntax and Question Semantics

That an intervention effect occurs in questions with the lower *wh* inside an island iff an intervener is placed above the island (but not inside it) has several important implications for theories of interrogative syntax/semantics. Below I discuss implications for the syntax/semantics of multiple questions and the semantics of pair-list readings.

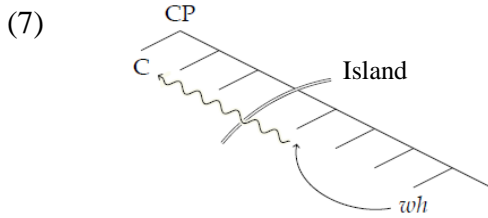
4.1 Interrogative Syntax-Semantics

Current theories of interrogative syntax/semantics assume that CM is an all-or-nothing operation: *wh* must move to all the way to C or stay in-situ and project focus alternatives that are computed by C. The data above teaches us that this architecture is untenable. The unavailability of the PL reading in (6a) entails that focus alternatives were computed above the island; but the availability of the PL reading in (6b) entails that alternatives could not have been computed all the way from the *wh*'s base-generated position, or we would expect to find an intervention effect in example (6b), contrary to fact.

To account for the pattern of intervention effects, it must be the case the *wh* *covertly moved* at least above the intervener inside the island in (6b). That movement could not have targeted the matrix C, since we observe an intervention effect in (6a). In order to predict that intervention happens when an intervener occurs *above* the island but not when it is *inside* the island, we require a derivation in which *partial* movement of the *wh* takes place, followed by a second step in which focus-alternatives are projected from *wh* to C. This type of architecture is schematized in (7) below.

³ The judgments in this section were confirmed by more than 20 native English speakers. The sentences were presented with contexts that satisfy the presuppositions of the multiple questions (see Dayal 2002).

⁴ Similar results obtain for other islands and other interveners. The data is omitted for space reasons.



The behavior of multiple questions with regard to intervention thus provides a new argument for a theory that combines CM and FA within the derivation of a single multiple question (cf. Pesetsky 2000, Beck 2006 for superiority; Cable 2010, Kotek and Erlewine 2013 for pied piping). However, the two mechanisms are used here in a novel order of operations: First, movement occurs inside the island. Then, focus-alternatives are computed above it. The island itself cannot be attracted to C (cf. Nishigauchi 1990 for Japanese), as this would incorrectly predict no intervention in example (6a).

4.2 The Semantics of Pair-List Readings

As noted above, Dayal (2002) argues that movement to C is *required* in order to derive a PL reading. With the exception of C&D (2010), all subsequent work on the semantics of multiple *wh*-questions has attempted to capture this judgment: that a PL reading is not possible if the lower *wh*-phrase does not *move* to C. As we have seen here, however, PL readings are available without movement. Thus, although we can maintain that the SP reading is computed without using focus-alternatives, e.g. via a choice-function mechanism, a different theory must explain the availability of PL readings in questions in which only one movement has occurred. In particular, we require a theory in which a moved *wh*-phrase and a *wh* projecting alternatives can together create a PL reading. To my knowledge, such a system does not exist in the literature on *wh*-questions.⁵

References

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⁵ Cheng and Demirdache (2010) develop a choice-function mechanism to derive pair-list readings of questions with three *wh*-phrases. However, such a theory cannot predict the pattern of intervention effects that we have seen here, since no focus-alternatives are used in the derivation of a question in that theory.