Intervention Effects inside and outside Islands*

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1   Introduction

Certain elements called interveners have been found to interact with *wh*-phrases in *wh*-questions in interesting ways in Japanese since Hoji (1985) such as the following:

(1) a. *{Daremo/Ken ka Mary/dareka}-ga **doko**-ni ikimasita ka?
　　　　 everyone/Ken or Mary/someone-Nom where-to went ka

　　 b. **Doko**-ni*i* {daremo/Ken ka Mary/dareka}-ga *t*i* ikimasita ka?
　　　　 'Where did {everyone/Ken or Mary/someone} go?'

Throughout this paper, interveners are underlined. (1)*a* shows that if interveners c-command *wh*-phrases, ungrammaticality (or certain restrictions on available interpretations as we will see) follows, which is called intervention effects (IE, henceforth). There are a few kinds of approach to the phenomenon, syntactic, semantic, and phonological; however, we will not review all of them here. Nor will we attempt to define precisely what interveners are. We will discuss only one particular type of semantic approaches here (see Morita (2013) and Morita and Kang (2016) for a review of the three kinds of approach and the definition of interveners). That is, we will critically examine approaches which employ alternative semantics, such as Cable (2010), Kotek (2014), and Kotek and Erlewine (2016), and will show that such approaches do not extend to languages such as Japanese and Sinhala in a straightforward manner.

　　The current paper is organized as follows. In the rest of the current section we introduce IE in English and Beck's (2006) semantic account. Section 2 will discuss Cable (2010), Kotek (2014), and Kotek and Erlewine (2016), who extend Beck's account to other IE examples in English and German, and we will raise a few problems with such approaches. Section 3 will propose an alternative account.

Pesetsky (2000) discovers that English also exhibits IE, but only in limited environments. Before introducing such data, he shows that an economy condition, more specifically the Superiority effect, can be violated when *which NP*'s, so called D(iscourse)-linked *wh*-phrases, are employed in the case of multiple-*wh* questions as follows:

(2) a.   Which person __ bought which book?
　　 b.   Which book did which person buy __?　　　Pesetsky (2000: 16)
　　 c. ＊What did who buy __?

(2)*c* violates the Superiority effect. That is, although *who* is a structurally closer goal to C (probe) than *what* is, a farther goal, i.e., *what*, is raised to C. However, Pesetsky notes that the effect is lifted with only D-linked *wh*-expressions as in (2)*b*.

Pesetsky finds that when the Superiority effect is violated, IE may be observed as follows:

(3) a.   Which book did <u>no one</u> give __ to which student?
　　 b. ?? Which student did <u>no one</u> give **which book** to __?
　　 c.   Which student did Mary give which book to __?

<div align="right">Pesetsky (2000: 61)</div>

(4) a.   Which girl did <u>only</u> Mary introduce __ to which boy?
　　 b. ?? Which boy did <u>only</u> Mary introduce **which girl** to __?
　　 c.   Which boy did Mary introduce which girl to __?

<div align="right">Pesetsky (2000: 61)</div>

No, only, not, never, and *very few* are interveners in English, and IE is observed only when superiority is violated as in (3)*b* and (4)*b*. To account for the contrast between examples *a* and *b* in (3) and (4), he proposes two kinds of movement, covert and feature movement, and only feature movement is subjected to IE. In other words, only D-linked *wh*-phrases can optionally go through feature movement, but when they do, they cannot cross interveners as in (3)*b* and (4)*b*.

However, as Chomsky (1995) entertains and then dismisses it, feature movement is theoretically a problematic notion, so Beck (2006) proposes a semantic approach to IE, which assumes no movement of in-situ *wh*-phrases. (However, in section 3, we will claim that Pesetsky's (2000) original intuition

about IE is correct; that is, there are two kinds of movement for in-situ *wh*-phrases.) More specifically, following Rooth's (1992, 1996) analysis of focus, Beck claims that a *wh*-phrase is a focus expression representing a set of contextually relevant alternatives, which is called alternative semantics. Such a set of alternatives expands the scope of the set through pointwise functional application, and further application of the function enables the set to reach the top of the tree (in the case of a matrix *wh*-question). In this manner, the meaning of a *wh*-question, i.e. a set of propositions (Hamblin 1973 and Karttunen 1977), is generated without movement of a *wh*-phrase. What is more, Rooth argues that the set expansion can apply across islands, which is why focused phrases can take scope over the matrix clauses even when they are generated inside islands. Even in overt *wh*-movement languages such as English and German, in-situ *wh*-phrases can remain inside islands while taking scope over the matrix clauses in the case of multiple-*wh* questions. Accordingly, Beck (2006) and Cable (2010) among others apply Rooth's focus analysis to the interpretation of in-situ *wh*-phrases which are in islands or phases.

Regarding IE under the alternative semantics approach, Beck claims that interveners are also focused, so they entertain alternative semantic values too. However, she further argues that *wh*-phrases do not have ordinary semantic values while interveners have both alternative and ordinary semantic values. Because of this semantic difference, she proposes two kinds of licensors: one for *wh*-phrases and the other for non-*wh*-phrases. IE arises when the licensor for non-*wh*-phrases intervenes between the *wh*-phrase licensor and a *wh*-phrase. Specifically, the non-*wh* licensor attempts to calculate both the ordinary and the alternative values of the *wh*-phrase because it is closer to the *wh*-phrase than the higher *wh* licensor is. However, since *wh*-phrases do not carry an ordinary semantic value, miscalculation arises under the non-*wh* licensor, and ungrammaticality (or more precisely semantic anomaly) surfaces as IE.

2　Further developments in the semantic approach to IE

Cable (2010), Kotek and Erlewine (2016), and Kotek (2014) adopt Beck's analysis of IE, and present further support to the alternative semantics approach. This section introduces their claims and raise a few problems common to their approaches.

2.1　Cable (2010), Kotek and Erlewine (2016), and Kotek (2014)

It has been noted that German is different from English in a few respects regarding quantifiers and *wh*-phrases. First, German does not exhibit the Superiority effect. Secondly, IE is observed whenever an intervener c-commands a *wh*-phrase at a surface structure in German unlike English. Remember IE arises in English only when superiority is violated as in (3)*b*. Thirdly, surface structure dictates scope hierarchy of quantifiers (in Mittelfeld) in German unlike English (Beck 1996: 41–42). Cable (2010) relates the first two phenomena by claiming that *wh*-phrases may or may not accompany a Q-particle (and we will come back to the third phenomenon when we discuss Kotek (2014)).

　Before examining Cable's explanation of the two phenomena, let us introduce some of his main arguments. *Wh*-phrases in Tlingit, which he discusses in detail in the book, exhibit an overt Q-particle, *sá*, as follows:

(5) a.　$[_{QP}$ **Daa sá**$]_i$ i　　éesh　t_i　al'óon?
　　　　　what　sá　your　father　　he.hunts.it
　　　'What is your father hunting?'

　　b.　$[_{QP} [_{NP} [_{CP}$ **Waá**　kligeyi]　　　xáat] **sá**$]_i$ i　　tuwáa t_i sigóo?
　　　　　　　　　how　it.is.big.REL fish　sá　your　spirit　　it.is.glad
　　　　　(Lit.) 'A fish that is how big do you want?'
　　　　　'How big a fish do you want?'　　　　　　　　　　Cable (2010: 7)

The Q-particle appears at the end of a raised phrase, so it appears after a *wh*-expression in (5)*a*, and, when a large-scale pied-piping takes place, it appears at the right edge of the pied-piped phrase as in (5)*b*. Cable argues that a Q-particle, being a head, selects (or adjoins to) a phrase which is to be raised to C-spec, and projects QP. Moreover, C attracts QP (overtly or covertly), not

a *wh*-phrase, so pied-piped and not pied-piped movements are equally treated as QP movement (dispensing with a theoretically unattested mechanism such as feature percolation from a *wh*-phrase to dominating projections to cause pied-piping (see Heck (2008) for a summary of previous accounts of pied-piping)). Q-particles in English and German are phonologically null.

Cable (2010) also claims that IE is observable even in overtly pied-piped phrases in English as follows:

(6) a. $^{(?)}$[$_{QP}$ A picture of **which president**] does Jim own?[1]

b. *[$_{QP}$ No picture of **which president**] does Jim own?

c. *[$_{QP}$ Only pictures of **which president**] does Jim own?

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ Cable (2010: 138, adapted)

As shown above, *no* and *only* are interveners in English, so it seems natural to conclude that the ungrammaticality of (6)*b* and *c* is due to IE. However, when a *wh*-phrase c-commands an intervener inside a pied-piped phrase, no IE is detected as follows:

(7) a. [$_{QP}$ **Which picture** only of presidents] does Jim own?

b. [$_{QP}$ **Which picture** containing no presidents] does Jim own?

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ Cable (2010: 138, adapted)

Accordingly, he presents the following generalization on IE:

(8) *[$_{QP}$ Q^0 [… intervener … ***wh*-phrase** …]]   Cable (2010: 137, adapted)

(8) indicates that IE surfaces when a *wh*-phrase, not QP, is c-commanded by an intervener. If correct, in-situ *wh*-phrases in superiority-violated examples such as (3)*b* and (4)*b* are not QP, which implies that a Q-particle is optionally dropped. Since C targets QP for attraction, it follows that superiority can be violated if a Q-particle of D-linked *wh*-phrases can be omitted in English. In contrast, no in-situ *wh*-phrases in German project to QP, so they are always subject to IE. In this manner, Cable (2010) manages to explain the relation between the Superiority effect and IE in English and German.

Another important claim by Cable (2010) is that there are two classes of languages regarding the relationship between a Q-particle and a *wh*-phrase. Languages in one class such as Tlingit do not require Agree between the two. However, ones in the other class such as English and German demand that a (covert) Q-particle Agree with a *wh*-phrase, so the size of pied-piping is

quite restricted. Accordingly, large-scale clausal pied-piping such as (5)*b* is disallowed in English and German, which is because embedded clauses, i.e., CP, are phases and Agree does not apply across phases. The present paper supports this claim.

Kotek and Erlewine (2016) extend Cable (2010) and propose that when a language moves QP covertly, it maximizes the size of QP, based on the following examples (the syntactic labeling of which is theirs, and will be modified later):

(9) a.   Which student read [$_{QP}$ a book from **which library**]?

<div align="right">ok pair-list; ok single-list</div>

　　b.   Which student read [$_{QP}$ <u>no</u> book from **which library**]?

<div align="right">*pair list; ok single-list</div>

(10) a.   Which collector sold [$_{QP}$ two pictures of **which president**]?

<div align="right">ok pair-list; ok single-list</div>

　　b.   Which collector sold [$_{QP}$ <u>only</u> PICTURES of **which president**]?

<div align="right">*pair list; ok single-list</div>

<div align="right">Kotek and Erlewine (2016: 682, adapted)</div>

Advancing the observations made by Pesetsky (2000) and Beck and Kim (2006), Kotek and Erlewine (2016) employ availability of pair-list readings (in addition to grammatical judgment) to diagnose IE, and claim that examples such as (9)*b* and (10)*b* do not allow pair-list interpretations, such as "John read no book from Ashmolean Library, Mary read no book from Bodleian Library, …" for (9)*b*. Therefore, they are subject to IE, i.e. (8). More specifically, in the case of covert movement, Q^0 merges to maximize the size of QP as long as Agree between Q^0 and *wh*-phrases is possible. For example, *no book from which library* is the maximum size of QP for Q^0 to Agree with *which book*, not *which library*,[2] so IE arises in (9)*b*.

Kotek (2014) extends (8) to cases in which an in-situ *wh*-phrase is in an island. Compare the following examples (Kotek 2014: 202):

(11) a.   Which linguist will <u>only</u> come [if we invite **which philosopher**]?

<div align="right">*pair list; ok single-list</div>

　　b.   Which linguist will come [if we <u>only</u> invite **which philosopher**]?

<div align="right">ok pair-list; ok single-list</div>

She uses the same test and finds out that when a c-commanding intervener is outside an island, IE is observed as in (11)*a*, where a pair-list interpretation such as "Chomsky will only come if we invite Quine, Kayne will only come if we invite Lewis, .." is unavailable. However, when a c-commanding intervener is inside an island, IE is not displayed as in (11)*b*, where both a single-list and a pair-list interpretation are possible. Note that, due to the necessity of Agree between Q^0 and *wh*-phrases (Cable 2010), merging Q^0 with the entire adjunct clause in (11) is disallowed due to the PIC (Phase Impenetrability Condition) by Chomsky (2000 et seq.), considering finite clauses are phases. Similarly, if QP is generated inside an island, it cannot be raised to C-spec. (Later we will argue that an in-situ QP can emerge inside an island, and the island is pied-piped to CP.) Accordingly, it is predicted that in-situ *wh*-expressions inside an island never project to QP, and hence, they are not raised to the matrix C, and are interpreted via alternative semantics. Indeed, the lack of a pair-list interpretation, and hence, IE in (11)*a* supports the prediction.

However, the same explanation cannot explain why (11)*b* does allow pair-list interpretations although an intervener c-commands a *wh*-phrase there. To account for the contrast between (11)*a* and *b*, Kotek (2014) first argues that English is a covert scrambling (or QR) language, which is why a sentence with multiple quantifiers such as *someone loves everyone* is ambiguous, because *everyone* can scramble over *someone* covertly. In (11)*b*, *which philosopher* covertly scrambles over *only*, and hence, IE is avoided. In this way, Kotek captures the third difference between English and German mentioned above, which is that the surface structure decides scope hierarchy of quantifiers in German, but it is not necessarily the case in English.

Since German is an overt scrambling language, a corresponding German example to (11)*b* is ungrammatical as follows:

(12) *Welcher Philosoph wird sich aergern [wenn <u>niemand</u>
　　　which philosopher will self be upset if no one
　　　welchen Linguisten einlaedt]?
　　　which linguist invite
　　　'Which philosopher will be offended if no one invites which linguist?'

<div align="right">Kotek (2014: 205)</div>

German does not allow covert scrambling; therefore, *niemand* (intervener)
c-commands *welchen Linguisten* 'which linguist' at LF, and hence, IE is
observed in (12).

　　To summarize so far, following Beck (2006), Cable (2010), Kotek (2014),
and Kotek and Erlewine (2016) (CKE, henceforth) argue that (i) *wh*-phrases
without Q^0 do not move at all, (ii) they are interpreted by alternative
semantics, and (iii) they are subject to IE.

2.2　Problems

Despite the neat explanation of IE, there are a few problems. First, CKE's
formulation of IE, i.e. (8), does not apply to languages such as Japanese and
Sinhala, as Hagstrom (1998) has already noted. First, consider the following
Sinhala examples, where a Q-particle is overt, i.e., *də*:

(13) a. {*<u>Ranjit-də Chitra</u>/Ranjit} **mokak-**$\boxed{\text{də}}$ kiwi-e?
　　　　　Ranjit-or Chitra/Ranjit what- də said-e
　　　b. **mokak-**$\boxed{\text{də}}_i$ {*<u>Ranjit-də Chitra</u>/Ranjit} t_i kiwi-e?
　　　　　what- də Ranjit-or Chitra/Ranjit said-e
　　　c. *{<u>Ranjit-də Chitra</u>/Ranjit} **mokak** kiwia $\boxed{\text{də}}$?
　　　　　Ranjit-or Chitra/Ranjit what said də
　　　　　'What did {Ranjit or Chitra/Ranjit} say?'

<div align="right">Morita (2017, modified)</div>

In Sinhala, disjunction phrases are interveners (as also in Japanese, which
will be presented in (15) below), so when they c-command *wh*-phrases, IE is
observed as in (13)*a*. But scrambling of a *wh*-phrase over an intervener saves
the sentence as in (13)*b*. Next compare the following pair, where both an
intervener and a *wh*-phrase are inside an island:

(14) a. [_{QP} [{Ranjit-də Chitra/Ranjit} **mokak** kiwia kotə]-də] oyaa
　　　　 Ranjit-or Chitra/Ranjit　　what　　say when- də　　you
　　　 paadam kəramin hiti-e?
　　　 study　　doing　　were-e

　　 b.*[{Ranjit-də Chitra/Ranjit} [_{QP} **mokak-**də] kiwia kotə] oyaa
　　　　 Ranjit-or Chitra/Ranjit　　　　what-də　　say　　when you
　　　 paadam kəramin hiti-e?
　　　 study　　doing　　were-e

　　　 '(Lit.) You were studying when {Ranjit or Chita/Ranjit} said what?'
　　　　　　　　　　　　　　　　　　　　　　 Morita (2017, modified)

Like Tlingit *sá*, *də*, which is normally adjacent to a *wh*-phrase and cannot be placed at the end of the clause as in (13),[3] must appear at the right edge of an adjunct clause as in (14) when a *wh*-phrase is inside the clause. *E* at the end of a verb marks the scope of a question. Cable (2010) claims that *də* is a Q-particle forming QP, and this QP is covertly raised to C-spec. Accordingly, a large-scale pied-piping, i.e., movement of the entire adjunct clause in (14)*a*, is initiated when a *wh*-phrase is in an island and *də* merges with the island, which suggests that no Agree between the two is required in Sinhala (as in Tlingit).

　　 Interestingly, IE disappears when both a c-commanding intervener and a *wh*-phrase are inside an island as in (14)*a*. However, this is exactly opposite from what (8) states.

　　 A similar contrast has been observed in Japanese since Hagstrom (1998) as follows:

(15) a.?* John-ka Bill-ga　　 [_{QP} **nani**-o]　　 kaimasita ka?
　　　　　　 -or　　 -Nom　　 what-Acc bought　　 ka
　　　　 'What did John or Bill buy?'

　　 b.　 Mary-wa [_{QP} John-ka Bill-ga　　 **nani**-o　　 katta　　 atode]
　　　　　　　 -Top　　　 -or　　 -Nom what-Acc bought after
　　　 dekakemasita ka?
　　　 left　　　　 ka
　　　 '(Lit.) Mary left after John or Bill bought what?'

　　　　　　　　　　　　　　　　　　 (Hagstrom 1998: 54, adapted)

Japanese is also a *wh*-in-situ language, but it does not show an overt Q-particle unlike Sinhala,[4] but IE disappears when both a c-commanding intervener and a *wh*-phrase are inside an island as in (15)*b*. If the whole adjunct clause is QP in (15)*b*, exactly the same observation as Sinhala can be made regarding IE inside islands in Japanese. Note that Japanese as well as Sinhala is an overt scrambling language, so it is unlikely that the *wh*-phrase inside an island covertly scrambles over the intervener in (15)*b* (and in (14)*a* in Sinhala).

The other diagnosis, i.e., availability of pair-list readings, also indicates that no IE arises when both an intervener and a *wh*-phrase are inside an island. Before discussing such cases, consider (16) first:

(16) a. John-ga **dono ko-ni dono hon-o** yonde-agemasu ka?
  John-Nom which child-to which book-Acc read-give ka
  'Which book does John read to which child?'

  (^{ok}pair-list; ^{ok}single-list)

  b. *{<u>Dareka</u>/<u>John-ka Bill</u>}-ga **dono ko-ni dono hon-o**
  someone/John-or Bill-Nom which child-to which book-Acc
  yonde-agemasu ka?
  read-give ka
  'Which book does {someone/John or Bill} read to which child?'

  (*pair-list; ^{ok}single-list)

(16)*a* shows that two 'which' phrases generate pair-list as well as single-list readings. Ungrammaticality and lack of a pair-list reading in (16)*b* are expected because an intervener c-commands the two *wh*-phrases, and hence, IE arises there.

When both an intervener and two *wh*-phrases are inside an island, a different observation is made as follows:

(17) a. Mary-wa [$_{QP}$ John-ga **dono ko-ni dono hon-o**
  Mary -Top John-Nom which child-to which book-Acc
  yonde-age tara] yorokobimasu ka?
  read-gave if become.happy ka
  '(Lit.) Mary will be happy if John reads which book to which child?' (^{ok}pair-list; ^{ok}single-list)

b. Mary-wa [$_{QP}$ { <u>dareka</u>/<u>John-ka Bill</u> }-ga **dono ko-ni dono**
Mary-Top someone/John-or Bill-Nom which child-to which
hon-o yonde-age tara] yorokobimasu ka?
book-Acc read-gave if become.happy ka
'(Lit.) Mary will be happy if {someone/John or Bill} reads which
book to which child?' (ᵒᵏpair-list; ᵒᵏsingle-list)

As before, ungrammaticality is lifted in (17)*b* despite a c-commanding
intervener, when both the intervener and a *wh*-phrase are inside an island.
What is more, pair-list readings are available in (17)*b*. These pieces of
evidence clearly indicate that IE does not surface inside QP in Japanese or
Sinhala; accordingly, (8) is not a correct generalization of IE. (Note that these
observations apply only to non-*wh* islands, because *wh*-phrases in *wh*-islands
are subject to IE in Japanese as we will discuss later.)

   CKE also face a problem when they account for the additional-*wh* effect in
Japanese, which has been noted by Watanabe (1992). Examine the following
wh-island examples:

(18) a. John-wa Mary-ni [**dare**-ga **nani**-o katta ka]
John-Top Mary-Dat who-Nom what-Acc bought ka
tazunemasita ka?
asked ka
'Did John ask Mary who bought what?'

b. John-ga **dono seito**-ni [**dare**-ga **nani**-o katta
John-Nom which student-Dat who-Nom what-Acc bought
ka] tazunemasita ka?
ka asked ka
'Which student did John ask who bought what?'

(18)*a* is a Yes/No question although there are *wh*-phrases, which is because
all the *wh*-phrases are licensed by the embedded C. An important point is
that those *wh*-phrases cannot take the matrix scope generating a direct *wh*-
question, so it is a type of *wh*-island effect. Interestingly, when there is a
wh-phrase in the matrix clause, the matrix construal for the embedded *wh*-
phrases is possible,[5] which Watanabe (1992) calls the additional-*wh* effect.

   This effect is a crosslinguistic phenomenon and is also observed in English

by Baker (1970) among others as follows:

(19) a.   Does John remember where we bought which book?

　　　b.   Who remembers where we bought which book?

<div align="right">Baker (1970: 215)</div>

(19)*a* disallows the matrix interpretation of the embedded *wh*-phrases. However, when there is a *wh*-phrase in the matrix clause, the matrix construal of an in-situ *wh*-phrase, i.e., *which book*, is possible as in (19)*b*.

　Since CKE do not discuss *wh*-islands, it is not clear how they account for the additional-*wh* effect. Nevertheless, one can argue that the in-situ *wh*-phrase, *which book*, does not project to QP and is interpreted by alternative semantics, which can apply across islands, but suppose the matrix C licenses a Yes/No question. Then it cannot interpret *which book*, hence, no matrix interpretation for the *wh*-phrase in (19)*a*. However, the matrix C is for a *wh*-question in (19)*b*, so *which book* can be interpreted in the matrix scope there. Thus, it seems possible to explain the additional-*wh* effect in English under CKE's framework. (Nevertheless, a problem remains as to why only *which book* can take the matrix scope while an overtly raised *wh*-phrase, i.e., *where*, cannot.)

　One could propose a similar account for the Japanese *wh*-island, (18), but a few problems ensue. That is, it is possible to argue that the embedded *ka* is interpreted as a Yes/No question while the matrix *ka* is as a *wh* question. (Note that *ka* is ambiguous between a Yes/No and a WH question particle in Japanese.) In that setting the set expansion for both *wh*-phrases continues past the embedded *ka* and reaches the matrix *ka* in (18)*b*, but not in (18)*a*. However, in another possible interpretation, only one of the two embedded *wh*-phrases, i.e. either *dare-ga* 'who-Nom' or *nani-o* 'what-Acc', can take the matrix scope in (18)*b*; thus, it is not clear to us what kind of mechanism can distinguish *wh*-phrases which pass through the embedded C from the other ones which do not.

　Even if the problem above is somehow overcome, a further and more serious problem arises. Although *ka* can be employed either for a Yes/No question or for a *wh* question particle, Yoshida (1998) shows that the two types of particles can be differentiated in the case of matrix questions as

follows:

(20) a. Mary-ga   kuru   {nokai/*ndai}?
       Mary-Nom   come Q_{YN}/Q_{WH}
       'Will Mary come?'

    b. Dare-ga   kuru   {*nokai/ndai}?
       who-Nom   come Q_{YN}/Q_{WH}
       'Who will come?'

Bearing the distinction in mind, consider the following example, where the matrix *ka* in (18)*a* is replaced with *ndai* and *nokai*:

(21) John-wa Mary-ni [**dare**-ga   **nani**-o   katta   ka] tazuneta
      John-Top Mary-Dat   who-Nom what-Acc bought ka   asked
      {*ndai/nokai}?
        Q_{WH}/Q_{YN}
      'Did John ask Mary who bought what?'

If there is a way for embedded *wh*-phrases to pass the embedded *ka*, then (21) should be acceptable if the matrix question particle is for a *wh*-question, i.e., *ndai*, but (21) is ungrammatical with *ndai*, which indicates that alternative semantics expansion (i.e., pointwise functional application) somehow must stop at the closest c-commanding *ka* (Shimoyama 2001). Another *wh*-phrase is necessary in the matrix clause to enable *wh*-phrases inside a *wh*-island to take the matrix scope. However, it is not clear how and why a *wh*-phrase in the matrix clause affects the (alternative-semantic) interpretations of embedded *wh*-phrases under CKE's framework.

    To sum up, this section has examined how Cable (2010) explains the contrast between English and German regarding IE with the notion of QP, and Kotek (2014) and Kotek and Erlewine (2016) apply Cable's claim to cases in which (i) both a c-commanding intervener and a *wh*-phrase are in islands and (ii) both are in the same DP. They propose that IE is a phenomenon within QP (cf. (8)), and are successful as far as English and German IE are concerned, but unfortunately (8) has not been tested on languages such as Sinhala, which has an overt Q-particle and displays IE. This section has demonstrated that (8) does not hold in Sinhala. Similarly, (8) has been found not to work for Japanese IE; hence, their formulation of IE needs to be revised. Moreover,

CKE's use of alternative semantics toward in-situ *wh*-phrases cannot explain the additional *wh*-effect in Japanese.

3 An alternative to alternative-semantics-based accounts of IE

This section proposes an alternative proposal to CKE. The present proposal departs from CKE regarding the formulation of IE and treatment of in-situ *wh*-phrases, but inherits two of their claims. First, we assume Cable's (2010) two-way classification of languages: whether languages require Q^0 to Agree with *wh*-phrases or not. This classification nicely explains why languages such as Tlingit, Japanese, and Sinhala allow large-scale pied-piping, whereas languages such as English and German do not. The following Sinhala and Japanese examples further support that no Agree is necessary between Q^0 and a *wh*-phrase:

(22) $[_{QP} [_{DP} [_{CP}$ Ranjit $[_{DP}$ **kauru** liyəpu potə] gatta kieənə]
               Ranjit   who   written book bought that
     katəkatawə] $\boxed{\text{də}}$] Chitra ahuv-e?
     rumour Q^0 Chitra heard-e
     'Who is the person x such that Chitra heard the rumour that Ranjit bought the book that x wrote?'   Slade (2011: 69)

(23) Mary-wa $[_{QP} [_{DP} [_{CP}$ John-ga $[_{DP}$ **nani**-o nakusita hito-ni]
      -Top   John-Nom what-Acc lost   person-Dat
     atta toiuu] uwasa-o] $\varnothing$] kiita ndai?
     saw that   rumor-Acc Q^0 heard Q_{WH}
     'What is the thing x such that Mary heard the rumor that John saw the person that lost x?'

There are two DPs and one CP between Q^0 and a *wh*-phrase in (22) and (23); nevertheless, it is possible to interpret the two sentences as a *wh*-question. Thus, no Agree between Q^0 and a *wh*-phrase is required in Sinhala and Japanese.

The other assumption we inherit from CKE, in particular, Kotek (2014), is that languages are divided into two categories in terms of overt or covert scrambling. Languages such as German, Japanese and Sinhala are overt

scrambling languages, so the surface structure decides scope hierarchy. In contrast, English is a covert scrambling language, which is why a sentence with multiple quantifiers is (often) ambiguous. Moreover, as Kotek (2014) argues, in-situ *wh*-phrases can covertly scramble, so that IE may be avoided in English (cf. (11)*b*). Below we will present a new proposal, which differs from CKE in two respects.

What has been revealed in the previous section is that IE inside (non-*wh*) islands is observed in German (and possibly in English without covert scrambling) while it is not in Japanese or Sinhala, which suggests that a different mechanism is employed towards in-situ *wh*-phrases inside (non-*wh*) islands between German (and English) on one hand and Japanese and Sinhala on the other.

What is common in all the languages mentioned above is that (some) in-situ *wh*-phrases are subject to IE outside islands.[6] Ignore D-linked *wh*-phrases for a while, and suppose the same mechanism is applied to in-situ *wh*-phrases outside islands crosslinguistically. Then a yet another mechanism is needed for in-situ *wh*-phrases inside (non-*wh*) islands in languages such as Japanese and Sinhala, because they do not show IE there unlike German (and English).

There are a few possible approaches to explain this fact. One is to claim that an alternative semantic method employed in Beck (2006) applies to in-situ *wh*-phrases outside islands, whereas a different method such as binding applies to in-situ *wh*-phrases inside (non-*wh*) islands, in Japanese and Sinhala. This approach is compatible with Cable (2010), Kotek (2014), and Kotek and Erlewine (2016). However, the mechanism via alternative semantics has been proposed to explain island-insensitivity in the first place (Rooth 1992, 1996), so it is not clear why Japanese and Sinhala adopt such a mechanism for in-situ *wh*-phrases outside islands, where the derivation does not concern crossing islands, and do not employ it for in-situ *wh*-phrases inside (non-*wh*) islands, where the derivation must somehow find a way to channel *wh*-phrases across islands. Moreover, a few differences regarding in-situ *wh*-phrases inside (non-*wh*) islands have been observed between Japanese and Sinhala on one hand and English and German on the other hand: (i) the former can license matrix interrogative C^0 without an additional *wh*-phrase in the matrix clause,

while the latter cannot, and (ii) the former does not exhibit IE while the latter does inside islands.

In the following subsections, we argue for two distinct mechanisms for in-situ *wh*-phrases inside (non-*wh*) islands between the two groups: binding and alternative semantics. In contrast, we propose the same mechanisms apply to *wh*-phrases outside islands crosslinguistically. More specifically, at least one QP must move to C-spec to check Q features overtly or covertly in a *wh*-question, which we call QP movement in this paper. Since the movement is syntactic in nature, it is subject to a syntactic IE contra Beck (2006) and CKE. The other remaining *wh*-phrases in the same sentence have two options: QP movement or focus movement. Focus movement is possible when in-situ *wh*-phrases or islands containing them are contrastive focused, but is subject to surface scope hierarchy with other operators. Thus, when such an operator c-commands a focused *wh*-phrase and it cannot semantically take scope over *wh*-phrases, a semantic IE follows. Accordingly, two types of IE are necessary. We start with a syntactic IE.

3.1　Reformulation of IE

First, we propose (24) instead of (8) for the generalization of IE:

(24)　Revised generalization of syntactic Intervention Effects (IE):

*[… <u>intervener</u> … [$_{QP}$ Q^0 … ***wh*-phrase** …] …]

In contrast to (8), (24) shows that it is not a *wh*-phrase but QP that causes a syntactic IE, which is explicit in Sinhala. Examine the contrast between (13)*a* and (14)*a* again, which are repeated below:

(13)　a.{*<u>Ranjit-də　Chitra</u>/Ranjit} [$_{QP}$ **mokak-**d̶ə̶] kiwi-e?

　　　　Ranjit-or　Chitra/Ranjit　　　　what-də　　　said-e

　　　　'What did {Ranjit or Chitra/Ranjit} say?'

(14)　a.　[$_{QP}$ [{<u>Ranjit-də　Chitra</u>/Ranjit} **mokak** kiwia kotə]-d̶ə̶] oyaa

　　　　　Ranjit-or　Chitra/Ranjit　what　　say　　when-də　you

　　　　paadam　kəramin　hiti-e?

　　　　study　　doing　　were-e

　　　　'(Lit.) You were studying when {Ranjit or Chita/Ranjit} said what?'

Də is a Q-particle, so it projects QP. IE arises in (13)*a* because an intervener c-commands QP, while it does not in (14)*a* because an intervener c-commands not QP but a *wh*-phrase. (14) also shows that Sinhala does not demand Q^0 to Agree with a *wh*-phrase unlike English and German, so Q^0 can merge with an island which contains *wh*-phrases, as Cable (2010) argues.

We propose that QP needs to Agree with C^0 and overtly or covertly move to C^0-spec to check uninterpretable Q features of C^0, which is necessary crosslinguistically to license *wh*-interrogative C^0 (but probably with an exception of Chinese, as we will discuss later). We further claim that a syntactic IE arises because an intervener blocks a syntactic association such as Agree, following Beck (1996), Hagstrom (1998), Kim (2002b), Morita (2002, 2013), and Morita and Kang (2016). Thus, a more detailed representation of (24) is the following:

(25) *[C^0 … <u>intervener</u> … [$_{QP}$ Q^0 … ***wh*-phrase** …] …]

   [*u*Q]   [*u*Q]   [Q (,*u*WH)] (WH)

QP has an interpretable Q feature, [Q], and C^0 has an uninterpretable Q feature, [*u*Q], so Agree is expected to take place between the two, but an intervener too has [*u*Q], so due to the economy condition, the intervener initiates Agree with QP wrongly and the derivation crashes.

WH features are necessary for languages such as English and German, where Agree between Q^0 and a *wh*-phrase is necessary (Cable 2010). To represent this relationship, a *wh*-phrase carries an uninterpretable WH feature, [*u*WH], while Q^0 has an interpretable WH feature, [WH]; however, they are unnecessary in Japanese, Sinhala, and Tlingit, so they are in round brackets in (25).

(25) (or (24)) applies to German IE such as (12), which is repeated below:

(12) *Welcher Philosoph   wird sich aergern [wenn <u>niemand</u>

   which philosopher will self be.upset if   no one

   [$_{QP}$ **welchen Linguisten**] einlaedt]?

      which   linguist   invite

   'Which philosopher will be offended if no one invites which linguist?'

                                                    Kotek (2014: 205)

(The corresponding English example, (11)*b*, does not show a syntactic IE

because of covert scrambling of 'which linguist' over the intervener as Kotek (2014) argues.) Because of Agree between Q^0 and a *wh*-phrase, Q^0 cannot appear at the edge of the adjunct clause in German (or English). Accordingly, *niemand*, an intervener, c-commands *welchen Linguisten*, a QP, so a syntactic IE surfaces.

It is also possible to capture IE inside nominal phrases under the new formulation. Examine the following sentences, which are the same examples as (9) and (10), but are assigned different syntactic categorization from Kotek and Erlewine (2016):

(26) a.   Which student read a book from [$_{QP}$ **which library**]?

<div align="right">

okpair-list; oksingle-list
</div>

    b.   Which student read <u>no</u> book from [$_{QP}$ **which library**]?

<div align="right">

*pair list; oksingle-list
</div>

(27) a.   Which collector sold two pictures of [$_{QP}$ **which president**]?

<div align="right">

okpair-list; oksingle-list
</div>

    b.   Which collector sold <u>only</u> PICTURES of [$_{QP}$ **which president**]?

<div align="right">

*pair list; oksingle-list
</div>

<div align="right">

Kotek and Erlewine (2016: 682, modified)
</div>

In (26)*b* and (27)*b*, QP is c-commanded by an intervener; hence, IE surfaces blocking pair-list interpretations. In the case of (26)*a* and (27)*a*, no IE arises because no intervener c-commands QP.

3.2   FocP

We still need to explain in-situ *wh*-phrases inside (non-*wh*) islands. As discussed above, English and German are different from Japanese and Sinhala in two respects. First, in-situ *wh*-phrases inside islands alone cannot license *wh*-interrogative C^0 in the former group. Contrast the following pair with (15)*b* in Japanese, which is repeated below:

(28) a.   *[If we invite which philosopher]$_i$ will Mary come t_i?

    b.   *Will Mary come [if we invite which philosopher]?

(15) b. Mary-wa [$_{QP}$ <u>John-ka Bill-ga</u> **nani**-o   katta   atode]

        -Top   -or   -Nom what-Acc bought after

    dekakemasita   ka?

    left   ka

    '(Lit.) Mary left after John or Bill bought what?'

<div align="right">(Hagstrom 1998: 54, adapted)</div>

The contrast between English and Japanese naturally follows under the present framework. According to Cable (2010), Q^0 needs to Agree with *wh*-phrases in English (and German), so it cannot be base-generated at the edge of an island or a phase. Thus, islands containing *wh*-phrases are not QP in English and German. In contrast, Q^0 does not Agree with *wh*-phrases in Japanese (and Sinhala as in (14)*a*), so it can be base-generated at the edge of an island or a phase. We assume binding between Q^0 and *wh*-phrases in Japanese, Sinhala and Tlingit. Moreover, since Q^0 carries a Q feature, it can check *wh*-interrogative C^0; hence, an island containing *wh*-phrases can license *wh*-interrogative C^0 in Japanese, Sinhala and Tlingit unlike in English and German.

The other difference is that *wh*-phrases inside islands are subject to IE in German (and English) as in (12) unlike Japanese and Sinhala, so they project to QP even inside islands according to (24). Nevertheless, pair-list readings are available even when two *wh*-phrases are separated by islands in English and German as in (29):

(29)   Which linguist will come [if we invite which philosopher]?

<div align="right">okpair-list; oksingle-list</div>

Accordingly, there must be a mechanism which allows QP inside islands or phases to take the matrix scope and be associated with an overtly raised *wh*-phrases in the matrix CP. To achieve this effect, we employ an alternative-semantic approach for *wh*-phrases inside islands in English and German. That is, in-situ *wh*-phrases represent a set of contextually relevant alternatives, and due to pointwise functional application, the scope of the set expands. However, the expansion does not transfer (or percolate) any syntactic feature of *wh*-phrases to the edge of a phase, so the expanded set itself cannot license *wh*-interrogative C^0 (unlike QP).

Despite adoption of alternative semantics, the present claim is different from Beck (2006), CKE, and Shimoyama (2001) in that pointwise functional application is not sufficient to set the nuclear scope of *wh*-operators; in other words, alternative semantics only works to form the syntactic restrictor of a *wh*-operator, which needs to be raised to C by an independent mechanism (see also Drubig 1994, Krifka 2006, and Wagner 2006 for a hybrid, i.e. alternative semantics plus movement account). To illustrate this claim, (28)*b* is represented as follows:

(28) *b′* *Will Mary come $[_{FocP} [_{Foc} \varnothing^{foc}]$ if we invite $[_{QP}$ which philosopher]]?
The in-situ *wh*-phrase above extends the scope of alternatives due to pointwise functional application, but it stops when the expansion reaches Foc^0, which is covert and represented as $\varnothing^{foc}$. Then FocP goes through (focus) movement to C-spec, but it cannot check an uninterpretable Q feature in the matrix C^0; hence, an additional *wh*-phrase, i.e., QP, is necessary in the matrix clause as in (29). (We will provide evidence for the claim later.) We assume that when multiple *wh*-operators such as QP and FocP are adjacent to each other in CP and combine into a single operator at LF, a pair-list reading is generated following Higginbotham and May (1981), who call such mechanism "absorption". Hence, a pair-list interpretation is available in (29).

Foc^0 is similar to (contrastive) focus particles in that it invokes a set of contextually relevant alternatives and supplies each entity for QP; thus, it has a high affinity with D-linked *wh*-phrases. Accordingly, D-linked *wh*-phrases optionally project to FocP, which also explains why the Superiority condition can be violated. (2)*a* and *b* are repeated below:

(2) a. $[_{CP} [_{QP}$ Which person] __ bought $[_{QP}$ which book]]?
    b. $[_{CP} [_{QP}$ Which book] did $[_{FocP} \varnothing^{foc} [_{QP}$ which person]] buy __]?

Pesetsky (2000: 16)

In (2)*a*, both of the *wh*-phrases project to QP; thus, a closer *wh*-phrase, i.e., *which person*, is raised to C-spec valuing Q feature. In contrast, (2)*b*, the subject *wh*-phrase projects to FocP while the object *wh*-phrases project to QP. Suppose FocP masks QP from C^0 (probably because Foc^0 is a phase head, and QP is transferred before C^0 probes for a Q feature). Then the object *wh*-phrase is the closest QP to C^0 and is overtly raised to C-spec, so

no superiority is violated there. FocP in (2) is raised to C-spec via focus movement. Accordingly, there are two kinds of movement for in-situ *wh*-phrases. Movement of QP is triggered by Agree with C^0 and that of FocP is triggered by focus; thus, the present paper supports Pesetsky's (2000) original insight about IE, according to which there are two kinds of covert movement for in-situ *wh*-phrases in English.

Next compare (4)*a* and (11)*a*, which are repeated below:

(4) a. Which girl did <u>only</u> Mary introduce __ to [$_{QP}$ which boy]?

<div align="right">okpair-list; oksingle-list</div>

(11) a. Which linguist will <u>only</u> come [$_{FocP}$ $\varnothing^{foc}$ if we invite [$_{QP}$ **which philosopher**]]?   *pair list; oksingle-list

According to Kotek (2014), no IE is observed in (4)*a* because *which boy* covertly scrambles past *only*, which indicates that QP can covertly scramble. However, unavailability of pair-list readings in (11)*a* suggests that FocP cannot (covertly) scramble over *only*. One may argue that an *if* clause does not scramble because it is an adjunct, but as (30) below shows, even DP does not covertly scramble when it contains QP:

(30) Which linguist <u>didn't</u> believe [$_{FocP}$ $\varnothing^{foc}$ the rumor that we invited [$_{QP}$ **which philosopher**]]?   *pair-list; oksingle-list

<div align="right">Kotek (2014: 202)</div>

cf. Which person <u>didn't</u> read [$_{QP}$ which book]?   okpair-list; oksingle-list

<div align="right">Pesetsky (2000: 60)</div>

Thus, FocP triggers covert large-scale pied-piping, but does not allow covert scrambling.

A problem remains to be resolved. IE in examples such as (3)*b*, (4)*b*, and (11)*a* is not captured by our new definition of a syntactic IE, i.e., (25), which only affects QP, not FocP. Thus, a second type of IE is necessary, which is formulated as follows:

(31) Semantic Intervention Effects (IE):

   *[… <u>intervener</u> … [$_{FocP}$ $\varnothing^{foc}$ [$_{QP}$ [***wh*-phrase**]…]]]

We assume with Mayr (2014) that certain elements (i.e., non-additives) cannot semantically take scope over *wh*-phrases. Moreover, FocP does not covertly scramble as argued above, so surface hierarchy reflects scope

hierarchy. Consequently, when a non-additive intervener c-commands an in-situ *wh*-phrase, absorption between a moved and the in-situ *wh*-phrase is blocked; hence, pair-list readings are prevented in (31).[7] In this way, we can account for IE in (3)*b*, (4)*b*, (11)*a*, and (30).

Some may say it is more desirable to propose a uniform approach to IE; however, the past 20 years of research has shown that we cannot precisely define what interveners are crosslinguistically. The reason may be because we have tried to account for two distinct phenomena under one account. As Beck (2006) notes, negatives in Thai cannot be unified regarding IE as follows:

(32) a. *Mâymiikhray chôop ?àan **nangsii lêmnay**?
         nobody   like   read book   which
         'Which books does nobody like to read?'

    b. Nít mây síi **?aray**?
         Nit not buy what
         'What didn't Nit buy?'

         (adapted from Ruangajaroon 2002, cited in Beck 2006: 8–10)

It is possible that (32)*a* displays a syntactic IE while (32)*b* is a case of a semantic IE. (Thus, we predict lack of pair-list readings in (32)*b* if we replace the subject and the object with singular denoting D-linked *wh*-expressions, but no data is available at the moment.)

Similarly, *less than* shows a contrast in English. Compare the following examples:

(33) Which student read [$_{FocP}$ $\varnothing^{foc}$ less than three books from [$_{QP}$ **which library**]]? ^{ok}pair-list; ^{ok}single-list

                        Kotek and Erlewine (2016: 681)

(34) a. Which book did less than three teachers read to [$_{QP}$ **which student**]?
                        ^{ok}pair-list; ^{ok}single-list

    b. Which student did less than three teachers read [$_{FocP}$ $\varnothing^{foc}$ [$_{QP}$ **which book**]] to?   *pair-list; ^{ok}single-list

According to Kotek and Erlewine (2016), *less than* is not an intervener against in-situ *wh*-phrases within DP as in (33). However, as (34)*b* indicates, IE is observed when superiority is violated. The contrast has a straightforward

explanation under the present account. (33) displays no IE because *less than* is not a syntactic intervener; that is, it does not carry an uninterpretable Q feature in (25). However, (34)*b* displays a semantic IE. As argued above, *which book* in (34)*b* can project to FocP due to D-linkedness, which escapes superiority violation. What is more, *less than* cannot take scope over a *wh*-phrase or FocP containing a *wh*-phrase according to Mayr (2014). Hence, a semantic IE arises in (34)*b*, hence, lack of a pair-list reading. These data lead to two kinds of IE and interveners. What is more, the contrast between (33) and (34)*b* supports the present claim that in-situ *wh*-phrases inside and outside islands go through a different derivation even in English and German.

In this section, following Pesetsky (2000), in-situ *wh*-phrases are raised to CP in two ways because they project QP or FocP. Only QP can Agree with *wh*-interrogative C^0, and is subject to the Minimal Link condition. Thus, FocP *wh*-phrases are exempted from the superiority condition. What is more, each category has been found to be subjected to IE; hence, two kinds of IE have been suggested, syntactic, i.e., (24), and semantic, i.e., (31) (see Morita (2002) for the same conclusion).

3.3 The additional-*wh* effect

Two types of derivation have been proposed to deal with islands or phases containing *wh*-phrases in the previous two subsections. One is to merge Q^0 directly at the edge of an island or a phase, which we call QP pied-piping in this paper. QP pied-piping is available in Japanese and Sinhala (and Tlingit), but not in English and German because Agree between Q^0 and *wh*-phrases is required in English and German. QP can license *wh*-interrogative C^0, so no additional *wh*-phrase in the matrix clause is necessary even when a *wh*-phrase is inside an island in Japanese and Sinhala.

The other type of pied-piping is to merge Foc^0 at the edge of an island or a phase, which we call FocP pied-piping. FocP itself does not license *wh*-interrogative C^0, so an additional *wh*-phrase is needed in the matrix clause (but as will be discussed later, Chinese may be an exception on this). FocP pied-piping is in principle available in any language. Accordingly, Japanese and Sinhala have two options of covert pied-piping. The following Japanese

examples support two types of pied-piping:

(35) a. *John-ga   {dareka/Ken-ka Mary}-ni   [$_{QP}$ **nani-o**]   misemasita

      John-Nom {someone/Ken-or Mary}-to   what-Acc showed

      ka?

      ka

      'What did John show to {someone/Ken or Mary}?'

  b. ?[$_{QP}$ **Dono   syonen-ga**]   {dareka/Ken-ka Mary}-ni

      which   student-Nom   {someone/Ken-or Mary}-to

      [$_{FocP/QP}$ **nani-o**]   misemasita ka?

            what-Acc showed   ka

      'Which student showed what to {someone/Ken or Mary}?'

                                            *pair-list

  c. [$_{QP}$ **Dono syonen-ga**]   {dareka/Ken-ka Mary}-ni

      which student-Nom {someone/Ken-or Mary}-to

      [$_{FocP/QP}$ **dono   syasin-o**]   misemasita ka?

            which   picture-Acc showed   ka

      'Which student showed which picture to {someone/Ken or

      Mary}?'}   *pair-list

In (35)*a*, an intervener c-commands QP, so ungrammaticality is clearly felt. In (35)*b* and *c*, however, no such strong ungrammaticality is perceived, and they are almost perfect. This is because the subject is a *wh*-phrase with Q^0, so it licenses *wh*-interrogative C^0 in (35)*b* and *c*, which allows the second *wh*-phrase, *nani* in (35)*b* and *dono syasin* in (35)*c*, to project to either QP or FocP depending on the context. If they project to FocP, no syntactic IE is observed. As (35)*c* shows, if the second *wh*-phrase is D-linked, the sentence is grammatically perfect. This is because D-linked *wh*-phrases project to FocP, and syntactic IE does not interact with FocP. Nevertheless, neither (35)*b* nor *c* allows pair-list interpretations, so semantic IE is operational there. This contrast supports not only two kinds of pied-piping but also two kinds of IE.

    There are environments in which only FocP pied-piping is possible. We propose that such environments are found when *wh*-islands are lifted with an additional-*wh* effect. Examine a Japanese example with a *wh*-island, i.e., (18)*a*, again, which is repeated below:

(18) a. John-wa Mary-ni [$_{CP}$ **dare**-ga **nani**-o katta ka]
John-Top Mary-Dat who-Nom what-Acc bought ka
tazunemasita ka?
asked ka
'Did John ask Mary who bought what?'

Since no Agree between Q^0 and a *wh*-phrase is required, one would expect Q^0 to directly merge with the embedded CP in (18)*a*; however, no matrix construal for *dare* 'who' and *nani* 'what' is possible. To explain this fact, we propose that *ka* is a possible binder of *wh*-expressions, and such binding respects minimality contra Shimoyama (2001).[8] This is why QP pied-piping is unavailable over embedded interrogative clauses in Japanese (and Sinhala). In order to give matrix scope to the embedded *wh*-phrases, one can resort to FocP pied-piping. However, FocP itself cannot check [uQ] of the matrix C^0. This is why at least one *wh*-phrase (which projects to QP) is necessary in the matrix clause. Consider the following sentence:

(36) [$_{CP}$ John-ga [$_{QP}$ **dono seito**-ni] [$_{FocP}$ [$_{CP}$ [$_{QP}$ **dare**-ga]
John-Nom which student-Dat who-Nom

[$_{QP}$ **nani**-o] katta kadooka] $\varnothing^{foc}$] tazunemasita ka]?
what-Acc bought kadooka asked ka
'Which student did John ask whether who bought what?'

(36) is a variant of (18)*b* in that the embedded *ka* is replaced with *kadooka* 'whether' to force the matrix readings of the two embedded *wh*-phrases. Due to the alternative semantic mechanism, *dare* 'who' and *nani* 'what' represent a set of relevant people and a set of relevant things respectively, and pointwise functional application unifies the two sets and stops at the embedded CP, the semantic representation of which would be a set like '{whether Ken bought a car, whether Ken bought a bicycle, … , whether Mary bought a car, whether Mary bought a bicycle, …}. FocP pied-pipes the entire embedded CP to the matrix C^0 via focus movement. However, FocP cannot value the uninterpretable Q feature of the matrix C^0, so another *wh*-phrase with Q^0 is necessary in the matrix clause because it values Q feature of the matrix C^0. This is how an additional *wh*-phrase lifts a *wh*-island.

Moreover, since *wh*-phrases inside *wh*-islands have been found to project

to QP (because Q^0 cannot bind across a *wh*-island), we predict a syntactic IE may surface inside a *wh*-island. The prediction is borne out as follows:

(37) [$_{CP}$ John-ga [$_{QP}$ **dono   seito**-ni] [$_{FocP}$ [$_{CP}$ {Ken/*dareka/*Ken-ka

  John-Nom   which   student-Dat   {Ken/someone/Ken-or

  Mary}-ga   [$_{QP}$ **nani**-o]   katta   kadooka] $\varnothing^{foc}$] tazunemasita ka]?

  Mary}-Nom   what-Acc bought   whether   asked   ka

  'Which student did John ask whether {Ken/someone/Ken or Mary}

  bought what?'

As before, *kadooka* 'whether' is employed to force the matrix reading of *nani* 'what' in the embedded clause. As predicted, interveners such as *dareka* 'someone' and *Ken-ka Mary* 'Ken or Mary' cause a syntactic IE (i.e., (25)) in (37), which is not observed in the case of other types of islands in Japanese (and Sinhala). Thus, *wh*-phrases in *wh*-islands in Japanese and ones in any island in English and German are derived in the same manner.

   The same explanation applies to English *wh*-islands such as (19), which is analyzed as follows:

(19)′ a.   Does John remember [$_{FocP}$ $\varnothing^{foc}$ [$_{CP}$ [$_{QP}$ where] we bought [$_{QP}$ which book]]]?

   b.   [$_{CP}$ Who remembers [$_{FocP}$ $\varnothing^{foc}$ [$_{CP}$ [$_{QP}$ where] we bought [$_{QP}$ which book]]]?   Baker (1970: 215)

In (19)′*b*, *where* checks [*u*Q] of the embedded C, and then FocP covertly pied-pipes the whole embedded CP to the matrix C via focus movement. In (19)′*a*, there is no QP to check the matrix C; hence, ungrammatical as a *wh*-question. Actually, Dayal (1996) proposes a very similar idea about the lifting of a *wh*-island. She claims that the in-situ *wh*-phrase, i.e., *which book*, goes through covert *wh*-movement to the embedded C generating a set of questions such as {where we bought Crime and Punishment, where we bought War and Peace, where we bought the Old Man and the Sea… }. Then the embedded CP is raised to the matrix C via QR, allowing pair-list interpretations between *who* and *which book*. This account is compatible with the present proposal, but since it does not generalize to other island cases such as (29), we argue for the alternative semantic approach to in situ *wh*-phrases inside any kind of islands in English and German.

Before we close this section, let us examine Chinese, which is very interesting in terms of IE and *wh*-islands. First, Chinese shows IE as follows:

(38) a. *<u>Shi</u>   Zhangsan chi-le [$_{QP}$ **shenme**]?

       SHI Zhangsan eat-Perf. what

       '(Lit.) What was x such that it was Zhangsan who ate x?'

   b. *<u>Lian</u> Zhangsan dou chi-le   [$_{QP}$ **shenme**]?

       even Zhangsan all   eat-Perf.   what

       'What did even Zhangsan eat?'   Yang (2012: 47)

Like German, but unlike Japanese or Sinhala, IE is also observed inside an island as in (39):

(39) *Mary kaisin su [yinwei   <u>lian</u>   Zhangsan dou chi-le

    Mary happy is   because even Zhangsan all   eat-Perf.

    [$_{QP}$ **shenme**]]?

       what

    '(Lit.) Mary is happy because even Zhangsan ate what?'

The ungrammaticality in (39) indicates that (large-scale) QP pied-piping is unavailable in Chinese like English and German; accordingly, (covert) Q^0 must Agree with a *wh*-phrase. However, unlike German or English, a *wh*-phrase inside an island can license *wh*-interrogative C^0 as follows:

(40) Mary kaisin su [yinwei   Zhangsan chi-le   [$_{QP}$ **shenme**]]?

    Mary happy is   because Zhangsan eat-Perf.   what

    '(Lit.) Mary is happy because Zhangsan ate what?'

IE in (38) and (39) suggests that *wh*-phrases there project to QP or FocP and Chinese is not a covert scrambling language. Since QP pied-piping is not an option in Chinese, we expect Foc^0 to head the adjunct clause in (40). However, we have argued that FocP cannot license *wh*-interrogative C^0 in English or German because it does not carry Q features. Suppose it is possible in Chinese.[9] Then we predict that an additional *wh*-phrase is unnecessary in the matrix clause in the case of *wh*-islands in Chinese, which is indeed the case as follows:

(41) ni   xiang-zhidao [$_{CP}$ **shei** mai-le   **shenme**]?
      you   wonder   who bought what
      'Who did you wonder what _ bought _?'
      'What did you wonder who bought _?'

<div align="right">Huang (1981/82: 382, adapted)</div>

Suppose *shei* 'who' projects to FocP and *shenme* 'what' projects to QP. Then the latter is raised to spec of the embedded C via QP movement licensing the embedded *wh*-interrogative C^0. In contrast, *shei* is raised to spec of the embedded CP through focus movement. Since FocP respects surface hierarchy, it takes scope over *shenme*. This generates a set of *wh*-questions such as {what Mary bought, what John bought, what Ken bought, …}. The set, which can be regarded as another focused phrase, can go through focus movement to the matrix C licensing the matrix *wh*-interrogative C^0, which is the same argument as Dayal (1996) although she views the focus movement as QR. Remember FocP can license *wh*-interrogative C^0 in Chinese, so the focus movement of the embedded CP results in the matrix construal of *shei* and the embedded construal of *shenme*.

    The matrix scope of *shenme* is similarly possible when *shei* projects to QP and is raised to spec of the embedded CP whereas *shenme* is interpreted via alternative semantics, the details of which are omitted here. Both *wh*-phrases cannot project to FocP to take the matrix construal unlike Japanese, presumably because Yes/No interrogative C^0 must be overtly indicated in Chinese. In this manner the present account can accommodate IE and *wh*-islands in Chinese.

    In this paper we have examined accounts such as Cable (2010), Kotek (2014) and Kotek and Erlewine (2016) (i.e., CKE), who assume with Beck (2006) that IE arises because an intervener blocks proper interpretation of in-situ *wh*-phrases which only have alternative semantic values. They further argue that in-situ *wh*-phrases which cannot be accessed by C^0, for example, ones in phases such as adjunct islands or complex DP's, do not project to QP and have to be interpreted via alternative semantics, so they are subject to IE. In other words, IE only affects *wh*-phrases which do not project to QP. Such a claim can explain German (and English) nicely because IE is observed inside

and outside islands. However, we have shown that their accounts do not extend to Sinhala or Japanese. Sinhala has an overt Q-particle and the particle appears at the edge of a phase when a *wh*-phrase is embedded in the phase. In this configuration, IE is expected to arise if an intervener in the same phase c-commands a *wh*-phrase according to CKE. However, we have found that IE is unobserved in such a case in Sinhala, and Japanese shows the same result too. Accordingly, we have concluded that Beck's (2006) formulation of IE is untenable; in other words, interveners do not block interpretation of in-situ *wh*-phrases.

What we have found is the following. Most importantly, languages divide into (at least) two groups regarding the derivation of *wh*-phrases inside non-*wh* islands. In a group of Japanese, Sinhala, and Tlingit, a Q-particle, which is Q^0 with a Q feature and designates the restriction of a *wh*-operator, can be separated from a *wh*-phrase, because binding of a *wh*-phrase by Q^0 is sufficient. Consequently, a Q-particle can be base-generated at the edge of a phase in those languages, which implies that *wh*-phrases inside islands or phases do not project to QP in this group. Since QP serves as a big "*wh*-phrase", it alone can license *wh*-interrogative C^0. In contrast, in the other group which includes English, German and Chinese, Q^0 cannot be separated from a *wh*-phrase because the former needs to Agree with the latter according to Cable (2010), which implies that *wh*-phrases inside islands or phases are QP in this group. Moreover, islands which contain *wh*-phrases are not QP in this group, so an additional *wh*-phrase or QP is necessary in the matrix clause. We have also shown that IE is undetected inside islands in Japanese and Sinhala. Accordingly, we have reformulated IE in syntactic terms, which states that ungrammaticality or lack of pair-list readings arises when an intervener c-commands a QP, not a *wh*-phrase. This is why IE is detected inside and outside islands or phases in English, German, and Chinese while it is only observed outside (non-*wh*) islands in Japanese and Sinhala.

Next we have examined why *wh*-phrases inside islands can take the matrix scope (and generate pair-list interpretations in the case of multiple-*wh* questions) in English and German, and argued that a covert Foc^0 selects an island containing *wh*-phrases and an alternative semantic mechanism is

applied to *wh*-phrases. However, contrary to SKE, we have claimed that application of alternative semantics (i.e., pointwise functional application) stops at Foc^0; in other words, the expansion mechanism works only to define the restriction, and the restriction, which is FocP, goes through focus movement to spec of CP. Unlike QP, FocP does not check a Q feature of the matrix C^0, so an additional QP is required in the matrix clause (except Chinese).

We have also shown why FocP allows D-linked *wh*-phrases to violate the Superiority condition and that FocP is necessary to circumvent *wh*-islands with an additional *wh*-phrase in the matrix clause in Japanese and without one in Chinese. FocP respects surface hierarchy, and when a certain quantifier or operator c-commands FocP, IE is observed. However, the kinds of interveners in this configuration are different from those detected when QP is c-commanded by an intervener. Accordingly, we have proposed a semantic IE and this effect is observed when a quantifier or operator which cannot take scope over *wh*-questions (i.e., non-additives in Mayr (2014)) c-commands FocP, which is sensitive to surface hierarchy.

The consequences of the present research is the following. First, a few proposals have been made to account for *wh*-phrases inside islands or phases, such as Reinhart's (1998) choice function, Baker's (1970) binding, and Rooth (1992, 1996) and Beck's (2006) alternative semantics, and the present paper has shown that both binding and alternative semantics are necessary in natural languages. However, they only serve to set the restrictor of a *wh*-operator, and do not set the nuclear scope. If this conclusion is correct, it is strong criticism to Inquisitive Semantics (Ciardelli et al 2013), which claims that a set of propositions is directly derived via alternative semantics, and it can serve as a *wh*-question.

Notes

1   Although sentence *a* is clearly better than *b* or *c*, native speakers of English generally do not think sentence *a* is grammatical.

2   The size of a phase inside DP is different between Kotek and Erlewine (2016) and Cable (2010). Cable (2010), following Embick and Marantz (2008), claims that lexical projections such as NP merge with a functional phase head such as little n^0, so in Q-WH agreement languages such as English, "pied-piping past lexical categories" is disallowed (Cable 2010: 150) and presents the following example to support his claim:

    (i) *I wonder [pictures of whom] John bought?   Cable (2010: 151)

If so, Q^0 must merge with PP, *of whom*, or the *wh*-phrase itself, *whom*, both of which are indeed acceptable as follows:

    (ii)   I wonder [of whom] John bought pictures.

    (iii)   I wonder [whom] John bought pictures of.

    On the other hand, Kotek and Erlewine (2016) argue that *pictures of whom* can be QP implying pied-piping past lexical categories is possible; that is, little n^0 is not a phase head contra Embick and Marantz (2008) and Cable (2010). As for overt pied-piping, Kotek and Erlewine further claim that there is a phonological constraint, which requires *wh*-phrases to be at "the left edge of the clause" (2016: 686). Thus, native speakers prefer (ii) and (iii) to (i). Because of the additional constraint on overt movement of QP, a few options are available in overt pied-piping, whereas because of no such phonological constraint on covert movement of QP, the largest possible QP is always raised covertly. As will be clear, the present account is in favor of Cable (2010). In other words, *which library* and *which president* are QP in (9) and (10) respectively.

3   There are exceptions to this generalization. First, degree questions allow *də* to appear clause-finally. Secondly, *də* can emerge at the end of a *wh*-interrogative clause when the clause is selected by a certain class of predicates. Moreover, it can be at the

end of a clause if it is a Yes/No question. See Kishimoto (2005) and Morita (2017) for analyses of the exceptions.

4   Two ideas have been proposed for not observing an overt Q-particle in Japanese. One is simply to claim that a Q-particle is covert in Japanese as in English and German (Morita 2017). The other is to assume that *ka* is a Q-particle, and it overtly moves to the right edge of a clause (Hagstrom 1998). This paper assumes with the former assumption.

5   As will be discussed immediately below, English also shows a similar effect, but there is one difference between Japanese and English *wh*-islands. In (18)*b*, the embedded *dare* 'who' or *nani* 'what' or both can take the matrix construal, whereas only a *wh*-in-situ, i.e., *what*, can do so in the corresponding English example.

6   The following Tlingit sentence may be an example of IE:

    (i) *<u>L daa sá</u> **aa**   **sáyá**   u<u>x</u>á?

         nothing who Q.Foc he.eats.it

         'Who ate nothing?'   Cable (2010: 27)

According to Cable (2010), *yá* is a focus particle and can sometimes follow the question particle, *sá*. If (i) is an example of IE, it further supports the present claim that interveners affect QP, not *wh*-phrases.

7   For single-list interpretations for in-situ *wh*-phrases, Reinhart's (1998) choice function serves the purpose (Dayal 2002).

8   Shimoyama (2001) instead claims that *wh*-phrases inside islands are uniformly derived through alternative semantics, and *ka* stops further continuation of pointwise functional application. She argues this is why Japanese is sensitive to only *wh*-islands, which always require *ka* at the end of a clause. We are opposed to this idea, because pointwise functional application does not check Q-features of *wh*-interrogative C^0. Accordingly, her idea cannot explain why *wh*-phrases inside non-*wh* islands can license *wh*-interrogative C^0 without an additional *wh*-phrase in the matrix clause in Japanese and Sinhala.

9   One way to implement this idea is to claim that Foc^0 somehow can carry Q feature in Chinese. Another way is simply not to posit any Q feature in C^0 in Chinese. We leave this issue for future research.

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