

'Why' Questions, Presuppositions, and Intervention Effects

ABSTRACT

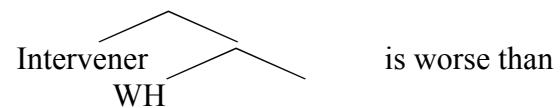
Intervention effects, triggered by the presence of an intervener c-commanding a Wh-phrase, are known to be weaker in WHY questions in Japanese and Korean. The existing analyses of this surprising phenomenon focus on the comparison between WHY questions and other Wh-questions but have not paid attention to the fact that the sentence is still judged more acceptable when an intervener does not c-command WHY. This paper presents a novel account which appeals to a peculiar presuppositional property of WHY questions and their impact on the information structure of Wh-questions. Unlike the previous analyses, the proposal can correctly derive graded acceptability of WHY questions in intervention contexts. It is also shown that the re-emergence of intervention effects with embedded WHY questions also has its root in the presupposition.

1. Why?

The paper is concerned with some unexpected behaviors of WHY questions in the context of what have come to be known as LF intervention effects. Intervention effects appear in wh-interrogative sentences when the Wh-phrases are c-commanded by ‘interveners’, which are often but not always identified as quantificational expressions. Hoji (1985) discovered this phenomenon in Japanese, but subsequent studies showed that many languages other than Japanese also display these effects. Despite all the extensive discussions and debates that followed Hoji’s dissertation, very few consider the matter settled. As the investigations intensify and extend to new languages, some new ‘twists and turns’ are discovered that seem to invalidate the existing analyses. The peculiarity of WHY questions is one of the new challenges that have been discussed in connection with intervention effects in Japanese and Korean. This paper draws mostly on data from Japanese with the understanding that Korean works in a very similar but perhaps not completely identical fashion. Any discrepancies between the two languages will be mentioned when relevant.

Let me begin with a very brief introduction to the intervention phenomenon. The tree structures in (1) summarize its core property.

(1)



b.



The following Japanese sentences exemplify the effects.

- (2) a. ?***Daremo** nani-o yom-ana-katta-no
anyone what-acc read-neg-past-Q
‘What did no one read?’

- b. ?*Ken-sika nani-o yom-ana-katta-no
Ken-except what-acc read-neg-past-Q
‘What did no one but Ken read?’

- c. ??**Daremo-ga** nani-o yon-da-no
everyone-nom what-acc read-past-Q
‘What did everyone read?’

- d. ??**Dareka-ga** nani-o yon-da-no
someone-nom what-acc read-past-Q
‘What did someone read?’

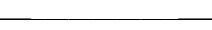
- e. ???[John-**ka** Bill]-ga nani-o yon-da-no?
 John-or Bill-nom what-acc read-past-Q?
 ‘What did John or Bill read?’

- f. ???Ken-**dake**-ga nani-o yon-da-no?
 Ken-only-nom what-acc read-past-Q?
 ‘What did only Ken read?’

This restriction holds only on the surface structure, and once the structural relation is reversed via scrambling of the wh-phrases over the interveners, the sentences become acceptable.

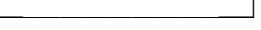
- (3) a. Nani-o₁ **daremo** t₁ yom-ana-katta-no


- b. Nani-o₁ Ken-**sika** t₁ yom-ana-katta-no


- c. Nani-o₁ **daremo**-ga t₁ yon-da-no


- d. Nani-o₁ **dareka**-ga t₁ yon-da-no


- e. Nani-o₁ [John-**ka** Bill]-ga t₁ yon-da-no


- f. Nani-o₁ Ken-**dake**-ga t₁ yon-da-no


The paradigm shown in (2) and (3) gives the impression that intervention is a well-defined phenomenon. Indeed, as far as the contrast between the two sets is concerned, it is very clear. As pointed out in Tomioka (2007b), however, this contrast is perhaps among the very few facts concerning intervention effects that are not debatable. First of all, it is not clear what the criterion for possible interveners is. While most of them are quantificational, not all quantifiers participate in intervention; *subeto-no* NP ‘all (the) NPs’ and *hotondo-no* NP ‘most NPs’, for

instance, do not induce intervention effects.¹ On the other hand, there are some interveners, such as an NP with the focus particle *mo* ‘also’, that are not obviously quantificational. The heterogeneity of interveners makes it difficult to present a clear picture of what intervention effects are about. Second, the reader may have noticed the varying degrees of unacceptability for the examples in (2), ranging from being marginal (??) to being more obviously unacceptable (*?). While it is the case, in both Japanese and Korean, that NPIs are consistently the strongest interveners, the overall situation is rather chaotic. Some skeptics might argue that such a state of affairs is not uncommon. Disputes over grammaticality judgments are frequently found in the literature, and one should not be too discouraged by them. Although there is certain truth in this rather cynical view, I believe that speakers’ subtle judgments about intervention effects can be systematically explained. The judgment issue is further complicated when the intervener is not the matrix subject. In general, intervention effects are significantly weaker with interveners that are not matrix subjects. The following are some examples taken from Tomioka (2007b).

(4) Indirect Object Interveners

- a. (?)Ken-wa **daremo-ni** nani-o age-ta-no (= Tomioka 2007, (32a))
Ken-top everyone-dat what-acc give-past-Q
'What did Ken give to everyone?'
- b. (?)Ken-wa Erika-**ka** Anna-**ni** nani-o mise-ta-no (= (34a))
Ken-top Erika-or Anna-date what-acc show-past-Q
'What did Ken show to Erika or Anna?'

(5) Embedded Subject Interveners

- a. Kimi-wa [CP **daremo-ga** nani-o yon-da-to] omotteiru-no (= (8a))
you-top everyone-nom what-acc read-past-comp think-Q
'What do you think that everyone read?'
- b. Kimi-wa [CP John-**ka** Bill-**ga** nani-o yon-da-to] omotteiru-no (= (9a))
you-top John-or Bill-nom what-acc read-past-comp think-Q
'What do you think that John or Bill read?'

Added to this already disorderly situation is the recent observation by several authors (e.g., Miyagawa 1997, Kuwabara 1998, Lee 2002, Ko 2005, Miyagawa and Endo 2004) that intervention effects are absent in Japanese and Korean when the wh-phrase is causal (*naze* in Japanese and *way* in Korean). The following sentences exemplify this surprising disappearance of intervention effects. In order to make the contrast clearer, I use the NPI interveners, which show the strongest intervention effects.

¹ These expressions are not interveners when they are topic-marked with the particle *wa*. When they appear with the nominative *ga*, on the other hand, they do show (weak) intervention effects. See Section 3 for more discussion.

- (6) a. ?***Daremo** nani-o yom-ana-katta-no (= (1a))
anyone what-acc read-neg-past-Q
‘What did no one read?’
- b. **Daremo** naze ko-nak-atta-no?
anyone why come-neg-past-Q
‘Why did no one come?’
- (7) a. ?***Ken-sika** nani-o yom-ana-katta-no (= (1b))
Ken-except what-acc read-neg-past-Q
‘What did no one but Ken read?’
- b. **Ken-sika** naze ko-nak-atta-no?
Ken-except why come-neg-past-Q
‘Why did no one but Ken come?’

As is the case for all intervention sentences, native speakers’ judgments on these contrasts are not uniform. For instance, a sentence like (7b) is judged unacceptable in Tanaka (1997).² On the other hand, there are a significant number of speakers who find a relevant contrast. In this paper, I take the position that the differences found in (6) and (7) are significant enough to call for an explanation. The issue of variable and unreliable judgments will not be forgotten, however. On the contrary, it will be the crucial point of departure from the existing analyses.

In the following section, I will begin my analysis by giving some reasons why I believe it is misleading to characterize the WHY effect as the cancellation or disappearance of intervention effects. I take the position that these effects are merely weakened in WHY questions, and this seemingly subtle and almost rhetorical difference leads to a dramatic divergence from the existing analyses. In Section 3, I will review Tomioka’s (2007b) information-structural analysis of intervention effects, which I use as the basis for the account presented in this paper. Under this approach, intervention effects arise when interveners fail to belong to the background in the information structural partition. Section 4 presents some peculiar presuppositional characters of WHY questions that are not shared by other Wh-questions. Unlike other Wh-questions, the non-Wh-portion of a WHY question must be presupposed independently of the value of the Wh-phrase. This presuppositional property helps an intervener be confined within the background, which in turn leads to the weakening of intervention effects in WHY questions. The problem of embedding is discussed in Section 5. While embedding in general weakens intervention effects, the situation is the opposite in WHY questions: Intervention effects re-emerge with an embedded WHY taking the matrix scope. Although this puzzle, discovered by Ko (2005), will remain unresolved, I will point out that, contrary to Ko’s generalization, the critical issue is not the syntax of embedding but the level of presupposition discussed in Section 4, which suggests that the account based on presupposition is on the right track. The conclusion of

² Ko (2005) reports that Korean speakers have more stable and uniform judgment about WHY contrasts than Japanese speakers. Miyagawa and Endo (2004) report the result of their informal experiment, in which 116 out of the 122 speakers find a sentence like (6b) acceptable.

the paper contains a brief discussion on the relevance of the current proposal to the general issue of unstable and variable judgments.

2. Disappearance vs. Weakening

All of the existing analyses of the WHY effects take the following steps. First, the contrasts between (6a)/(7a) and (6b)(7b) suggest that a causal wh is immune to intervention effects. Second, the mysterious disappearance of intervention effects should be connected to some other peculiarity (or peculiarities) of WHY questions. Ko (2005), the most recent and probably the most successful analysis to date, is no exception to this general trend. Based on the general guidelines of adverb placement of Cinque (1999), she proposes that a WHY is a CP-modifier that can be projected directly in the Spec of the CP it modifies. This means, in effect, that WHY questions do not have any movement dependencies between the Wh-operators and their traces/copies. The *intervener^why* order is created by scrambling the intervener to a CP adjunction position. (8a) illustrates this process.

- (8) a. Spell Out Structure of WHY
 $[\text{CP} [\text{INTERVENER}]_1 [\text{CP} [\text{WHY}] [\text{IP} \dots t_1 \dots]]]$ \leftarrow No LF raising of WHY

- b. Spell Out Structure of Other WH
 $[\text{CP} [\text{IP} [\text{INTERVENER}] \dots [[\text{WH}] \dots]]] \leftarrow \text{WH raises to Spec CP at LF}$

Since WHY occupies the surface position where it commands its semantic scope, it need not move at LF. On the other hand, other Wh-phrases are not in Spec of CP at Spell-out and must be raised to that position at LF. This would create an intervention configuration. The chain of a Wh-phrase and its trace is intervened by an intervener. Ko's analysis not only explains the contrasts between (6a)/(7a) and (6b)(7b) nicely but also captures the re-emergence of intervention effects with WHY in embedded contexts, an issue to which I will return in Section 5.

Ko's analysis is attractive in many ways. Her syntax of WHY questions seems independently motivated, and it can be successfully implemented for compositional semantics.³

³ The success in semantic interpretation depends on which framework of interrogative semantics is chosen. With Karttunen's (1977) analysis, for instance, a Wh-phrase must have a variable within the scope of the Q-morpheme, which turns a proposition into a set of propositions (the denotation is $\lambda p. \lambda q. p=q$). Although Ko states, 'The CP that 'why' modifies may be interrogative or declarative (Ko 2005, p. 877), Ko's syntax would not work well with Karttunen's semantics: The CAUSE operator that is a part of a causal Wh-phrase must be combined with a proposition but not with a set of propositions. Thus, projecting WHY in Spec of an interrogative CP creates a combinatorial incompatibility. Hamblin (1973) provides the framework most compatible with Ko's syntactic analysis. A Wh-phrase denotes a set, and the composition proceeds via the point-wise functional application. The system avoids the aforementioned type-mismatch, and the presence of a variable is also not required.

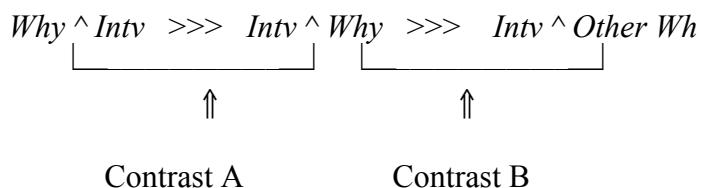
My primary objection to Ko's analysis, or to all the existing analyses for that matter, is the first premise that they all seem to adopt: Intervention effects disappear or are cancelled in WHY questions. I have already mentioned that this premise is not universally endorsed. Although that fact alone may be attributed to dialectal variations, there is one invariant fact. Even for those who find (6b)/(7b) acceptable, the scrambled versions, shown in (9), are still better than (6b)/(7b), as briefly discussed in Ko (2005, footnote 7).⁴ As far as I can tell, the judgments on this contrast seem unanimous.⁵

- (9) a. Naze **daremo** ko-nak-atta-no? (The scrambled version of (3b))
 why anyone come-neg-past-Q
 'Why did no one come?'

b. Naze **Ken-sika** ko-nak-atta-no? (The scrambled version of (4b))
 why Ken-but come-neg-past-Q
 'Why did no one but Ken come?'

In this sense, intervention effects are operative even in WHY questions. The current state of affairs is schematized in (10).

- (10) Better << ----- >> Worse



The existing accounts concentrate on Contrast B and interpret it as the disappearance of intervention effects. However, such a stance leaves Contrast A unaccounted for. Some may argue that Contrast A is a matter of preference, and that focusing on explaining Contrast B is justified because Contrast B is a matter of grammaticality. At the bottom of the acceptability scale, the *intervener^argument Wh* order elicits the strongest sense of unacceptability, which may give the impression that we are dealing with a matter of grammaticality. Since we typically take grammaticality to be binary (grammatical or ungrammatical), we would be reluctant to call the

⁴ I call (9) the ‘scrambled’ versions of (6b)/(7b) although Ko (2005) analyzes them as the base order and the intervention order (i.e., *interverner^why*) as the result of the scrambling of the intervener over WHY. My use of the term ‘scrambled’ does not necessarily mean that I have a major objection to Ko’s analysis. The main reason is to keep (9) parallel to (3).

⁵ Ko notes that the contrast is minimal for her whereas one of the anonymous reviewers finds it significant. My own interview with several native speakers of Japanese and Korean is in accordance with the reviewer's judgment. While some may concur with Ko's assessment, it is important to note that no native speakers of Japanese or Korean find the *intervener*^*why* order better than the scrambled order.

intervener^why order ‘less ungrammatical’ or the *why-intervener* order ‘more grammatical’. Hence, Contrast A has to be a preference issue. I find this tactic objectionable, however. As far as I can tell, there is no foundation, theoretical or experimental, to claim that Contrast A and Contrast B are categorically different. The distinction is made arbitrarily and impressionistically, and all we can rely on is the relative order of acceptability. It is also worth pointing out that Contrast A fits the general pattern of intervention effects: The *Wh^intervener* order is better than the other. Thus, WHY questions are not totally free from the intervention effects. The current situation calls for one of the two remedies.

- (11) a. There are two independent reasons for intervention effects, one of which is not applicable for WHY questions. The other is still causing the intervention effects but not with the same degree of severity as in the other Wh-cases.
- b. There is one reason for intervention effects, but the effects are **weakened** by some special property/properties that WHY questions have.

Although neither choice is intrinsically superior to the other, I will take the approach described in (11b).⁶ One may devise a system along the lines of (11a) by combining a syntactic principle for Contrast B with a pragmatic factor that explains Contrast A. As I mentioned above, however, the categorical distinction between Contrast A and B is not justified. Moreover, (11a) requires a pragmatic factor to derive preference, but preference is often gradient. If the required pragmatic principle itself can encode gradable acceptability, the other principle becomes superfluous. By choosing (11b), one needs to take an approach to intervention effects that can encode gradability. Gradability was one of the main issues that motivated the pragmatic analysis in Tomioka (2007b), which I will review in the following section.

3. Pragmatic Account for Intervention Effects

The contrasts between the examples in (2) and those in (3) have been interpreted to mean that the constraint responsible for the intervention effects targets movements selectively. The fact that scrambling of a Wh over an intervener is acceptable suggests that intervention effects are irrelevant for surface movements. Assuming that in-situ Wh-phrases move at LF to a position where they take scope, one can argue that LF Wh-movement, unlike surface movement, is incapable of passing over those interveners. Many of the existing analyses, such as Hoji (1985),

⁶ This ‘number game’ approach has some precedence. In *the Barriers* (Chomsky 1986), for instance, Chomsky tries to derive the comparative judgment discrepancy between an ECP violation (stronger) and a Subjacency violation (weaker) from the number of barriers being crossed over. Tomioka (2007b) also applies a similar tactic to explain the special status of NPI interveners. In addition to the information structural requirement (see Section 3 of this paper), NPIs are also subject to a phonological phrasing requirement, which states that an NPI and its licenser (i.e., negation) be contained in the same phonological phrase. See Hirotani (2004) for more discussion and some relevant experimental data.

Beck (1997), Tanaka (1997) and others, appeal to this discriminatory nature of the constraint. In Beck's (1997) and Beck and Kim's (1997) analysis, for instance, an intervener creates a quantifier-induced barrier at LF. Consequently, surface movement is allowed to cross over it, but LF movement cannot. The pragmatic account offered in Tomioka (2007b) is perhaps the only exception to this general trend. The analysis is based on the challenging facts concerning the intervention effects mentioned in Section 1. (12) is a (non-exhaustive) list of the challenges we have to overcome.

- (12) a. The judgments on intervention effects are subtle, unstable, and varying across individual speakers.
- b. It is unclear what the definitive criterion that separates potential interveners from non-interveners is. They are mostly quantifiers, but some quantifiers are non-interveners, and there are some non-quantificational interveners.
- c. Intervention effects in Japanese and Korean are often significantly weaker when the interveners are not matrix subjects.

The key observation in Tomioka (2007b) is that all of the potential interveners in Japanese and Korean resist morphological topic marking (i.e., *wa* in Japanese and *(n)un* in Korean) while the non-interveners, whether they are quantificational or referential, can have the topic morphology. Based on this generalization, potential interveners are labeled as A(nti)-T(opic) I(tem)s, and the anti-topicality of interveners leads to the idea of ‘intervention effects as ill-formed information structure’. This process takes the following steps.

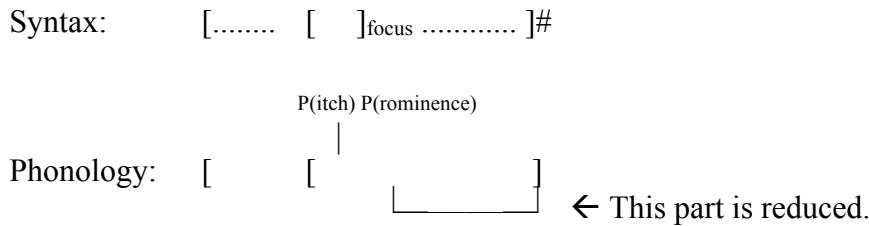
- (13) a. In an ordinary Wh-question, the Wh-phrase is focused, and the rest belongs to the background against which the question is asked. Krifka (2001) presents the most straightforward parallelism, in terms of structured meaning, between the focus-background partition and the information structure of wh-interrogatives.
- b. Interveners cannot have the thematic topic (or ‘speaking-of topic’) marker *wa*. Topics typically belong to the background (cf. Kuno 1973), but the anti-topicality of interveners makes them incapable of being in the background by virtue of the topic-marking.
- c. To ensure their background/presupposed status, the interveners need to be ‘prosodically reduced’.⁷ Scrambling of a Wh creates such a prosodic pattern.

The last step, (13c), is built upon the recurring observation in Japanese phonology/phonology-syntax interface (cf. Pierrehumbert and Beckman 1988, Nagahara 1994, Ishihara 2003 among others) that focusing on some constituent in Japanese results in two prosodic effects: First, a high pitch accent is placed on the focused phrase, and second, it triggers dramatic reduction of the

⁷ This reduction process has been labeled as ‘deaccenting’ (Tancredi 1992), ‘eradication’ (Deguchi and Kitagawa 2002), or compression (Hirotani 2004).

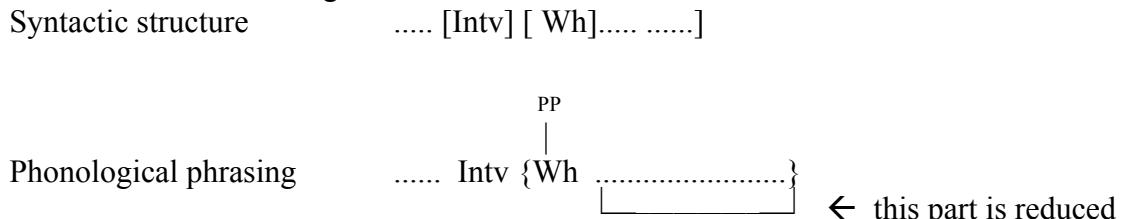
pitch range of the materials that linearly follow the focused material. (14) illustrates the prosodic effects of focusing in Japanese.

(14) Syntax-Phonology Mapping

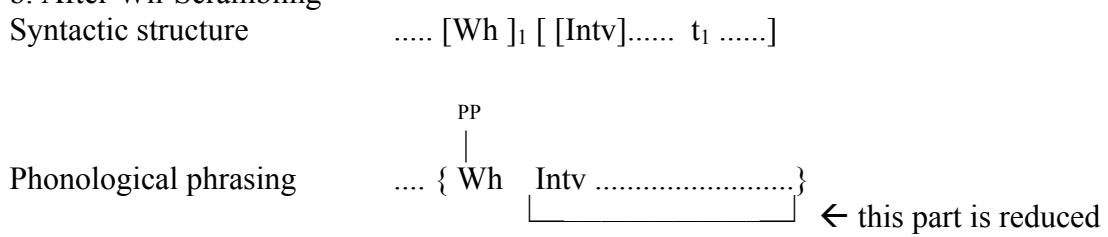


Following the terminology introduced by Ishihara (2003), I call this reduction after a focused phrase ‘post-focus reduction.’ This means that when focused material, such as a Wh-phrase, is scrambled, the material that is ‘jumped over’ by the scrambled phrase is newly placed within the post-focus reduction domain. Thus, scrambling of a wh-phrase over an intervener places the intervener in the area of post-focus reduction. (15) illustrates the prosodic effects of scrambling. (The curly brackets {} in the phonological phrasing indicate major phrase boundaries.)

(15) a. Before Wh-Scrambling



b. After Wh-Scrambling



(15b) shows that, as the Wh-phrase scrambles, the area of post-focus reduction expands to the left and ends up containing the intervener. The prosodic process of reduction is not only phonological but also affects pragmatic interpretations. It has been claimed on many occasions (e.g., Tancredi 1992, Rooth 1992, Fox 2000 among others) that phonological reduction is tied to givenness, presupposition, old information or other closely related information structural concepts. Intervention effects are no exception to this general prosody-pragmatics

correspondence. An intervener, which should not be a (part of) focus, can safely be confined within the background if it is included in the post-focus reduction.

What about anti-topical interveners that come before wh-phrases? Since they are not placed within the post-focus reduction, they are more likely interpreted as a (part of) focus, which would go against the general requirement that non-wh materials should be part of the background. However, not all pre-wh interveners are the same in this regard. It has been noticed that nominative subjects, when compared to topic-marked subjects, show aggressively non-topical (= focal) properties; the exhaustive implicature with an individual-level predicate (Kuroda 1965, Kuno 1973, Heycock 1994) and the obligatory ‘novel’ interpretation (Kuno 1973). These authors also noted, however, that such anti-topical properties do not appear with embedded subjects or with non-subjects such as indirect objects. The idea exploited by Heycock (1994) and Tomioka (2007a) is the notion of competition between the nominative case *ga* and the topic marker *wa*, which can be generalized as follows: A matrix subject with the nominative *ga* is a (part of) focus when it could have been marked with the topic marker *wa*. As it stands, this generalization does not make reference to any prosodic effects. It seems possible, however, to modify it as, ‘A matrix subject with the nominative *ga* is a (part of) focus when it could have been marked with the topic marker *wa*, unless it appears in the post-focus reduction.’ Because of this extra-layer of complexity with matrix subjects, leaving a matrix subject in the non-reduction creates more ill effects on the information structure than leaving other material in the same position. Therefore, matrix subject interveners lead to stronger intervention effects (as we have seen the examples in (2)) than non-subject or embedded subject interveners do (see the examples in (4) and (5)).

In Tomioka’s (2007b) analysis, what goes wrong with the *Intervener^Wh* word order is essentially pragmatic. Intervention effects come about when there is a gap between the information structure required for a Wh-question and its ideal linguistic realization. The analysis is particularly suitable for the situation surrounding intervention where our judgments are gradient. As discussed earlier, intervention effects are weakened in embedded contexts or with non-subject interveners, but native speakers still prefer the scrambled versions (i.e., the *Wh^intervener*) in those environments as well. The strength of intervention effects depends on how (un-)likely a pre-Wh intervener is to be interpreted as a focus. This factor operates independently of post-focus reduction, and it is still true that reduction creates an ideal environment for the background materials to appear in. Combining all the ingredients together, we can derive the ‘ranking’: The *Intervener^Wh* order is better with a non-matrix subject intervener than with a matrix subject intervener but still not as good as the *Wh^intervener* order, in which the prosodic pattern and the pragmatic requirement go hand in hand. As we have seen in the previous section, WHY questions exhibit a similar pattern of graded acceptability, and it seems only natural to extend the pragmatic approach to the WHY phenomenon.

4. Presuppositional Asymmetries in Wh-questions

Under the information structural account of intervention, the improvement in WHY questions should also be attributable to some pragmatic peculiarity of WHY. In this section, I will show that such a pragmatic factor does exist and I will explain how it leads to the weakening of

intervention effects with WHY.

It is well-known that a sentence of the form ‘p, because q’ presupposes the truth of p (cf. Linebarger 1981). This presupposition of a causal statement is illustrated below.

- (16) a. It's not the case that Sue left early because she didn't feel well.
b. Actually she felt perfectly fine. She left because she was bored.
c. #Actually she didn't leave early. She was the last person to leave.
- (17) a. Did Sue leave early because she didn't feel well?
b. No, she was feeling perfectly well. She was just bored.
c. #No, she didn't leave early although she felt ill.

When it falls under the scope of negation, ‘p, because q’ still requires the truth of p. The same is true for yes-no questions. This presuppositional property is inherited by a WHY-question, as pointed out by Lawler (1971).

- (18) Why did Sue leave early?

For (18) to be felicitous, it must be presupposed that Sue left early. In other words, in a WHY-question, the non-WHY portion corresponds to a presupposed proposition. In particular, it is important to note that the presupposition is completely independent of the value of the Wh-phrase. Let us call this type of presupposition a Wh-independent presupposition. The question is whether other Wh-questions also have presuppositions similar to the ones we find in *why*-questions. Consider (19).

- (19) What did Sue buy yesterday?

This question does seem to have a presupposition not too far from the WHY presupposition. Potential candidates for its presupposition are:

- (20) a. Sue did buying yesterday (Wh-independent presupposition)
b. Sue bought something yesterday. (Wh-dependent presupposition)

(20a) is perhaps closer to the WHY presupposition in the sense that the proposition expressed in it does not contain anything that corresponds to a Wh-phrase. (20b) is slightly different. In the place where a Wh-appears, there is explicit existential quantification. Compare this strategy to the WHY presupposition for (18): The presupposed proposition ‘Sue left early’ does not have existential quantification over causing events/propositions. Although the difference between WHY questions and other wh-questions seems trivial, it becomes more pronounced when the subject of the Wh-question is an NP that creates a downward-entailing environment in its matrix. Consider the following.

- (21) What did no one buy?

- (22) a. NOT: No one did buying.
 b. NOT: No one bought anything.
 c. Perhaps: There is something that no one bought.

It is obvious that the Wh-independent presupposition (= (22a)) fails. The question in (21) does not presuppose that no one did buying. With the existential quantification strategy, we now have two options because the subject has semantic scope and can create an ambiguity with respect to the scope of the existential quantifier. Of the two options, the ‘existential-narrow-scope’ option (= (22b)) is practically identical to (22a) and certainly does not capture our intuition about (21). The only remaining possibility is (22c), in which the existential quantification takes scope over the quantificational subject. On the other hand, the WHY presupposition observed above is completely intact even with a downward-entailing subject: (23a) presupposes (23b).

- (23) a. Why did no one leave early?
 b. No one left early.

Thus, the type of presupposition involved in a WHY question is rather different, compared to presuppositions in other Wh-questions. The difference can be made even more evident with the test administered in Groenendijk and Stokhof (1984), who show that the existential presupposition, if it is a presupposition at all, can be cancelled with embedding under the verb *know*.

- (24) If the secretary knows who the CEO met yesterday and the CEO actually didn’t meet anybody yesterday, then, the secretary knows that the CEO didn’t meet anybody.

The presupposition of a WHY question fails the test miserably.⁸

- (25) If Ken knows why Sue left early and Sue actually didn’t leave early, then, ## she knows that Sue didn’t leave early.

This fact is also in accordance with our intuition about negative answers to Wh-questions. To the question *what did Sue buy?*, one can truthfully answer by saying *she bought nothing* without creating ill effects of presupposition failure. In general, the proposition created by existentially binding a wh-variable is not a presupposition but should be considered as an epistemic bias on

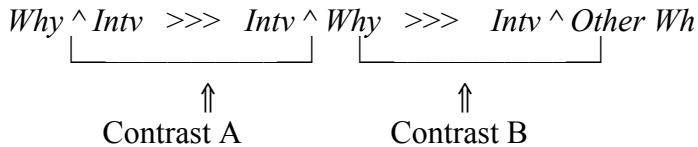
⁸ Of course, we can think of an existential presupposition of a *why* question. For instance, one might say that *why did Sue leave early* presupposes that there is some event/proposition that caused the event/proposition that Sue left early. It can be just as cancelable as the other comparable existential presuppositions.

- (i) If the secretary knows why the CEO retired, and the CEO retired for no particular reason, then the secretary knows that the CEO retired for no particular reason.

the part of the speaker (cf. Han and Romero 2004). When the speaker asks *what did Sue buy?*, she is inclined to believe that Sue bought something. It is nonetheless uncertain that the addressee shares the same belief. Thus, the speaker should not be too shocked to find that her bias turns out to be false. On the other hand, a sentence with a (global) presupposition functions properly in the discourse only when all the conversation participants share the presupposition.

I argue that this difference between a presupposition and an epistemic bias is reflected in the judgment contrast between a WHY question and other Wh-questions. Recall that in my pragmatic analysis, intervention effects arise when interveners fail to be in the background. A position that precedes a Wh is not a part of the post-focus reduction and therefore not an ideal position for an intervener to appear in. We have already observed, however, that there are other factors that influence the information structural partition (e.g., the non-matrix subject effects in (4) and (5)). A WHY presupposition also belongs to this category of ‘other factors’. In a WHY question and only in a WHY question, the proposition that corresponds to the non-Wh portion of the question must be presupposed. Meanwhile, the notion of presupposition is intimately tied to that of background, givenness and old information. Since an intervener in a WHY question is always included in the sentence that denotes a presupposed proposition, it is quite reasonable to suppose that it is regarded as a part of the background even when it appears outside of the post-focus reduction. This explains the significant weakening of intervention effects in WHY questions when they are compared to other Wh-questions (Contrast B in (10), which is repeated below).

- (10) Better <-----> Worse



However, we expect that the scrambled order is still preferred (Contrast A). The post-focus reduction creates a more suitable place for background materials, and when the intervener is confined within the reduced domain, the pragmatic requirement and the prosodic pattern are completely synchronized. All in all, our judgment pattern in (10) is precisely what the current proposal predicts.⁹

⁹ An anonymous reviewer pointed out that a causal Wh-question degrades when *naze* ‘why’ is replaced by *dooyuu riyuu-de* (for what reason).

- (i) ?? Daremo dooyuu riyuu-de ko-nak-atta-no
anyone for what reason come-neg-past-Q
'For what reason did no one come?'

As the reviewer admits, the judgment is subtle, and I am not completely sure whether this judgment is consistent across speakers. One issue is, however, that this sentence is ambiguous: In addition to the meaning that the *naze* ‘why’ version has, it could also mean ‘what reason is such

5. Intervention Effects in Embedded Contexts

Although the presuppositional analysis gives an account that is consistent with our graded judgments, the puzzle of WHY questions has an additional twist; the re-emergence of intervention effects in embedding. Ko (2005) notes that when a causal Wh is in an embedded clause but takes matrix question scope, the sentence is ungrammatical.

- (26) *Erika-wa [daremo naze ko-nakat-ta-to] omotte-iru-no?
Erika-top anyone why come-neg-past-C think-prog-Q
'Why does Erika think that no one came?'

(26) contrasts not only with the root question (e.g., (6b)/(7b)) but also with an embedded question sentence like (27).

- (27) Erika-wa [daremo naze ko-nakat-ta-ka] sitte-iru / Ken-ni tazune-ta
Erika-top anyone why come-neg-past-Q know-prog / Ken-ni ask-past
'Erika knows / asked Ken why no one came.'

(27) shows that the issue is not a matter related simply to the embedding of WHY. The scope of WHY is also key. In Ko's analysis, these contrasts are easily accounted for in structural terms. In a matrix WHY question, the surface position of the Wh can be Spec of CP, whether or not there are any phrases preceding it. The option of direct merge into Spec of CP is the crucial property that separates WHY from the other Whs. When WHY appears in an embedded clause but takes matrix scope, it must undergo LF movement to Spec of the matrix CP. This movement creates an intervention environment where an intervener sits between the moved WHY and its trace. Of course, no ill effects are expected for an embedded WHY with embedded scope. The surface position and its scope position coincide, so WHY is directly projected in the Spec of the embedded CP. There is no LF movement, and no intervention effects.

Although Ko's analysis is very effective, the presuppositional account can say a thing or two about the embedding effects. First of all, one noticeable difference between (26) and the grammatical matrix cases (e.g., (6b)/(7b)) is the levels at which the presuppositions hold. Because of the presence of the attitude verb *think*, the proposition that no one came is local (i.e., Erika believes that no one came) in (26). Of course, the level of presupposition alone would not be enough since the presupposition is also local in the grammatical example (27). With the verb

that no one came for that reason?' This interpretation, while possible, requires a very specific, and perhaps not so easily imaginable context wherein the speaker assumes that there are different reasons for people to have come, but also some reason for which no one came. While it is not clear whether the availability of this extra reading affects our judgment, it certainly makes a simple comparison between the two versions much more difficult than one would expect.

ask, the presupposition is local whereas the factive attitude verb *know* promotes the presupposition to the global level. Either way, the sentence is grammatical with indirect question scope. However, once we look at the correlation between the level of presupposition and the scope of WHY, Ko's generalization can be reformulated as follows:

- (28) Let p be the ‘argument’ proposition of a WHY question. Then, the following generalization holds in intervention contexts¹⁰: The level at which p is presupposed is at least as high as the level at which WHY takes its scope.

Presupposition Level	Scope of <i>why</i>	Example
Global (Matrix)	Matrix	(6b)/(7b) ^{OK}
Local (Embedded)	Matrix	(26) *
Local (Embedded)	Embedded	(27) with <i>ask</i> ^{OK}
Global (Matrix)	Embedded	(27) with <i>know</i> ^{OK}

I must confess that I do not fully understand why this generalization holds. It is something that I will have to leave for another occasion. The generalization is merely descriptive and does not explain the embedding puzzle, not nearly as neatly as Ko's analysis. I nonetheless believe that (28) is at least the correct characterization of the phenomenon, and there are indeed some facts that are completely unexpected under Ko's analysis.

Although non-factive attitude verbs generally do not let the embedded presuppositions go through and become global, there are some discourse contexts in which such a promotion of the presupposition is highly encouraged. Consider (29).

- (29) (?)pro [daremo naze ko-nakat-ta-to] omou?
 pro anyone why come-neg-past-C think-prof-Q
 ‘Why do you think that no one came?’

In (29), the unpronounced subject is understood to be the second-person (the hearer), and the sentence is much more acceptable than (26), in which the matrix subject is a third-person. Notice that, although (29) takes the form of embedding, its discourse function is practically identical to the root version *why did no one come?* The only difference between (29) and its root counterpart is once again the speaker's bias. With the root option, the speaker is inclined to believe that the hearer knows the answer. With the embedding under *think*, the speaker is likely to be assuming that the hearer does not know the answer for sure but has some opinion of the answer. Despite the difference in the epistemic bias, both questions presuppose that no one left. The promotion of the presupposition is playing a role in improving the sentence.

Another context in which the embedded presupposition can be lifted up is the contrastive topic construction (cf. Hara 2006).

¹⁰ The generalization does not apply in non-intervention contexts. In other words, without an intervener, the embedded WHY can take matrix scope even with an attitude verb. A sentence also improves when the order of the intervener and WHY is reversed.

- (30) (Jaa) ERIKA-wa [daremo naze omotte-iru-no?
 Then ERIKA-Cont anyone why think-prof-Q
 'Why does ERIKA think that no one came?'

Let us think about the kind of situation in which a question like (30) can be posed. Imagine that we are listing to people's views on possible reasons for the complete lack of attendance at some event. Jim thinks no one came because the invitations weren't sent, and Ken thinks that everyone stayed home to watch an important football game. Now we want to know what Erika thinks. (30) can be uttered in such a situation. Note, however, that this discourse context would not make sense unless all the conversation participants believe that no one came. In other words, the use of a contrastive topic in (30) facilitates the promotion of the proposition that no one came to the global presupposition. (30) has the disadvantage of having a rather long sequence of reduced material (from *daremo* 'anyone' to the matrix verb *omotteiru* 'think'). Since Japanese employs null anaphora strategies robustly, a sentence with such a long reduced sequence is felt to be rather unnatural. Once the unnaturalness associated with long reduction is overcome, however, the sentence is more or less acceptable.

It is obvious that a structural account, such as Ko's, would not predict any improvement in sentences like (29) or (30). They have embedded structure, thus they are not supposed to behave differently from the ungrammatical (26). The presuppositional approach can, on the other hand, provide enough flexibility to accommodate the otherwise unexpected enhancement of acceptability. As I mentioned above, the origin of the presupposition-scope correspondence in WHY questions is still unclear. I would like to point out, however, that the generalization in (28) also seems relevant, somewhat surprisingly, to WHY questions in English. Notice that a causal Wh can move out of an embedded clause selected by an attitude verb like *think*. For instance, (31) is ambiguous with respect to the scope of the Wh-phrase.

- (31) Why does Maria think that Jose came?
 Possible: Which p, p caused Maria to think that Jose came?
 Possible: Which p, Maria thinks that p caused Jose to come?

Interestingly, when the embedded subject is *no one*, the embedded reading becomes noticeably harder.

- (32) a. Why does Maria think that no one came?
 b. Prominent: Which p, p causes Maria to think that no one came?
 c. Hard: Which p, Maria thinks that p caused no one to come?

According to the native speakers I consulted, it is not impossible to get the 'cause-for-the-embedded-clause' reading, but the other reading is more salient. This is reminiscent of (but perhaps not quite identical to) the unacceptable Japanese sentence (26). Even more surprising is the improvement effect. The tricks I used to improve the Japanese WHY questions seem to work for English as well.

- (33) a. Why do you think that no one came?
 b. OK: Which p, p causes you to think that no one came?
 c. OK: Which p, you think that p caused no one to come?

- (34) a. ... and why does MARIA think that no one came?
 b. OK(?): Which p, p causes Maria to think that no one came?
 c. OK: Which p, Maria thinks that p caused no one to come?

With the second person subject, both readings are readily available. (34) can be used in the same discourse context as the one described above, and in such a situation, the ‘cause-for-the-embedded-clause’ is indeed the more salient reading. I cannot offer any conclusive answer to this puzzle, but it is quite revealing that the overt movement of WHY in English is also sensitive to levels of the presupposition.

Ko’s discovery of the embedding effect adds more complexity to the already complex phenomena of intervention. It turns out, however, that the embedding effect itself is multi-layered in such a way that only the current proposal, which is based on presuppositions, can correctly characterize it.

6. CONCLUSION

Much of the success of generative linguistics has come as the result of a ‘survival of the fittest’ approach. Even though some of the most recent frameworks, such as Economy-based syntax and Constraint-based phonology, have some components that are comparative, their main objective is to choose one winner – only the superlative derivation/structure survives. The complexity and subtlety of intervention effects shows that this familiar methodology is a little too cold-blooded. With the intervention phenomenon, we encounter, more often than not, a situation where A is better than B but still not as good as C. Although disagreement in grammaticality judgments is no news to many of us, what intrigues me about intervention is the systematic pattern of our judgments. We may debate endlessly whether a given sentence should be judged as ungrammatical, marginal, or merely unnatural, but our judgments are fairly clear and consistent when a given *pair* of sentences is put to the test. The *Wh^{intervener}* order is better than the opposite order across the board. A matrix subject intervener is worse than a non-subject intervener, and an NPI intervener is stronger than others. The main topic of this paper is no exception: A WHY question is better than a non-WHY question, but still the *why^{intervener}* order is preferred to the other order.

In a situation like this, it would be counter-productive to insist on having absolute judgments, and we may as well accept the comparatively varying judgments as such and try to explain what is consistent in the seemingly chaotic data. The information structural account advocated in this paper is particularly useful to navigate the judgment patterns in the intervention phenomenon. Notice that the key pragmatic notions themselves do not need to be comparative or gradable. If something is a focus or belongs to the background, that is all we need to know. It is not necessary at all to appeal to such notions as being ‘less focused’ or ‘more like background’. Intervention effects come about when there is a gap between the information structural partition

of a Wh-question and the ideal linguistic realization of it. This gap is at the heart of our gradient judgments. When the gap is relatively narrow, the sentence is often regarded as unnatural, but many speakers may label it as essentially grammatical. The wider the gap becomes, the less acceptable the sentence is felt to be, and at the end point of the gap expansion, we have something akin to an ungrammatical sentence. Such a label, however, does not have much substance when there are middle points for which no fitting labels are found.

I still believe that there are many phenomena that are most effectively explained by the familiar ‘survival of the fittest’ strategy. At the same time, we must admit, and shouldn’t feel any shame in doing so, that the same strategy doesn’t work in every case. The intervention phenomenon is one of those which escape the net of the traditional method, and the information structural analysis captures it quite nicely.

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REFERENCE

- Beck, Sigrid. 1996. Quantified structures as barriers for LF movement. *Natural Language Semantics* 4, 1-56.
- Beck, Sigrid. 2006. Intervention effects follow from focus interpretation. *Natural Language Semantics* 14, 1-56.
- Beck, Sigrid and Shin-Sook Kim. 1997. On Wh- and operator-scope in Korean. *Journal of East Asian Linguistics* 6, 339-384.
- Cinque, Guglielmo. 1999. Adverbs and Functional Heads. Oxford University Press, Oxford, UK.
- Deguchi, Masanori and Yoshihisa Kitagawa. 2002. Prosody and wh-questions. In: Hirotani, M. (ed.) *The Proceedings of NELS 32*, GLSA, University of Massachusetts at Amherst.
- Fox, Danny. 2000. Economy and Semantic Interpretation, Cambridge: MIT Press.
- Hagstrom, Paul. 1998. Decomposing Questions. Doctoral dissertation, MIT.
- Han, Chung-hye, and Maribel Romero. 2004. On negative yes/no questions. *Linguistics and Philosophy* 27: 609-658.
- Hara, Yurie. 2006. Japanese Discourse Items at Interface. Doctoral dissertation, University of Delaware.
- Heycock, Caroline. Focus projection in Japanese. In M. Gonzalez (ed.) *Proceedings NELS 24*, GLSA, University of Massachusetts at Amherst. 157-171.
- Hirotani, Masako. 2004. Prosody and LF: Processing Japanese Wh-questions. Doctoral dissertation, University of Massachusetts at Amherst.
- Hoji, Hajime 1985. Logical Form Constraints and Configurational Structures in Japanese. Doctoral dissertation, University of Washington.
- Ishihara, Shinichiro. 2002. Invisible but audible wh-scope marking: Wh-constructions and deaccenting in Japanese. In: Mikkelsen, L., and C. Potts (eds.) *The Proceedings of WCCFL 21*, Cascadilla Press, Somerville, MA, pp.180-193.
- Ishihara, Shinichiro. 2003. Intonation and Interface Conditions, Doctoral Dissertation, MIT.
- Kim, Shin-sook. 2005. Focus intervention effects in questions. Manuscript presented at Theoretical East Asian Languages 3, Harvard University.
- Kim, Soowon. 1991: Chain scope and quantification structure. Doctoral dissertation, Brandeis University.
- Ko, Hee-jeong. 2005. Syntax of wh-in-situ: Merge into [Spec, CP] in the overt syntax. *Natural Language and Linguistic Theory* 23, 867-916.
- Krifka, Manfred. 1992. Focus, quantification, and dynamic interpretation: The case of focus sensitive particles. In: K. Bimbó & A. Máté, (eds.), *Proceedings of the Fourth Symposium on Logic and Language*. Aron Publishers, Budapest, pp.31-60.
- Krifka, Manfred. 2001. For a structured meaning account of questions and answers. In: Fery, C. and W. Sternefeld (eds.), *Audiatur Vox Sapientiae. A Festschrift for Arnim von Stechow*, Akademie Verlag (= *Studia Grammatica* 52), Berlin, pp.287-319.
- Kuno, Susumu 1973. The Structure of the Japanese Language. MIT Press, Cambridge, MA

- Kuwabara, Kazuki. 1998. Overt wh-movement and scope fixing scrambling: A preliminary study. In: Inoue, Kazuko (ed.) Report (2) Researching and Verifying an Advanced Theory of Human Language, 115-127.
- Lawler, J., 1971b, "any Questions?", in *Papers from the 7th Regional Meeting, Chicago Linguistic Society* (CLS 7).
- Lee, Mina. 2002. Why is 'why' different? Manuscript presented at Chicago Linguistics Society 38.
- Miyagawa, Shigeru. 1997. On the nature of wh-scope. Manuscript, MIT.
- Miyagawa, Shigeru, and Yoshio Endo. 2004. Intervention effects are not pragmatic. Manuscript, MIT and Yokohama National University.
- Nagahara, Hiroyuki. 1994. Phonological Phrasing in Japanese. Doctoral dissertation, UCLA.
- Pierrehumbert, Janet, and Mary Beckman. 1988. Japanese Tone Structure, MIT Press, Cambridge, MA.
- Tanaka, Hidekazu 1997. Invisible movement of sika-nai and the linear crossing constraint. *Journal of East Asian Linguistics* 6, 143-188.
- Tancredi, Chris. 1992. Deletion, deaccenting, and presupposition. Doctoral Dissertation, MIT.
- Tomioka, Satoshi. 2007a: 'The Japanese existential possession: A case study of pragmatic disambiguation,' *Lingua*, 117: 881-902.
- Tomioka, Satoshi. 2007b. Pragmatics of LF intervention effects: Wh-interrogatives in Japanese and Korean, *Journal of Pragmatics*, 39: 1570-1590.