Implicature Unsuspendable: Japanese Contrastive *wa*

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1 Introduction

The traditional view of pragmatics maintains that implicatures are computed after the whole semantic computation is done. Recently, however, the Syntax-Semantics-Pragmatics interfaces have gained more attention. In other words, linguists have started to consider the possibility of a new approach, i.e. the pragmatic system is not totally independent of the computation of syntax and semantics. Especially, Chierchia (2001) proposed that the derivation of scalar implicature starts at the level of a unit smaller than a sentence just like syntactic and semantic composition. The distribution and the function of *wa* also supports the idea of the compositionality of implicature computation.

In Hara (To appear), it is shown that Japanese Contrastive Topics always induce scalar implicatures as shown in (1). For example, in (1-b), where the subject *John* is marked by Contrastive *-wa*, the speaker asserts that he or she knows that John came but the speaker also implicates that it is possible that other people might not have come. On the other hand in (1-c), where the subject *John* is marked by Nominative Case *-ga*, the assertion is understood as a complete answer without an implicature.

(1) a. Dare-ga paatii-ni ki-ta-ka?
who-Nom party-Dat come-Past-QP
'Who came to the party?'

b. JOHN-**wa** ki-ta
John-Top come-Past
'As for John, he came.'
(Implicature: It is possible that it is not the case that John and Mary came.
≈I don't know about others.)

c. JOHN-ga ki-ta.
John-Nom come-Past
'John came.' (complete answer)

Scalar implicatures are usually categorized under conversational implicatures. In this paper, however, I will argue that implicatures induced by *wa* are conventional implicatures.[1]

In the first section, I will briefly review Hara (To appear) and provide how implicatures are computed. Secondly, I will present three arguments to show that the *wa*-induced implicatures are conventional implicatures based on the compositionality theory of scalar implicature computation in Chierchia (2001). In addition, I will also introduce an island-sensitive movement of an implicature operator that accounts for the (un)availability of global implicatures within different types of clauses.

2 Contrastive Topics and Implicatures

The propositions that cannot induce implicatures are not compatible with Contrastive Topics. For example, the proposition 'Some people came.' is marked by Contrastive *wa* and induce implicature as in (2-a). On the other hand, the proposition 'Everyone came' cannot be marked by *wa*, since it cannot induce implicatures.

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(2) a. nanninka-wa ki-ta
Some-people-CTop come–Past
Some people came.
(Implicature: It is possible that it is not the case that everyone came.)
b. #Minna-**wa** kita.
Everyone-CTop came
(no implicature is possible)

Here is a brief sketch of the explanation. The asserted proposition 'Everyone came' is the strongest (most informative) among the alternatives ('Some people came', 'Most people came' etc.). Therefore, there is no room to implicate and hence, the proposition is not compatible with Contrastive *wa*.

In the following section, I will give a formal mechanism for computing implicatures

2.1 Presuppositional Requirement

In Hara (To appear), I claimed that Contrastive Topics always induce scalar implicatures that express the uncertainty of the alternatives as defined in (3). I employed the mechanism developed by Sauerland (2001) to compute implicatures and proposed that if a sentence contains a CTopic, it presupposes a particular set of scalar alternatives. A scalar alternative becomes an implicature 'only if the scalar alternative is stronger than the assertion.' In our case, since CTopic-marked sentences always induce implicatures, they must have a scalar alternative stronger than the assertion in order to be interpreted properly. In other words, as in (3-b), there must be a scalar alternative that entails but is not entailed by the original assertion. If the presupposition is satisfied, Contrastive implicates that the negation of the stronger alternative is possible ((3-c)).

(3) CONTRASTIVE(<B, T>)
a. asserts: B(T)
b. presupposes: $\exists$ T′[T′ $\in$ ALT_C(T) & B(T′) entails B(T) & B(T) doesn't entail B(T′)]
c. implicates: $\forall$ T'[T'$\in$ ALT_C(T) & B(T') entails B(T) & B(T) doesn't entail B(T')] $\rightarrow$ *Poss*($\neg$B(T'))]

To illustrate, let us see how (2-a) induces its implicature.

(2-a) nanninka-wa ki-ta
Some-people-CTop come–Past
Some people came.
(Implicature: It's possible that not everyone came.)

The asserted proposition $\exists x$[[person(x)][come(x)]] has a stronger scalar alternative $\forall$(x) [[person(x)][came(x)]]. $\forall$(x)[[person(x)][came(x)]] entails $\exists x$[[person(x)][come(x)]] but not the other way around. Therefore, the asserted proposition is compatible with *-wa* and induce an implicature 'It is possible that it is not the case that everyone came.'

(4) a. $\exists x$[[person(x)][come(x)]] (=B(T))
b. Stronger Scalar Alternative: $\forall$(x)[[person(x)][came(x)]] (=B(T'))
c. B(T') entails B(T).
d. B(T) does not entail B(T').
e. Implicature:
Poss ($\neg\forall$(x)[[person(x)][came(x)]])
(=$\neg$B(T'))

On the other hand, (12) does not induce implicatures.

(12) #Minna-**wa** kita.
Everyone-CTop came
(no implicature is possible)

The asserted proposition $\forall(x)$[[person(x)][came(x)]]. $\forall(x)$[[person(x)][came(x)]] does not have a stronger scalar alternative. None of its scalar alternatives ($\exists x$ [person(x)][come(x)], few(x) [[person(x)][came(x)]], most(x)[[person(x)][came(x)]], more-than-half(x)[[person(x)][came(x)]] etc.) entails the original assertion. Since it causes the presupposition failure, therefore, the asserted proposition is not compatible with *-wa*.[2]

(5) a. $\forall(x)$[[person(x)][came(x)]] (=B(T))
b. Scalar Alternative: $\exists x$ [person(x)][come(x)] (=B(T'))
c. B(T') does not entail B(T).
d. B(T) entails B(T').
e. No implicature

In summary, Contrastive Topics always induce scalar implicatures and this property is pronounced as a presuppositional requirement on the proposition that *-wa* takes.

3 Conventional Scalar Implicature

In the previous section, I have shown that a Contrastive Topic presupposes a particular set of scalar alternatives. If the presupposition is satisfied, the sentence elicits implicatures. In this section, I present three arguments that show that *wa*-induced implicatures are conventional. In particular, the final argument is based on the compositionality of the scalar implicature computation Chierchia (2001). This analysis is applicable to other languages that have Contrastive Topic marking, like Korean.

In Grice (1975), implicatures are divided into two categories: conversational and conventional; and scalar implicature is traditionally categorized under conversational implicatures. Conversational implicatures are interpretations calculated from the semantic content of the proposition. Conventional implicatures are due to a particular lexical item. In this paper, I claim that the implicature that arises with *wa* is conventional even though it is computed through scalar alternatives.

3.1 Detachability and Non-Cancellability

First, Grice (1975) says that conventional implicatures are detachable whereas conversational ones are not. For instance, uttering (6-a) in a context where it is clearly false induces an ironic interpretation (6-b) due to its conversational implicature observing the Grician maxims.[3]

(6) a. John's a genius.
b. John is an idiot. Levinson (1983)

The same ironic interpretation arises when we replace 'genius' with its synonyms.

(7) a. John's a mental prodigy.

[2]Some readers might notice that this analysis is very similar to Büring's 1997 analysis of German Topic-Focus contour. For a comparison with Büring (1997), see Hara (2004a)

[3]The following is the general pattern for obtaining a conversational implicature:

(i) a. S has said that p
b. there's no reason to think S is not observing the maxims, or at least the co-operative principle
c. in order for S to say that p and be indeed observing the maxims or the co-operative principle, S must think that q
d. S must know that it is mutual knowledge that q must be supposed if S is to be taken to be co-operating
e. S has done nothing to stop me, the addressee, thinking that q
f. therefore S intends me to think that q, and in saying that p has implicated q.

b. John's an exceptionally clever human being.
c. John's an enormous intellect.
d. John's a big brain. Levinson (1983)

Since the same interpretation arises as long as the same semantic content is obtained, conversational implicatures are non-detachable. Grice (1975) reasons that "[conversational] implicature is attached to what is said, not to linguistic form" (Levinson, 1983). Conversational implicatures are calculated based on the truth-conditional content according to the principles of Pragmatics. Therefore, as long as the sentence has the same truth-conditional content, the same implicature arises even if some lexical items are changed.

On the other hand, the conventional implicature induced by 'but' is detachable, i.e., it can be lost when we replace 'but' with 'and', which has the same truth-conditional meaning (a conjunction operator $\wedge$).

(8) a. She is from Brooklyn but she is nice.
(Conventional Implicature: There is a contrast between two conjuncts. (People from Brooklyn are usually not nice.))
b. She is from Brooklyn and she is nice.

Deictic items also induce conventional implicature. For example, in French when *vous* is used to refer to a single addressee as in (9-a), it conventionally conveys that there is a social distance between the speaker and the addressee. When *tu* is used as in (9-b), the sentence conveys the same truth condition but it does not indicate the same social relationship.

(9) a. Vous êtes le professeur
b. Tu es le professeur Levinson (1983)

Now, let us turn to the implicature induced by *wa*. The implicature with *wa* is detachable since it depends on the particular lexical item *wa*. For example, if we replace *wa* with *ga* as in (1-c), the implicature of the uncertainty is lost even though (1-c) has the same truth-conditions as (1-b).

(1) a. Dare-ga paatii-ni ki-ta-ka?
who-Nom party-Dat come-Past-QP
'Who came to the party?'
b. JOHN-**wa** ki-ta
John-Top come-Past
'As for John, he came.'
(Implicature: It is possible that it is not the case that John and Mary came.
≈I don't know about others.)
c. JOHN-ga ki-ta.
John-Nom come-Past
'John came.' (complete answer)

Therefore, the *wa*-induced implicatures are more like conventional implicatures than they are like conversational ones.

Second, the implicature with *wa* is non-cancellable. Conversational implicatures are known to be cancellable (or defeasible), as shown below:

(10) a. Many people came.
(Conversational implicature: Not everyone came.)
b. Many people came. In fact, everyone came.

As stated above, Grice (1975) characterizes conversational implicature as inferences calculated from the semantic content of the proposition not attributed to specific lexical items. They are more like inductive inferences than they are like deductive ones because conversational implicatures can be cancelled without causing infelicity.

On the other hand, conventional implicatures are not cancellable since they are tied to a particular linguistic item employed in a sentence, as in (11).

(11) ??The Duke of Norfolk has three mansions, but only one car,
and there is in fact no contrast between these two facts. Levinson (1983)

How about the *wa*-induced implicature? The infelicity of (12) suggests that a *wa*-induced implicature is not cancellable either. If it were, namely if implicature were not necessary, there would be no reason for (12) to be infelicitous.

(12) #Minna-**wa** kita.
Everyone-CTop came (no implicature is possible)

Unlike conversational scalar implicatures, therefore, it seems that the *wa*-implicature is not something merely derived from semantic content by default according to the principles of Pragmatics. Rather, it is generated by a particular lexical item, *wa*.

To sum up this section, I have presented two reasons for categorizing the scalar implicature induced by *wa* as conventional: detachability and non-cancellability. In the next section I will present the third argument; *wa*-implicatures cannot be suspended in Downward Entailing contexts.

3.2 Wa *in a downward-entailing context*

The third reason for the implicature with *wa* to be conventional comes from the fact that the implicature cannot be suspended in a Downward Entailing (DE) Context. It is a well-observed fact that a conversational scalar implicature is suspended in a DE context as in (13-b). (13-a) implicates "He did not read 4", observing the Gricean Principles. If the speaker already knows that John read 4, he or she had said so. Therefore, it it likely true that John did not read 4. In (13-b), however, this implicature must be removed, since the interpretation of (13-b) does not implicate that he will not pass when he reads four.

(13) a. John-ga hon-o 3-satsu yon-da.
John-Nom book-Acc 3-Class read-Past
'John read 3 books.'
(Conversational Scalar Implicature: He did not read 4)
b. John-ga hon-o 3-satsu yom-eba, goukaku-suru.
John-Nom book-Acc 3-Class read-Comp, pass-do
'If John reads 3 books, he will pass.' (He will pass even if he reads 4.)

Chierchia (2001) proposes that scalar implicatures are compositionally computed and the computation of the strong values (the plain meaning plus the implicature) must be subject to the Strength Condition ((14)). The strong value must be more informative than the plain value. In other words, the strong value cannot be entailed by the plain value.

(14) Strength Condition:
The strong value cannot become weaker than the plain value

He then defines two separate application rules for non-DE and DE contexts as in (15). In a DE context, the strong meaning is carried on to the higher computation whereas in a non-DE context, only the plain meaning is carried on.

(15) Strong Application
Suppose $\alpha = [\beta\ \gamma]$, where β is of type <a,b> and γ of type a. Then:
$$[\![[\beta\ \gamma]]\!]^S \begin{cases} [\![\beta]\!]^S([\![\gamma]\!]^S), \text{if } [\![\beta]\!]^S \text{is not DE} \\ [\![\beta]\!]^S([\![\gamma]\!]) \wedge \neg([\![\beta]\!](\gamma^{ALT})), \text{otherwise} \end{cases}$$

This mechanism is proposed for the following reason. A locally computed implicature must be removed in a DE context, otherwise it would yield a weakening of information. Let us go

through how this weakening takes place step by step. First, the truth table of the plain meaning for (13-b) would look like (16). When John read only 2 books, the antecedent of the conditional receives a false value (0). Whenever the antecedent is false, the whole sentence is vacuously true (1).

(16) Plain meaning

	local		global
	$\lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert \geq 3$	pass(j)	$\lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert \geq 3 \rightarrow \mathbf{pass}(j)$
John read 2	0	1	1
John read 2	0	0	1
John read 3	1	1	1
John read 3	1	0	0
John read 4	1	1	1
John read 4	1	0	0

Next, the strong meaning (the plain meaning with an implicature) changes the truth table as in (17). Since the antecedent of the conditional contains an implicature, it has a stricter truth-condition, i.e. receives more 0s. As a consequence, the whole sentence receives more 1s.

(17) Strong meaning

	local		global
	$\lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert \geq 3 \wedge \lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert \ngeq 4$	pass(j)	$[\lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert \geq 3 \wedge \lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert \ngeq 4] \rightarrow \mathbf{pass}(j)$
John read 2	0	1	1
John read 2	0	0	1
John read 3	1	1	1
John read 3	1	0	0
John read 4	0	1	1
John read 4	0	0	1

To sum, in (13-b) if the local conversational implicature $\lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert \neq 4$ were not removed, the strong value of the whole sentence becomes actually weaker than the plain meaning, since the former is entailed by the latter (see the table below; whenever $\lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert = 3 \rightarrow \mathbf{pass}(j)$ is true, $[\lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert = 3 \wedge \lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert \neq 4] \rightarrow \mathbf{pass}(j)$ is true, but not vice versa.).

(18) Weakening

	plain	strong
	$\lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert \geq 3 \rightarrow \mathbf{pass}(j)$	$[\lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert \geq 3 \wedge \lvert x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x) \rvert \ngeq 4] \rightarrow \mathbf{pass}(j)$
John read 2	1	1
John read 2	1	1
John read 3	1	1
John read 3	0	0
John read 4	1	1
John read 4	(0) ←Stronger	(1)

Therefore, in a DE context, only the plain meaning is retained for the subsequent computation. The implicature induced by *wa*, however, cannot be suspended in a DE context. In (19), if the local implicature induced by *wa*, $Poss(|x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x)| \neq 4)$, were a conversational implicature, it would be removed and only the plain meaning would be passed on to the subsequent computation, just as in the case without *wa* described above. If it is conventional, in contrast, it will resist being removed even within a DE context; and thus the sentence violates the Strength Condition and is predicted to be ungrammatical. In fact, (19) is unacceptable; therefore the implicature induced by *wa* must be conventional.[4, 5]

(19) *Moshi John-ga hon-o 3-satsu-**wa** yom-eba, goukaku-suru.
if John-Nom book-Acc 3-Class-Top read-Comp, pass-do
'If John reads [$_{\text{CTop}}$ 3] books, he will pass.'

The equivalent sentence in Korean is also unacceptable.

(20) *Manyak John-i chayk-ul sey-kwon-un ilku-myen, hapkyek-ha-l kes-i-ta.
if John-Nom book-Acc 3-Class-Top read-Comp, pass-do-Future thing-be-Decl
'If John reads [$_{\text{CTop}}$ 3] books, he will pass.' (Korean)

The same unacceptability is observed when *wa* is in the restriction of a Universal Quantifier, which is another DE context.

(21) *Hon-o 3-satsu-**wa** yon-da zen'in-ga goukaku-si-ta.
book-Acc 3-Class-Top read-Past everyone-Nom pass-do-Past
'Everyone who read [$_{\text{CTop}}$ 3] books passed.'

As shown above, the scalar implicature induced by *wa* is not suspendable in a DE context. Therefore, it causes a conflict with the higher computation of conversational implicature since keeping the local scalar implicature yields a weakening, which violates the Strength Condition. This is another piece of evidence that shows that the scalar implicature with *wa* is conventional

[4] One might suggest that topics cannot be embedded within an *if*-clause; therefore (19) is ungrammatical. This analysis makes the wrong prediction for the following sentence since *wa* is within an *if*-clause and the sentence is grammatical.

(i) Moshi Mary-ga John-ga hon-o 3-satsu-**wa** yomu-to shinjir-eba, goukaku-suru.
if John-Nom book-Acc 3-Class-Top read-Comp believe-Comp, pass-do
'If Mary believes that John reads [$_{\text{CTop}}$ 3] books, he will pass.'

Hara (2004c) analyzes this configuration and claims that implicature computation should take place in a larger cycle than Chierchia's, namely at the position where a proposition is combined with an attitude predicate.

[5] *Wa* cannot occur within temporal adjunct clauses such as *when*, *before* and *after* but can occur within a *because*-clause. In Hara (2004b) I use Tenny's 2002 proposal that Japanese *node* 'because' is a head of an Evidential projection. I claim that the evidential argument within the Evidential projection supplies the attitude bearer for the Contrastive Topic (see section 4).

(i) a. #Kinou Mary-wa uchi-ni kita toki, daremo i-nakat-ta.
yesterday Mary-CTop house-dat came when, anyone exist-Neg-Past
'When Mary came to our house, no one was home.'
b. #Kinou Mary-wa uchi-ni kuru mae, daremo i-nakat-ta.
yesterday Mary-CTop house-dat come before, anyone exist-Neg-Past
'Before Mary came to our house, no one was home.'
c. #Kinou Mary-wa uchi-ni kita ato, minna-de shokuji-o shita.
yesterday Mary-CTop house-dat came-after, everyone-with meal-Acc did
'After Mary came to our house, we had meal together.'
d. Kinou Mary-wa uchi-ni kita node, kodomo-ga yorokon-da.
yesterday Mary-CTop house-dat came because, children-Nom happy-Past
'Because Mary came to our house, the children became happy.'

since conversational scalar implicatures are suspended in a DE context. In the next section, I will examine the sentences in (19) and (21) more closely.

3.3 Movement of an Implicature Operator

In order to give a full explanation for why (19) is unacceptable, we need to exclude the possibility of a global computation of the implicature in (19) as well.

Take a look at the conditional sentence without a CTopic in (13-b) again. This sentence as a whole has a conversational implicature, "If John reads only 2 books, he might not pass." The computation is done in the following way. (13-b) is entailed by "If John reads 2 books, he will pass" since whenever the latter is true, the former is true. By Gricean Principles, the negation of the stronger sentence, "It is not the case that if John reads 2 books, he will pass" becomes the conversational scalar implicature.

(22) moshi John-ga hon-o 3-satsu yom-eba, goukaku-suru.
if John-Nom book-Acc 3-Class read-Comp, pass-do
'If John reads 3 books, he will pass.'

Why can't we do the same thing for *wa*? In other words, the proposition $|x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x)| = 3 \rightarrow \mathbf{pass}(j)$ has a stronger scalar alternative, namely $|x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x)| = 2 \rightarrow \mathbf{pass}(j)$. Therefore, $Poss(\neg[|x : \mathbf{read}(j)(x) \wedge \mathbf{book}(x)| = 2 \rightarrow \mathbf{pass}(j)])$ could be an implicature for (19) if the computation of the *wa*-implicature took place globally. In fact, this interpretation is possible when the *wa*-marked phrase is clearly outside the antecedent of the conditional as in (23) and (24-b).

(23) John-ga hon-o 3-satsu-**wa** moshi pro pro yom-eba, goukaku-suru.
John-Nom book-Acc 3-Class-Top if pro pro read-Comp, pass-do
'As for 3 books, if John reads them, he passes.'[6]

(24) a. *moshi pro nihongo-wa dekir-eba, shuushoku-ni yuuri-da.
if pro Japanese-Top capable-Comp job_finding-Dat advantage-Copula
'If you can speak [$_{\text{CTop}}$ Japanese], it is easy to find a job.'
b. nihongo-wa moshi pro dekir-eba, shuushoku-ni yuuri-da.
Japanese-Top if pro capable-Comp job_finding-Dat advantage-Copula
'As for Japanese, if you can speak it, it is easy to find a job.'

Moreover, a global computation of *wa*-implicature *per se* is not impossible. In (25), the *wa*-marked phrase is embedded in a complement clause. The local implicature is impossible since "Everyone comes" does not have a stronger alternative as we have seen in (12). Globally speaking, in contrast, $\neg\mathbf{think}(\forall x\ [\mathbf{person}(x)][\mathbf{come}(x)])$ indeed has a stronger scalar alternative $\neg\mathbf{think}(\exists x[\mathbf{person}(x)][\mathbf{come}(x)])$ and thus it has an implicature, $Poss(\neg\neg\mathbf{think}(\exists x[\mathbf{person}(x)][\mathbf{come}(x)]))$, "I thought some people would come". This *wa*-marked sentence is acceptable; therefore we have to allow the global computation of a *wa*-implicature.

(25) minna-wa kuru-to omowa-nakat-ta.
Everyone-Top come-Comp think-Neg-Past
'I didn't think [$_{\text{CTop}}$ everyone] would come.'

To reconcile this conflict, I suggest an island-sensitive movement of an implicature operator, which is part of the lexical meaning of *wa*. At the base position, *wa* generates scalar alternatives (e.g.{one, some, most, every} in (25)) and the implicature operator, which moves to the clause-initial position, computes the implicature by negating an alternative stronger than the plain meaning ((26)). The crucial point here is that only the operator moves and 'everyone' remains in *situ*, i.e. under the scope of negation. This way, we can compute an implicature globally and

[6] "3 books" here does not have a specific interpretation.

keep the $\neg\forall$ reading at the same time. This movement is blocked if *wa* is inside an island such as an adjunct clause ((27)) and a complex noun phrase ((21)).[7]

(26) [$_{CP}$ Op [$_{NegP}$ [$_{CP}$ [$_{XP}$ t [$_{XP}$ everyone] ^{ALT} -wa] came Comp] think Neg] Past] ((25))

(27) [$_{CP}$ Op [$_{AdjunctP}$ John-Nom book-Acc [$_{XP}$ t [$_{XP}$ 3] ^{ALT} -wa] read if] pro passes] ((19))

One might feel uncomfortable introducing a syntactic operation like movement in order to explain a semantic-pragmatic object like implicature. However, having a *wa*-marked NP which is coindexed with an argument within a conditional is semantically interpretable, as we have seen in (23). Therefore, it is reasonable to think that the unavailability of a global implicature for (19) is not due to semantic constraints but syntactic ones.[8]

Consequently, (19) becomes unacceptable for the following reasons: first, a *wa*-marked sentence must induce an implicature; second, the local computation of implicature yields a weakening; and third, the global computation of implicature is blocked due to the island violation induced by movement of the implicature operator.

4 Concluding Remarks: Future Research and Cross-Linguistic Implications

In this paper, I have shown that scalar implicatures induced by *wa* should be categorized as conventional implicatures. Implicatures by *wa* are detachable, and non-cancellable. Also, they are unsuspendable in DE contexts. Furthermore, I have proposed movement of an implicature operator. This allows us to make correct predictions regarding the possibilities of global implicature computation. This paper crucially depends on Chierchia's (2001) compositionality of the scalar implicature computation and the existence of the syntax-semantics-pragmatics interface. Implicature is not something that is added after all the semantic computation but is computed along with syntactic and semantic composition.

The operator movement analysis of Contrastive Topics pertain to an important question. Where exactly does this operator move? Hara (2004b) addresses this issue and claim that the

[7]This movement could be assimilated to the surface movement of a null operator proposed in Watanabe (1992)

[8]It is a reasonable question whether we observe the island-effect in other island constructions. The following sentences are all grammatical. The relevant question is whether we could have a global implicature for each sentence. Since the judgement is not clear, I will leave this question for the future research.

(i) a. CNPC
John-ga tsugi-no hi 3-nin-wa kuru-to iu shuchoo-o sita.
John-Nom next-Gen day 3-Class-CTop come-Comp say claim-Acc did
'John made a claim that [$_{CTop}$ 3 people] would come next day.'

b. Wh
John-ga 3-tsu-no mondai-wa tok-eru-ka pro wakara-nai.
John-Nom 3-Class-gen problem-CTop solve-can-whether pro know-Neg
'I don't know whether John can solve [$_{CTop}$ 3] problems.'

c. Relative Clause
Mary-wa John-wa katta hon-o yonda.
Mary-Top John-CTop bought book-Acc read
'Mary read the book [$_{CTop}$ John] bought.'

implicature operator adjoins to Evidential projection (Cinque, 1999; Tenny, 2002) in order to find an attitude-bearer for implicatures.

Lastly, it would be very exciting if we could find cross-linguistic evidence for movement or locality condition of other discourse operators. Indeed, some discourse-related items in English and German behave like Japanese *wa*. As mentioned in footnote (i), *wa* cannot occur within temporal clauses such as *after*, *before*, and *when* as well as *if*, while it can occur within a *because*-clause. A similar pattern is observed with respect to the English adverb *obviously*. Tredinnick (2004) points out that sentence (28-a) is ambiguous. One meaning is that Mary is upset because of the fact that John doesn't love her, and the speaker comments that it is obvious that John doesn't love her. The other meaning is that Mary is upset because of the obviousness of John's lack of love for her (she might not care whether John actually loves her or not). If we switch the adjective with the adverb *obviously* as in (28-b), only the former reading, namely the speaker's comment, is available. I propose that this is because *obviously* has to be associated with the speaker's attitude such as Assert function. Along this line, we could speculate that there is a locality condition for this association, or an island-sensitive movement of some operator, for even the speaker's comment interpretation is not available with *obviously* being within an *if*-clause and temporal clauses as in (28-c)-(28-f).

(28) a. Mary is upset because it is obvious that John doesn't love her. (ambiguous)
b. Mary is upset because obviously John doesn't love her. (unambiguous)
c. *Mary will be upset if obviously she fails the exam.
d. *Mary got upset after obviously she failed the exam.
e. *Mary was single before obviously she met John.
f. *Mary got upset when obviously she failed the exam

Similarly, the German discourse particle *ja*, which roughly corresponds to the meaning of *obviously* in English can occur within a *because*-clause but not in an *if*-clause and temporal clauses.[9, 10]

(29) a. Maria ist ärgerlich, weil John ja sie nicht liebt.
Maria is angry, because John JA her not love
'Maria is angry, because John JA doesn't love her.'
b. *Maria wird ärgerlich sein, wenn sie ja die Prüfung nicht besteht.
Maria will angry be, if she JA the exam not pass
'Maria will be angry, if she JA doesn't pass the exam.'
c. *Maria wurde ärgerlich, nachdem sie ja die Prüfung nicht bestanden hatte.
Maria got angry, after she JA the exam not passed have
'Maria is angry, after she JA didn't pass the exam.'
d. *Maria wurde allein, bevor sie ja John getroffen hatte.
Maria was single, before she JA John met have
'Maria was single, before she JA met John.'
e. *Maria wurde ärgerlich, als sie ja die Prüfung nicht bestanden hatte.
Maria was angry, when she JA the exam not passed have
'Maria is angry, when she JA didn't pass the exam.'

Tenny (2002) proposes that Japanese *node* 'because' is a head of an Evidential projection and it introduces two arguments: a proposition and an evidential argument. Then, she accounts for different interpretations of direct experience predicates within a *because*-clause and a *when*-clause, arguing that unlike *node* 'because', *toki* 'when' does not project Evidential Phrase (see Tenny 2002 for details). I claim that this analysis of *because*-clause accounts for the cross-

[9] See Kratzer (1999) for her rough definition of *ja*.
[10] Kratzer (1999) provides the following example:

(i) Als ich (*ja) in Syracuse gewohnt habe, war ich oft in Ithaca
When I JA in Syracuse lived have, was I often in Ithaca

linguistic contrast between *because* and *when*. In *because*-clauses, the implicature operator finds the local Evidential projection which is headed by *node* 'because', and the attitude-bearer variable is saturated by the evidential argument of *because*, which is in turn controlled by the speaker. On the other hand, in *when*-clauses, the operator has to target the matrix Evidential projection, and hence it causes an adjunct island violation.

Although many stipulations contained in this analysis need to be clarified, the constant pattern observed across languages will shed new light on issues concerning syntax-semantics-pragmatics interfaces.

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