Evidentiality of Discourse Items and *Because*-clauses*

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Abstract

There is a parallelism between Contrastive-marking and Evidential-marking with respect to their distribution among adjunct clauses. I take this fact to show that both Contrastive-marking and Evidential-marking express some attitude toward a closed proposition, following Johnston's (1994) analysis that the semantics of temporal and *if*-clauses involve event quantification, while that of *because*-clauses is a relation between two particular events. Furthermore, this association between the implicature and the attitude-holder cannot be established in certain constructions, namely adjunct clauses and relative clauses. Hence, I argue that the computation of Contrastive-marking involves an island-sensitive movement of an operator.

1 Introduction

The Japanese contrastive marker *wa* can appear within a *because*-clause as in (1),[1] while it cannot appear within a temporal clause headed by *toki* 'when' as in (2-a) (and other temporal clauses; see (20) below), and an *if*-clause (2-b).[2,3]

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[1]Later in this paper, it will be shown that the distinction of two types of *because*, transparent and opaque (Kratzer, 1998) is crucial, since only opaque *because* allows embedding of *wa*. See section 6.3 for details.

[2]The same asymmetry is also found in Sawada and Larson (2004).

[3]Kuroda (2005) uses the following example and the Contrastive *wa* within *if* is judged grammatical. According to Kuroda (2005), it implies that "if at least Nomo had been well, Dodgers would have won, even if others had not been" (p.17).

(i) mosi Nomo wa genki dattara, Dodgers ga katta daroo
if well were won would
'if Nomo had been well, Dodgers would have won.' (Kuroda, 2005, p.17)

His judgement and reading cannot be replicated by Japanese speakers I have consulted, and I will put this issue aside.

(1) Itsumo uchi-ni KODOMO-**wa** kuru **node** oyatsu-o
always house-Dat children-Con come because, sweets-Acc
yooi-su-ru.
prepare-do-Present
'Because (at least) children come to our house, I always prepare sweets.'

(2) a. *Itsumo uchi-ni KODOMO-**wa** kuru **toki**, inu-ga
always house-Dat children-Con come when, tea-Acc
hoe-ru.
offer-Present
'When (at least) children come to our house, the dog always barks.'

b. *Moshi John-ga hon-o 3-SATSU-**wa** yom-eba,
if John-Nom book-Acc 3-Class-Con read-Comp,
gookaku-suru.
pass-do
'If John reads (at least) 3 books, he will pass.'

Interestingly, the same asymmetry is found with the post-propositional evidential morpheme, *sooda/soona* which follows a finite (inflected) predicate and indicates that the proposition is asserted based on reported evidence.[4]

(3) a. Kodomo-ga kur-u **soona node**, oyatsu-o
children-Nom come-Pres Evid because, sweets-Acc
yooi-shita.
preparation-di
'Because children are coming (I heard), I prepared sweets.'

b. *Kodomo-ga kuru **soona toki**, oyatsu-o yooi-shita.
children-Nom come Evid when, sweets-Acc preparation-did
'When children are coming (I heard), I prepared sweets.'

c. *Moshi kodomo-ga kuru **soonar-a(ba)**, oyatsu-o
if children-Nom come Evid-Comp, sweets-Acc
yooi-suru.
preparation-do
'If children are coming (I heard), I will prepare sweets.'

This paper investigates this parallelism between *node* 'because' and other adverbial clauses with respect to compatibility with Contrastive and Evidential marking, and accounts for the data in terms of the evidential component of

[4] As the editor has pointed out to me, the post-propositional *sooda/soona* contrasts with the propositional evidential morpheme *sooda/soona*, which follows a bare predicate and translates as 'it seems/appears that...'. The morpheme *sooda/soona* can occur under a *when*-clause and *if*-clause.

(i) a. Kodomo-ga ki soona node, oyatsu-o yooi-shita.
children-Nom come seem because, sweets-Acc prepare-did
'Because it seemed that children would come, I prepared sweets.'

b. Kodomo-ga ki soona toki, oyatsu-o yooi-shita.
children come seem when sweets-Acc prepare-did
'When it seemed that children would come, I prepared sweets.'

c. moshi kodomo-ga ki soonar-a(ba), oyatsu-o yooi-suru.
if children come seem-Comp sweets-Acc prepare-do
'If it seems that children would come, I will prepare sweets.'

because-clauses and discourse items.

The first section gives a brief overview of Hara (2005) and Hara (2006, ch. 2) where it is claimed that the Japanese Contrastive-marker *wa* presupposes the speaker's limited knowledge and induces conventional scalar implicatures. In section 3, I investigate *wa*-marking in embedded clauses and show that *wa*-induced implicatures can be relativized to an attitude-holder other than the speaker. In particular, I demonstrate that the definition of *wa*-marking involves shiftable indexicals in the sense of Schlenker (2003). Section 4 presents in detail the asymmetry sketched above between *because*-clauses on the one hand and *if*-clauses and temporal clauses on the other, with some cross-linguistic data from Japanese, English and German. Section 5 summarizes Johnston's (1994) analysis of the syntactic and semantic differences of various adjunct clauses. Given Johnston's (1994) analysis, in section 6 I explain the asymmetry of *wa*-marking and evidentials found for various adjunct clauses in terms of a type mismatch. Finally, in section 7, I discuss the global computation of *wa*-implicatures in adjunct clauses, and argue for syntactic representations for implicature computation (c.f. Chierchia, 2004).

2 Contrastive-marking

As noted by Kuno (1973), Japanese Contrastive-marking involves a morphological marker *wa* and a prosodic peak in the intonation (indicated by capitals). A sentence with Contrastive-marking is accompanied by a certain implicature as illustrated in (4-b).

(4) a. Among John and Mary, who came to the party?
b. JOHN-wa kita.
John-Con came.
'John came. (Mary didn't come, or I don't know about Mary.)'

In order to capture this intuition, I argued in Hara (2005) and Hara (2006, ch. 2) that the prosodic peak of Contrastive-marking creates a partition of the asserted proposition into B (background) and F (Focus) just like question abstracts in the Structured Meaning Approach (c.f. von Stechow, 1990; Krifka, 2001). The morphological *wa*-marking then introduces the CON operator that takes the structured meaning as its argument and yields a certain interpretation as formulated in (5).

(5) Let w be a world variable, *sp* the speaker, F the focus-marked elements, B the background, R the restriction.
CON(w)(*sp*)(B(F))
a. asserts: B(F)(w)=1
b. presupposes: $\exists F'[[F' \in R]$ & $[B(F') \Rightarrow B(F)]$& $[B(F) \not\Rightarrow B(F')]]$
There exists B(F') which is stronger than B(F)
c. implicates: $\forall F'[[[F' \in R]\&[B(F') \Rightarrow B(F)]\&[B(F) \not\Rightarrow B(F')]]$
$\rightarrow \exists w'[w' \in \mathrm{Dox}_{sp}(w)][B(F')(w') = 0]$
If there exists B(F') which is stronger than B(F), it is possible that B(F') is false.

First, the **assertional** content of the Contrastive-marked sentence is the proposition obtained by applying the Focus-marked element F to the question abstract B (5-a). Second, the Contrastive-marked sentence **presupposes** that there exists a stronger alternative to the asserted proposition (5–b), i.e., there is a scalar alternative that entails but is not entailed by the original assertion.[5] Finally, if the presupposition is met, the sentence with Con **conventionally implicates** that the speaker considers the possibility that the stronger alternative is false (5–c). In other words, by Contrastive-marking, the speaker indicates his/her limitation of knowledge with respect to the question under discussion (e.g. 'Who came to the party?'), i.e., the asserted proposition is his/her maximal knowledge, and as for alternative propositions, the speaker either considers them false or unknown (see Spector, 2003; van Rooij and Schulz, 2004, for the notion of *order of knowledge*).

The interpretation of (4-b) is depicted in (6).

(6) a. B= $\lambda x.\ x$ came. F=John F'= John and Mary
b. assertion: John came.
c. implicates: the speaker considers the possibility that 'John and Mary came' is false.
d. assertion+implicature: the speaker considers the possibility that 'Mary came' is false.

This treatment of Contrastive-marking predicts that if a Contrastive-marked proposition, i.e., B(F), is the strongest among its alternatives, the sentence causes a presupposition failure. This prediction is borne out by the following example. In (7), assuming that the quantificational domain is not empty, the asserted proposition, 'everyone came', is the strongest among its alternatives. Namely, it entails all of its scalar alternatives, 'someone came.' 'most people came.' etc., and none of the alternatives entail it. As a consequence, Contrastive-marking is not compatible with the asserted proposition.

(7) #ZEN'IN-wa kita.
Everyone-Con came
(no implicatures)

Similarly, this analysis of Contrastive-marking makes the correct prediction about the scope inversion fact observed by Büring (1997). If a sentence contains a universal quantifier and negation as in (8), it can only have $\neg\forall$ reading. The $\forall\neg$ reading causes a presupposition failure since it is the strongest proposition among alternatives; hence this reading is not available for (8) (See Hara (2005) and Hara (2006, ch. 2) for a comparison with Büring (1997)).

(8) ZEN'IN-wa ko-nakat-ta
Everyone-Con come-Neg-Past
a. It is not the case that all the people came. ($\neg\forall$)
b. *All the people are such that they didn't come. (*$\forall\neg$)

[5]Logical entailment might not be the ideal tool to determine whether a proposition is stronger than the other. We might appeal to the notion of 'Horn Scale' which is formed by items that are salient and relevant in the context (Horn, 1972; Gamut, 1991). See Hara (2006, ch. 2) for details on this matter.

3 Embedded Contrastive

In this section, I present data that suggest *wa*-induced implicatures can be associated with an attitude-holder other than the speaker. I utilize Schlenker's (2003) notion of 'shiftable indexicals' in order to identify the agent of the implicatures in different contexts.

3.1 Relativized Implicatures

Let us first see what happens to *wa* in an embedded context. Implicature Computation by *wa*-marking interacts with attitude predicates. In (9), *wa* can be associated to an attitude-bearer other than the speaker (i.e. John) since *wa* is embedded within an attitude predicate. Hence, assuming that we only consider Mary and Peter, (9) is ambiguous between a local implicature (the implicature relativized to John) (9-a) and the global implicature (the implicature relativized to the speaker) (9-b).

(9) MARY-**wa** kita-to John-ga shinjite-iru
Mary-Con come-Comp John-Nom believe-Prog
'John believes at least Mary came.' (ambiguous)

a. Local: The speaker knows [John believes Mary came]
Implicature: John doesn't know whether Peter came]

b. Global: The speaker knows [John believes Mary came]
Implicature: The speaker doesn't know [whether John knows that Peter came]

As seen in the previous section, the use of *wa* introduces the operator Con (5). The previous section only looked at cases where the implicature is associated with the speaker. I now claim that if the operator is embedded in an attitude report, the induced implicature can be relativized to the agent of the reported attitude.[6]

To accommodate this intuition, I modify the denotation of Con so that it contains shiftable indexicals in Schlenker's (2003) sense.

3.1.1 Schlenker (2003)

Kaplan (1989) claims that the referent of an indexical is always determined by the context of the actual utterance, which is summarized in the following thesis.

(10) Fixity Thesis (a corollary of Direct Reference):
The semantic value of an indexical is fixed solely by the context of the actual speech act, and cannot be affected by any logical operators.
(Kaplan 1989; restatement by Schlenker 2003)

[6] Van Rooij and Schulz (2004) also modify their framework in order to generate a desired 'local' conversational implicature as observed by Chierchia (2004) and Landman (2000).

(i) John believes that his colleague makes $100 an hour.

a. Local: John believes that his colleague makes not more than $100 an hour.

b. Global: It is not the case that John believes that his colleague makes more than $100 an hour.

For example, in English, the indexical *I* always refers to the actual speaker of the sentence. Consequently, in order to describe the situation in (11), the subject of the reported speech act has to be referred to with the third person pronoun *he*. (11-b) is not an accurate description of the situation in (11), since English *I* can only refer to the actual speaker.

(11) Situation to be reported: John says: 'I am a hero.'

a. English: John_i says that he_i is a hero.
b. English: *John_i says that I_i am a hero. (Schlenker, 2003)

Observing this fact, Kaplan (1989) claims that no natural language has operators that shift the context that determines the value of indexicals. He calls such operators *monsters*.

As a reply to Kaplan's observation, Schlenker (2003) argues that "every attitude verb is a Kaplanian monster" (p.37). In Amharic, for example, the first person indexical shifts in attitude reports to the agent of the reported attitude as depicted in (12) (the actual example in Amharic is given in (13)).

(12) Situation to be reported: John says: 'I am a hero.'
Amharic (lit.): John_i says that I_i am a hero. (Schlenker, 2003)

(13) ǰon ǰegna nə-ññ yɨl -all
John hero be.PRT-1sO 3M.say -AUX.3M
'John says that he is a hero.'
(lit. John_i says that I_i am a hero.) (D. Petros, p.c. to Schlenker)

Schlenker (2003) proposes the following logical structure for the Amharic sentence, in which he treats the semantics of attitude predicates as quantification over contexts. In addition, the embedded clause contains shiftable indexicals, $agent(c_i)$, $time(c_i)$, $world(c_i)$, which are functions from contexts to individuals/times/worlds.

(14) $\text{SAY}_{\langle John, now, actually \rangle}$ c_i be-a-hero ($agent(c_i)$,$time(c_i)$, $world(c_i)$)
(Schlenker, 2003)

In (14), the context of the reported speech act, c_i is bound by the attitude predicate. As a result, in Amharic, *-ññ* is interpreted as $agent(c_i)$, which refers to the speaker in the embedded context, John. English *I* is not shiftable, i.e. it can only pick up the actual context ($c_@$) , and therefore, it can only be interpreted as the speaker in the context of the actual utterance ($[\![\mathbf{I}]\!]^g = agent(c_@)$).

3.1.2 *Wa*-implicatures and Shiftable Indexicals

Following Schlenker's (2003) approach to indexicals, I reformulate my Contrastive operator as follows. It takes shiftable indexicals, $agent(c)$ and $world(c)$, as its arguments.

(15) $\textsc{Con}(w(c))(agent(c))(\text{B(F)})$

a. asserts: B(F)(w)=1
b. presupposes: There exists B(F') which is stronger than B(F)
c. implicates: $\exists w'[w' \in \text{Dox}_{agent(c)}(w(c))][\text{B(F')}(w') = 0]$
In some doxastic worlds accessible to the agent in context c, the stronger alternative is false.

Hence, the induced implicature could be associated with an agent other than the speaker.

Let us go back to the ambiguity of (9) repeated here as (16). Recall that the implicature induced by Contrastive-marking can be relativized to either the agent of the actual utterance (the speaker) or the agent of the reported attitude (John).

(16) MARY-**wa** kita-to John-ga shinjite-iru
Mary-**Con** come-Comp John-nom believe-Prog
'John believes at least Mary came.'

I propose that the operator Con has a syntactic representation and the syntactic location of the operator determines which implicatures are induced. Namely, the syntactic position of the operator determines the attitude-bearer of the induced implicature (the speaker or the subject of the attitude predicate) and the contrasted proposition (matrix or the embedded clause; the size of B).

(17) a. Local: $c_@$ [$_{CP}$ [$_{IP}$ c_i [$_{CP}$ **Con** [$_{XP}$ Mary-wa] came Comp] John-ga believe]]
b. Global: $c_@$ [$_{CP}$ **Con** [$_{IP}$ c_i [$_{CP}$ [$_{XP}$ Mary-wa] came Comp] John-ga believe]]

Let us illustrate how these LF structures generate different implicatures. I assume that background B is a question predicate in the Structured Meaning Approach (von Stechow, 1990) obtained by lambda abstraction using a designated variable (Kratzer, 1991b). The operator Con in (17-a) takes the embedded IP. The context of the embedded speech act picks out 'John' as the agent of knowledge of the proposition (18–b) and generates a local implicature (18-c).

(18) Computation of the local implicature
a. $B_l = \lambda y \in D_e.[\![\textbf{Mary}_1\ \textbf{came}]\!]^{g,h^{1/y}} = \lambda y.\textbf{came}(h^{1/y}(1)) = \lambda y.\textbf{came}(y)$
b. $agent(c_i) = j$
c. $\textsc{Con}(w(c_i))(j)(\textbf{came}(m))$
implicates: In some of the doxastic worlds compatible with **John's belief**, it is not the case that Mary and Peter came.

On the other hand, in (17-b), Con operates over the matrix sentence. As a result, the context of the actual speech act picks out the speaker as the agent/seat/locus of knowledge (19–b) and generates a global implicature (19-c).

(19) Computation of the global implicature
a. $B_g = \lambda y \in D_e.[\![\textbf{John believes Mary}_1\ \textbf{came}]\!]^{g,h^{1/y}} =$
$\lambda y.\textbf{think}(j)(\textbf{came}(h^{1/y}(1))) = \lambda y.\textbf{think}(j)(\textbf{came}(y))$
b. $agent(c_@) = sp$
c. $\textsc{Con}(w(c_@))(sp)(\textbf{think}(j)(\textbf{came}(m)))$
implicates: In some of the doxastic worlds compatible with **the speaker's belief**, it is not the case that John believes that Mary and Peter came.

In summary, the Con Operator sitting at a clause-initial position (either embedded or matrix) determines the agent and locus of *wa*-implicatures.

3.2 Interim Summary

I have shown that the implicature triggered by *wa* can be relativized to different agents in an embedded context following Schlenker's (2003) analysis of attitude predicates as operators that change the context of utterance. I have reformulated my definition of Con so that it contains shiftable indexicals. In the next section, I will present some parallels between Contrastive-marking and Evidentiality, and explore the semantic structure of Japanese evidentials.

4 Data: Parallelism of Asymmetry

Japanese Contrastive *wa* cannot appear within adjunct clauses, i.e., temporal clauses and *if*-clauses. Examples are repeated here in (20) with additional examples of other temporal clauses (*before*-clauses and *after*-clauses).

(20) a. *Itsumo uchi-ni KODOMO-**wa** kuru **toki**, inu-ga
always house-Dat children-Con come when, tea-Acc
hoe-ru.
offer-Present
'When (at least) children come to our house, the dog always barks.'

b. *Moshi John-ga hon-o 3-SATSU-**wa** yom-**eba**,
if John-Nom book-Acc 3-Class-Con read-Comp,
goukaku-suru.
pass-do
'If John reads (at least) 3 books, he will pass.'

c. *Kinou uchi-ni KODOMO-**wa** kuru **mae**, daremo i-nakat-ta.
yesterday house-Dat children-Con come before, anyone exist-Neg-Past
'Before (at least) children came to our house yesterday, no one was home.'

d. *Kinou uchi-ni KODOMO-**wa** kita **ato**, minna-de shokuji-o shita.
yesterday house-Dat children-Con came after everyone-with meal-Acc did
'After (at least) children came to our house, we had meal together.'

However, there seems to be an exception to this observation. *Wa*-marking is available in a *because*-clause, which is also an adjunct clause.[7]

(21) Itsumo uchi-ni KODOMO-**wa** kuru **node** oyatsu-o
always house-Dat children-Con come because, sweets-Acc
yooi-su-ru.
prepare-do-Present
'Because (at least) children come to our house, I always prepare sweets.'

A parallel asymmetry is observed for evidential morphemes: the Japanese evidential morpheme *soona/sooda* indicates that the proposition is uttered based

[7] Japanese has two forms for *because*, *node* and *kara*. In this paper, I use *node* since the literature I cite in this section uses *node*. As far as the semantic data in this section are concerned, these two forms are interchangeable, although there is an inflectional change with an evidential *sooda/soona*: *soona kara* is ungrammatical in standard Japanese (Tokyo dialect), and *sooda kara* is used instead.

on reported evidence (*hearsay* evidence). Like *wa*, the morpheme *soona/sooda* cannot be embedded under temporal clauses or *if*-clauses, as we have seen in (3) repeated here as (22) with additional examples of *before* and *after* temporal clauses.

(22) a. *Kodomo-ga kuru **soona toki**, oyatsu-o yooi-shita.
children-Nom come Evid when, sweets-Acc preparation-did
'When children are coming (I heard), I prepared sweets.'
b. *Moshi kodomo-ga kuru **soonar-a(ba)**, oyatsu-o
if children-Nom come Evid-Comp, sweets-Acc
yooi-suru.
preparation-do
'If children are coming (I heard), I will prepare sweets.'
c. *Kodomo-ga kaeru **soona mae**, watashi-wa kaet-ta
children-Nom go.home Evid before, I-Add go.home-Past
Intended: 'Before children went home (I heard), I went home.'
d. *Kodomo-ga kaetta **soona ato**, watashi-mo kaet-ta
children-Nom went.home Evid after, I-Add go.home-Past
Intended: 'After children went home (I heard), I went home, too.'

In contrast, *soona/sooda* can be embedded under *because*-clauses as we have seen in (3-a) repeated here as (23).

(23) Kodomo-ga kur-u **soona node**, oyatsu-o yooi-shita.
children-Nom come-Pres Evid because, sweets-Acc preparation-di
'Because children are coming (I heard), I prepared sweets.'

This asymmetry between temporal clauses and *if*-clauses on the one hand and *because*-clauses on the other is not limited to Japanese discourse items but is found cross-linguistically. In the following sections, I highlight some data from English and German.

4.1 English

The English adverb *obviously* indicates an expressive attitude toward a proposition, while the adjective *obvious* can be analyzed as either expressive or propositional. Tredinnick (2004) points out that sentence (24-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 (Some native speakers comment that this reading is harder to get than the other). The other meaning is that Mary is upset over 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 (24-b), only the former reading, namely the speaker's comment, is available.

(24) a. Mary is upset because it is obvious that John doesn't love her.
b. Mary is upset because obviously John doesn't love her.

The adverb *obviously* is unambiguously expressive. Namely, it indicates that the speaker has some attitude (and perhaps some indirect evidence) toward the embedded proposition. Remarkably, the adverb *obviously* cannot appear under *when* (25–a) or *if* (25–b), while it can under *because* as illustrated in (24-b).

(25) a. *Mary got upset when obviously she failed the exam
b. *Mary will be upset if obviously she fails the exam.

4.2 German

Similarly to Japanese evidentials and English *obviously*, the German discourse particle *ja*, which indicates the speaker's assumption that the expressed content might be known to the addressee, can occur within a *because*-clause but not in temporal clauses or *if*-clauses.[8]

(26) a. *Maria wurde ärgerlich, als sie die Prüfung ja nicht
Maria was angry, when she the exam JA not
bestanden hatte.
passed have
'Maria was angry, when she JA didn't pass the exam.'
b. *Maria wird ärgerlich sein, wenn sie die Prüfung ja nicht
Maria will angry be, if she the exam JA not
besteht.
pass
'Maria will be angry, if she JA doesn't pass the exam.'

(27) Maria ist ärgerlich, weil John sie ja nicht liebt.
Maria is angry, because John her JA not love
'Maria is angry, because John JA doesn't love her.'

In sum, there exists a cross-linguistic asymmetry regarding embeddability of expressive/discourse morphemes. They can be embedded under *because*, while they cannot be embedded under temporal clauses and *if*-clauses.

In order to provide an explanation for this asymmetry, I examine the difference between temporal clauses and *because* clauses in the subsequent sections.

5 Different Types of Adjuncts

In this section, I review two previous studies on the semantics of adjunct clauses; Johnston (1994) and Kratzer (1991a). Johnston (1994) treats the semantics of temporal adjuncts as quantification over event predicates and the semantics of *because* adjuncts as a relation between propositions. Kratzer (1991a) offers an analysis for *if*-clauses parallel to Johnston's analysis for temporal clauses.

[8]The following is Kratzer's (1999) definition of *ja*.

(i) *Ja* α is appropriate in a context c if the proposition expressed by α in c is a fact of w_c which - for all the speaker knows - might already be known to the addressee. (Kratzer, 1999)

Kratzer (1999) also shows that it can be relativized to an attitude-bearer other than the speaker if it is embedded within an attitude predicate:

(ii) Webster sagte, dass er ja nienmanden gekant habe
Webster said that he JA nobody know had
'Webster said he hadn't know anybody.' (Kratzer, 1999)

5.1 Temporal adjuncts and *Because*: Johnston (1994)

According to Johnston (1994), *when* combines with a property of events and yields a time-interval description. That is, the *when*-clause denotes the time-interval which is the temporal runtime of the **maximal** eventuality denoted by the description in the adjunct clause. This maximality of eventuality is required since atelic eventuality descriptions like *she is at the cafe* can serve as the restrictions on adverbs of quantification as in (28). That is, (28) is interpreted as: "for each maximal interval for which Marcia is at the cafe, there must be an eventuality of Marcia writing a letter whose runtime is contained within that interval."

(28) Marcia always writes a letter when she is at the cafe.

Johnston (1994) defines a maximal eventuality function, MAX(ϕ)(e), as follows: "MAX(ϕ)(e) is true if and only if e meets the description ϕ and there is no other eventuality meeting that description whose runtime contains the runtime of e."

(29) MAX(ϕ)(e)= 1 iff [$\phi(e)$ & $\sim \exists e'.[\phi(e')$ and $(e \neq e')$ & $[f(e) \subseteq f(e')]]]$ (Johnston, 1994)

Since *when* needs to apply the maximal event e to the temporal runtime function f, the argument of *when* must be an event predicate of type $\langle s,t\rangle$, not a proposition of type$t$.

(30) a. when Marcia was at the cafe
b. Marcia was at the cafe $\Rightarrow \lambda e'$.**Marcia-was-at-the-cafe'**(e')
c. when $\Rightarrow \lambda\phi \in D_{\langle s,t\rangle}\lambda i[\exists e.[\text{MAX}(\phi)(e)$ & $i = f(e)]]$
d. when Marcia was at the cafe
$\Rightarrow \lambda i[\exists e.[\text{MAX}(\lambda e'.$**Marcia-was-at-the-cafe'**$(e'))(e)$ & $i = f(e)]]$
(abbreviated as **when'**$_e$(**at'**(Marcia, the cafe, e)); f is the temporal runtime function) (Johnston, 1994)

Following earlier proposals, Johnston (1994) assumes that a temporal clause is always a restriction of an adverb of quantification (AoQ). When the quantification is done by an implicit existential, an episodic reading is derived as in (31-a). On the other hand, (31-b) is an instance of an overt adverb of quantification.

(31) a. Marcia wrote a letter when she was at the cafe. (Episodic)
$\exists$[**when'**$_e$(**at'**(Marcia, the cafe, e_1))][**write'**(Marcia, a letter, e_2)]
b. Marcia always writes a letter when she is at the cafe. (AoQ)
$\forall$[**when'**$_e$(**at'**(Marcia, the cafe, e_1))][**write'**(Marcia, a letter, e_2)]
(Johnston, 1994)

On the other hand, Johnston (1994) claims that *because* takes a proposition and expresses a binary relation between two particular events. In other words, *because* itself does not provide existential quantification, hence the complement of *because* needs to be already existentially closed before *because* applies to it. (For the purpose of exposition, I delay an explanation of the semantics of *because* until section 6.3.)

(32) a. Marty sold his bike because the gears broke.

b. **because'**($\exists e_1$.[**sold'**(Marty, his bike, e_1)],$\exists e_2$.[**break'**(Marty, his bike, e_2)])

Johnston (1994) further argues that a *because*-clause cannot be a restriction of an adverb of quantification since the adverb *always* cannot quantify over propositions, i.e., the sentence in (33-a) does not receive the interpretation in (33-b). The clause under *because* is an existentially closed proposition; hence the *because*-clause itself does not contain a variable.

(33) a. Jane always fixes the car because John wrecks it.
b. #$\forall$[**because'**$\exists e_1$.[**wrecks'**(John, the car, e_1)]][**fix'**(Jane, the car, e_2)]
All (relevant) events caused by John's wrecking the car are ones of Jane's fixing it.

In sum, *because* takes a proposition of type t, whereas *when* necessarily takes an event predicate of type $\langle s, t\rangle$.[9,]

5.2 *If*-clauses: Kratzer (1991)

If-clauses have a structure similar to temporal clauses. According to Kratzer (1991a), an *if*-clause restricts the domain of adverbial quantification. The sentences in (34) have the logical representations in (35).

(34) a. Sometimes, if a man buys a horse, he pays cash for it.
b. Always, if a man buys a horse, he pays cash for it.
c. Most of the time, if a man buys a horse. he pays cash for it. (Kratzer, 1991a)

(35) a. There is an event e [if e is an event that involves a man buying a horse, then e is part of an event in which this man pays cash for it]
b. For all events e [if ... (e) ..., then ... (e) ...]
c. For most events e [if ... (e) ..., then ... (e) ...] (Kratzer, 1991a)

This suggests that the same line of reasoning for temporal clauses applies to *if*-clauses. Clauses under *if* are event predicates $\langle s, t\rangle$ like the ones under *when*.

6 Attitudes and Event Quantification

6.1 The Case of *wa*: The Semantic Type of B(F)

In the previous section, I reviewed Johnston (1994) who claims that *when*-clauses are restrictions of event quantification, while *because*-clauses express a relation between two particular events. Now, the question is how does this semantic difference account for the distribution of *wa*-marking? As shown in section 2, Contrastive-marking indicates the limit of some attitude-holder's knowledge regarding a certain question. That means, the attitude-holder knows of

[9]In (31), the content of the adverbial adjunct (the *when*-clause) is presupposed, while in (32), the content of the *because*-clause is not presupposed but asserted. Sawada and Larson (2004) claim that Johnston's (1994) analysis of the difference in quantificational structures accounts for the difference regarding the presupposition between temporal clauses and *because*-clauses. This is predicted by the common assumption that the restriction of the quantification is presupposed to be non-empty.

some propositions that they are true. It is not possible to have knowledge of a property of events, i.e., it is not possible to assign a truth-value to a property of events. Therefore, the argument of Con, i.e., B(F), cannot be an event predicate of type $\langle s, t\rangle$, but must be a proposition of type t.

Now, let us go back to the adjunct asymmetry of Contrastive-marking. Relevant examples are repeated here as (36) and (37).

(36) *Itsumo uchi-ni KODOMO-**wa** kuru **toki**, inu-ga hoe-ru.
always house-Dat children-Con come when, tea-Acc offer-Present
Intended: 'When (at least) children come to our house, the dog always barks.' (20-a)

(37) Itsumo uchi-ni KODOMO-**wa** kuru **node** oyatsu-o
always house-Dat children-Con come because, sweets-Acc
yooi-su-ru.
prepare-do-Present
'Because (at least) children come to our house, I always prepare sweets.' (21)

The local computation of Con for (36) is impossible due to a type mismatch. The Con operator requires a closed proposition as its argument. The interpretation of the IP under *when* is an event predicate of type $\langle s, t\rangle$. So, it cannot serve as the argument for Con, which must be of type t.[10]

(38) *$[_{\text{CP}}\ [_{\text{IP}}\ [_{\text{AdjunctP}}\ [\ \text{Con}\ [_{\text{IP}\langle s,\,t\rangle}\ \textbf{came}(j, e)\ ]\ ]\ \text{when}\ ]\ \ldots\ ]\ ]$

In other words, if Con appeared under *when*, the IP would have to be of type t by type-shifting or existential closure. This would cause a semantic crash in the higher computation, i.e., it would result in vacuous quantification. The adverbial quantifier fails to bind a variable.[11]

In contrast, the local computation for (37) is available since the clause under *because* is interpreted as a proposition. As a result, *wa* can be embedded under *because* and it induces a local implicature.

(39) $[_{\text{CP}}\ [_{\text{IP}}\ [_{\text{AdjunctP}}\ [\ \text{Con}\ [_{\text{IP}t}\ \exists e.\ [_{\text{IP}\langle s,\,t\rangle}\ \textbf{came}(j, e)\ ]]\ ]\ \text{because}\ ]\ \ldots\ ]\ ]$

In conclusion, the adjunct asymmetry for the embeddability of *wa* is due to the following semantic difference: temporal clauses and *if*-clauses involve event quantification, hence these clauses denote properties of events, while a *because*-clause expresses a relation between two particular events/situations. Con, as we have seen in sections 2 and 3.1.2, indicates some attitude-holder's limit of knowledge regarding a proposition, hence the argument of Con needs to be type t. Therefore, Con cannot appear under *when* since Con blocks binding of an event variable, which causes an intervention effect. Con is compatible with a *because*-clause since the clause under *because* is interpreted as a proposition.

[10] By 'AdjunctP' in (38), I do not mean there is a Projection headed by an adjunct, but I use it to indicate the boundary of adjunct clauses, i.e., temporal clauses, *if*-clauses and *because*-clauses

[11] It will be shown in section 7 that the global computation of Con in (36) is unavailable due to an island violation.

6.2 Semantics of Evidentials: the locus of knowledge

I propose that evidentials also take propositions as their arguments. For example, the Japanese evidential morpheme *soona/sooda* indicates that the proposition is uttered based on some reported evidence (*hearsay* evidence) as in (40-a). The sentence in (40-a) is interpreted as (40-b) (ignoring tense): the speaker has hearsay evidence x for p, and p is such that there exists an event e, and e is John's home-going.

(40) a. John-ga kaet-ta-sooda.
John-Nom go.home-Past-Evid
'John went home (I heard).'
b. $\textbf{Evid}(x, p)$ & $\textbf{hearsay}(sp, x)$ & $p = \exists e.\textbf{go.home'}(j, e)$

In what follows, I show how the semantic structure above explains the asymmetry regarding the availability of evidential morphemes under adjunct clauses.

As discussed above, there is a clear semantic distinction between *because*-clauses on the one hand and temporal clauses and *if*-clauses on the other. Given this distinction, the event quantification analysis of *soona/sooda* explains why *soona/sooda* can be embedded under *because* but not under *when*. As formalized in (40-b), *soona/sooda* existentially closes the event predicate and the sentence expresses that the speaker has hearsay evidence for the particular event denoted by the prejacent clause.

Since *because* takes a proposition, (40-a) can be embedded under *because* as in (41) yielding the formula in (42). The speaker explains the causal relation between two particular events: the event of his/her home-going and the event of John's home-going, for which he/she has hearsay evidence.

(41) John-ga kaetta **soona node**, watashi-mo kaeru
John-Nom went.home Evid because, 1sg-Add go.home
koto-ni shita.
NMNL-Dat decided
'Because John went home (I heard), I decided to go home, too.'

(42) $\textbf{because'}(\exists e.[\textbf{go.home'}(sp, e))$,
$(\textbf{Evid}(x, p)$ & $\textbf{hearsay}(sp, x)$ & $p = \exists e.\textbf{go.home'}(j, e))$

On the other hand, *when* and *if* always take an event predicate. Therefore, it is predicted that embedding *soona/sooda* under *when* and *if* is not possible because of a type mismatch. This prediction is borne out, as seen in (43) (see (22) above for other examples).[12]

[12] An anonymous reviewer pointed out that embedding English *obviously* under *when* and *if* is sometimes possible as in (i).

(i) a. If you've obviously put so much effort into getting into law school, they should take it into account and admit you.
b. Mary got upset when obviously she shouldn't have.

I take *obviously* in (i-a) as a VP modifying adverb rather than a sentential (evidential) adverb, and hence it does not cause a type mismatch. (i-b) is more problematic to my analysis, and it might be necessary to shift the type of *when*. Indeed, Chris Davis (p.c.) has noted that *when* in (i-b) seems different than a purely temporal *when*, and seems to mean something like "even though".

(43) *John-ga kaetta **soona toki**, watashi-mo kaet-ta
John-Nom went.home Evid when, 1sg-Add go.home-Past
Intended: 'When John went home (I heard), I went home, too.' (3-b)

Kratzer (1999) also points out the same phenomenon for the German particle *ja*. As (44) and (45) show, *ja* cannot be embedded under *when*.

(44) *Maria wurde ärgerlich, als sie die Prüfung ja nicht bestanden
Maria was angry, when she the exam JA not passed
hatte.
have
'Maria is angry, when she JA didn't pass the exam.' (26-a)

(45) Als ich (*ja) in Syracuse gewohnt habe, war ich oft in Ithaca
When I JA in Syracuse lived have, was I often in Ithaca
'When I JA lived in Syracuse, I was often in Ithaca.' (Kratzer, 1999)

Kratzer (1999) gives an explanation which is parallel to the current proposal: "Since the scope of a discourse particle has to express a proposition, the scope of a discourse particle cannot include pronouns that are bound from outside. That is, no discourse particle can intervene between a bound variable pronoun and its binder."

In short, the interpretations of *when*-clauses in (44) and (45) contain event variables, hence they are properties of events. Since *ja* expresses some attitude toward a particular event, it cannot operate over predicates.[13]

6.3 Extension 1: Opaque and Transparent *Because*

Johnston's proposal regarding the semantic difference between temporal clauses and *because*-clauses can be extended to the two interpretations of *because* observed by Davidson (1967) and Kratzer (1998): a singular causal statement (transparent *because*) and a causal explanation (opaque *because*). A singular causal statement expresses a relation between events. For example, the sentence in (46-a) expresses a scenario where the principal fell and also knocked down the speaker. On the other hand, a causal explanation expresses a relation between propositions, which is set up by an inference made by some attitude-holder. The sentence in (46-b) gives the reason for the speaker's action of going to the pageant in virtue of certain properties of the expressed events.

[13]Kratzer (1999) goes on to show the following seeming exception to her analysis. Since *ja* needs to take a proposition, it blocks binding. However, attitude-holders can bind into a clause which is in the scope of *ja* as in (i).

(i) Jederder Zeugen behauptete, er habe ja mit eigenen Augen gesehen, dass ....
Each witnesses claimed he had JA with own eyes seen that
'Each of the witnesses claimed he had JA seen with his own eyes that...'
(Kratzer, 1999)

In (i), the expressive meaning induced by *ja* is attributed to the reported attitude situation, rather than the actual utterance situation. More specifically, the assumption that the content of the embedded clause "he had seen with his own eyes that..." might be already known to the addressee is anchored to the agent of the reported utterance 'each of the witnesses'. von Fintel and Iatridou (2002) explains this interpretation by analyzing the pronoun in the complement clause in (i) as a *logophor* or a shiftable indexical. Namely, the pronoun *er* 'he' is not bound by the quantifier of the matrix subject, but it refers to the agent of the reported utterance. See Hara (2006, ch. 4) for further discussion on this topic.

(46) a. I fell because the principal did. (transparant)
b. I went to the pageant because the principal did. (opaque)
(Kratzer, 1998)

All the examples with *because* in the sections above use an opaque *because*; they are the speaker's or some attitude-holder's explanation of the relation between two propositions.

Unlike an opaque *because*, the two conjuncts of a transparent *because* are not connected by the speaker's reasoning but are simply in a causal relation. To illustrate with a Japanese example, *node* in (47-a) is a transparent *because*; the two conjuncts of a transparent *because* are not particular events connected by someone's reasoning but are event predicates simply combined by an event quantification and a causal relation as depicted in (47-b).

(47) a. ame-ga futta node, kion-ga sagat-ta.
rain-Nom fell because because, temperature-Nom down-Past
'Because it rained, the temperature went down.' (transparent *because*)
b. $\exists e.[\textbf{down'}(temp, e)\ \&\ \exists e'.[\textbf{cause}(e', e)\ \&\ \textbf{rain'}(e')]]$

Now, if a *wa*-marked element is embedded under a clearly transparent *because* as in (48-b), the sentence turns out to be ungrammatical. The ungrammaticality of (48-b) can be explained along the same line as the case of *when*: in the complement of transparent *because*, the event predicate is not existentially closed, so locally the argument of the Con operator is not a closed proposition of type t.

(48) a. KOOCHOO-SENSEI-wa geki-ni it-ta node, boku-mo
principal-Con pageant-to go-Past because, 1sg-Add
it-ta.
go-Past
'Because the principal went to the pageant, I also went to it.'
(opaque *because*)
b. sakki AME-ga/*wa futta node, kion-ga
while-ago rain-Nom/Con fell because, temperature-Nom
sagat-ta.
down-Past
'Because it rained a while ago, the temperature went down.'
(transparent *because*)

Similarly, having an evidential under a transparent *because* is predicted to be ungrammatical. The semantics of the transparent *because* consists of an event quantification and a causal relation (47-b). Having an evidential would existentially close the event predicate and there would be no event variable to be quantified over, resulting in a type-mismatch or vacuous quantification. This is indeed the correct prediction as witnessed in (49) for English and also in (50-a), while the opaque counterpart is grammatical.[14]

[14]Unfortunately, this story cannot be straightforwardly extended to German *ja*, since the German translation of (49) with *ja* is acceptable.

(i) Es ist kalt, weil das Fenster ja offen ist.
it is cold because the window JA open is

(49) *It got cooler because obviously it rained.

(50) a. *ame-ga futta soona node, kion-ga sagat-ta.
rain-Nom fell Evid because, temperature-Nom down-Past
Intended: 'Because it rained (I heard), the temperature went down.'

b. Koochoo-sensei-ga geki-ni it-ta soona node, boku-mo
principal-Nom pageant-to go-Past Evid because, 1sg-Add
it-ta.
go-Past
'Because the principal went to the pageant (I heard), I also went to it.'

This shows that a transparent *because* patterns just like *when*. A transparent *because* merely denotes a causal relation between two events, while an opaque *because* connects two propositions by some attitude-bearer's reasoning. It is the point-of-view-ness that is crucial for hosting *wa*.

6.4 Extension 2: *Because* and Evidentials as Context-shifters

This section argues that Contrastive-markimg, evidentials and the *because* operator all take a proposition as their argument and express some attitude toward the event or situation that the proposition denotes. Contrastives express the fact that the information denoted by the embedded proposition is the most informative answer that the speaker (or some other locus of the knowledge) has. Evidentials indicate the source of the speaker's or some other attitude-holder's belief of the embedded proposition. The *because* operator expresses the speaker's or some attitude-bearer's inference about the connection between two propositions. These expressions interact with the context of the utterance. In the following, I adduce further evidence for the evidentiality of the *because* operator and the discourse item Con and *sooda/soona*, by briefly showing that evidentials and the *because* operator set up a context for the embedded proposition just like attitude predicates do. See Hara (2006, ch. 4) for a detailed discussion on this topic.

6.4.1 *Because* is a context-shifter

It is the speaker's or some attitude-bearer's reasoning that connects the two conjuncts of opaque *because*; therefore there is some representation of point of view in the complement of *because* parallel to that of an attitude operator. Hence, the agent of reasoning introduced by opaque *because* can be an attitude-holder other than the speaker (from this section on, all instances of *because* in the examples are opaque *because*).

In (51), for example, it is the president who draws the inference that connects the two conjuncts. Hence, the implicature induced by *wa* 'Possibly, John doesn't speak other languages' is also associated with the president.

'It is cold because the window JA is open.'

Presently, I do not have a convincing explanation for this difference between German *ja* on one hand and Japanese *soona* and English *obviously* on the other.

(51) Shachoo-wa John-ga NIHONGO-wa dekiru-node,
president-Top John-Nom Japanese-Con capable-because,
saiyoo-shi-ta.
hire-do-Past
'Because John can speak (at least) Japanese, the president hired him.'

Suppose that the company is looking for someone who can speak either Japanese or Korean. The use of *wa* in (52–a) indicates some attitude-holder's limited knowledge and generates an implicature 'Possibly, John doesn't speak Korean.' If the agent of this implicature were the actual speaker, the continuation in (52–b) would be infelicitous, since the speaker has complete knowledge.[15]

(52) a. Shachoo-wa John-ga NIHONGO-wa dekiru-node, saiyoo-shi-ta.
'Because John can speak (at least) Japanese, the president hired him.'
b. Demo, John-wa jitsuwa kankokugo-mo dekiru.
But, John-Top actually Korean-Add capable
'But, actually, John can speak Korean, too.'

The implicature is relativized to the shifted context that assigns the president as the locus of knowledge as depicted in (53). (Here, I slightly modify Johnston's analysis of *because* as a relation between events and make it a relation between situations.)

(53) a. $[_{\mathrm{CP}}\ [_{\mathrm{IP}}\ [_{\mathrm{AdjunctP}}\ \mathrm{Op}_{\langle president \rangle}\ \mathrm{c}_i$ **Con** $\exists s.\ [_{\mathrm{IP}}$ **john-capable-of-**

[15] We can find an actual example in which the agent of the reasoning must be the speaker with German causal *denn*. German has two causal connectives, *denn* and *weil*. Unlike *weil*, *denn* seems to unambiguously indicate the speaker's reasoning, since (i-a) is understood as a contradiction.

(i) a. #Der Firmenleiter hat sich entschieden Mary einzustellen, denn sie
The company.boss has SELF decided Mary hire because she
spricht Holländisch. Aber ich glaube Mary spricht kein Holländisch.
speaks Dutch But I believe Mary speaks no Dutch
'The president decided to hire Mary because she speaks Dutch. But I don't think Mary speaks any Dutch.'
b. Der Firmenleiter hat sich entschieden Mary einzustellen, weil sie
The company.boss has SELF decided Mary hire because she
Holländisch spricht. Aber ich glaube Mary spricht kein Holländisch.
speaks Dutch But I believe Mary speaks no Dutch
'The president decided to hire Mary because she speaks Dutch. But I don't think Mary speaks any Dutch.'

Scheffler (2005) analyzes the causal relation expressed by *denn* as a conventional implicature.

(ii) In a sentence "A, *denn* B", with $[\![A]\!] = \phi$ and $[\![B]\!] = \psi$, *denn* has the following semantics:
Assertion: $\phi \wedge \psi$
Conventional Implicature: CAUSE(ϕ, ψ)

If Scheffler's (2005) analysis is right, the assertion of the first sentence in (i-a) entails that the speaker believes "Mary speaks Dutch" is true. Hence, the continuation leads to a contradiction. Furthermore, Potts (2003) claims that conventional implicatures are always speaker-oriented. It follows that the causal relation in (i-a) is attributed to the speaker.

On the other hand, the causal relation denoted by *weil* is part of the assertion. Therefore, the content of the *weil*-clause does not need to be believed by the speaker, and the reasoning can be attributed to the president.

Japanese(s)] because] ...]]

b. $agent(c_i)$= the president

c. $\textsc{Con}(w(c_i))(agent(c_i))(\exists s.$**john-capable-of-Japanese**$(s))$
implicates: In some of the doxastic worlds compatible with the president's belief, it is not the case that John speaks other languages.

In sum, the use of *because* introduces a new context that binds the context variable of the shiftable indexicals in Con.[16]

6.4.2 Evidentials shift contexts

The semantics of evidential morphemes has not received any formal treatment until recently and the semantic contribution that evidential morphemes make is still controversial. The current analyses suggest that Evidentials introduce a local context. For example, Izvorski (1997) claims that indirect evidentiality presupposes that the speaker has indirect evidence. Following Kratzer's (1987) standard analysis of modality, Izvorski (1997) treats the semantics of the indirect evidential as quantification over possible worlds, where the presupposition restricts the modal base to the propositions that can be inferred by the indirect evidence. On the other hand, Faller (2002) analyzes evidentials as speech act modifiers. In both analyses, an evidential morpheme seems to express a relation between the speaker and the proposition to which the evidential attaches. More specifically, an evidential sets up a context where the truth of the embedded proposition holds.

I propose that Japanese evidentials function like attitude reports and the *because* operator (see also McCready, 2006). Specifically, evidentials are attitude operators that bind context variables of shiftable indexicals. For example, the use of the hearsay evidential *sooda* in (40), repeated here as (54), introduces an attitude operator that indicates the truth of the embedded proposition is based on hearsay evidence.

(54) John-ga kaet-ta sooda.
John-Nom go.home-Past Evid
'John went home (I heard).' (40)

Evidentials can provide an appropriate context for direct experience predicates. The Japanese adjectives of direct experience such as *samui* 'to feel cold', *sabishii* 'to feel sad' etc. restrict their subjects to the first person (Kuroda, 1973; Kuno, 1973; Aoki, 1986; Tenny, 2006).

(55) a. Watashi/*anata/*kare-wa samui desu.
I/you/he-Top cold Cop
'I am/*you are /*he is cold.'

b. Watashi/*anata/*kare-wa sabishii desu.
I/you/he-Top sad Cop
'I am/*you are /*he is sad.' (Tenny, 2006)

[16] In Hara (2006, ch. 4), I provide support for the claim that *because* introduces an attitude operator that can shift contexts by examining some data pointed out by Tenny (2006) on direct experience and long-distance reflexives.

In (56-b), the evidential morpheme *sooda* lifts the person constraint on direct experience, suggesting that the evidential provides a local context which changes the agent/locus of knowledge from the speaker to 'John', who provided hearsay evidence to the speaker.

(56) a. *John-wa samui.
John-Top cold.
'John is cold.'
b. John-wa samui sooda.
John-Top cold Evid.
'John is cold (I heard).'

Now, let us examine how the evidential *sooda* interacts with Contrastive-marking. Consider (57), identical to (55) except that the subject is marked with the Contrastive morpheme *wa*.

(57) JOHN-wa kaet-ta sooda.
John-Con go.home-Past Evid
'(At least) John went home (I heard).'

Remember from sections 2 and 3 that Contrastive-marking indicates that the locus of knowledge does not have the maximal knowledge with respect to the property in question, and the agent can be shifted if Contrastive-marking is embedded under an attitude operator. If *sooda* is an attitude operator that specifies the agent of the knowledge as someone other than the speaker, the implicature induced by *wa* should be attributed to the agent specified by the shift in the context induced by *sooda*. Indeed, in (57), the implicature can be associated to the evidence the speaker has rather than the speaker, as in (58-c).

(58) a. $c_@$ [c_i **Con** [$_{IP}$ $\exists e$. [**went.home**(j, e)]] sooda]
b. $agent(c_i)$ =hearsay evidence
c. $\textsc{Con}(w(c_i))(agent(c_i))(\exists e.\textbf{went.home}(j, e))$
implicates: In some of the doxastic worlds compatible with **the hearsay evidence** the speaker has, it is not the case that other people went home.

This intuition is further supported by the following examples. Recall from section 2 that Contrastive-marking cannot be used when the speaker's knowledge is the strongest among alternatives (when all the individuals are in the extension of the property) as in (59-b). The same explanation applies to the infelicity of (59-c). The shifted locus of the knowledge (the hearsay evidence) cannot have the maximal knowledge with respect to the property in question.

(59) a. Mary-to Peter-wa shiken-ni ukat-ta-no?
Mary-and Peter-Top exam-Dat pass-Past-Q
'Did Mary and Peter pass the exam?'
b. ??MARY-**wa** ukat-te, PETER-mo ukat-ta.
Mary-**Con** pass-and, Peter-Add pass-Past
'Mary passed and Peter passed, too.'
c. ??MARY-**wa** ukat-ta-**soode**, PETER-mo ukat-ta-**sooda**.
Mary-**Con** pass-Past-**Evid**, Peter-Add pass-Past-**Evid**
'Mary passed (I heard) and Peter passed, too (I heard).'

Interestingly, (59-c) is improved if one of the evidential-markers is removed as follows.

(60) a. Did Mary and Peter pass the exam?
b. MARY-**wa** ukat-ta-**soode**, PETER-mo ukat-ta.
'Mary passed (I heard), and Peter passed, too.'
c. MARY-**wa** ukat-te, PETER-mo ukat-ta-**sooda**.
'Mary passed, and Peter passed, too (I heard).'

This contrast is not surprising, since unlike (59-c) the propositional content of each conjunct of (60-b) relies on different agents of knowledge. For example, the first conjunct of (60-b) implicates that according to **the hearsay evidence**, it is possible that Peter didn't pass. The second conjunct of (60-b) entails that **the speaker** believes that Peter passed. These interpretations do not contradict each other.

Similarly, (59-c) can also be improved by specifying a different source of evidence overtly as in (61-b). Again, because each conjunct has a different attitude-holder for the asserted content and the implicature, their interpretations do not cause a contradiction.

(61) a. Did Mary and Peter pass the exam?
b. John niyoruto MARY-wa ukat-ta-soode, Bill niyoruto
John according.to Mary-Con pass-Past-Evid, Bill according.to
PETER-mo ukat-ta-sooda.
Peter-Add pass-Past-Evid
'According to John, Mary passed (I heard), and according to Bill, Peter passed, too (I heard).'

In this section, I argued that the *because* operator and the evidential morpheme *sooda* are attitude operators that shift the context of utterance just like attitude predicates do.[17] Both *because* and *sooda* shift the agent of the *wa*-implicature.

6.5 Interim Summary

Both Contrastive-marking and evidentials express some attitude towards a particular event or situation. Hence, their arguments cannot be predicates but must be propositions. Temporal clauses and *if*-clauses are properties of events that contain an event variable bound from outside. The data above show that embedding of attitude expressions such as *wa* and evidential morphemes blocks binding of an event variable, which is required for the semantics of these clauses, i.e., event quantification.[18] On the other hand, the *because* operator takes a proposition just like Con and evidentials do. Hence, those discourse morphemes such as Japanese *wa*, English *obviously* and German *ja* are compatible with (opaque) *because*-clauses.

[17]Indeed, Tenny (2006) argues that Japanese *node* 'because' is an evidential marker.
[18]See Hara (2006, chapter 6) and Hara (To appear) for the discussion of relative clauses.

7 Global Implicature Computation Blocked by Syntax

The previous section revealed that the local computation of Con under temporal and *if* clauses is not permissible due to a type mismatch. Now, remember from section 3.1 that the sentence in (62) has two possible LFs, shown in (63); the Con operator can be placed at matrix or embedded clause-initial position.

(62) MARY-**wa** kita-to John-ga shinjite-iru
Mary-Con come-Comp John-Nom believe-Prog
'John believes (at least) Mary came.' (ambiguous)

(63) a. Local: $c_{@}$ [$_{CP}$ [$_{IP}$ c_i [$_{CP}$ **Con** [$_{XP}$ Mary-wa] came Comp] John-ga believe]]
b. Global: $c_{@}$ [$_{CP}$ **Con** [$_{IP}$ c_i [$_{CP}$ [$_{XP}$ Mary-wa] came Comp] John-ga believe]]

What prevents the LF of (2-a), repeated here as (64), from having the structure in (65) and inducing a global implicature outside the *when*-clause?

(64) *Itsumo uchi-ni KODOMO-**wa** kuru **toki**, inu-ga hoe-ru.
always house-Dat children-Con come when, tea-Acc offer-Present
'When (at least) children come to our house, the dog always barks.'

(65) *$c_{@}$ Con [$_{CP}$ [$_{IP}$ [$_{AdjunctP}$ c_i [$_{XP}$ John-wa] came when] ...]]

A closer look at the interpretation of (21) repeated here as (66) reveals that the Con operator introduced by *wa* cannot be positioned outside of the *because*-clause, since the global computation of the *wa*-implicature is not available for (66). The LF structure in (67-a) is not available, hence the only legitimate reading for (66) comes from the local computation of the *wa*-implicature from the LF in (67-b).

(66) Itsumo uchi-ni KODOMO-**wa** kuru **node** oyatsu-o
always house-Dat children-Con come because, sweets-Acc
yooi-su-ru.
prepare-do-Present
a. *'(at least) Children are such that because they comes to our house, I always prepare sweets.'
b. 'Because (at least) children come to our house, I always prepare sweets.'

(67) a. *$c_{@}$ **Con** [$_{CP}$ [$_{IP}$ [$_{AdjunctP}$ [$_{XP}$ John-wa] came because] ...]]
b. $c_{@}$ [$_{CP}$ [$_{IP}$ [$_{AdjunctP}$ c_i **Con** [$_{XP}$ John-wa] came because] ...]]

In addition to adjunct clauses, Contrastive-marking is not available within a relative clause:

(68) *Itsumo amerika-de CHOMSKY-**wa** kai-ta hon-ga
always America-at Chomsky-**Con** write-Past book-Nom
shuppan-sa-re-ru.
publish-do-Pass-Present
'The book which (at least) Chomsky wrote in America is always pub-

lished.'

In the syntactic literature, these constructions are known to be islands for *wh*-movement. Hence, it seems that Contrastive-marking is constrained by the syntax. More specifically, it seems that the association between CON and the Focus-marked element cannot be established across a syntactic island. Observing these facts, this section argues for movement of the CON operator by showing that Contrastive-marking is sensitive to island effects.

To better understand this phenomenon, I first give an overview of islands for *wh*-movement in Japanese, and then I compare the structure of Japanese *wh*-questions proposed by Nishigauchi (1990) with the distribution of Japanese Contrastive-marking.

7.1 *Wh*-islands in Japanese

Japanese is a *wh*-in-situ language in view of Huang's (1982a; 1982b) theory of *wh*-movement. That is, *wh*-words move covertly to clause-peripheral positions at LF.[19] For example, *naze* 'why' cannot appear within a complex NP as in (69). In the LF-movement approach, this is understood as follows. Even though *naze* is in the base generated position in overt syntax, it moves to the clause-initial position in covert syntax, which violates the complex NP island constraint (Ross, 1967).

(69) *[Kare-ga naze kai-ta hon]-ga omosiroi-desu-ka?
he-Nom why write-Past book-Nom interesting-is-Q
'Why are books that he wrote t interesting?'

In this LF-movement approach, it is difficult to understand why some Japanese *wh*-words can appear within adjunct islands (70) and complex NP Islands (71).

(70) Mary-wa [John-ga nani-o yomu mae-ni] dekaketa no?
Mary-TOP John-NOM what-ACC read before left Q
'Mary left before John read what?' (Pesetsky, 1987, p.110)

(71) kimi-wa [dare-ga kai-ta hon-o] yomi-masi-ta ka?
you-TOP who-NOM wrote book-ACC read.POL-PAST Q
'You read books that who wrote?' (Nishigauchi, 1990, p.40)

To save the LF-movement approach, Nishigauchi (1990) argues for LF pied-piping (see also Choe (1987), Pesetsky (1987); see Hagstrom (1998) for a different approach). In Nishigauchi's (1990) approach, what actually moves covertly is not the *wh*-word, but the island that contains the *wh*-word. For example, (71) has the LF structure in (72-a) instead of (72-b).

(72) a. [$_{CP}$ [who-Nom wrote book] -Acc$_i$ [$_{IP}$ [$_{VP}$ t$_i$ read]] Q]

b. *[$_{CP}$ who-Nom [$_{IP}$ [$_{VP}$ [t$_i$ wrote book] -Acc$_i$ read]] Q]

[19] Also, Kikuchi (1987) has shown that Japanese Comparative Deletion involves operator movement, which is sensitive to island constructions. See Kikuchi (1987) for detailed discussions.

Hence, although it appears that Japanese *wh*-questions do not obey a general constraint that prohibits movement across adjunct and complex NP islands, the acceptability of the construction is due to amelioration by LF pied piping.

On the other hand, it has been claimed that a *wh*-word inside a *wh*-island is not acceptable (Nishigauchi, 1990; Watanabe, 1992; Shimoyama, 2006), since there seems to be a preference toward the local association of the *wh*-word with the embedded Q-morpheme *-ka* over the global association with the matrix *-ka*.

(73) John-wa [Mary-ga nani-o katta-ka] imademo
John-Top Mary-Nom what-Acc bought-Q still
shiri-tagat-teiru-no?
know-want-Prog-Q
a. 'Does John still want to know what Mary bought?'
b. ?'What$_1$ is such that John still wants to know [whether Mary bought it$_1$]?' (Deguchi and Kitagawa, 2002)

According to Deguchi and Kitagawa (2002) and Ishihara (2002), this seeming *wh*-island effect in Japanese reported in earlier literature is a misinterpretation of the preference toward a non-monotonic prosody.[20]

(74) John-wa [Mary-ga NA*ni-o katta-ka*] imademo
John-Top Mary-Nom what-Acc bought-whether still
shiri-tagat-teiru-no?
know-want-Prog-Q
'Does John still want to know what Mary bought?"

Deguchi and Kitagawa (2002) and Ishihara (2002) propose a prosodic-sensitive association of the *wh*-word and the Q-morpheme and show that the global association in (73-b) becomes much more readily available if the post-focal reduction continues to the sentence-final Q-morpheme (Global Emphatic Prosody (Global EPD) in Deguchi and Kitagawa's terminology and Focus Intonation (FI) in Ishihara's terminology) as in (75).

(75) John-wa [Mary-ga NA*ni-o katta-ka*] *imademo*
John-Top Mary-Nom what-Acc bought-whether still
shiri-tagat-teiru-no?
know-want-Prog-Q
'What$_1$ is such that John still wants to know [whether Mary bought it$_1$]?'
(Deguchi and Kitagawa, 2002)

Deguchi and Kitagawa (2002) and Ishihara (2002) attribute the preference for local *wh*-scope observed in (73-b) to the shorter post-focal reduction (Local EPD or FI) as depicted in (74), which is preferred due to a tendency to avoid monotonic prosody. Therefore, a Japanese embedded *wh*-question does not constitute an island for a matrix *wh*-question if the correct prosody is assigned to the question.

In summary, in Japanese, a *wh*-word moves at LF, and as a consequence it obeys island constraints. The seeming exception of an adjunct island or a

[20] I use italics to indicate the post-focal reduction. See Deguchi and Kitagawa (2002) or Ishihara (2002) for more a precise representation of the prosody patterns.

complex NP island is shown to be the result of LF pied-piping of the whole island. On the other hand, an embedded *wh*-question does not constitute an island in Japanese.

7.2 *Wa*-marking and Islands

In this section, I demonstrate that *wa*-marking has a parallel distribution to Japanese *wh*-questions in terms of embedding under islands.

First, consider the case of adjunct clauses. When *wa*-marking is under temporal and *if*-clauses, the global computation of *wa*-implicatures (e.g. (65)) is somehow blocked as we have seen in (2).

However, in temporal clauses, Contrastive-marking can be rescued by changing the construction so that it has a structure parallel to the pied piped *wh*-question. More specifically, if *wa* is attached to the whole island leaving the Focus-marking on the contrasted argument, the sentence becomes acceptable with the desired global implicature ('For other people, I don't know whether the dog barks when they come.' (76-a)).[21]

(76) a. Itsumo [uchi-ni JOHN-ga kuru toki]-**wa**, inu-ga
always house-Dat John-Nom come when-**Con**, tea-Acc
hoe-ru.
offer-Present
'At least when John comes to our house, the dog always barks.'

b. Kinou [JOHN-ga uchi-ni kuru mae]-**wa**, daremo i-nakat-ta.
'At least before John came to our house, no one was home.'

c. Kinou [JOHN-ga uchi-ni kita ato]-**wa**, minna-de shokuji-o shita.
'At least after John came to our house, we had meal together.'

Contrastives also observe complex NP islands. *Wa*-marking cannot be used for NPs within relative clauses as seen in (68). Similarly to adjunct islands, (68) can be improved if the Contrastive morpheme *wa* is realized at the edge of the complex NP island.

(77) Itsumo [amerika-de CHOMSKY-ga kai-ta hon]-wa
always Amerika-at Chomsky-Nom write-Past book-Con
shuppan-sa-re-ru.
publish-do-Pass-Present
'At least the book which Chomsky wrote in America is always published.'

Now, let us turn to *wh*-islands. *Wa*-marking seems to be available in *wh*-islands:

(78) boku-wa ano-mise-de JOHN-wa nani-o kat-ta ka kii-ta.
I-Top that-shop-at John-Con what-Acc buy-Past Q ask-Past

[21] Unfortunately, a Contrastive within an *if*-clause cannot be saved by pied piping.

(i) *[Moshi John-ga hon-o 3-SATSU yomu-nara]-**wa**, goukaku-suru.
if John-Nom book-Acc 3-Class read-Comp-**Con**, pass-do
'If John reads (at least) 3 books, he will pass (the exam).'

I do not have an explanation for this difference at moment.

'I asked what (at least) John bought at that shop.'

As discussed by Deguchi and Kitagawa (2002) and Ishihara (2002), a Japanese embedded *wh*-question does not constitute an island for a matrix *wh*-question if the correct prosody is assigned to the question. For this reason, I do not take (78) above as a counterexample to my generalization.

In short, *wa*-marking is not available within adjunct and complex NP islands. However, most of the constructions (except for *if*-clauses) can be improved by overt pied-piping-like structures. In other words, it is possible to Contrastive-mark an element within islands and obtain global implicatures if the *wa* morpheme is realized at the edge of those domains that can undergo pied-piping in *wh*-questions. In addition, *wa*-marking is possible within a *wh*-island. Overall, the distribution of Contrastive *wa*-marking is parallel to the distribution of Japanese *wh*-questions.

7.3 Movement of Con

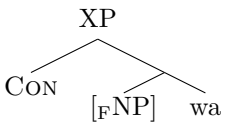
The data shown above suggest that the placement of the Con operator is constrained by syntactic islands.

One might speculate that there could be some principle which simply restricts *wa* from being embedded within adjunct clauses or complex NPs. Such a speculation might come from the fact that Contrastive *wa* is homophonous with Thematic *wa*, which is claimed to mark the Topic in information structure (Vallduví, 1992; Heycock, 1993) and appears at left-peripheral position. Indeed, Contrastive *wa* is called 'Contrastive Topic' by some authors. I agree that Contrastive *wa* and Thematic *wa* are homophonous not by accident, and that Contrastive *wa* also involves the notion of information structure and left periphery. (e.g. I propose that the Con operator is placed at a clause-initial position.) However, a more sophisticated explanation is needed because the simple stipulation that bans *wa* from appearing in adjunct clauses and complex NPs makes the wrong empirical prediction when *wa* is embedded under an attitude predicate. For example, in (79), even though the *wa*-marked element is within an island construction, the sentence is judged grammatical. This is unexpected if we assume that *wa* can only appear in the matrix clause. A better explanation for (79), one that correctly explains the grammatical judgement, is that a *wa*-marked element needs to be local to an attitude-bearer (the speaker or the subject of the attitude predicate).

(79) John-ga MARY-wa kuru-to **omot**-ta toki, kanojo-ga
John-Nom Mary-Con come-Comp **think**-Past when 3sg-Nom
heya-ni haitte kita .
room-Dat in come-Past
'When John thought that at least Mary comes, she came into the room.'

Hence, observing the data shown in 7.2, I propose a syntactic movement account for this problem. The Con operator is originally generated locally as in (80), and moves to yield the LF structures which determine which attitude-bearer, the speaker or the subject of the attitude predicate, is responsible for the induced implicature.

(80)



Let us go back to the ambiguity of (9) repeated here as (81).

(81) MARY-**wa** kita-to John-ga shinjite-iru
Mary-Con come-Comp John-nom believe-Prog
'John believes at least Mary came.' (9)

If the operator moves to the edge of the embedded clause, it induces the local implicature 'John considers the possibility that Peter didn't come'. If it moves to the edge of the matrix IP, it induces the global implicature 'The speaker considers the possibility that John doesn't believe Peter came'.[22]

(82) global
c@ Con [CP [IP c_i [CP Con [XP t Mary-wa] came Comp] John-ga believe]]
local

A movement analysis straightforwardly explains the ungrammaticality of (2-a) repeated here as (83). The context variables of the Con operator generated under *when* need to be saturated. However, there is no attitude predicate under *when*, hence it targets the matrix clause. This movement crosses an adjunct island.

(83) *Itsumo uchi-ni JOHN-**wa** kuru **toki**, inu-ga hoe-ru.
always house-Dat John-**Con** come **when**, tea-Acc offer-Present
'When (at least) John comes to our house, the dog always barks.'(2-a)

(84) *[SpeechActP [speaker] [Con [IP ... [AdjunctP [IP t John-wa come] when

[22]Note that the Contrastive Operator Con does not form a constituent with the Contrastive-marked NP *Mary* at LF, where scope is computed. The configuration like (80) is necessary for the following reason. Consider sentence (i), in which the *wa*-marked quantifier *zen'in* 'everyone' is embedded in the complement clause.

(i) Zen'in-wa kur-u-to omow-anakat-ta.
Everyone-Con come-Present-Comp think-Neg-Past
'At least, I didn't think that everyone would come.'
(Implicature: I thought someone would come.)

The local implicature is impossible since "Everyone comes" does not satisfy the presupposition of Con as we have seen in section 2. On the other hand, if the operator formed a constituent with the quantifier and moved to the matrix clause along with it, the syntax would yield an LF-structure, $\forall x \neg$ **think** ([**person**(x)] [**come**(x)]), which again fails to satisfy the presupposition, since the assertion exhausts all the individuals in the domain. Hence, it fails to induce the implicatures required by *wa*.

Nonetheless, (i) is acceptable; therefore we have to allow the global computation of a *wa*-implicature without moving the quantifier *zen'in* 'everyone'. If Con alone is placed in the sentence-initial position (but leaving the quantifier *in situ*), $\neg$**think** ($\forall x$ [**person**(x)] [**come**(x)]) indeed has an implicature, $\neg\neg$**think**($\exists x$ [**person**(x)] [**come**(x)]) $\approx$ "I thought some people would come". Therefore, the Contrastive Operator Con is detachable from the Contrastive-marked element as depicted in (ii), which is a structural representation of (i).

(ii) [CP Con [NegP [CP [XP t [XP everyone] -wa] came Comp] think Neg] Past]

]]]]

When *wa* is further embedded under an attitude predicate, the sentence is acceptable even within an island ((79), repeated here as (85)).

(85) John-ga MARY-**wa** kuru-to **omot**-ta toki, kanojo-ga
John-Nom Mary-**Con** come-Comp **think**-Past when 3sg-Nom
heya-ni haitte kita .
room-Dat in come-Past
'When John thought that (at least) Mary comes, she came into the room.'

The CON operator does not need to cross an island since it can find a local attitude operator that binds its context variable.

(86) [$_{\text{IP}}$ ... [$_{\text{AdjunctP}}$ [$_{\text{VP}}$ $\mathbf{c}_i$ CON [$_{\text{CP}}$ [$_{\text{IP}}$ [$_{\text{XP}}$ t] [$_{\text{XP}}$ Mary] -wa] come] Comp] **thought** toki] ...]

7.4 Arguments for a movement approach

The introduction of a syntactic movement operation to account for a semantics-pragmatics phenomenon like implicature computation may seem unconventional. In general, semantic associations such as focus associations (Rooth, 1985, 1992) and choice function binding (Reinhart, 1997) are immune to islands. Moreover, Contrastive-marking an argument within an island *per se* should be acceptable on semantic grounds alone, since there are other ways to express the intended meaning. There are two ways to ameliorate the constructions in (2), in which *wa*-marking occurs within adjunct clauses: one is pied-piping the Contrastive-marking to outside of the island as shown in section 7.2, and the other is base-generating the Contrastive-marked element at the clause-initial position. In the following section, I demonstrate specifically how the sentences in (2) are ameliorated and how they are interpreted.[23]

7.4.1 Pied-piping

First, if *wa* is attached to a *when*-clause and the *when*-clause contains an argument that bears a focus marked by a sentential stress, it is possible to compute a global implicature. In (76-a), for example, the *when*-clause *JOHN-ga kita toki* contains the argument NP *John*, which has a focus-marking dissociated from *wa*. The *wa* is attached to this *when*-clause and implicates 'I don't know if it's true that when other people come to our house, the dog always barks.'

7.4.2 Co-indexation with *pro*

In addition to "pied-piping"-like constructions, (2-a) can be ameliorated by generating a *wa*-marked NP overtly outside the island construction and co-indexing it with *pro*. For example, in (87), the *wa*-marked NP JOHN$_i$-**wa**

[23]For space reasons, I only go over examples with adjunct islands, but the same argument goes through with Complex NP islands. See Hara (2006, ch. 3) and Hara (To appear) for examples with Complex NP islands.

is co-indexed with *pro*, within a temporal clause, and it induces the intended implicature.[24]

(87) JOHN$_i$-**wa** itsumo uchi-ni *pro*$_i$ kuru **toki**, inu-ga
John-**Con** always house-Dat *pro* come **when**, dog-Nom
hoe-ru.
bark-Present
'At least John$_i$ is such that when *pro*$_i$ comes to our house, the dog always barks.'
(Implicature: As for Mary, it might not bark.)

Since CON is generated outside the island, it does not cross the island in order to be bound by the actual context.

(88) c$_@$ CON [$_{XP}$ t [John]$_{-wa}$] always [$_{AdjunctP}$ *pro* came toki] dog-ga barks] (87)

Together with the "pied-piping" facts presented in the previous section, this possibility of amelioration by co-indexation with *pro* demonstrates that the ungrammaticality of (2) is not due to semantic constraints but syntactic ones.[25]

In short, the unavailability of the global computation of CON in (2) is not due to semantic constraints but to syntactic ones, since the intended interpretations are successfully derived by changing the syntactic structures.

7.5 Section Summary

The use of *wa* triggers implicatures which are associated with the speaker or some attitude-bearer. This association is blocked by certain syntactic configurations, namely adjunct islands and complex NP islands. To capture these facts, I have proposed a syntactic movement account for the positioning of the CON operator. CON moves in order to locally identify the context that saturates its shiftable indexicals.

[24]Some informants report that (87) is not completely acceptable. The sentence (87) improves if it is read with post-focal reduction after the contrastive-marked element *John-wa* (c.f. Ishihara, 2000, 2002), and with a pause after *John-wa*.

[25]The sentence in (87) is not an instance of overt movement of *John-wa*.

Hoji (1985) provides the following anaphor binding test to show that the sentence-initial *wa*-marked phrase is not an instance of movement. In (i-a), if the sentence-initial *wa*-marked phrase *sono zibun nituite-no hon* were originally generated under VP and preposed by movement, *zibun* could be bound by *John*, since it could be reconstructed into the argument position as in (i-b). This interpretation is, however, not possible, hence the sentence-initial *wa*-marked phrase is not an instance of overt movement. It is base-generated in the initial position and coindexed with an empty pronoun (*pro* in more recent terminology) at the argument position.

(i) a. *[$_{NP}$ sono zibun$_i$ nituite-no hon]$_j$ -wa John$_i$-ga [$_{VP}$ e_j suteta]
that self about book -Top John-nom threw-away
'As for [that book about himself$_i$]$_j$, John$_i$ threw it$_j$ away.'

b. [$_S$ [$_{NP}$ sono zibun$_i$ nituite-no hon]$_j$ -o [$_S$ John$_i$-ga [$_{VP}$ t_j suteta]]]
that self about book -Acc John-nom threw-away
'That book about himself$_i$, John$_i$ threw away.' (Hoji (1985); p.129,133)

8 Concluding Remarks

This paper has dealt with several different semantics-pragmatics concepts: the implicature triggered by the Contrastive marker *wa*, evidentials, and reasoning expressed by *because*, which all share a common property: these discourse items operate over a proposition, and hence they block binding of an event variable. I have also proposed that the computation of CON involves syntactic movement which determines the size of the proposition it takes and the context which binds the indexicals. This movement is blocked if *wa* is embedded within a relative clause or an adjunct clause which are islands for movement.

The facts presented in this paper also have interesting ramifications regarding the connection between implicatures and evidentiality. Both concepts were previously treated within semantics-pragmatics, while recent studies have started to explore the phenomena in the context of syntax-semantics-pragmatics interfaces. For example, Chierchia (2004) argues that syntactic structures must be visible for implicature computation.

Recent work by Tenny (2006) and Speas (2004) (following Cinque (1999)) also argues that there is a syntactic representation for point of view arguments. Consider again the following example with a hearsay evidential.

(89) John-ga kaet-ta sooda.
John-Nom go.home-Past Evid
' John went home (I heard).'

Following Tenny's (2006) formulation, (89) has the structure depicted in (90). The evidential morpheme *sooda* projects an evidential phrase which contains x_j, someone other than the speaker or the hearer, as an invisible argument.

(90) [$_{\text{SpeechActP}}$ [the speaker$_i$] [$_{\text{EvidentialP}}$ x_j [$_{\text{Evidential'}}$ John-ga kaet-ta [$_{\text{Evidential}}$ sooda]]]]

Since Japanese evidentials have a very rigid syntax, it is plausible to posit a syntactic projection for this lexical category. Tenny (2006) further treats Japanese *node* 'because' as an evidential, and argues that *because*-clauses are Evidential Phrases. The syntactic movement proposed for *wa*-implicature computation accords well with Tenny's proposal. If *because*-clauses head or embed an Evidential Phrase à la Tenny, they can host a CON operator, while temporal clauses or *if*-clauses, which cannot host an Evidential Phrase, cannot host a CON operator either. In other words, the presence or absence of an Evidential Phrase can be regarded as a syntactic reflection of Johnston's semantic difference between temporal clauses and *because*-clauses.

References

Aoki, H. (1986). Evidentials in Japanese. In W. Chafe and J. Nichols (Eds.), *Evidentiality: The Linguistic Coding of Epistemology*. Norwood, New Jersey: Ablex Publishing Corporation.

Büring, D. (1997). The great scope inversion conspiracy. *Linguistics and Philosophy 20*, 175–194.

Chierchia, G. (2004). Scalar implicatures, polarity phenomena, and syntax/pragmatics interface. In *Structures and Beyond*. Oxford University Press.

Choe, J. W. (1987). Lf movement and pied-piping. *Linguistic Inquiry 18*(2), 348?353.

Cinque, G. (1999). *Adverbs and Functional Heads: A cross-linguistic perspective*. Oxford University Press.

Davidson, D. (1967). Causal relations. *Journal of Philosophy 64*(21), 691–703.

Deguchi, M. and Y. Kitagawa (2002). Prosody and wh-questions. In *Proceedings of the Thirty-second Annual Meeting of the North-Eastern Linguistic Society*, pp. 73–92.

Faller, M. (2002). *Semantics and pragmatics of evidentials in Cuzco Quechua*. Ph. D. thesis, Stanford University.

Gamut, L. T. F. (1991). *Pragmatics: Meaning and Usage*, Chapter Logic, Language and Meaning, pp. 195–212. Chicago University Press.

Hagstrom, P. (1998). *Decomposing Questions*. Ph. D. thesis, Massachusetts Institute of Technology.

Hara, Y. (2005). Contrastives and gricean principles. In P. Dekker and M. Franke (Eds.), *Fifteenth Amsterdam Colloquium*, pp. 101–106. Universiteit van Amsterdam.

Hara, Y. (2006, February). *Japanese Discourse Items at Interfaces*. Ph. D. thesis, University of Delaware, Newark, DE.

Hara, Y. (To appear). Movement of a Shifty Operator. In *Proceedings of the 4th Formal Approaches to Japanese Linguistics*. MITWPL.

Heycock, C. (1993). Focus Projection in Japanese. In M. Gonzalez (Ed.), *Proceedings of NELS*, 24, pp. 159–187.

Hoji, H. (1985). *Logical Form Constraints and Configurational Structure in Japanese*. Ph. D. thesis, University of Washington.

Horn, L. R. (1972). Greek Grice. In *Proceedings of the Ninth Regional Meeting of the Chicago Linguistics Society*, Chicago University, Chicago, Illinois, pp. 205–214. Chicago Linguistics Society.

Huang, C.-T. J. (1982a). *Logical form constraints and configurational structures in Japanese*. Ph. D. thesis, Massachusetts Institute of Technology.

Huang, C.-T. J. (1982b). Move wh in a language without wh movement. *The Linguistic Review 1*, 369–416.

Ishihara, S. (2000). Scrambling and its interaction with stress and focus. Massachusetts Institute of Technology.

Ishihara, S. (2002). Invisible but audible wh-scope marking: Wh-constructions and deaccenting in Japanese. In *Proceedings of the Twenty-first West Coast Conference on Formal Linguistics*, pp. 180–193. Cascadilla Press.

Izvorski, R. (1997). he present perfect as an epistemic modal. *the proceedings of SALT 7*.

Johnston, M. (1994). *the Syntax and Semantics of Adverbial Adjuncts*. Ph. D. thesis, UCSC.

Kaplan, D. (1989). Demonstratives: an essay on the semantics, logic, metaphysics, and epistemology of demonstratives and other indexicals. In J. Almog, J. Perry, and H. Wettstein (Eds.), *Themes from Kaplan*, pp. 481–563. Oxford: Oxford University Press.

Kikuchi, A. (1987). Comparative deletion in Japanese. Manuscript. Yamagata University.

Kratzer, A. (1987). Modality. In A. von Stechow and D. Wunderlich (Eds.), *Handbook of Semantics,*, pp. 639–650. Berlin: Walter de Gruyter.

Kratzer, A. (1991a). Conditionals. In A. von Stechow and D. Wunderlich (Eds.), *Semantics: an international handbook of contemporary research*, pp. 651.656. Berlin: De Gruyter.

Kratzer, A. (1991b). The representation of focus. In A. von Stechow and D. Wunderlich (Eds.), *Semantics. An International Handbook of Contemporary Research*, pp. 825–834. Berlin: de Gruyter.

Kratzer, A. (1998). Scope or pseudoscope? are there wide-scope indefinites? In S. Rothstein (Ed.), *Events and Grammar*, pp. 163–196. Kluwer Academic Publishers.

Kratzer, A. (1999). Beyond *ouch* and *oops*. how descriptive and expressive meaning interact. Handout, Cornell Conference on Theories of Context Dependency, March 26.

Krifka, M. (2001). For a structured meaning account of questions and answers. In *Audiatur Vox Sapientia. A Festschrift for Arnim von Stechow*, pp. 287–319. Berlin: Akademie Verlag.

Kuno, S. (1973). *The Structure of the Japanese Language*. Cambridge, Mass: MIT Press.

Kuroda, S.-Y. (1973). Where epistemology, style, and grammar meet: a case study from Japanese. In S. Anderson and P. Kiparsky (Eds.), *A Festschrift for Morris Halle*, pp. 377–391. New York, NY: Holt, Rinehart and Winston.

Kuroda, S.-Y. (2005). Focusing on the Matter of Topic: a Study of *Wa* and *Ga* in Japanese. *Journal of East Asian Linguistics 14*, 1–58.

Landman, F. (2000). *Events and Plurality: The Jerusalem Lectures*. Dordrecht, Holland: Kluwer.

McCready, E. (2006). Shifting contexts? that might be good. slides presented at The 11th Sinn und Bedeutung Conference, September 21-23, Barcelona.

Nishigauchi, T. (1990). *Quantification in the theory of grammar*. Dordrecht: Kluwer.

Pesetsky, D. (1987). Wh-in-situ: Movement and unselective binding. In E. J. Reuland and A. G. ter Meulen (Eds.), *The representation of (in)definiteness.* Cambridge, MA: MIT Press.

Potts, C. (2003). *The Logic of Conventional Implicatures.* Ph. D. thesis, UC Santa Cruz.

Reinhart, T. (1997). Quantifier scope: how labor is divided between qr and choice functions. *Linguistics and Philosophy 20*, 335–397.

Rooth, M. (1985). *Association with Focus.* Ph. D. thesis, University of Massachusetts at Amherst.

Rooth, M. (1992). A theory of focus interpretation. *Natural Language Semantics 1*, 75–116.

Ross, J. R. (1967). *Constraints on Variables in Syntax.* Ph. D. thesis, Massachusetts Institute of Technology.

Sawada, M. and R. Larson (2004). Presupposition & root transforms in adjunct clauses. In M. Wolf and K. Moulton (Eds.), *Proceedings of NELS 34*, pp. 517–528. GLSA.

Scheffler, T. (2005). Syntax and semantics of causal *Denn* in german. In P. Dekker and M. Franke (Eds.), *Fifteenth Amsterdam Colloquium.* Universiteit van Amsterdam.

Schlenker, P. (2003). A plea for monsters. *Linguistics and Philosophy 26*(1), 29–120.

Shimoyama, J. (2006). Indeterminate phrase quantification in Japanese. *Natural Language Semantics 14*(2), 139–173.

Speas, M. (2004). Evidentiality, logophoricity and the syntactic representation of pragmatic features. *Lingua 114*, 255–276.

Spector, B. (2003). Scalar implicatures: exhaustivity and gricean reasoning. In B. ten Cate (Ed.), *Proceedings of the ESSLLI'03 student session.*

Tenny, C. (2006). Evidentiality, experiencers, and the syntax of sentience in Japanese. *Journal of East Asian Linguistics 15*(3), 245–288.

Tredinnick, V. (2004). Modal flavor and quantificational force in free relatives with -ever. University of Pennsylvania.

Vallduví, E. (1992). *The informational component.* New York: Garland.

van Rooij, R. and K. Schulz (2004). Exhaustive interpretation of complex sentences. *Journal of Logic, Language and Information 13*, 491–519.

von Fintel, K. and S. Iatridou (2002). The meanings of epistemic modality. Presentation at Sinn und Bedeutung 7, UniversitNat Konstanz,.

von Stechow, A. (1990). Focusing and backgrounding operators. In W. Abraham (Ed.), *Discourse Particles*, pp. 37–84. Amsterdam: John Benjamins.

Watanabe, A. (1992). Subjacency and s-structure movement of wh-in-situ. *Journal of East Asian Linguistics 1*, 255–291.