Implicatures and Evidentiality of *Because* Complements at Syntax-Semantics-Pragmatics Interfaces

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Abstract. This paper will explain the asymmetry parallelism between *node* 'because' and *toki* 'when' in terms of the availability of Evidential Phrase in syntax, following the analysis by Chinque [1], Speas [2] and Tenny [3]. This (in)compatibility of Evidential Phrases with Adjunct Clauses is further motivated by the syntax-semantics difference of Adjunct Clauses discussed by Johnston [4].

1 Introduction

The Japanese contrastive marker *wa* can appear within a *because*-clause as in (1), while it cannot appear within temporal clauses like *toki* 'when' as in (2-a) and an *if*-clause as in (2-b).[1, 2]

(1) Itsumo uchi-ni Mary-**wa** kuru **node** kodomo-ga yorokob-u.
always house-Dat Mary-CTop come because, children-Nom happy-Present
'Because Mary$_{CTop}$ always comes to our house , the children are happy.'

(2) a. *Itsumo uchi-ni Mary-**wa** kuru **toki**, keeki-o motteku-ru.
yesterday house-Dat Mary-CTop come when, cake-Acc bring-Present
'When Mary$_{CTop}$ comes to our house, she always brings a cake.'
b. *Moshi John-ga hon-o 3-satsu-**wa** yom-eba, goukaku-suru.
if John-Nom book-Acc 3-Class-CTop read-Comp, pass-do
'If John reads 3$_{CTop}$ books, he will pass.'

Interestingly, the same asymmetry is found with an evidential morpheme *souna/souda*.

(3) a. Kodomo-ga kuru **souna node**, oyatsu-o youi-shita.
children-Nom come Evid because, sweets-Acc preparation-di
'Because I heard that children are coming, I prepared sweets.'

[1] The same asymmetry is also found in Sawada and Larson [5].

[2] Kuroda [6] uses the following example and the Contrastive *wa* within *if* is judged grammatical. According to Kuroda [6], 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 [6]; p.17)

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

b. *Kodomo-ga kuru **souna toki**, oyatsu-o youi-shita.
children-Nom come Evid when, sweets-Acc preparation-did
'When I heard that children are coming, I prepared sweets.'
c. *Kodomo-ga kuru **souna raba**, oyatsu-o youi-suru.
children-Nom come Evid Comp, sweets-Acc preparation-do
'If I heard that children are coming, I will prepare sweets.'

This paper will analyze this parallelism of the asymmetry between *node* 'because' and *toki* 'when' in terms of the availability of Evidential Phrase in syntax, which has been proposed and investigated by Chinque [1], Speas [2] and Tenny [3]. Evidential Phrase is a syntactic manifestation of a semantics-pragmatic object, Evidentiality. This (in)compatibility of Evidential Phrases with Adjunct Clauses is further motivated by the syntax-semantics difference of Adjunct Clauses discussed by Johnston [4]. The paper will first explore the implicature computation of a Japanese Contrastive Topic in syntax. In particular, it will be argued that the computation can be blocked in a certain syntactic configuration. Secondly, I will present the parallelism between the distribution of the Contrastive Topic and Evidential morphemes and show the connection between Implicatures and Evidentiality. Thirdly, I will go over Johnston's syntax-semantics analysis of adjunct clauses and argue that his analysis is in support of my analysis regarding the (in)availability of Evidential Phrase in adjunct clauses.

2 Implicature Computation Blocked by Syntax

In [7], I argued that Japanese Contrastive Topic *wa* induces implicatures which are always attributed to some attitude-bearer x as defined in (4).

(4) CONTRASTIVE$(w)(x)$(B)(T) (w: world variable, x: speaker or attitude-bearer, B: background, T: contrastive-marked element, C: common ground)
a. asserts: B(T)(w)
b. presupposes: $\forall w' \in \min_w[w' \in \text{Dox}_x(w)] : \exists \text{T}'[\text{T}' \in ALT_C(\text{T})$ & B(T′)(w') → B(T)(w') & B(T)(w') ↛B(T′)$(w')]$
c. implicates: $\exists w' \in \min_w[w' \in \text{Dox}_x(w)] : \forall \text{T}'[\text{T}' \in ALT_C(\text{T})$ & B(T′)(w') → B(T)(w') & B(T)(w') ↛ B(T′)(w')][B(T′)(w')=0])

For instance, (5) is defined iff in all worlds w' differing minimally from w and doxastically accessible to the speaker (the attitude-bearer), there exists some stronger scalar alternative (e.g. Everyone came.).

(5) Nanninka-wa ki-ta.
some-people-CTop come-Past
'[Some people]$_{CTop}$ came'

In (6), *wa* can be associated to another attitude-bearer (i.e. Mary) since *wa* is embedded within an attitude predicate, hence it is ambiguous between the speaker's global implicature and Mary's local implicature. I proposes that the use of *wa* introduces an operator which determines the attitude-bearer of the induced implicature (the speaker or the subject of the attitude predicate) and the contrasted proposition (the matrix or the embedded, i.e. the size of B in (4)).

(6) nanninka-**wa** kita-to Mary-ga shinjite-iru
some-people-CTop come-Comp Mary-nom believe-Prog
'Mary believes [some people]$_{CTop}$ came.' (ambiguous)

a. Local: The speaker asserts [Mary believes some people came and she doesn't believe everyone came]
b. Global: The speaker asserts [Mary believes some people came] and the speaker doesn't assert [Mary believes everyone came]

This association between the operator and the *wa*-marked item seems to be blocked in a certain syntactic configuration, adjunct island, as in (2-a). Since semantic associations are immune to islands, I propose a syntactic account, namely I speculate that the operator is originally generated locally and moves to the positions such as Speech Act Phrase or attitude predicates.

(2-a) *Itsumo uchi-ni Mary-**wa** kuru **toki**, keeki-o motteku-ru.
yesterday house-Dat Mary-CTop come when, cake-Acc bring-Present
'When Mary$_{CTop}$ comes to our house, she always brings a cake.'

Moreover, having a Contrastive within a temporal *per se* should be allowed semantically, i.e. semantically interpretable. As we can see in (7), *wa*-marked NP can be coindexed with an argument, *pro*, within a temporal clause. Therefore, the ungrammaticality of (2-a) is not due to semantic constraints but syntactic ones.

(7) Mary$_i$-**wa** itsumo uchi-ni *pro*$_i$ kuru **toki**, keeki-o motteku-ru.
Mary-CTop always house-Dat *pro* come when, cake-Acc bring-Present
'As for Mary$_{iCTop}$, when *pro*$_i$ comes to our house, she always brings a cake.'
(Possible Implicature: As for John, he never brings anything.)

(7) is not an instance of overt movement of *Mary-wa*. As discussed in Hoji [8], the empty category e_j in (8-a) is a base-generated empty pronominal (little *pro* in more recent terminology) coindexed with *wa*-phrase, while $\underline{t}_j$ is a trace created by the movement of the object.

(8) a. John$_j$-wa [$_S$ Mary-ga [$_{VP}$ e_j butta]]
John-Top Mary-Nom hit
'As for John$_j$, Mary hit him$_j$.' (Hoji [8];p.133)
b. John$_j$-o [$_S$ Mary-ga [$_{VP}$ t_j butta]]
John-Top Mary-Nom hit
'John$_j$, Mary hit t$_j$.' (Hoji [8];p.133)

Hoji [8] provides the following anaphor binding test to show that the sentence-initial *wa*-marked phrase is not an instance of movement. In (9-a), *zibun* cannot be bound by *John*, unlike (9-b).

(9) a. *[$_{NP}$ sono zibun$_i$ nituite-no hon]$_j$ -wa John$_i$-ga [$_{VP}$ $\underline{e}_j$ suteta]
that self about book -Top John-nom threw-away
'As for [that book about himself$_i$]$_j$, John$_i$ threw it$_j$ away.' (Hoji [8];p.133)
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 [8];p.129)

According to Hoji [8], this contrast proves that the sentence-initial *wa*-phrase is base-generated and coindexed with an empty pronominal which is also base-generated.

Going back to (7), *Mary-wa* is not moved out of the *when*-clause but base-generated; hence it does not involve movement and does not cause an adjunct island violation. On the other hand, in (2-a), *Mary-wa* is generated under *when*; hence the implicature operator needs to cross an island in order to find its attitude-bearer.

In summary, the use of the Contrastive Topic *wa* triggers implicatures which are associated to the speaker or some attitude-bearer if available. This association is blocked by a certain syntactic configuration, namely an adjunct island.

3 Parallelism of the Asymmetry

In the previous section, we have seen that *wa* within *when*-clause is ungrammatical, since the association between *wa*-implicature and attitude-bearer is not established. However, if *wa* is embedded within a *because*-clause as in (1), the sentence is acceptable.

(1) Itsumo uchi-ni Mary-**wa** kuru **node** kodomo-ga yorokob-u.
always house-Dat Mary-CTop come because, children-Nom happy-Present
'Because Mary$_{CTop}$ always comes to our house , the children are happy.'

As we have seen earlier, the same asymmetry is found with evidentials. An evidential morpheme *souna/souda* indicates that the statement is based on reported evidence. *Souna/souda* can occur within *because* ((3-a)) but cannot occur within *when* ((3-b)).

(3) a. Kodomo-ga kuru **souna node**, oyatsu-o youi-shita.
children-Nom come Evid because, sweets-Acc preparation-did
'Because I heard that children are coming, I prepared sweets.'
b. *Kodomo-ga kuru **souna toki**, oyatsu-o youi-shita.
children-Nom come Evid when, sweets-Acc preparation-did
'When I heard that children are coming, I prepared sweets.'

The same asymmetry is observed in other languages. The speculation is that whenever discourse items need to be associated to some attitude-holder, the asymmetry emerges. For example, in English, the evidential adverb *obviously* can occur within a *because*-clause while it cannot under *when* and *if*.

(10) a. Mary is upset because obviously John doesn't love her.
b. *Mary got upset when obviously she failed the exam
c. *Mary will be upset if obviously she fails the exam.

Tredinnick [9] points out that sentence (11-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 (10-a), only the former reading, namely the speaker's comment, is available. I speculate that this is because *obviously* has to be associated with the speaker's attitude such as Assert function just like Japanese *wa* is associated to an attitude-bearer.

(11) 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) (10-a)

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.[3, 4]

(12) 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 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.'
c. *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.'

Kratzer [10] also shows that it can be relativized to an attitude-bearer other than the speaker if it is embedded within an attitude predicate like *claim*:

(13) Jederder Zeugen behauptete, er habe ja mit eigenen Augen gesehen, dass ....
Each witnexxes claimed he had JA with own eyes seen that
'Each of the witnesses claimed he had JA seen with his own eyes that...' (Kratzer [10])

In summary, discourse items which need to be associated to an attitude-holder show a cross-linguistic parallelism of asymmetry among adverbial adjuncts in which they are embedded. Particularly in Japanese, both Contrastive Topics and evidential morphemes share the same pattern of the distributional asymmetry. Following Sawada and Larson [5] and Johnston[4], I will argue that the asymmetry comes from the syntax/semantic difference between *when* and *because*. Namely, the Evidential Projections are available for *because* but not for *when*.

4 Implicatures and Evidentials

On the assumption that there exist Speech Act Phrases (Rivero, Rizzi [11],[12]) and Evidential Phrases (Cinque, Speas [1],[2]), Tenny [3] argues for the existence of an evidential argument in syntax, which refers to an individual who is "responsible for evaluating the truth of a proposition" (pp.26-27). For example, as mentioned earlier, a sentence with a *souda/souna* ending indicates that the truth value of the statement is based on the reported evidence as in (14).

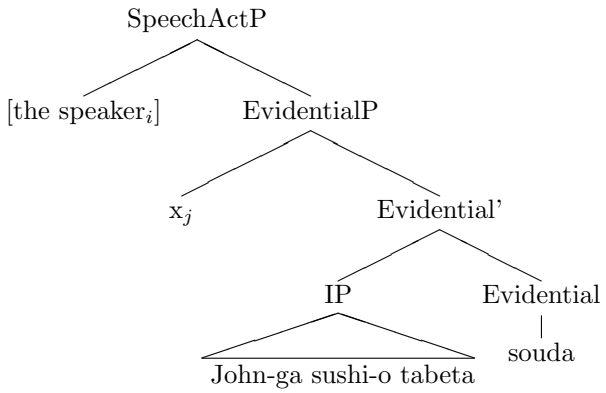
(14) John-ga sushi-o tabeta souda.
John-Nom sushi-Acc ate Evid
'(I heard that) John ate sushi.'

[3] See Kratzer [10] for her rough definition of *ja*.
[4] Kratzer [10] 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
(Kratzer [10])

According to Tenny [3], this is mapped in syntax in the following way: the evidential phrase projected by *souda/souna* contains x_j, someone other than the speaker, as an invisible argument.

(15)



I equate the attitude-bearer contained within *wa* to this evidential argument. Both an evidential argument and an attitude-bearer are bearers of a point of view towards a proposition. Indeed, if an overt evidential morpheme like *souna/souda* indicates that the speaker is not the evidential argument, as in (16), the implicature induced by *wa*, 'Possibly others didn't come', is associated to the reported evidence, not to the speaker.

(16) Kinou John-wa kita souda.
yesterday John-CTop came Evid
'Yesterday, [John]$_{CTop}$ came (I heard).'

Tenny further proposes that *node* 'because' is a head of an Evidential projection and *node* introduces two arguments: a proposition and an evidential argument as depicted in (17).

(17) node [p x]
Prop Evid

Tenny provides different interpretation of direct experience predicates within a *because*-clause and a *when*-clause (see Tenny [3] for details). I modify Tenny's [3] analysis in a way that *because* takes an Evidential Phrase as its complement rather than itself projecting the phrase. In other words, I claim that this Evidential Projection, which contains an evidential argument, is available in a complement of a *because*-clause, while it is not in a *when*-clause. Now, let us go back the contrast between *because* and *when* with respect to the use of *wa* and remember that the interpretation of *wa* involves the movement of the implicature operator to an attitude-holder. In the *because*-clause (1), the implicature operator finds the local Evidential Projection as in ((18)).

(1) Itsumo uchi-ni Mary-**wa** kuru **node** kodomo-ga yorokob-u.
always house-Dat Mary-CTop come because, children-Nom happy-Present
'Because Mary$_{CTop}$ always comes to our house , the children are happy.'

(18) ... [$_{\text{AdjunctP}}$ [$_{\text{EvidP}}$ Op [$_{\text{EvidP}}$ [evid-arg] [$_{\text{Evid'}}$ [$_{\text{IP}}$ t Mary-wa come]]]] because] (1)

In *when*-clauses, the operator has to target the matrix clause, which causes an adjunct island violation ((19)).

(2-a) *Itsumo uchi-ni Mary-**wa** kuru **toki**, keeki-o motteku-ru.
yesterday house-Dat Mary-CTop come when, cake-Acc bring-Present
'When Mary$_{CTop}$ comes to our house, she always brings a cake.'

(19) *[$_{\text{SpeechActP}}$ [speaker] [$_{\text{EvidP}}$ Op [$_{\text{EvidP}}$ ... [$_{\underline{\text{AdjunctP}}}$ [$_{\text{IP}}$ t Mary-wa come] when]]]] (2-a)

*

In order to explain why Evidential Projection is not available for *when*, while it is for *because*, the next section will review Johnston's [4] analysis on the adjunct adverbials.

5 Semantics and Syntax of *When* and *Because*

In the previous section, I have proposed that the asymmetry of the distribution of a Contrastive Topic and evidentials between *when* and *because* is due to the (in)availability of Evidential Projection in syntax. This section will embody this claim by offering an intrinsic argument regarding syntax and semantics of adjunct clauses. Especially, I will review the analysis by Johnston [4] and show that his analysis correlates the syntactic difference proposed above in terms of Evidential Projection.

5.1 Johnston (1994)

I need to establish two points regarding the syntax of adjuncts. First, there is no Evidential Phrase under *when*. Second, there could be an Evidential Phrase under *because*.

According to Johnston, *when* combines with an open event sentence and yields a time-interval description. In this analysis of *when*, since *when* needs to apply the maximal e to the temporal runtime function f, the argument of *when* must be an open event predicate $< e, t >$, not a closed proposition t.

(20) a. when Marcia was at the cafe
b. Marcia was at the cafe $\Rightarrow \lambda e'$.**Marcia-was-at-the-cafe'**(e')
c. when $\Rightarrow \lambda\phi \in D_{<e,t>}\lambda i[\exists e[\text{MAX}(\phi)(e)\&i = f(e)]]$
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)

Following earlier literatures, Johnston [4] 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 borne out as in (21-a). On the other hand, (21-c) is an instance of the overt adverb of quantification.

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

On the other hand, Johnston [4] claims that *because* takes a closed event sentence and expresses a binary relation between closed event sentences. In other words, in the complement of *because*, the existential quantifier over events is not provided by *because*.

(22) 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 [4] further argues that *because*-clause cannot be a restriction of an adverb of quantification. (23-a) does not mean (23-b).

(23) 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.

To sum, *because* takes a closed event sentence t, whereas *when* necessarily takes an open even predicate $< e, t >$. Now, how is this semantic difference manifested in syntax? In particular, how is this difference related to Evidential Projection?

5.2 Evidential Projection and Adverbial Adjuncts

Since an evidential argument is a sentient being who holds evidence for judging the truth-value of an asserted proposition, Evidential Projection takes a closed event sentence (type t). One cannot hold for the evidence for the truth of an open predicate since the expression is not saturated to be a truth-condition. Given Johnston's analysis of *when*, therefore, there is no Evidential Projection under *when*.

On the other hand, Johnston's analysis of *because* is compatible with the analysis in which *because* takes an Evidential Phrase as its complement. Since it is the speaker's or some attitude-bearer's reasoning that connects two conjuncts of *because*, there is a room to introduce evidentiality (point of view) in the complement of *because*.

5.3 Opaque and Transparent *Because*

Furthermore, this speculation correlates with the two interpretations of *because* observed by Davidson [13] and Kratzer [14]: singular causal statement (transparent *because*) and causal explanation (opaque *because*). A singular causal statement expresses a relation between events. For example, (24-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; hence it is not a truth-conditional. (24-b) gives the reason for the speaker's action of going to the pageant in virtue of having certain properties of the expressed events.

(24) a. I fell because the principal did. (transparant)
b. I went to the pageant because the principal did. (opaque)
(Kratzer [14])

The ungrammaticality of *wa* within a transparent *because* ((25)) can be explained along the same line with the case of *when*.

(25) sakki made ame-ga/*wa futta node, kion-ga sagat-ta.
while-ago until rain-Nom/CTop fell because, temperature-Nom down-Past

'Because it rained until a while ago, the temperature went down.' (transparant *because*)

Unlike a opaque *because*, the two conjuncts of a transparent *because* are not connected by the speaker's reasoning but are simply in causal relation. Therefore, the complement of *because* does not contain an Evidential Projection, and hence, the implicature operator needs to target the matrix Evidential Projection, which causes an island violation.

To conclude this section, the semantic difference between *when* and *because* is that *when* takes an open event predicate and *because* takes a closed sentence. Syntactically speaking, *when* subcategorizes for an IP/TP, while *because* subcategorizes for an Evidential Projection.

6 Conclusion and Ramification of the analysis

The framework of interfaces among syntax and semantics-pragmatics offers a straightforward account for the asymmetry observed between *when*-clauses and *because*-clauses. In this paper, I have shown that implicature computation triggered by *wa* involves a syntactic operation of implicature operator movement. This movement is blocked if *wa* is embedded within a *when*-clause since it causes an adjunct island violation. On the other hand, *wa* survives within an (opaque) *because*-clause, since the implicature operator has a host (Evidential Projection) within the adjunct clause; hence it does not need to cross an island. The difference between opaque *because*-clauses on one hand and transparent *because*-clauses and *when*-clauses is represented in syntax as (un)availability of Evidential Projections.

The facts presented in this paper also have an interesting ramification regarding the connection between implicatures and evidentiality. Both concepts are previously treated within semantics-pragmatics, while recent studies have started to explore the phenomena in context of syntax-semantics-pragmatics interfaces as in Chierchia [15] for implicatures and Speas [2] and Tenny [3] for evidentiality. However, the connection between the two concepts has not been discussed in theoretical linguistics. The analysis in this paper offers several connections between the two, descriptively, semantically and syntactically. Contrastive Topics, which induces implicature computation, and evidential morphemes share the same distributional pattern. Implicatures and evidentiality both have associations with the same object, the attitude-holder. Evidential Projections are the syntactic hosts for Implicature Operators. Future research on other discourse items will reveal the well-founded bond between implicatures and evidentiality in linguistic theory.

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