

**GRAMMAR OF KNOWLEDGE REPRESENTATION:
JAPANESE DISCOURSE ITEMS AT INTERFACES**

by
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A dissertation submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Linguistics

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JAPANESE DISCOURSE ITEMS AT INTERFACES**

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TABLE OF CONTENTS

ABSTRACT	xi
Chapter	
1 BACKGROUND AND OVERVIEW	1
1.1 General Introduction	1
1.2 Main Issues and Theoretical Background	2
1.2.1 Implicatures and Japanese <i>Wa</i>	2
1.2.2 Japanese evidential markers	8
1.2.3 General Assumptions	11
1.3 Overview of the dissertation	13
2 CONTRASTIVES AND GRICEAN PRINCIPLES	17
2.1 Introduction	17
2.2 Data: Contrastives induce implicatures	18
2.2.1 Uncertainty	18
2.2.2 Infelicity with the strongest proposition	20
2.2.3 Scope Inversion	20
2.3 Büring 1997	22
2.4 Contrastive Marking in Japanese	26
2.4.1 Negation is not Focused	26

2.4.2	Two Components	27
2.4.2.1	Focus Meaning in Structured Meaning Approach . . .	27
2.4.2.2	Presupposition and Implicature of Contrastives . . .	29
2.4.3	Proportional and Cardinal <i>Many</i>	33
2.4.4	Interim Summary	35
2.5	Contrastive with a Fully Resolved Answer	36
2.6	Local computation	39
2.7	Exhaustivity (Spector, 2003; Schulz and van Rooij, To appear)	44
2.7.1	Deriving Scalar Implicatures from Exhaustivity	45
2.7.2	Applying to Contrastive-marking	50
2.7.2.1	Contrastive as Limited Competence	51
2.7.2.2	Contrastive as Limited Knowledge	53
2.8	Chapter Summary	57
3	EMBEDDED CONTRASTIVE	59
3.1	Introduction	59
3.2	Relativized Implicatures	60
3.2.1	Schlenker (2003)	62
3.2.2	<i>Wa</i> -implicatures and Shiftable Indexicals	63
3.3	Implicature Computation Blocked by Syntax	66
3.3.1	Island Effects	66
3.3.1.1	Japanese Island Constructions for <i>wh</i> -questions	67
3.3.1.2	<i>Wa</i> -marking and islands	71
3.3.2	Movement of CON	75

3.3.3	Arguments for a movement approach	80
3.3.3.1	Pied-piping	80
3.3.3.2	Co-indexation with <i>pro</i>	82
3.3.4	Section Summary	85
3.4	Chapter Summary	86
4	<i>BECAUSE</i>, EVIDENTIALS AND MONSTERS	88
4.1	Introduction	88
4.2	Parallelism of Asymmetry	89
4.2.1	A Cross-linguistic Pattern	91
4.3	Different Types of Adjuncts	94
4.3.1	Temporal adjuncts and <i>Because</i> : Johnston (1994)	95
4.3.2	<i>If</i> -clauses: Kratzer (1991)	97
4.4	Attitudes and Event Quantification	98
4.4.1	The Case of <i>-wa</i> : The Semantic Type of B(F)	98
4.4.2	Semantics of Evidentials: the seat of knowledge	100
4.4.3	Extension: Opaque and Transparent <i>Because</i> 's	103
4.5	Interim Summary	105
4.6	<i>Because</i> and Evidentials as Monsters	106
4.6.1	<i>Because</i> shifts context	106
4.6.1.1	Direct Experience	110
4.6.1.2	Long-Distance Reflexive	112
4.6.2	Evidentials shift contexts	114
4.6.2.1	Evidentials and Direct Experience	118

4.6.2.2	Evidentials and Long Distance Reflexives	119
4.6.3	Section Summary	120
4.7	Chapter Summary	120
5	<i>DAROU</i>	121
5.1	Introduction	121
5.2	Case Study: <i>Darou</i>	122
5.2.1	Data	123
5.2.1.1	Prediction/Inference from non-observable Evidence .	123
5.2.1.2	Probability adverbs	126
5.2.1.3	Embedding under attitude operators	127
5.2.2	Semantic Contribution of <i>Darou</i>	132
5.2.2.1	Kratzer (1991)	132
5.2.2.2	Restricted Modal Base	133
5.2.2.3	Bias: more than 50 %	134
5.2.2.4	Agent of Bias	135
5.2.3	Section Summary	137
5.3	A Puzzle	137
5.4	Not part of the propositional content	138
5.4.1	Embedding under Negation	139
5.4.2	Embedding under Questions	143
5.4.3	Chunks of meaning	148
5.4.4	Comparison with Potts (2003)	154
5.4.4.1	<i>Darou</i> does not involve an identity function	154
5.4.4.2	<i>Darou</i> can be semantically embedded	156

5.4.4.3	<i>Darou</i> is not necessarily speaker-oriented	157
5.4.5	Section Summary: Open End	158
5.5	Chapter Summary	159
6	CONCLUDING REMARKS AND PROSPECTS	161
6.1	Grammaticalization of Pragmatic Effects	161
6.1.1	Local Implicature	161
6.1.2	Syntactic Constructions	163
6.1.3	Embedded Evidential Morphemes	165
6.2	Remaining Issues	166
6.2.1	Contrast among Speech Acts	167
6.2.2	Attitude Expressions and Relative Clauses	170
6.2.3	<i>Because</i> and Speech Acts	174
6.2.3.1	<i>Zibun</i> and <i>de se</i> interpretation	174
6.2.3.2	<i>Darou</i> and shiftable indexicals	176

ABSTRACT

Until recently, it has been widely assumed that pragmatics is independent of the computation of syntax and semantics. However, there is a movement in the direction that at least some of the pragmatic effects should be analyzed in semantics. Some lexical items have been identified to be closely tied to implicatures. Also, language has linguistic means to indicate the nature of evidence for an uttered statement, *evidentiality*. The existence of these items raises a question of where exactly is the boundary of semantics and pragmatics. Japanese has a rich paradigm of morphological manifestation of implicatures and evidentiality, which also has a rigid syntax. By investigating Japanese discourse items which give rise to pragmatic effects, this dissertation sheds a new light on the issue of how these pragmatic notions are represented in language.

Contrastive-marking is analyzed as an indication of lexically specified Gricean implicature. Adopting Schlenker's (2003) notion of 'shiftable indexicals', I argue that Contrastive-marking also contains a shiftable indexical because the implicature associated with Contrastive-marking can be relativized to an attitude-holder other than the actual speaker of the sentence. This association between the implicature and the attitude-holder cannot be established in certain constructions, adjunct clauses and relative clauses. Hence, I argue that the computation of Contrastive-marking involves an island-sensitive movement of an operator.

I also present a parallelism between Contrastive-marking and Evidential-marking with respect to the 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 semantics of temporal and *if*-clauses involve an event quantification, while that of *because*-clauses is a relation between two particular events. Furthermore, I argue that *because*-operator and evidential-marking are context-shifters that can bind shiftable indexicals.

Toward the end of the dissertation, I give an analysis of a particular discourse item *darou* as an evidential marker that has a modal flavor, which indicates the speaker's bias toward the embedded proposition and the bias is based on non-observable reasoning that the speaker has. The data also toss a question to the discussion on levels of meaning to which discourse items commit.

Chapter 1

BACKGROUND AND OVERVIEW

1.1 General Introduction

When people communicate to each other using a language, they are exchanging their knowledge using the language. Linguistic expressions encode the content of knowledge. When the speaker asserts *John came.*, the hearer interprets that the proposition ‘John came’ is part of the speaker’s knowledge: the speaker believes that ‘John came’ is true. However, knowledge we exchange is not necessarily the belief of the speaker. Knowledge that people have could be incomplete. In other words, we can report our knowledge with some degree of uncertainty. We can also report knowledge that comes from other sources. Furthermore, we are capable of articulating our conjectures without any conclusive evidence. For example, the hearer usually draws an inference that the speaker does not have more knowledge than what he/she actually says. According to the literature in pragmatics, this inference is not due to a particular lexical item in the speaker’s utterance, but due to the cooperative principle ‘Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange’ (Grice, 1975). Grice (1975) calls *implicature* this kind of interpretation which is inferred by the speaker’s utterance beyond what is actually said.

Recent semanticists, who study linguistically encoded meanings, have started to investigate the pragmatic nature of language more closely, since many linguistic

expressions actually involve features determined by the context in which they are used. For example, some lexical items have been identified to be closely tied to implicatures. Also, language has linguistic means to indicate the nature of evidence for an uttered statement, *evidentiality*. The existence of these items raises a question of where exactly is the boundary between semantics and pragmatics lies.

Fortunately, Japanese is suitable for investigation into pragmatic effects, since Japanese has a rich paradigm of morphological manifestation of implicatures and evidentiality, which also has a rigid syntax. The phenomenon is less visible in languages like English and German, where many of the pragmatic effects are represented by intonation or adverbs which are relatively free in the syntax. By investigating Japanese discourse items which give rise to pragmatic effects, this dissertation sheds new light on the issue of how these pragmatic notions are represented in language. In particular, how the representations of different knowledge, namely notions of implicatures and evidentiality, interact with the context of utterance?

In the following sections, I go over the basic concepts dealt with in this dissertation, *implicatures* and *evidentiality*, and introduce Japanese discourse items corresponding to these pragmatic effects. Also, I give an overview of this dissertation.

1.2 Main Issues and Theoretical Background

1.2.1 Implicatures and Japanese *Wa*

Grice (1975) divides implicatures into two categories, conversational and conventional implicatures. Conversational implicatures are interpretations calculated from the semantic content of the proposition by the general assumption that the Cooperative Principle holds. For example, from the utterance (1-a), we almost automatically obtain an inference in (1-b).

- (1) a. Some people came.
- b. Not everyone came.

[Levinson \(1983\)](#) explicates the Gricean mechanism of conversational implicatures as follows.¹

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

([Levinson, 1983](#), p.113-114)

According to this mechanism, (1-a) implicates (1-b) in the following way. If the speaker of (1-a) thought that 'everyone came.' is true, he/she should have said so, since the utterance of 'everyone came.' is more informative, hence more desirable, than 'some people came.' Therefore, assuming that the speaker is observing the cooperative principle, he/she thinks 'everyone came.' is not true.

As one of their major features, it has been observed that conversational implicatures are known to be cancelable (or defeasible), as shown in (3).

¹ In chapter 2, I will present a recent reformulation of the mechanism developed by [Schulz and van Rooij \(to appear\)](#).

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

Similarly, since the same interpretation arises as long as the same semantic content is obtained, conversational implicatures are non-detachable. As [Levinson \(1983\)](#) notes, [Grice \(1975\)](#) reasons that “[conversational] implicature is attached to what is said, not to linguistic form” ([Levinson, 1983](#), p.116). For instance, uttering (4-a) in a context where it is clearly false induces an ironic interpretation (4-b) due to its conversational implicature.

- (4) a. John’s a genius.
b. John is an idiot. ([Levinson, 1983](#), p.116)

The same ironic interpretation arises when we replace ‘genius’ with its synonyms. For instance, uttering (4-a) in a context where it is clearly false induces an ironic interpretation (4-b) due to its conversational implicature.

- (5) a. John’s a mental prodigy.
b. John’s an exceptionally clever human being.
c. John’s an enormous intellect.
d. John’s a big brain. ([Levinson, 1983](#), p.117)

Conversational implicatures are calculated based on the truth-conditional content according to the principles of Pragmatics. Therefore, as long as the sentence has the same truth-conditional content, the same implicature arises even if some lexical items are changed.

While conversational implicatures are derived by a general pragmatic principle (the cooperative principle), conventional implicatures are due to a particular lexical item. For example, Grice (1975) identifies a lexical item *but* as a triggerer of a conventional implicature. The use of *but* implicates that there is a contrast between the conjuncted propositions. This implicature is lost when we replace ‘but’ with ‘and’, which has the same truth-conditional meaning (a conjunction operator \wedge).

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

Also, conventional implicatures are not cancelable since they are tied to a particular linguistic item employed in a sentence, as in (7).

- (7) ??The Duke of Norfolk has three mansions, but only one car,
and there is in fact no contrast between these two facts. (Levinson, 1983,
p.129)

In short, conversational implicatures are derived by a pragmatic principle that operates over the propositional content encoded by lexical items, while conventional implicatures are triggered by specific lexical items.

The first half of this dissertation is mainly concerned with the Japanese particle *-wa*, which seem to have a close connection to the notion of implicatures. Based on the work by Kuroda (1965), Kuno (1973) distinguishes the function of the Japanese particle *-wa* as two semantic-pragmatic effects, *Thematic* and *Contrastive* as illustrated in (8).

- (8) a. Thematic *-wa*

John-wa gakusei desu
John-Top student is
'Speaking of John, he is a student.'

- b. Contrastive *-wa*

Ame-wa futte imasu ga, yuki-wa futte imas-en
rain-TOP falling is but snow-TOP falling is-NEG
'It is raining, but it is not snowing.' (Kuno, 1973, :38)

According to Kuno (1973), thematic *-wa* indicates the theme of the sentence. Kuno (1973) also notes that an NP marked with thematic *-wa* is either anaphoric or generic, i.e., it is part of old information. In Heycock (1993), this use of *-wa* is associated to *Topic* in information structure (Vallduví, 1992). The sentence (8-a) delivers the speaker's knowledge about John, without indicating about his/her knowledge about any other individuals. On the other hand, Contrastive *-wa* indicates there is a contrast among individuals. Also, Contrastive *-wa* can contain new information and receives prominent intonation (see Nakanishi, 2001, for the experimental work on the prosody of *-wa*).

In this dissertation, I focus on the second use of *-wa*, Contrastive *-wa*. Contrastive *-wa* has interesting properties pertaining to the lexicalization of pragmatic effects discussed above. For example, the use of Contrastive *-wa* is associated with implicatures as in (9).

- (9) NANNINKA-wa ki-ta
Some-people-Con come-Past
Some people came.

(Implicature: It's possible that not everyone came.)

Although the implicature induced by *-wa* is similar to the conversational implicature presented above, it has features of conventional implicatures. First, the induced implicature is not cancelable. For example, the use of *-wa* in the first conjunct of (10-a) implicates that the speaker considers the possibility that the other individual, Peter didn't pass. The second conjunct strengthens the implicature. (See chapter 2 for the precise computation.) On the other hand, in (10-b), the second conjunct attempts to negate the implicature of the first conjunct. By asserting 'Peter passed', it entails that the speaker considers no possibility that Peter didn't pass. This attempt results in infelicity as shown in (10-b).

- (10) (Among Mary and Peter,) who passed the exam?
- a. MARY-wa ukat-te/takedo, PETER-wa ukara-nakat-ta
 Mary-Con pass-and/Past.but, Peter-Con pass-Neg-Past
 '[Mary]_{Con} passed and/but [Peter]_{Con} didn't pass.'
 - b. *MARY-wa ukat-te/takedo, PETER-wa ukat-ta
 Mary-Con pass-and/Past.but, Peter-Con pass-Past
 '[Mary]_{Con} passed and/but [Peter]_{Con} passed.'

Similarly, the implicature induced by *-wa* is detachable. (11-b) implicates that the speaker is uncertain about others, 'At least Mary passed.', while (11-c) does not have such an interpretation.

- (11) a. Who passed the exam?
- b. MARY-wa ukat-ta
 Mary-Con pass-Past
 '[Mary]_{Con} passed.'
 - c. Mary-ga ukat-ta.
 Mary-Nom pass-Past
 'Mary passed.'

In summary, Japanese Contrastive *-wa* gives rise to an interpretation similar to the one of conversational implicatures as its lexical specification. Hence, investigating the semantics and syntax of Japanese Contrastive *-wa* offers a new insight into the theory of the representation of knowledge.

1.2.2 Japanese evidential markers

Besides implicatures, *evidentiality* is another key topic that is of immediate concern to this dissertation. There are languages (Japanese, Korean, Turkish, Quechua to name a few) that have means of encoding the information source (evidence) of an uttered statement as a bound morpheme. For example, as in a Japanese example (12), a sentence with a *souda/souna* ending indicates that the truth value of the statement is based on the reported evidence (hearsay).

- (12) a. John-ga kaet-ta-souda.
John-Nom go.home-Past-Evid
'John went home (I heard).'

Most of the European languages like English do not have a rich system that exclusively encodes evidentiality, although some adverbs like *apparently*, *obviously* etc. seem to mark indirect evidence. Namely, the adverbs indicate that the speaker did not witness the event expressed by the proposition, but the statement is a conclusion drawn from some indirect evidence.

- (13) a. Kim has apparently been offered a new job. (von Fintel, 2005)
b. Joe obviously made a big mistake. (von Fintel, 2003)

Speas and Tenny (2003) have analyzed these evidential markers as a grammaticalization of seat of knowledge. Namely, evidential markers indicate the agent of knowledge

of the uttered statement.

Apart from evidential markers, there is another way, which is more common in human languages (perhaps universal), to introduce a new agent of knowledge linguistically, namely the use of *attitude predicates* such as *say*, *believe* etc. [Schlenker \(2003\)](#) proposes to treat attitude reports as speech-act operators. His arguments are based on the observation that the referents of certain indexicals can be shifted if they are embedded under attitude predicates. For example, according to [Schlenker \(2003\)](#), in Amharic, when the first person indexical is embedded under an attitude predicate as in (14), the referent of the indexical shifts to the agent of the reported attitude as depicted in (15).

- (14) ḵon ḵegna nə-ññ yil -all
 John hero be.PRT -1sO 3M.say -AUX.3M
 ‘John says that he is a hero.’

 (lit. John says that I am a hero.) (Schlenker, 2003)
- (15) Situation to be reported: John says: ‘I am a hero.’

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

This analysis pertains to an interesting property with respect to the agent of conversational implicature. For instance, [Landman \(2000\)](#) and [Chierchia \(2004\)](#) observe that (16) is normally interpreted as ‘Mary believes that not all people came.’ Namely, there is an interpretation that involves a conversational implicature ‘not all people came’ attributed to the speaker of the reported utterance, ‘Mary’.

- (16) Mary believes that some people came.

Hence, if the agent of the speech act and that of the knowledge are shifted by speech-act operators like attitude predicates, the agent of implicature is also shifted. It is interesting to see how the interpretation of Japanese Contrastive *-wa* interacts with attitude predicates [chapter 3]. Also, if the function of evidentials is somewhat parallel to that of attitude predicates, this leads to another interesting question of how the implicature computation interacts with evidential marking [chapter 4].

I mainly discuss two Japanese evidential markers, *souda/souna* and *darou*, in this dissertation. As mentioned earlier, a sentence with *souda/souna* indicates that the speaker makes a statement based on hearsay evidence as in (12).

- (12) John-ga kaet-ta-souda.
 John-Nom go.home-Past-Evid
 ‘John went home (I heard).’

Interestingly, if the argument of the sentence (12), *John* is Contrastive-marked as in (17), the implicature induced by *-wa* ‘it’s possible that others didn’t go home.’ seems to be associated with the evidence that the speaker has.

- (17) JOHN-wa kaet-ta souda.
 John-Con go.home-Past Evid
 ‘At least John went home (I heard).’

In chapter 4, we will see how this shift of the agent of implicature happens.

Another evidential marker in Japanese which will be discussed in this dissertation is *darou*. *Darou* indicates that the speaker has a bias toward the asserted proposition, hence it is often translated as ‘probably’ as in (18).

- (18) ashita kare-ga kuru darou.
 tomorrow he-Nom come DAROU

‘Probably, he will come tomorrow.’

Since *darou* indicates “the speaker’s” bias, it does not change the agent of knowledge of the prejacent proposition unlike *souda/souna*. However, it is interesting in that it has a modal-flavor, and also when *darou* itself is embedded under an attitude predicate as in (19). In (19), the agent of the bias is ‘Mary’, not the actual speaker of the sentence.

- (19) Mary-wa John-ga kuru darou to omot-teiru.
Mary-Top John-Nom come DAROU Comp think-Prog
‘Mary thinks that John will come-*darou*’

In chapter 5, I examine the semantics of *darou* and inquire into the levels of meaning to which it contributes.

1.2.3 General Assumptions

In addressing the issues that arise with discourse items, I build my discussions and analyses in the framework of generative grammar, which is developed in Principles and Parameters approach and the Minimalist Program (Chomsky, 1981, 1995). Especially, I assume the inverted Y-model of the grammar (20). In this model, lexical items enter syntactic derivation. After Spell Out, the syntactic derivation branches into the two levels of the interface representations, PF and LF. PF is a level of the phonological representation that interfaces with perceptual-articulatory system. On the other hand, LF is a level of the semantic representation that interfaces with conceptual-intentional system. The syntactic operations occur before Spell Out are overt, and hence they influence the PF representation, while the operations after Spell Out are covert and only influence the LF representation.



The LF representation is particularly relevant in chapter 3. I assume that the syntactic representations at the LF component is visible to semantic interpretation. In addition, I adopt the general assumption of compositionality that the meaning of a sentence systematically corresponds to the structure of the sentence.

Until recently, it has also been widely assumed that pragmatics is independent of the computation of syntax and semantics. As mentioned above, however, there are a number of researchers who have shown that at least some of the pragmatic effects should be analyzed in semantics. For example, [Chierchia \(2004\)](#) proposes that the computation of implicatures should be incorporated into grammar by drawing an analogy to the history of *presupposition*; “it was thought early on that presuppositions constituted a purely pragmatic phenomenon, not amenable to a grammar-driven compositional treatment (see, e.g., [Kempson, 1975](#)). But eventually it turned out that such a compositional, grammar-driven treatment is, in fact, the one that allows us a better understanding of the phenomenon.” ([Chierchia, 2004](#), p.48). The pragmatic phenomena which I discuss in this dissertation are all tied to particular linguistic items: they are part of the semantics of the lexical meanings. In this sense, this dissertation deals with lexical semantics.

In order to tackle the semantics of Japanese Contrastive-marking, I adopt von Stechow’s (1990) Structured Meaning Approach. As noted by [Kuno \(1973\)](#), Japanese Contrastive *-wa* involves a prosodic peak in the intonation. I take this fact to argue that Japanese Contrastive-marking involves a phonological Focus-marking,

which generates a question meaning in the sense of the Structured Meaning Approach (von Stechow, 1990).

For the semantics of modal-flavor of *darou*, I follow Kratzer's (1991b) standard analysis of modality. Namely, the modal meaning is expressed as a quantification over epistemic possible worlds.

1.3 Overview of the dissertation

In this chapter, I have introduced the basic concepts and issues, and illustrated with corresponding Japanese examples, which will be dealt in the rest of this dissertation.

In chapter 2, I start off by giving an analysis of Japanese Contrastive-marking. As observed for German Contrastive-marking by prosody (Topic-Focus contour), Japanese Contrastive-marking seems to give rise to uncertainty implicatures. The influential work by Büring (1997) will be first reviewed. According to Büring (1997), the German Topic-Focus contour generates a set of questions in the sense of Rooth (1985; 1992). The contour gives rise to an uncertainty because the assertion does not resolve all of the generated questions. Although the same intuition is shared for Japanese Contrastive-marking, Büring's (1997) analysis cannot be directly applied to Japanese Contrastive-marking, since Japanese Contrastive-marking involves a different Focus-structure, which is crucial to Büring's (1997) analysis. Instead, I formulate the definition of Contrastive-marking in the framework of structured meaning approach (von Stechow, 1990; Krifka, 2001, among others). There are two independent components in Japanese Contrastive-marking, namely Focus-marking by prosody which generates a semantic meaning parallel to a *wh*-question, and *wa*-marking which presupposes an alternative stronger to the assertion and implicates the negation of the alternative is possible. Chapter 2 also presents a set of data

that appears to be a puzzle for the uncertainty analysis of Contrastive-marking. Contrastive-marking can be used when the speaker is certain about all the alternatives. The local computation of *wa*-marking is proposed to resolve this puzzle. In addition, I attempt to relate the meaning of Contrastive-marking to the Gricean Principle, since implicatures that are computed by Contrastive-marking are very similar to conversational scalar implicatures in Grice (1975). The recent theory on exhaustivity by Schulz and van Rooij (to appear) and Spector (2003) is considered. In their works, scalar implicatures are analyzed as a subcase of exhaustive interpretation. Furthermore, the computation of implicatures involve two steps. First, the Gricean Principle tells the interpreter to assume that the speaker's utterance is maximally informative given his/her knowledge. This instruction gives a primary weak implicature which is parallel to the uncertainty implicature by Contrastive-marking. Second, the assumption that the speaker is maximally competent gives a strong implicature, which is an exhaustive interpretation. Hence, I reanalyze the function of Contrastive-marking as a lexical indication of limited competence.

Chapter 3 moves on to consider the implicature computation by Japanese Contrastive-marking in embedded contexts. First of all, when *wa*-marking is embedded under an attitude verb, the implicature triggered by *-wa* can be relativized either to the speaker or the subject of the attitude predicate. Following Schlenker's (2003) notion of 'shiftable indexicals', I extend my analysis of Contrastive-marking in chapter 2 so that the agent of the implicatures could be associated to a different agent of knowledge depending on the context where it occurs. Furthermore, this association interacts with syntactic structures. *Wa*-marking is not possible within relative clauses and adjunct clauses (temporal-clauses and *if*-clauses). The data show an interesting parallelism with Japanese *wh*-questions. It appears that Japanese *wh*-question formation violates island constraints. In Nishigauchi (1990), however, it

is argued that the seeming island violation is the consequence of LF pied piping of the whole island. In fact, it is possible to Contrastive-mark an argument within an island construction if the *wa*-marking is attached at the edge of the island with the Focus-marking inside the island. Observing this parallelism, I argue that the computation of Contrastive-marking, namely the placement of the operator that induces implicatures involves an island-sensitive movement.

Chapter 4 presents a parallelism between Contrastive-marking and evidentiality in terms of their distribution with respect to adjunct clauses. In Chapter 3, it is shown that *wa*-marking is not available within temporal-clauses and *if*-clauses. However, it is possible to have *wa*-marking within *because*-clauses. The same asymmetry is found with evidential-marking. An evidential-marker cannot appear within temporal and *if*-clauses, while it can within *because*-clauses. I follow Johnston's (1994) analysis that the semantics of temporal and *if*-clauses involve an event quantification, while that of *because* is a relation between two particular events. In other words, temporal and *if*-clauses contain an open event variable, hence they are unsaturated open predicates, while *because*-clauses are saturated closed propositions. Hence, Contrastive-marking and evidentials, which express some attitude toward a particular event, cannot intervene in event quantifications. In addition, evidentials and *because* are analyzed as attitude operators that shift the context which binds shiftable indexicals contained in Contrastive-marking, a direct experience predicate and a long-distance reflexive.

Chapter 5 continues the topic of evidentiality but employs a different approach. Namely, I focus on the evidential morpheme in Japanese, *darou*. Various contexts where the use of *darou* is suitable are explored, which gives us a better understanding of the semantic contribution of it. I propose to treat *darou* as an evidential marker that has a modal flavor, which indicates the speaker's bias toward the

embedded proposition. Furthermore, this bias is based on non-observable reasoning that the speaker has. The notion of “the speaker” can be shifted as well, although it is less flexible than the ones discussed in chapter 4 (Contrastive-marking, direct experience predicates, and long-distance reflexives). This fact also sheds new light on the ongoing discussion on levels of meaning to which discourse items commit.

In chapter 6, I conclude this dissertation by arguing that the properties of the Japanese discourse items presented in the earlier chapters support the idea that pragmatic effects and syntax-semantic computation are *interlingual*. I also present some facts and puzzles that are not discussed in this dissertation.

Chapter 2

CONTRASTIVES AND GRICEAN PRINCIPLES

2.1 Introduction

This chapter presents an analysis of Contrastive-marked sentences at root clauses. Contrastive meaning can be represented by prosody as in English (B-accent) (Jackendoff, 1972) and German (Topic-Focus contour) (Féry, 1993; Büring, 1997; Krifka, 1998) and it can also be represented by a combination of prosody and morphology as in Japanese (-*wa*) (Kuno, 1973; Oshima, 2002; Nakanishi, 2001; Hara, to appear) and Korean (-*nun*) (Lee, 2000). It has been observed that the contrastive meanings come from an *uncertainty* implicature. However, uncertainty alone does not correctly characterize all the properties of Contrastives. This chapter elaborates an analysis that connects the phenomena of Contrastive meaning to a more general pragmatic principle, i.e. the Gricean principles, rather than stipulating that Contrastives induce a particular implicature. In section 2.2, I first present some data with Contrastive-marking which suggest that Contrastive-marking is tied to implicatures. In section 2.3, I summarize the analysis by Büring (1997) on the Topic-Focus accent on German. In section 2.4, I go over my analysis on Japanese Contrastives discussed in Hara (to appear). In section 2.5, I will point out the problem in characterizing Contrastive-marking in terms of uncertainty. Next, section 2.6 shows that local computation of implicatures is crucial in making the correct predictions. It is

also shown that implicatures induced by Contrastive-marking are very similar to the Gricean (primary) implicatures. Lastly, in section 2.7, I point out how my analysis of Contrastives is consistent with the notion of Gricean Principles and exhaustivity developed in Spector (2003) and Schulz and van Rooij (to appear).

2.2 Data: Contrastives induce implicatures

In this section, I will go over a range of data with Contrastive-marking, and informally show that the following generalization holds:

(1) Generalization:

Contrastives are licit when (scalar) implicatures can be generated.

More specifically, Contrastive-marking implicates some uncertainty; hence, a sentence cannot be Contrastive-marked if the proposition expressed by the sentence is the strongest among alternatives.¹ 2. Similarly, if a sentence is ambiguous between the strongest interpretation and another weaker interpretation of that sentence, then Contrastive-marking the sentence disambiguates the meaning in favor of the weaker interpretation.

2.2.1 Uncertainty

When Contrastive-marking is used in a sentence, the meaning of that sentence seems to carry a degree of uncertainty. In (2-b), the answer indicates that the proposition ‘Mary passed the exam.’ is the most informative answer that the speaker

¹ Of course, I am not the first one that made this observation. In particular, Büring (1997) has a convincing formal implementation of this generalization, which I will go over in section 2.3.

can give to the questioner; in other words, it generates an implicature that the speaker is uncertain about others.²

- (2) a. Who passed the exam?
 b. [_B Mary did.]
 (Implicature: Possibly, others didn't pass. /I don't know about others.)

In (3), while the utterance without Contrastive-marking (3-c) is likely to be interpreted as 'Mary and only Mary passed,' (3-b) makes the utterance less assertive.³ In other words, it seems to implicate 'Possibly, others didn't pass/I don't know about others.' Similarly, Contrastive-marking of numerals as in (4-b) seems to have an effect similar to 'at least N', namely it specifies the number that the speaker is certain of and indicates an uncertainty regarding larger numbers (Teramura, 1991).

- (3) a. Who passed the exam?
 b. MARY-wa ukat-ta
 Mary-Con pass-Past
 '[Mary]_{Con} passed.'
 c. Mary-ga ukat-ta.
 Mary-Nom pass-Past
 'Mary passed.' (exhaustive answer)
- (4) a. How many people came to the party?
 b. 3-nin-wa kita
 3-Class-Con came
 '3 people came.' (Implicature: Possibly, it is not the case that more than three came. /I don't know whether more than three came)

² [_B] indicates so-called B-accent (L+H*) in Jackendoff (1972).

³ Capitalization of *Mary* indicates sentential stress marked by a prosodic peak.

2.2.2 Infelicity with the strongest proposition

The uncertainty requirement explains why some Contrastive-marked quantifiers, like *zen'in-wa* 'everyone', cannot appear in an affirmative context. This proposition is the most informative proposition among the possible alternatives (e.g. 'Some people came', 'Most people came.' etc.), therefore no implicature can be derived. Hence, (5) is infelicitous, since the asserted proposition is not compatible with the property of Contrastive-marking.

- (5) #ZEN'IN-wa kita.
 Everyone-Cont came
 (no implicatures)

On the other hand, *daibubun-no* 'most' does not cause infelicity in an affirmative context (6), since there is a more informative proposition, namely 'Everyone came.'

- (6) DAIBUBUN-no hito-wa kita.
 Most-Gen person-Con came
 ' [Most people]_{Con} came.' (Implicature: Probably, not everyone came. \I don't know whether everyone came.)

2.2.3 Scope Inversion

The same reasoning can be made to capture the scope inversion phenomenon observed by Contrastive-marking.

In (7), German Topic-Focus contour only allows the $\neg\forall$ reading, which leaves room for uncertainty regarding the alternatives; 'Are some of them corrupt?', 'Are most of them corrupt?' etc.

- (7) /ALLE Politiker sind NICHT\ korrump
 all politicians are not corrupt

- a. ‘It is not the case that all politicians are corrupt.’ ($\neg\forall$)
(Implicature: Possibly, some are corrupt.)
- b. *‘No politicians are corrupt.’ ($*\forall\neg$)
(No implicature: unavailable reading for (7)) (German; Büring 1997)

Japanese Contrastive-marking shows the same pattern. (8) only has $\neg\forall$ reading.

- (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. ($*\forall\neg$)

I claim that the scope inversion phenomena illustrated in (8) is due to the generalization made earlier about Contrastive-marking: namely, Contrastives always induce implicatures. If a sentence contains a Contrastive, only the reading that has implicatures can survive. In (8), the $\neg\forall$ reading implies “Some people came”, while the $\forall\neg$ reading exhaustively entails or contradicts all the variants of the asserted proposition, “Some people didn’t come”, “Most people came”, etc. and therefore no propositions are left to be implicated. Consequently, $\neg\forall$ is the only available reading for (8).

With other quantifiers that are not the strongest in the scale such as *daibubun-no* ‘most’, *-wa* is compatible with both wide scope and narrow scope, as shown in (9), because neither scope has the strongest reading.

- (9) DAIBUBUN-no hito-wa ko-nakat-ta
Most-Gen person-Con come-Neg-Past
- a. It is not the case that Most people came.
(Implicature: Possibly, some people came.)

- b. Most people are such that they didn't come.
 (Implicature: Possibly, it is not the case that everyone didn't come.)

In summary, Contrastives can be used in a proposition only when they induce implicatures. My purpose of this chapter is to give a precise analysis of Japanese Contrastive-marking. As mentioned in footnote 1, a formal implementation of the generalization sketched in this section is made available for German Topic-Focus contour by Büring (1997). In the next section, I will go over Büring's analysis in order to grasp the phenomenon formally, and examine whether it is directly applicable to Japanese Contrastive-marking.

2.3 Büring 1997

In this section, I will review Büring's analysis of Topic-Focus contour. An ambiguous sentence in German such as (10-a) can be disambiguated by a using Topic-Focus prosody as in (10-b) (Féry (1993); Büring (1997); Krifka (1998) among others). Büring (1997) calls the rising accent on *alle* a Topic accent and the falling accent on *nicht* a Focus accent.

- (10) a. Alle Politiker sind nicht korrupt
 all politicians are not corrupt
 (i) No politician is corrupt. ($\forall\neg$)
 (ii) It is not the case that all politicians are corrupt. ($\neg\forall$)
- b. /ALLE Politiker sind NICHT\ korrupt
 all politicians are not corrupt
 It is not the case that all politicians are corrupt. ($\neg\forall$ only)

Büring (1997) provides the following analysis in the framework of Rooth's (1985, 1992) *Alternative Semantics for Focus*. By having the Topic-Focus prosody,

(10-b) elicits three different semantic values: First, it has the ordinary semantic value $\llbracket(10-b)\rrbracket^o$. Second, the Focus accent on *NICHT* 'not' generates the Focus semantic value $\llbracket(10-b)\rrbracket^f$, which is a set of propositions obtained by replacing the focused element with some type-identical alternatives to it (i.e., not and the identity function). Third, the Topic accent on *ALLE* 'all' generates the Topic semantic value $\llbracket(10-b)\rrbracket^t$, which is a set of sets of propositions obtained by replacing the topical element with alternatives (i.e., other generalized quantifiers).

- (11) a. $\llbracket(10-b)\rrbracket^o$ =It is not the case that all politicians are corrupt
 b. $\llbracket(10-b)\rrbracket^f$ ={All politicians are corrupt, It is not the case that all politicians are corrupt}
 c. $\llbracket(10-b)\rrbracket^t$ ={ {All politicians are corrupt, It is not the case that all politicians are corrupt},
 {Most politicians are corrupt, It is not the case that most politicians are corrupt},
 {Some politicians are corrupt, It is not the case that some politicians are corrupt},
 {No politicians are corrupt, It is not the case that no politicians are corrupt} }

Büring (1997) explains the availability of the $\neg\forall$ reading by adopting the notion of Residual Topic (“a set of disputable propositions induced by a Topic”):

- (12) If a sentence S with a Topic accent is uttered given some Context CX, and there is no disputable Residual Topic the sentence establishes, the utterance of S in CX is infelicitous.

In the $\neg\forall$ reading of (10-b), there are Residual Topics since the proposition asserting that not all politicians are corrupt can cross out only one set of propositions in the Topic value. It neither entails nor excludes other sets of propositions. In other words, we are still able to ask whether there are some corrupt politicians and how many politicians are not corrupt.

- (13) $\llbracket \neg\forall \rrbracket^t$
- a. $\llbracket \text{not} \rrbracket_F \llbracket \text{all} \rrbracket_T \text{ politician } [[\text{corrupt}]]]]$
 - b. $\{ \{ \neg \text{all}(\text{politician})(\lambda x.\text{corrupt}(x)), \text{all}(\text{politician})(\lambda x.\text{corrupt}(x)) \},$
 $\{ \neg \text{most}(\text{politician})(\lambda x.\text{corrupt}(x)), \text{most}(\text{politician})(\lambda x.\text{corrupt}(x)) \},$
 $\{ \neg \text{some}(\text{politician})(\lambda x.\text{corrupt}(x)), \text{some}(\text{politician})(\lambda x.\text{corrupt}(x)) \},$
 $\{ \neg \text{one}(\text{politician})(\lambda x.\text{corrupt}(x)), \text{one}(\text{politician})(\lambda x.\text{corrupt}(x)) \} \}$

On the other hand, the $\forall\neg$ reading is not available for (10-b), as there is no room for dispute in this reading. If all politicians are such that they are not corrupt, all sets of propositions in the topic value are either entailed or contradicted. All propositions in the Topic value are crossed out since none of them are disputable.

- (14) $\llbracket \forall\neg \rrbracket^t$
- a. $\llbracket \text{all} \rrbracket_T \text{ politician } [[\text{not} \rrbracket_F [\text{corrupt}]]]]$
 - b. $\{ \{ \text{all}(\text{politician})(\lambda x.\neg\text{corrupt}(x)), \text{all}(\text{politician})(\lambda x.\text{corrupt}(x)) \},$
 $\{ \text{most}(\text{politician})(\lambda x.\neg\text{corrupt}(x)), \text{most}(\text{politician})(\lambda x.\text{corrupt}(x)) \},$
 $\{ \text{some}(\text{politician})(\lambda x.\neg\text{corrupt}(x)), \text{some}(\text{politician})(\lambda x.\text{corrupt}(x)) \},$
 $\{ \text{one}(\text{politician})(\lambda x.\neg\text{corrupt}(x)), \text{one}(\text{politician})(\lambda x.\text{corrupt}(x)) \} \}$

Accordingly, (14) does not satisfy (12), and thus the quantifier wide scope reading of (10-b) is not available. The narrow scope reading in (10-b) is available because the set of alternatives in (13) includes disputable propositions.

Büiring (1997) notes that scope inversion is not obligatory for all quantifiers. For instance, (15) remains ambiguous even with a Topic Focus contour.

- (15) Zwei /DRITTEL Politiker sind NICHT\ korrump
 Two [thirds]_T of the politicians are [not]_F corrupt

This follows from the fact that both readings have disputable questions:

- (16) a. It is not the case that two thirds of the politicians are corrupt
 b. ... and it might or might not be the case that there are in fact no corrupt politicians
- (17) a. Two thirds of the politicians are non-corrupt
 b. ... and it might or might not be the case that some are corrupt

As shown above, in Büiring's (1997) system, it is crucial that negation is Focus-marked to generate a set of propositions (the Focus value). Büiring (1997) characterizes Topic-marked sentence as an indication that there exist some unanswered questions. Hence, a sentence with Topic marking necessarily has disputable questions in its Topic value, which are derived from the Focus value. As presented in section 2.2, Japanese Contrastive marking has the same distribution and the same intuition in terms of its interpretation. Hence, it is tempting to apply Büiring's (1997) analysis to Japanese case. However, there are some complications in terms of mapping between phonological realization and semantic computation. In the next section, I will discuss my analysis on Japanese Contrastive Topics I developed in

Hara (to appear).

2.4 Contrastive Marking in Japanese

Similarly to Büring (1997), I claim that a contrastive-marked sentence presupposes that there exist a stronger scalar alternative to the assertion, and it implicates that it is possible that the stronger alternative is false.

2.4.1 Negation is not Focused

Although, intuitively, the interpretation of morphological Contrastive-marking in Japanese is parallel to the interpretation of German Topic-Focus contour, it is not clear whether negation is Focus-marked in the Contrastive Japanese sentences.

When negation is in Focus, the stress falls onto the verb in Japanese as follows:

- (18) a. John-ga ki-ta-no?
John-Nom come-Past-QP
'Did John come?'
- b. Iiya, KO-nakat-ta.
No, come-Neg-Past
'No, (he) did NOT.'

In the case of scope inversion, no focus is marked on negation in Japanese. When sentence (19) is uttered, *zen'in* 'everyone' receives stress, as indicated by the capitals. However, neither the verb stem nor the negation morpheme *nakat* receives any phonological or morphological marking.

- (19) John-wa ZEN'IN-wa tasuke-nakat-ta
John-Top Everyone-CTop help-Neg-Past
*'John didn't help anyone.'
- 'It is not the case that John helped everyone.'

If there is no Focus-marking on negation, its Topic value would be a set of singleton sets. Therefore, unlike the German case, the Topic value here is not a set of *yes-no* questions (i.e. it is not a set of sets of propositions). Accordingly, the contrastive meaning cannot be characterized as the existence of unanswered questions in the Topic value. One could assume that the negation does not have a particular prosodic pattern even though it is in Focus. Rather than generalizing Büring’s (1997) analysis to Japanese, I offer an alternative analysis of the Japanese facts that captures the same kind of intuition (uncertainty or disputability of alternatives) without assuming that the negation is Focus-marked.

2.4.2 Two Components

I claim that Japanese Contrastive marking always induces scalar implicatures that express the possibility of the negation of stronger alternatives. More specifically, Japanese Contrastive marking involves two components: 1) a prosodic peak that indicates Focus-marking, and 2) *wa*-morpheme that introduces the CON operator, which induces scalar implicatures. I formulate the interpretation of Japanese Contrastive-marking in the framework of the Structured Meaning Approach (von Stechow, 1990; Krifka, 2001, among others).

2.4.2.1 Focus Meaning in Structured Meaning Approach

Krifka (2001) generalizes the basic treatment of question meanings in the Structured Meaning Approach as follows:

- (20) Question meanings are functions that, when applied to the meaning of the answer, yield a proposition. (Krifka, 2001)

For example, a question is mapped to a function (21-a), and by supplying an answer, it returns a proposition ‘Mary passed.’

- (21) a. Who passed the exam? $\lambda x.\mathbf{passed}(x)$
 b. Mary. m
 c. Question applied to answer: $\mathbf{passed}(m)$

The function domain of the function $\lambda x.\mathbf{passed}(x)$ needs to be represented as well. Consequently, the question above is represented as a pair (22-b). The function part of the question meaning is referred to as B (background) and the domain part is referred to as R (Restriction)

- (22) a. Who passed the exam?
 b. $\langle B, R \rangle = \langle \lambda x.\mathbf{passed}(x), \mathbf{person} \rangle$

Within this approach, a focus meaning is also represented as a pair $\langle B, F \rangle$, where F refers to the Focus-marked element marked by a prosodic peak.

- (23) a. Who passed the exam? $\langle \lambda x.\mathbf{passed}(x), \mathbf{person} \rangle$
 b. $[_F \text{ MARY }]$ passed the exam. $\langle \lambda x.\mathbf{passed}(x), m \rangle$

An answer with Focus marking to a question is legitimate if the backgrounds of the answer and the question are identical, and the Focus-marked element is a member of the restriction.

- (24) Criterion for congruent question-answer pair Q-A,
 where $[[Q]] = \langle B, R \rangle$ and $[[A]] = \langle B', F \rangle$:
 $B = B'$ and $F \in R$ (Krifka, 2001)

To illustrate how this works, consider the example in (25): In (25-a), the answer ‘Mary saw [_F John]’ is congruent to the question ‘Who did Mary see’ because the question background (B) and the answer background (B’) are equivalent (B = B’) and the denotation of the focus-marked element ‘[_F John]’ is in the restriction of the question R (F ∈ R). (25-b) is not congruent since the backgrounds are different. (25-c) is not congruent since the focus is not in the domain.

- (25) Who did Mary see? $\langle \lambda x.(\mathbf{see})(x)(m), \mathbf{person} \rangle$
- a. Mary saw [_F JOHN] . $\langle \lambda x.(\mathbf{see})(x)(m), j \rangle, j \in \mathbf{person}$
- b. [_F Mary] saw John . $\langle \lambda x.(\mathbf{see})(j)(x), m \rangle, m \in \mathbf{person}$
- c. *Mary saw [_F *Die Kinder der Finsternis*] . $\langle \lambda x.(\mathbf{see})(KF)(m), KF \rangle,$
 $KF \notin \mathbf{person}$
(Krifka, 2001)

2.4.2.2 Presupposition and Implicature of Contrastives

Modeling after the structured meaning approach (von Stechow, 1990; Krifka, 2001), I define the interpretation of Japanese Contrastive-marking as follows.

- (26) Let w be a world variable, sp the speaker, F the focus-marked elements, B the background, R: restriction.
- CON(w)(sp)(B(F))
- a. asserts: B(F)(w)
- b. presupposes: $\exists F'[[F' \in R] \ \& \ [B(F') \Rightarrow B(F)] \ \& \ [B(F) \neq B(F')]]$
(There exists B(F’) which is stronger than B(F))
- c. implicates: $\exists w'[w' \in \text{Dox}_{sp}(w)][B(F')(w') = 0]$
(= $\diamond(\neg(B(F')))$)

Focus-marking involved in Contrastive-marking is responsible for the partition of the asserted proposition into B (background) and F (Focus). B is obtained by lambda abstraction over the asserted proposition using a designated variable (c.f. [Kratzer, 1991c](#)).

$$(27) \quad B = \lambda x \in D_e. \llbracket \text{Mary}_1 \text{ passed} \rrbracket^{g, h^{1/x}} = \lambda x \in D_e. h^{1 \rightarrow x}(1) \text{ passed} \\ = \lambda x \in D_e. x \text{ passed}$$

In addition to Focus-marking, Japanese Contrastive-marking involves *wa*-marking. I propose that this morphological marking introduces the CON operator into the semantics which triggers a presupposition and induces an implicature.. A Contrastive-marked sentence presupposes a stronger alternative F' which is also an element of R (restriction) such that $B(F')$ asymmetrically entails $B(F)$.⁴ In our case, since Contrastive-marked sentences always induce implicatures, they must have a scalar alternative stronger than the assertion in order to be interpreted properly. In other words, as in [\(26-b\)](#), there must be a scalar alternative that entails but is not entailed by the original assertion.⁵ If the presupposition is satisfied, Contrastive *-wa* implicates that the negation of the stronger alternative is possible ([\(26-c\)](#)).

⁴ I also assume that all the members of R have the same semantic type just like alternatives in Alternative Semantics ([Rooth, 1985, 1992](#)).

⁵ Logical entailment might not be the ideal tool to determine whether a proposition is stronger than the other. Arguably, the induced implicature is not necessarily derived from the entailment scale. In [\(i-b\)](#), ‘everyone but John came.’ seems to entail ‘John didn’t come.’ (c.f. [von Stechow, 1993](#)). Hence, ‘Everyone except John’ seems to be the strongest proposition among the alternatives.

- (i) a. Who came to the party?
 b. *John-igai-ga ki-ta. John-mo ki-ta kamosirenai.
 John-except-Nom come-Past. John-Additive come-Past might
 ‘Everyone but John came. John might have come, too.’

For instance, (3-b) repeated below in (28-b) induces an implicature ‘Possibly, others didn’t pass.’ We can take ‘Mary and Peter passed’ as a stronger scalar alternative to ‘Mary passed.’ Contrastive-marking indicates the speaker’s uncertainty with respect to the stronger alternative: the negation of the alternative, ‘It is false that Mary and Peter passed,’ is possible.

- (28) a. Who passed the exam?
 b. MARY-wa ukat-ta
 Mary-Con pass-Past
 ‘[Mary]_{Con} passed.’
 c. Mary-ga ukat-ta.
 Mary-Nom pass-Past
 ‘Mary passed.’ (exhaustive answer)

Let us illustrate with examples which are more clearly scalar. In (29), *-wa* is attached to a generalized quantifier *nanninka* ‘some people’. Therefore, our B has to have a semantic type higher than the type of the predicate in (27) as in (30-a).

- (29) NANNINKA-wa ki-ta
 Some-people-Con come-Past

If that is the case, the current analysis would predict that (ii) is unacceptable, which is the wrong prediction.

- (ii) John-igai-wa ki-ta.
 John-except-Contrastive come-Past
 ‘Everyone but John came.’

At this point, the semantics of Japanese exceptives is not clear to me, and I will assume that ‘everyone but John’ is informatively weaker than ‘everyone’. We might appeal to the notion of ‘Horn Scale’ which is formed by items that are salient and relevant in the context (see Horn, 1972; Gamut, 1991). See also section 2.8.

Some people came.

(Implicature: It's possible that not everyone came.)

- (30) a. $B = \lambda \wp \in D_{\langle \langle e, t \rangle, t \rangle} . \wp(\lambda y. \text{came}(y))$
 b. $F' = \lambda P. \exists(x)[\text{person}(x)][P(x)]$
 c. $F = \lambda P. \forall x[\text{person}(x)][P(x)]$

The asserted proposition $\exists x[[\text{person}(x)][\text{come}(x)]]$ has a stronger scalar alternative $\forall(x)[[\text{person}(x)][\text{come}(x)]]$.⁶ $\forall(x)[[\text{person}(x)][\text{come}(x)]]$ entails $\exists x [[\text{person}(x)][\text{come}(x)]]$ but not the other way around. Therefore, the asserted proposition is compatible with *-wa* and induces an implicature ‘It is possible that it is not the case that everyone came.’

- (31) $\exists(x) [[\text{person}(x)][\text{come}(x)]]$ (=B(F))
 a. scalar alternative: $\forall(x)[[\text{person}(x)][\text{come}(x)]]$ (=B(F'))
 b. B(F') entails B(F)
 c. B(F) does not entail B(F')

On the other hand, (5) repeated here as (32), does not induce implicatures.

- (32) #MINNA-**wa** kita.
 Everyone-Con came
 (no implicature is possible) (5)

The asserted proposition is $\forall(x)[[\text{person}(x)][\text{come}(x)]]$. $\forall(x)[[\text{person}(x)][\text{come}(x)]]$ does not have a stronger scalar alternative. None of its scalar alternatives (e.g., $\exists x$

⁶ I assume that it is presupposed that the quantificational domain is not empty. If no one comes, B(F'), $\forall(x)[[\text{person}(x)][\text{come}(x)]]$, will be vacuously true, while B(F) will be false.

[person(x)] [come(x)], few(x)[[person(x)][come(x)]], most(x) [[person(x)][come(x)]], more-than-half(x)[[person(x)][come(x)] etc.) entails the original assertion. Since the asserted proposition causes a presupposition failure, therefore, it is not compatible with *-wa*.

- (33) $\forall(x)$ [[person(x)][come(x)] (=B(F))
 a. scalar alternative: $\exists(x)$ [[person(x)][come(x)] (=B(F'))
 b. B(F') does not entail B(F)
 c. B(F) entails B(F')

In short, Japanese Contrastive-marking involves two components: prosodic Focus-marking and the introduction of the CON operator via the morphology. The Focus-marking partitions the semantic meaning into a pair consisting of background B and a focus F. The CON operator presupposes B(F'), a stronger alternative to B(F), and implicates that the negation of B(F') is possible.⁷

2.4.3 Proportional and Cardinal *Many*

The interesting contrast between cardinal ‘many’, *takusan*, and proportional ‘many’, *ooku*, is explained in this analysis as well. *Takusan* behaves just like *zen'in* ‘everyone’. In other words, if it is Contrastive-marked, the sentence is disambiguated

⁷ In chapter 3, we will see the case where the dissociation of these two components is visible. Namely, when a Focus-marked element is embedded under a syntactic island, *-wa* is attached to the whole island.

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

See chapter 3 for details.

into the negation-wide-scope reading in negative contexts and it is infelicitous in an affirmative context. On the other hand, a sentence which contains the Contrastive-marked *ooku* remains ambiguous in a negative context and it is felicitous in an affirmative context.

- (34) a. TAKUSAN-no-hito-wa ko-nakat-ta
 card.many-people-Con come-Neg-Past
 It is not the case that many people came. (\neg many only)
- b. # Takusan-no-hito-wa ki-ta.
 Many-people-Con come-Past
 ‘Many people came’
- (35) a. OOKU-no-hito-wa ko-nakat-ta
 prop.many-people-Con come-Neg-Past
 Many of the people are such that they didn’t come. (many \neg)
 It is not the case that many of the people came. (\neg many)
- b. Ooku-no-hito-wa ki-ta.
 Many-people-Con come-Past
 ‘Many of the people came’

The asserted proposition of the quantifier-wide-scope reading of (34-a) can be written as (36). Some scalar alternatives, such as $\text{no}(x)[[\text{person}(x)][\neg\text{come}(x)]]$, $\exists(x)[[\text{person}(x)][\neg\text{come}(x)]]$, etc., do not entail $\text{many}(x)[[\text{person}(x)][\neg\text{come}(x)]]$ regardless of whether many has a cardinal or a proportional semantics. The contrast here is due to the fact that $\forall x[[\text{person}(x)][\neg\text{come}(x)]]$ does not entail $\text{many}_{card}(x)[[\text{person}(x)][\neg\text{come}(x)]]$ but $\forall x[[\text{person}(x)][\neg\text{come}(x)]]$ does entail $\text{many}_{prop}(x)[[\text{person}(x)][\neg\text{come}(x)]]$.

$$(36) \quad \text{many}_{card}[[\text{person}(x)][\neg\text{come}(x)]] \quad (=B(F))$$

- a. scalar alternative: $\forall x[[\text{person}(x)][\neg\text{come}(x)]]$ (=B(F'))
- b. B(F') doesn't entail B(F)
- c. B(F) entails B(F')

$\forall x[[\text{person}(x)][\neg\text{come}(x)]]$ does not entail $\text{many}_{card} [[\text{person}(x)][\neg\text{come}(x)]]$. Suppose that there are 80 people in the domain and we say “many people” only when there are more than 100 people; then $\forall x[[\text{person}(x)][\neg\text{come}(x)]]$ is true but $\text{many}_{card} [[\text{person}(x)][\neg\text{come}(x)]]$ is false.

As a result, the $\text{many}_{card}\neg$ reading of (34-a) causes a presupposition failure and thus it is not an available reading for (34-a). On the other hand, $\forall x [[\text{person}(x)][\neg\text{come}(x)]]$ entails $\text{many}_{prop} [[\text{person}(x)][\neg\text{come}(x)]]$ by definition, since proportionally many individuals is always going to be a subset of all the individuals. Therefore, the $\text{many}_{prop}\neg$ reading of (35-a) induces an implicature, namely $\diamond(\neg\forall x [[\text{person}(x)][\neg\text{come}(x)]])$.

2.4.4 Interim Summary

Hara (to appear) claimed that Contrastive Topics always induce scalar implicatures and this property is pronounced as a presuppositional requirement on the proposition that *-wa* takes. Also, notice that the induced implicatures are very similar to the conversational scalar implicatures of Grice. In section 2.7, I will derive the interpretation of *-wa* from Gricean Principles following Spector (2003) and Schulz and van Rooij (to appear). My analysis essentially has the same spirit as Büring's: Contrastive-marking gives rise to uncertainty. The difference between Büring's and my approaches lies on the difference in phonological marking of Focus between two languages. In the next section, I will point out a seeming problem for these uncertainty approaches.

2.5 Contrastive with a Fully Resolved Answer

The data presented in section 2.2 are neatly explained by Büring’s (1997) theory and my analysis for Japanese. Contrastives give rise to uncertainty by indicating that there are unanswered questions. Contrastive-marking cannot be used when the asserted proposition is the strongest among the alternatives, since then all the questions would be resolved. Similarly, when a sentence is ambiguous, contrastive-marking disallows the reading which does not leave any open questions.

However, having open questions does not seem to be precise context for Contrastives. This is clear in (37) where all the relevant questions are completely resolved and Contrastive-marking is still felicitous. The speaker has an answer (with certainty) for each alternative.

- (37) John-to Mary-to Bill-no nakade, dare-ga party-ni ki-ta-no?
John-and Mary-and Bill-Gen among, who-Nom party-Dat come-Past-Q?
‘Among John, Mary and Bill, who came to the party?’ (Japanese)
- a. JOHN-to MARY-**wa** ki-ta-kedo, BILL-**wa** ko-nakat-ta.
John-and Mary-Con come-Past-but, Bill-Con come-Neg-Past
‘John and Mary came, but Bill didn’t come.’
- b. JOHN-to MARY-**wa** ki-te, BILL-**wa** ko-nakat-ta.
JOHN-to MARY-Con come-Past, Bill-Con come-Neg-Past
‘John and Mary came, and Bill didn’t come.’

Similar patterns are observed for English B-accent and German Topic-Focus contour. Contrastive-marking is possible even if the speaker has a complete knowledge with respect to the question.⁸

⁸ My informants reported that the prosody marking of the second conjunct needs to be less prominent than the first in order to be felicitous, and the use of *and* makes the sentence more deviant.

- (38) Among John, Mary and Bill, who came to the party?
- a. [B John and Mary came], but [B Bill] didn't come.
- b. ?[B John and Mary came], and [B Bill] didn't come.
- (39) Von John, Maria und Bill, wer ist auf die Party gegangen?
of John, Mary and Bill, who is on the party gone
'Among John, Mary and Bill, who came to the party?' (German)
- a. /JOHN und MARIA\ sind gegangen, aber /BILL ist NICHT\
John and Maria are gone, but Bill is not
gegangen.
gone
'John and Mary came, but Bill didn't come.' (German)
- b. ?/JOHN und MARIA\ sind gegangen, /BILL ist NICHT\
John and Maria are gone, Bill is not gone
gegangen.
'John and Mary came, and Bill didn't come.'

One might try to save the previous analysis which depends on partial answers by limiting the domain of the requirement to each conjunct. For example, in (37), the proposition expressed by the first conjunct 'John and Mary came.' is a partial answer to the question 'Among John, Mary and Bill, who came to the party?', and so is the one expressed by the second conjunct 'Bill didn't come.' As long as each of the Contrastive-marked conjuncts can be treated as a partial answer, Contrastive-marking is possible. However, this strategy fails if we look at the following set of data. It predicts (40-a), (41-b), and (42-a) to be felicitous, since each conjunct should give rise to uncertainty just like the case above.

- (40) JOHN-to MARY-to Bill-no nakade, dare-ga party-ni ki-ta-no?
John-and Mary-and Bill-Gen among, who-Nom party-Dat come-Past-Q?
'Among John, Mary and Bill, who came to the party?' (Japanese)

- a. *JOHN-to MARY-**wa** ki-te, Bill-**wa** ki-ta.
 John-and Mary-Con come-Past-and, Bill-Con come-Past
 ‘John and Mary came, and Bill came.’
- b. *JOHN-to MARY-**wa** ki-ta-kedo, Bill-**wa** ki-ta.
 John-and Mary-Con come-Past-but, Bill-Con come-Past
 ‘John and Mary came, but Bill came.’
- (41) Among John, Mary and Bill, who came to the party?
- a. *[_B John and Mary came], but [_B Bill] came.
- b. *[_B John and Mary came], and [_B Bill] came.
- (42) Von John, Maria und Bill, wer ist auf die Party gegangen?
 of John, Mary and Bill, who is on the party gone
 ‘Among John, Mary and Bill, who came to the party?’ (German)
- a. */JOHN und MARIA\ sind gegangen, /BILL ist GEGANGEN\
 John and Maria are gone, Bill is gone
 ‘John and Mary came, and Bill came.’
- b. */JOHN und MARIA\ sind gegangen, aber /BILL ist GEGANGEN\
 John and Maria are gone, but Bill is gone
 ‘John and Mary came, but Bill came.’

The correct generalization is that there is a ban on having positive answers for **all** the alternatives.

- (43) The use of Contrastive is licit:
- a. when the speaker is not sure of the alternatives having the property, or
- b. when the speaker knows that there are alternatives which do not have the property.

To summarize the point here, although the uncertainty or partial answer approach to Contrastive-marking seems to capture the intuition reported in section

2.2, it faces a problem with the data above, since Contrastive-marking can be used even when the speaker has a fully resolved answer. In the next section, I will show that the local computation of implicatures overcomes the problem discussed in this section.

2.6 Local computation

In the sections above, I have sketched that Contrastive-marking seems to involve *uncertainty* implicatures and it also removes Exhaustive interpretations. However, Contrastives can be used when the speaker is certain about alternatives (when the speaker has an exhaustive answer). In other words, Contrastives can be used both when the speaker is not sure about alternatives and when the speaker knows that the alternatives are false. In this section, I will show that local computation of Contrastive interpretation correctly predicts the distribution of Contrastive-marking.

Let us illustrate with the following simplified examples assuming we are only considering two individuals, Peter and Mary. Contrastive-marking can be used when the individuals induce opposite polarity values for the property in question ($\lambda x.x$ passed) as in (44-a), while it cannot be used when both of the entities have the same values as in (44-b).

- (44) Who passed the exam?
- a. MARY-wa ukat-te/takedo, PETER-wa ukara-nakat-ta
 Mary-Con pass-and/Past.but, Peter-Con pass-Neg-Past
 ‘[Mary]_{Con} passed and/but [Peter]_{Con} didn’t pass.’
 - b. *MARY-wa ukat-te/takedo, PETER-wa ukat-ta
 Mary-Con pass-and/Past.but, Peter-Con pass-Past
 ‘[Mary]_{Con} passed and/but [Peter]_{Con} passed.’

Remember that Contrastive-marking implicates that in some of the doxastic worlds

compatible with the speaker's belief, the stronger alternative is false as in (26) repeated here as (45).

(45) Let w be a world variable, sp the speaker, F the focus-marked elements, B the background, R : restriction.

$CON(w)(sp)(B(F))$

- a. asserts: $B(F)(w)$
- 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: $\exists w'[w' \in Dox_{sp}(w)][B(F')(w') = 0]$
($=\diamond(\neg(B(F')))$)

For (44-a), two different B s (backgrounds) and F s (Foci) are obtained as in (46) and (47).

(46) Mary-wa $\underbrace{\text{passed}}_{B_1}$, but Peter-wa $\underbrace{\text{didn't pass}}_{B_2}$. (44-a)

- (47)
- a. $B_1 = \lambda x.\text{passed}(x)$
 - b. $F_1 = m$
 - c. $B_2 = \lambda x.\neg\text{passed}(x)$
 - d. $F_2 = p$

By the assertion of the first conjunct (44-a), the speaker states her belief that Mary passed. Furthermore, due to the Contrastive-marking, the sentence implicates that $\diamond(\neg B_1(m \oplus p))$ 'the speaker doesn't know that both Mary and Peter passed.' By combining these two, the hearer infers $\diamond(\neg B_1(p))$, i.e., 'it is possible that Peter didn't pass.' This is compatible with the assertion of the second conjunct. The

assertion of the second conjunct is merely a stronger version (\forall -quantification over the speaker's doxastic worlds) of the implicature of the first conjunct (\exists -quantification over the speaker's doxastic worlds).

- (48) a. Assertion of the first conjunct entails:
 $\mathbf{believe}(B_1(F_1))$ ($=\mathbf{believe}(\mathbf{passed}(m))$)
- b. Interpretation of $\text{CON}(w)(sp)(B_1(F_1))$ implicates:
 $\diamond(\neg B_1(m \oplus p))$
- c. Assertion + Implicature: $\diamond(\neg B_1(p))$
- d. Assertion of the second conjunct (in terms of B_1) entails:
 $\mathbf{believe}(\neg B_1(p))$ ($=\mathbf{believe}(\neg\mathbf{passed}(p))$)
- e. $\diamond(\neg B_1(p))$ and $\mathbf{believe}(\neg B_1(p))$ are compatible.

Similarly, the second conjunct '[Peter]_{Con} didn't pass.' has the following values for B_2 and F_2 .

- (49) a. $B_2 = \lambda x. \neg\mathbf{passed}(x)$
 b. $F_2 = p$
 c. $B_2(F_2) = \neg\mathbf{passed}(p)$

Contrastive-marking in the second conjunct carries the meaning 'the speaker doesn't know that Mary didn't pass.' Again, this is compatible with the assertion of the first conjunct, which can be translated as 'Mary does not have the property of B_2 (non-passing).'

- (50) a. Assertion of the second conjunct of (44-a) entails:
 $\mathbf{believe}(B_2(F_2))$ ($=\mathbf{believe}(\neg\mathbf{passed}(p))$)

- b. Interpretation of $\text{CON}(w)(sp)(B_2(F_2))$ implicates:
 $\diamond(\neg B_2(m \oplus p))$
- c. Assertion + Implicature: $\diamond(\neg B_2(m))$
- d. Assertion of the first conjunct of (44-a) (in terms of B_2) entails:
 $\mathbf{believe}(\neg B_2(m))$ (= $\mathbf{believe}(\neg\neg\mathbf{passed}(m))$)
- e. $\neg \mathbf{believe} B_2(m)$ and $\mathbf{believe}(\neg B_2(m))$ are compatible.

Now, let us turn to the other case where both individuals have the same value with respect to the property.

(51) *Mary-wa $\underbrace{\text{passed}}_{B_1}$, but Peter-wa $\underbrace{\text{passed}}_{B_2}$. (44-b)

- (52) a. $B_1=B_2= \lambda x.\mathbf{passed}(x)$
- b. $F_1= m$
- c. $F_2=p$

A closer examination of (44-b) reveals that the contrastive interpretation of the first conjunct and the assertion of the second conjunct are incompatible. Unlike (44-a), the second conjunct in (44-b) asserts that in all the possible worlds compatible with the speaker's belief, p has the property B_1 , since $B_1 = B_2$. This is inconsistent with the implicature triggered by $\text{CON}(w)(sp)(B_1(F_1))$, which indicates there exist some worlds where p does not have the property B_1 .

- (53) a. Assertion of the first conjunct entails:
 $\mathbf{believe}(B_1(F_1))$ (= $\mathbf{believe}(\mathbf{passed}(m))$)
- b. Interpretation of $\text{CON}(w)(sp)(B_1(F_1))$ implicates:
 $\diamond(\neg B_1(m \oplus p))$

- c. Assertion + Implicature: $\diamond(\neg B_1(p))$
- d. Assertion of the second conjunct(in terms of B_1) entails:
 $\mathbf{believe}(B_1(p))$ (= $\mathbf{believe}(\mathbf{passed}(p))$)
- e. $\diamond(\neg B_1(p))$ and $\mathbf{believe}(B_1(p))$ are incompatible!

The same result comes out for the second conjunct.

- (54)
- a. Assertion of the second conjunct of (44-b) entails:
 $\mathbf{believe}(B_2(F_2))$ (= $\mathbf{believe}(\mathbf{passed}(p))$)
 - b. Interpretation of $\text{CON}(w)(sp)(B_2(F_2))$ implicates:
 $\diamond(B_2(m))$
 - c. Assertion + Implicature: $\diamond(\neg B_2(m))$
 - d. Assertion of the first conjunct of (44-b) (in terms of B_2) entails :
 $\mathbf{believe}(B_2(m))$ (= $\mathbf{believe}(\neg\neg\mathbf{passed}(m))$)
 - e. $\diamond(\neg B_2(m))$ and $\mathbf{K}(B_2(m))$ are incompatible!

To summarize, the implicatures from Contrastive-marking are computed at each conjunct. Simple the uncertainty property itself does not correctly characterize all the distributional patterns of Contrastive-marking. Contrastive-marking can be used even when the speaker is certain about all the alternatives.⁹Namely, an uncertainty on the part of the speaker's knowledge is not the accurate specification of

⁹ There is another interesting contrast with respect to local computation and exhaustivity. Giving an exhaustive answer with Contrastive-marking like (44-a) repeated here as (i-a) is actually preferred over the one without it (i-b).

- (i) Who passed the exam?
 - a. MARY-wa ukat-te/takedo, PETER-wa ukara-nakat-ta
 Mary-Con pass-and/Past.but, Peter-Con pass-Neg-Past
 '[Mary]_{Con} passed and/but [Peter]_{Con} didn't pass.'

Contrastive-marking. Rather, it indicates the speaker considers the possibility where unmentioned alternatives have false value, either the speaker could be not sure about the alternatives, or else the speaker could know that the alternatives are false. The context where Contrastive is illicit is that the speaker knows that all the alternatives have the same property, i.e. have the value, *true* for the question under discussion, since there is no Contrast in the speaker’s knowledge.

Another thing to note is that the induced implicatures are very similar to Gricean conversational scalar implicatures. In the next section, I go over the mechanism developed by Spector (2003) and Schulz and van Rooij (to appear) that derive exhaustivity from the Gricean principles and show that the distributional pattern of Contrastive topics matches the *order of knowledge* they propose for exhaustivity interpretations.

2.7 Exhaustivity (Spector, 2003; Schulz and van Rooij, To appear)

In the previous section, I argued that contrastive meaning cannot be characterized simply as uncertainty, that is, as the existence of unanswered questions, since

-
- b. ??MARY-ga ukat-te/takedo, PETER-ga ukara-nakat-ta
 Mary-Nom pass-and/Past.but, Peter-Nom pass-Neg-Past
 ‘Mary passed and/but Peter didn’t pass.’

This is puzzling since the exhaustive interpretation of the first conjunct of (i-b) ‘Mary and only Mary came.’ is compatible with the assertion of the second conjunct. I do not have a convincing explanation for this preference at this moment. One thing to note is that the function of Contrastive-marking is to indicate a partial answer, or to indicate a contrast among alternatives. Hence, I speculate that in Japanese we have a tool to indicate a contrast, *wa*-marking; therefore the knowledge of the speaker ‘Mary passed and Peter didn’t pass’ is best represented by the use of *-wa*. Accordingly, the use of *ga* in (i-b) is marked because the speaker chose a form that suggests the knowledge that the speaker has is a complete knowledge, rather than a contrast.

this makes incorrect predictions when the speaker has knowledge that resolves all the answers. Also, as mentioned in 2.4.4, implicatures associated with Contrastive-marking are very similar to Gricean conversational implicatures. I will integrate these two observations by looking at the theory of exhaustivity proposed by Spector (2003) and Schulz and van Rooij (to appear).

2.7.1 Deriving Scalar Implicatures from Exhaustivity

This subsection summarizes how the theory of exhaustivity proposed by Spector (2003) and Schulz and van Rooij (to appear) derives scalar implicatures. (I focus on Schulz and van Rooij (to appear) in this section.)

In recent literature on Gricean Pragmatics (Gamut, 1991; Sauerland, 2004; Spector, 2003; Schulz and van Rooij, to appear), scalar implicatures are derived in two steps. First, the speaker utters A. B is more informative than A. Assuming that the speaker is trying to be maximally informative (Gricean Principle), the hearer infers that the speaker does not hold a belief that B is true (primary implicature). Assuming that the speaker is opinionated, the hearer strengthens the primary implicature: the hearer infers that the speaker believes that B is false (secondary implicature).

Spector (2003) and Schulz and van Rooij (to appear) implement these two steps formally and derive scalar implicatures from exhaustive inferences. For example, in a context where there are only two individuals, Mary and Peter, Bob's answer in (55) implicates that Peter didn't pass the exam.

(55) Ann: Who passed the exam?

Bob: Mary.

(Schulz and van Rooij, to appear)

Schulz and van Rooij (to appear), “combines Grice’s first subclause of the maxim of quantity with the maxims of quality and relevance” (p.39) and reformulate their Gricean Principle as follows:

- (56) The Gricean Principle (restatement of Schulz and van Rooij (to appear))
 In uttering A a rational and cooperative speaker makes a maximally relevant claim given her knowledge.

As the first step, Schulz and van Rooij (to appear) state that their Gricean Principle derives a primary (weak) implicature, “Bob does not know whether Peter passed the exam.”

Schulz and van Rooij (to appear) formalize the Gricean Principle in (56) by first defining an ordering on the knowledge a speaker has: “a speaker has more knowledge about P if she knows of more individuals that they have property P .”¹⁰

¹⁰ In Schulz and van Rooij (to appear), they redefine the order of knowledge. According to Schulz and van Rooij (to appear) this is necessary to cover the case where the non-logical vocabularies are added such as “If they asked the same questions as last year then Peter passed the examination.” as an answer to Ann’s question (55). See Schulz and van Rooij (to appear) for details.

- (i) Given a context $C = \langle W, R \rangle$ we define for $v_1, v_2 \in W$
 $v_1 \leq_{P,A}^* v_2$ iff def
1. $[P](v_1) \subseteq [P](v_2)$ and
 2. for all non-logical vocabulary θ occurring in A besides P : $[\theta](v_1) = [\theta](v_2)$;
- $v_2 \equiv_{P,A}^* v_1$ iff def
 $v_1 \leq_{P,A}^* v_2$ and $v_2 \leq_{P,A}^* v_1$
- (ii) Comparing relevant knowledge
 Given a context $C = \langle W, R \rangle$ we define $v_1, v_2 \in W$

- (57) $w_1 \preceq_{P,A} w_2$ if for every world v_2 considered possible by the speaker in w_2 (i.e. $v_2 \in R(w_2)$), she distinguishes some possibility v_1 in $R(w_1)$ where the extension of P is smaller than or equal to the extension of P in v_2 .
(Schulz and van Rooij, to appear)

Notice that, in their way of characterizing the order of knowledge, it is not considered as the speaker's knowledge when she knows that some individuals do not have the property P .¹¹

Given this ordering of the speaker's knowledge, the interpreter selects the possibilities where the speaker knows **least** about the question-predicate:

- (58) Interpreting according to the Gricean Principle (Schulz and van Rooij, to appear)

Let A be an answer given to a question with question-predicate P in context $C = \langle W, R \rangle$. We define the pragmatic interpretation $grice^C(A, P)$ of A with respect to P and C as follows:

$$grice^C(A, P) =_{def} \{w \in [\mathbf{KA}]^C \mid \forall w' \in [\mathbf{KA}]^C : w \preceq_{P,A} w'\}$$

In other words, in accordance with the Gricean Principle, the hearer ignores the possibilities in which the speaker knows of more individuals that they have property

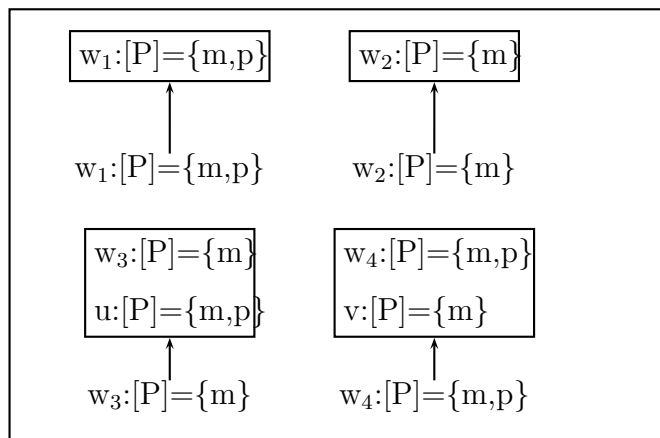
$$\begin{aligned} w_1 \preceq_{P,A} w_2 & \text{ iff }_{def} \forall v_2 \in R(w_2) \exists v_1 \in R(w_1) : v_1 \preceq_{P,A}^* v_2, \\ w_1 \cong_{P,A} w_2 & \text{ iff }_{def} w_1 \preceq_{P,A} w_2 \& w_1 \preceq_{P,A} w_2. \end{aligned}$$

¹¹ Schulz and van Rooij (to appear) also note this point in their footnote 45 “Some readers may notice that in this way we do not respect the knowledge the speaker might have about some individuals not having property [P]. We would like to have some kind of motivation for why this information should not be taken into account, but until now we do not have a convincing explanation.” [p. 41]

P than what is asserted in A .

To illustrate the pragmatic interpretation of Bob’s answer in (55), Schulz and van Rooij (to appear) provides the following model. (Arrows indicate the accessibility relation from a possible world w to the knowledge state $R(w)$ of the speaker in w .)

(59)



(Schulz and van Rooij, to appear)

In all of the worlds in the diagram above, Bob knows $P(m)$ is true. Following the Gricean Principle, worlds where Bob knows least about the question Predicate P are considered. Bob knows more about the predicate in w_1 than in w_2 , w_3 and w_4 ; therefore, w_1 is eliminated from the interpretation by the Gricean Principle. Moreover, Bob’s knowledge about the predicate P in w_2 , w_3 and w_4 is equal (Remember that Schulz and van Rooij’s (to appear) definition does not consider knowing not having the property P as knowledge.). The difference between w_2 and w_3 is that in w_2 the speaker has a “more definite opinion”. Therefore, $grice^C(P(m), P) = \{w_2, w_3, w_4\}$. Hence, it is derived that Bob does not know that Peter passed the exam. The Gricean Principle gives a primary (weak) implicature, the speaker does not have knowledge of whether the property in question holds for the rest of the alternative individuals,

“Bob does not know whether Peter passed the exam.”

Second, the assumption that the speaker is opinionated, i.e., knowledgeable about the world, gives a secondary (strong) implicature, the speaker knows that the property does not hold for the alternative individuals. According to [Schulz and van Rooij \(to appear\)](#), this interpretation is obtained by maximizing the speaker’s competence with respect to the question to the extent that the Gricean Principle is obeyed. ($w \cong_{P,A} w'$ means the knowledge of the speaker in w is equal to that in w' . See footnote 10 for the definition.)

(60) Adding Competence to the Gricean Principle ([Schulz and van Rooij, to appear](#))

Let A be an answer given to a question with question-predicate P in context $C = \langle W, R \rangle$. We define the pragmatic interpretation $eps^C(A, P)$ of A with respect to P and C as follows:

$$\begin{aligned} eps^C(A, P) &=_{def} \{w \in grice^C(A, P) \mid \forall w' \in grice^C(A, P) : w \not\sqsubseteq_{P,A} w'\} \\ &= \{w \in [\mathbf{KA}]^C \mid \forall w' \in [\mathbf{KA}]^C : \\ &w \preceq_{P,A} w' \wedge (w \cong_{P,A} w' \rightarrow w \not\sqsubseteq_{P,A} w')\} \end{aligned}$$

The hearer first selects the possibilities where the speaker knows least about the question-predicate ($w \preceq_{P,A} w'$ by the Gricean Principle), and then among those possibilities where the speaker is equally knowledgeable, the hearer selects the possibilities where the speaker is maximally competent about the question predicate.

Now, how do we compare the speaker’s competence? [Schulz and van Rooij \(to appear\)](#) defines as follows: “in a world w_2 the speaker is at least as competent as in world w_1 [$w_1 \sqsubseteq_{P,A} w_2$] if in w_1 the speaker considers at least as many extensions possible for question-predicate P as in w_2 ” ($v_2 \equiv^* v_1$ roughly means $[P](v_2) = [P](v_1)$).

See footnote 10 for the more precise definition.):

(61) Comparing Competence (Schulz and van Rooij, to appear)

Given a context $C = \langle W, R \rangle$ we define for $w_1, w_2 \in W$

$w_1 \sqsubseteq_{P,A} w_2$ iff $\forall v_2 \in R(w_2) : \exists v_1 \in R(w_1) : v_2 \equiv^* v_1$.

Going back to the same example (55) with the model depicted in (59), we have seen that following the Gricean Principle, the hearer selects w_2 , w_3 , and w_4 . Next, assuming the competence assumption, defined in (64), the hearer selects those worlds where the speaker is maximally competent. Comparing w_2 and w_3 , the speaker is more competent in w_2 ($w_3 \sqsubseteq w_2$), since the speaker in w_2 considers less extensions possible for P than she does in w_3 . Similarly, $w_4 \sqsubseteq w_2$. In w_3 and w_4 , the speaker is equally competent, since she considers the same number of extensions possible for P . Therefore, the speaker is maximally competent in w_2 , i.e. $eps^W(P(m), P) = \{w_2\}$. Now, in w_2 , the speaker does not consider the possibility of $P(p)$. Hence, the combination of the Gricean Principle and the assumption of maximizing competence successfully derives the exhaustive interpretation for (55), ‘the speaker believes that Peter didn’t pass the exam.’

The key point which is relevant to the issue in this chapter is that, for Spector (2003) and Schulz and van Rooij (to appear), the speaker’s knowledge state in which she knows that a particular individual is not in the extension of the property is **equal** to the state of knowledge in which she is uncertain that the individual is in the extension. What distinguishes these two states is the competence of the speaker.

2.7.2 Applying to Contrastive-marking

In Spector (2003) and Schulz and van Rooij (to appear), the information state in which the speaker is uncertain whether x has the property P is not distinct from

the information state that the speaker knows that *x* has the property *P*. Now remember that from my analysis of Contrastive-marking that its distribution is as in (43) repeated here as (62).

- (62) The use of Contrastive is licit:
- a. when the speaker is not sure of the alternatives having the property, or
 - b. when the speaker knows that there are alternatives which do not have the property. (43)

The ordering on information states used by Spector (2003) and Schulz and van Rooij (to appear) is parallel to the distribution of Contrastive-marking. In this subsection I reformulate my original analysis: Contrastive-marking is used by the speaker to indication that her knowledge/competence is limited.

2.7.2.1 Contrastive as Limited Competence

As mentioned earlier, primary weak implicatures are very similar to the implicatures associated with Contrastive-marking. In (3) repeated here as (63), (63–b) indicates the speaker is not sure about others.

- (63) a. Who passed the exam?
- b. MARY-wa ukat-ta
Mary-Con pass-Past
‘[Mary]_{Con} passed.’
 - c. MARY-ga ukat-ta.
Mary-Nom pass-Past
‘Mary passed.’ (exhaustive answer)

Because of this resemblance, it is tempting to propose that the function of Contrastive-marking is to indicate that the speaker has a limited competence with respect to the question predicate.¹² Now, I posit the following interpretation of Contrastive-marking. (Here, I go back to the notations in structure meaning approach I used in section 2.4.) The background B and the assertion $B(F)$ correspond to the question predicate P and the answer A respectively in Schulz and van Rooij (to appear):

- (64) Interpreting a sentence with Contrastive-marking
 $\text{CON}(B(F))$
 implicates: $\text{grice}^C(B(F), B) = \{w \in [\mathbf{K}(B(F))]^C \mid \forall w' \in [\mathbf{K}(B(F))]^C : w \preceq_B w'\}$

In other words, Contrastive-marking lexically specifies that the speaker’s competence is minimal and signals the hearer that an exhaustive interpretation is unavailable, i.e., the secondary strong implicature. To illustrate, let us take the example (3) with the model in (59).

- (65) a. $B = \lambda x. \mathbf{passed}(x)$
 b. $F = m$
 c. $B(F) = \mathbf{passed}(m)$

The following is the interpretation of (63-b).

¹² Schulz and van Rooij (to appear) also mentions this intuition at the end of their section 7 [p. 49]: “the answerer can cancel this additional assumption by either mentioning that she is not competent or simply deviating from the standard form of answering a question (by using negation, special intonation, etc.). In this way we can correctly predict the weakening of exhaustive interpretation to ‘limited-competence’ inferences for such answers.”

$$\begin{aligned}
(66) \quad & \text{CON}(\mathbf{passed}(m)): \\
& \text{implicates: } \textit{grice}^C(\mathbf{passed}(m), [\lambda x. \mathbf{passed}(x)]) \\
& = \{w \in [\mathbf{K}(\mathbf{passed}(m))]^C \mid \forall w' \in [\mathbf{K}(\mathbf{passed}(m))]^C : w \preceq_{[\lambda x. \mathbf{passed}(x)]} w'\} \\
& = \{w_2, w_3, w_4\}
\end{aligned}$$

Just like the primary implicature computation, the result of (66) entails that the speaker considers both the possibility that Peter passed and the possibility that Peter didn't pass. Hence, it entails that the speaker doesn't know that Peter passed, which seems to be a desired interpretation for (63-b).

In summary, in order to account for the contrast between (44-a) and (44-b), it is crucial to assume the order of knowledge proposed by Schulz and van Rooij (to appear), to exclude from the speaker's knowledge the case where the speaker knows of an individual **not** having the property.

2.7.2.2 Contrastive as Limited Knowledge

I now turn to other cases with Contrastive-marking, in particular, how to account for the ungrammaticality of the Contrastive *-wa* in '[Everyone]_{Con} came' and the scope inversion with '[Everyone]_{Con} didn't come'?

- (5) #ZEN'IN-wa kita.
 Everyone-Cont came
 (no implicatures)
- (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. ($*\forall\neg$)

Contrastive-marking not only generates an implicature whenever possible, it **always** generates an implicature. As a consequence, Contrastive-marking is possible only in contexts in which the speaker’s knowledge is limited. Namely, there must be an effect of limiting the speaker’s competence.

(67) Interpreting a sentence with Contrastive-marking

CON(B(F))

presupposes: $eps^C(B(F), B) \neq grice^C(B(F), B)$

In other words, Contrastive-marking presupposes that the speaker’s knowledge state is not maximal with respect to the question predicate in the sense of [Schulz and van Rooij \(to appear\)](#). In the speaker’s knowledge state, the set of the individuals included in the extension of the property in question is a **proper** subset of the individuals in the restriction R.

To illustrate this, let us consider again the model in (59) which contains Peter and Mary and no other individuals. The proposition ‘Everyone came.’ cannot be Contrastive-marked as seen in (5) repeated below as (68).

(68) #ZEN’IN-wa kita.

Everyone-Con came

‘[Everyone]_{Con} came.’

(5)

Knowing that ‘Everyone came.’ is true entails knowing that all the individuals are in the extension of the property $B = \lambda x \in D_e.x$ came. Therefore, the assertion itself selects w_1 as the speaker’s knowledge state. Limiting the competence, namely not applying eps^C does not give a different interpretation from the result of $grice^C$. This goes against the presupposition of CON; and hence (68) is infelicitous.

- (69) a. Assertion of (5) entails: $\mathbf{K}(B(m \oplus p))$
 b. $grice^C(B(m \oplus p), B) = \{w_1\}$
 c. $eps^C = \{w_1\}$
 d. Presupposition Failure

Similarly, the $\forall\neg$ reading is not available for (8) repeated here as (70) because it would entail that the speaker has maximal knowledge for the property.

- (70) 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. ($*\forall\neg$)

Not applying eps^C does not affect the interpretation since the assertion itself implies that the speaker has a maximal knowledge with respect to the property $B = \lambda x \in D_e.x$ didn't come; hence the speaker is maximally competent, which is not compatible with the presupposition of Contrastive-marking.

In summary, the lexical entry of Contrastive-marking can be reanalyzed as follows. It presupposes that the speaker's knowledge with respect to the property B is not maximal; (hence there is an effect by not assuming that the speaker is competent), and it always induces a Gricean implicature.

- (71) Interpreting a sentence with Contrastive-marking
 CON(B(F))
 presupposes: $eps^C(B(F), B) \neq grice^C(B(F), B)$
 implicates: $grice^C(B(F), B) = \{w \in [\mathbf{K}(B(F))]^C \mid \forall w' \in [\mathbf{K}(B(F))]^C : w \preceq_B w'\}$

To conclude this section, Contrastive-marking a sentence indicates that the speaker has a limited competence with respect to the property in question; and therefore, it lexically induces Gricean primary implicatures. Crucially, the order of knowledge proposed by Spector (2003) and Schulz and van Rooij (to appear) correctly predicts the distribution of Contrastive-marking. In Spector (2003) and Schulz and van Rooij (to appear), the speaker’s knowledge is ordered by the number of the individuals having the property in question. In effect, in the case where the speaker knows of some individuals **not** having property *P*, it is not counted as the speaker’s knowledge with respect to *P*. This corresponds to the use of Contrastive-marking; the speaker can use Contrastive-marking even when the speaker has answers for all the individuals as long as there is a contrast among them.¹³

¹³ In this chapter, I only consider a contrast in the speaker’s *knowledge* to characterize the use of Contrastive-marking. However, some data suggest that a contrast indicated by Contrastive-marking can be associated to a concept higher than knowledge, for example, speech act. Suppose that the answerer in (i) knows that both Mary and Peter passed, and he/she is also aware that the questioner is anxious to know whether Peter passed the exam. The use of Contrastive-marking is possible in this context with the intention indicated in the translation, although the speaker’s knowledge is maximal. Tomioka (2001) characterizes the implicature of Contrastive-marking as the speaker’s “unwillingness to assert” the alternative propositions. The reason that the speaker is unwilling to assert could be different: the speaker does not know the answer (lack of knowledge), the speaker wants to tease the questioner, the speaker thinks it is inappropriate to answer all the questions etc. In addition, Contrastive-marking can be used with constructions associated with other speech acts such as interrogatives, imperatives and exhortatives. Although I cannot attempt a full discussion here, I am optimistic that my analysis can be extended to these constructions.

- (i) a. Who passed the exam?
- b. MARY-wa ukat-ta.
 Mary-Con pass-Past
 ‘Mary passed (and I am not going to tell you that Peter passed.)’

2.8 Chapter Summary

I surveyed several analyses of Contrastives at the root clause. I pointed out that the uncertainty interpretation is not the only characteristic of Contrastives, because Contrastive-marking can be used when the speaker has an exhaustive answer. I presented two analyses that captures the observed distribution of Contrastive-marking. First, I argued that Contrastive-marking implicates that the speaker considers that the negation of the stronger (more informative) alternative is possible, and I showed that local computation of implicatures at each conjunct makes the correct distribution. I also emphasized that the function of Contrastive-marking is to presuppose that some alternatives for the question predicate have non-positive values in the speaker’s knowledge state. This speculation is inspired by the formulation of the Gricean Principle and the interpretation of exhaustivity developed by [Spector \(2003\)](#) and [Schulz and van Rooij \(to appear\)](#). Accordingly, I presented an alternative of Contrastive-marking in which Contrastive-marking can be understood as an indication of limited knowledge/comptence.

The two analysis not only differ as to whether the definition explicitly refers to the Gricean Principle but also differ in terms of the order of knowledge/information state. In the first analysis presented in section 2.4, the informativity scale is defined in terms of entailment. In the second analysis, presented in section 2.7, the informativity scale is ordered by the number of individuals having the property in question. As I mentioned in footnote 5, the logical entailment relation might not be appropriate to determine the informativity scale, and therefore, additional pragmatic restrictions such as ‘Horn Scale’ might be necessary. On the other hand, the order of knowledge/information state defined by [Spector \(2003\)](#) and [Schulz and van Rooij](#)

(to appear) results in a counter-intuitive treatment of the knowledge that the speaker might have some individuals not having the property. In this dissertation, I do not attempt to determine whether these two ways of characterizing the informativity are notational variants or they actually make different predictions. (In the subsequent chapters, I will use the first definition of Contrastives (26) for ease of application.)

Another thing to note is that, in this chapter, implicatures associated with Contrastive-marking are always associated to the speaker. The next question pertains to what happens if Contrastives are embedded under attitude predicates. Are implicatures always interpreted as the speaker's non-maximal knowledge? Can the agent of the knowledge be shifted by attitude predicates? In the next chapter, I will explore these questions and argue that implicatures by Contrastive-marking can be ambiguous depending on which attitude-bearer is associated to the induced-implicature. I will also present some syntactic correlation of the semantic interpretations.

Chapter 3

EMBEDDED CONTRASTIVE

3.1 Introduction

The traditional view of pragmatics is that implicatures are computed after the whole semantic computation is done. Pragmatics is treated as independent of the internal structure of syntax and semantics. Recently, however, the Syntax-Semantics-Pragmatics interface has gained more attention. In other words, linguists have started to consider the possibility of a new approach, i.e. the pragmatic system is not totally independent of the computation of syntax and semantics. Notably, [Chierchia \(2004\)](#) proposed that the derivation of scalar implicature starts at the level of a unit smaller than a sentence just like syntactic and semantic composition.

The previous chapter examined Japanese Contrastive marker *-wa* in root clauses and claimed that it presupposes the speaker's limited knowledge and induces conventionally Gricean implicatures. Investigating the lexicalized Gricean implicatures in relation to syntactic structures will shed new light on the debate on the computation of embedded implicature. In this chapter, I investigate three types of embeddings: under attitude predicates, relative clauses and adjunct clauses. I argue that the distribution and the function of *-wa* show that implicatures can be relativized to different agents of knowledge, and that the computation of the implicature triggered by *-wa* depends on the syntactic structures in which it occurs.

In section 3.2, I present data that suggest *-wa*-induced implicatures can be associated to 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. In section 3.3, I demonstrate that the association between the implicatures and the attitude-holder is constrained by a syntactic structure. In particular, I argue that the computation of contrastive meaning involves a syntactic movement of the CON operator, which is sensitive to island effects. I argue that the computation is blocked in an island configuration.

3.2 Relativized Implicatures

Let us first see what happens to *-wa* in an embedded context. Implicature Computation by *wa*-marking interacts with attitude predicates. In (1), *-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 we only consider Mary and Peter for possible comers, (1) is ambiguous between John’s local implicature implicature (the implicature relativized to John) (1-a) and the speaker’s global implicature (the implicature relativized to the speaker) (1-b).

- (1) 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 proposed in the previous chapter, the use of *-wa* introduces the operator CON.

- (2) 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: $\exists w'[w' \in \text{Dox}_{sp}(w)][B(F')(w') = 0](=\diamond(\neg(B(F'))))$

In the previous chapter, I only looked at the case where the implicature is associated to 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.¹

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

¹ 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.

3.2.1 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.

(3) 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)

For example, in English, the indexical *I* always refers to the actual speaker of the sentence. Consequently, in order to describe the situation in (4), the subject of the reported speech has to be referred by the third person pronoun *he*. (4–a) is not an accurate description of the situation in (4), since English *I* can only refer to the actual speaker.

(4) 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 there is no operator that shifts the context that determines the value of indexicals. He calls such operators *monsters*.

In contrast, 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 (5) (the actual example in Amharic is given in (6)).

(5) Situation to be reported: John says: ‘I am a hero.’

Amharic (lit.): John_i says that I_i am a hero. (Schlenker, 2003)

- (6) ḵjon ḵjegna nə-ññ yil -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 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.

- (7) SAY_{<John,now,actually>} c_i be-a-hero ($agent(c_i)$, $time(c_i)$, $world(c_i)$)
 (Schlenker, 2003)

In (7), 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 ($[[I]]^g = agent(c_{@})$), and therefore, it can only be interpreted as the speaker in the context of the actual utterance.

3.2.2 *Wa*-implicatures and Shiftable Indexicals

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

- (8) CON($w(c)$)($agent(c)$)(B(F))
 a. asserts: B(F)(w)=1

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

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

Let us go back to the ambiguity of (1) repeated here as (9).

- (9) 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).

- (10) 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. Recall from chapter 2 that background B is a question predicate in the Structured Meaning Approach (von Stechow, 1990) obtained by lambda abstraction using a designated variable (Kratzer, 1991c). The operator in (10-a) takes the embedded IP.

The context of the embedded speech picks out ‘John’ as the agent of knowledge of the proposition (11–b) and generates a local implicature (11-c).

(11) Computation of the local implicature

a. $B_l = \lambda y \in D_e. \llbracket \mathbf{Mary}_1 \text{ came} \rrbracket^{g, h^{1/y}} = \lambda y. \mathbf{came}(h^{1 \rightarrow y}(1)) = \lambda y. \mathbf{came}(y)$

b. $agent(c_i) = j$

c. $CON(w(c_i))(j)(\mathbf{came}(m))$

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 (10-b), the operator takes the matrix sentence. As a result, the context of the actual speech picks out the speaker as the agent of knowledge (12–b) and generates a global implicature (12-c).

(12) Computation of the global implicature

a. $B_g = \lambda y \in D_e. \llbracket \mathbf{John} \text{ believes } \mathbf{Mary}_1 \text{ came} \rrbracket^{g, h^{1/y}} = \lambda y. \mathbf{think}(j)(\mathbf{came}(y))(h^{1 \rightarrow y}(1)) = \lambda y. \mathbf{think}(j)(\mathbf{came}(y))$

b. $agent(c_{\textcircled{a}}) = sp$

c. $CON(w(c_{\textcircled{a}}))(sp)(\mathbf{think}(j)(\mathbf{came}(m)))$

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.

3.3 Implicature Computation Blocked by Syntax

The previous section showed that Contrastive-marking involve two discrete components, the CON operator, which determines the agent of the implicatures, and Focus-marking, which determines the alternative propositions. This association between the operator and the Focus-marked item seems to be blocked in certain syntactic configurations, namely adjunct and complex NP islands. This section argues for movement of the CON operator by showing that Contrastive-marking is sensitive to island effects.

3.3.1 Island Effects

Although it is possible to Contrastive-mark an element within a local clause under attitude predicates as discussed in section 3.2, it is not possible to Contrastive-mark an element within an adjunct clause (13) or a relative clause (14).

- (13) a. *Itsumo uchi-ni JOHN-**wa** kita 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.'
- b. *Kinou JOHN-**wa** uchi-ni kuru mae, daremo i-nakat-ta.
yesterday John-**Con** house-dat come before, anyone exist-Neg-Past
'Before at least John came to our house, no one was home.'
- c. *Kinou JOHN-**wa** uchi-ni kita ato, minna-de
yesterday John-**Con** house-dat came-after, everyone-with meal-Acc
shokuji-o shita.
did
'After at least John came to our house, we had meal together.'
- d. *Moshi John-ga hon-o 3-SATSU-**wa** yomu-nara, goukaku-suru.
if John-Nom book-Acc 3-Class-**Con** read-Comp, pass-do
'If John reads at least 3 books, he will pass (the exam).'
- (14) *Itsumo CHOMSKY-**wa** kai-ta hon-ga shuppan-sa-re-ru.
always Chomsky-**Con** write-Past book-Nom publish-do-Pass-Present

‘The book which at least Chomsky wrote is always published.’

In the syntactic literature, these constructions are known to be islands for *wh*-movement. Hence, it seems that Contrastive-marking is dependent on syntactic constructions. More specifically, it seems that the association between CON and the Focus-marked element cannot be established if the association needs to cross an island construction. 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*-question by Nishigauchi (1990) with the distribution of Japanese Contrastive-marking.

3.3.1.1 Japanese Island Constructions for *wh*-questions

Japanese is a *wh*-in-situ language in view of Huang’s (1982a; 1982b) theory of *wh*-movement. Namely, *wh*-words move covertly to clause-peripheral positions at LF.² For example, *naze* ‘why’ cannot appear within a complex NP as in (15). In the LF-movement approach, this is understood as the following. Even though *naze* is in the base generate position in overt syntax, it moves to the clause-initial position in covert syntax, which violates the island constraint (Ross, 1967).

- (15) *[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 of Japanese *wh*-words can appear within adjunct islands (16) and complex NP Islands

² Also, Kikuchi (1987) has shown that Japanese Comparative Deletion involves an operator movement, which is sensitive to island constructions. See Kikuchi (1987) for detailed discussions.

On the other hand, it has been observed that a *wh*-word inside a *wh*-island is not acceptable (Nishigauchi, 1990; Watanabe, 1992). For example, in (19-b), there seems to be a preference toward the local association of the *wh*-word *nani* with the embedded Q-morpheme *-ka* over the global association with the matrix *-ka*. This preference suggests that there is a *wh*-island effect in Japanese.

- (19) John-wa [Mary-ga nani-o katta-ka] imademo shiri-tagat-teiru-no?
 John-Top Mary-Nom what-Acc bought-Q still know-want-Prog-Q

of the predicate within complex NP constructions, i.e. the so-called *rentai* ‘adnominal’ form. For instance, an auxiliary verb *beshi* surfaces as its *rentai* form *beki* both in a relative clause (i-b) and a temporal clause (i-c).

- (i) a. yakusoku-o mamoru beshi.
 promise-Acc keep should
 ‘You should keep your promise.’
 b. mamoru beki yakusoku
 keep should promise
 ‘the promise you should keep’
 c. yakusoku-o mamoru beki toki
 promise-Acc keep should when
 ‘when you should keep your promise’

Secondly, temporal clauses can be case-marked and appear in an argument position.

- (ii) [John-ga i-ta toki]-ga ichiban tanoshikat-ta.
 John-Nom exist-Past when-Nom most fun-Past
 ‘It was the most fun when John was here.’

This is, however, not possible for *if*-clauses:

- (iii) *[John-ga i-ta-ra]-ga ichiban tanoshikat-ta.
 John-Nom exist-Past-Comp-Nom most fun-Past

Consequently, the feature analysis cannot be readily extended to all adjunct clauses. I leave this issue here, since it goes beyond the scope of this dissertation.

- a. ‘Does John still want to know what Mary bought?’
- b. ?‘What₁ is such that John still wants to know [whether Mary bought it₁]?’
(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. 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 (19-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 (20).⁴

- (20) John-wa [Mary-ga NAni-o *katta-ka*] *imademo*
 John-Top Mary-Nom what-Acc bought-whether still
shiri-tagat-teiru-no?
 know-want-Prog-Q
 ‘What₁ is such that John still wants to know [whether Mary bought it₁]?’
 (Deguchi and Kitagawa, 2002)

Deguchi and Kitagawa (2002) and Ishihara (2002) attribute the preference for local *wh*-scope observed in (19-b) to the shorter post-focal reduction (Local EPD or FI) as depicted in (21), which is preferred due to a tendency to avoid monotonic prosody.

⁴ 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.

- (21) John-wa [Mary-ga N*Ani-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?’

In summary, in Japanese, a *wh*-word moves at LF, and as a consequence it obeys the island constraints (see also [Kikuchi \(1987\)](#) for an island-sensitive movement of a syntactic operator involved in Comparative Deletion). The seeming exception of an adjunct island or a complex NP island is shown to be the result of LF pied-piping of the whole island. On the other hand, [Deguchi and Kitagawa \(2002\)](#) or [Ishihara \(2002\)](#) show that an embedded *wh*-question does not constitute an island in Japanese since the association between the *wh*-word and the matrix Q-morpheme is easily established if the right prosody is assigned.

3.3.1.2 *Wa*-marking and islands

In this section, I will show that *wa*-marking has a parallel distribution to Japanese *wh*-questions in terms of embedding under islands. The morpheme *-wa* cannot appear within an adjunct or a complex NP, while the ameliorated constructions which are parallel to the pied-piped *wh*-questions are available. As for *wh*-islands, *wa*-marking on an argument within an embedded question is possible.

First, let us see the case of adjunct clauses. Contrastives cannot be embedded

under temporal clauses and *if*-clauses as in (22).^{5,6}

- (22) a. *Itsumo uchi-ni JOHN-**wa** kita 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.’
- b. *Kinou JOHN-**wa** uchi-ni kuru mae, daremo i-nakat-ta.
 yesterday John-**Con** house-dat come before, anyone exist-Neg-Past
 ‘Before at least John came to our house, no one was home.’
- c. *Kinou JOHN-**wa** uchi-ni kita ato, minna-de
 yesterday John-**Con** house-dat came-after, everyone-with meal-Acc
 shokuji-o shita.
 did
 ‘After at least John came to our house, we had meal together.’
- d. *Moshi John-ga hon-o 3-SATSU-**wa** yomu-nara, goukaku-suru.
 if John-Nom book-Acc 3-Class-**Con** read-Comp, pass-do
 ‘If John reads at least 3 books, he will pass (the exam).’

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

⁵ 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, so I will put this issue aside.

⁶ Embedding *-wa* under *because* is grammatical, However, it still shows an island effect, since the Global computation of *wa*-implicatures is not an available reading. See Chapter 4 for details.

contrasted argument, the sentence becomes acceptable with the desired implicature ('For other people, I don't know whether the dog barks when they come.' (23-a)).⁷

- (23) a. Itsumo [uchi-ni JOHN-ga kita toki]-**wa**, inu-ga hoe-ru.
 always house-Dat John-Nom come when-**Con**, tea-Acc offer-Present
 'At least when John comes to our house, the dog always barks.'
- b. Kinou [JOHN-ga uchi-ni kuru mae]-**wa**, daremo
 yesterday John-Nom house-dat come before-**Con**, anyone
 i-nakat-ta.
 exist-Neg-Past
 'At least before John came to our house, no one was home.'
- c. Kinou [JOHN-ga uchi-ni kita ato]-**wa**,
 yesterday John-Nom house-dat came-after-**Con**, everyone-with
 minna-de shokuji-o shita.
 meal-Acc did
 '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 in (14) repeated here as (24).

- (24) *Itsumo [CHOMSKY-**wa** kai-ta hon]-ga shuppan-sa-re-ru.
 always Chomsky-**Con** write-Past book-Nom publish-do-Pass-Present
 'The book which at least Chomsky wrote is always published.'

⁷ 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).'

This is probably due to the difference in categorial feature between temporal clauses and *if*-clauses. Japanese temporal clauses have nominal features, which are lacking in *if*-clauses. See also footnote 3.

Similarly to adjunct islands, (24) can be improved if the Contrastive morpheme *-wa* is realized at the edge of the complex NP island.

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

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

- (26) 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
'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 as an island for a matrix *wh*-question if the correct prosody is assigned to the question. For this reason, I do not take (26) above as a counter-example 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 intended implicatures if *-wa* morpheme is realized at the same domain as the one which can be pied-piped for *wh*-questions. In addition, *wa*-marking is possible within *wh*-island. Overall, the distribution of Contrastive *wa*-marking is parallel to the distribution of Japanese *wh*-questions.

3.3.2 Movement of Con

The data shown above suggests 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. The speculation probably comes from the fact that Contrastive *-wa* is homophonous to Thematic *-wa*, which is claimed to mark Topic in information structure (Vallduví, 1992; Heycock, 1993) and appears at left-peripheral position. Indeed, Contrastive *-wa* is called ‘Contrastive Topic’ in some literature. 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 (27) and (28), even though the *wa*-marked elements are within island constructions, the sentences are judged grammatical. This is unexpected if we assume the simple explanation for the distribution of *-wa*, i.e., *-wa* can only appear in the matrix clause. A better explanation for (27) and (28), 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).

- (27) a. 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.’

- b. Moshi Mary-ga John-ga hon-o 3-SATSU-wa yomu-to
 if Mary-Nom John-Nom book-Acc 3-Class-Con read-Comp
shinji-ta-nara, goukaku-suru.
believe-Past-Comp, pass-do
 ‘If Mary believed that John reads at least 3 books, he will pass (the exam).’

- (28) MARY-wa ki-ta-to omot-teiru hito-ga iru.
 Mary-Con come-Past-Comp **think**-Prog person-Nom exist
 ‘There is a person who thinks that at least Mary came.’

Hence, observing the data shown in 3.3.1, I propose a syntactic movement account for this problem. Namely, I speculate that the operator is originally generated locally as in (29) 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.

- (29)
- $$\begin{array}{c}
 \text{XP} \\
 \swarrow \quad \searrow \\
 \text{CON} \quad \text{[FNP]} \quad \text{wa}
 \end{array}$$

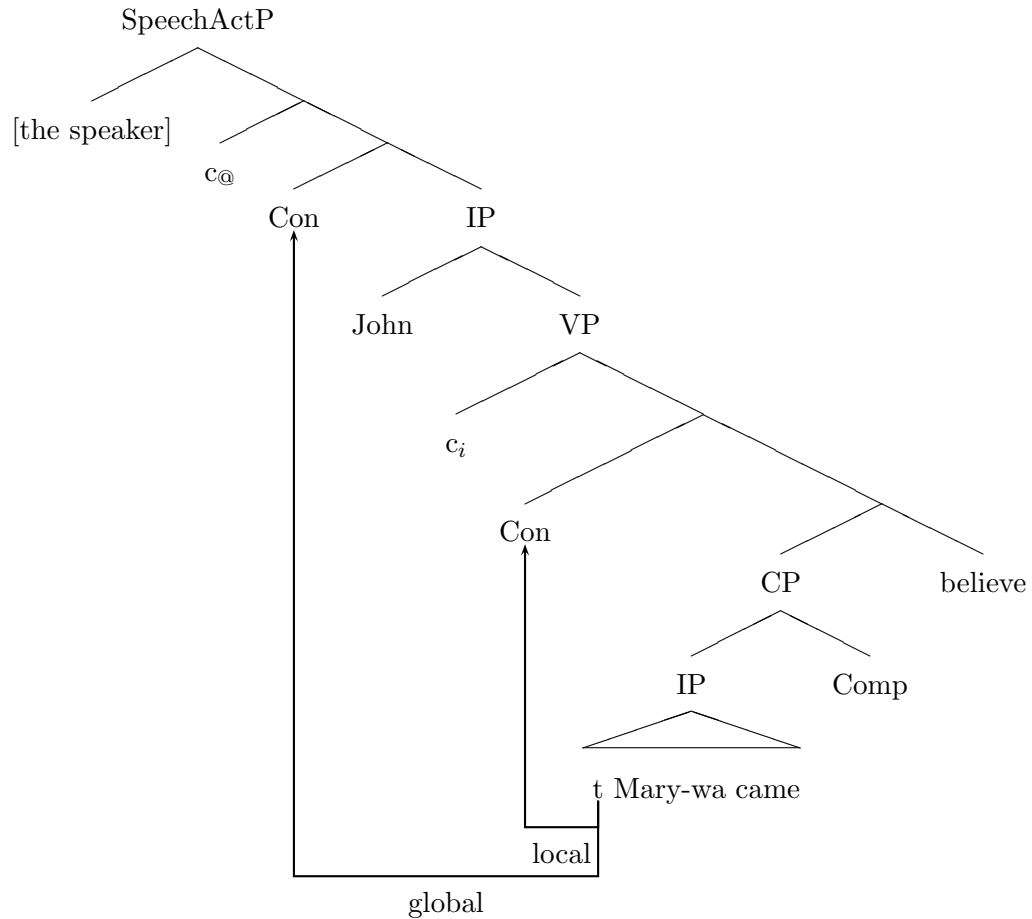
Let us go back to the ambiguity of (1) repeated here as (30).

- (30) MARY-wa kita-to John-ga shinjite-iru
 Mary-Con come-Comp John-nom believe-Prog
 ‘John believes at least Mary came.’ (1)

If the operator moves to the embedded clause, it induces John’s local implicature ‘John considers the possibility that Peter didn’t come’. If it moves to the matrix IP, it induces the speaker’s global implicature ‘The speaker considers the possibility

that John doesn't believe Peter came'.

(31)



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 (29) is necessary for the following reason. Consider sentence (32), in which the *wa*-marked quantifier *zen'in* 'everyone' is embedded in the complement clause.

(32) 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 the previous chapter. 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 a LF-structure, $\forall x \neg \mathbf{think} ([\mathbf{person}(x)] [\mathbf{come}(x)])$, which again fails to satisfy the presupposition, since the assertion exhausts all the individuals in the domain.⁸ Hence, it fails to induce the implicatures required by *-wa*.

Nonetheless, (32) 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*), $\neg \mathbf{think} (\forall x [\mathbf{person}(x)] [\mathbf{come}(x)])$ indeed has an implicature, $\neg \mathbf{think} (\exists x [\mathbf{person}(x)] [\mathbf{come}(x)]) \approx$ “I thought some people would come”. Therefore, the Contrastive Operator CON is detachable from the Contrastive-marked element as depicted in (33), which is a structural representation of (32).

⁸ Not only the presupposition is satisfied, but also the assertion of this LF structure is infelicitous. Namely, when *zen'n* ‘everyone’ is embedded under *omow-anakat-ta* ‘didn’t believe’, the reading where ‘everyone’ is taking wide scope seems absent even without *wa*-marking.

- (i) Zen'in-ga kur-u-to omow-anakat-ta.
 Everyone-Nom come-Present-Comp think-Neg-Past
 a. ‘I didn’t think that everyone would come.’
 b. *‘Everyone was such that I didn’t think s/he would come.’

This is an intriguing fact but beyond the scope of the current topic, and I put this issue aside.

- (33) [CP CON [_{NegP} [CP [XP] t [XP everyone]] -wa] came Comp] think Neg] Past]

A movement analysis straightforwardly explains the ungrammaticality of (13-a) repeated here as (34). The operator generated under *when* looks for its context. There is no attitude predicate under *when*, hence it targets the matrix clause.⁹ This movement crosses an adjunct island.

- (34) *Itsumo uchi-ni JOHN-wa kita **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.’ (13-a)

- (35) *_{[SpeechActP [speaker] [Con [IP ... [AdjunctP [IP] t John-wa come] when]]]]}

Remember that when *-wa* is further embedded under an attitude predicate, the sentence is acceptable even within an island (27-a) (repeated here as (36)).

- (36) John-ga MARY-wa kuru-to **omot**-ta toki, kanojo-ga heya-ni
 John-Nom Mary-**Con** come-Comp **think**-Past when 3sg-Nom room-Dat
 haitte kita .
 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.

- (37) [IP ... [AdjunctP [VP **c_i** CON [CP [IP [XP] t [XP Mary]] -wa] come] Comp]
thought toki] ...]

⁹ Attitude predicates are not the only operators that can license embedded *wa*-marking. Chapter 4 will discuss other operators that license *wa*-marking and why those options are not available for *when*-clauses.

3.3.3 Arguments for a movement approach

The introduction of a syntactic movement to account for a semantic/pragmatic phenomenon like implicature computation may seem unconventional. However, in general, semantic associations such as focus associations (Rooth, 1985, 1992) and choice function binding (Reinhart, 1997) are immune to islands. Moreover, *wa*-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 (13) and (14): one is pied-piping the Contrastive-marking to outside of the island as shown in section 3.3.1.2, and the other is base-generating the Contrastive-marked element at the clause-initial position. In the following section, I demonstrate specifically how (13) and (14) are ameliorated and how they are interpreted.

3.3.3.1 Pied-piping

First, if *-wa* is attached to a *when*-clause and the *when*-clause contains an argument that bears a dissociated focus marked by a sentential stress, it is possible to compute a global implicature. In (38), for example, the *when*-clause *JOHN-ga kita toki* contains the argument NP *John*, which has a dissociated focus-marking, 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.’

- (38) Itsumo uchi-ni JOHN-ga kita toki-**wa**, inu-ga hoe-ru.
always house-Dat John-Nom come when-**Con**, tea-Acc offer-Present
‘At least when John comes to our house, the dog always barks.’

Similarly, *wa*-marking on a complex NP (instead of inside a complex NP) and an independent focus-marking on an embedded argument successfully generates the global

implicature ‘I don’t know if it’s true that the book which other people wrote is always published.’

- (39) Itsumo CHOMSKY-ga kai-ta hon-wa shuppan-sa-re-ru.
 always Chomsky-Nom write-Past book-**Con** publish-do-Pass-Present
 ‘At least the book which Chomsky wrote is always published.’

These structures do not cause an island violation because CON is generated outside the island and the movement of CON is local. The LF structure for (38) and the subsequent movement of the CON operator is depicted in (40).

- (40) $c_{@}$ CON $\left[\text{IP always } \left[\text{XP } t \left[\text{AdjunctP house-ni John-ga came toki } \right] \text{-wa } \right] \text{ dog-ga} \right.$
 barks] (38)

The following is how CON is computed in (38). The shiftable indexical $agent(c)$ is bound by the actual utterance context $c_{@}$, hence, the context induces an implicature associated to the actual speaker as in (41-c).

- (41) a. $B_l = \lambda y \in D_e. \llbracket \mathbf{when\ John_1\ came,\ the\ dog\ barks} \rrbracket^{g, h^{1/y}}$
 $= \lambda y. \mathbf{when}'_e(\mathbf{came}(h^{1 \rightarrow y}(1), e))(\mathbf{bark}'(d, e))$
 $= \lambda y. \mathbf{when}'_e(\mathbf{came}(y, e))(\mathbf{bark}'(d, e))$
 b. $agent(c_{@}) = sp$
 c. $CON(w(c_{@}))(sp)(\mathbf{when\ John\ came,\ the\ dog\ barks})$
 implicates: In some of the doxastic worlds compatible with the speaker’s belief, it is not the case that when someone other than John comes, the dog barks.

3.3.3.2 Co-indexation with *pro*

In addition to “pied-piping”-like constructions, (13-a) can be ameliorated by generating a *-wa*-marked NP overtly outside the island construction and co-indexing it with *pro*. For example, in (42), the *wa*-marked NP JOHN_{*i*}-**wa** is co-indexed with *pro*, within a temporal clause, and it induces the intended implicature.¹⁰

- (42) JOHN_{*i*}-**wa** itsumo uchi-ni *pro*_{*i*} kita **toki**, inu-ga hoe-ru.
 John-**Con** always house-Dat *pro* came **when**, dog-Nom 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.

- (43) c@ CON [XP t [John]-*wa*] always [AdjunctP *pro* came toki] dog-ga barks]
 (42)

The example in (44) illustrates the same point with a Complex NP. Contrastive-marking is on the argument generated outside the island construction.

- (44) CHOMSKY_{*i*}-*wa* itsumo *pro*_{*i*} kai-ta hon-ga
 Chomsky-Con always *pro* write-Past book-Nom
 shuppan-sa-re-ru
 publish-do-Pass-Present
 ‘At least Chomsky is such that the book which he wrote is always published.’

¹⁰ Some informants report that (42) is not completely acceptable. The sentence (42) 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*.

Together with the “pied-piping” facts presented in the previous section, this possibility of amendment by co-indexation with *pro* demonstrates that the ungrammaticality of (13) and (14) is not due to semantic constraints but syntactic ones.

The sentences in (42) and (44) not an instance of overt movement of *John-wa* or *Chomsky-wa*. As discussed in Hoji (1985), the empty category e_j in (45-a) is a base-generated empty pronominal (little *pro* in more recent terminology) coindexed with the *wa*-phrase, while in the case of (45-b), t_j is a trace created by the movement of the object, *John-o*.

- (45) a. John_j-wa [s Mary-ga [vP e_j butta]]
 John-Top Mary-Nom hit
 ‘As for John_j, Mary hit him_j.’
- b. John_j-o [s Mary-ga [vP t_j butta]]
 John-Acc Mary-Nom hit
 ‘John_j, Mary hit t_j .’ (Hoji (1985); p.133)

Hoji (1985) provides the following anaphor binding test to show that the sentence-initial *wa*-marked phrase is not an instance of movement. In (46-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 (46-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 at the argument position.

- (46) 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
that self about book -Acc John-nom
suteta]]]
threw-away
‘That book about himself_i, John_i threw away.’(Hoji (1985); p.129,133)

Going back to (42), repeated here as (47), *Mary-wa* is not moved out of the *when*-clause but base-generated outside; as a result, the Contrastive operator does not cross an island.

- (47) JOHN_i-**wa** itsumo uchi-ni *pro*_i kita **toki**, inu-ga hoe-ru.
John-Con always house-Dat *pro* came when, dog-Nom 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.)

On the other hand, in (13-a), repeated below as (48), *Mary-wa* is generated under *when*, and the operator needs to cross an island to find its attitude-bearer.

- (48) *Itsumo uchi-ni JOHN-**wa** kita **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.’

In short, the unacceptability of (13) and (14) are not due to semantic constraints but to syntactic ones, since the intended interpretations are successfully derived by changing the syntactic structures.

3.3.4 Section Summary

The use of *-wa* triggers implicatures which are associated to the speaker or some attitude-bearer. This association is blocked by a certain syntactic configuration, namely an adjunct island and a complex NP island. 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.

This analysis pertains to two questions. First, looking at (10), the two LF structures of (1) repeated here as (49), the CON operator seems to move to matrix or embedded clause-initial position.

- (49) 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]]

Then, what exactly prevents the LF in (48) from having the following structure and induce a local implicature within the *when*-clause?

- (50) $c_{@}$ [_{CP} [_{IP} [_{AdjunctP} c_i CON [_{XP} t Mary-wa] came when] ...]]

Moreover, there is an apparent exception to my analysis. The morpheme *-wa* can appear within a *because*-clause as in (51)

- (51) Itsumo uchi-ni John-**wa** kuru **node** oyatsu-o youi-su-ru.
 always house-Dat John-Con come because, sweets-Acc prepare-do-Present
 a. ‘Because at least John comes to our house, I always prepare for sweets.’

- b. *‘At least John is such that because he comes to our house, I always prepare for sweets.’

There still seems to be an island effect since the reading with global computation of CON (51-b) is not available. What is surprising about (51) is that it can have a structure parallel to (50), namely (52-a), but obviously not a structure where CON moves to the matrix position (52-b).

- (52) a. $c_{@}$ [CP [IP [AdjunctP c_i $\overbrace{\text{CON [XP t Mary-wa]}}$] came because] ...]]
 b. * $c_{@}$ $\overbrace{\text{CON [CP [IP [AdjunctP c_i [XP t Mary-wa]]]}}$ came because] ...]]
 *

The next chapter looks more closely at the semantics of different adjunct clauses and provides an explanation for why temporal clauses and *if*-clauses cannot host the CON operator and why *because*-clauses can.

3.4 Chapter Summary

I have shown that the implicature triggered by *-wa* can be relativized to different agents in an embedded context following Schlekner’s (2003) analysis of attitude predicates as operators that change the context of utterance. Namely, I have reformulated my definition of CON so that it contains shiftable indexicals. 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 chapter also have interesting ramifications regarding the connection between implicatures and evidentiality, which is another grammaticalization of sentience/seat of knowledge. 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 ([Chierchia \(2004\)](#) for implicatures; [Speas \(2004\)](#) and [Tenny \(2004\)](#) for evidentiality). However, the connection between the implicatures and evidentiality has not been discussed in theoretical linguistics. In the next chapter, I will present some parallels between Contrastive-marking and Evidentiality, and explore the semantic structures of Japanese evidentials.

Chapter 4

BECAUSE, EVIDENTIALS AND MONSTERS

4.1 Introduction

The previous chapter revealed that the implicature induced by Contrastive-marking can be associated to an attitude-holder other than the speaker. I have also emphasized that the CON operator contains shiftable indexicals, *agent(c)* and *world(c)*, which require context variables. For this reason, the CON operator needs to be bound by an attitude operator, like an attitude predicate, which supplies a context. In other words, computation of Contrastive-marking is tied to the notion of attitudes and point-of-view. A discussion of Evidentiality, which [Speas \(2004\)](#) and [Tenny \(2004\)](#) claim to be another grammatical realization of point-of-view, is relevant to my analysis of Contrastive-marking because, Evidential-marking has a striking parallelism to Contrastive-marking in terms of its distribution.

Until recently, there has not been much work on Evidentiality available in the literature on formal syntax/semantics. In this chapter, I argue that evidentials are operators that can also shift the context. First, I point out a parallel between the asymmetric distribution of Contrastive-marking and of evidentials. The data demonstrates that an evidential takes a proposition and expresses some attitude towards that proposition. I show that the same explanation applies to Contrastive-marking: the CON operator takes a proposition and induces an implicature. Second, I argue

that treating evidentials as context-shifting operators is compatible with the current available analysis of evidentials that treats them as quantifiers over possible worlds or speech act modifiers. Hence, my analysis predicts that if Contrastive-marking is embedded under an overt evidential morpheme, the limitation of knowledge that CON implicates can be associated to the evidence rather than the speaker.

This chapter is structured as follows. In section 4.2, I present a seeming exception to my analysis in the previous chapter: namely, although I argued that Contrastive-marking is not allowed within adjunct clauses, a *because*-clause, which is an adjunct clause, does allow Contrastive-marking within it. I also show that this same asymmetry is found for evidential morphemes cross-linguistically. Section 4.3 summarizes Johnston's (1994) analysis of the syntactic and semantic differences of various adjunct clauses. Given Johnston's (1994) analysis, in section 4.4 I explain the asymmetry of *wa*-marking and evidentials for various adjunct clauses in terms of a type mismatch. In section 4.6, I claim that the *because* operator and evidential morphemes are monsters that shift the context of utterance because they introduce a local (embedded) context.

4.2 Parallelism of Asymmetry

As mentioned in chapter 3, Japanese Contrastive *-wa* cannot appear within temporal clauses. Examples are repeated here in (1). In chapter 3, I showed that the ungrammaticality is due to an adjunct island violation caused by movement of the CON operator introduced by *-wa*.

- (1) a. *Itsumo uchi-ni JOHN-wa kita 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.'

- b. *Kinou Mary-wa uchi-ni kuru mae, daremo i-nakat-ta.
yesterday Mary-CTop house-dat come before, anyone exist-Neg-Past
'Before at least Mary came to our house, no one was home.'
- c. *Kinou Mary-wa uchi-ni kita ato, minna-de
yesterday Mary-CTop house-dat came-after, everyone-with meal-Acc
shokuji-o shita.
did
'After at least Mary came to our house, we had meal together.'
- d. *Moshi John-ga hon-o 3-satsu-wa yom-eba, goukaku-suru.
if John-Nom book-Acc 3-Class-Con read-Comp, pass-do
'If John reads at least 3 books, he will pass.'

However, there seems to be an exception to this observation. *Wa*-marking is available in a *because*-clause, which is also an adjunct clause.^{1,2}

¹ Japanese has two forms for *because*, *node* and *kara*. In this chapter, I use *node* since the literature I cite in this chapter uses *node*. As far as the semantic data in this chapter are concerned, these two forms are interchangeable, although there is an inflectional change with an evidential *souda/souna*: *souda kara* is preferred over *souna kara* at least in standard Japanese (Tokyo dialect).

² In Japanese, a *because*-clause does not seem to be an island to *wh*-movement as shown in (i).

- (i) Mary-wa [John-ga nani-o yom-da node] okot-ta no?
Mary-TOP John-NOM what-ACC read-Past because angry-Past Q
'Mary got angry because John read what?'

Nishigauchi (1990) does not analyze *wh*-movement in adjunct islands, hence it is not clear why (i) is not an adjunct-island violation. Furthermore, the feature analysis mentioned in footnote 3 in chapter 3 cannot be extended here since *because*-clauses do not have nominal features. Like an *if*-clause, a *because*-clause cannot be case-marked, as indicated by the ungrammaticality of (ii).

- (ii) *[John-ga i-ta-node]-ga ichiban yoi riyuu da.
John-Nom exist-Past-because-Nom most good reason Cop
'[Because John was here] was the best reason.'

- (2) Itsumo uchi-ni JOHN-**wa** kuru **node** oyatsu-o youi-su-ru.
 always house-Dat John-Con come because, sweets-Acc prepare-do-Present
 a. ‘Because at least John comes to our house, I always prepare for sweets.’
 b. *‘At least John is such that because he comes to our house, I always
 prepare for sweets.’

A closer look at the interpretation of (2) reveals that the CON operator introduced by *-wa* still obeys the adjunct island constraint, since the global computation of the *wa*-implicature is not available for (2). Namely, the LF structure in (3) is not available, hence the only legitimate reading for (2) comes from the local computation of the *wa*-implicature from the LF in (4).

(3) * $c_{@}$ $\overbrace{\text{Con}}^*$ [CP [IP [AdjunctP [XP t Mary-wa] came because] ...]]

(4) $c_{@}$ [CP [IP [AdjunctP c_i $\overbrace{\text{Con}}^*$ [XP t Mary-wa] came because] ...]]

In chapter 3, I stated that the local computation of CON is not available for temporal clauses and *if*-clauses when there is no attitude operator embedded under those adjunct clauses. Therefore, the reason behind this asymmetry reduces to the question of why the local computation of the CON operator is possible under a *because*-clause. In order to explain this asymmetry, I examine the difference between temporal clauses and *because* clauses in the subsequent sections, and argue that *because* introduces a local context.

4.2.1 A Cross-linguistic Pattern

In the previous subsection, I presented an asymmetry regarding local computation of the CON operator among adjunct clauses. A parallel asymmetry is observed

for evidential morphemes: the Japanese evidential morpheme *souna/souda* indicates that the proposition is uttered based on reported speech (*hearsay* evidence). Like *-wa*, the morpheme *souna/souda* cannot be embedded under temporal clauses or *if*-clauses, while it can be embedded under *because*-clauses.

- (5) a. *John-ga kaetta **souna 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.’
- b. *John-ga kaetta **souna raba**, watashi-mo kae-ru
 John-Nom went.home Evid Comp, 1sg-Add go.home-Present
 Intended: ‘If John went home (I heard), I’m going home, too.’
- (6) John-ga kaetta **souna node**, watashi-mo kaet-ta.
 John-Nom went.home Evid because, 1sg-Add go.home-Past
 ‘Because John went home (I heard), I went home, too.’

A similar asymmetry is observed for the English adverb *obviously*. The 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 (7-b) 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 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 (7-a), only the former reading, namely the speaker’s comment, is available.

- (7) a. Mary is upset because obviously John doesn’t love her.
 b. Mary is upset because it is obvious that John doesn’t love her.

The adverb *obviously* is unambiguously expressive. Namely, it indicates the speaker has some attitude (and perhaps some indirect evidence) toward the embedded proposition. Remarkably, the adverb *obviously* cannot appear under *when* (8-a) or *if* b], while it can under *because* as illustrated in (7-a).

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

Similarly, 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 and *if*-clauses.³

- (9) a. *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.'

³ 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)

- b. *Maria wird ärgerlich sein, wenn sie die Prüfung ja nicht besteht.
 Maria will angry be, if she the exam JA not pass
 ‘Maria will be angry, if she JA doesn’t pass the exam.’
- (10) 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 evidential morphemes. They can be embedded under *because*, while they cannot be embedded under temporal clauses and *if*-clauses.

4.3 Different Types of Adjuncts

In the previous chapter, I provided evidence that *-wa* within temporal clauses and *if*-clauses is ungrammatical. I argued that in these cases the association between the *wa*-implicature and attitude-bearer is not established. Formally speaking, CON is not in a position where its *c* argument can be saturated. However, if *-wa* is embedded within a *because*-clause as in (2) (repeated here as (11)), the sentence is acceptable.

- (11) Itsumo uchi-ni John-**wa** kuru **node** oyatsu-o youi-su-ru.
 always house-Dat John-Con come because, sweets-Acc prepare-do-Present
 ‘Because at least John comes to our house, I always prepare for sweets.’ (2)

I have also shown in the previous section that a parallel asymmetry is observed for evidential morphemes in various languages. In this section, I attribute this asymmetry to Johnston’s (1994) proposal which treats the semantics of temporal adjuncts as quantification over event predicates and the semantics of *because* adjuncts as a relation between propositions. I argue that the clause which the CON operator or an evidential morpheme takes as an argument cannot be an event predicate but must

be a proposition. Hence, they cannot occur within temporal clauses due to a type mismatch, while they can be within *because*-clauses.

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

According to Johnston (1994), *when* combines with a property of events and yields a time-interval description. In this analysis of *when*, since *when* needs to apply the maximal event e to the temporal runtime function f , the argument of *when* must be an event predicate $\langle s, t \rangle$, not a proposition t .⁴

- (12) a. when Marcia was at the cafe
 b. Marcia was at the cafe $\Rightarrow \lambda e'. \mathbf{Marcia-was-at-the-cafe}'(e')$
 c. when $\Rightarrow \lambda \phi \in D_{\langle s, t \rangle} \lambda i [\exists e. [\mathbf{MAX}(\phi)(e) \ \& \ i = f(e)]]$
 d. when Marcia was at the cafe
 $\Rightarrow \lambda i [\exists e. [\mathbf{MAX}(\lambda e'. \mathbf{Marcia-was-at-the-cafe}'(e'))(e) \ \& \ i = f(e)]]$
 (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

⁴ $\mathbf{MAX}(\phi)(e)$ is a maximal eventuality function. Johnston (1994) defines it as follows: “ $\mathbf{MAX}(\phi)(e)$ 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 .”

- (i) $\mathbf{MAX}(\phi)(e) = 1$ iff [$\phi(e) \ \& \ \sim \exists e'. [\phi(e') \ \text{and} \ (e \neq e') \ \& \ [f(e) \subseteq f(e')]]$] (Johnston, 1994)

is done by an implicit existential, an episodic reading is derived as in (13-a). On the other hand, (13-b) is an instance of the overt adverb of quantification.

- (13) a. Marcia wrote a letter when she was at the cafe. (Episodic)
 $\exists[\mathbf{when}'_e(\mathbf{at}'(\text{Marcia, the cafe, } e_1))][\mathbf{write}'(\text{Marcia, a letter, } e_2)]$
 b. Marcia always writes a letter when she is at the cafe. (AoQ)
 $\forall[\mathbf{when}'_e(\mathbf{at}'(\text{Marcia, the cafe, } e_1))][\mathbf{write}'(\text{Marcia, a letter, } e_2)]$
 (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, in the complement of *because*, the existential quantifier over events is not provided by *because*. (For the purpose of exposition, I delay an explanation of the semantics of *because* until section 4.4.3.)

- (14) a. Marty sold his bike because the gears broke.
 b. $\mathbf{because}'(\exists e_1.[\mathbf{sold}'(\text{Marty, his bike, } e_1)], \exists e_2.[\mathbf{break}'(\text{Marty, his bike, } e_2)])$

Johnston (1994) further argues that a *because*-clause cannot be a restriction of an adverb of quantification since the adverb *always* cannot quantify over a proposition, i.e., the sentence in (15-a) does not receive the interpretation in (15-b). The clause under *because* is an existentially closed proposition; hence the *because*-clause itself does not contain a variable.

- (15) a. Jane always fixes the car because John wrecks it.
 b. $\#\forall[\mathbf{because}'\exists e_1.[\mathbf{wrecks}'(\text{John, the car, } e_1)]][\mathbf{fix}'(\text{Jane, the car, } e_2)]$

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 $\langle s, t \rangle$.⁵

4.3.2 *If*-clauses: Kratzer (1991)

If-clauses have a structure similar to temporal clauses. According to Kratzer (1991a), an *if*-clause restricts the domain of quantification of adverbial quantification. The sentences in (16) has the logical representations in (17).

- (16) 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)
- (17) 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 suggest 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*.

⁵ In (13), the content of the adverbial adjunct (the *when*-clause) is presupposed, while in (14), 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.

4.4 Attitudes and Event Quantification

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

In the previous section, I reviewed Johnston (1994) which 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 chapter 2, Contrastive-marking indicates the limit of knowledge regarding a certain question. That means, the speaker knows of 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 have truth-value of 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 asymmetry of Contrastive-marking. Relevant examples are repeated here as (18) and (19).

- (18) *Itsumo uchi-ni JOHN-**wa** kita **toki**, inu-ga hoe-ru.
 always house-Dat John-Con come when, tea-Acc offer-Present
 Intended: ‘When at least John comes to our house, the dog always barks.’

(1-a)

- (19) Itsumo uchi-ni John-**wa** kuru **node** oyatsu-o youi-su-ru.
 always house-Dat John-Con come because, sweets-Acc prepare-do-Present
 ‘Because at least John comes to our house, I always prepare for sweets.’ (2)

As argued in chapter 3, the global computation of CON in (18) is unavailable due to an island violation. The operator CON cannot move outside the adjunct island, as illustrated in (20).

- (20) *_{[SpeechActP [speaker] [} Con [IP ... [AdjunctP [IP t John-wa come] when]] _{]]]}
 *

The local computation of CON for (18) 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 .

(21) *[CP [IP [AdjunctP CON [IP $\langle s, t \rangle$ **came**(j, e)] when] ...]]

In other words, if CON appeared under *when*, the IP must be of type $\langle t \rangle$ by type-shifting or existential closure. This would cause a semantic crash in the higher computation, i.e., results in a vacuous quantification. The adverbial quantifier fails to bind a variable.

Therefore, the interpretation of CON under *when* is not available in either positions, global or local.

The same island effect is observed for (19), blocking the global computation of CON. Namely, (19) cannot mean ‘At least John is such that because he comes to our house, I always prepare for sweets.’ In contrast, the local computation is available since the clause under *because* is interpreted as a proposition. As a result, *-wa* can be embedded under *because* and it only induces a local implicature.⁶

⁶ The current analysis implies that a *because*-clause contains some kind of an attitude operator that binds context variables just like attitude predicates. Indeed, in (i) the uncertainty implicature associated with *-wa*, ‘Possibly, John does not speak other languages’ is associated not to the speaker but to the president.

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

In section 4.6, I analyze Japanese *because* as an evidential, which introduces an evidential argument that indicates the agent/seat of knowledge.

(22) [CP [IP [AdjunctP CON [IP< t > $\exists e$. [IP< s, t > **came**(j, e)]] because] ...]]

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 indicates a limit of knowledge regarding a proposition. Therefore, if CON appeared it cannot appear under *when* since it 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.

4.4.2 Semantics of Evidentials: the seat of knowledge

I propose that evidentials also take propositions as their arguments. For example, the Japanese evidential morpheme *souna/souda* indicates that the proposition is uttered based on some reported speech (*hearsay* evidence) as in (23-a). The sentence in (23-a) is interpreted as (23-b) (ignoring tense): the speaker has hearsay evidence x for p , and p is such that there exist an event e , and e is John's home-going.

- (23) a. John-ga kaet-ta-souda.
 John-Nom go.home-Past-Evid
 'John went home (I heard).'
- b. **Evid**(x, p) & **hearsay**(sp, x) & $p = \exists e$.**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 one hand and temporal clauses and *if*-clauses on the other. Given this distinction, the event quantification analysis of *souna/souda* explains why *souna/souda*

can be embedded under *because* but not under *when*. As formalized in (23-b), *souna/souda* existentially closes the event predicate and the sentence expresses that the speaker has hearsay evidence for this particular event denoted by the proposition.

Since *because* takes a proposition, (23-a) can be embedded under *because* as in (6) repeated here as (24) yielding the formula in (25). 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.

(24) John-ga kaetta **souna node**, watashi-mo kaet-ta.
 John-Nom went.home Evid because, 1sg-Add go.home-Past
 'Because John went home (I heard), I went home, too.'

(25) **because'**($\exists e$.[**go.home'**(*sp, e*)],
 (**Evid**(*x, p*) & **hearsay**(*sp, x*) & *p* = $\exists e$.**go.home'**(*j, e*))

On the other hand, *when* and *if* always take an event predicate. Therefore, it is predicted that embedding *souna/souda* under *when* and *if* is not possible because of the type mismatch. This prediction is borne out as witnessed in (26) and (27).

(26) *John-ga kaetta **souna 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.' (5-a)

(27) *John-ga kaetta **souna raba**, watashi-mo kae-ru
 John-Nom went.home Evid Comp, 1sg-Add go.home-Present
 Intended: 'If John went home (I heard), I'm going home, too.' (5-b)

Kratzer (1999) also points out the same phenomenon for the German particle *ja*. As (28) and Kratzer's example (29) show, *ja* cannot be embedded under *when*.

- (28) *Maria wurde ärgerlich, als sie die Prüfung ja nicht bestanden hatte.
 Maria was angry, when she the exam JA not passed have
 ‘Maria is angry, when she JA didn’t pass the exam.’ (9-a)
- (29) 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.”

Namely, the interpretation of *when*-clauses in (9-a) and (29) contain event variables, hence they are properties of events. Since *ja* expresses some attitude toward a particular event, it cannot operate over predicates.

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 (30).

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

In (30), 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 (30) 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 section 4.6 below for further discussion on this topic.)

4.4.3 Extension: Opaque and Transparent *Because*’s

In section 4.3.1, I reviewed Johnston’s proposal that temporal clauses and *because*-clauses have different semantics and syntactic structures. This difference 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 (31-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 (31-b) gives the reason for the speaker’s action of going to the pageant in virtue of certain properties of the expressed events.

- (31) a. I fell because the principal did. (transparent)
 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 (32-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 (32-b).

- (32) 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. $\exists e.[\mathbf{down}'(temp, e) \ \& \ \exists e'.[\mathbf{cause}(e', e) \ \& \ \mathbf{rain}'(e')]]$

Now, if a *wa*-marked element is embedded under a clearly transparent *because* as in (33-b), the sentence turns out to be ungrammatical. The ungrammaticality of (33-b) can be explained along the same line as the case of *when*: in the complement of transparent *because*, the event predicate is not existential closed, so locally the argument of CON operator is not a closed proposition of type *t*, and the CON operator cannot move outside the adjunct island in order to receive a global interpretation.

- (33) a. koucho-sensei-wa geki-ni it-ta node, boku-mo it-ta.
principal-Con pageant-to go-Past because, 1sg-Add go-Past
‘Because the principal went to the pageant, I also went to it.’
(opaque *because*)
- b. sakki made ame-ga/*wa futta node, kion-ga
while-ago until rain-Nom/Con fell because, temperature-Nom
sagat-ta.
down-Past
‘Because it rained until 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 (32-b). Having an evidential would existentially close the event predicate and there would be no event variable to be quantified over, which results in a type-mismatch or a vacuous quantification. This is indeed the correct predication as witnessed in (34) and also in (35) for English.⁷

(34) *ame-ga futta souna node, kion-ga sagat-ta.
 rain-Nom fell Evid because, temperature-Nom down-Past
 Intended: ‘Because it rained (I heard), the temperature went down.’

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

This evidence clearly suggests 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*.

4.5 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 attitude

⁷ Unfortunately, this story cannot be straightforwardly extended to German *ja*, since the German translation of (35) with *ja* is acceptable.

(i) Es ist kalt, weil das Fenster ja offen ist.
 it is cold because the window JA open is
 ‘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 *souna* and English *obviously* on the other.

expressions such as *-wa* and evidential morphemes block binding of an event variable, which is required for the semantics of these clauses, i.e., the event quantification.⁸ On the other hand, the *because* operator takes a proposition just like CON and evidentials. Hence, the attitude expressions are compatible with (opaque) *because*-clauses.

4.6 *Because* and Evidentials as Monsters

The previous section revealed that Contrastives, 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 seat of the knowledge) has. Evidentials indicate the source (the speaker or some other attitude-holder) of the truth of the embedded proposition. The *because* operator expresses the speaker's or some attitude-bearer's inference connecting between two propositions. In other words, these expressions interact with the context of the utterance. In chapter 3, I argued that Contrastives are shiftable indexicals because the agent of the implicature can be shifted if the Contrastive-marker *-wa* is embedded under an attitude-predicate. In this section, I argue that evidentials and the *because* operator set up a context for the embedded proposition just like attitude predicates do.

4.6.1 *Because* shifts context

It is the speaker's or some attitude-bearer's reasoning that connects the two conjuncts of *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

⁸ See chapter 6 for the discussion of relative clauses.

of reasoning made by *because* can be an attitude-holder other than the speaker. In (36-a), for example, it is the president that draws the inference that connects the two conjuncts, since it can be followed by a sentence like (36-b). If the reasoning indicated by *because* were always attributed to the speaker, the continuation in (36-b) should lead to a contradiction.⁹

⁹ We can find an actual example of this type of contradiction with German causal *denn*. German has two causal connectives, *denn* and *weil*. Unlike Japanese *node* or the other German connective *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
 The company.boss has SELF decided Mary hire because
 sie spricht Holländisch. Aber ich glaube Mary spricht kein
 she speaks Dutch But I believe Mary speaks no
 Holländisch.
 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
 The company.boss has SELF decided Mary hire because
 sie Holländisch spricht. Aber ich glaube Mary spricht kein
 she speaks Dutch But I believe Mary speaks no
 Holländisch.
 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 $\llbracket A \rrbracket = \phi$ and $\llbracket B \rrbracket = \psi$, *denn* has the following semantics:
 Assertion: $\phi \wedge \psi$
 Conventional Implicature: CAUSE(ϕ, ψ)

- (36) a. Shachoo-wa John-ga nihongo-ga dekiru-node,
 president-Top John-Nom Japanese-Nom capable-because,
 saiyou-shi-ta.
 hire-do-Past
 ‘Because John can speak Japanese, the president hired him.’
- b. Demo, John-wa jitsuwa nihongo-ga mattaku deki-nai.
 but, John-Top actually Japanese-Nom at.all capable-Neg
 ‘But, actually, John cannot speak Japanese at all.’

Given this data, I propose that a *because*-clause contain an attitude operator that binds context variables just like an attitude predicate does. Hence, if Contrastive-marking is used inside the *because*-clause of (36-a), as in (37), the implicature induced by *-wa* ‘Possibly, John doesn’t speak other languages’ is associated to the president.

- (37) Shachoo-wa John-ga NIHONGO-wa dekiru-node, saiyou-shi-ta.
 president-Top John-Nom Japanese-Con capable-because, 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 (38-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 (38-b) would be

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.

infelicitous, since the speaker has a complete knowledge.

- (38) a. Shachoo-wa John-ga NIHONGO-wa dekiru-node, saiyou-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 seat of the knowledge as depicted in (39). (Here, I slightly modify Johnston’s analysis of *because* as a relation between events and make it a relation between situations.)

- (39) a. [CP [IP [AdjunctP OP_{<president>} c_i **CON** $\exists s$. [IP **john-capable-of-Japanese**(s)] because] ...]]
 b. $agent(c_i)$ = the president
 c. $CON(w(c_i))(agent(c_i))(\exists s. \mathbf{john-capable-of-Japanese}(s))$
 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. In the following section, I provide support for the claim that *because* introduces an attitude operator that can shift contexts by examining some data pointed out by Tenny (2004) on direct experience and long-distance reflexives.

4.6.1.1 Direct Experience

Some of the Japanese adjectives of direct experience such as *samui* ‘to feel cold’, *sabishii* ‘to feel sad’ etc. restrict their subjects to be the first person (Kuroda, 1973; Kuno, 1973; Aoki, 1986).

- (40) 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, 2004)

Tenny (2004) shows that this constraint still holds when the predicate is under *when* but the constraint is lifted under *because*. In (41-a), *kare* ‘he’ cannot be the subject of direct experience, and hence *samui* cannot be interpreted as direct experience ‘to feel cold’ but as a property of ‘being cold’ which takes a quasi-argument as its subject. *Kare* ‘he’ in (41-a) is the subject of the matrix clause. On the other hand, (41-b) allows both readings, hence a *because*-clause seems to lift the person constraint of direct experience.

- (41) a. Kare-wa samukat-ta toki, dambou-o ire-ta.
He-Top cold-Past when heater-Acc turn.on-Past
(i) *‘When he was cold, he turned on the heater.’
(ii) ‘When it was cold, he turned on the heater.’
- b. Kare-wa samukat-ta node, dambou-o ire-ta.
He-Top cold-Past when heater-Acc turn.on-Past
(i) ‘Because he was cold, he turned on the heater.’
(ii) ‘Because it was cold, he turned on the heater.’
- (Shinko Tamura, p.c. to Tenny (2004))

This contrast is straightforwardly explained if we assume that *because* introduces a new context that shifts the agent/seat of the knowledge. The precise constraint on direct experience in Japanese is that the subject of the predicate must be the agent/seat of the knowledge in the local context.

- (42) samui [*agent(c)*]
 ‘to feel cold’

In (41-a), *when* does not provide a new context. For this reason, the agent of the knowledge is still the speaker even under *when*. So, the reading in (41-a-i), corresponding to the structure in which the third person pronoun *kare* ‘he’ is co-referred to the subject of the direct experience, is not available, since it violates the person constraint on direct experience. As a result, the only reading available for (41-a) is the one where the predicate *samui* is interpreted as a property of ‘being cold’, which takes a quasi-argument as its subject.

- (43) a. $c_{@}$ [IP he_i [AdjunctP it/* pro_i cold when] ...] (41-a)
 b. *agent(c_@)* = the speaker

On the other hand, *because* introduces an attitude operator and shifts the context of the embedded proposition so that the local seat of knowledge can be someone other than the speaker. In contrast with (41-a), the pronoun *kare* ‘he’ in (41-b) can be the subject of the direct experience, since in the embedded context, the subject of the predicate is the local agent of the knowledge.

- (44) a. $c_{@}$ [IP he_i [AdjunctP c_j it/ pro_i cold because] ...] (41-b)
 b. *agent(c_j)* = he_i

4.6.1.2 Long-Distance Reflexive

The same pattern of asymmetry between *when* and *because* is observed for a long distance reflexive *zibun* (Kuroda, 1973; Sells, 1987; Iida, 1996; Oshima, 2004a,b, to appear). *Zibun* can take a long-distance antecedent if it is embedded under *because*, while it cannot under *when*.

- (45) a. *Takasi_i-wa [Yosiko-ga mizu-o zibun_i no ue-ni kobosi-ta
Takasi_i-Top [Yosiko-Nom water-Acc self_i Gen on-Loc spill-Past
toki] nurete-simatta.
when] wet-got
'Takasi_i got wet when Yosiko spilled water on him_i'
- b. Takasi_i-wa [Yosiko-ga mizu-o zibun_i no ue-ni kobosi-ta
Takasi_i-Top [Yosiko-Nom water-Acc self_i Gen on-Loc spill-Past
node] nurete-simatta.
because] wet-got
'Takasi_i got wet because Yosiko spilled water on him_i'

(Sells 1987 cited in Tenny 2004)

Oshima (2004b) analyzes one of the uses of *zibun* as a shiftable first person indexical (called a *quasi-indicator* in Oshima (2004b) following Castañeda (1967)). Namely, in addition to the anaphoric use as in (46-a), *zibun* can refer to the agent 'Max' of the reported attitude *omot* 'think', ('I' of the embedded speech act) as in (46-b).

- (46) a. Max_i wa zibun_i o nagut-ta.
Max_i Top self_i Acc hit-Past
'Max_i hit himself_i.'
- b. Max_i wa zibun_i ga yuusyuu-da to omotte-i-ru.
Max_i Top self_i Nom talented-be:Pres Comp think-Asp-Pres
'Max_i thinks he_i is talented.' (Oshima, 2004b)

Oshima (2004b) argues that the reference of *zibun* is assigned within the ‘context of use’ of indirect utterances. Hence, in (46-b), *zibun* picks out ‘Max’ as its referent since it appears within the context where Max is the agent of the knowledge (see also Anand, 2005).¹⁰

- (47) a. $[[\mathbf{zibun}]^c = agent(c)$
 b. $c_{@} [IP Max c_i [CP [IP zibun talented] Comp] believe]$ (46-b)
 c. $agent(c_i) = Max$

Given Oshima’s (2004b) shiftable indexical analysis of *zibun*, the asymmetry in (45) is predicted naturally by positing that *because* is an operator which introduces a new context.

Example (45-a) does not involve any indirect utterance, hence there is no shift of context. Therefore, *zibun* cannot be interpreted as a long-distance reflexive, but only as an anaphor. As a consequence, *zibun* in (45-a) can only refer to ‘Yoshiko’, which leads to an incongruent interpretation, ‘Takashi got wet when Yoshiko spilled water on herself.’ On the other hand, in (45-b), it is possible for *zibun* to refer back to the matrix subject ‘Takasi’ since *because* introduces a local context and ‘Takasi’ is the seat of knowledge in that context. Takasi’s reasoning expressed by the *because*-clause counts as a report of the indirect utterance by Takasi. As a result, *zibun* refers to the agent of the indirect utterance, Takasi.

¹⁰ Following Culy’s (1997) insight, Oshima (2004a,b, to appear) further distinguishes the use of *zibun* as a long-distance reflexive into two uses, a logophoric use and a perspectival (emphatic) use. Oshima (2004a,b, to appear), only logophoric *zibun*, which appears under attitude verbs, gives rise to a *de se* interpretation. On the other hand, perspectival *zibun* in an adverbial clause (e.g., *because*-clause) does not imply self-orientation. See also chapter 6 for further discussion.

- (48) a. $c_{@}$ [IP Takasi [AdjunctP c_j Yoshiko water zibun spilled because] ...]
 (45-b)
 b. $\llbracket \text{zibun} \rrbracket^{c_j} = \text{agent}(c_j) = \text{Takasi}$

In summary, the data above support the idea that the use of *because* introduces an attitude operator that shifts the context of utterance just like an attitude-predicate does. The use of *because* allows implicatures induced by Contrastive-marking to be associated to the attitude-holder other than the speaker. It also provides a local agent of the reported knowledge for a direct experience predicate, which requires its subject to be the agent of the knowledge. Finally, the shift of context created by *because* allows *zibun* to be interpreted as a long-distance reflexive.

4.6.2 Evidentials shift contexts

The semantics of evidential morphemes has not received any formal treatment until recently and the semantic contribution 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 each analysis, 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 evidentials functions like attitude reports and the *because* operator. Specifically, evidentials are attitude operators that bind context variables of shiftable indexicals. For example, the use of hearsay evidential *souda* in (23), repeated here as (49), introduces an attitude operator that indicates the truth of the embedded proposition is based on hearsay evidence.

- (49) John-ga kaet-ta souda.
 John-Nom go.home-Past Evid
 ‘John went home (I heard).’ (23)

In other words, *souda* shifts the seat of knowledge of the embedded proposition from the speaker to someone else, hearsay evidence, as depicted in (50).

- (50) a. $c_{@} [XP c_i [IP \exists e. [\mathbf{went.home}(j, e)]]] \text{ souda }]$ (23)
 b. $agent(c_i) = \text{hearsay evidence}$

Now, let us examine how the evidential *souda* interacts with Contrastive-marking. Consider (51), identical to (49) except that the subject is marked with the Contrastive morpheme *-wa*.

- (51) JOHN-wa kaet-ta souda.
 John-Con go.home-Past Evid
 ‘At least John went home (I heard).’

Remember from chapters 2 and 3 that Contrastive-marking indicates that the seat 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 *souda* 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 *souda*. Indeed, in (51), the implicature can be associated to the evidence the speaker has rather than the speaker as in (52-c).

- (52) a. $c_{@} [c_i \text{ Con } [_{IP} \exists e. [\text{John-wa-went.home}(e)]]] \text{ souda }]$
 b. $agent(c_i) = \text{hearsay evidence}$
 c. $\text{CON}(w(c_i))(agent(c_i))(\exists e. \text{John-wa-went.home}(e))$
 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 attested by the following examples. Recall from chapter 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 (53-b). The same explanation applies to the infelicity of (53-c). The shifted agent/seat of the knowledge (the hearsay evidence) cannot have the maximal knowledge with respect to the property in question.

- (53) 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-**soude**, PETER-mo ukat-ta-**souda**.
 Mary-**Con** pass-Past-**Evid**, Peter-Add pass-Past-**Evid**
 'Mary passed (I heard) and Peter passed, too (I heard).'

Interestingly, (53-c) is improved if one of the evidential-markers is removed as follows.

- (54) a. Did Mary and Peter pass the exam?
- b. MARY-**wa** ukat-ta-**soude**, PETER-mo ukat-ta.
Mary-**Con** pass-Past-**Evid**, Peter-Add pass-Past
'Mary passed (I heard), and Peter passed, too.'
- c. MARY-**wa** ukat-te, PETER-mo ukat-ta-**souda**.
Mary-**Con** pass-and, Peter-Add pass-Past-**Evid**
'Mary passed, and Peter passed, too (I heard).'

This contrast is not surprising, since unlike (53-c) the propositional content of each conjunct of (54-b) relies on different agents of knowledge. For example, the first conjunct of (54-b) implicates that **the hearsay evidence** indicates the possibility where Peter didn't pass. The second conjunct of (54-b) entails that **the speaker** believes that Peter passed. These interpretations do not contradict each other, since each interpretation belongs to a different agent.

Similarly, (53-c) can also be improved by specifying a different source of evidence overtly as in (55-b). Again, because each conjunct has a different attitude-holder for the asserted content and the implicature, their interpretations do not cause a contradiction.

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

4.6.2.1 Evidentials and Direct Experience

Just like the *because* operator, an evidential lifts the person constraint of direct experience predicates. As we have seen in section 4.6.1.1, at the root clause, the direct experience predicate *samui* ‘to feel cold’ cannot take non-first person subjects, though in an embedded context, it can take the local seat of knowledge in the context. The same pattern is obtained for the case of embedding under an evidential. In (56-b), the evidential morpheme *souda* lifts the person constraint on direct experience, suggesting that the evidential provides a local context which changes the agent/seat of the knowledge to ‘John’, as depicted in (57).

- (56) a. *John-wa samui.
 John-Top cold.
 ‘John is cold.’
- b. John-wa samui souda.
 John-Top cold Evid.
 ‘John is cold (I heard).’
- (57) a. $c_{@} [c_i [_{IP} \text{John cold}] \text{souda}]$
 b. $agent(c_i) = \text{John}$

Example (58-a) shows that if the adverbial phrase *Mary niyoruto* ‘according to Mary’ specifies that the source of the evidence, i.e., the seat of the knowledge, is ‘Mary’, the constraint still applies, since ‘John’ is not the agent. (58-b) shows that specifying the source using only the adverbial phrase is not sufficient to shift the context.

- (58) a. ??Mary niyoruto John-wa samui souda.
 Mary according.to John-Top cold Evid
 ‘According to Mary, John is cold.’
- b. ??John niyoruto kare-wa samui.
 John according.to he-Top cold

‘According to John, he is cold.’

4.6.2.2 Evidentials and Long Distance Reflexives

The last piece of data that supports the argument for analyzing evidentials as attitude operators come from long distance reflexives. As mentioned in 4.6.1.2, the Japanese reflexive *zibun* is argued to be a shiftable indexical that obtains its referent from the agent/seat of the knowledge in the local context (Oshima, 2004b). The following contrast shows that the presence of an overt evidential morpheme, as in (59-b), makes it easier for the plural reflexive *zibun-tachi* to pick out the evidence source as its referent.¹¹

- (59) a. ?A-shinbunsha_i niyoruto ano-kiji-wa jibun-tachi_i no gohou
A-newspaper according.to that-article-Top self-Pl. Gen mistake
dat-ta.
Cop-Past
‘According to A News_i, that article turned out to be their_i false report.’
- b. A-shinbunsha_i niyoruto ano-kiji-wa jibun-tachi_i no gohou
A-newspaper according.to that-article-Top self-Pl. Gen mistake
dat-ta souda.
Cop-Past
‘According to A News_i, that article turned out to be their_i false report
(I heard).’

In summary, the data on Contrastive-marking, direct experience and long distance reflexive support the proposal that, like attitude-predicates and the operator *because*, the evidential morpheme *souda* introduces a local context into the semantics.

¹¹ Although there exists a contrast between (59-a) and (59-b), (59-a) is not as marked as (58-b). I do not have an explanation for this difference at moment.

4.6.3 Section Summary

In this section, I argued that the *because* operator and the evidential morpheme *souda* are attitude operators that shift the context of utterance just like attitude predicates do. Both *because* and *souda* shift the agent of the *wa*-implicature, lift the person constraint on direct experience predicates, and license the long distance reflexive *zibun*.

4.7 Chapter Summary

This chapter dealt with several different semantics-pragmatics concepts: the implicature triggered by the Contrastive marker *-wa*, evidentiality, reasoning expressed by *because*, which all share the common property. First, they operate over a proposition, and hence they block binding of an event variable. Second, evidentials and the *because* operator can be analyzed as attitude operators, which, like attitude predicates, shift the context for the shiftable indexicals contained in Contrastive-making, direct experience, and the long distance reflexive *zibun*. The computation of Contrastive-marking, direct experience, and the long distance reflexive *zibun* requires the seat of knowledge in the local context, as well as the agent's epistemic attitude toward the proposition under the scope of the attitude operator

Notions like the representation of knowledge and epistemic attitudes are hallmarks of another important semantics-pragmatics concept, *modality*. In fact, evidentiality is often observed to involve modality as part of its semantics in the literature (Izvorski, 1997; Faller, 2002; Speas, to appear; McCready and Ogata, 2005, among others). This observation relates to the Japanese evidential morpheme *darou*. In the next chapter, I turn to the empirical facts concerning this particular morpheme and speculate on the question of the semantic status of evidentiality.

Chapter 5

DAROU

5.1 Introduction

Chapter 4 examined properties of attitude operators like Contrastive-marking, *because* and evidentials. These all express some epistemic attitude toward a proposition and interact with the context of utterance. This line of analysis probably reminds readers of the notion of modality. Concepts like knowledge representation and epistemic attitudes are core characteristics of modality. Indeed, the semantics of evidentials is often analyzed as a subcase or a special case of modality in the recent formal literature (Izvorski, 1997; Faller, 2002; Speas, to appear; McCready and Ogata, 2005, among others). Moreover, some modern linguists consider the analysis of modality as a subcase of evidential or a speech act modifier (Papafragou 2000; Huddleston and Pullum 2002; Drubig 2001, among others; see also von Stechow 2005, for the summary of the recent discussion).

My purpose in this chapter is to present a case study on the Japanese evidential morpheme *darou*. *Darou* is a sentence-final evidential marker that has a modal-flavor. It is an evidential marker in the sense that it makes reference to the speaker's lack of evidence. *Darou* is also a modal expression in the sense that it involves a quantification over epistemic possible worlds. I go through the contexts where the use of *darou* is licit and claim that the semantics of *darou* indicates a bias

toward the embedded proposition based on a particular modal base in the sense of [Kratzer \(1991b\)](#). The data on embedded *darou* also show a slightly different pattern from the shiftable indexicals discussed in the previous chapter in terms of point-of-view. In addition, I exhibit a peculiar distribution of *darou* with probability adverbs and phrases, which pertains to the discussion of levels of meaning in the literature on evidentials.

5.2 Case Study: *Darou*

This section gives an analysis for the Japanese sentence-final evidential marker *darou*. *Darou* has been understood as an expression that indicates a 50-80% probability of the proposition ([Masuoka, 1991](#)). Hence, the closest English interpretation for (1) would be ‘Probably, he will come tomorrow.’

- (1) ashita kare-ga kuru darou.
 tomorrow he-Nom come DAROU
 ‘He will come tomorrow-*darou*.’

In fact, the interpretation of (1) is not easily distinguishable from (2-a), which uses a probability adverb *tabun* ‘probably’. It is also possible to use both the marker and the adverb as in (2-b).

- (2) a. tabun ashita kare-ga kuru.
 probably tomorrow he-Nom come
 ‘Probably, he will come tomorrow.’
 b. tabun ashita kare-ga kuru darou.
 probably tomorrow he-Nom come DAROU
 ‘Probably, he will come tomorrow-*darou*.’

I re-interpret the intuition reported by Masuoka (1991) (50-80% probability) as that *p-darou* indicates the speaker's bias for *p*. I argue that the bias is based on the speaker's pure prediction but not on any observable evidence.

5.2.1 Data

In the following, I make an informal approximation of the properties of *darou* by going through the empirical data based mainly on observations from previous works (Masuoka, 1991; Morimoto, 1994; Takubo, 2001; Sugimura, 2004) in addition to the new data on embedding.

5.2.1.1 Prediction/Inference from non-observable Evidence

The following examples show that *darou* can be attached only to predictions derived by epistemic reasoning.

Darou cannot be used when particular instances of evidence are available for the event denoted by the proposition. Note that the distinction I am making here is not between direct and indirect evidence. Rather, it is between reasoning from generalization on the one hand and inference by observable evidence (including direct and indirect) on the other. First of all, as in (3), *darou* cannot be used when the speaker has direct evidence for the content of the proposition.

(3) Direct Evidence

- a. Context: The speaker saw John drinking last night.
- b. #Kinou John-wa wine-o takusan nonda darou.
yesterday John-Top wine-Acc many drank DAROU
'Probably, John drank a lot of wine yesterday.'

(Translation of Izvorski's (1997) example)

Furthermore, (4) shows that *darou* cannot be used for the inference drawn from an indirect evidence, either.

(4) Indirect Evidence

- a. Context: There are a lot of empty wine bottles in John's room.
- b. #Kinou John-wa wine-o takusan nonda darou.
yesterday John-Top wine-Acc many drank DAROU
'John drank a lot of wine yesterday-*darou*.'

The context where *darou* can be used is the one where the speaker draws a conclusion/prediction from some generalizations rather than particular evidence as in (5).

(5) Prediction

- a. Context: John likes wine very much.
- b. Kinou John-wa wine-o takusan nonda darou.
yesterday John-Top wine-Acc many drank DAROU
'John drank a lot of wine yesterday-*darou*.'

The following pair of the examples illustrates the same point. *Darou* cannot attach to the inference drawn from a specific piece evidence as in (6).

(6) Indirect Evidence

- a. Context: My ex-girlfriend's last name on the alumni phonebook has changed.
- b. #kanojo-wa mou kekkon-shita darou.
she-Top already marriage-did DAROU
'She is married by now-*darou*.'

(Morimoto, 1994)

Darou can attach to some guess which is simply compatible with the available facts, as in (7).

(7) Prediction

- a. Context: It has been seven years since I broke up with my ex-girlfriend.
b. kanojo-wa mou kekkon-shita darou.
she-Top already marriage-did DAROU
'She is married by now-*darou*.' (Morimoto, 1994)

In many cases, *darou* cannot be used with a first person pronoun. Since the speaker is asserting his/her decision on their actions, it is not felicitous to indicate the speaker's judgement on its probability.

- (8) #watashi-wa ashita party-ni iku darou.
I-Top tomorrow party-to go DAROU.
'I will go to the party tomorrow-*darou*.'

Darou with a first person is possible if the speaker does not have control over his/her action as in (9).

- (9) ashita kare-ni at-ta ato, watashi-wa naku darou.
tomorrow he-Dat meet-Past after, I-Top cry DAROU.
'After I meet him tomorrow, I will cry-*darou*.'

Morimoto (1994) showed that *doumo* 'somewhat/somehow' presupposes that the speaker actually saw some kind of evidence of the content of the embedded proposition. (10-b) presupposes that either the speaker actually saw Mr. Kato's son in person or the speaker has some cognitive experience of the evidence for the statement such as seeing a picture of him, while (10-a) does not have such a requirement.

- (10) a. Kato-san-no musuko-wa chiisai.
 Kato-Mr.-Gen son-Top small
 ‘Mr. Kato’s son is small.’
- b. Kato-san-no musuko-wa doumo chiisai.
 Kato-Mr.-Gen son-Top somehow small
 ‘Mr. Kato’s son is somehow small.’ (Morimoto, 1994)

Doumo cannot co-occur with *darou*, since the presuppositions of *doumo* and the semantic meaning of *darou* conflict each other: *doumo* requires direct or indirect evidence, while *darou* prohibits the presence of any evidence.

- (11) #doumo kouteibuai-ga 1-percent agaru darou.
 somehow official-discount-rate-Nom 1-percent rise DAROU
 ‘Probably, the official discount rate will somehow rise by 1 percent.’
 (Takubo, 2001)

In summary, *darou* cannot be used for an inference that the speaker draws from a particular instance of evidence. Although it is not clear what counts as evidence, the data show that the grammar of *darou* distinguishes the context in which it can occur.

5.2.1.2 Probability adverbs

As mentioned earlier for (2-b), *darou* can co-occur with *tabun* ‘probably’, which seems to convey the equivalent message. Sugimura (2004) observes that *darou* can also co-occur with *kitto* ‘certainly’ but cannot co-occur with a low-probability adverb, *moshikasuruto* ‘maybe’ (12).

- (12) kare-wa tabun/kitto/*moshikasuruto kuru darou.
 he-Top probably/certainly/maybe come DAROU
 ‘Probably/Certainly/*Maybe, he will come-*darou*.’ (Sugimura 2004)

Following Sugimura's (2004) observation, I propose that *darou* semantically indicates a high probability, namely a bias (more than 50 %) toward the event denoted by the proposition, rather than Masuoka's (1991) 50-80 %.

The notion of 80 % (non-100 %) as the interpretation of *darou* comes from the following intuition: when *darou* stands alone without a probability adverb as in (1) repeated here as (13), it seems to indicate a slight uncertainty compared to the one without *darou* (14). I propose that the uncertainty is not due to lexical specification of *darou* but derived by a pragmatic inference (conversational implicature). Namely, by explicating that it is merely a biased view, it is implicated that it is not a belief.

(13) ashita kare-ga kuru darou.
tomorrow he-Nom come DAROU
'He will come tomorrow-*darou*.'

(14) ashita kare-ga kuru.
tomorrow he-Nom come.
'He will come tomorrow.'

Hence, this uncertainty is cancelable because it is not a lexical property of *darou*. The bias can be strengthened by *kitto* 'certainly'. On the other hand, *darou* is incompatible with *moshikasuruto* 'maybe', which is at the low end of the probability scale (lower than 50 %).

In short, the lexical meaning of *darou* includes a bias toward the event denoted by the embedded proposition. This bias can be strengthened by a probability adverb, as long as the meanings are compatible with each other.

5.2.1.3 Embedding under attitude operators

In the previous chapters, I have discussed attitude operators that shift the context, such as attitude verbs, the *because* operator etc., and I have shown that

expressions that include shiftable indexicals pick up the agent of knowledge in the local context rather than the actual speaker. Examples with Contrastive-marking are repeated here. The implicature by Contrastive-marking can be associated to the local attitude-bearer, namely the subject of the attitude predicate as in (15-a).

- (15) 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 [John knows whether Peter came]

Similarly, the implicature can be associated with the agent of reasoning by *because* (with either form, *node* or *kara*).

- (16) Shachoo-wa John-ga NIHONGO-wa dekiru-node/kara, saiyou-shi-ta.
 president-Top John-Nom Japanese-Con capable-because, hire-do-Past
 ‘Because John can speak at least Japanese, the president hired him.’

If the semantic contribution of *darou* includes the speaker’s bias, it is an interesting question whether the notion of ‘the speaker’ can be shifted if the context changes. In fact, the bias expressed by *darou* in (17-a) is attributed to Mary, since the speaker can felicitously challenge the content of the bias as in (17-b).

- (17) a. Mary-wa John-ga kuru darou to omot-teiru.
 Mary-Top John-Nom come DAROU Comp think-Prog
 ‘Mary thinks that John will come-*darou*’

- b. Boku-wa sou-wa omow-anai-kedo.
 I-Top so-Top think-Neg-though
 ‘I don’t think so (that he will come), though.’

Interestingly, however, the *because*-operator is not sufficient to change the agent of the bias. One of the Japanese forms for ‘because’, *kara*, can embed *darou* as in (18-a), although it seems that the speaker has to be the agent of reasoning of *because*. When the reasoning is attributed to someone other than the speaker as in (18-b), the use of *darou* becomes infelicitous.¹

- (18) a. boku-wa ame-ga furu darou kara kasa-o mot-te
 I-Top rain-Nom fall DAROU because umbrella-Acc have-and
 it-ta
 go-Past
 ‘Because it will rain-*darou*, I took an umbrella with me.’
- b. ??John-wa ame-ga furu darou kara kasa-o mot-te
 John-Top rain-Nom fall DAROU because umbrella-Acc have-and
 it-ta
 go-Past
 ‘Because it will rain-*darou*, John took an umbrella with him.’

Example (18-b) can be improved by inserting an attitude verb overtly as in (19).

¹ I now switch to *kara* as a translation of ‘because’ since it is not possible to use *darou* with *node* ‘because’. I speculatively attribute this fact to Tenny’s (2004) proposal that *node* is derived from another evidential expression *noda*. Namely, it is not possible to have two evidential expressions in one clause.

- (i) *boku-wa ame-ga furu darou node kasa-o mot-te it-ta
 I-Top rain-Nom fall DAROU because umbrella-Acc have-and go-Past
 Intended: ‘Because it will rain-*darou*, I took an umbrella with me.’

This speculation requires more careful analysis but I leave this issue for future research.

- (19) John-wa ame-ga furu darou kara to omot-te, kasa-o
 John-Top rain-Nom fall DAROU because Comp think-Past, umbrella-Acc
 mot-te it-ta
 have-and go-Past
 ‘Thinking that because it will rain-*darou*, John took an umbrella with him.’

Observing these data above, my speculation here is that the agent of the bias by *darou* can only be co-referred with the agent of the speech act. In [Schlenker \(2003\)](#), attitude predicates are analyzed as reported speech acts. In this view, the subject of the attitude predicate is the agent of the embedded speech act; which in turn is the agent of knowledge of the embedded proposition. On the other hand, the context that *because* introduces only changes the representations of knowledge, hence it does not change the agent of the speech act, although it might change the agent of knowledge. Hence, without an overt attitude predicate, *because* does not shift the agent of bias expressed by *darou*. Accordingly, (18-b) results in infelicity since the actual speaker’s bias toward ‘it will rain’ does not cause John to bring an umbrella. This difference between the *because* operator and attitude predicates I propose here is very speculative, and I cannot justify this proposal at present. For the purpose of this chapter, I would like to draw readers’ attention to the fact that the agent of the bias indicated by *darou* can be shifted by an attitude predicate.

In summary, the agent of the bias indicated by *darou* is the agent of the local speech act. If *darou* appears at root, the agent is the speaker of the actual utterance. The agent can be shifted only under attitude verbs, hence it has a tighter restriction than the discourse-related items discussed in chapter 4 (implicature by Contrastive-marking, direct experience, and the long distance reflexive *zibun*). Only a change of speech act can change the agent of the bias, while a change of knowledge state

cannot.²

To conclude this section, the properties of *darou* can be summarized as follows.

- The use of *darou* is licit only when the speaker does not have any observable instances of evidence.
- *Darou* indicates a bias (more than 50 %) toward the embedded proposition, i.e., p is more likely than $\neg p$.
- The agent of bias is the agent of the local speech act.

² In chapter 4, I have shown that the implicature can also be associated with hearsay evidence as in (i).

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

Unfortunately, it is not possible to test the context change with the hearsay evidential *souna/souda*, since *darou* simply cannot co-occur with *souna/souda*.

- (ii) a. *ame-ga furu darou souda
rain-Nom fall DAROU Evid
Intended: 'The hearsay evidence has a bias toward 'it will rain.'
b. *ame-ga furu souna/souda darou
rain-Nom fall Evid DAROU

Embedding (ii) under an attitude verb does not save the construction.

- (iii) a. *John-wa ame-ga furu darou souda to omot-teiru
John-wa rain-Nom fall DAROU Evid Comp think-Prog
b. *John-wa ame-ga furu souna/souda darou to omot-teiru
John-wa rain-Nom fall Evid DAROU Comp think-Prog

As mentioned in footnote 1, I attribute the reason for this fact to the assumption that having two evidentials in one clause is not allowed.

5.2.2 Semantic Contribution of *Darou*

Integrating the properties observed above, I define the semantic contribution of *darou* as follows:

(20) The Interpretation of p-*darou*

The speaker of the utterance context has an epistemic bias for p derived from reasoning and not from observable (direct or indirect) evidence.

I follow Kratzer's (1991b) standard analysis of modality in order to implement this property of *darou*.

5.2.2.1 Kratzer (1991)

In Kratzer (1991b), modals are treated as quantification over epistemic possible worlds (the modal base; $f_c(i)$ in (21)). Possibility (*might*) is defined as existential quantification over the modal base, while necessity (*must*) is defined as universal quantification over the modal base.

- (21) a. $\llbracket \mathbf{might} \phi \rrbracket^{c,i} = 1$ iff $\exists w' \in f_c(i) : \llbracket \phi \rrbracket^{c, \langle w', t_i \rangle} = 1$
 b. $\llbracket \mathbf{must} \phi \rrbracket^{c,i} = 1$ iff $\forall w' \in f_c(i) : \llbracket \phi \rrbracket^{c, \langle w', t_i \rangle} = 1$

(c : the context of utterance; i : the index of evaluation (a world-time pair); $f_c(i)$: the set of worlds compatible with what is know in i)

(von Stechow and Gillies' (2005) reformulation of Kratzer (1991b))

In addition to the modal base and quantificational force, Kratzer (1991b) introduces the notion of ordering source. The ordering source forces a particular ordering among epistemic worlds of the modal base in terms of their accessibility. For example, (22-b) is interpreted somewhat weaker than (22-a). If (22-b) were a

mere universal quantification over the modal base, it would be at least as strong as (22-a).

- (22) a. She climbed Mount Toby.
b. She must have climbed Mount Toby. (Kratzer, 1991b)

According to Kratzer (1991b), in (22-b), the *stereotypical* ordering source restricts the modal base so that the propositions determined by the modal base denote what is *normally* true in that world. Hence, the universal quantification is only over the restricted domain, which does not necessarily include the actual world where (22-a) is evaluated.

5.2.2.2 Restricted Modal Base

Let us turn back to the question of the semantic contribution of *darou*. First of all, how can we represent formally the difference between p-*darou* (1), repeated here as (23), and p (14), repeated here as (23)?

- (23) ashita kare-ga kuru darou.
tomorrow he-Nom come DAROU
'Probably, he will come tomorrow.'

- (24) ashita kare-ga kuru.
tomorrow he-Nom come.
'He will come tomorrow.'

Remember that I stipulate the semantic contribution of *darou* as in (20) repeated here as (25).

- (25) The Interpretation of p-*darou*

The speaker of the utterance context has an epistemic bias for p derived from reasoning and not from observable (direct or indirect) evidence.

More specifically, following Kratzer's (1991b) standard analysis of modality, I claim that *darou* restricts its quantificational domain and has a certain quantificational force. *Darou* contributes to the communication background in that it restricts its modal base to the speaker's prediction and excludes what can be inferred by available evidence.

The intuition of uncertainty about the propositional content as in (23) comes from this restriction of *darou*, that the speaker does not have observable evidence for the assertion.

In other words, the quantificational domain of *darou* is restricted so that every world in the domain is assigned to the set of propositions that constitute what is generalized in the speaker's knowledge and cannot be inferred by any particular instance of evidence as we have seen in section 5.2.1.1. The source of the bias is not observable evidence but epistemic reasoning.

5.2.2.3 Bias: more than 50 %

We have identified the quantificational domain for the modal-meaning of *darou*. In order to complete a modal analysis of *darou*, we need to also identify its quantificational force. I define the quantificational force of *darou* as more than 50 %. Hence, a low probability adverb *moshikasuruto*, which indicates less than 50 %, is not compatible with *darou*, as in (12) (repeated here as (26)).

- (26) kare-wa tabun/kitto/*moshikasuruto kuru darou.
he-Top probably/certainly/maybe come DAROU
'Probably/Certainly/*Maybe, he will come.' (Sugimura, 2004)

On the other hand, universal quantification by *kitto* ‘certainly’ is possible, since it is compatible with the semantics of *darou*. The semantics of *darou* indicates the likelihood of the embedded proposition higher than its alternative ‘he will not come’, while *kitto* strengthen the likelihood into 100 %.³

Hence, we obtain the following definition for the modal meaning of *darou*.

- (27) The modal meaning of p-*darou*
- a. Quantificational Domain: possible worlds which are compatible with the speaker’s non-observable reasoning
 - b. Quantificational force: more than 50 % ($p >_{likelihood} \neg p$)

5.2.2.4 Agent of Bias

Finally, we need to modify the definition in (27) in order to incorporate the data discussed in 5.2.1.3. Namely, in (17-a), repeated here as (28), an overt attitude predicate shifts the agent of bias from the speaker to *Mary*.

³ The bias meaning expressed by *darou* is Focus-sensitive. That is, if the embedded proposition receives Focus-marking as in (i-b), the alternatives considered to have lower probability compared to ‘John will come’ are ‘Mary will come.’, ‘Bill will come.’ etc. rather than ‘John will not come.’ In this case, therefore, it is not clear that the quantificational force of the bias is ‘more than 50 %’.

- (i) a. dare-ga kuru?
 who-Nom come
 ‘Who will come?’
- b. [_F JOHN-ga] kuru darou.
 [John-Nom] come DAROU
 ‘John will come-*darou*.’

This is an interesting issue but beyond the scope of this chapter, hence I only consider the case where the competitors of the bias are p and $\neg p$.

- (28) Mary-wa John-ga kuru darou to omot-teiru.
 Mary-Top John-Nom come DAROU Comp think-Prog
 ‘Mary thinks that John will come-*darou*’

Hence, the denotation of *darou* includes a shiftable indexical, the *speaker* of context *c*. Note that this is distinct from the agent of knowledge in context *c*, which is discussed extensively in the previous chapter. As presented in section 5.2.1.3, the change of the knowledge agent by *because* is not sufficient to change the bias agent of *darou*. (18-b), repeated here as (29), is infelicitous since it is hard to imagine that the actual speaker’s bias toward ‘It will rain’ is the reason why John took an umbrella with him.

- (29) ??John-wa ame-ga furu darou kara kasa-o mot-te it-ta
 John-Top rain-Nom fall DAROU because umbrella-Acc have-and go-Past
 ‘Because it will rain-*darou*, John took an umbrella with him.’

The agent of the bias, i.e. the individual to which the modal base of *darou* is accessible, is the speaker of the local speech act.⁴ Therefore, we now obtain the following definition for *darou*:

- (30) The modal meaning of p-*darou* in context *c*
- a. Quantificational Domain: possible worlds which are compatible with the non-observable reasoning of the speaker of context *c*
 - b. Quantificational force: more than 50 % (p>*likelihood* ¬p)

⁴ This property of *darou*, being shiftable under attitude predicates, raises an interesting issue with respect to the level of meaning to which *darou* contributes. See section 5.4.4 for details.

5.2.3 Section Summary

To summarize, *darou* is analyzed as a quantification over the modal base which consists of epistemic possible worlds accessible to the speaker of the utterance context. The modal base is restricted to generalizations by ‘the speaker’ and does not include propositions inferrable from particular instances of evidence ‘the speaker’ might have. The quantificational force of *darou* is more than 50 %. The notion of ‘the speaker’ can be shifted if an attitude predicate introduces a reported speech act.

5.3 A Puzzle

As shown above, *darou* is not compatible with the low probability adverb ‘moshikasuruto’ *maybe*, since *darou* expresses the speaker’s bias toward the proposition, i.e. the speaker’s judgement that the probability of the proposition is high. This line of analysis encounters an interesting puzzle when we look at clausal expressions of probability. As in (31), for example, both the auxiliary *darou* and the adverb *tabun* are compatible with a full clausal phrase *kanousei-ga aru* ‘there is a possibility that’.

- (31) a. kare-ga kuru kanousei-ga aru darou.
he-Nom come possibility-Nom exist DAROU
‘Probably, there is a possibility that he would come.’
- b. tabun kare-ga kuru kanousei-ga aru.
probably he-Nom come possibility-Nom exist
‘Probably, there is a possibility that he would come.’

This contrasts with the incompatibility of *darou* and *moshikasuruto* that we have seen in (12), repeated here as (32).

- (32) *kare-wa moshikasuruto kuru darou.
 he-Top probably/certainly/maybe come DAROU
 ‘Maybe, he will come-*darou*.’ (Sugimura 2004)

The contrast can be made even sharper as in (33).

- (33) a. kare-ga kuru kanousei-ga hikui darou.
 he-Nom come possibility-Nom low DAROU
 ‘The possibility that he would come is low-*darou*.’
 b. tabun kare-ga kuru kanousei-ga hikui.
 probably he-Nom come possibility-Nom low
 ‘Probably, the slight possibility that he would come is low.’

In short, while *darou* cannot co-occur with the adverb of low probability *moshikasuruto* ‘maybe’, it can with a clausal counterpart, namely *kanousei-ga aru* ‘there is a possibility that...’ and *kanousei-ga hikui* ‘the possibility that ... is low.’

5.4 Not part of the propositional content

In order to resolve the puzzle presented above, I propose dividing the probability expressions into two groups as follows.

(34)

Group A	<i>kanarazu</i> ‘certainly’, <i>kanousei-ga aru</i> ‘there is a possibility that’, <i>kanousei-ga hikui</i> ‘the possibility that ... is low’
Group B	<i>darou</i> , <i>tabun</i> ‘probably’, <i>kitto</i> ‘certainly’, <i>moshikasuruto</i> ‘maybe’

In the following, I argue that unlike Group A, The semantic meaning denoted by expressions in Group B, namely the bias meaning of *darou* and adverbs like *tabun*

‘probably’, *kitto* ‘certainly’ and *moshikasuruto* ‘maybe’, are not part of the propositional content, but contributes to a higher level, speech-act operator or expressive level. First, I show that elements in Group B cannot be part of the negated content of a proposition. Second, I argue that, with question formation, the elements in Group A are embedded under a question operator, while the ones in Group B always outscope the question operator.

5.4.1 Embedding under Negation

In the previous literature on evidentials, it has been agreed upon that the meaning conveyed by evidentials is not part of the assertion. One of the reasons for this view is that the evidential meaning is not embedded under negation. For example, according to [Izvorski \(1997\)](#), a Bulgarian present perfect form indicates that the speaker infers the embedded proposition from indirect evidence.

- (35) toj izpil vsičkoto vino včera.
 he drunk-**PE** all-the wine yesterday
 ‘He apparently drank all the wine yesterday.’ (Bulgarian; [Izvorski, 1997](#))

This indication of indirect evidence cannot be negated as in (36-b).

- (36) a. Apparently, Ivan didn’t pass the exam.
 b. Ivan ne izkaral izpita
 Ivan not passed-PE the-exam
 =Ivan didn’t pass the exam (it is said/I infer)
 ≠It is not the case that {it is said/I infer} that Ivan passed the exam.
 (Bulgarian; [Izvorski, 1997](#))

[Izvorski \(1997\)](#) takes this fact to show that the inference by evidential marking is not part of the assertion. This argument relies on the following assumption:

- (37) If the semantic meaning of a lexical item is part of the propositional content, the meaning should be able to be under the scope of a negation.

Turning to Japanese *darou*, it appears to have the same interpretation as the Bulgarian evidential-marking. In (38), the bias is not under the scope of the negation, but the bias is toward the proposition including the negation, ‘John is not coming.’

- (38) John-wa ko-nai-darou.
John-Top come-Neg-darou
‘John won’t come-*darou*’

However, it is not clear whether the negation test is applicable, since the position of negation seems to be morpho-syntactically determined in Japanese. The negation in Japanese is a suffix that attaches to predicates like verbs and adjectives which it takes a scope over. (39) is thus ill-formed morpho-syntactically, not just semantically.

- (39) *John-wa ko-darou-nai.
John-Top come-darou-Neg

Hence, following [Sugimura \(2004\)](#), I use a sentential negation *wakedewanai* ‘it is not the case that’ to test the embeddability of the items in discussion. In fact, as [Sugimura \(2004\)](#) notes, there is a difference between *kanarazu* and *kitto* (both glossed as ‘certainly’) in their distribution under the negation. I extend this observation to the difference between items in Group A and Group B. It is possible to syntactically and semantically embed expressions in Group A under *wakedewanai* ‘it is not the case that’. Namely, the probability expressed by the elements are negated.

- (40) a. kare-ga kanarazu kuru wakedewanai.
 he-Nom certainly come Neg
 ‘It is not the case that it is certain that he is coming.’(Sugimura, 2004)
- b. kare-ga kuru kanousei-ga aru wakedewanai.
 he-Nom come possibility-Nom exist Neg
 ‘It is not the case that there is a possibility that he is coming.’
- c. kare-ga kuru kanousei-ga hikui wakedewanai.
 he-Nom come possibility-Nom low Neg
 ‘It is not the case that the possibility that he is coming is low.’

On the other hand, it is not possible to embed items in Group B under negation as in (41).

- (41) a. *kare-ga kuru darou wakedewanai.
 he-Nom come DAROU Neg
 Intended: ‘It is not the case that I have a bias toward ‘he is coming.’
- b. *kare-ga tabun kuru wakedewanai.
 he-Nom probably come Neg
 Intended: ‘It is not the case that he is probably coming.’
- c. *kare-ga kitto kuru wakedewanai.
 he-Nom certainly come Neg
 Intended: ‘It is not the case that he is certainly coming.’
- (Sugimura, 2004)
- d. *kare-ga moshikasuruto kuru wakedewanai.
 he-Nom maybe come Neg
 Intended: ‘It is not the case that he is maybe coming.’

As for adverbs, if they are placed in the sentence-initial positions as in (42), the grammatical judgement is lifted. However, note that the meanings obtained are different from (40). Namely, the probability meaning is not under the scope of negation. In fact, the probability is calculated over the entire proposition including

the negation, ‘it is not the case that John is coming.’ Hence, the meaning structure here is parallel to the one observed for the Bulgarian perfect of evidential.

- (42) a. tabun, kare-ga kuru wakedewanai.
probably he-Nom come Neg
‘Probably, it is not the case that he is coming.’
- b. kitto, kare-ga kuru wakedewanai.
certainly he-Nom come Neg
‘Certainly, It is not the case that he is coming.’
- c. moshikasuruto, kare-ga kuru wakedewanai.
maybe he-Nom come Neg
‘Maybe, it is not the case that he is coming.’

This is not an available option for *darou* which must occur in the sentence-final position.

- (43) *darou kare-ga kuru wakedewanai.
DAROU he-Nom come Neg

Observing these facts, one thing to note is that syntactic position of Japanese items is more rigid than that of the Bulgarian evidential. In Bulgarian, the syntax does not determine the scopal relation between the two. Hence, when the evidential co-occurs with negation, the sentence is grammatical but only with the reading where the evidential takes a wider scope over the negation. In Japanese, the syntax of the probability markers is less flexible, and hence when the items in Group B are forced to be in the scope of the negation, the sentence results in ungrammaticality. If the adverbs are placed sentence-initially, they are able to scope over the negation. Together with this difference between Japanese *darou* and probability adverbs on the one hand and the Bulgarian evidential on the other, I conclude that the negation test shows that the semantic contribution of *darou* and probability adverbs (Group

B) are not part of the propositional content.

5.4.2 Embedding under Questions

Another test that distinguishes the two groups is inspired by Zimmerman's (2005) work on the German particle *wohl*. According to Zimmermann (2005), *wohl* expresses the speaker's epistemic uncertainty or assumption, as in (44).

- (44) Hein ist wohl auf See.
Hein is at sea
= Speaker assumes that Hein is at sea (German: Zimmermann, 2005)

Zimmermann (2005) claims that the semantic contribution of *wohl* is not part of the propositional content. Zimmermann (2005) builds his argument based on the interaction of a question operator with *wohl* and the following assumption.

- (45) If *wohl* made up part of the propositional meaning of an utterance, a proposition containing *wohl* should behave just like other propositions under question formation.

(Zimmermann, 2005)

According to Zimmermann (2005), when *wohl* occurs in a question formation, the meaning of *wohl* takes scope over the question meaning. Namely, the speaker is not asking about the addressee's assumption, but the speaker is still asking about the truth of the proposition 'Hein is at sea,' and at the same time indicating that the addressee could answer with some uncertainty.

- (46) a. Ist Hein wohl auf See?
Is Hein at sea

≈Tell me (granted a degree of uncertainty) whether Hein is at sea or not.

≠Tell me whether you assume that H. is at sea, or whether you don't assume that H. is at sea (German: Zimmermann, 2005)

Hence, with the assumption in (45), Zimmermann (2005) concludes that the meaning of *wohl* is not part of the propositional content.

Let us use this test with the Japanese probability expressions. First, I restate Zimmermann's (2005) assumption as follows.

- (47) If the semantic meaning of a lexical item is part of the propositional content, the meaning should be able to be under the scope of a question operator.

Japanese question formation involves the question particle *ka* and a rising intonation, which I indicate with '?.'⁵ As predicted, items in Group A can be embedded under the question particle as in (48). Furthermore, the probability meaning is also semantically embedded under the question as the translations show.

- (48) a. ashita kanarazu John-ga ki-masu-ka?
tomorrow certainly John-Nom come-Hon-Q
'Is it certain that John is coming tomorrow?'
- b. ashita John-ga kuru kanousei-ga ari-masu-ka?
tomorrow John-Nom come possibility-Nom exist-Hon-Q
'Is there a possibility that John is coming tomorrow?'
- c. ashita John-ga kuru kanousei-ga hikui-desu-ka?
tomorrow John-Nom come possibility-Nom low-Hon-Q
'Is the possibility that John is coming tomorrow low?'

⁵ I use an honorific form *masu* or *desu* for question formation since the one without it, *kuru-ka* 'come-Q', is less conversational and harder to judge its intuition.

Turning to Group B, adverbs can occur in question formation, although their semantic meanings are not embedded under the question meaning. Namely, the speaker's interest is not in the probability of the proposition but in the truth of the proposition, and the speaker is allowing the addressee to have different degrees of uncertainty for the answer, which is parallel to the intuition reported for the German *whol* by [Zimmermann \(2005\)](#).

- (49) ashita John-ga tabun/kitto/moshikasuruto ki-masu-ka?
 tomorrow John-Nom probably/certainly/maybe come-Hon-Q
 'Is John coming tomorrow probably/certainly/maybe?'

This intuition can be attested by the following data. The answerer can respond to the question (50) by saying *ie* 'no', only when he/she disagrees with the propositional content of the question as in (50-b). The answerer cannot challenge the probability expressed by the adverbs as shown in (50-c) and (50-d).

- (50) ashita John-ga tabun ki-masu-ka?
 tomorrow John-Nom probably come-Hon-Q
 'Is John coming tomorrow probably?'
- a. hai, ki-masu.
 yes, come-Hon.
 'Yes, he is coming.'
- b. ie, ki-mase-n.
 no, come-Hon-Neg
 'No, he is not coming.'
- c. #ie, kitto kuru
 no, certainly come
 'No, he is certainly coming.'
- d. #ie, moshikasuruto kuru
 no, maybe come

‘No, he is maybe coming.’

Now, let us examine the case for *darou*. Unlike the probability adverbs, it cannot co-occur within the canonical question formation (rising intonation and Q-morpheme) as shown in (51). (The morpheme *deshou* is an honorific form of *darou*.)⁶

- (51) a. *ashita John-ga kuru darou-ka?
tomorrow John-Nom come DAROU-Q
Intended: ‘Do you have a bias toward ‘John is coming tomorrow’?’
- b. *ashita John-ga kuru deshou-ka?
tomorrow John-Nom come DESHOU-Q
Intended: ‘Do you have a bias toward ‘John is coming tomorrow’?’

However, the sequence of (51-a) can be grammatical if it is uttered with a falling intonation, although its interpretation is different, namely it is a self-addressing question.⁷

⁶ The sequence *darou-masu* is morphologically ill-formed, as in (i).

- (i) *ashita John-ga kuru darou-masu.
tomorrow John-Nom come DAROU-Hon

⁷ I would like to attribute this difference to the different shiftable indexicals that *darou* and the probability adverbs contain. As discussed earlier in section 5.2.1.3, the agent of the bias created by *darou* is the speaker of the local speech act. I speculate, on the other hand, that the probability of the adverbs in Group B (and perhaps the uncertainty expressed by the German *wohl*) are associated to the agent of knowledge. This difference between the knowledge and the speech act results in the different behavior with the intonation. Gunlogson (2003) states “[r]ising declaratives commit the Addressee to the proposition expressed.” and “[f]alling declaratives commit the Speaker to the proposition expressed.” Namely, the rising intonation shifts the agent of knowledge to the addressee, while the falling accent does not. As for the agent of the speech act, it is always the actual speaker that performs the speech act of

- (52) ashita John-ga kuru darou-ka.
 tomorrow John-Nom come DAROU-Q
 ‘I wonder if John is coming-*darou*.’

Apart from the issue of the question’s addressee, the interpretation of (52) is parallel to the one with the adverbs and the German *whol* in terms of its scopal behavior. Namely, the speaker is not asking himself/herself about the probability but about the content of the proposition. The speaker can negate his/her first utterance by ‘no’ only when the speaker changes his/her mind about the propositional content as in (53–b), and not about its probability (53–c) and (53–d).

- (53) ashita John-ga kuru darou-ka
 tomorrow John-Nom come DAROU-Q
 ‘I wonder if John is coming-*darou*.’
- a. un, kuru.
 yes, come.
 ‘Yes, he is coming.’
- b. iya, ko-nai darou.
 no, come-Neg DAROU
 ‘No, he is not coming-*darou*.’
- c. #iya, kitto kuru
 no, certainly come
 ‘No, he is certainly coming.’
- d. #iya, moshikasuruto kuru
 no, maybe come
 ‘No, he is maybe coming.’

Hence, the bias meaning of *darou* is not in the scope of the question meaning.

questioning. Accordingly, I suspect that *darou-ka* with a rising intonation is not available because the agent of knowledge is not sufficient to shift the change of the bias. This line of analysis is still speculative, and I leave this issue for future research.

In summary, the expressions in Group A contribute to the assertive content; and therefore, when they occur in a question formation, their semantic contribution is part of the proposition in question. On the other hand, the meanings expressed by the items in Group B are not in the scope of the question meaning, although there is a difference between *darou* and the adverbs in terms of the interpretation of the question (a canonical question or self-addressing question).

To conclude, the probability expressions in Group A are part of the propositional content of an utterance. On the other hand, the probability indicated by the items in Group B contributes to some higher level of meaning. In other words, there is a distinct level of meaning to which the elements in Group B contribute.

5.4.3 Chunks of meaning

The existence of different levels of meaning solves the puzzle of *darou* and its asymmetry with regard to the expressions that indicate low probability. I propose that the expressions in group B generate meanings independent of the propositional content. Namely, I propose to analyze the sentence-final marker *darou* and the probability adverbs like *tabun* ‘probably’, *kitto* ‘certainly’, and *moshikasuruto* ‘maybe’ as non-propositional expressions. On the other hand, the adverb *kanarazu* ‘certainly’ and phrases like *kanousei-ga aru* ‘there is a possibility that’, and *kanousei-ga hikui* ‘there is a slight possibility that’ contribute to the assertive or propositional level of meaning.⁸

⁸ See section 5.4.1 and Sugimura (2004) for the difference between *kitto* and *kanarazu*.

(54)

propositional (Group A)	<i>kanarazu</i> ‘certainly’, <i>kanousei-ga aru</i> ‘there is a possibility that’, <i>kanousei-ga hikui</i> ‘there is a slight possibility that’
non-propositional (Group B)	<i>darou, tabun</i> ‘probably’, <i>kitto</i> ‘certainly’, <i>moshikasuruto</i> ‘maybe’

Different degrees of certainty (e.g. 40% and 80%) are compatible as long as one is stacked on top of the other. Incompatibility arises only when both the adverb and *darou* contribute different levels of certainty to the same level.

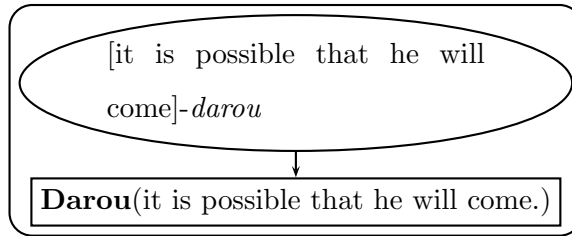
First of all, *darou* can co-occur with a pure assertive expression as in (31-a) and (33), repeated below as (55) and (56), since the existential possibility (propositional) and the likelihood (speech-act-level) are represented in different tiers.

(55) kare-ga kuru kanousei-ga aru darou.
he-Nom come possibility-Nom exist DAROU
‘There is a possibility that he will come-*darou*.’

(56) kare-ga kuru kanousei-ga hikui darou.
he-Nom come possibility-Nom low DAROU
‘There is a slight possibility that he will come-*darou*.’

Namely, *darou* is operating over the clause *kare-ga kuru kanousei-ga aru* ‘there is a possibility that he will come.’ and expresses a bias toward the whole proposition.

(57)

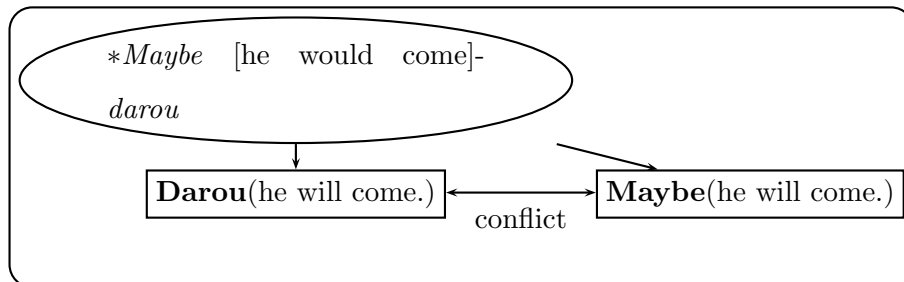


On the other hand, (12), repeated here as (58), with *moshikasuruto* causes a conflict in meaning since each represents a contradictory different degree of certainty in the same non-propositional level.

- (58) kare-wa tabun/kitto/*moshikasuruto kuru darou.
he-Top probably/certainly/maybe come DAROU
'Probably/Certainly/*Maybe, he will come.' (Sugimura 2004)

Each *darou* and *moshikasuruto* 'maybe' operates over the proposition *kare-ga kuru* 'he will come' and creates its own expressive meaning. *Darou* indicates high probability, and *moshikasuruto* indicates low probability. These two chunks of meaning result in an infelicity, since the speaker is giving an incongruent judgement.

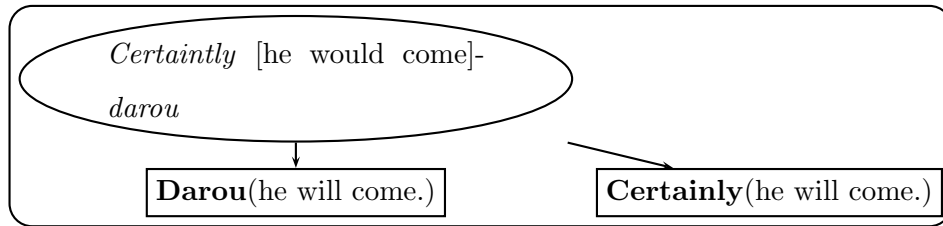
(59)



Furthermore, if the quantificational forces of the probability do not conflict with each other, generating two expressive meanings does not cause an infelicity. *Darou*

indicates the speaker’s bias toward ‘he will come’, while *kitto* ‘certainly’ indicates the speaker’s belief in the content of the proposition. These two meanings are compatible. The latter is a stronger version of the former.

(60)



To summarize, the puzzle presented in section 5.3 resolves if we analyze *darou* and probability adverbs as morphemes that create meanings that belong to a different level from a simple assertion. The incompatibility arises only when both the adverb and *darou* express incompatible meanings in the same level.

The bias meaning of *darou* shows a conflict with respect to probability only with a non-propositional adverb of low probability, while it is compatible with an assertive counterpart.

Let me conclude this section by showing the interpretation of (2-b) repeated here as (61). Both *darou* and *tabun* operate over the same propositional content ‘He will come tomorrow’, and yield non-propositional meanings independently.

(61) *tabun ashita kare-ga kuru darou.*
 probably tomorrow he-Nom come DAROU
 ‘He will come tomorrow-*darou*.’

The sentence-final marker *darou* indicates a bias toward the proposition and the bias is based on the speaker’s reasoning that do not include particular instances of evidence.

- (62) non-propositional meaning 1 by *darou*
- a. p: He will come tomorrow.
 - b. Quantificational Domain: {w: w is a possible world which is compatible with the non-observable reasoning by the actual speaker}
 - c. Quantificational Force: more than 50 % ($p >_{likelihood} \neg p$)
 - d. In prose: the actual speaker considers the probability of p to be higher than $\neg p$ based on his/her non-observable reasoning.

By the adverb *tabun*, the speaker indicates that the content is highly probable based on his/her belief.

- (63) non-propositional meaning 2 by *tabun*
- a. p: He will come tomorrow.
 - b. Quantificational Domain: {w: w is a possible world which is compatible with the actual speaker's belief}
 - c. Quantificational Force: around 80 % (Probability(p) \approx 0.8)
 - d. In prose: the actual speaker considers the probability of p as around 80%.

Note that unlike *darou*, *tabun* does not have the evidence-less condition. If *tabun* is used without *darou*, the speaker can have evidence for the propositional content as in (64).

- (64) John-no hey-a-ni bin-ga takusan aru kara, kinou
 John-Gen room-Dat bottle-Nom many exist because yesterday
 John-wa tabun wine-o takusan nonda.
 John-Top probably wine-Acc many drank
 'Because there are a lot of bottles in John's room, John probably drank a

lot of wine yesterday.’

Another thing to note is that the propositional content ‘he will come tomorrow’ in (61) is not an actual assertion of the speaker, but a mere argument to the higher functors like *darou* and *tabun*. If it were the actual assertion, the non-propositional meanings such as ‘the speaker’s bias’ and ‘the judgement of high probability’ would weaken the assertion. For example, the sequence of two clauses in (65) is not felicitous. The assertion of the first conjunct without a modal entails the speaker’s commitment to the truth of ‘she climbed Mt. Tobi’ in the actual world. However, the second conjunct indicates that the speaker considers the truth of the proposition ‘she climbed Mt. Tobi’ only in the restricted modal base, which might not include the actual world (see section 5.2.2.1).

(65) #She climbed Mt. Tobi and she must have climbed Mt. Tobi.

If the propositional content of *darou* in (61) were projected higher as the speaker’s assertion, it would yield a message parallel to (65), ‘he will come tomorrow, and I have a bias toward ‘he will come tomorrow.’” Hence, when the proposition is predicated to *darou*, the propositional content is not projected but only the bias meaning is generated. (See also section 5.4.4.1.)

In summary, by taking the propositional content as an argument, *darou* generates a meaning which is distinct from the propositional level. Also, the argument does not independently project. The next question pertains to what is the nature of the level to which *darou* contributes.

5.4.4 Comparison with Potts (2003)

The puzzle presented in 5.3 is straightforwardly explained by the introduction of a different level of meaning. In the recent semantics literature, there is a distinguished level of meaning, *expressive* meaning, which is extensively discussed in Potts (2003). The behavior of *darou* is similar to the behaviour of expressives in that their meaning contribution is not under the scope of negation or question. For example, the expressive *damn* in (66) represents “the speaker disapproves of having to look after Sheila’s dog” (Potts, 2003).

(66) I am not looking after Sheila’s damn dog while she is on holiday.
(Potts, 2003)

The meaning expressed by *damn* cannot be part of the negated content (67–a) nor part of the question (67–b), since both (67–a) and (67–b) carry the same expressive meaning “the speaker disapproves of having to look after Sheila’s dog” as (66).

(67) a. It’s just not true that Sheila’s damn dog is on the couch!
b. Am I looking after Sheila’s damn dog while she is on holiday?
(Potts, 2003)

However, I show that the semantic meaning represented by *darou* exhibits properties which are different from the ones defined as expressive meanings in Potts (2003).

5.4.4.1 *Darou* does not involve an identity function

First of all, in Potts (2003), a computation of expressive meaning involves two functional applications, one that yields an expressive meaning and the other

which is an identity function that yields assertive meaning (at-issue entailment). For example, the expressive *damn* in (68) takes *Republicans* as its argument and yields an expressive meaning as in (68-a). At the same time, it yields the semantic meaning of *Republicans* by identity function in the assertive level. The assertive meaning of *Republicans* then becomes an argument to a higher functor like *say*, and the sentence obtains the meaning of at-issue entailment (68-b) independent of its expressive meaning.

- (68) The damn Republicans want the bill passed. (Potts, 2003)
- a. expressive meaning: The speaker disapproves of Republicans.
 - b. at-issue entailment: The Republicans want the bill passed.

This identity function for the assertive tier is necessary for the following reason. (69) can be felicitously uttered even if we assume that Bush is a Republican and he will not call himself *damn*. According to Potts (2003), this is because the only at-issue entailment is the complement of *say*, while the expressive meaning of (69) is not part of it.

- (69) Bush says the damn Republicans deserve public support.

Darou does not have this property. If it did, it would create an incongruent message. For example, if (70) generated two meanings, *p* as its assertive meaning and *p-darou* as its expressive meaning, the expressive meaning would weaken the assertion. (See also (62).) Namely, (70) would mean something like ‘John came and I have a bias toward ‘John came.’”

- (70) John-ga kita darou.
 John-Nom came DAROU
 ‘John came-*darou*.’

Hence, it is not desirable to have two meanings projected at the same time for *darou*. *Darou* does not have multi-dimensional functional applications but only projects the bias meaning.

5.4.4.2 *Darou* can be semantically embedded

Related to the point above, Potts (2003) argues that at-issue meanings never apply to expressive meanings. For example, (69), repeated here as (71), is a consistent report of Bush’s utterance ‘the Republicans deserve public support.’ with the speaker’s additional comment on his/her attitude toward Republicans. Namely, the expressive meaning ‘disapproval of Republicans’ is not semantically embedded under *say*.

- (71) Bush says the damn Republicans deserve public support.

Darou behaves differently. As discussed earlier, the use of *darou* in (18-b), repeated here as (72), is infelicitous. If the bias meaning of *darou* projected invariably as the speaker’s comment and *because* only took the propositional content ‘It will rain.’ (72), could have an interpretation ‘John took an umbrella with him because it will rain, and the speaker has a bias toward ‘it will rain.’”

- (72) ??John-wa ame-ga furu darou kara kasa-o mot-te it-ta
 John-Top rain-Nom fall DAROU because umbrella-Acc have-and go-Past
 ‘Because it will rain-*darou*, John took an umbrella with him.’

However, that interpretation is not available for (72). Hence, I conclude that *because* takes the non-assertive meaning, the speaker’s bias, as its argument; and therefore, (72) results in infelicity, since the speaker’s bias alone does not causes John’s action of taking an umbrella.

5.4.4.3 *Darou* is not necessarily speaker-oriented

Another related property Potts (2003) discusses is that expressive meanings are always attributed to the actual speaker. (73) illustrates his point. (73) shows that it is hard to associate the expressive meaning ‘disapproval of Republicans’ to the agent of the reported speech unless some intonation is added to indicate that the embedded sentence is a direct quote.

(73) Clinton: The damn Republicans want the bill passed.

Bush: #Clinton says the damn Republicans want the bill passed.

(Potts, 2003)

In section 5.2.1.3, we have seen that this is not the case for *darou*. The bias indicated by *darou* does not need to be the actual speaker, but the speaker of the local utterance. The speaker can challenge the content of the bias without causing infelicity as in (17), repeated here as (74), since the bias does not belong to the actual speaker but to the local speaker of the embedded speech act, *Mary*.

- (74) a. Mary-wa John-ga kuru darou to omot-teiru.
 Mary-Top John-Nom come DAROU Comp think-Prog
 ‘Mary thinks that John will come-*darou*’
- b. Boku-wa sou-wa omow-anai-kedo.
 I-Top so-Top think-Neg-though
 ‘I don’t think so (that he will come), though.’

Furthermore, the complement of *think* in (74–a) is not a direct quote. The (non-shiftable) indexical, *watashi* ‘me’ in (75) always refers to the speaker and never refers to *Mary*. If the embedded proposition were a direct quote, the referent of *watashi* ‘me’ should be the original speaker of the quote, *Mary*.

- (75) Mary-wa John-ga watashi-ni ai-ni kuru darou to omot-teiru.
 Mary-Top John-Nom me-Dat meet-to come DAROU Comp think-Prog
 ‘Mary thinks that John will come to see me.-*darou*’

In summary, the non-propositional meaning conveyed by *darou* is distinct from the expressive meaning defined in Potts (2003). First, the computation of *darou* does not involve an identity function. Second, the expressive meaning can be an argument to higher functors. Lastly, the expressive meaning can be associated with an agent other than the actual speaker.

5.4.5 Section Summary: Open End

This section argued that the indication of the speaker’s probability judgement by Japanese evidential marker *darou* is not part of the assertion. It cannot be under the scope of negation nor question formation. Also, the bias meaning of *darou* conflicts only with adverbs of low probability at the same non-assertive level, while it is compatible with an assertive counterpart.

Although the property reported for *darou* is similar to the one for ‘expressive meaning’, the notion of ‘expressive meaning’ cannot be directly applied to *darou* since the semantic meaning of *darou* interacts with local contexts more closely than the ones previously observed for English expressives. Hence, if we would like to analyze the meaning of *darou* as expressive, we need to reformulate the term “expressive”.

In fact, some items that are claimed to be expressive can be relativized to an attitude-bearer other than the speaker. [Kratzer \(1999\)](#) shows that at root-level, *ja* indicates that, for all the speaker knows, the content of the asserted proposition might be known to the addressee. According to [Kratzer \(1999\)](#), in contrast, if *ja* is embedded under an attitude predicate as in (76), it is interpreted as “for all Webster knows”.

- (76) 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](#))

[Kratzer \(1999\)](#) also reports that even in English, at least some expressives can be associated to the speaker of the reported utterance as in (77). The opinion that Webster is a bastard belongs to the individual denoted by *my father* rather than the actual speaker.

- (77) My father screamed that he would never allow me to marry that bastard
 Webster. ([Kratzer, 1999](#))

Therefore, we seem to have enough motivation to reconsider the notion of “expressive” meaning. Another option to pursue is to analyze *darou* as a speech-act modifier or a sentence-type modifier as argued in [Faller \(2002\)](#) and [Zimmermann \(2005\)](#). Unfortunately, I cannot attempt an analysis of *darou* can be analyzed in this approach at present.

5.5 Chapter Summary

This chapter gave an analysis of *darou* as an evidential morpheme that has a modal-flavor:

- (78) The modal meaning of p-*darou* in context *c*
- a. Quantificational Domain: possible worlds which are compatible with the non-observable reasoning by the speaker of context *c*
 - b. Quantificational force: more than 50 %
($p >_{likelihood} \neg p$)

The following are crucial ingredients of the analysis. First, *darou* indicates a bias toward the event denoted by the embedded proposition. Second, the source of the bias for p is not observable evidence but epistemic reasoning. Third, the semantic denotation of *darou* contains a shiftable indexical ‘the speaker of context *c*’ as the agent of the bias. Fourth, I have argued that the bias for p introduced by *darou* is not part of the assertive content. The last two points create a tension in the theory of levels of meaning, since, unlike the expressive meanings discussed in [Potts \(2003\)](#), it is possible to semantically embed the probability judgement by *darou* and associate the judgement to some agent other than the speaker.

Chapter 6

CONCLUDING REMARKS AND PROSPECTS

6.1 Grammaticalization of Pragmatic Effects

To conclude this dissertation, let us go back the general debate in terms of the treatment of pragmatics in linguistic theory I introduced in chapter 1. Traditionally, it has been assumed that pragmatic effects are root phenomena. Namely, pragmatics is independent of the internal structure of syntax and semantics. However, there is a movement in the direction that at least some pragmatic effects should be analyzed in the semantics. I hope that my work on Japanese discourse items supports the latter view.

6.1.1 Local Implicature

First of all, as [Chierchia \(2004\)](#) notes, the traditional view of pragmatics cannot compute local implicatures. Here, I briefly summarize Chierchia's (2004) arguments. A sentence like (1) seems to implicate (2).

- (1) John believes that some students are waiting for him. ([Chierchia, 2004](#), p.44)
- (2) John believes that not every student is waiting for him. ([Chierchia, 2004](#), p.44)

However, if implicatures are computed globally, (2) cannot be obtained. In this view, since the computation only takes the output of the semantics of the whole sentence, the relevant stronger alternative to (1) would be (3-a), and hence the computed implicature would be (3-b).

- (3) a. John believes that every student is waiting for him.
 b. It is not the case that John believes that every student is waiting for him.
 (Chierchia, 2004, p.44)

Chierchia (2004) says “Sentence [(3-b)] is much weaker than [(2)]. The former merely says that it is *compatible* with John’s beliefs that not every student is waiting” (p.44). Namely, (3-b) does not negate the possibility that every student is waiting, unlike (2), which seems to be the more prominent implicature for (1).

The same argument applies to *wa*-implicatures. If the computation of CON took place after the semantics of the whole root sentence, local implicatures would never be generated. Consider the example in chapter 3 repeated here as (4) again.

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

I argued in chapter 3 that the placement of CON in the syntactic structure determines the agent and the background for the implicature computation. If CON is independent of the internal structure of syntax and semantics, that is if the local placement of CON were not possible, we would only expect (5-b) to be the interpretation of (4), and would not expect (5-d) to be generated, which is a wrong prediction.

- (5) a. Global: $c_{@}$ [_{CP} **Con** [_{IP} c_i [_{CP} [_{XP} Mary-wa] came Comp] John-ga believe]]
- b. $\text{CON}(w(c_{@}))(sp)(\mathbf{think}(j)(\mathbf{came}(m)))$
 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.
- c. Local: $c_{@}$ [_{CP} [_{IP} c_i [_{CP} **Con** [_{XP} Mary-wa] came Comp] John-ga believe]]
- d. $\text{CON}(w(c_i))(j)(\mathbf{came}(m))$
 implicates: In some of the doxastic worlds compatible with **John's belief**, it is not the case that Mary and Peter came.

Hence, the existence of the local *wa*-implicature supports the idea that the internal structure of syntax and semantics is visible to pragmatic effects.

6.1.2 Syntactic Constructions

In addition, if the computation of implicatures is totally independent of syntactic constructions, we do not expect any island effects. As we have seen in chapter 3, Contrastive-marking is not possible within an adjunct clause (except for a *because*-clause) or within a relative clause as in (6).

- (6) a. *Itsumo uchi-ni JOHN-wa kita toki, inu-ga hoe-ru.
 always house-Dat John-Con come when, tea-Acc offer-Present
 Intended: 'When at least John comes to our house, the dog always barks.'
- b. *Itsumo CHOMSKY-wa kai-ta hon-ga shuppan-sa-re-ru.
 always Chomsky-Con write-Past book-Nom publish-do-Pass-Present
 Intended: 'The book which at least Chomsky wrote is always published.'

However, the constructions can be ameliorated by pied-piping-like structures as in (7).

- (7) a. Itsumo [uchi-ni JOHN-ga kita toki]-wa, inu-ga hoe-ru.
 always house-Dat John-Nom come when-Con, tea-Acc offer-Present
 ‘At least when John comes to our house, the dog always barks.’
- b. Itsumo CHOMSKY-ga kai-ta hon-wa shuppan-sa-re-ru.
 always Chomsky-Nom write-Past book-Con publish-do-Pass-Present
 ‘At least the book which Chomsky wrote is always published.’

Another way to ameliorate the constructions in (6) is to have a Contrastive-marked NP overtly outside the island clause and co-index it with a *pro* as in (8).

- (8) a. JOHN_{*i*}-**wa** itsumo uchi-ni *pro*_{*i*} kita **toki**, inu-ga hoe-ru.
 John-Con always house-Dat *pro* came when, dog-Nom bark-Present
 ‘At least John_{*i*} is such that when *pro*_{*i*} comes to our house, the dog always barks.’
- b. CHOMSKY_{*i*}-wa itsumo *pro*_{*i*} kai-ta hon-ga
 Chomsky-Con always *pro* write-Past book-Nom
 shuppan-sa-re-ru
 publish-do-Pass-Present
 ‘At least Chomsky is such that the book which he wrote is always published.’

Both (7) and (8) have the same semantic meanings that the non-Contrastive-marked versions of (6) have: ‘When John comes to our house, the dog always barks.’ and ‘The book that Chomsky wrote is always published.’ If the computation of *wa*-implicature were global and did not interact with the syntactic structure of the sentence, it would be puzzling that the constructions in (6) are ungrammatical. In chapter 3, I have argued that the computation of Contrastive-marking involves an

island-sensitive movement of CON, which explains the ungrammaticality of (6). It is clear, at the very least, that the syntactic constructions affect the availability of Contrastive-marking. Therefore, the computation of the implicature triggered by Contrastive-marking is subject to syntactic structures.

6.1.3 Embedded Evidential Morphemes

Concepts like ‘seat of knowledge’ and ‘point of view’ have also been traditionally treated within pragmatics with little interaction with the syntax and semantics of the sentence. In chapters 4 and 5, I have examined the semantics of Japanese evidentials. Evidential-marking is analyzed as a lexical realization, like attitude predicates, introduces a new speech act. In particular, the semantic meaning contributed by *darou* can be embedded under attitude predicates (9-a) and the *because* operator (9-b).

- (9) a. Mary-wa John-ga kuru darou to omot-teiru.
 Mary-Top John-Nom come DAROU Comp think-Prog
 ‘Mary thinks that John will come-*darou*’
- b. boku-wa ame-ga furu darou kara kasa-o mot-te
 I-Top rain-Nom fall DAROU because umbrella-Acc have-and
 it-ta
 go-Past
 ‘Because it will rain-*darou*, I took an umbrella with me.’

If the meaning contributed by *darou* were purely pragmatic, i.e. added after the semantics of the whole root sentence is computed, the meaning would always take a wide scope and the agent of the bias indicated by *darou* would always be the actual speaker. As we have seen in chapter 5, this is not the case; the agent of the bias can be shifted to the subject of the reported speech act as in (9-a), and the bias meaning can be embedded under the *because* operator as in (9-b). Therefore, the meaning

contribution of Evidential-marking actually depends on the syntax and semantics of the sentence.

Recent work by [Tenny \(2004\)](#) and [Speas \(2004\)](#) (following [Cinque \(1999\)](#)) also argue that there is a syntactic representation for point of view arguments. Consider the following example which has a hearsay evidential.

- (10) John-ga kaet-ta souda.
 John-Nom go.home-Past Evid
 ‘ John went home (I heard).’

Following Tenny’s ([2004](#)) formulation, *souda* projects an evidential phrase which contains x_j , someone other than the speaker or the hearer, as an invisible argument.

- (11) [SpeechActP [the speaker_i] [EvidentialP x_j [Evidential’ John-ga kaet-ta [Evidential
 souda]]]]

Since Japanese evidentials have a very rigid syntax, it is plausible to posit a syntactic projection for this lexical category. In this dissertation, however, I will not attempt to verify whether the syntactic structures [Tenny \(2004\)](#) and [Speas \(2004\)](#) propose are the actual structures, for lack of decisive data.

6.2 Remaining Issues

There are a number of remaining issues with respect to the properties of Contrastive-marking and evidentials, which were not discussed in this dissertation. In the following sections, I will highlight some interesting topics among them.

6.2.1 Contrast among Speech Acts

In chapter 2, I have characterized the use of Contrastive-marking in terms of the speaker's knowledge. As mentioned in footnote 13 in chapter 2, however, the contrast could be among the speaker's intentions with respect to his/her speech act. For example, following Büring's (1997) system of Focus and Topic values, Tomioka (2001) defines the interpretation of Contrastive-marking as follows:

- (12) $[[\text{CON}]]^o = D_{\langle e, \langle t, t \rangle \rangle}$
 For any x , $\alpha [[\text{CON}(x)(\alpha)]]^o = [[\alpha]]^o$
 Presupposition for $\text{CON}(x)(\alpha)$: x is unwilling to assert any proposition in the members in $[[\alpha]]^t$, except for $[[\alpha]]^o$ (Tomioka, 2001)

Namely, the use of Contrastive-marking is licit when there are some reasons for the speaker not to assert the alternative propositions. In this dissertation, I have talked about cases where the speaker is unwilling to assert the alternative propositions because of his/her limited knowledge. There seem to be other reasons for the speaker to be unwilling to assert the alternative propositions. To illustrate, in (13), although the answerer knows that Peter passed, he/she indicates his/her unwillingness to assert the information because, for example, he/she wants to tease the questioner, there is another person who is not supposed to hear about the information, etc.

- (13) a. Who passed the exam?
 b. MARY-wa ukat-ta.
 Mary-Con pass-Past
 'Mary passed (and I am not going to tell you that Peter passed.)'

If this analysis is on the right track, it should extend to other kinds of speech acts. Indeed, Contrastive-marking can be used with some (but not all) constructions associated with a speech act different from assertion.

First of all, Contrastive-marking can be used with some question formations. In this use, Contrastive-marking seems to indicate that there is some reason why the speaker is unwilling to *question* other propositions. The most conceivable reason to me is that the speaker is particularly interested in the questioned individual but not so interested in others.

- (14) JOHN-wa ki-mashi-ta-ka?
John-Con come-Hon-Past-Q
'As for John, did he come?'
- (15) dare-ga PAATII-NI-wa ki-mashi-ta-ka?
who-Nom party-Dat-Con come-Hon-Past-Q
'As for the party, who came to it?'

Although it is possible to Contrastive-mark an argument within a *wh*-question as in (15), it is not easy to Contrastive-mark a *wh*-word as in (16).

- (16) *John-wa NANI-wa kai-mashi-ta-ka?
John-Top what-Con buy-Hon-Past-Q
'[What]_{Con} did John buy?'

(16) can be improved by inserting a morpheme *no* (which is argued to be an evidential marker in Tenny (2004)) with a special context depicted in (17-a). The context does not help to improve (16).

- (17) a. Context: John didn't buy books, clothes, foods...

- b. ?John-wa NANI-wa kat-ta-no-desu-ka?
 John-Top what-Con buy-Past-Evid-Hon-Q
 ‘[What]_{Con} did John buy?’

Second, Contrastive-marking is possible within an imperative as in (18). The speaker of (18) seems to indicate that Japanese is a more important language to study than other languages. Hence, we can rephrase the interpretation as ‘the speaker is unwilling to order the addressee to study other languages because others are not as important as Japanese.’

- (18) NIHONGO-wa benkyoo-si-ro!
 Japanese-Con study-do-Imp
 ‘Study at least Japanese!’

Similarly, Contrastive can be used with an exhortative construction. An exhortative indicates a strong encouragement and is less forceful than a normal imperative. The function of Contrastive-marking in exhortative seems to be parallel to the one in imperative.

- (19) NIHONGO-wa benkyoo-si-you.
 Japanese-Con study-do-Exho
 ‘Let’s study at least Japanese.’
 ‘You should study at least Japanese.’

Interestingly, Contrastive-marking is not possible with exclamatives. Neither a normal noun phrase (20–a) nor an exclamative *wh*-word (20–b) can be Contrastive-marked.

- (20) a. *JOHN-wa nante kireina e-o kai-ta noda!
 John-Con what pretty picture-Acc draw-Past Exc
 ‘What a pretty picture [John]_{Con} drew!’
- b. *John-wa NANTE KIREINA E-wa kai-ta noda!
 John-Top what pretty picture-Con draw-Past Exc
 ‘ [What a pretty picture]_{Con} John drew!’

This is puzzling since it is conceivable to construct a situation where the speaker exclaims a certain proposition while he/she is unwilling to exclaim alternative ones because they are not so noteworthy.

6.2.2 Attitude Expressions and Relative Clauses

In chapter 3, I explained that the global computation of *wa*-implicatures was blocked due to the island violation.

- (21) *Itsumo CHOMSKY-wa kai-ta hon-ga shuppan-sa-re-ru.
 always Chomsky-Con write-Past book-Nom publish-do-Pass-Pres
 ‘The book which at least Chomsky wrote is always published.’

Remember from chapter 4 that I explained the unavailability of evidential-marking and the local computation of *wa*-implicatures within temporal clauses, *if*-clauses and transparent *because*-clauses in terms of type-mismatch. Now, how about the local computation of relative clauses? Namely, why can’t the CON operator be placed in front of the embedded clause as (22)?

- (22) *[_{CP} [_{IP} [_{NP} **Con**_j [_{CP} (which_i) [_{XP} t_j Chomsky-wa] t_i wrote book]]...]]

Let us start with a brief introduction to the semantics of relative clauses. Following Quine (1960), Heim and Kratzer (1998) treat relative clauses as predicates. For example, in (23), ‘which is empty’ denotes the function $\lambda x. x$ is empty.

(23) The house which is empty is available. (Heim and Kratzer, 1998, p.87)

In Heim and Kratzer (1998), the function meaning of a relative clause is obtained in the following way. The relative clause involves movement of a relative operator, which leaves a variable as in (24).

(24) The house [_{CP} which₁ [_{IP} t₁ is empty]] is available.

The relative operator then lambda-abstracts over the embedded IP:

(25) $\llbracket \mathbf{which}_1 \mathbf{t}_1 \mathbf{is\ empty} \rrbracket^{g^{1/x}}$
= $\lambda x.g^{1 \rightarrow x}(1)$ is empty
= $\lambda x.x$ is empty

Taking the proposal that the argument of the CON operator needs to be type t , it follows that the local computation of *wa*-implicatures is not possible in (21) due to a type mismatch. The embedded CP in (22) ‘(which) Chomsky wrote’ is a predicate (type $\langle e, t \rangle$), not a proposition (type t).

Similarly, Evidential-marking is not possible inside relative clauses as in (26) for the Japanese hearsay *souna/souda* or in (27) for the German *ja*.¹

¹ The case of the English *obviously* is tricky. As in (i-a), having *obviously* within a relative clause is grammatical, although it is not with a universal quantifier as in (i-b). My speculation is that the relative clause in (i-a) is reanalyzed as a non-restrictive (supplementary) one.

- (i) a. I met the woman that obviously, John is after.
b. *I met every woman that obviously, John is after.

- (26) *Itsumo Chomsky-ga kai-ta souna/souda hon-ga
 always Chomsky-Nom write-Past Evid book-Nom
 shuppan-sa-re-ru.
 publish-do-Pass-Pres
 ‘The book which Chomsky wrote (I heard) is always published.’
- (27) *Die Frau, hinter der John ja her ist, ist Mary.
 The woman after who John JA PRT is is Mary
 ‘The woman that John is JA after is Mary.’

Again, the current analysis of Evidential-marking explains the ungrammaticality of (26) and (27). Evidentials take a closed proposition t , hence having an evidential under a relative clause, which is type $\langle e, t \rangle$, causes a type mismatch.

Interestingly, having an attitude predicate within a relative clause seems to improve the grammaticality of *wa*-marking under the relative clause as in (28).

- (28) ?Kinou NIHONGO-wa dekiru to omot-teiru hito-ni at-ta.
 yesterday Japanese-Con capable Comp think-Prog person-Dat meet-Past
 ‘I met [the person]_{*i*} who thinks he_{*i*} can speak at least Japanese.’

I speculate that (28) has the following structure (29). More specifically, the variable created by a relative operator (which is covert in Japanese) is the subject of the attitude predicate, while the subject of the most deeply embedded clause is an empty pronoun *pro*.

- (29) ?Kinou [[*pro* NIHONGO-wa dekiru] to *t* omot-teiru] hito-ni
 yesterday [[*pro* Japanese-Con capable] Comp *t* think-Prog] person-Dat
 at-ta.
 meet-Past
 ‘I met [the person]_{*i*} who thinks he_{*i*} can speak at least Japanese.’

Furthermore, I propose to treat this pronoun as a shiftable indexical ('I' of the reported speech). Indeed, the overt use of the shiftable indexical *zibun* improves (29) as seen in (30).

- (30) Kinou zibun-ga NIHONGO-wa dekiru to t omot-teiru hito-ni
 yesterday self-Nom Japanese-Con capable Comp t think-Prog person-Dat
 at-ta.
 meet-Past
 'I met [the person]_i who thinks he_i can speak at least Japanese.'

As a consequence, (30) and (29) have a parallel structure to (31). In other words, the domain of the computation of *wa*-implicature does not involve a variable. Accordingly, the problem of the type mismatch disappears.

- (31) MARY-wa ki-ta to omot-teiru hito-ga iru.
 Mary-Con come-Past Comp think-Prog person-Nom exist
 'There is a person who thinks that at least Mary came.'

This speculation predicts that if the variable created by the relative operator is the subject of the most deeply embedded clause, then *wa*-marking within the same clause is not possible. This prediction is attested in (32). In (32), the subject of the attitude predicate *omot* 'think' is overtly specified as *John*, who is distinct from the referent of the head noun. Therefore, the variable which is relativized to the head noun *hito* 'person' is in the domain of the computation of *wa*-implicature. As a consequence, *wa*-marking in (32) causes a type mismatch.

- (32) *Kinou e NIHONGO-wa dekiru to John-ga omot-teiru
 yesterday e Japanese-Con capable Comp John-Nom think-Prog
 hito-ni at-ta.
 person-Dat meet-Past

‘I met [the person]_i such that John thinks that he_i can speak at least Japanese.’

To conclude, even though more careful investigations are required, I am optimistic that the type mismatch analysis discussed in chapter 4 for adverbial adjunct clauses can be extended to the case of relative clauses.

6.2.3 *Because* and Speech Acts

In chapter 4, I have argued that evidentials and the *because* operator are attitude operators similar to attitude predicates that shift the context for shiftable indexicals. However, there are some differences between contexts introduced by Evidential-marking and the *because* operator on the one hand and attitude predicates on the other pointed out in the literature of *de se* attitudes and point-of-view.

6.2.3.1 *Zibun* and *de se* interpretation

As introduced in work by Lewis (1979) and Chierchia (1989), the use of attitude predicates gives rise to a *de se* interpretation. Let us illustrate with an example from Percus and Sauerland (2003). Suppose that John is looking at a guy in an image presented by a projector without being aware that the guy is himself. In this context, (33) is judged false on the *de se* interpretation (33-a), while it is judged true on the non-*de-se* interpretation (33-b).

- (33) John thinks that he is a criminal. (Percus and Sauerland, 2003)
- a. Situation: John thinks: ‘I am a criminal.’ (*de se*)
 - b. Situation: John thinks: ‘The guy I’m looking at is a criminal.’ (non-*de-se*)

According to Oshima (2004a,b, to appear), Japanese long-distance reflexive *zibun* has distinctive uses with respect to the availability of a *de se* interpretation, logophoric use (c.f. Culy, 1997) and empathic (perspectival) use (c.f. Kuno, 1978). The logophoric use is possible in attitude predicates. For example, consider the example (34), adopted from Coulmas (1986), and assume that Oedipus has not learned yet that Jokasta is his birth mother. On the *de se* interpretation (34-a) is not an accurate description of the situation of (34), because *zibun-no haha* ‘self’s mother’ picks out Oedipus’s adopted mother. In contrast, (34-b) on the *de se* interpretation is an accurate description of the situation of (34), since Oedipus knows that Jokasta is his wife.

(34) Situation: Oedipus thinks: ‘Jokasta is beautiful.’

- a. Oedipus-wa zibun-no haha-ga utsukushii-to omot-teiru
Oedipus-Top self-Gen mother-Nom beautiful-Comp think-Prog
‘Oedipus thinks that self’s mother is beautiful.’
- b. Oedipus-wa zibun-no tsuma-ga utsukushii-to omot-teiru
Oedipus-Top self-Gen wife-Nom beautiful-Comp think-Prog
‘Oedipus thinks that self’s wife is beautiful.’

On the other hand, the empathic use of *zibun* which is introduced in a *because*-clause does not induce a *de se* interpretation. For example, *zibun* in both (35-a) and (35-b) picks out Oedipus as its referent, since the content of the *because*-clause is uttered from Oedipus’s point of view. However, the agent of the utterance is still the actual speaker, not Oedipus; therefore Oedipus’s *de se* awareness is irrelevant. Hence, unlike the case with an attitude verb, both (35-a) and (35-b) can be the accurate description of the situation in (35), since Jokasta is both Oedipus’s mother and Oedipus’s wife.

- (35) Situation: Jokasta fell down the stairs and knocked down Oedipus.
- a. Oedipus-wa, zibun-no haha-ga koke-ta kara, koke-ta
Oedipus-Top self-Gen mother-Nom fall-Past because, fall-Past
'Oedipus fell because self's mother fell.'
 - b. Oedipus-wa, zibun-no tsuma-ga koke-ta kara, koke-ta
Oedipus-Top self-Gen wife-Nom fall-Past because, fall-Past
'Oedipus fell because self's wife fell.'

In chapter 3, I have argued that the interpretation of Contrastive-marking involves a shiftable indexical. If the notion of 'shiftable indexical' necessarily includes a *de se* interpretation, characterizing the embeddability of Contrastive-marking in terms of shiftable indexicals is questionable. Namely, it might be more appropriate to attribute the property of Contrastive-marking to the notion of empathy à la [Kuno \(1978\)](#) and [Oshima \(2004a,b, to appear\)](#). It would be an interesting to pursue whether the agent of *wa*-implicature pertains to a *de se* interpretation or not.

6.2.3.2 *Darou* and shiftable indexicals

Another issue related to this topic is the shiftability of the agent of bias introduced by *darou* discussed in chapter 5. Remember from chapter 5 that the bias meaning indicated by *darou* can be embedded under an attitude predicate as in (36–a). In particular, the agent of the bias is the agent of the embedded attitude, *Mary*, since the speaker can disagree with the embedded proposition as in (36–b).

- (36) a. Mary-wa John-ga kuru darou to omot-teiru.
Mary-Top John-Nom come DAROU Comp think-Prog
'Mary thinks that John will come-*darou*'
- b. Boku-wa sou-wa omow-anai kedo.
I-Top so-Top think-Neg though
'I don't think so (that he will come), though.'

As we have seen in chapter 5, the bias meaning indicated by *darou* can be embedded under a *because* operator only when the agent of the reasoning is the actual speaker as in (37–a). If the reasoning expressed by the *because* operator is due to someone other than the speaker, *darou* cannot be used under *because*.

- (37) a. boku-wa, ame-ga furu darou kara, kasa-o mot-te
 I-Top rain-Nom fall DAROU because umbrella-Acc have-and
 it-ta
 go-Past
 ‘Because it will rain-*darou*, I took an umbrella with me.’
- b. ??John-wa, ame-ga furu darou kara, kasa-o mot-te
 John-Top rain-Nom fall DAROU because umbrella-Acc have-and
 it-ta
 go-Past
 ‘Because it will rain-*darou*, John took an umbrella with him.’

In chapter 5, I have speculated that the agent of the bias expressed by *darou* can only be co-referred with the agent of the speech act, but not necessarily with the agent of knowledge. On the other hand, the agent of *wa*-implicatures, the subject of direct experience, and the referent of *zibun* can be co-referred with the agent of knowledge.

Now, given Oshima’s (2004a; 2004b; to appear) distinction of the use of long-distance *zibun* as logophoric and empathic, it is plausible to analyze the attitude-holder of the *darou*-bias as unambiguously logophoric and the attitude-holders of Contrastive-marking and direct experience as ambiguous between logophoric and empathic. Again, the relevant question to ask is whether these items give rise to a *de se* interpretation. If *darou* is unambiguously logophoric, it is predicted that it should always induce a *de se* interpretation. If Contrastive-marking and direct experience are ambiguous, it should be possible to construct situations where the

agent of knowledge holds *de se*-awareness.

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