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CONSTRUCTING CONCESSIVE CONDITIONALS IN JAPANESE

By

Ai Matsui

A THESIS

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ABSTRACT

CONSTRUCTING CONCESSIVE CONDITIONALS IN JAPANESE

By

Ai Matsui

This thesis investigates the syntactic, semantic and pragmatic nature of concessive conditionals, e.g. *even if* sentences in English. Since Karttunen & Peters (1979), the word *even* has been viewed as an element that adds an existential and scalar presupposition. The existing analyses of *even if* sentences (e.g. Bennett (1982), Guerzoni & Lim (2007)) based on this view are not directly applicable to the Japanese concessive conditional which has no conditional morpheme but consists of a gerundive clause and the additive particle *mo*. In my compositional analysis, the concessive conditional meaning is build up from the gerundive construction, which is a clausal conjunction ‘and’ that also reflects the speaker’s knowledge about the normal situations, and *mo* that measures and compares the degree of expectedness derived from the gerundive construction. This study may also shed light on theoretical connections among conditionals, modals, and questions, as well as some issues of semantics and pragmatics of clausal conjunctions.

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Remaining oddities in the thesis, if any, are of course mine.

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1 Introduction

1.1 The expression *even if*

Let us first consider what the speaker means by uttering an *even if* sentence. Suppose one said sentence (2), given the following situation.

- (1) A scenario: We have a friend Mary, who is hospitalized now. Among several visitors she has, she is usually very happy whenever her boyfriend John comes to see her, whereas it is mostly not so when her ex-boyfriend Bill comes instead. As long as she can see John though, she is happy. But we have found that this is not the case on a day she has to get an injection. She hates it so much that on a day she has one ...
- (2) *Even if John came, she would be in a bad mood all day.*

An *even if* sentence like (2) is the one I refer to as concessive conditionals and is the target expression of this thesis. Given the situation (1), the sentence is grammatical and felicitous. We understand that it adds a kind of emphasis indicating in what way this is unexpected compared to the other normal situations in which John comes.

Thus, it is infelicitous to say the following given the scenario (1) because they do not seem to express unlikeliness or unexpectedness with respect to what we know.

- (3)
 - a. # Even if John didn't come, she would be in a bad mood all day (on her injection day).
 - b. # Even if Bill came, she would be in a bad mood all day (on her injection day).

Knowing that Mary was usually happy when John came, and one might believe that if John came she would be happy but may not be if he didn't, (3a) would sound infelicitous and we might partially reject it by giving a response like "yeah, but, she would be like that on her injection day anyway if he didn't come..." Similarly, to (3b), we might say "yeah, but, she would be like that anyway if Bill came..." Hereafter, I mark the sentence with "#" to indicate that the sentence is infelicity, as opposed to "*" for morpho-syntactic ungrammaticality and clear falsity as an intended meaning.

Some general questions will be about how to represent the meaning of concessive conditional in a linguistic model, and how to derive the notion of expectedness or likeliness compositionally. I investigate the questions from the perspective of the Japanese concessive conditional construction. Since it appears in quite a different morphological composition from that in English, it gives us a new look at the representation of the concessive conditional meaning.

The following sentence is an equivalent to the *even if* sentence (2).

- (4) *John-ga kite-mo Mary-wa kigen-ga warui*
 John-NOM come.GER-*mo* Mary-TOP mood-NOM bad.NONPAST
 ‘Even if John came, Mary would be in a bad mood.’

Like in English, it expresses how unlikely or unexpected it is for Mary to be in a bad mood given John’s coming, considering the normal situation. If the subject in the antecedent clause was ‘Bill’ instead of ‘John’, then it would result in a kind of rejection ‘yeah but...’ as same as in English (3). Note that, however, unlike English *even if*, there is no explicit conditional morpheme. It does not appear to be concessive ‘conditional’ in that sense. Instead, the particle *mo* is attached to the antecedent clause whose verb ‘come’ is in the gerundive form (represented with GER in the gloss).¹

By comparing the morphemes and structure of concessive conditional and other conditionals in Japanese as presented in (5), it is clear that the Japanese concessive conditional does not involve an overt conditional construction. The following types of construction are taken from Kuno (1973:p.168-194).

- (5) a. Perfective *tara* Clauses

John-ga kitara Mary-wa kigen-ga warui
 John-NOM come.if Mary-TOP mood-NOM bad.NONPAST
 ‘If John has come/came, Mary will be in a bad mood.’

¹I adopt a traditional term ‘gerundive’ (Kuno 1973) for convenience. Morpho-phonologically speaking, the gerundive form in Japanese is an affixation of allomorphic *te* or *de* on the verb stem. The syntactic and semantic properties of the gerundive form in Japanese may not be identical to that of the gerundives in English.

b. Assertive *nara* Clauses

John-ga kuru nara Mary-wa kigen-ga
 John-NOM come.NONPAST if Mary-TOP mood-NOM
warui
 bad.NONPAST
 ‘If John is coming, Mary would be in a bad mood.’

c. A clause with the temporal marker *to*

John-ga kuru-to Mary-wa kigen-ga warui
 John-NOM come.NONPAST-*to* Mary-TOP mood-NOM bad.NONPAST
 ‘If/When John comes, Mary would be in a bad mood.’

All sentences in (5) show that the verb form of the antecedent clause must take the past (perfective) form, as in (5a) or the non-past form, as in (5b,c). There is neither a gerundive form verb for ‘come’ nor a particle like *mo*. Thus, comparing the morphological manifestation of concessive conditionals in (4) with that of conditionals in (5a-c), it is apparent that the former is not simply built up from the latter. The situation is a little different from English in which the concessive conditionals *even if* clearly has the conditionality realized morphologically with *if*.

One might hypothesize that the particle *mo* corresponds to *even*. However, the following does not support that view. The sentence (6) is a minimal pair of (4), where *mo* has removed.

(6) *John-ga kite Mary-wa kigen-ga warui*
 John-NOM come.GER Mary-TOP mood-NOM bad.NONPAST
 ‘John came, and (so) Mary is in a bad mood.’

Without *mo*, the sentence is a conjunction ‘and’ of two events. The meaning of sentence (6) is that the propositions that John came and that Mary is in a bad mood both must be true, thus no conditionality at all. In addition to the conjunction of the two events, the construction also expresses some sort of relationship between the two propositions such as *so* in English might represent. The expression signals the speaker’s perspective on the situation such that the Mary’s being in a bad mood is

somehow resulted from John's coming. Thus, there is an causal relationship between two clauses, although it is less explicitly expressed compared to sentences with an overt causal conjunction such as *-kara* 'because' and *-node* 'because'. From this observation, one might expect that *mo* is an element that takes this gerundive 'and'-conjoined sentence and turns that into a concessive conditional.

Another possible hypothesis is that *mo* be an element that introduces not only the notion of unexpectedness/unlikeliness but also conditionality, i.e. *mo* as a combination of *even* and *if*. However, this view seems to go too far beyond the core property of *mo*. The basic property of *mo* is to introduce an additive meaning ‘also’ as the following shows, and conditionality is not involved.

- (7) a. [John]-*mo kita*.
 John-*mo* come.PAST
 'John also came (in addition to someone else).'
- b. [John-*ga kuru-to*]-*mo kangae-rareru*
 John-NOM come.NONPAST-COMP-*mo* think-able.NONPAST
 'It is also conceivable that John will come (besides other conceivable situations).'

When it attaches to the noun *John*, it implies someone other than John that has come in (7a). When *mo* attaches to the tense specified embedded clause *John-ga kuru-to*, it signals some other proposition besides ‘John is coming’. Thus, it is not the case that *mo* inherently has conditionality as a part of the meaning.

In sum, the above facts in Japanese raises a question of the emergence of conditionality in concessive conditionals, so to speak. My hope is to derive the conditional meaning without any overt conditional morpheme and to find a way to represent the notion of ‘unlikeliness’ or ‘unexpectedness’. Solving this puzzle with a compositional analysis includes a careful investigation of particles such as *mo* that is difficult to find the equivalent in other languages (English, for example) by itself. Furthermore, it requires us to reconsider the meaning of (concessive) conditionals and its representation

in a linguistic model.

1.2 A Note on Kinds of Meaning

Let me clarify what I mean by ‘meaning’ and what kind of meaning my analysis is trying to capture. Briefly put, in considering the meaning of concessive conditionals, the present thesis considers all the aspects of meaning together on the same level of representation, either truth-conditional or of conventional implicature, but setting aside conversational implicature. As it is commonly understood, when we say to know the meaning of a certain expression, it is to know the truth-conditions (Heim & Kratzer 1998). That is, it is to know the conditions for the expression to be judged as true or false. If I say *I ate an apple*, we know what the condition is for the sentence is judged as true. Thus, the sentence is judged as true if and only if I, the one who uttered the sentence, ate an apple.

A sentence could convey more meaning than what is said, for example, the class of meaning called ‘conversational implicatures’. One of the classic examples in Gamut (1991:Ch. 6) is a meaning related to the temporal ordering.

- (8) a. Annie took off her socks and jumped into bed. (Gamut 1991:197)
 b. Annie took off her socks and then she jumped into bed.

By saying (8a), there is first of all a truth-conditional meaning that the two things have happened, i.e. the event of Annie’s taking off her socks and the event of her jumping into bed are both true at some point in past. The conversational aspect of the meaning of (8a) is that it happened in that order as described in (8b) as *then* explicate. The conversational meaning that arises in (8a) is said to be ‘cancelable’. Below, what follows *but* cancels the ‘then’ meaning.

- (9) Annie took off her socks and jumped into bed, but I do not know which she did first. (ibid.)

If the temporal sequence meaning in (8a) is conventionalized and always there as a part of truth-condition, then what follows after *but...* should lead it to contradiction.² There is an approach to derive this kind of meaning, e.g. Grice's maxims and the cooperative principles as a part of his theory of language use. As Potts (2005) remarks, the maxims are 'independent of language' (p. 26), and thus not of idiosyncratic properties of the grammar of language. In such a view, the conversational implicature, the 'then' meaning in (8a), is not encoded as a linguistic property of the conjunction *and*.³

For the concessive conditionals, on the other hand, it is clear that the meaning of *even if* is not of conversational implicatures. The meaning of concessive conditionals, the notion of unlikeliness/unexpectedness as we saw in the previous subsection, arises because of the existence of morphemes like *even* and *if*, thus the meaning must be derived conventionally. This should be the case in the Japanese concessive conditional too, for it is the interaction between the gerundive clause and the particle *mo* that is responsible for the 'even if' meaning. This is also supported by the cancelability test as I show below.

- (10) *John-ga kite-mo Mary-wa kigen-ga warui*
 John-NOM come.GER-*mo* Mary-TOP mood-NOM bad.NONPAST
 'Even if John came, Mary would be in a bad mood.'

- a. #...*Taitei John-ga kuru-to Mary-wa kigen-ga*
 Usually John-NOM come.NONPAST-*to* Mary-TOP mood-NOM
warui-kedo.
 bad.NONPAST-though

²Assuming that a conjunction *but* does not allow a pair of contradicting truth-conditions to be conjoined together in the discourse.

³Levinson (2000:199) introduces a following example in English from Wilson (1975): *Driving home and drinking three beers is better than drinking three beers and driving home*. This shows that the temporal sequence meaning is required, or otherwise the comparison between *A and B* and *B and A* in the form *A and B is better than B and A* would be the same, which should make the comparatives meaningless because the comparison is made between the two same things. This is called 'pragmatic intrusion' (Levinson 2000) where the truth-condition of the whole sentence, the comparative, depends on the local and less explicit meaning like 'then'. This might doubt the cancelable property of the 'then' meaning in 'and' conjunction. However, it might depend on how to analyze the meaning of comparatives, and I will leave such an issue open.

‘...Though usually, when John come, Mary is in a bad mood.’⁴

- b. #...*Mochiron John-ga kureba, sore-wa*
Of course John-NOM come.CONDITIONAL that-TOP
atarimae-da-kedo.
expected-COPULA.NONPAST-though
‘...Though, of course, that is expected if John came.’

Besides the above two aspects, the truth-conditional meaning and conversational implicatures, there are several other terms and concepts that surround the non-truth-conditional aspect of meaning. The most common ones are ‘presuppositions’ and ‘conventional implicatures’. Whatever the complicated history of misuse or misunderstanding there is behind certain terminology, in my present analysis, I will treat all the aspects of meaning, other than the one of conversational implicatures, to be a part of conventionalized meaning along with truth-conditions that can be derived in terms of linguistic properties rather than language use. The two terms may be used interchangeably in the present thesis, since the distinction is not crucial for my purpose.⁵ I am following the strategy taken by Karttunen & Peters (1979) in the following sense as described by Gamut: “[...] the value of the Karttunen and Peters article is not that it distinguishes conventional implicatures from presuppositions, but that it presents a method which demonstrates how non-truth-conditional aspects of meaning can be dealt with in the same formal recursive manner as truth-conditional ones” (Gamut 1991:218).

In sum, there are several different terms and notions to label different kinds of meaning, such as truth-condition, conversational implicature, conventional implicature, and presupposition. What I focus on is all those kinds except conversational implicature. Thus, it is no important for the purpose of the thesis to make a precise distinction between truth-condition and conventional implicature (presupposition).

⁴I follow Kuno’s (1973) treatment of *to* as a ‘temporal marker’.

⁵However, in Potts (2005, 2007), where he analyzes the ‘supplementary expressions’ as conventional implicatures, the distinction is made more clearly in terms of cancellation under a certain condition and projection property (projection plugs).

Now that it is clearer what kind of meaning we should look for, let us return to the target expression (2) and (4). It is important to notice that the notion of ‘expectedness’ or ‘likeliness,’ is conventionalized; it arises because of the certain construction (for example having a lexical item *even* in English), and not just because of what the situation was like when the sentence was uttered or what the feeling of the speaker/addressee was like. For Karttunen & Peters (1979), *even* is an element that does not affect the truth-condition of the sentence but that contribute to non-truth-conditional and conventional meaning.⁶ The ‘even’ meaning consists of two parts: (i) an additive or existential meaning, and (ii) a scalar meaning with respect to likeliness or expectation. For example, sentence (11) is analyzed as consisting of several aspects of meaning (12a-c).

(11) *Even Bill likes Mary.*

- (12) a. Bill likes Mary.
 b. Other people besides Bill like Mary.
 c. Of the people under consideration, Bill is the least likely to like Mary.
 (From Karttunen and Peters 1979: (16-18))

In order for (11) to be true and felicitous, it first has to be that Bill likes Mary (12a). Furthermore, the sentence says that there are people other than Bill who likes Mary (12b), i.e. the additive/existential meaning. It also says that Bill is the least likely one to like Mary of the people under consideration (12c), i.e. the scalar meaning. In Karttunen and Peters’ sense, the aspect of meaning (12a) is the ‘truth-condition’ of the sentence (11), and the rest (12b-c) is the presupposition (or the conventional implicature, in their original terminology).

Turning to concessive conditional (2), it is not clear, compared to example (12), what exactly the truth-condition of the *even if* sentence is, based on the above distinc-

⁶They call it ‘(conventional) implicatures,’ and others point out that it is actually ‘presuppositions.’ (Potts 2005:Ch.2). I do not think that, in any event, the distinction between truth-conditional and non-truth-conditional is particularly a critical issue in the present analysis, as long as it is not about the conversational implicatures.

tion. Suppose *even* only contributes to the non-truth-conditional (but conventional) aspect of meaning following Karttunen and Peters. Does it follow then, in terms of the truth-condition, (2) has the meaning (13a)?

(13) A tentative meaning for *even if John came, Mary would be in a bad mood*:

- a. If John came Mary would be in a bad mood.
- b. There could be other situations besides John's coming.
- c. Of the situations under consideration, John's coming is the least likely.

Suppose the description in (13) is a correct view. Then, the sentence (2) *even if John came, Mary would be in a bad mood* would mean that John's coming is unlikely/unexpected compared to other situations, from (13b,c). However, let us recall scenario (1). It does not say that the event of John's coming itself is unlikely. Rather, we want to have a meaning that says 'it is unlikely/unexpected for Mary to be in a bad mood by John's coming'. Thus, in extending Karttunen and Peter's view of *even*, one should reconsider when determining the truth-condition of the *even if* expressions as well as the other aspects of meaning. As I noted, the main purpose of this thesis is not to sort the concessive conditional meaning into truth-condition and other kinds of meaning. Although I do not present a comprehensive analysis on the English *even if*, my compositional analysis on the Japanese *even if* sentences, which do not exhibit a morphological one-to-one correspondence to the English *even* and *if*, will hopefully shed light on the general question about how to represent the overall meaning of concessive conditionals.

1.3 An Overview

In section 1, I introduced the target construction, the concessive conditional construction, and explained what the puzzle is. I also noted what I mean by the 'meaning' and what kinds are relevant in my analysis. In section 2, first I review some of the previous works on English *even if* (Bennett 1982, Guerzoni & Lim 2007), and then

on the Japanese *even if* expression (Fujii 1989) as well as on the closely related ‘even’ expression *demo* (Nakanishi 2006, Yoshimura 2007). Section 3 presents my compositional analysis on the Japanese concessive conditional construction. It consists of two parts. First I consider the gerundive construction without *mo* and derive the meaning of ‘and’-conjunction (section 3.1-3.2). Then, I propose a denotation for *mo* that would be added on to the analysis of gerundive constructions (section 3.3-3.4). The meaning is derived step by step via functional application following the framework laid out in Heim & Kratzer (1998). Section 4 summarizes the main points in my proposal and their implications. Additional data is presented at the end where necessary, for example, the deontic ‘may’ modal construction, the so-called Universal Concessive Conditional that shows an interaction of *wh*-phrases and concessive conditionals, and morphological variations across different registers/dialects of Japanese.

2 Previous Studies

I will first review Bennett (1982) and Guerzoni & Lim (2007) in section 2.1, and point out some achievements and problems in the compositional analysis of the concessive conditionals. In section 2.2, I will turn to the meaning and usage of the Japanese concessive conditionals (Fujii 1989). I will also review some of the recent works on the Japanese *even*-like item *demo* (Nakanishi 2006, Yoshimura 2007). Their works concentrate particularly on the relationship between *demo* and noun phrases (e.g. [*Mary-demo*] *kita* ‘Even Mary came’). Therefore, their compositional analyses on the Japanese ‘even’ item requires some modification to my analysis on concessive conditionals, where it involves conditionality and clausal conjunctions. Nevertheless, it is worth reviewing their work on *demo* for my analysis, for *demo* actually consists on the same elements as concessive conditionals (i.e. the gerundive form and *mo*).

2.1 English *even if*

2.1.1 Bennett (1982) and the ‘Consequent Entailment Problem’

Bennett (1982) makes a distinction between two kinds of *even if* meaning. He calls one of them ‘Introduced If Conditionals’ as exemplified in (14a) and the other ‘Standing If Conditionals’ as in (14b). The distinction is based on the generalization by Pollock (1976), in which he calls the former ‘standard use of *even if*’ and set aside the other as exceptional.

(14) a. *Introduced if Conditional*

(Situation: I stand looking at the ranging water of the river and the ruins of the bridge...)

Even if the bridge were standing, I would not cross.

↔ I would not cross.

b. *Standing if Conditional*

(Situation: John’s boss is so puritanical.)

Even if he drank just a little, she would fire him.

\hookrightarrow She would fire him if he drank some.

According to Pollock (1976) and Bennett (1982), the truth of consequent *I would not cross* is implied (\hookrightarrow) in the Introduced *if* conditional (14a), but the consequent *she would fire him* in the Standing *if* conditional (14b) is not. To paraphrase, the natural reading of (14a) is almost saying as ‘I would not cross (no matter what)’ or ‘I would not cross if the bridge were standing or not’, whereas in (14b), it is not ‘she would fire him no matter what’ but rather it is ‘she would fire him if he drank some’. This contrast is sometimes referred to as the ‘Consequent Entailment Problem’ (Lycan 1991, Baker 1994).

Bennett (1982) then gives a set of conditions (15) for a concessive conditional sentence S to be felicitously asserted.

- (15)
- The S* is true,
 - There is a neighbor sentence (S_j) which is known and naturally related to S*, and
 - S_j is more expectably true than S* is.

This conditions applies equally to both kinds of *even if* sentences. However, what counts as S* and S_j look different depending on whether it is of Introduced or Standard *if* conditionals as shown below.

(16) *Introceded If Conditionals*

S: *Even if the bridge were standing I would not cross.*

S_j: I would not cross.

S*: If the bridge were standing I would not cross.

(17) *Standing If Conditionals*

S: *Even if John drank just a little she would fire him.*

S_j: If John drank a lot she would fire him.

S*: If John drank just a little she would fire him.

By applying the conditions in (15), the two kinds of *even if* meaning can be described in the following way.

- (18)
- The S^* ‘If the bridge were standing I would not cross’ is true,
 - There is a neighbor sentence (S_j ‘I would not cross’) which is known and naturally related to S^* , and
 - S_j ‘I would not cross’ is more expectably true than S^* ‘If the bridge were standing I would not cross’ is.
- (19)
- The S^* ‘If John drank just a little she would fire him’ is true,
 - There is a neighbor sentence (S_j ‘If John drank a lot she would fire him’) which is known and naturally related to S^* , and
 - S_j ‘If John drank a lot she would fire him’ is more expectably true than S^* ‘If John drank just a little she would fire him’ is.

As Bennett remarks, the contrast is attributed to the difference in the scope that *even* may take. According to him, *even* is a kind of operator that has a certain scope of operation and that provides what he calls ‘neighbor’ sentences (labeled S_j). Notice that the S_j of the Introduced *if* conditional only consists of the consequent clause, but the one of the Standing *if* conditional consists of both the antecedent and consequent clauses. “It’s difference between a sentential vehicle for ‘even’ which happens to be a conditional, and one whose conditionality is itself a result of the operation of ‘even’, so to speak.” (Bennett 1982:411)

Bennett’s (1982) analysis may be a good start to grasp the overall meaning of concessive conditionals. However, it still remains unclear how to obtain a relevant neighbor sentence for each *even if* sentence. Furthermore, we do not know the precise meaning of *even* itself and how that interact with the conditionals.⁷

2.1.2 Guerzoni and Lim (2007)

Given such unanswered questions, Guerzoni & Lim (2007) present a compositional analysis on *even if* sentences with a denotation for *even*. For them *even* is a focus

⁷Baker (1994) points out other potential problem with Bennett’s account on the Introduced *if* conditionals.

sensitive operator that does not affect the truth-conditional meaning of the sentence that it applies to, but only adds some kind of presuppositional meaning, following Karttunen & Peters (1979). The following (20) is the formalization that gives the two kinds of presuppositional meaning (the additive meaning (20a) and the scalar meaning (20b)), and the truth-conditional meaning (20c). (Symbols ‘p, q’ stand for variables for propositions, ‘w’ for an evaluation world, ‘C’ for a set of contextually salient propositions.)

- (20) $\llbracket \text{even} \rrbracket (C)(p)(w)$ is defined iff
- a. $\exists q \in C [q \neq p \ \& \ q(w)=1] \ \&$
 - b. $\forall q \in C [q \neq p \rightarrow p <_{\text{likely/expected}} q]$
 - c. If defined, then $\llbracket \text{even} \rrbracket (C)(p)(w) = p(w)$

Adopted from (4) in Guerzoni and Lim (2007)

The denotation (20) defines a condition for an *even if* sentence to be felicitous in a certain discourse context. When *even* is applied to the sentence $p(w)$ in a certain discourse context C (i.e. a proposition that takes a variable w , the evaluation world), it first presupposes that there exists another proposition q that is not the same as p (the additive meaning (20a)). It also presupposes that comparing p and q , p is less likely than q (the scalar meaning (20b)). The basic meaning of $p(w)$ does not change with or without the word *even* (the truth conditional meaning (20c)).

The following shows the structure assumed for the Standing *if* conditional.

- (21) $\llbracket \text{even} \llbracket \text{if John drank one ounce of whiskey he would be fired} \rrbracket \rrbracket$

This shows that the word *even* is a sentential operator that applies the whole sentence $\llbracket \text{if John drank one ounce of whiskey he would be fired} \rrbracket$. Following the proposed denotation (20), the truth-condition of the *even if* sentence *even if John drank one ounce of whiskey he would be fired* is equivalent to *if John drank one ounce of whiskey*

he would be fired. A difference is that, with *even*, the sentence is has two kinds of presuppositions: the additive and scalar meaning.

In order to formalize and explicitly describe what those presuppositional meaning are, Guerzoni & Lim (2007) adopt Rooth’s focus/alternative semantics. As Rooth (1997) explains, there are two distinct levels of semantic interpretations in the semantic model. One is called the ‘ordinary semantics’ level, whose interpretation is represented with $\llbracket \cdot \rrbracket^O$, and the other is the ‘alternative semantics’ level, with $\llbracket \cdot \rrbracket^F$. While the ordinary level computes the truth condition, the alternative level derives the non-truth-conditional meaning such as focus by producing a set of alternatives. In Guerzoni and Lim’s (2007) view, there is always a focus assigned somewhere in the *even* involved sentences. The interpretation of the focus meaning is a key to derive what Bennett (1982) called the ‘neighbor’ sentences that is crucial for the likeliness scalar meaning.

In the example (21), the phrase *one ounce* is focus assigned according to their analysis. Roughly, at the level of alternative semantics, the following set of alternative propositions is produced under such condition.⁸ Symbol ‘d’ stands for a variable of degree.

- (22) a. $\{p: \exists d \& p = \text{that if John drank } d\text{-much whiskey she would fire him}\}$
 b. $\left\{ \begin{array}{l} \text{that if John drank one ounce of whiskey she would fire him,} \\ \text{that if John drank one and half ounce of whiskey she would fire him,} \\ \text{that if John drank two ounces of whiskey she would fire him,} \dots \end{array} \right\}$

(Guerzoni and Lim 2007 (22))

We may think this as a process of deriving set of alternative propositions (neighbor sentences) that varies in terms of the amount of whiskey. This set of alternatives is supposed to fix the range of C in the denotation (20).

⁸I interpreted ‘&’ as ‘such that’.

The denotation (20) would predict the following meaning for the Standing *if* conditional (21).

(23) a. ADDITIVE MEANING

There is a proposition q in the set $C(=(22))$ that is not same as $p(=$ ‘if John drank one ounce of whiskey he would be fired’)

b. SCALAR MEANING

‘If John drank one ounce of whiskey she would fire him’ is less likely than all other alternatives in $C(=(22))$ ⁹

c. TRUTH CONDITION¹⁰

The truth condition of *even if John drank one ounce of whiskey she would fire him* is equivalent to that of *if John drank one ounce whiskey she would fire him*.

In this way, their compositional analysis contributes to the formalization of concessive conditional. It recaptures Bennett’s (1982) notion of neighbor sentences by adopting the focus/alternative semantics.

However, in their attempt to uniformly derive the two kinds of ‘even if’ meanings, they introduce an additional null morpheme in the analysis to account for Introduced *it* conditionals, which may make their proposal less convincing. The null morpheme AFF appears in the antecedent clause, and it is focused in the Introduced *it* conditional.

(24) [even [if [AFF]_F the bridge were standing I would not cross]]

This AFF is supposed not to affect to the meaning at the ordinal semantics level as shown in (25a), but does so at the alternative level when it has a focus assigned as in (25b).

⁹As it has been pointed out by Marcin Morzycki, there is no constraint that states the amount ‘on ounce’ to be the minimum amount among the alternative set. So, there could be ‘a drop of whiskey’ or ‘a sip of whiskey’ for example in the alternative set. However, it should not be that drinking one ounce and get fired is less likely than drinking a sip of whiskey and get fired.

¹⁰Guerzoni and Lim (2007) call it ‘assertion’ instead of ‘truth condition’. The two terms may not be defined the same. According to Stalnaker (1978) for example, the term ‘assertion’ may include the additive and scalar meanings as well. I tentatively interpret their ‘assertion’ as ‘truth condition’ for simplicity.

- (25) a. $\llbracket \text{AFF} \rrbracket^O = \lambda t. t$
 b. $\llbracket \text{AFF} \rrbracket^F = \{ \lambda t. t, \lambda t. t=0 \}$

(Adopted from (15) and (17) in Gueizoni and Lim (2007))

They explain that the focus assigned AFF produces the following set, which will determine the range of C in the denotation of *even*.

- (26) $C = \left\{ \begin{array}{l} \text{that if the bridge were standing I would not cross,} \\ \text{that if the bridge were not standing I would not cross} \end{array} \right\}$

(Adopted from (18) in Gueraoni and Lim (2007))

This analysis explains how the Introduced *if* conditional seems to imply the truth of the consequent ‘I would not cross’ independently. However, from a technical point of view, it is not clear how a set of truth values $\{0, 1\}$ can be transformed into a set of propositions (26). Even though it could, positing a null morpheme should be done with care or otherwise it may be ad hoc. To support the adequacy of the null morpheme, we may look for a condition that restricts the distribution of the null morpheme. For example, there seems to be no reason for the non-existence of the focus assigned AFF in the Standing If sentence. It is also unclear why it should only appear in the antecedent clause (*if AFF the bridge were standing*) and not elsewhere (e.g. *if the bridge were standing I AFF would not cross*).

Furthermore, in their account, the set of propositions are in the form of English conditional ‘if... (then)’ as in (22, 26). However, the English *if... (then)* expression is not equivalent to a logical connective such as material implication in the propositional logic (cf. Kratzer (2002, 1986)). Therefore, it may be not adequate to represent a list of propositions using English *if... (then)*, since English *if...* may be tied to non-truth-conditional meaning. My concern is that, in Guerzoni & Lim’s (2007) account, there is no consideration on the conditionality itself and its interaction with concessive

meaning. Accordingly, the following contrast may imply the interaction of conditional and *even*.

- (27) a. If John drank one ounce of whiskey (then) she would fire him.
b. Even if John drank one ounce of whiskey (*then) she would fire him.

The optionality of *then* is not available when there is *even*. Although it depends on how to analyze *then*, an implication is that the conditional part of concessive conditional may not be equivalent to the conditional without ‘even’.

2.2 Japanese ‘Even (If)’ Expressions

2.2.1 Fujii (1989)

Fujii (1989) claims that the meaning of the gerundive-*mo* construction in Japanese as exemplified in (4) is different from what an *even if* sentence in English means. According to her, the Japanese gerundive-*mo* construction has broader range of use and it could be translated in *even if*, *even when*, *even though*, or *although* in English.¹¹ However, her claim is not problematic for my analysis, since her description about the Japanese gerundive-*mo* construction, as I summarized in (28), is the property of concessive conditional in general and it is not limited to the Japanese gerundive-*mo* construction.

- (28) Fujii’s (1989) generalization: In the Japanese gerundive-*mo* construction,
- a. it is not specified whether or not the antecedent clause is accepted as true by the speaker, and
 - b. the consequent clause expressed is contrary to the consequent clause expected, given the truth of the antecedent clause.

As it will be shown in section 3, my analysis will account for the observation in (28).

¹¹It is another issue in what way the related expressions in English (such as *even if*, *even when*, *even though*, and *although*) are similar and whether they can be also analyzed as a kind of concessive conditionals.

Although Fujii’s (1989) observation captures the meaning of the Japanese gerundive-*mo* sentences, she does not propose a compositional analysis to account for the concessive conditional meaning. To my knowledge, no compositional analysis is available for the Japanese gerundive-*mo* construction. I will now turn to some previous studies on *demo*, a kind of *even* expression in Japanese (Nakanishi 2006, Yoshimura 2007). However, their analyses on the expression *demo* is not about concessive conditionals. The reason I still refer to their works here is because they present an application of Karttunen & Peter’s (1979) view on *even* to the Japanese data in a compositional semantic framework. Moreover, since the expression *demo* can be decomposed into *de-mo* (copula *da* in the gerundive form and *mo*), I believe that it is constructionally related and that my analysis on concessive conditional could be extended to the understanding of *demo* in future.

2.2.2 Nakanishi (2006)

For Nakanishi (2006), *demo* and *mo* are both ‘even’, which I will argue against later. Her focus of the analysis is where *demo/mo* appears adjacent to a noun phrase.

- (29) a. *John-wa* [*Hon A*]_F {-*mo*/-*demo*/??-*dake-demo*} *yon-da*.
 John-TOP book A {-even/-even/-only-even} read-PAST
 ‘John even read Book A.’
- b. *John-wa* [*Hon A*]_F {-*mo*/-*demo*/*-*dake-demo*} *yom-ana-katta*.
 John-TOP book A {-even/-even/-only-even} read-NEG-PAST
 ‘John didnt even read Book A.’

(adopted from (9) and (10) in Nakanishi (2006))

Similarly to the English *even*, both sentences (29) involve a scalar meaning. As we have seen in the ‘even if’ analysis by Gueroni & Lim (2007), the scalar meaning of ‘even’ can be described in terms of a set of alternatives associated with focus. Following Rooth’s alternative/focus semantics, the set of alternatives can be achieved by having a set of propositions that minimally differs where the focus is assigned, i.e. by substituting the focus marked ‘Book A’ with other candidates.

- (30) a. John even read [Book A]_F
 b. Among the set of propositions $C = \left\{ \begin{array}{l} \text{John read Book A,} \\ \text{John read Book B,} \\ \text{John read Book C, ...} \end{array} \right\}$,
 [John read Book A] is the **least likely** thing to happen.
- (31) a. John didn't even read [Book A]_F
 b. Among the set of propositions $C = \left\{ \begin{array}{l} \text{John read Book A,} \\ \text{John read Book B,} \\ \text{John read Book C, ...} \end{array} \right\}$,
 [John read Book A] is the **most likely** thing to happen.

A puzzle is that, as I bold faced in (30b) and (31b), there are two options for the scalar meaning ('the least likely' or 'the most likely') depending on whether there is a negation in the sentence or not.

A possible solution is to have the scope of *even* over the negation.

- (32) a. $\text{even} > \neg$
 b. Among the set of propositions $C = \left\{ \begin{array}{l} \text{John didn't read Book A,} \\ \text{John didn't read Book B,} \\ \text{John didn't read Book C, ...} \end{array} \right\}$,
 [John didn't read Book A] is the **least likely** thing to happen
 ([John read Book A] is the most likely thing to happen).

This would prevent us from having a lexical ambiguity theory that assumes two kinds of 'even': one that derives the 'least likely' meaning in (30) and another that derives the 'most likely' meaning in (31).¹²

Nakanishi (2006) argues, based on the interaction with *dake* 'only' as in *dake-demo* 'only-even', that the Japanese *even* items (*demo* and *mo*) support the scope theory. Essentially, her analysis on *demo/mo* follows Karttunen and Peter's 'even'.

- (33) $\llbracket -demo \rrbracket^w(C)(p)$ is defined iff $\forall q \in C [q \neq p \rightarrow q >_{\text{likely}} p]$ (Nakanishi 2006 (26))

¹²However, as Giannakidou (2007) points out, it leaves us with a question why such movement (the raising of *even*) is obligatorily required to fix the order $\text{even} > \neg$, and never allows an option of the hierarchical order of $\neg > \text{even}$.

According to Nakanishi (2006), *demo*, like the English *even* does not change the truth condition of the sentence ‘John read Book A’, however, it introduces a scalar meaning, i.e. ‘John read Book A’ is the least likely thing among all other considerable situations (e.g. {John read Book B, John read Book C, ...}).¹³

In short, we may view this as an example of applying an ‘even’ analysis in English to Japanese data. The problem is that the word *demo* does not appear in the concessive conditional construction. If, as Nakanishi (2006) assumes, *demo* and *mo* are both ‘even’, we may adopt the denotation (33) to the gerundive-*mo* construction and modify it so that it can take a clausal argument for example. However, I think *demo* and *mo* should be kept distinct from each other from both theoretical and empirical points of view. As Nakanishi (2006) herself mentions in her footnote 6, the grammaticality judgement of *demo*-sentences is not stable. As we will see below, this is explained by that *demo* and *mo* are indeed different and their grammaticality or acceptability are judged on different property of the sentence.

2.2.3 Yoshimura (2007)

Yoshimura (2007) takes the unstable judgment result for *demo* seriously, and argues that *mo* and *demo* should be analyzed separately because the acceptability of the two morphemes depend on different licensing conditions. The following data (34) illustrates that *demo* and *mo* appear under different conditions.¹⁴

- (34) a. *i-tteki*-{??*demo*/**mo*} *non-da.*
 one-CL_{time}-{DEMO/MO_{NPIpitch}} drink-PAST
 ‘#(I) drank even one drop.’

¹³Nakanishi (2006) denies the need of the existential presupposition.

¹⁴In this case, the accent pattern of the phrase with *mo* makes a difference in meaning. Thus, for example, a phrase *i.chi.pe.e.ji.mo.* ‘one-page-*mo*’ with the LHHHHH pattern (where L= low, H= high) would be an NPI element (or an Negative Cord Item (Watanabe 2004)) ‘not even one page’, requiring an overt negation that c-commands it within the same clause, whereas the same phrase with the LHHLL pattern would be ‘one page’ accompanied with an implicature/presupposition ‘one page is surprisingly a lot’ without requiring any overt negation in the sentence. Let us set aside of the latter one.

- b. *i-tteki*-{*demo*/*mo*} *noma-naka-tta.*
 one-CL_{time}-{DEMO/MO_{NPIpitch}} drink-NEG-PAST
 ‘(I) didnt drink even one drop.’
- c. *i-kkai*-{*demo*/**mo*} *sensei-ni hanashi-ta no?*
 one-CL_{time}-{DEMO/MO_{NPIpitch}} teacher-to talk-PAST Q
 ‘Did (you) talk to the teacher even once?’

Yoshimura (2007; Ch.5 (75-77))

As the contrast (34a,c) and (34b) shows, *i-tteki-mo* should appear with negation. On the other hand, *i-tteki-demo* is natural only when the sentence involves a so-called ‘affective operator’, such as Yes-No questions as in (34c), conditionals, imperatives, generics, emotive verbs (e.g. ‘be surprised (at)’), and intentional verbs (e.g. ‘want’). Furthermore, it is important to note that *demo* and *mo* result in different degrees and kinds of unacceptability. On the one hand, the licensing failure of *mo*_{NPI} (34a, c) results in ‘sharp ungrammaticality’ as indicated by ‘*’. On the other hand, the failure results in a ‘pragmatic oddity’ as indicated by ‘#’ in the case of *demo* as shown in (34a, b). This suggests that *demo* and *mo* are different and the contrast should be represented in a linguistic model.

2.3 Summary

As for the expression *even if* in English, there was an issue on the two kinds of ‘even if’ meaning (Pollock 1973). Bennett (1982) analyzes the two meanings, however, leaving a room for a conventional way to derive the unexpectedness meaning. Guerzoni & Lim (2007) attempt a compositional analysis for *even if* to derive the two kinds of ‘even if’ meaning uniformly by adopting Rooth’s alternative/focus semantics and Karttunen & Peter’s (1979) view of *even*. However, there were some problems with respect to the null morpheme in the Introduced *if* conditional and the conditionality in concessive conditional.

For the Japanese concessive construction, first, we examined the basic meaning of the gerundive-*mo* construction and its similarity to the meaning of *even if* in English (Fujii 1989). We then turned to some application of the English *even* analysis to the Japanese *demo*, another ‘even’-like expression, which is morphologically closely related to concessive conditional. Like Guerzoni & Lim (2007), Nakanishi (2006) adopts the focus/alternative semantics and Karttunen and Peter’s view on *even* to derive some ‘even’ meaning in Japanese. While no distinction has been made between the two kinds of ‘even’ elements (*demo* and *mo*) in Nakanishi (2006), Yoshimura (2007) argues that the two are different.

From these previous studies, I point out some significance of my analysis on the Japanese concessive conditional. First of all, since there has been no compositional analysis on the gerundive-*mo* construction, it would be worth presenting one. There may be a way of adopting the denotation for *demo* by Nakanishi (2006) or Yoshimura (2007), and modify it so that we can consider the interaction of the ‘even’ meaning and conditionals or a similar clausal relationship, extending the case of the ‘even’ element that is attached to non-clausal constituents. However, it would require a decomposition of *demo*, since there is no independent word *demo* in concessive conditionals, but the gerundive construction and *mo*. The decomposition itself is reasonable, knowing that *demo* indeed consists of the gerundive form of copula *de* and *mo*. The difficulty is that we do not want to assign conditional meaning to the gerundive form, as we confirmed in section 1. The gerundive construction is merely a sentential ‘and’ conjunction. Furthermore, we do not want to take an approach that assumes *mo* to be ‘even’ by itself, since that would go back to Yoshimura’s (2007) argument. Therefore, my attempt of deriving the meaning of gerundive construction and proposing a denotation for *mo* that would transform the gerundive into the concessive conditional will support the view that the distinction between be made between *demo* and *mo*. Moreover, my approach, particularly in deriving the conditionality from the absence

of conditional construction, will shed light on the English *even if* expressions and the meaning of concessive conditionals in general. I also hope to explore the interaction between conditionality and the notion of expectedness, which has not been concerned sufficiently in Guerzoni & Lim (2007).

3 Constructing Japanese Concessive Conditionals

This section presents my analysis of the Japanese concessive construction. In order to see how the meaning of concessive conditional is derived step by step, first, I will consider the structural relationship of the two clauses involved in concessive conditionals. In section 3.1, I show that the gerundive construction in Japanese functions like the sentential ‘and’ conjunction. In section 3.2, I propose a denotation for the gerundive morpheme to account for the meaning observed in the previous section. In section 3.3, I will turn to the basic properties of *mo*, which is the additive meaning but with the unexpectedness meaning under a certain structural condition. I then propose a denotation for *mo* in section 3.4. Lastly, the derivation is shown to see how the gerundive construction turns into the concessive conditional by the addition of *mo*.

3.1 On The Gerundive Construction

As we saw in section 1 and as repeated below, the sentence (35) resulted in an ‘and’ conjunction, as in (36), when there is no *mo*.

- (35) [*John-ga kite*]-*mo* *Mary-wa kigen-ga warui*
John-NOM come.GER-*mo* Mary-TOP mood-NOM bad.NONPAST
‘Even if John came, Mary would be in a bad mood.’

- (36) [*John-ga kite*] *Mary-wa kigen-ga warui*
John-NOM come.GER Mary-TOP mood-NOM bad.NONPAST
‘John came, and (so) Mary is in a bad mood.’

This suggests that the fundamental operation introduced by the gerundive construction is the clausal conjunction ‘and’. The two conjoined propositions, John’s coming and Mary’s being in a bad mood, are both true.

The following set of data supports that the gerundive formation is the basic ‘and’ conjunction strategy in Japanese.

- (37) a. *Mary-wa* [*yasashikute*] [*kawaii*].
 Mary-TOP kind.GER cute.NONPAST
 ‘Mary is kind and cute.’
- b. *John-wa* [*hon-o yonde*] [*terebi-o mita*].
 John-TOP book-ACC read.GER TV-ACC watch.PAST
 ‘John read a book and watched TV.’
- c. [*John-ga kite*] [*Mary-ga kaeru*].
 John-NOM come.GER Mary-NOM went home.NONPAST
 ‘John comes and Mary goes home.’

(As an answer to: What usually happens in the office while I am out?)

- d. [*John-wa kite*] [*Mary-wa kaeru*].
 John-TOP come.GER Mary-TOP went home.NONPAST
 ‘John comes and Mary goes home.’

(As an answer to: Do both John and Mary join the reception after the talk?)

There is no free morpheme like *and* in English that combines adjectival phrases, verb phrases, and clauses. Instead, the first conjunct (phrase/clause) takes the gerundive form.¹⁵ Note that the gerundive clause lacks tense, i.e. the interpretation of the temporal information depends on the other clause that does have the past/non-past morpheme. For example, (37b) indicates John’s reading and watching TV happened in past, and (37c) indicates that John’s coming and Mary’s going home both happen within the same interval of time (in this particular example, ‘while you are out’). These facts suggest that the gerundive construction in Japanese is a strategy to combine clauses or phrases that takes tense morpheme.

Let us focus on the clausal conjunctions (37c, d), which consists of two propositions with different subjects. I set aside constructions (37a, b), which presumably is a coordination of adjective phrases or verbal phrases, and not a clausal conjunction.¹⁶ As is also the case in English, a natural interpretation of (37c) may have a temporal

¹⁵There is a particle *to* ‘and’ as in [*John-to Mary*]-*ga kita* ‘John and Mary came’, but this can coordinate nominals only, and it cannot connect adjectival/verbal phrases and clauses.

¹⁶It is possible to analyze (37a, b) as a clausal conjunction as well, for example, by assuming a null pronoun (e) as in structure *Mary₁-wa* [*e₁ yasashikute*] [*e₁ kawaii*]. I will leave this option.

sequential meaning ‘then’, i.e. ‘John came and (then) Mary left’. I have explained in section 1.2 that this aspect of meaning is cancelable, thus it is probably not lexically encoded as a part of the meaning of *and*. The following shows that, in Japanese too, such temporal meaning ‘then’ in (37c) can be cancelled by the subsequent utterance ‘I don’t know which happens first though...’.¹⁷

- (38) (*Taitei watashi-ga i-nai-aida-ni John-ga kite Mary-ga*
 (Usually I-NOM exist-NEG-while-at) John-NOM come.GER MaryNOM
kaeru.
 go home.NONPAST
 ‘(Usually, while I am away,) John comes and Mary goes home.’
 ...*Docchi-ga-saki-ka shiranai-kedo...*
 ‘I don’t know which happens first though...’

This fact suggests that the temporal sequential meaning is not conventionalized in the gerundive morpheme itself, just as it was for the English *and* (see section 1.2). The sentence in (37d) too does not necessarily imply which occurred first. As an answer to a particular question as exemplified in (37d), probably the two things happens at the same time or within the same interval of time (whenever ‘after the talk’ indicates), thus no temporal sequential meaning.

As a note, however, there are certain cases where it is difficult to deny the temporal meaning. That is when the gerundive clause is subordinated, rather than coordinated, to the tensed clause. The distinction between subordination and coordination of the gerundive clause can be made by observing where the topic marker *wa* appears. For example, sentence (37c) does not involve the topic marking at all, and the sentence is coordination. To see sentence (37d), both subjects of the two clauses are equally topic-marked, and this too is coordination, not subordination. On the other hand, when there is a topic marking in the second conjunct only and not in the gerundive

¹⁷I thank Yasutada Sudo for confirming the cancelability of constructions in (38, 39), and for pointing out a possible interpretation for (40a).

clause, it is subordination. As exemplified in (39), in the subordination type gerundive construction, denying the temporal sequential meaning will result in inconsistency.

- (39) (*Taitei watashi-ga i-nai aida-ni John-ga kite Mary-wa*
(Usually I-NOM exist-NEG while-at) John-nom come.GER Mary-TOP
kaeru.

go home.NONPAST

‘(While I am away,) John comes, and (then/so) Mary goes home.’

#*Docchi-ga saki-ka shiranai-kedo...*

‘I don’t know which happens first though...’

There is also a sense that the speaker of the sentence (39) thinks that Mary’s going home is somehow triggered by John’s coming. This sense is based on what the speaker knows about the relationship between the two events. For example, if the speaker knows that Mary does not want to see him for some reason, the combination of the two events ‘John came’ and ‘Mary goes home’ is a reasonable and expected situation. The sense of ‘reasonable’ or ‘expected’ based on what is known is signaled in the asymmetrical type gerundive construction, and it is not cancelable unlike in (38).

Furthermore, the following contrast indicates that the topic marking may change the structural relationship of the conjuncts.

- (40) a. COORDINATION

[*Mary-ga*]₁ *John-ga kite e₁ kaetta.*
Mary-NOM John-NOM come.GER go home.PAST
Roughly: ‘John came, and MARY went home.
(It is Mary who went home and not Bill.)’

- b. SUBORDINATION

[*Mary-wa*]₁ *John-ga kite e₁ kaetta.*
Mary-TOP John-NOM come.GER go home.PAST
‘John came, and (then/so) Mary went home.’ (= (39))

In (40a), dislocating the subject of the second conjunct typically results in the focus meaning, or a kind of contrast between Mary and other people the speaker has in

mind. Therefore, dislocation of the subject *Mary-ga* in the coordination structure changes the original meaning of the sentence in some sense. On the other hand, the topic marked subject *Mary-wa* can occur at the beginning of the sentence as in (40b) without changing the meaning, i.e. without gaining the focus meaning. Compared to (40a), (40b) sounds neutral and canonical.¹⁸ From the fact that no meaning change occurs in the subordinate gerundive construction, I assume that the gerundive clause (*John-ga kite*) in (40a) is structurally and semantically subordinated under the main clause (*Mary-wa kaetta*), whereas in (40b), the conjoined clauses are a case of coordination at least semantically.¹⁹

Now, let us return to the target construction, repeated below.

- (41) a. *John-ga kite-mo Mary-wa kigen-ga warui*
 John-NOM come.GER-*mo* Mary-TOP mood-NOM bad.NONPAST
 ‘Even if John came, Mary would be in a bad mood.’
- b. [*Mary-wa*]₁ *John-ga kite-mo e₁ kigen-ga warui.*
 MaryTOP John-NOM come.GER-*mo* mood-NOM bad.NONPAST
 ‘Even if John came, Mary would be in a bad mood.’

The topic marking on the subject noun *Mary* (but not on the subject of the gerundive clause) suggests that the sentence has some non-cancelable meaning based on whatever the speaker knows. For the sake of my purpose, I will focus on the meaning of the subordinate type gerundive construction only, where the causal meaning is non-cancelable. I will leave the other type aside. I tentatively adopt an idea that the gerundive morpheme is lexically ambiguous: one for subordination and another for coordination, for the sake of simplicity.

¹⁸From a different perspective, Kuno (1973) also points out that the topicalization (topic marking with dislocating it across the gerundive clause) is only possible when the gerundive clause is being a subordinate clause of the second conjunct and not when the two clauses are in a coordination relationship. However, his distinction of subordination-coordination may not be exactly the same from the one I assume in the thesis.

¹⁹Contrary to my argument, Hasegawa (1996a,b) argues that whatever additional meaning that arises in the gerundive construction is cancelable, and attempts to derive that temporal/causal meaning from the Gricean pragmatic account. At the same time, however, she also presents some cases where such meaning is not cancelable.

3.2 Deriving the Meaning of the Gerundive Construction

In this subsection, I will compositionally derive the meaning of gerundive constructions (of the asymmetrical type) setting aside *mo* until later in section 3.3 and 3.4. First, let me layout the basic rules for my compositional analysis.

(42) *Types*:

- i. s, t are basic types.
- ii. If α, β are types then $\langle \alpha, \beta \rangle$ is a type.
- iii. Nothing else is a type.

(43) *Domains*:

- i. The domain D of type s is $D_s = \{w_1, w_2, w_3, \dots\}$.
- ii. $D_t = \{1, 0\}$
- iii. $D_{\langle \alpha, \beta \rangle}$ is the set of all functions from D_α to D_β

Everything is combined via Functional Application (Heim & Kratzer 1998).

(44) If α is a branching node, $\{\beta, \gamma\}$ is the set of α 's daughters, and $\llbracket \beta \rrbracket =$ is a function whose domain contains $\llbracket \gamma \rrbracket$, then $\llbracket \alpha \rrbracket = \llbracket \beta \rrbracket(\llbracket \gamma \rrbracket)$.

As we have confirmed in section 1.2, the main purpose in the present analysis is to draw a clear line between the truly truth-conditional meaning and presuppositions. Let us tentatively adopt an idea that all those aspects of non-cancelable meaning contributes to the truth value. That is, making clear a distinction between presupposition and truth-condition is not important in the present analysis.

For convenience, let us restrict the domain of worlds to just four of the following. The purpose of this illustration is to show a way to incorporate the notion of expectedness or likeliness into the model.

- (45)
- $D_s = \{w_1, w_2, w_3, w_4\}$
 - $\llbracket \text{John-NOM come} \rrbracket = \lambda w. \text{came}(\text{John})(w) = \{w_1, w_2\}$

- $\llbracket \text{Mary-TOP happy.NONPAST} \rrbracket = \lambda w. \text{happy}(\text{Mary})(w) = \{w_1, w_3\}$

This sets up the situation in the following way: in w_1 , both of the two events happened to be true, just John came is true in w_2 , John didn't come and Mary is happy in w_3 , and both events didn't happen in w_4 . We are thus not considering about propositions that other visitors such as Bill came or something else happened to Mary (e.g. Her physical condition started getting worse, she got a wonderful present from Bill. . . etc.), though, of course, we could if we want to. For now, this is sufficient to represent the meaning of unexpectedness in the gerundive-*mo* construction.

In addition to (45), let us further assume that Mary only could be either happy or otherwise in a bad mood, admitting though that it is too simplistic about the nature of one's emotional states.

- (46)
- $D_s = \{w_1, w_2, w_3, w_4\}$
 - $\llbracket \text{John-NOM come} \rrbracket = \lambda w. \text{came}(\text{John})(w) = \{w_1, w_2\}$
 - $\llbracket \text{Mary-TOP happy.NONPAST} \rrbracket = \lambda w. \text{happy}(\text{Mary})(w) = \{w_1, w_3\}$
 - $\llbracket \text{Mary-TOP mood-NOM bad.NONPAST} \rrbracket$
 $= \lambda w. \text{in-a-bad-mood}(\text{Mary})(w) = \{w_2, w_4\}$

Using the simplified model (46), let us return to the scenario, repeated below, that allows the concessive conditional *even if John came Mary would be in a bad mood* to be felicitous.

Scenario: We have a friend Mary, who is hospitalized now. Among several visitors she has, she is usually very happy whenever her boyfriend John came to see her, whereas it is mostly not so when his friend Bill came instead. As long as she can see John though, she is happy. But we happened found that this is not the case on a day she has to get an injection. She hates it so much that on a day she has one... *Even if John came Mary is in a bad mood.*

With respect to the normal situation, i.e. when it is not the day she gets an injection, Mary is normally happy (not in a bad mood) if John came. I represent this normal situation in the following way: $\forall w[w \in \text{NORM} \rightarrow \text{came}(\text{John})(w) \wedge \text{happy}(\text{Mary})(w)]$.

This says that for all worlds w , such that w is one of the expected or normal kinds, the two propositions are always either both true or both not.

I will embed this piece of information about the normal situation into the meaning of the gerundive morpheme in order to derive the non-cancelable meaning that reflects the speaker's knowledge about the relationship between the two event under a normal circumstance.

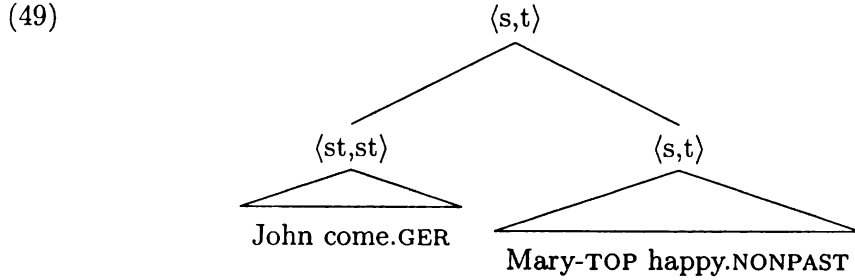
$$(47) \llbracket \text{GER} \rrbracket = \lambda_{P(s,t)} \lambda_{q(s,t)} \lambda w. p(w) \wedge q(w) \wedge \forall w' [w' \in \text{NORM} \rightarrow [p(w') \leftrightarrow q(w')]]$$

The gerundive morpheme takes two clausal arguments and conjoin them together: $p(w) \wedge q(w)$. Furthermore, it tells us what kind of situations are normal (likely, expected) with respect to what we know in the discourse. This is represented as $\forall w' [w' \in \text{NORM} \rightarrow [p(w') \leftrightarrow q(w')]]$. It says that in the normal situations, both of the propositions p and q have the same truth value (both true or both false). In other words, there is a particular relationship between the two conjoined events. Considering (45) we have set up in advance, w (call it an evaluation world) presumably should be $\{w_1\}$, where as w' is $\{w_1, w_4\}$. It says that for all w' that is in the set $\text{NORM} = \{w_1, w_4\}$ (what are considered to be the usual situations, the norm, or whatever assumed to be taken for granted, reflecting the discourse up to that point), the truth value of John's coming and Mary's being happy are the same. That is, either both true or both false. To see the relationship with w and w' , we notice that $w' = \{w_1, w_4\}$ happens to include $w = \{w_1\}$, thus it indirectly says that w is in NORM . Let us say that this gives us the information about how 'expected' the proposition $p(w) \wedge q(w)$ is. I suggest that the existence of information about the likeliness/expectedness of $p(w) \wedge q(w)$ is why the gerundive construction has the non-cancelable meaning.

Let us derive the meaning for the gerundive construction without *mo*, using an example (48).

- (48) *John-ga kite Mary-wa ureshii*
 John-NOM come_{GER} Mary-TOP happy.NONPAST
 ‘John came, and (so) Mary is happy.’

I assume the following structure (49) for simplicity, although it leaves room for discussion to which node the gerundive clause should be attached. In this structure, the gerundive clause appears as a sentential modifier.



For now, I ignore the internal structure of the gerundive clause, especially about tense, which should be worried about at some point in order to assign a relevant temporal interpretation for the gerundive clause.²⁰

- (50) $\llbracket \text{John-NOM come.GER Mary-TOP happy.NONPAST} \rrbracket$
 $= \text{came}(\text{John})(w) \wedge \text{happy}(\text{Mary})(w) \wedge$
 $\forall w' [w' \in \text{NORM} \rightarrow [\text{came}(\text{John})(w') \leftrightarrow \text{happy}(\text{Mary})(w')]]$

Two things have occurred in the evaluation world w , John came and Mary is happy. There is also another aspect of meaning: about how likely it is with respect to the normal situation. For all w' , w' is in the set of normal situations, and it is either both events, John's coming and Mary's being happy, are true or both false. In our very restricted understanding of the worlds, it should be w_1 and w_4 . The evaluation world w is happened to be one of NORM, thus the present situation, that John came and Mary is happy, is something that is compatible with what is considered to be normal and is nothing surprising, hence expected.

²⁰For example, we might need a free variable for tense that could be bound by the tense of the main clause.

Now that we have derived the meaning for the gerundive construction, let us move on to add the particle *mo*. As it will be shown in the following section 3.3, it is not only *mo* that is responsible for the ‘even if’ meaning, but it is the combination of the gerundive construction and *mo*.

3.3 On *mo*

Let us first confirm the basic property of *mo*. As the following data shows, the particle *mo* by itself contributes to the additive meaning ‘also/too’.

- (51) a. *John-ga san-ji-ni keeki-o tabeta.*
 John-NOM three-o’clock-at cake-ACC eat.PAST
 ‘John ate cake at three o’clock.’
- b. *John-mo san-ji-ni keeki-o tabeta.*
 John-mo three-o’clock-at cake-ACC eat.PAST
 ‘Also John ate cake at three o’clock.’
 (Presupposes: There is someone else who ate cake at three o’clock.)
- c. *John-ga san-ji-ni keeki-mo tabeta.*
 John-NOM three-o’clock-at cake-mo eat.PAST
 ‘John ate cake too, at three o’clock.’
 (Presupposes: There is something else that John ate at three o’clock.)
- d. *John-ga san-ji-ni-mo keeki-o tabeta.*
 John-NOM three-o’clock-at-mo cake-mo eat.PAST
 ‘John ate cake at three o’clock too.’
 (Presupposes: John ate cake at some other time.)

(67a) shows the one without *mo*. *Mo* can attach to a subject noun (67b), an object noun (67c), or an adjunct (67d).²¹ When *mo* appears in a sentence, it raises an additive meaning, presupposing an alternative situation. Depending on which constituent it attaches to, the content of presupposition (‘something else’) changes as shown in (67b-d).

²¹*Mo* cannot co-occur with the nominative case marker (**John-ga-mo*/**John-mo-ga*). On the other hand, it is marginally acceptable with the accusative marker, but the order is fixed (??*keeki-o-mo*/**keeki-mo-o*). Other particles such as dative, instrumental, and locative do not get deleted by the attachment of *mo* (?**san-ji-mo*), and the order of *mo* and those particles is fixed (**san-ji-mo-ni*).

A morpho-syntactic constraint on *mo* is that it cannot be directly attached to adjectives and verbs with a non-past or past tense morpheme.

- (52) a. **John-ga keeki-o taberu/tabeta-mo*.
 John-NOM cake-ACC eat.NONPAST/eat.PAST-*mo*
 Intended: ‘John also EAT/ATE the cake.’
 (Intended to presuppose: John does/did something with the cake; e.g. Not just watching it, but he also ATE it.)
- b. *John-ga keeki-o tabe-mo shita*.
 John-NOM cake-ACC eat-*mo* do.PAST
 ‘John also ATE cake.’
 (Presupposes: John does/did something with the cake; e.g. Not just watching it, but he also ATE it.)

Syntactically, it could appear adjacent to the stem of verb (52b). However, as it is also the case in English, (52b) is grammatical and felicitous if there is a focus prosodically marked on *tabe-mo* ‘eat’. If not, I would say it is a kind of negative polarity item that requires negation as its licenser. I will leave the cases where *mo* associates with focus and/or triggers polarity sensitivity. The point here is only to show a morpho-syntactic constraint on *mo* such that *mo* cannot directly attach to verbs/adjectives that has a non-past or past morpheme. As we know, an exceptional case is the gerundive form as it appears in the concessive conditional construction.

Futhermore, *mo* could take a clausal one as shown below.

- (53) a. *Mary-wa [John-ga keeki-o tabeta]-to-mo itteita*.
 Mary-TOP [John-NOM cake-ACC eat.PAST]-COMP-*mo* say.PAST
 ‘Mary also said John ate cake.’
 (Presupposes: Mary said something else.)
- b. *Mary-wa [John-ga keeki-o tabeta]-ka-mo kiita*.
 Mary-TOP [John-NOM cake-ACC eat.PAST]-whether-*mo* ask.PAST
 ‘Mary also asked whether John ate cake.’
 (Presupposes: Mary asked something else.)

The additive meaning arises similarly to (67b-d). It seems that the additive meaning generally appears, as long as the constituent that *mo* attaches to has assigned a

structural nominative or accusative case or has a particle such as *ni*, *to* and *ka*.^{22,23}

From the fact above, we may take the additive meaning as a part of the core meaning of *mo*. This sounds plausible, to recall the meaning of ‘even’ in Karttunen and Peters (1979), in which it says that there are two kinds of presuppositional meaning: the additive and the scalar meaning. Since our focus of study is ‘even if’ and not ‘also/too’, we need the scalar meaning as well. The scalar meaning was responsible for the unexpectedness or unlikeliness meaning. However, where can we find the expectedness meaning in *mo*? As a clarification, it is not the case that what is said (e.g. ‘John’, ‘cake’, ‘at three o’clock’ etc.) is unexpected in (67) and (53). The sentences only presuppose that there is something else other than what is said but do not say which is more likely.

In some certain cases, however, *mo* expresses that what is said in the sentence is unexpected, out of the norm, or off the standard. The unexpectedness meaning appears not in an arbitrary way but in a particular structural environment. Typically, one is where *mo* appears with an expression of amount as shown below in (54a-d), and another is with the gerundive clause, i.e. the concessive conditionals, as we know.

- (54) a. *John-ga keeki-o mi-kire tabeta.*
John-NOM cake-ACC three-pieces eat.PAST
‘John ate three pieces of cake.’
- b. *John-ga keeki-o mi-kire-mo tabeta.*
John-NOM cake-ACC three-pieces-*mo* eat.PAST
‘John ate three pieces of cake.’ (Eating 3 pieces of cake is surprisingly a lot!)
- c. *John-ga juuhachi-jikan neta.*
John-NOM eighteen-hours sleep.PAST
‘John slept for 18 hours.’

²²It is controversial deciding which grammatical category we assume especially for *to* and *ka*. For example, some would say they are the head of CP, i.e. a complementizer like *that* in English, but for some they may be a postpositional element. (Fukui & Sakai 2003:p.328-221) concerns the controversy.

²³Sentence (53b) may sound unnatural compared to (53a) to some speakers, although I found no unnaturalness. My guess is that the unnaturalness in (53b) decrease when there is an overt complementizer *-to* in between *ka* and *mo*.

- d. *John-ga juuhachi-jikan-mo neta.*
 John-NOM eighteen-hours-mo sleep.PAST
 ‘John slept for 18 hours.’ (Sleeping 18 hours is surprisingly a lot!)

Unlike the nouns and clauses in (67, 53), numeral expressions that tells the amount do not take a case or postpositional particle (54a, c). When such amount expressions take *mo* (54b,d), it indicates the speaker’s perspective that the amount mentioned is off the standard and it is surprisingly a lot.²⁴ The sense of surprise ‘a lot!’ that the speaker implies with *mo* could be ‘a lot’ for the speaker, ‘a lot’ in general, or ‘a lot’ for John based on what the speaker knows. Thus, what is said (‘John ate three pieces of cake’ or ‘John slept for 18 hours’) is unexpected, off the standard or out of the norm with respect to the normal amount.

The notion of unexpectedness is the most crucial part of the meaning of concessive conditional. As Fujii (1989) has generalized as in (28), the gerundive-*mo* construction expresses that the consequent is contrary to what is expected given the antecedent. Thus, the sentence *John-ga kite-mo Mary-wa kigen-ga warui* ‘Even if John came, Mary would be in a bad mood’ expresses that Mary’s being in a bad mood is contrary to what is expected to be normal given John’s coming. It is not the case that John’s coming itself is unexpected or Mary’s being in a bad mood is unexpected. The expectation is based on the relationship between the two conjoined propositions.

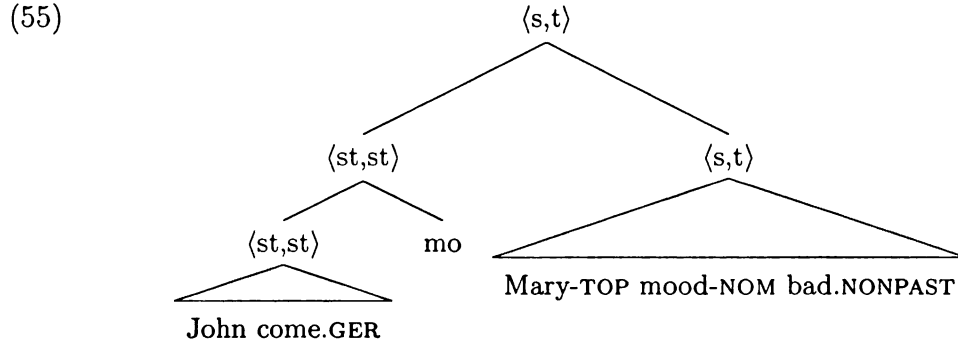
In the following subsection, I will propose a denotation for *mo* based on the two fundamental properties of *mo*: the additive meaning, and the notion of unexpectedness. I tentatively distinguish the case in which *mo* that has these two properties from the case in which *mo* only has the additive meaning. This distinction is not arbitrary, since they appear in different structural conditions. As the contrast between (67, 53)

²⁴There is another way to express the notion of off the standard, which is ‘surprisingly few’. In such a case, there is another morpheme that expresses the less-than-expected meaning, which is *-shika*. It is a negative polarity item, and with an overt negation, it means ‘only’ or ‘just’, e.g. *san-jikan-shika ne-nakatta*(sleep-NEG.PAST). ‘I only slept for (no more than) 3 hours (which is remarkably short time)’. Yoshimura (2007) investigates various focus sensitive elements including *-shika*.

and (54) indicates, we may tentatively generalize that the unexpectedness meaning arises when it attaches to a kind of adverbial expression that is not case marked or marked with a postpositional particle. Therefore, my proposal of *mo* will account for the cases where *mo* appears together with such adverbial expressions. Although this proposal may be limited and far from the comprehensive understanding of *mo*, it may still be a starting point of such a big project.

3.4 Deriving the Meaning of Gerundive-*mo*

Let us assume the following structure.



As before, the gerundive clause is of type $\langle st, st \rangle$, a kind of adverbial clause or a sentential modifier. Suppose *mo* takes such an adverbial constituent as its argument. The following shows my denotation for *mo* based on the structure above.

(56) $\llbracket mo \rrbracket =$
 $\lambda f_{\langle st, st \rangle} \lambda q_{\langle s, t \rangle} \lambda w. q(w) \wedge \exists q' [q' \neq q \wedge f(q')] \wedge \forall q' [q' \neq q \rightarrow f(q) <_{likely} f(q')]$

First, *mo* takes an argument of type $\langle st, st \rangle$, a sentential modifier. It will be the gerundive clause [John come.GER] in the case of concessive conditional construction. However, *mo* would not assign the truth value to the content of the gerundive clause. What it gives us is only about the main clause *q* in *w*. This is plausible, since the speaker does not specify whether John's coming is true/actually happened in the evaluation world *w* by saying 'even if John came,...'. The rest of the denotation gives more information about the likeliness/expectedness, following the Karttunen

and Peters' (1979) approach. There are two kinds of presuppositional meaning: the additive meaning ($\exists q'[q' \neq q \wedge f(q')]$) and the scalar meaning ($\forall q'[q' \neq q \rightarrow f(q) <_{\text{likely}} f(q')]$), or the comparative likeliness/expectedness meaning. This is in fact what we have seen in the analyses by Nakanishi (2006) and Yoshimura (2007) of the 'even'-like element *demo*. However, unlike their approach, the denotation (56) is not for *demo* but it is for *mo*.

Now, let us combine the gerundive construction and *mo* together and see how the proposed denotations derive the meaning of concessive conditionals compositionally. As the first step, we have the gerundive construction with some sort of causal meaning, which is based on what is presupposed to be normal in the discourse.

$$\begin{aligned}
 (57) \quad & \llbracket \text{John-NOM come.GER} \rrbracket \\
 & = [\lambda p \lambda q \lambda w. p(w) \wedge q(w) \wedge \forall w'[w' \in \text{NORM} \rightarrow p(w') = q(w')]](\llbracket \text{John-NOM come} \rrbracket) \\
 & = \lambda q \lambda w. \text{come}(\text{John})(w) \wedge q(w) \wedge \forall w'[w' \in \text{NORM} \rightarrow \text{come}(\text{John})(w') \leftrightarrow q(w')]]
 \end{aligned}$$

Up to this point of derivation, it has a potential to raise the meaning of expectedness (i.e. how normal it is) by virtue of having the gerundive construction. What *mo* does is to take this gerundive clause, add the other possibilities of what could happen upon John's coming, and assign the likeliness/expectedness meaning.

$$\begin{aligned}
 (58) \quad & \llbracket \text{John-NOM come.GER-mo} \rrbracket \\
 & = \llbracket \text{mo} \rrbracket(\llbracket \text{John-NOM come.GER} \rrbracket) \\
 & = \lambda f_{\langle st, st \rangle} \lambda q_{\langle s, t \rangle} \lambda w. \left[\begin{array}{c} q(w) \wedge \exists q'[q' \neq q \wedge f(q')] \wedge \\ \forall q'[q' \neq q \rightarrow f(q) <_{\text{likely}} f(q')] \end{array} \right] \left(\llbracket \text{John-NOM come.GER} \rrbracket \right) \\
 & = \lambda q_{\langle s, t \rangle} \lambda w. \left[\begin{array}{c} q(w) \wedge \exists q'[q' \neq q \wedge \llbracket \text{John-NOM come.GER} \rrbracket(q') \wedge \\ \forall q'[q' \neq q \rightarrow \llbracket \text{John-NOM come.GER} \rrbracket(q) <_{\text{likely}} \llbracket \text{John-NOM come.GER} \rrbracket(q')] \end{array} \right]
 \end{aligned}$$

Finally, the main clause is combined, filling in the slot '*q*' above. This last step is just to substitute $\llbracket \text{Mary-TOP mood-NOM bad.NONPAST} \rrbracket$ with '*q*'.

$$(59) \quad \llbracket \text{John-NOM come.GER-mo Mary-TOP mood-NOM bad.NONPAST} \rrbracket$$

$$= \lambda q_{\langle s, t \rangle} \lambda w \left[\begin{array}{c} q(w) \wedge \exists q' [q' \neq q \wedge \llbracket \text{John-NOM come.GER} \rrbracket(q')] \wedge \\ \forall q' [q' \neq q \rightarrow \llbracket \text{John-NOM come.GER} \rrbracket(q) <_{\text{likely}} \llbracket \text{John-NOM come.GER} \rrbracket(q')] \end{array} \right] \\ \left(\left[\left[\text{Mary-TOP mood-NOM bad.NONPAST} \right] \right] \right)$$

Since the final step (59) takes a space to fully spell out, let me explain by breaking it up into three parts as in (A-C) below, which would roughly correspond to the truth conditional meaning, the additive meaning, and the scalar meaning respectively.

(A) TRUTH CONDITIONAL MEANING

$$[\lambda q \lambda w. q(w)](\llbracket \text{Mary-TOP mood-NOM bad.NONPAST} \rrbracket) \\ = \llbracket \text{Mary-TOP mood-NOM bad.NONPAST} \rrbracket(w)$$

From (46),

$$\text{bad-mood}(\text{Mary})(w) = \text{Mary is in a bad mood in the evaluation world } w.$$

The core part of the meaning of the concessive conditional sentence says that Mary is in a bad mood in the evaluation world w .

(B) ADDITIVE MEANING

$$\left[\lambda q \lambda w \exists q' [q' \neq q \wedge \llbracket \text{John-NOM come.GER} \rrbracket(q')] \right] \left(\left[\left[\begin{array}{c} \text{Mary-TOP mood-NOM} \\ \text{bad.NONPAST} \end{array} \right] \right] \right)$$

$$= \exists q' \lambda w [q' \neq \text{bad-mood}(\text{Mary}) \wedge \llbracket \text{John-NOM come.GER} \rrbracket(q')]$$

From (57),

$$\lambda w \exists q' \left[\begin{array}{c} q' \neq \text{bad-mood}(\text{Mary}) \wedge \text{come}(\text{John})(w) \wedge q'(w) \wedge \\ \forall w' [w' \in \text{NORM} \rightarrow \text{come}(\text{John})(w') \leftrightarrow q'(w')] \end{array} \right]$$

The additive meaning says that there is another consequence q' which is different from q (=‘Mary is in a bad mood’). By virtue of having the gerundive morpheme as I proposed in (47), the additive meaning also introduces the degree of expectation, or how likely it is for the two events (John’s coming and q')

to co-occur. Assuming the simplified nature of worlds in (46) that reflects the current understanding of the discourse, q and q' can be represented as different sets of worlds $\{w_2, w_4\}$ and $\{w_1, w_3\}$ respectively. The former is in which Mary is in a bad mood and the latter is in which she is happy.

(C) SCALAR MEANING

$$\left[\lambda q \lambda w. \forall q' [q' \neq q \rightarrow \llbracket \text{John-NOM come.GER} \rrbracket(q) <_{\text{likely}} \llbracket \text{John-NOM come.GER} \rrbracket(q')] \right] \\ \left(\left[\llbracket \text{Mary-TOP mood-NOM bad.NONPAST} \rrbracket \right] \right) \\ = \lambda w. \forall q' \left[\left[\begin{array}{c} q' \neq \llbracket \text{Mary-TOP mood-NOM bad.NONPAST} \rrbracket \rightarrow \\ \llbracket \text{John-NOM come.GER} \rrbracket(\llbracket \text{Mary-TOP mood-NOM bad.NONPAST} \rrbracket) \\ <_{\text{likely}} \llbracket \text{John-NOM come.GER} \rrbracket(q') \end{array} \right] \right]$$

From (47) and (50),

$$\lambda w. \forall q' \left[\left[\begin{array}{c} q' \neq \llbracket \text{Mary-TOP mood-NOM bad.NONPAST} \rrbracket \rightarrow \\ \text{came}(\text{John})(w'') \wedge \text{bad-mood}(\text{Mary})(w'') \wedge \\ \forall w' [w' \in \text{NORM} \rightarrow [\text{came}(\text{John})(w') \leftrightarrow \text{bad-mood}(\text{Mary})(w')]] \\ <_{\text{likely}} \left[\begin{array}{c} \text{came}(\text{John})(w'') \wedge q'(w'') \wedge \\ \forall w' [w' \in \text{NORM} \rightarrow [\text{came}(\text{John})(w') \leftrightarrow q(w')]] \end{array} \right] \end{array} \right] \right]$$

The scalar meaning that is derived by *mo* is represented as a comparison of expectedness, as it has been claimed elsewhere. However, it is not the case that *mo* itself assigns the degree of expectedness to the antecedent clause or to the consequent clause. In my analysis, the notion of expectedness is provided by the gerundive morpheme. What *mo* compares is the expectedness of the two different gerundive constructions, i.e. the likeliness of ‘John came and Mary is in a bad mood’ and ‘John came and Mary is not in a bad mood’ with respect to normalcy.

The representation of the meaning we have achieved follows the pervious works we have covered in section 1-2 in that it has the additive meaning and the expected-

ness/likeliness scalar meaning. I derived this notion of unexpectedness not from the particle *mo* by itself but rather from the interaction between *mo* and the gerundive construction that introduces the notion of expectedness with respect to normalcy. As a result, the scalar meaning in my analysis is not anymore a comparison of how likely it is between the consequent proposition q and the alternative consequent proposition q' . The concessive conditional meaning is described in terms of how likely the consequent clause is given the condition of John's coming compared to all other consequences given the same condition. This indicates that my version of *mo* has to take an argument that already bears a notion of expectedness/likeliness in order to achieve the unexpectedness meaning. In the remaining part of the thesis, I will consider some predictions and implications of my approach presented here.

4 Summary and Some Implications

4.1 The Gerundive Construction Revisited

I proposed the following denotation (60) for the gerundive morpheme.

$$(60) \quad \llbracket \text{GER} \rrbracket = \lambda p_{\langle s, t \rangle} \lambda q_{\langle s, t \rangle} \lambda w. p(w) \wedge q(w) \wedge \forall w' [w' \in \text{NORM} \rightarrow [p(w') \leftrightarrow q(w')]]$$

The basic property of the gerundive construction was the ‘and’ conjunction in Japanese, which is represented in the first part of the denotation ($p(w) \wedge q(w)$). It takes the two arguments p and q and states the truth condition with respect to the evaluation world w . The rest of the denotation illustrates what the normal situation should be like. In the normal situation w' , according to the discourse context and what we know, both p and q co-occur or neither does. Because it is said that $(p(w) \wedge q(w))$ is one of such normal situations, I suggested that this results in the expectedness meaning.

The proposed denotation can account for the basic conjunction property as well as the special relationship between the two conjoined propositions.

- (61) *John-ga kite Mary-wa ureshii.*
John-NOM come.GER Mary-TOP happy.NONPAST
‘John came, and (so) Mary is happy.’

The gerundive construction says that John came and Mary is happy. It not only says that those two things occurred, but it also tells us that it is somehow expected for Mary to be happy upon John’s coming based on the speaker’s knowledge about the normal situation. I suggested this is reflected as a kind of causal meaning ‘so’. I have said in section 3.1 that the expectedness meaning is not cancelable when the sentence involves a topic marking on the subject of the tensed clause as in (61), which I called the subordination type gerundive construction.

The present analysis only focused on the subordination type gerundive construction. However, the fact is that *mo* can appear in either type of the gerundive con-

struction, either subordination or coordination. Let us recall the examples of the coordination type gerundive sentences introduced in (37c, d), as repeated below.

- (62) c. [*John-ga kite*] [*Mary-ga kaeru*].
 John-NOM come.GER Mary-NOM went home.NONPAST
 ‘John comes and Mary goes home.’

(As an answer to: What usually happens in the office while I am out?)

- d. [*John-wa kite*] [*Mary-wa kaeru*].
 John-TOP come.GER Mary-TOP went home.NONPAST
 ‘John comes and Mary goes home.’

(As an answer to: Do both John and Mary join the reception after the talk?)

In these cases above, no particular relationship between the two conjoined events is presupposed. They are just a list of events.

The following is the two sentences with *mo* attached.

- (63) a. [*John-ga kite*]-*mo* [*Mary-ga kaeru*].
 John-NOM come.GER-*mo* Mary-NOM went home.NONPAST
 Roughly: ‘Although John comes, Mary goes home.’
- b. [*John-wa kite*]-*mo* [*Mary-wa kaeru*].
 John-TOP come.GER-*mo* Mary-TOP go home.NONPAST
 Roughly: ‘Although JOHN might come, MARY would go home.’

The translations in (63a) and (63b) are mine and they may leave room for discussions. Let us tentatively assume that ‘although’ is the most accurate translation and that it is one of concessive expressions. In any event, sentences (63a, b) show that the gerundive *mo* construction is not limited to the subordination type but also applicable to the coordination type. This may suggest that my analysis on the gerundive-*mo* should be extended to the coordination type. However, the connection between the conjuncts, John’s coming and Mary’s going home, may not be the same as the gerundive-*mo* of the subordination type. The relationship of the two clauses may not

be conditional, but it may rather be contrastive.²⁵ Thus, what is unusual/unexpected is not that Mary's going home given John's coming, or in other words, it is not that the speaker thinks Mary would go home if John comes based on the normal situations, but rather, the speaker is making a contrast between the two events. I will leave room for discussion on the difference between 'even if' and 'although'. It may be an interesting discussion if there is some diagnostics to distinguish the two kinds of concessive meaning.

To give a comprehensive analysis of the gerundive construction in Japanese, one should consider a question of kinds of clausal relationship that needs to be assigned for the gerundive conjunction. It is not plausible to implement a piece of information about the normal situation $\forall w'[w' \in \text{NORM} \rightarrow [p(w') \leftrightarrow q(w')]]$ for any type of gerundive form, because that was originally supposed to derive the causal meaning between the two conjoined propositions that arises in the subordination type and not necessarily in the coordination type. Thus, in order to account for the gerundive construction in general, one has to look into various kinds of clausal relationship other than the causal one, for example, the temporal sequential meaning I did not cover in the present analysis. A hope is to construct a denotation for the gerundive form that can account not only for the causal meaning, but also for the temporal sequential meaning for example (cf. Hasegawa (1996a,b) for other possible meanings). As Watanabe (1990) argues, deriving the temporal sequential meaning would require more careful classification of verbs with respect to the temporal and aspectual properties, e.g. telicity.

Furthermore, adopting a formal tool for the notion of topichood may help constructing a theory of the gerundive conjunction, since the topic marking was the key to distinguish the subordination type gerundive conjunction (in which a non-cancellable

²⁵By 'contrastive', I mean a sense in which *but* might represent. Indeed, the 'even' expression *demo* as a sentential conjunction (and as an independent word), it functions like 'but', e.g. *John-ga kita. Demo Mary-wa kaetta.* 'John came. But, Mary went home.'

meaning arises) and the coordination type gerundive conjunction (in which the additional meaning is cancelable). Further research of the Japanese concessive conditional may lead us to investigate broader issues of the semantics-pragmatics interface of clausal conjunctions.

4.2 *Mo* Revisited

In some cases, including concessive conditionals, *mo* expresses unexpectedness.

- (64) a. *John-ga juuhachi-jikan-mo neta.*
 John-NOM eighteen-hours-*mo* sleep.PAST
 ‘John slept for 18 hours.’ (Sleeping 18 hours is unusually a lot!)
- b. *John-ga konshuu keeki-o san-kai-mo tabeta.*
 John-NOM this week cake-ACC three-times-*mo* eat.PAST
 ‘John ate cake three times this week.’
 (Eating cake three times a week is surprisingly frequent!)

In (64a), in addition to the truth conditional meaning that says John has slept for 18 hours, the sentence also expresses that the speaker thinks sleeping 18 hours is a lot in general, for the speaker, or for John based on what the speaker knows about John’s normal lifestyle. Similarly, three times a week is unusually a lot as a frequency of John’s cake eating in (64b).

To capture the notion of unexpectedness in the concessive conditional, I proposed the following denotation for *mo*.

- (65) $\llbracket mo \rrbracket = \lambda f_{\langle st, st \rangle} \lambda q_{\langle s, t \rangle} \lambda w. q(w) \wedge$
 $\exists q'[q' \neq q \wedge f(q')] \wedge \forall q'[q' \neq q \rightarrow f(q) <_{likely} f(q')]$

Mo first takes an argument of type $\langle st, st \rangle$, a kind of modifier. Then, without affecting the meaning of the second argument q , it gives two additional meanings: the additive meaning ($\exists q'[q' \neq q \wedge f(q')]$) and the comparative meaning with respect to likeliness/expectedness ($\forall q'[q' \neq q \rightarrow f(q) <_{likely} f(q')]$).

In the concessive conditional construction, the gerundive clause (*John-ga kite*) fills the argument variable $f_{\langle st, st \rangle}$. When *mo* applies, it introduces possible alternative situations q' , which is different from the situation Mary's being in a bad mood. Assuming the simplified world as illustrated in (46), q' is the situation in which Mary is happy. Then, it puts the two conjoined propositions ('John came and Mary is in a bad mood' and 'John came and Mary is happy') on the likeliness/expectedness scale, and says that what is said ('John came and Mary is in a bad mood') is less likely/expected than all ('John came and Mary is happy').

My denotation for *mo* may be applied to the example (64) to account for the meaning 'it is surprisingly/unusually a lot', assuming that the amount/frequent expressions have the same semantic type as a gerundive clause. However, it is not the case that any kind of a non-case-marked or a postposition-free phrase can take *mo*. For example, 'sometimes' and '(sleep) deeply', which should not take a case or postposition particle, cannot have *mo*.

- (66) a. **John-ga gussuri-mo neta.*
 John-NOM deeply-*mo* sleep.PAST
 Intended: 'John slept deeply.' (It was an unusually deep sleep!)
- b. **John-ga tokidoki-mo keeki-o tabeta.*
 John-NOM sometimes-*mo* cake-ACC eat.PAST
 Intended: 'John sometimes ate cake.'
 ('Sometimes' is surprisingly a lot because John rarely eats cake!)

We may tentatively say that the phrase that *mo* attaches to has to have a specific amount such as 'for 18 hours' and 'three times' in order to express the unexpectedness.

However, in other cases, *mo* only expresses the additive meaning and not necessarily the expectedness scalar meaning.

- (67) a. *John-mo san-ji-ni keeki-o tabeta.*
 John-*mo* three-o'clock-at cake-ACC eat.PAST
 'Also John ate cake at three o'clock.'
 (Presupposes: There is someone else who ate cake at three o'clock.)

- b. *John-ga san-ji-ni-mo keeki-o tabeta.*
 John-NOM three-o'clock-at-*mo* cake-*mo* eat.PAST
 'John ate cake at three o'clock too.'
 (Presupposes: John ate cake at some other time.)
- c. *Mary-wa [John-ga keeki-o tabeta]-to-mo itteita.*
 Mary-TOP [John-NOM cake-ACC eat.PAST]-COMP-*mo* say.past
 'Mary also said John ate cake.'
 (Presupposes: Mary said something else.)
- d. *Mary-wa [John-ga keeki-o tabeta]-ka-mo kiita.*
 Mary-TOP [John-NOM cake-ACC eat.PAST]-whether-*mo* ask.past
 'Mary also asked whether John ate cake.'
 (Presupposes: Mary asked something else.)

A different denotation for *mo* may be required to account for these cases. A lexical ambiguity approach will assume that there are two *mos* in the lexical entry. However, such an approach may undermine the observation that the meaning of *mo* (whether it is only additive or additive with unexpectedness) correlates with the structural environment it appears. The *mo* that appears with a phrase that has a structural case or postpositional particle introduces the additive meaning and no further than that. On the other hand, the other *mo* appears with a subordinate type gerundive clause or a (specific) amount expression, and it derives the additive and the expectedness meaning. The proposed denotation for *mo* should specify the latter *mo*, and not the one that appears on a phrase that has a case or postpositional particle. It might be possible to give a unified account on *mo*, however it is difficult to do so unless we incorporate a theory of case/postposition marking, because that is the factor that distinguishes the two different *mos*.²⁶

Another important aspect of *mo*, which has been well studied but not in this thesis, is its interaction with *wh*-phrases. For example, by substituting *dare* 'who' with *John* in the gerundive-*mo* construction results in 'whoever' as shown below.

²⁶The relationship of case assignment and *mo* has been notice elsewhere. For example, Kakegawa (2003) offers an analysis that treats *mo* as a case particle.

- (68) [*dare-ga kite*]-*mo* *Mary-wa kigen-ga warui.*
 who-NOM come.GER-*mo* Mary-TOP mood-NOM bad.NONPAST
 ‘Whoever came (No matter who came), Mary would be in a bad mood.’

Sentence (68) shows that the property of *wh*-phrases in Japanese and in English are different, since no substitution of a *wh*-phrase is available in an English *even if* sentence.

- (69) **Even if who came, Mary would be in a bad mood.*

Since no *wh*-phrase can occur in the conditional *if* clause in English, a syntactic theory of *wh*-phrases may independently account for the ungrammaticality of (69).

As for *wh*-phrases in Japanese, there have been various syntactic and semantic accounts proposed in order to account for their distribution and interpretations. Japanese *wh*-phrases are also called ‘indeterminate pronouns’ following Kuroda’s (1965) terminology (Shimoyama 2006), since the interpretation of a *wh*-phrase such as *dare* is not determined until it is ‘licensed’ by particular particles such as *mo* in (68), the sentence final question marker *no* as in (70a), or *ka/mo* that appears adjacent to the *wh*-phrase (70b, c). Without these licensors, a *wh*-phrase alone cannot have an interpretation and the sentence is ungrammatical as shown in (70d).

- (70) a. [*dare-ga kite*] *Mary-wa kigen-ga warui* *no?*
 who-NOM come.GER Mary-TOP mood-NOM bad.NONPAST Q
 Who x such that x came and Mary is in a bad mood?
- b. [*dare-ka-ga kite*] *Mary-wa kigen-ga warui.*
 who-*ka*-NOM come.GER Mary-TOP mood-NOM bad.NONPAST
 ‘Someone came and Mary is in a bad mood.’
- c. [*dare-mo-ga kite*] *Mary-wa kigen-ga warui.*
 who-NOM come.GER Mary-TOP mood-NOM bad.NONPAST
 ‘Everyone came and Mary is in a bad mood.’
- d. * [*dare-ga kite*] *Mary-wa kigen-ga warui.*
 who-NOM come.GER Mary-TOP mood-NOM bad.NONPAST

In order to account for the dependency relationship of *wh*-phrases and the licensing particles, various approaches have been proposed. For example, Nishigauchi (1991) proposes a *wh*-movement analysis at LF, and Watanabe (1992) argues for an overt (non-LF) movement analysis of null operators. Shimiyama (2006) and Kratzer & Shimoyama (2002) present a non-movement analysis based on Hamblin's (1973) semantics for *wh*-phrases as sets of alternatives. Although their approaches are different, one common view is that *mo* is a universal quantifier that binds variables introduced by *wh*-phrases. While such a view explains the meaning (70c), it may not be adequate to account for the gerundive-*mo* construction that does not necessarily involve a *wh*-phrase. However, a unified account for *mo* should be flexible enough to explain both cases in which the sentence has a *wh*-phrase and in which it does not. In this respect, a further investigation of *mo* implies a better understanding of *wh*-phrases in Japanese.

Furthermore, the research on *wh*-phrases and concessive conditionals across languages may also shed light on some empirical and theoretical connections between conditionals and interrogatives. According to Gawron (1999), the English *wh-ever* sentences are indeed examples of a conditional construction. He calls the *wh-ever* construction the 'Universal Concessive Conditional (UCC)', and argues that the antecedent clause in the UCC is closely related to question formation.

4.3 Other General Issues

I would like to point out three more related issues with respect to the gerundive-*mo* construction and concessive conditional in general. First, let us recall the so-called consequent entailment problem. In short, it was a contrast shown in the two kinds of *even if* sentences.

- (71) a. *Introduced if*
Even if the bridge were standing, I would not cross.

↪ I would not cross.

b. *Standing if*

Even if he drank just one ounce, she would fire him.

↪ She would fire him if he drank some.

According to Pollock (1976) and Bennett (1982), the consequent in (71a) must be true independent of the truth of the antecedent clause. The speaker implies his/her strong will of not crossing, thus ‘I would not cross if the bridge were standing or not’. On the other hand in (71b), it is not that the truth of the consequent ‘she would fire him’ is independent of the truth of ‘if he drank just one ounce’. It is not intuitive to interpret it as ‘she would fire him if he drank one ounce or not’.

My analysis in section 3 on the Japanese concessive conditional did not concern about the consequent entailment problem. Interestingly, though, the contrast is apparent in Japanese.

(72) a. *Introduced if*

Hashi-ga kakatte-ite-mo watashi-wa watara-nai
 Bridge-NOM standing-be.GER-*mo* I-TOP cross-not.NONPAST
 ‘Even if the bridge were standing, I would not cross.’

b. *Standing if*

John-ga honno hito-kuchi-de-mo nondara bosu-wa
 John-NOM just one-sip-COP.GER-*mo* drink.COND(if) boss-TOP
kubi-ni suru
 fired-DAT do.NONPAST
 ‘Even if John drank just a sip, the boss would fire him.’

The structure of *Introduced if* (72a) is the one I accounted for in section 3, i.e. the combination of the gerundive clause and *mo*. On the other hand, the structure of *Standing if* (72b) is different in that, although there is a similar construction (the gerundive copula and *mo*), it is embedded in an antecedent clause with an overt conditional morpheme (...*nondara*, the perfective *tara* conditional construction, cf.

5a).²⁷ This brings us back to Bennett's (1982) explanation of the contrast. According to him, the Standing *if* does involve the conditional construction but the conditionality in the Introduced *if* is "a result of the operation of *even*" (Bennett 1982: p.411). Indeed, to see the Japanese counterparts, the Standing *if* is built upon a conditional construction (72b), but the conditionality in the Introduced *if* (72a) is morphologically unclear.

In this respect, my analysis of the Japanese concessive conditional was mainly about the Introduced *if* conditional only. This was the type of *even if* sentences that Guerzoni & Lim (2007) accounted for by introducing an invisible morpheme *AFF*, which is not at all necessary in my analysis. As the data (72) shows, the other type of concessive conditional, the Standing *if* conditional does have the same elements as the Introduced *if* conditional: gerundive morpheme *de*, the copula verb, and *mo*. However, one has to account for the morphologically overt conditional as well and the interaction of *de-mo* and the overt conditional in order to account for the Standing *if* conditional.

Accordingly, since the source of conditionality is different in (72a) and (72b), this might raise a question on the English *if* construction. For example, although we see *if* in both (71a) and (71b), is it the case that both types of constructions share the same structure? With respect to the structure of the English *if* sentences, Haegeman (2003, 2006) argues that there are two different structures of *if*-conditionals in English: either the antecedent clause being IP adjoined to the main clause, or it being CP adjoined.

A second thing to be mentioned is a link between conditionals and modality. One of the modal expressions in Japanese has a parallel construction with the one of concessive conditional.

²⁷I thank Yasutada Sudo again for pointing this out.

- (73) a. With *mo*: Concessive Conditional ‘Even if’

[*John-ga kite-mo*] *Mary-wa kigen-ga warui.*
 John-NOM come.GER-*mo* Mary-TOP mood-NOM bad.NONPAST
 ‘Even if John came Mary would be in a bad mood.’

- b. With *mo* and *iidesu-yo*: The Deontic ‘may’

[*John-ga kite-mo*] *iidesu-yo.*
 John-NOM come.GER-*mo* good.NONPAST-*yo*
 Lit. ‘It is also ok if John come.’
 ‘John may(is allowed to) come.’

The deontic ‘may’ in (73b) shows exactly the same antecedent clause (*John-ga kite*) as the one in (73a). As Kratzer (2002, 1986) argues, there seems to be a link between modality and the natural language conditional in that the antecedent clause of conditionals restrict modals. However, we might need to reconsider whether the notion of normalcy, which is a key to derive the unexpectedness in my analysis, is also adequate for accounting for the deontic meaning of permission.

A third thing to be mentioned here is about some variations. In this thesis, I have only introduced one version of concessive conditionals (74a). There is also a colloquial (casual, less formal) version (74b). (74c) is an example from Kansai (Western) dialect. The last two involve complementizers as glossed with ‘COMP’ below.

- (74) a. ‘Standard’

John-ga kite-mo *Mary-wa kigen-ga warui.*
 John-NOM come.GER-*mo* Mary-TOP mood-NOM bad.NONPAST
 ‘Even if John came, Mary would be in a bad mood.’

- b. Colloquial

John-ga kita-tte *Mary-wa kigen-ga warui.*
 John-NOM come.PAST-COMP Mary-TOP mood-NOM bad.NONPAST
 ‘Even if John came, Mary would be in a bad mood.’

- c. *Kansai*-dialect

John-ga kita-ka-te *Mary-wa kigen-ga warui.*
 John-NOM come.PAST-*ka*-COMP Mary-TOP mood-NOM bad.NONPAST
 ‘Even if John came, Mary would be in a bad mood.’

The notable differences are summarized below.

- (75) a. The verb of the antecedent clause in (74a) must take the gerundive form, whereas it is the past tense form in (74b, c).
 b. There must be a complementizer *tte/te* in (74b, c), whereas (74a) does not allow a complementizer.
 c. No *mo* in (74b, c). In (74c), however, takes the question particle *ka*.

Like the ‘standard’ version in (68), the other two versions also demonstrate the property of dependency relationship with wh-phrases.

- (76) a. Colloquial

Dare-ga kita-tte Mary-wa kigen-ga warui.
 Who-NOM come.PAST-COMP Mary-TOP mood-NOM bad.NONPAST
 ‘Whoever came, Mary would be in a bad mood.’

- b. *Kansai*-dialect

Dare-ga kita-ka-te Mary-wa kigen-ga warui.
 Who-NOM come.PAST-*ka*-COMP Mary-TOP mood-NOM bad.NONPAST
 ‘Whoever came, Mary would be in a bad mood.’

What is interesting is that there is no *mo* in (76a, b) which is said to be a potential licenser for the wh-phrase. As we saw in (70a-d), the interpretation and grammaticality of wh-phrases depends on particles such as *ka* and *mo*. Sentence (76b) does have the particle *ka* before the complementizer, however, it is not clear why it is *ka*, which is normally considered as a question marker, and not *mo* as in the ‘standard’ version. A further investigation of concessive conditional should account not only for the properties of those particles, but also for the licensing condition of wh-phrases apart from the existence of such particles.

If the meanings of all the variations in (74a-c) should be represented exactly in a same way, we should also be able to derive the meaning of concessive conditional without the referring to the gerundive construction and *mo*. In order to account for the other versions of concessive conditionals as exemplified in (74b, c), one has to

account for the obligatory past tense morpheme on the antecedent clause, the complementizers, and the question particle *ka* in the (74c). A further research on these dialectal variations would reveal a range of morphological realization that conventionally derives the concessive conditional meaning. It may eventually lead us to understand how the meanings of concessiveness and conditionals are constructed and lexicalized across languages.

5 Conclusion

In order to account for the Japanese concessive conditional, I presented a compositional analysis that concerns an interaction of the gerundive construction and the additive particle *mo*. In deriving the meaning of the gerundive construction, I argued that the construction has a meaning that reflects the speaker's knowledge about the relationship between the two conjoined events under a normal circumstance, in addition to the truth-conditional meaning. This explains how a certain type of gerundive construction not only represents the combination of more than one events but also introduces the notion of likeliness or expectedness. Then, I proposed a denotation for *mo* that derives the notion of unexpectedness based on the expectedness derived by the gerundive clause.

I pointed out that there is a limitation on kinds of data that the proposed denotations can account for. Although my denotation for the gerundive morpheme can account for the meaning of the gerundive construction of a particular type, namely the subordination type, it may not be adequate for the one of coordination. As for the denotation for *mo*, it may not be adequate to explain the meaning of *mo* that appears as a particle that attaches to a case-marked phrase or a phrase with a postpositional particle. To overcome the limitations and to extend the present analysis of the gerundive form and *mo*, I suggested that one should also look into theories about topichood, case-marking, and postposition marking. I also pointed out that further research may reveal theoretical connections among concessive conditionals and other kinds of constructions such as modal sentences and questions or interrogatives.

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