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Pragmatic Aspects of Scalar Modifiers

The Semantics–Pragmatics Interface

OSAMU SAWADA
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General preface

The theoretical focus of this series is on the interfaces between subcomponents of the human grammatical system and the closely related area of the interfaces between the different subdisciplines of linguistics. The notion of “interface” has become central in grammatical theory (for instance, in Chomsky’s Minimalist Program) and in linguistic practice: work on the interfaces between syntax and semantics, syntax and morphology, phonology and phonetics, etc. has led to a deeper understanding of particular linguistic phenomena and of the architecture of the linguistic component of the mind/brain.

The series covers interfaces between core components of grammar, including syntax/morphology, syntax/semantics, syntax/phonology, syntax/pragmatics, morphology/phonology, phonology/phonetics, phonetics/speech processing, semantics/pragmatics, and intonation/discourse structure, as well as issues in the way that the systems of grammar involving these interface areas are acquired and deployed in use (including language acquisition, language dysfunction, and language processing). It demonstrates, we hope, that proper understandings of particular linguistic phenomena, languages, language groups, or inter-language variations all require reference to interfaces.

The series is open to work by linguists of all theoretical persuasions and schools of thought. A main requirement is that authors should write so as to be understood by colleagues in related subfields of linguistics and by scholars in cognate disciplines.

In a wide ranging but detailed investigation of scalar modifiers, Osamu Sawada argues for a multidimensional analysis that separates out the semantic aspects of the scales from the pragmatic ones. Sawada argues that though these two different dimensions are at play in how meanings are built up, there is a deep parallelism in the way that the notion of scale enters into the calculation of meaning in both dimensions, a parallelism captured theoretically by the way that the mechanisms that compose both semantic and pragmatic meanings are connected through the abstract concept of degree. This provides an explanation for both the particular kinds of pragmatic effect that these modifiers have and for their synchronic and diachronic typology.

David Adger
Hagit Borer
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About seven years have passed since my graduation, and I have had further opportunities to reconsider the data and analyses of pragmatic scalar modifiers. I have also had the chance to investigate the phenomenon from different perspectives, including the interpretation of embedded pragmatic scalar modifiers and the historical development of pragmatic scalar modifiers. These discussions are included in Chapters 8 and 9. I hope I have provided some examples of developments in the book, both empirical and theoretical.

During the process of writing this book, I have received much help and support from many scholars and colleagues. First, I wish to thank Tom Grano and Yusuke Kubota for having numerous discussions and providing me with valuable comments and suggestions regarding the data and analyses concerning pragmatic scalar modifiers and related phenomena. I also would like to extend my gratitude to the anonymous reviewers from Oxford University Press for their helpful discussions and feedback, which improved the content of this book significantly.

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Finally, I would like to express my deepest thanks to my parents Harumi and Fujie Sawada and my brother Jun Sawada for their support. Harumi and Jun provided many interesting examples and ideas relevant to the material presented in this book. I really enjoyed my discussions with them. I also want to thank my mother Fujie for her continuous support and encouragement.

Osamu Sawada

February 2017
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<td>ACC</td>
<td>accusative</td>
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<td>ACID</td>
<td>alleged conventional implicature device</td>
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<td>BEN</td>
<td>benefactive</td>
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<td>CI</td>
<td>conventional implicature</td>
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<td>CL</td>
<td>classifier</td>
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Introduction

1.1 Aim

Scalarity is one of the most fundamental concepts of human cognition. It is pervasive in language, and many linguistic expressions inherently have a scalar meaning: comparatives, adjectives, adverbs, nouns, quantifiers, measure phrases, numeral classifiers, polarity items (e.g., minimizers), scalar focus particles (e.g., even), intensifiers (e.g., very, much), hedges (e.g., more or less, approximately), exclamatives, expressives (e.g., damn), and so on. Scalarity is often used for measuring or comparing things, objectively (e.g., This building is 20 meters tall). Furthermore, it also plays an important role in evaluating things subjectively based on a contextually determined standard or personal taste (e.g., Tom is tall; tennis is fun; this coffee is too strong).

This book investigates the scalar phenomenon of natural language from the standpoint of the interface between semantics and pragmatics. More specifically, this book will focus on the meaning and use of pragmatic scalar modifiers, and considers (i) the (non)parallelism between semantic and pragmatic scalar modifiers (i.e., the conventional implicature triggering scalar modifiers); (ii) the compositionality and dimensionality of pragmatic scalar modifiers; (iii) the source of variation in the meaning of pragmatic scalar modifiers; and (iv) the interpretation of pragmatic scalar modifiers in an embedded content.

An interesting point of pragmatic scalar modifiers is that they often have a “dual-use phenomenon.” The dual-use phenomenon is a phenomenon where a degree morphology/scalar concept used for expressing at-issue scalar meaning (i.e., part of “what is said”) can also be used for expressing a not-at-issue scalar meaning (i.e., not part of “what is said”).

As we will discuss in detail, the dual-use phenomenon is quite pervasive in scalar expressions of natural language, including comparatives (Chapter 3), minimizers (Chapter 4), intensifiers (Chapter 5), and scale-reversal adverbs (Chapter 6), and scalarity is utilized not just for measuring an individual or event in the semantic level, but also for expressing various subjective feelings or discourse-pragmatic information such as politeness, priority of utterance, the speaker’s attitude, and unexpectedness at the pragmatic level.

The dual-use phenomenon is important for theories at the semantics/pragmatics interface because it strongly suggests that there are both similarities and differences between semantics (at-issue meaning) and pragmatics (not-at-issue meaning).
Introduction

The Gricean approach to the meaning/use of natural language often assumes a distinction between at-issue meaning and conventional implicature (CI), which is not-at-issue, although they are both parts of the meanings of words (Grice 1975, 1989). At-issue meaning contributes to the truth condition of a given sentence (which can be represented at the level of semantic representation/logical form), while CI (not-at-issue meaning) does not. In terms of Grice’s terminology, at-issue meaning belongs to “what is said,” while CI belongs to “what is implicated” (Grice 1975, 1989).

Grice’s (1975, 1989) discussion of the notion of CI is brief, with only a few examples provided (e.g., therefore, but, moreover, and on the other hand). However, recently (especially after Potts’ (2005) seminal work), many researchers have shown there are many phenomena that can be counted as CIs in natural language, such as expressives and supplements (Potts 2005, 2007a, b); honorifics/anti-honorifics (e.g., Potts and Kawahara 2004; J. Sawada 2016); datives (e.g., Horn 2007, 2009); discourse particles (e.g., Kratzer 1999; McCready 2009, 2010); exclamatives (Castroviejo Miró 2010); Japanese diminutives (Sawada 2013a); degree adverbs (e.g., McCready and Schwager 2009); modal demonstratives (Sawada and Sawada 2013); Japanese benefactives (Kubota and Uegaki 2011); evaluative adverbs (e.g., Mayol and Castroviejo 2013; Liu 2012), etc. (See also Bach (1999b) and Potts (2015) for the list of alleged conventional implicature items.)

To illustrate CI, let us consider the following examples:

(1) (Appositive)
Lance Armstrong, the cyclist, battled cancer.
At-issue: Lance Armstrong battled cancer
CI: Lance Armstrong is a cyclist.

(2) (Utterance modifier)
Frankly speaking, I think this costs too much.
At-issue: I think this costs too much.
CI: I am talking to you in a serious way/in a direct way.

(3) (Expressive adjective bastard)
That bastard Kresge is famous.
At-issue: Kresge is famous.
CI: The speaker has a negative feeling toward Kresge.

(4) (Honorifics, Japanese)
Yamada sensei-ga o-warai-ni nat-ta.
Yamada teacher-NOM SUB.HON-laugh-SUB.HON become-PAST
At-issue: Prof. Yamada laughed.
CI: The speaker honors Prof. Yamada.

Potts (2005) claims that the meanings triggered by parentheticals (Huddleston and Pullum 2002; Potts 2005, 2007a) as in (1), utterance modifiers (e.g., Bellert 1977; Potts 2005) as in (2), the expressive bastard as in (3), and Japanese honorifics (Harada 1976; Potts and Kawahara 2004) as in (4) are independent of “what is said” and they should be analyzed as a CI.
One supportive piece of evidence for the idea that they are CIs come from the fact that we cannot challenge the CI parts of the sentences by saying "No that’s not true!" The negative response can only target the at-issue part of the sentences. These phenomena suggest that there is a fundamental distinction between at-issue meaning and a CI. (We will discuss this point and other supportive evidence in detail in Chapter 2.)

In the current literature on semantics/pragmatics, the view that CIs and at-issue entailment are logically independent of each other is called a multidimensional approach.

Various scholars have questioned the status of CIs and made various alternative proposals for the distinction between at-issue meaning and CI meaning, such as Bach’s (1999a) second-order speech act approach, and relevance-theoretic approaches (e.g., Blakemore 1987, 1992, 2002; Carston 2002; Wilson 2011). These theories also consider there is a fundamental distinction between at-issue meaning and meaning corresponding to the Grice’s notion of CIs (although each theoretical approach and assumptions are different).

However, if we look closely at the scalar phenomenon of natural language, we see cases where a degree morphology (concept) used to express an at-issue scalar meaning is also used to express a meaning that corresponds to the notion of CI. This fact is significant for the theory of the semantics/pragmatics interface, because the phenomenon suggests there is a relation between at-issue semantic meaning and CI meaning. Let us consider some examples.

1.2 Dual-use phenomenon of scalar modifiers

1.2.1 Comparison with an indeterminate pronoun

In Japanese, sentences with \textit{nani-yori-mo} ‘lit. what-than-MO’ can express two kinds of comparison with indeterminateness:

\begin{enumerate}
\item \textit{nani-yori-mo} tenisu-wa tanoshii.
\end{enumerate}

\begin{enumerate}
\item At-issue semantics: Tennis is more fun than anything.
\item At-issue semantics: Tennis is fun. CI: The utterance that tennis is fun is more noteworthy than any alternative utterance.
\end{enumerate}

In the first reading, tennis is compared with (contextually determined) individual alternatives (e.g., soccer, basketball, reading, picnicking, etc.), while in the second reading, the utterance "tennis is fun" is compared with alternative utterances in terms of “noteworthiness,” and construed as the most noteworthy.

In terms of levels of meaning, the meaning of \textit{nani-yori-mo} in the first reading contributes to the sentence’s propositional (at-issue) content, while in the second reading the meaning of \textit{nani-yori-mo} is not part of the sentence’s propositional content (i.e., it is not at-issue); instead, it compares the at-issue utterance with alternative utterances, thereby functioning at the level of discourse. This is corroborated by the fact that the phrase \textit{nani-yori-mo} in the second reading (i.e., the noteworthy reading) is not necessary in the second reading for calculating the truth value of the proposition expressed.
Interestingly, a similar phenomenon occurs in languages other than Japanese. For example, we see the same ambiguity in the Korean expression mwues-potato-TO ‘what-than-TO’:

(6) Mwues-pota-to teynisu-nun caymi-itta. (Korean)
what-than-TO tennis-TOP fun-DECL
Individual reading: Tennis is more interesting than anything.
Noteworthy reading: More than anything, tennis is interesting.

We can see a similar phenomenon in English as well. Although in English, surface form distinguishes an individual comparison and a noteworthy comparison, they both use exactly the same degree morphology:

(7) Tennis is more interesting than anything. (Individual reading)
(8) a. More than anything, tennis is interesting. (Noteworthy reading)
   b. Tennis is, more than anything, interesting. (Noteworthy reading)

These data strongly suggest that dual-use phenomenon of comparison with indeterminateness is cross-linguistically pervasive.

1.2.2 Minimizer PPIs
In some languages, the dual-use phenomenon occurs in minimizers. For example, in Japanese, chotto and sukoshi can modify a gradable predicate:

(9) Kono doa-wa [chotto/sukoshi] ai-teiru. 
This door-TOP a little/a little open-perf
‘lit. This door is a little open.’ (= This door is slightly open.)

However, chotto, but not sukoshi, can also appear in a context where there is no gradable predicate that it can combine with:

(10) [Chotto/*sukoshi] hasami aru? 
A little/a little scissors exist
At-issue semantics: Are there scissors?
CI: I am minimizing the degree of imposition of my question (request).

Matsumoto (1985, 2001) observes that this type of chotto is a hedge/lexical speech act qualifier similar to kind of and sort of (G. Lakoff 1972). In terms of the semantics/pragmatics distinction, it seems natural to view the minimizer in (9) as belonging to the level of “what is said,” while considering the minimizer in (10) as belonging to the domain of CI. It does not participate in the truth condition of the at-issue question. A similar phenomenon can also be observed in Greek:

(11) Greek
   a. Ligi brizola parakalo? (Amount reading)
      A bit-feminine steak please
      ‘Please give me a bit of steak.’
Dual-use phenomenon of scalar modifiers

b. Ligo brizola parakalo? (Expressive reading)
A bit.neuter steak please
‘LIGO, please give me steak.’
(Anastasia Giannakidou, personal communication)

We can use the minimizer ligo (a neuter form) as a polite request similar to (10).

1.2.3 Intensifiers

Recent studies of intensifiers have shown that intensification of meaning is represented at both at-issue and not-at-issue levels, e.g., the English totally, fully (McCready and Schwager 2009; Beltrama 2014; Irwin 2014), the German ur ‘lit. absolutely’ and the Japanese particle zenzen ‘lit. at all’ (McCready and Schwager 2009); the Japanese totemo ‘lit. very’ (Sawada 2014a); the Japanese totemo ‘lit. very’ (Sawada 2014a); the German expressive intensifiers sau/voll/total ‘totally’ (Gutzmann and Turgay 2015); the Italian issimo ‘extremely’ (Beltrama 2014; Beltrama and Bochnak 2015).

For example, McCready and Schwager (2009) claim that the English intensifier fully has both an at-issue use and an expressive/pragmatic use:

(12) a. The pipe is fully straight. (At-issue use)
   (Kennedy and McNally 2005: 355)
b. Brenda is fully going to fly kick me! (Expressive use)
   (McCready and Schwager 2009)

In (12a) the adverb fully is used at the level of semantics. It denotes that the relevant degree is at a maximum level on the scale of straightness. On the other hand, (12b) uses fully at the pragmatic level. McCready and Schwager (2009) argue that fully in (12b) behaves as an expressive where the CI is that the speaker is maximally epistemically committed to his/her justification for his/her use of the proposition.

The Japanese intensifier totemo ‘very’ also has a dual-use phenomenon, but its dual property is quite different from that of intensifiers like fully:

(13) Kono ie-wa totemo ookii.
    This house-top very big
    ‘This house is very big.’

However, totemo can also intensify a negative modal statement:

(14) a. (Ability modal)
    Tetsuya-nado totemo {deki-na-katta/*deki-ta].
    Staying up all night-nado TOTEMO can-NEG-PAST/can-PAST
    ‘Staying up all night was impossible.’
    (CI: I am emphasizing the impossibility.)

b. (Epistemic modal)
    Taro-ga shaken-ni ukaru-nado totemo {arisooni-nai/*arisoo-da].
    Taro-NOM exam-in pass-nado TOTEMO likely-NEG/likely-PRED
    ‘It is unlikely that Taro will pass the exam.’
    (CI: I am emphasizing the unlikelihood.)
Descriptively, in (14a), *totemo* emphasizes a modal statement that is concerned with ability. On the other hand, in (14b), *totemo* emphasizes an epistemic modal statement. It emphasizes the modal statement that “it is unlikely that Taro will pass the exam.”

This use of *totemo* is not-at-issue, not part of “what is said.” This is supported by the fact that in (14a) the meaning of *totemo* is not within the scope of the past-tense operator. The speaker’s emphatic emotion/intensification is anchored to the time of utterance. The interesting point of the Japanese *totemo* is that unlike other speaker-oriented intensifiers like *fully* and *totally*, *totemo* has to appear in a negative context. Furthermore, it has to co-occur with a negative modal predicate.

The above data clearly show that intensification is pervasive in the not-at-issue dimension. How can we explain this variation?

### 1.2.4 Comparative intensifier *motto* (Japanese)

In Japanese, intensified comparison can occur at both at-issue level and the CI level. As example (15) shows, a sentence with the Japanese degree adverb *motto* can be ambiguous between a degree reading and a negative reading:

(15) **Motto** hayaku hashi-re!

MOTTO fast run-IMP

a. 'Run still much faster than now!'

b. At-issue: Run fast!

CI: Your speed of running is now slow.

In the degree reading (15a), the sentence is interpreted as a comparative in which the adverb *motto* behaves as a comparative morpheme whose meaning contributes to the at-issue semantics. More precisely, *motto* has a meaning of intensified comparison with a norm-related presupposition. In this reading, the speaker is urging the listener to run even faster.

Note that in this reading, the adverb *motto* receives a pitch accent.

On the other hand, in the negative reading (15b), the sentence’s at-issue meaning is viewed as a simple imperative, ‘run fast,’ with *motto* conveying the speaker’s negative attitude/perspective toward the current situation by comparing/contrasting the current and expected speeds of running. In this reading, the adverb *hayaku ‘fast’* (not the degree adverb *motto*) receives a pitch accent.

In terms of the status of meaning, it is possible to argue that while the meaning of *motto* in the first reading contributes to the truth condition of a given sentence, its meaning in the second reading does not. At issue is where the negative implication comes from.

### 1.2.5 Counter-expectational scalar adverbs

Synchronically, the Japanese counter-expectational scalar adverbs *yoppodo* and *kaette* do not have dual-use characteristics.

However, historically, the current pragmatic uses were derived from at-issue meanings. For example, historically, *yoppodo* was used as an intensifier like *extremely* or
very. However, currently, it is not a mere intensifier. It has counter-expectational meaning as well:

(16) (Context: Taro is looking at a ramen restaurant from outside. He sees many people waiting in front of the restaurant.)
    Ano raamen-ya-wa yoppodo oishii-nichigainai.
    That ramen-restaurant-TOP YOPPODO delicious-must
    At-issue: That ramen restaurant must be very delicious. Not-at-issue: I am inferring the degree via evidence and the degree is more than my expectation.

Yoppodo in (16) denotes a high degree at the at-issue level and conventionally implies that the given degree is above the speaker’s expectation, based on some evidence.

Note that yoppodo in (16) has the property of a modal concord (e.g., Geurts and Huitink 2006; Zeijlstra 2008) or modal matching (Grosz 2010) in that it always has to coincide with an evidential modal. If there is no modal element, the sentence is ill-formed:

(17) *Ano raamen-ya-wa yoppodo oishii.
    That ramen-restaurant-TOP YOPPODO delicious
    ’That ramen restaurant is yoppodo (delicious).’

Regarding kaette, historically, the counter-expectation was developed by combining the verb kaeru ‘to reverse’ and the particle te (Nihon kokugo daijiten). Kaette conventionally implicates that the opposite is normally the case:

(18) (Context: the speaker has lost his way in a subway station in Tokyo. More than five lines intersect at the station.)
    Tokyo-wa kaette fuben-da.
    Tokyo-TOP reversal inconvenient-PRED
    At-issue semantics: Tokyo is inconvenient.
    CI: Generally speaking, Tokyo is considered to be convenient.

1.2.6 Main questions

The dual-use phenomenon observed in section 1.2.5 provides an important perspective for considering relations between semantics (at-issue meaning) and pragmatics (not-at-issue meaning).

Although the standard theories of semantics and pragmatics assume that there is a distinction between the two, dual-use phenomenon of scalar modifiers also suggests a relation between them.

In this book, I investigate the similarities and differences between semantic and pragmatic scalar modifiers in terms of the semantics and pragmatics interface. More specifically, I address the following questions:

(19) Q1: What are the similarities and differences between semantic (at-issue) scalar modifiers and pragmatic (not-at-issue) scalar modifiers? Can we analyze the similarities and differences in a systematic way?

1 Historically, yoppodo (yohodo) originally come from yoki hodo ‘good/moderate level’ (see Chapter 9).
Q2: What kind of variations are there in pragmatic scalar modifiers? Can we capture the variation in a systematic way?

Q3: How are the pragmatic scalar modifiers interpreted in an embedded environment? What happens if the pragmatic meanings of pragmatic scalar modifiers are embedded under an attitude predicate like think/believe, which describes a subject's belief/thoughts as an at-issue meaning?

Q4: To what extent are pragmatic scalar modifiers pervasive? Under what circumstances can semantic scalar modifiers change into pragmatic scalar modifiers?

Q5: What does the dual-use phenomenon of scalar modifiers imply for the theory of semantics/pragmatics interface?

As regards the first question, I argue that although semantic and pragmatic scalar meaning are compositionally and dimensionally different, there is a striking parallelism between semantic and pragmatic uses in terms of scale structure. I show that the scalarity structure utilized for measuring an individual or event at the semantic level is also utilized for signaling various aspects of pragmatic information, including politeness, priority of utterance, the speaker's attitude, and the salience of the discourse context. I will analyze the similarities and differences between semantic and pragmatic usage utilizing a multidimensional composition system.

With regard to the second question (which concerns semantic variations), I will propose that there are two types of pragmatic scalar modifiers, a higher-level pragmatic scalar modifier and a lower-level pragmatic scalar modifier. A higher-level modifier utilizes an implicit pragmatic scale, while a lower-level modifier recycles the scale of an at-issue gradable predicate. I will show that these modifier types have different compositional and discourse-pragmatic characteristics.

Regarding the third question, I will claim that if pragmatic scalar modifiers are embedded under a complement of an attitude predicate, their interpretations can radically change. First, the meanings of the embedded pragmatic scalar modifier (and other CI-triggering expressions as well) can be subject-oriented and "at-issue" (not a CI). Second, in lower-level pragmatic scalar modifiers, the embedded pragmatic scalar modifiers can be speaker-oriented (can project out of the complement of an attitude predicate) only when there is a modal in the main clause. As for the first point, we will propose that there is a semantic shift from a CI to a secondary-at-issue meaning. As for the second point, we will explain the seemingly puzzling projective of lower-level pragmatic scalar modifiers by assuming that their judge must be consistent with the judge in the at-issue level.

As for the fourth question (regarding pervasiveness), I investigate this issue from a historical point of view. My claim is that although the dual-use phenomenon is cross-linguistically pervasive and the relationship between at-issue and not-at-issue scalar modifiers can be captured under a general path of semantic change/grammaticalization (i.e., propositional > (textual) > expressive) (Traugott 1982), the semantic shift of scalar modifiers is not lexically random.

I argue that the semantic change of scalar modifiers is constrained/regulated by their lexical and morphosyntactic properties. I also show that in some cases (totema) the directionality of semantic change is from expressive to propositional.
As for the final question (implications for the semantics/pragmatics interface),
I claim that dual-use phenomena provide supportive evidence for a multidimen-
sional approach to the interface (Potts 2005; McCready 2010; Gutzmann 2012). I also
compare how other theories treat Grice’s notion of CI (e.g., a procedural approach;
Blakemore 1987; Bach 1999b), and show that only a multidimensional approach can
theoretically capture both similarities and differences between semantic and prag-
matic scalar modifiers.

1.3 Similarities and differences between semantic and pragmatic
scalar modifiers (Q1)

1.3.1 Differences between semantic and pragmatic scalar modifiers
The meanings of semantic and pragmatic scalar modifiers are different in terms of use.
Semantic scalar modifiers specify the relation of degrees of individuals or things to an
appropriate standard associated with a gradable predicate (e.g., Kennedy and McNally
2005):

(20) Nani-yori-mo
tenisu-wa
tanoshii. (Individual reading)
What-than-mo
tennis-top fun
‘Tennis is more fun than anything.’

(21) Kono
do-a-wa {chotto/sukoshi} ai-teiru. (Degree reading)
This
door-top a bit/a bit
open-perf
‘This door is a little open.’

(22) Kono
hon-wa
totemo omoshiroi.
This
book-top very
interesting
‘This book is very interesting.’

(23) Motto
hayaku
hashi-re! (Degree reading)
motto
fast
run-imp
‘Run even much faster than now!’

In (20), the degree of “fun-ness” of tennis is related to a contextual standard; in (21),
the degree of “openness” of the door is related to a minimum standard; in (22) the
“interestingness” of the book is related to a contextual standard, and in (23), the
expected degree of the addressee’s running speed is related to the current speed.2

2 Strictly speaking, there is a slight difference in meaning between sukoshi and chotto. Although both
denote a low degree or amount, each minimizer conveys a different mode of measurement. While sukoshi
conventionally implies that a given measurement is precise, chotto conventionally implies that it is imprecise.
I will claim that sukoshi and chotto are “mixed content” (McCready 2010; Gutzmann 2012) that contain both
a semantic and CI meaning within a single word:

(i) Kono
sao-wa (sukoshi/chotto) magat-teiru.
This
rod-top a bit/a bit
bend-state
At-issue: This rod is a bit bent. (The degree of this rod is higher than the standard (zero) by a small
degree.) CI from sukoshi: I am measuring the degree in a precise way. CI from chotto: I am measuring
the degree in an imprecise way.
(24)  
  a. Tom is very tall.
  b. This book is extremely expensive.
  c. This rod is partially bent.

Crucially, here, the meaning of semantic scalar modifiers is “part of what is said.” Namely, they are part of the propositional content. This idea is supported by the fact that the scalar meaning triggered by at-issue scalar modifiers can be challenged by saying “No, that’s false.”

(25)  
  a. No, that’s false!
  b. Iya, sore-wa uso-da.
      No that-top false-pred
      ‘No, that’s false.’

On the other hand, the scalar meanings of pragmatic scalar modifiers are not part of “what is said.” They do not contribute to the truth conditions of a given proposition. Rather they convey some kind of speaker-oriented meaning. Observe the following examples:

(26)  
  Speaker’s evaluation of his/her utterance (Noteworthy comparison)
  Nani-yori-mo tenisu-wa tanoshii.
  What-than-mo tennis-top fun
  At-issue: Tennis is fun. CI: The utterance that tennis is fun is more noteworthy/ preferable than any other utterance.

(27)  
  Speaker’s regulation of his/her own utterance (Expressive chotto)
  Chotto jikan-ga nai-desu.
  A little time-nom neg-perf.hon
  At-issue: I don’t have time? CI: I am minimizing the illocutionary force of my utterance.

(28)  
  The speaker’s emotion of rejection
  Sonnakoto boku-ni-wa totemo deki-na-katta.
  Such a thing I-to-top totemo can-neg-past
  At-issue: I couldn’t do such a thing. CI: I am emphasizing the inability.

(29)  
  The speaker’s negative emotion toward an utterance situation
  Kono mise-no keeki-wa motto oishi-katta.
  This store-gen cake-top motto delicious-past
  At-issue: This store’s cake was delicious.
  CI: The degree of deliciousness of the store’s cake in the past (in the actual world) is much greater than the current degree of deliciousness of the store’s cake.)
  (CI: This store’s cake is not delicious now.)

In this book I will analyze the degree use of sukoshi as mixed content (McCready 2010; Gutzmann 2012) in that it has both an at-issue component and a CI component within a single word.

Typical examples of mixed content are pejoratives/ethnic slurs like Broche (Bach 2006; McCready 2010; Gutzmann 2011; Williamson 2009) and TV distinction (Bach 2006; Horn 2007; Potts 2007a). Ethnic slurs have mixed content. For example, Broche has a truth-conditional meaning equivalent to “German,” but in addition to this, it conventionally implicates that the speaker has a negative attitude toward Germans. See Chapter 3 for the detailed discussion on mixed content.
In (26), the speaker is using nani-yori-mo in order to convey that he/she thinks that, given the utterance situation, the at-issue utterance is the most noteworthy. In (27), the speaker is using chotto in order to minimize the degree of imposition of his/her own utterance to the addressee. As for (28), the speaker is using totemo to signal the meaning of refusal/rejection, and in (29) motto is signaling a speaker’s complaint regarding the current (low) degree of deliciousness of the store’s cake.

Crucially, the speaker-oriented meanings in (26)–(29) cannot be challenged by denial:

(30) Iya, sore-wa uso-da.
    No that-top false-pred
    ‘No, that’s false!’

Denial can only target the at-issue part of the sentences.

In arguing for the idea that these pragmatic scalar modifiers have the property of non-truth-conditionality (CI-hood), I will provide further additional evidence that their pragmatic meanings cannot be within the semantic scope of logical operators. For example, in (28), the speaker’s emphatic meanings triggered by totemo in (28) and motto in (29) cannot be within the scope of the past tense.

1.3.2 Similarities between at-issue and not-at-issue scalar modifiers

Despite the above differences (non-parallelism) between pragmatic and semantic scalar modifiers, there is a striking parallelism between them in terms of scale structure.

For example, in the case of nani-yori-mo 'lit. what-than-mo' (Chapter 4), I will argue that both an individual comparison reading and a noteworthy comparison reading have exactly the same scalar meaning, i.e., a superlative-like comparative meaning.

(31) Nani-yori-mo tennis-wa tanoshii.
    What-than-mo tennis-top fun
    a. At-issue: Tennis is more fun than anything. (Individual reading)
    b. At-issue: Tennis is fun. CI: The utterance “Tennis is fun” is more noteworthy than any other alternative utterance. (Noteworthy reading)

In the individual reading, nani-yori-mo (= 31a) compares an at-issue individual with every alternative individual and says that the former is the highest on the scale associated with a gradable predicate. On the other hand, in the noteworthy reading, (= 31b) nani-yori-mo compares an at-issue utterance to every alternative utterance and says that the former is the highest on the scale of noteworthiness.

As for the case of minimizers (Chapter 5), I claim that the degree type of minimizer (= 32a) and an expressive minimizer have exactly the same scalar meaning "greater than a standard by a small amount/degree”:

(32) a. Kono doa-wa {chotto/sukoshi} ai-teiru.
    This door-top a little/a little open-perf
    At-issue: The degree of bentness of this rod is slightly greater than a minimum standard (zero degree).
b. [Chotto/*sukoshi] hasami aru?
   A little/a little scissors exist
   At-issue semantics: Are there scissors? CI: The degree of imposition of my utterance on the addressee is slightly greater than a minimum standard.

Degree minimizers measure the degree of an individual/entity and semantically denote the degree is greater than a standard associated with a gradable predicate. On the other hand, in the case of the expressive minimizer, it measures the degree of imposition of an at-issue speech act on the addressee and implies that the degree of imposition is slightly greater than a standard (i.e., the degree of the speaker's imposition of the at-issue speech act on the addressee is low).

As for comparative adverbs (Chapter 6), I argue there is a parallelism between an at-issue use and a not-at-issue/expressive use in terms of scale structure. As for the comparative adverb motto, a degree use and a negative use have the same scalar meaning, i.e., intensification:

(33) Motto hayaku hashi-re!
    MOTTO fast run-IMP
    Degree reading: Run even faster!
    Negative reading: At-issue: Run fast! CI: The expected degree of running speed is much greater than the degree of the current speed. (= The degree of the current running speed is low.)

In the degree use (= 33a), motto expresses an intensified comparison between two individuals x and y. On the other hand, in the negative use (= 33b), motto compares the same individual based on two different situations. Namely, it compares an individual x in an utterance situation to x’s degree in an alternative expected situation in the domain of CI and denotes the expected degree is much greater than the current degree. I argue that the negative inference of the negative motto comes from the large gap between a current degree and an expected degree.

The non-comparative intensifier totemo ‘very’ also has a parallelism between the at-issue and not-at-issue use in terms of intensity:

(34) a. Taro-wa totemo kashikoi.
    Taro-TOP very smart
    ‘Taro is very smart.’

b. Konnna muzukashii mondai-wa watashi-ni-wa totemo
   Such difficult problem-TOP I-to-TOP TOTEMO
tok-e-nai.
solve-can-NEG
   At-issue: I can’t solve such a difficult problem. Not-at-issue: I am emphasizing the impossibility of solving the problem.

Finally, as for the counter-expectational adverbs, kaette and yoppodo (Chapter 7), although they do not have a dual-use characteristic, their not-at-issue/CI meaning
Two types of pragmatic scalar modifiers

has the same scale structure as their source meanings. The adverb *kaette* is historically derived from the verb ‘to reverse,’ and the CI meaning of *kaette* utilizes this function in the CI dimension. The CI is that the opposite of the at-issue gradable predicate is normally true with respect to the target:

(35) Koko-wa kaette abunai-desu.

At-issue: It is dangerous here.
CI: Generally, it is safe here.

As for the counter-expectational intensifier *yoppodo*, originally it had a pure at-issue intensifier use. Although the current use of *yoppodo* has the not-at-issue component on evidentiality and counter-expectation, it still has an at-issue intensification component:

(36) Taro-wa yoppodo isogasii-nichigainai.

At-issue: Taro must be very busy.
CI: I am inferring the degree via evidence, and the degree is above my expectation.

These parallelisms strongly suggest that the scale structure at the semantic level can be extended at the discourse-pragmatic level in a parallel manner.

Sections 1.3.1 and 1.3.2 suggest that there are both similarities and differences between semantic and pragmatic scalar modifiers. In this book, I try to explain the similarities and differences in a systematic way using a multidimensional composition system (Potts 2005; McCready 2010; Gutzmann 2011).

1.4 Two types of pragmatic scalar modifiers (Q2)

The second core question of this monograph is the variation of pragmatic scalar modifiers. In considering the semantic variations, I will posit that there are two types of pragmatic scalar modifiers: higher- and lower-level ones. The former are placed at a higher level and operate on an entire utterance, while the latter are placed lower and modify a predicate, as illustrated in (37) and (38):

(37) A higher-level pragmatic scalar modifier

```
S'  
/   
/    
DegP  S

scalar modifier_{PRAG} speech act/proposition
```
Introduction

A lower-level pragmatic scalar modifier

\[
\begin{array}{c}
S \\
\text{DP/S} \quad \text{DegP} \\
\text{entity/proposition} \quad \text{AdjP} \\
\text{scalar modifier}_{PRAG} \quad \text{gradable predicate}
\end{array}
\]

We will investigate the difference between higher- and lower-level pragmatic scalar modifiers from various perspectives: scalarity, compositionality, discourse-orientedness, and compositionality. I will show that the two types are radically different in terms of their compositionality and pragmatic functions.

1.4.1 Higher-level pragmatic scalar modifiers

Let us first consider the case of higher-level pragmatic scalar modifiers. Descriptively, they are similar to sentential adverbs or evaluative adverbs like fortunately and surprisingly in that they are “supplemental” in nature (Potts 2005; Huddleston and Pullum 2002).

(39) a. Fortunately it is very close to public transport.
   (http://www.tripadvisor.co.uk/LocationPhotoDirectLink-g196637-d196931-i52092694-Ibis-Lille-Roubaix-Centre-Roubaix-Nord-Nord-Pas-de-Calais.html)
   b. Surprisingly, the opposition, usually eager to find any stick to beat the government with, is refusing to comment on the affair. (COBUILD)

However, there is a difference between fortunately and higher-level pragmatic scalar modifiers in terms of the explicitness of the measure function dimension. While evaluative adverbs clearly have measure function dimensions (e.g., surprisingness, unfortunateness), it is not clear what kind of dimension (scale) the higher-level pragmatic scalar modifiers have:

(40) a. More than anything, Tokyo is safe.
   b. Chotto kaimono-ni i-te ki-masu.
   ‘Chotto, I will go shopping.’
   c. Ilaria is totally coming to the party. (McCready and Schwager 2009)

In this book, we will investigate what kind of scalar properties higher-level pragmatic scalar modifiers have with a special focus on nani-yori (Chapter 4) and the expressive chotto (Chapter 5). In considering the meaning of higher-pragmatic scalar modifiers, we will also investigate sensitivity to sentence types (Sadock and Zwicky...
Two types of pragmatic scalar modifiers

1985). Nani-yori-mo ‘more than anything’ and the expressive chotto can appear with any kind of speech act:

(41) Speaker’s regulation of his/her own utterance
   a. (Declarative)
      Chotto ryugaku-o kangae-tei-masu.
      A bit study abroad-ACC think-ING-PERF.HON
      ‘Chotto, I am now thinking about the possibility of study abroad.’
   b. (Interrogative)
      Chotto doi-te itadake-masu-ka?
      A little leave-TE give-PERF.HON-Q
      ‘Chotto, can you step aside?’
   c. (Imperative)
      Chotto kore kasha-te
      A bit this lend-IMP
      ‘Chotto, lend this to me.’

(42) a. (Declarative)
      Naniyoi-mo Hanako-wa totemo yasashii.
      What-than-MO Hanako-TOP very kind
      ‘More than anything, Hanako is very kind.’
   b. (Interrogative)
      Nani-yori-mo doko-de kore-o mituke-mashi-ta?
      What-than-MO where-LOC this-ACC find-PERF.HON-PAST
      ‘More than anything, where did you find this?’
   c. (Imperative)
      Nani-yori-mo mazu jugyoo-ni ki-nasai.
      What-than-MO first class-to come-IMP
      ‘More than anything, come to the class!’

However, as McCready and Schwager (2009) and Beltrama (2015) observe, basically, the expressive intensifier totally fully can only appear in a declarative sentence:

(43) a. He totally didn’t show up. (Declarative)
   b. *Who totally went to the party? (Interrogative)
   c. *Totally go buy me a beer! (Imperative) (McCready and Schwager 2009)

McCready and Schwager (2009) and Beltrama (2015) assume that totally is a proposition-taking operator.

Because of the distributional differences described above, I will assume that there are two types of pragmatic scalar modifiers: those with a speech-act-modifying use

3 Notice, however, that totally is fine with advice imperatives and rhetorical questions (McCready and Schwager 2009):
(1) A: Should I go to the party? B: Totally go, dude! (Advice imperative) (McCready and Schwager 2009)
(2) Who totally didn’t do their work yesterday? (Rhetorical question) (McCready and Schwager 2009)
and those with a proposition-modifying use. The former are structurally higher than the latter in the logical structure:

\[(44)\]

a. Speech-act-modifying type: *nani-yori-mo, more than anything*, the expressive *chotto*
b. Proposition-taking type: *fully, totally*

\[(45)\] Varieties of higher-level pragmatic scalar modifiers

* Speech act modifier (e.g., *nani-yori-mo, chotto*)
* Propositional modifier (e.g., *fully, totally*)

The fact that there is an asymmetrical ordering relationship between *more than anything* and *totally* also supports the idea that the speech act modifier is placed higher than the propositional modifier in the logical semantic structure:

\[(46)\]

a. More than anything, Bill totally hates natto.

b. More than anything, Bill is totally thinking that he is not guilty.

\[(47)\]

a. *Totally, more than anything, Bill hates natto.*
b. *Totally, more than anything, Bill is thinking that he is not guilty.*

The question is how we can analyze the meaning of higher-level pragmatic scalar modifiers in a theoretical way. In this book, we will analyze the meaning of higher-level pragmatic scalar modifiers (and lower-level pragmatic scalar modifiers) based on multidimensional semantics (Potts 2005; McCready 2010; Gutzmann 2012, 2015) to show that there are variations among higher-level pragmatic scalar modifiers in terms of compositionality as well.

More specifically, I will show that we need to differentiate between higher-level pragmatic scalar modifiers that consist of a single word and scalar modifiers that consist of multiple words in terms of compositionality:

\[4\] I think that this asymmetry can be captured as the difference of functional projections in syntax (Cinque 1999; Rizzi 2002). Cinque (1999) proposes the following hierarchy of functional projection and it seems that the speech-act-modifying pragmatic scalar modifiers correspond to MoodP_{speechact} and the proposition-taking type corresponds to MoodP_{evaluative} in his structural hierarchy:

\[\begin{array}{llllllllllllllll}
\text{MoodP}_{\text{speechact}} & \text{MoodP}_{\text{evaluative}} & \text{MoodP}_{\text{evidential}} & \text{ModP}_{\text{epistemic}} & \text{TP(Past)} > \\
\text{TP(Future)} & \text{MoodP}_{\text{realis}} & \text{ModP}_{\text{alethic}} & \text{AspP}_{\text{habitual}} & \text{AspP}_{\text{repetitive}}(\text{I}) > \\
\text{AspP}_{\text{repetitive}}(\text{I}) & \text{ModP}_{\text{volutinal}} & \text{AspP}_{\text{celerative}}(\text{I}) & \text{TP(Anterior)} & \text{AspP}_{\text{terminative}} > \\
\text{AspP}_{\text{terminative}} & \text{AspP}_{\text{perspective}} & \text{AspP}_{\text{proximate}} & \text{AspP}_{\text{dative}} & \text{AspP}_{\text{generic/progressive}} > \\
\text{AspP}_{\text{prospective}} & \text{ModP}_{\text{obligation}} & \text{ModP}_{\text{permission/ability}} & \text{AspP}_{\text{complete}} & \text{VoiceP} > \\
\text{AspP}_{\text{celerative}}(\text{II}) & \text{AspP}_{\text{repetitive}}(\text{II}) & \text{AspP}_{\text{frequentative}}(\text{II})
\end{array}\]

(Cinque 1999)

We will discuss the logical structure of the speech act in Chapter 4.

\[5\] Natto is fermented soybeans.
Two types of pragmatic scalar modifiers

(48) a. A higher-level pragmatic scalar modifier based on a single word: chotto, totally
      b. A higher-level pragmatic scalar modifier based on multiple words: more than anything, nani-yori-mo

It will be shown that the single-word pragmatic scalar modifiers are calculated by the resource-insensitive CI application, i.e., Potts’ CI application, while the multiple-word pragmatic scalar modifiers are calculated by the resource-sensitive application, i.e., shunting application (McGready 2010; Gutzmann 2011).

1.4.2 Lower-level pragmatic scalar modifiers

Lower-level pragmatic scalar modifiers are radically different from higher-level pragmatic scalar modifiers in terms of both structure and compositionality. Structurally, they are located at a lower level and directly combine with a gradable predicate. Semantically, they recycle an at-issue gradable predicate to convey the CI meaning.

(49) Kono mise-no keeki-wa motto oishi-katta.
     This store-gen cake-top MOTTO delicious-past
     At-issue: This store’s cake was delicious.
     CI: The degree of deliciousness of the store’s cake in the past (in the actual world) is much greater than the current degree of deliciousness of the store’s cake. (Implication: This store’s cake is not delicious now.)

(50) Tetsuya-o suru-nado totemo deki-nai.
     Staying up all night-ACC do-NADO TOTEMO can-NEG
     At-issue: Staying up all night is impossible. CI: I [the speaker] am emphasizing the impossibility.

(51) Koko-wa kaette kiken-da.
     Here-top reversal dangerous-PRED
     At-issue: This place is dangerous. CI: Generally speaking, this place is not dangerous.

(52) (Context: Taro is looking at a ramen restaurant from outside. He sees a lot of people waiting in front of the restaurant.)
     Ano raamen-ya-wa yoppodo oishii-nichigainai.
     That ramen-restaurant-top YOPPDO delicious-must
     At-issue: [The food at] that ramen restaurant must be very delicious. CI: I [the speaker] am inferring the degree via evidence, and the degree is above my expectation.

For example, in (49), motto utilizes the at-issue gradable predicate oishii ‘delicious’ in the CI dimension. Totemo in (50) utilizes the scale of impossibility denoted by deki-nai, while kaette in (51) utilizes the scale of dangerous. Yoppodo in (52) utilizes the at-issue gradable predicate (here, oishii ‘delicious’); it denotes a high degree at the at-issue level and conventionally implies that the given degree is above the judge’s expectation, based on some evidence.
Introduction

We will argue that the fundamental properties of lower-level pragmatic scalar modifiers are that they recycle the measure function dimension of an existing at-issue gradable predicate and convey that there is a contrast/gap between an utterance situation and a speaker’s expected situation with regard to the degree of a target. I will also claim that, compositionally speaking, lower-level pragmatic scalar modifiers must be computed via a mixed application (McCready 2010; Gutzmann 2012) which allows an at-issue meaning and a CI meaning in a simultaneous fashion.

1.5 Interpretation of embedded pragmatic scalar modifiers (Q3)

The third main question I would like to address concerns the interpretation of embedded pragmatic scalar modifiers. As we have seen in sections 1.3 and 1.4, pragmatic scalar modifiers have the property of CIs and they are speaker-oriented. The question is how these pragmatic scalar modifiers are interpreted when they are embedded under an attitude predicate like believe and think.

In this book I will discuss the following two points regarding embedded pragmatic scalar modifiers. First, when pragmatic scalar modifiers (and other CI expressions) are embedded under an attitude predicate, they can be subject-oriented, in which case their meanings become at-issue, i.e., their meanings are within the semantic scope of logical operators in the main clause. I will propose that there is a shift from a CI to a secondary at-issue meaning at a clausal level (before combining with an attitude predicate). It will be shown that the semantic shift from a CI to a secondary at-issue entailment is observed in typical expressives as well.

The second major point I will discuss is concerned with the projectivity (speaker orientation) of embedded pragmatic scalar modifiers: unlike higher-level pragmatic scalar modifiers/expressives, the speaker-oriented use of lower-level pragmatic scalar modifiers can project out of the complement of an attitude predicate only when there is a modal/speaker-oriented element in the main clause. In this book, I will call this phenomenon “projection via modal support” and try to provide a theoretical explanation. It will also be shown that there is variation among lower-level pragmatic scalar modifiers as to what kind of modality/speaker-oriented elements can support their projections, and that this can be naturally explained based on the semantic characteristic of each scalar modifier.

1.5.1 Subject-oriented reading of embedded CIs/pragmatic scalar modifiers

Let me briefly overview the basic idea of subject-oriented reading of CIs/pragmatic scalar modifiers. It is well known that CIs are strongly projective. Potts (2005) claims that in contrast to typical presuppositions, CIs can project even if they are embedded in the complement of an attitude predicate such as believe or a verb of saying (which functions as a presupposition plug; Karttunen 1973) (we will discuss the difference between typical presupposition and typical CIs in Chapter 2):

(53) a. Sheila believes that Chuck, a psychopath, is fit to watch the kids.
    b. Sue believes that that bastard Kresge should be fired. (#I think he’s a good guy.) (Potts 2007a: 170)
Potts (2005) claims that appositives and expressives are invariably speaker-oriented, regardless of their syntactic environment. However, recent studies have shown that contrary to Potts’ initial claim, CI expressions such as expressives can have non-speaker orientation (e.g., Wang et al. 2005; Karttunen and Zaenen 2005; Sauerland 2007; Amaral et al. 2007; Potts 2007a; Harris and Potts 2009).

For example, Amaral et al. (2007) provide the following examples to show that expressives and appositives can be subject-oriented:

(54) Joan is crazy. She's hallucinating that some geniuses in Silicon Valley have invented a new brain chip that's been installed in her left temporal lobe and permits her to speak any of a number of languages she's never studied. Joan believes that her chip, which she had installed last month, has a twelve year guarantee. (Amaral et al. 2007: 735)

(55) (Context: We know that Bob loves to do yard work and is very proud of his lawn, but also that he has a son Monty who hates to do yard chores. So Bob could say the following (perhaps in response to his partner's suggestion that Monty be asked to mow the lawn while Bob is away on business)): Well, in fact Monty said to me this very morning that he hates to mow the friggin' lawn. (Amaral et al. 2007: 736)

In (54), the appositive part is anchored to Joan, and in (55), the expressive *friggin'* is anchored to Monty.

Based on these facts, Amaral et al. (2007) and Harris and Potts (2009) suggest that the interpretations of embedded expressives and appositives are a matter of indexicality. In this view the determination of speaker-orientedness/non-speaker-orientedness is a pragmatic phenomenon.

In this book I will argue that the interpretation of embedded CIs/pragmatic scalar modifiers is not just a matter of indexicality. More specifically, I will argue that in the subject-oriented reading there is a semantic shift from a conventional implicature to a secondary at-issue entailment when it is combined with an attitude predicate.

For example, in (56), the expressive *friggin'* is subject-oriented and its meaning is clearly within the semantic scope of the past tense:

(56) (Subject-oriented reading, *friggin'* = Monty's perspective) Monty said to me two years ago that he hated to mow the friggin' lawn, but now, he doesn't mind.

On the subject-oriented reading, *friggin'* has to be within the scope of the matrix tense. On the sequence-of-tense reading, which is the most salient, the time of Monty's speech corresponds with the time of Monty's hating, i.e., the time at which Monty had a negative attitude toward the lawn, as in (57):

(57) Monty said to me two years ago that he hated to mow the friggin' lawn, but now, he doesn't mind. (embedded clause = past tense)

The important point, however, is that *friggin'* is an expressive; it relates to Monty's attitude in the past. It is not a primary meaning.
Introduction

The same phenomenon can be observed in the case of embedded pragmatic scalar modifiers. For example, in (58), the expressive/negative totemo can be anchored to the subject Taro (in fact it can only be anchored to the subject) and its meaning is clearly within the semantic scope of the past tense in the main clause:

(58) Embedded totemo
Taro-wa tetsuya-nado totemo deki-nai-to omo-tta.
Taro-TOP staying up all night-NADO TOTEMO can-NEG-that think-PAST
At-issue: Taro thought that staying up all night was impossible.
Expressive: Staying up all night is highly impossible according to Taro’s past thought.

The expressive meaning triggered by the negative totemo is Taro’s feeling in the past. (Recall that in a simple non-embedded environment the negative totemo behaves as a CI. It cannot be under a scope of a past-tense/logical operator.) In this book I will propose that the semantic shift from a CI to a secondary at-issue entailment occurs when the embedded clause (which contains a CI/pragmatic scalar modifier) combines with an attitude predicate and receives a subject-oriented reading.

1.5.2 Speaker-oriented reading of embedded (lower-level) pragmatic modifiers: The projection of CIs via “modal support”

As example (59) shows, the expressive chotto can be anchored to the speaker (note that there is also a reading where the expressive chotto is anchored to the subject of the sentence):

(59) (Context: A secretary is telling a visitor about Prof. Yamada’s schedule.)
Yamada-sensei-wa konsyuu-wa chotto o-jikan-ga
Yamada-teacher-TOP this.week-TOP CHOTTO time-NOM
naite omo-te-orare-masu.
NEG.EXIST-that think-TE-SUB.HON-PERF.HON
At-issue: Professor Yamada thinks that this week, he does not have time.
CI: I [the speaker] am weakening the force of my assertion. (speaker-oriented)

In (59), the expressive chotto is speaker-oriented. The natural situation for the speaker-oriented reading is one where the speaker (i.e., the secretary) uses chotto in order to weaken the illocutionary force of his/her speech act.6

Lower-level pragmatic scalar modifiers are radically different from typical CIs and higher-level pragmatic scalar modifiers in terms of their projection. That is, the not-at-issue meaning of lower-level pragmatic scalar modifiers can project out of the complement of the attitude predicate only if there is a modal in the main clause.

Let us observe some examples of yoppodo and kaette. First, yoppodo. Recall that yop-podo (in the normal affirmative sentence) always co-occurs with an evidential modal.

6 Note, however, that not all kinds of higher-level pragmatic scalar modifiers can be embedded under the attitude predicate. We will discuss this point in detail in Chapter 8.
If *yoppodo* is embedded in the complement of an attitude predicate and there is an evidential modal in the embedded clause, then *yoppodo* is always subject-oriented:

(60) (Context: Taro sees a lot of people waiting in front of the ramen restaurant and thinks that this situation is unusual.)

\[ \text{Taro-wa [ano ramen-ya-wa } \text{yoppodo oishii-nichigainai]-to} \text{Taro-top that ramen-restaurant-top YOPPDOO delicious-must-that omo-teiru.} \text{think-TEIRU} \]

‘Taro thinks that the [food at the] ramen restaurant must be very delicious.’

CI: Taro is inferring the degree via evidence, and the degree is above my (the speaker’s) expectation. (Only a subject-oriented reading is available.)

However, if *yoppodo* is embedded in the complement of an attitude predicate and there is an evidential modal (concord element) in the main clause, then *yoppodo* is always speaker-oriented:

(61) (Context: The speaker observes that Taro goes to the ramen restaurant Kiyuka every day.)

\[ \text{Taro-wa [ano ramen-ya-wa } \text{yoppodo oishii]-to} \text{Taro-top that ramen-restaurant-top YOPPDOO delicious-that omo-teiru-nichigainai.} \text{think-TEIRU-must} \]

‘Taro must think that [the food at] that ramen restaurant is very delicious.’

CI: [the speaker] am inferring the degree via evidence, and the degree is above my expectation. (Only a speaker-oriented reading is available.)

The above data suggest that the interpretation of *yoppodo* is dependent on the position of an evidential modal. If there is a modal in the embedded clause, the not-at-issue meaning of *yoppodo* is anchored to the subject of the sentence (here Taro), while if the evidential modal is in the clause it is anchored to the speaker.

As for the counter-expectational adverb *kaette*, although it does not exhibit the “modal-concord-like” phenomenon or modal-matching phenomenon, it demonstrates the projection of not-at-issue meaning via modal support. If there is no modal in the main clause, the embedded *kaette* can only be subject-oriented:

(62) Taro-wa [konbini-no kohii-no-hoo-ga kissaten-no Taro-top convenience.store-gen coffee-gen-direction-nom cafe-gen kohii-yori-mo kaette oishii]-to omo-teiru. coffee-than-MO KAETTE tasty-that think-TEIRU

‘Taro thinks that a convenience store’s coffee is tastier than coffee at a café.’

(CI: Taro thinks that a café’s coffee is generally tastier than a convenience store’s coffee.)

However, if a modal is inserted in the main clause, *kaette* can project. The following sentence can have both a subject-oriented reading and a speaker-oriented reading:
(63) Taro-wa konbini-no konbini-top [konbini-no convenience.store-gen] coffee-gen-convenience.store-gen coffee-direction-nom coffee-gen-direction-nom kissaten-no kissaten-GEN kissaten-GEN kissaten-yori-mo kissaten-from-mo kaette kaette oishii-to oishii-that think-teiru-may think-teiru-may kamoshirenai. may think-tasty that think-teiru-may
'Taro may think that a convenience store’s coffee is tastier than coffee at a café.'
(CI, reading 1: Taro thinks that a café’s coffee is generally tastier than a convenience store’s coffee.)
(CI, reading 2: The speaker thinks that a café’s coffee is generally tastier than a convenience store’s coffee.)

Reading 1 is subject-oriented. In this reading, the subject Taro assumes that the opposite of his assumption can be true. The natural context for this reading is that Taro is surprised at the deliciousness of a convenience store’s coffee. Reading 2 is a speaker-oriented reading, in which the speaker admits the possibility that the opposite of his/her own assumption can be true. The natural context for this reading is that the speaker often sees Taro buying coffee at a convenience store and thinks about why Taro buys coffee there rather than at a café.

In this book, we will show that the phenomenon of projection of not-at-issue meaning via modal support illustrated in (62) and (63) is pervasive in lower-level pragmatic scalar modifiers:

(64) The projection of CI meanings via modal support:
The CI meaning of lower-level pragmatic scalar modifiers that are embedded under the attitude predicate can be projected (speaker-oriented) if there is an appropriate modal in the main clause.

We will explain the seemingly puzzling projection of lower-level pragmatic scalar modifiers by assuming that their judge must be consistent with the judge in the at-issue level. We will also show that the kind of modal which supports the speaker orientation (projection) can be different among lower-level pragmatic scalar modifiers. For example, in the case of yoppodo, an evidential modal supports its projection, and in the case of totemo, a negative gradable modal (meaning unlikely, impossible) can support the projection. I argue that these variations can be accounted for by the lexical meanings of each pragmatic scalar modifier.

The phenomenon of speaker orientation via modal support in pragmatic scalar modifiers provides new insight for the current theory of the taxonomy of PC, especially for parametric classification based on “obligatory local effect” (Tonhauser et al. 2013), in that whether a given scalar modifier has a local effect or not depends on the presence or absence of another element, modality. It will be shown that there is a new class of PC that requires consistency of perspective between an at-issue meaning and a CI meaning.

1.6 The semantic change of scalar modifiers (Q4)

We have so far briefly discussed the varieties of pragmatic scalar modifiers. In this book, we will also consider how pragmatic scalar modifiers have been developed from a historical perspective.
I will show that the development of pragmatic scalar modifiers can be captured under a general path of semantic change/grammaticalization (i.e., propositional > (textual) > expressive) (Traugott 1982):7

\[(65)\] Extension from a semantic scalar meaning to a pragmatic scalar meaning

At-issue scalar meaning $\rightarrow$ CI/expressive scalar meaning

However, I will also show that the semantic shift of scalar modifiers is not lexically random. I argue that it is constrained/regulated by the lexical and morphosyntactic properties of the scalar modifiers.

A constraint at the lexical level will be argued based on data from minimizers (Chapter 5) and intensified comparative adverbs (Chapter 6), which show that semantic change does not occur if the source meaning does not fit with the mode of expressive meaning.

At the morphosyntactic level, I will argue based on data from noteworthy comparison (Chapter 4) and intensified comparison (Chapter 6), that there is a general constraint that the elements that are only used for expressing a particular CI meaning must form a constituent, and if the at-issue morphosyntactic environment does not satisfy this requirement, a semantic change will not occur. We will show that this constraint is deeply connected to the issue of semantic compositionality.

We will also discuss the issue of unidirectionality and present cases where the directionality from propositional to expressive meaning is reversed in the semantic change of Japanese *totemo*. Furthermore, we will discuss the relationship between semantic change and syntactic change and claim that the two are not always parallel, based on the syntactic and semantic properties of lower-level pragmatic scalar modifiers.

1.7 Chapter summary

To summarize, in this book we will focus on the dual-use phenomenon in natural language and consider the following issues:

\[66\]

a. The similarities and differences between at-issue scalar meanings and CI (not-at-issue) scalar meanings
b. Variations of pragmatic scalar modifiers (both compositional/semantic variations)
c. Interpretations of embedded pragmatic scalar modifiers
d. Historical development of pragmatic scalar modifiers

I think that these issues are important for current theories of the semantics/pragmatics interface. In the current literature on semantics and pragmatics, various theories have focused on the difference between semantics and pragmatics. However, the dual-use phenomenon strongly suggests that there is some relation between them.

7 Usually, grammaticalization is understood as the change whereby lexical items and constructions appear in certain linguistic contexts to serve a grammatical function and, once grammaticalized, continue to develop new grammatical functions (Hopper and Traugott 2003) (see also Meillet 1912; Lehmann 1995; and Heine, Clausi, and Hünnemeyer 1991, among many others).
Introduction

This book will try to explain the similarities and differences between semantic scalar meaning and pragmatic scalar meaning (CI scalar meaning) and the properties of pragmatic scalar modifiers. Theoretically, in analyzing the meanings of pragmatic scalar modifiers, we will utilize the idea of multidimensionality (Potts 2005; McCready 2010; Gutzmann 2010) which enables us to analyze the at-issue scalar meanings and CI scalar meanings in a unified/systematic way.

The structure of this book is as follows. In Chapter 2 I will introduce the landscape of scalar meanings and highlight the target phenomenon of this book—the phenomenon of dual use of scalar modifiers. I will introduce four kinds of scalar meanings: at-issue scalar meaning, conversational scalar meaning, presuppositional scalar meaning, and conventional implicature (CI) scalar meaning. We will then look at the dual-use phenomenon of scalar modifiers where a scalar modifier can express both at-issue scalar meaning and CI scalar meaning.

In Chapter 3, I will introduce the logic of conventional implicatures (CIs), which provides a starting point for analyzing the meanings of CI scalar modifiers and considering the relation between at-issue scalar meanings and CI scalar meanings in a more theoretical way. I will introduce the type systems of conventional implicature and various interpretive rules based on the systems, including CI application (Potts 2005), shunting application (McCready 2010), mixed application (McCready 2010; Gutzmann 2011), and expressive application (Gutzmann 2011; McCready 2010; Sawada 2013a).

Chapter 4 though Chapter 7 are devoted to case studies of pragmatic scalar modifiers. In Chapter 4 we will focus on the dual-use phenomenon of comparison with an indeterminate pronoun in Japanese (and other languages) and consider the similarities and differences between individual comparison (which is interpreted at the at-issue dimension) and noteworthy comparison (which is interpreted at the CI dimension). We will also consider the role of scalarity and comparison in a discourse context.

Chapter 5 investigates the dual-use phenomenon of positive polarity minimizers with special reference to the Japanese minimizers *sukoshi* ‘a little’ and *chotto* ‘a little.’ We will first observe the fact that although both *chotto* and *sukoshi* can combine with a gradable predicate and measure degrees in the at-issue level, only *chotto* can be used to attenuate the degree of imposition of a speech act in the CI level. We will then consider the cause behind the asymmetry and suggest the difference between *sukoshi* and *chotto* in the manner of measurement plays an important role in explaining the asymmetry (i.e., *sukoshi* posits a precise mode of measurement, while *chotto* posits an imprecise mode of measurement in their CI components (even in the case of the seemingly pure at-issue minimizers)).

Chapter 6 investigates the expressive uses of intensifiers with special reference to the Japanese intensifier *totemo* and the comparative adverb *motto*. I will claim that the expressive *totemo* and *motto* belong with lower-level pragmatic scalar modifiers which recycle the scale of an at-issue gradable predicate. (The expressive *totemo* makes reference to the degree of a negative gradable modal, while *motto* makes reference to the degree of a regular gradable predicate.) I will show that these pragmatic scalar modifiers are fundamentally different from the higher-level pragmatic intensifiers like the expressive *totally* in terms of the level of modification and compositionality.
Chapter 7 investigates the meaning and use of Japanese counter-expectational scalar adverbs—that is, the counter-expectational intensifier *yoppodo* and the Japanese scale-reversal adverb *kaette*. In an adjectival environment, *yoppodo* semantically intensifies degrees based on extraordinary evidence and conventionally implies that the degree is above the speaker’s expectation. By contrast, *kaette* reverses the scale of the gradable predicate and conventionally implies that the opposite situation is generally true. I will propose that there are two types of counter-expectational expressions using scalability: a relative type, which represents “above expectation” (e.g., *yoppodo*), and a reversal type, which expresses counter-expectation via polarity reversal (e.g., *kaette*). Comparison with wh-exclamatives, sentence exclamation, and the counter-expectational *but* is also discussed.

Chapter 8 investigates the interpretation of embedded pragmatic scalar modifiers. More specifically, we will focus on the pragmatic scalar modifiers that are embedded in the complement of an attitude predicate and consider how their subject-oriented and speaker-oriented readings are interpreted. We will show that there is a semantic shift from a CI to a secondary at-issue entailment (at a clausal level) in the case of subject-oriented reading. As for subject-oriented reading, I will claim that there is the phenomenon of “projection of CI meaning via a modal support” in the lower-level pragmatic scalar modifiers.

In Chapter 9 we will consider the historical development of pragmatic scalar modifiers. I will claim that although the directionality of semantic change of scalar modifiers can be captured under a general path of semantic change/grammaticalization (i.e., propositional > (textual) > expressive) (Traugott 1982), the semantic shift of scalar modifiers is not lexically at random. I will argue that the semantic change of scalar modifiers is constrained/regulated by their lexical and morpho-syntactic properties.

In Chapter 10, I will summarize my analyses/proposal and discuss the theoretical implications behind it. I will also compare the proposed approach to Bach’s (1999a) approach and the relevance theory approach to a CI.
Landscape of scalar meanings

2.1 Introduction

In this chapter we will introduce the kinds of scalar meanings and highlight the target phenomenon of this book—the dual use of scalar modifiers. We will discuss the status of the meaning of pragmatic scalar modifiers that have a property of conventional implicature (CI) and consider the difference between the CI scalar meaning and other kinds of scalar meaning (at-issue scalar meaning, conversational scalar meaning, and presuppositional scalar meaning) in detail.

2.2 Kinds of scalar meanings

There are four kinds of scalar meaning in natural language (in the Gricean framework):

(1)  
  a. At-issue scalar meaning
  b. Conversational scalar meaning (scalar implicature)
  c. Presuppositional scalar meaning
  d. CI scalar meaning

Let us look at each kind of scalar meaning in turn.

2.2.1 At-issue scalar meaning

At-issue scalar meaning is calculated in the domain of truth-conditional semantics. Typical examples of this scalar type are direct measurement and comparison:

(2)  
  a. This building is 10 meters tall.
  b. Tom is taller than Bill.

(2a) expresses the height of a building and (2b) compares Tom and Bill in terms of height. The scalar meaning is represented in the domain of semantics. Also, the scalar meaning in both sentences is not sensitive to context, because the truth value of the sentences does not change depending on context. Note that at-issue scalar meaning can be sensitive to context. For example:

(3)  
  a. Taro is tall.
  b. Taro is taller.
A well-known property of gradable adjectives like tall (= 3a) is that their interpretation is context-dependent (e.g., Sapir 1944; Bartsch and Vennemann 1973; McConnell-Ginet 1973; Kamp 1975; Kennedy 1999; Kennedy and McNally 2005). The truth value of the proposition in (3a) can change depending on the standard of comparison the speaker or the listener assumes (e.g., Taro is tall for a child, Taro is tall for a Japanese person, etc.). (3b) is a comparative sentence whose standard of comparison is implicit. The scalar meaning in (3b) is also context-sensitive because an implicit standard of comparison must be fixed by context (i.e., previous discourse). In the literature on the semantics/pragmatics interface, the context-dependent scalar phenomenon as in (3) is often discussed under the rubric of “pragmatic intrusion of what is said,” and various ideas have been proposed regarding the theoretical treatment of this phenomenon (Sperber and Wilson 1986 [1995]; Recanati 1989, 1993, 2004; Bach 1994, 1999a).1

Although it is true that these meanings are pragmatic, since the meaning is truth-conditional (part of what is said), I will classify these as at-issue scalar meaning.

2.2.2 Conversational scalar meaning (scalar implicature)

The second kind of scalar meaning is scalar implicature (or Q implicature). Scalar implicature is different from at-issue scalar meaning in that it is not part of “what is said.” It is an inference that is calculated via a general pragmatic principle. For example, the following sentences induce scalar implicature:

(4) Some tennis players smoke.
   (Implicature: Not all tennis players smoke.)

(5) This coffee is warm.
   (Implicature: The coffee is not hot.)

In the (neo)-Gricean frameworks, the above implicatures are calculated using the maxim of quantity/Q principle (Grice 1989; Horn 1984):

(6) Maxim of Quantity/Q principle: “Say as much as you can”

Prototypically, the above maxim requires a quantitative scale (a Horn scale). For example, sentence (4) has a quantitative scale as in (7a) and sentence (5) has a quantitative scale as in (7b):

(7)  a. (all, some)
    b. (hot, warm)

1 For example, the relevance-theoretic approach (Sperber and Wilson 1986 [1995]) explains pragmatic intrusion into Grice’s notion of “what is said” by introducing the notion of explicature. According to this approach, an explicature is an inferential development of one of the incomplete conceptual representations or logical forms encoded by an utterance. Recanati (1989, 1993) has a similar idea, and analyzes the phenomenon based on the concept of saturation. He considers saturation to be a pragmatic process whereby a given slot, position, or variable in the linguistically decoded logical form is filled or saturated. On the other hand, Bach (1994, 1999a) claims that there is no pragmatic intrusion into “what is said” because the “pragmatically expanded proposition” belongs neither to “what is said” nor to “what is implicated.” Instead, it belongs to the middle ground level “impliciture” (notice the spelling of the word with an i). According to Bach (1994), implicatures go beyond what is said, but unlike implicatures, implicatures are built out of what is said.
According to Horn (1972), quantitative scales are defined by entailment (see also Horn 1989; Gazdar 1979; Levinson 2000):

(8) A set of linguistic alternatives \( \langle x_1, x_2, \ldots, x_n \rangle \) such that \( S(x_i) \) unilaterally entails \( S(x_j) \), where \( S \) is an arbitrary simplex sentence frame, and \( x_i \succ x_j \), and where \( x_1, x_2, \ldots, x_n \) are

(i) equally lexicalized items, of the same word class, from the same register; and
(ii) "about" the same semantic relations, or from the same semantic field.

Thus, based on the Q-principle, if the speaker makes a weak statement (e.g., some tennis players smoke, this coffee is warm), one can infer that he/she was not in an epistemic position to have asserted any stronger value (to its left) on the same scale (i.e., not all tennis players smoke, this coffee is not hot).2

Note that there are also cases in which scales are formed based on pragmatic knowledge, rather than on logical entailment (Hirschberg 1985, 1991; Levinson 2000). Observe the following dialogue:

(9) A: How is Fred doing?
   B: He’s got to Salt Lake City.
   Implicature: not Chicago or New York.
   Given scale: (New York, Chicago, Salt Lake City, Reno)
   (Levinson 2000: 105)

The inference in (9B) depends on context. That is, it is induced only when Fred is traveling from the West Coast to the East Coast.3

Conversational implicatures have several important properties. First, they are cancelable (Grice 1975, 1989). For example, the implicature in (10a) can be cancelable without a sense of contradiction, as shown in (10b):

(10) a. Some tennis players smoke.
    (Implicature: Not all tennis players smoke.)
    b. In fact, all tennis players smoke.

Second, conversational scalar implicatures are nondetachable. Let us consider this property based on (11). (11) with almost induces a negative conversational implicature that "Bill did not swim the English Channel" (Sadock 1981):

(11) Bill almost swam the English Channel.
    (Implicature: Bill didn’t swim the English Channel.)

---

2 More recently, Chierchia (2004) has argued, based on the interaction of negation and disjunction in complex sentences, that scalar implicatures are computed locally by semantic composition rules rather than by the general principle of conversational maxim (but see Russell 2006).

3 The pragmatic scale can be explicitly expressed by let alone (e.g., Fillmore et al. 1988; Kay 1990; Sawada 2003; Toosarvandani 2010):

(i) I could not even reach Chicago, let alone New York.
(ii) Tom won't drink beer, let alone sake.
This implicature is nondetachable because the same semantic content carries the same implicature (Sadock 1981: 262–3):

(12) a. Bill nearly swam the English Channel.
   (Implicature: Bill didn’t swim the English Channel.)
   b. Bill came close to swimming the English Channel.
   (Implicature: Bill didn’t swim the English Channel.)

Conversational implicatures have other important characteristics: calculability, reinforceability, and universality (see Grice 1975, 1989; Sadock 1978; Levinson 1983, 2000).

2.2.3 Presuppositional scalar meanings

The third kind of scalar meaning is presuppositional scalar meaning. A presupposition is an inference or proposition whose truth is taken for granted in the utterance of a sentence.

Various approaches/theories have been proposed for presupposition, but very broadly, there are two kinds of the notion of presupposition, a semantic presupposition and a pragmatic presupposition.

In semantic/logic-based approach to presupposition, a presupposition is often defined as a binary relation between the parts of a sentence in a given language. That is, one sentence semantically presupposes another if the truth of the second is a condition for the semantic value of the first to be true or false. For example, intuitively it is difficult to determine the truth/falsity of sentence (13), since currently there is no king in France (see chapter 2 in Beaver 2001 for a detailed discussion of this approach):

(13) The king of France is bald.
   Presupposition: There is a king of France.

Note, however, there is also an idea of “pragmatic presupposition” (Stalnaker 1974) where presupposition is not defined as a binary relation between the parts of a sentence. According to Stalnaker, a pragmatic presupposition associated with a sentence is a condition that a speaker would normally expect to hold in the common ground between discourse participants when that sentence is uttered. It is not (necessarily) associated with a particular lexical item/construction, but rather pragmatic presuppositions include all sorts of assumptions that the speaker makes in uttering a sentence. Stalnaker considers that all of the facts can be stated and explained directly in terms of the underlying notion of speaker presupposition (i.e., pragmatic presupposition).

Karttunen (1974: 181) proposed to formulate a pragmatic account as a definition of pragmatic sentence presupposition:

(14) $p$ is a presupposition of $S$ iff $S$ can be felicitously uttered only in contexts that entail $p$. (Based on Karttunen 1974: 181)

The conversational context includes a common ground, the set of propositions believed and accepted by the conversation participants (Stalnaker 1978).
Landscape of scalar meanings

This definition is somewhat similar to the semantic presupposition in that it “reserves the term presupposition for relation (semantic or pragmatic) between sentences.”

In this book I will not discuss which approach is better but will basically adopt Karttunen’s (1974) definition of presupposition (i.e., pragmatic presupposition), and discuss the notion of semantic presupposition when the distinction becomes important.

Presupposition is usually triggered by the use of particular lexical items or linguistic constructions. For example, to list a few, the definite article the, a factive predicate know, the aspectual predicate stop, the implicative verb manage, or the iterative adverb again are standardly assumed to induce a presupposition:

(15) a. (Definite description)
    The king of France is bald.
    Presupposition: There is a king of France.

b. (Factive predicate)
    Tom knows that Taro is a genius.
    Presupposition: Taro is a genius.

c. (Aspeсtual predicate)
    Bill stopped smoking.
    Presupposition: Bill has been smoking.

d. (Implicative verb)
    Mary managed to solve the problem.
    Presupposition: Mary tried to solve the problem.

e. (Iterative adverb)
    Jim was late for the train again.
    Presupposition: Jim was late for the train before.

Importantly, there are also presuppositions that are triggered by scalar expressions. For example, recent studies have shown that the so-called incremental more triggers a scalar presupposition (Thomas 2010; Greenberg 2009):

(16) There were five beers on the kitchen table. There are two more in the fridge.
    (Thomas 2010: 234)

The morpheme more has an at-issue comparative meaning (e.g., Tom is more intelligent than Bill). However, in (16) the morpheme more does not function as the at-issue comparative morpheme. As Thomas (2010) argues, the second sentence asserts that ‘there are two beers in the fridge’ (rather than ‘there are seven beers in the fridge’), and the morpheme more triggers a presupposition that ‘there are/were some beers somewhere (in this case the presupposition corresponds to the first conjunct).’ The information that ‘there are/were some beers somewhere’ is a proposition because it projects from the antecedent of conditionals, among other environments such as negation and modal:

(17) If there are two more beers in the fridge, Chuck will drink them.
    Presupposition: There are/were some other beers somewhere else.
Furthermore, the fact that the proposition that there are/were some other beers somewhere can be targeted by the "Hey, wait a minute!" test (von Fintel 2004), which also supports the idea that it is a presupposition:

(18) A: There are two more beers in the fridge.
B: Hey, wait a minute, I didn't know that we had any other beers!

According to von Fintel (2004) in response to the speaker’s utterance of \( p \), the listener can respond "Hey, wait a minute! I didn’t know X!" if and only if \( p \) presupposes X. And in this context, the listener in (18) can actually respond to the utterance of (18A) by saying, "Hey, wait a minute! I didn’t know that we had any other beers!" A similar phenomenon can be found in Japanese. Sawada (2009b) argues that when the numerical additive particle moo in Japanese appears in the verbal domain, it triggers a “prior time” presupposition (Greenberg 2009):

(19) (Watashi-wa) beeru-o moo 1-ppai nomi-masu.
I-TOP beer-ACC more.add 1-CL.glass drink-PERF.HON
'I will drink one more glass of beer.' At issue: I will drink one glass of beer. Presupposition: I drank at least one glass of beer before the time of utterance.

We can represent the at-issue meaning and the presuppositional meaning of sentence (19) based on Davidsonian event-based semantics (Greenberg 2009) (here I omit the politeness meaning for the sake of brevity):

(20) Assertion and presupposition of (19)
a. Assertion: \( \exists e_1 \exists t_1 [t_1 >\) now, drink \((e_1), \text{Ag}(e_1) = I, \text{Th}(e_1) = \text{beer}, \#\text{glass of beer} = 1, \tau(e_1) \subset t_1] \)
b. Presupposition: \( \exists e_2 \exists t_2 [t_2 <\) now, drink \((e_2), \text{Ag}(e_2) = I, \text{Th}(e_2) = \text{beer}, \#\text{glass of beer} \geq 1, \tau(e_2) \subset t_2, (e_2 + e_1) = e_3] \)

The presupposition states roughly that there was a drinking eventuality whose agent is I and whose theme is beer; the cardinality of glasses of beer is at least one; and adding the asserted eventuality \((e_1)\) to the presupposed eventuality \((e_2)\) results in a “larger” eventuality \((e_3)\) (Greenberg 2009). As Greenberg argues, this presupposition is part of the conversational common ground.

(21) (Modal)
Taro-wa biiru-o moo 1-ppai nomu-tumorida.
Taro-TOP beer-ACC more.add 1-CL.glass drink-be going to
‘Taro is going to drink one more glass of beer.’
Presupposition: Taro drank at least one glass of beer before the time of utterance.

(22) (Question)
Biru-o moo 1-ppai itadake-masu-ka?
Beer-ACC more.add 1-CL.glass give me-PERF.HON-Q
‘Can you give me one more glass of beer?’
Presupposition: I received at least one glass of beer before the time of utterance.
Landscape of scalar meanings

(23) (Conditional)
Biru-o moo 1-ppai tanome-ba, waribiki ken-ga
Beer-ACC more.add 1-CL.glass order-if discount card-NOM
mora-e-ru.
receive-can-NON.PAST
‘If we order one more glass of beer, we can get a discount card.’
Presupposition: We ordered at least one glass of beer before the time of utterance.

In examples (21)–(23), the prior time presupposition projects out of the scope of the modal operator, the question operator, and the conditionals.4

2.2.4 CI scalar meanings
The last kind of scalar meaning is CI scalar meaning, which is the main focus of this book. Conventional implicatures (Grice 1975, 1989) are different from at-issue meaning in that they are not part of “what is said.” They are also different from conversational implicatures in that they are not derived from a general pragmatic mechanism (i.e., a conversational maxim). Instead, this inference is part of the conventional meaning of the words.5

Grice (1975) discusses the notion of conventional implicature as follows:

(24) In some cases, the conventional meaning of the words used will determine what is implicated, besides helping to determine what is said. If I say (smugly), He is an Englishman; he is, therefore, brave, I have certainly committed myself, by virtue of the meaning of my words, to its being the case that his being brave is a consequence of his being an Englishman. But while I have said that he is an Englishman and said that he is brave, I do not want to say that I have said that it follows from his being an Englishman that he is brave, though I have certainly

4 Note that in Japanese there is another kind of additive morpheme ato. Ato also has a prior time presupposition but it also has an endpoint-oriented presupposition:

(i) (Watashi-wa) beeru-o ato 1-ppai nomi-masu.
I-top beer-ACC ATO 1-cup drink-PERF.HON
‘I will drink one more glass of beer.’
At issue: I will drink one glass of beer.
Presupposition: I drank at least one glass of beer before the time of utterance and the next glass will be the final glass.

Ato is an endpoint-oriented additive particle in the sense that it presupposes that adding an asserted degree to an existing degree will result in reaching an endpoint. One the other hand, moo is a neutral additive particle in the sense that adding degree does not necessarily reach to an endpoint. Thus it is possible to consider that in Japanese there are two modes of additivity: endpoint-oriented additivity and non-endpoint-oriented additivity (neutral additivity).

5 Grice is usually credited with the discovery of conventional implicature, but Frege had a similar idea (Bach 1999b). In ‘On sense and reference’, Frege says that ‘this conjunction (=although) actually has no sense and does not change the sense of the clause but only illuminates it in a peculiar fashion. We could indeed replace the concessive clause without harm to the truth of the whole by another of the same truth value; but the light in which the clause is placed by the conjunction might then easily appear unsuitable, as if a song with a sad subject were to be sung in a lively fashion’ (Frege 1892 [1994: 155]).
indicated, and so implicated, that this is so. I do not want to say that my utterance of this sentence would be, strictly speaking, false should the consequence in question fail to hold. So some implicatures are conventional, unlike the one with which I introduced this discussion of implicature. (Grice 1975: 44–5)

Building on Grice’s discussion of CI, Potts (2005) claims CIs have the following properties:

(25) a. CIs are part of the conventional meaning of words.
   b. CIs are commitments, and thus give rise to entailments.
   c. These commitments are made by the speaker of the utterance.
   d. CIs are logically and compositionally independent of “what is said.”
      (Potts 2005)

Let us consider the above definition based on expressives and supplements, which are often considered to be CIs:

(26) a. Expressive
    Ed refuses to look after Sheila’s damn dog. (Potts 2005: 158)
   b. Appositive (supplement)
    Ames, a successful spy, is now behind bars. (Potts 2005: 90)

We can say that the meanings of supplements and expressives are CIs. First, they satisfy the properties (a) and (b). They are part of the meaning of words, and they give rise to entailments. This is supported by the fact that it is impossible to cancel the CI parts of the sentences in (25) by saying (27):

(27) a. Ed refuses to look after Sheila’s damn dog. # But in fact, I like Sheila’s dog.
    b. Ames, a successful spy, is now behind bars. # But in fact, Ames is not a
       successful spy.

Expressives and appositives also have the property of independence (criterion (d)). Their meanings are independent from at-issue content because their presence/absence does not affect the truth value of the given sentences. The fact that their meanings are independent from the at-issue content is corroborated by the fact that even if we say “No, that’s false,” the denial cannot target the CI part of the sentences:

(28) No, that’s false!

The fact that they never appear in the scope of other operators also supports the idea that their meanings are independent of at-issue content.

(29) a. It’s just not true that Sheila’s damn dog is on the couch! (Potts 2005: 159)
    b. It’s false that Alonzo, a big-shot executive, is not behind bars. (Potts 2005: 114)

As Potts (2005) argues, CIs are scopeless (having a widest scope). The data in (29) make us wonder whether there is a difference between a CI and a presupposition. We will discuss the difference between CIs and presuppositions in detail later in this chapter.
Now let us consider the property of speaker-orientedness (criterion (c)). Potts (2005) argues that expressives and appositives are speaker-oriented even in the context of embedding under an attitude predicate (see section 2.4). This is supported by the following examples:

(30) a. Sue believes that Chuck, a confirmed psychopath, is a suitable babysitter—
#but Chuck isn’t a psychopath. (Potts 2005, 2007a)

b. Sue believes that that bastard Kresge should be fired. (#I think he’s a good guy.) (Potts 2007a: 170)

Here the appositive and the expressive are anchored to the speaker.6,7

It is important to note (for the purpose of this book) that various kinds of scalar modifiers seem to be able to trigger CIs:

(31) Chotto jikan-ga nai-desu.
A little time-NOM NEG-PERF.HON
At-issue: I don’t have time.
CI: I am weakening the force of my assertion.

What-than-MO Tokyo-TOP convenient-PRED
At-issue semantics: Tokyo is convenient.
CI: The utterance that Tokyo is convenient is more noteworthy than any other utterance related to Tokyo.

(33) Motto majimeni benkyoo-shi-nasai!
motto seriously study-DO-IMP
At-issue: Study seriously.
CI: You are not studying seriously now.

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6 Note, however, that expressives and appositives can actually be non-speaker-oriented (subject-oriented) in the context of embedding under an attitude predicate/verbs of saying (Wang et al. 2004; Amaral et al. 2007; Karttunen and Zaenen 2005; Schlenker 2007; Harris and Potts 2009). Harris and Potts (2009) present both corpus and experimental evidence to indicate that appositives and expressives are generally speaker-oriented, but certain discourse conditions can counteract this preference. This suggests that the criterion (c) is too strong. We can instead say that CIs are judge-dependent (Lasersohn 2005) and typically the judge corresponds to a speaker (Potts 2007a). We will discuss this issue in Chapter 8 in detail.

7 Horn (2007) and Potts (2015) define CIs in a way that corresponds to Grice’s original ideas of CIs:

(i) Definition of CI (Horn 2007) (based on Grice): For Grice (1989), a conventional implicature C associated with an expression E manifests the following two definitional properties:
(a) by virtue of being conventional, C constitutes a noncancelable aspect of the meaning of E, and
(b) by virtue of being an implicature, C’s truth or falsity has no effect on the truth conditions of E.

(ii) Definition of CIs (Potts 2015): Meaning p is a conventional implicature of phrase S if, and only if:
(a) p is a conventional (encoded) property of a lexical item or construction in S
(b) p is entailed by S
(c) p’s truth or falsity has no effect on the at-issue content of S

In these definitions, the notion of speaker-orientedness is not included.
The dual-use phenomenon of scalar modifiers

(34) Ano ramen-ya-wa yoppodo oishii-nichigai.
That ramen-restaurant-TOP YOPPDOO delicious-must
At-issue: That ramen restaurant must be very delicious.
CI: The degree inferred via evidence is above my expectation.

Intuitively, they seem to have the properties of CIs. Unlike conversational scalar implicatures, CI scalar meanings are not cancelable. For example, it is odd to say (35b) after (35a):

What-than-mO Tokyo-TOP convenient-PRED
At-issue semantics: Tokyo is convenient.
CI: The proposition that Tokyo is convenient is more noteworthy than any other proposition related to Tokyo.
b. #Demo sore-ga ichiban taisetsuna johoo-de-wa nai.
But that-NOM most important information-PRED-TOP NEG
'But that is not the most important information.'

Furthermore, they seem to be independent from at-issue content. The denial iya sore-wa usoda 'No, that’s false' cannot target the CI component of (31)–(34). Throughout the book we will extensively discuss the CI-hood of these modifiers in detail.

2.3 The dual-use phenomenon of scalar modifiers:

The target phenomenon

What is interesting is that the scalar phenomenon is cross-dimensional. If we look closely at the scalar phenomenon, we often see that a particular scalar expression/scalar concept can be used in different semantic domains/dimensions, as shown in the following examples:

(36) Comparison with indeterminateness
Nani-yori-mo tenisu-wa tanoshii.
What-than-mO tennis-TOP fun
a. At-issue semantics: Tennis is more fun than anything.
b. At-issue semantics: Tennis is fun. CI: The utterance that tennis is fun is more noteworthy than any alternative utterance.

(37) Minimizers
a. {Chotto/*sukoshi} hasami aru?
A bit/a bit scissors exist
At-issue semantics: Are there scissors? CI: I am weakening the force of my question (request).
b. Kono doa-wa {chotto/sukoshi} ai-teiru.
This door-TOP a bit/a bit open-PERF
'lit. This door is (only) a little open.' (= This door is slightly open.)
Landscape of scalar meanings

(38) **Intensifiers**

Motto  hayaku hashi-re!

**MOTTO** fast  run-IMP

a. 'Run still much faster than now!'
b. At-issue semantics: Run fast!

CI: The expected speed of running is much higher than the current speed.
(Implied: The degree of the current running speed is low.)

The dual-use phenomenon of scalar modifiers can be defined as follows:

(39) The dual-use phenomenon of scalar modifiers: A scalar concept that is used for expressing an at-issue meaning can also be used for expressing a not-at-issue meaning (CI).8

We will show that the dual-use phenomenon is not specific to a particular language, but cross-linguistically pervasive. The existence of the dual-use phenomenon of scalar modifiers is significant because it suggests that there is a relationship between at-issue and not-at-issue meaning. In the literature many studies have focused on the difference between them. However, little attention has been paid to the similarity between at-issue meaning and not-at-issue meaning. In the following chapters, we will discuss the "cross-dimensional" property of scalar meaning and try to clarify the similarities and differences between at-issue scalar meanings and CI scalar meanings in a theoretical way. We will consider what the phenomenon tells us about theories of the semantics/pragmatics interface (see Chapter 1 for the fundamental/specific questions behind the dual-use phenomenon of scalar modifiers).

2.4 **Notes on the status of CI: CI versus presuppositions**

Before closing this chapter, let us briefly discuss the difference between presuppositions and CIs. The distinction between CIs and presuppositions is under debate, and researchers have different opinions about it. Both CIs and presuppositions are "not-at-issue" and they are triggered by a particular lexical item/construction.

However, there are also some important differences between CIs and presuppositions in terms of projectivity and backgroundedness.

(40) a. Projectivity: While presuppositions cannot usually project out of the complement of an attitude predicate/a verb of saying, CIs can.
b. Backgroundedness: While presuppositions are backgrounded, CIs are not. CIs offer new information.

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8 Note that the dual-use phenomenon of scalar modifiers is not specific to the relation between at-issue meaning and a CI. The phenomenon can also be observed in the relation between at-issue meaning and a presupposition. As we noted in section 2.2.3, the English comparative morpheme more can express both an at-issue comparative meaning and a cumulative presuppositional meaning. In this book we will particularly focus on the dual-use phenomenon, whereby a particular degree morpheme can be used in both an at-issue level and a CI level.
Let us consider each point one by one. Regarding the property of projection, both presuppositions and CIs are projective in that their meanings can project (survive) even if they are embedded under logical operators (e.g., tense, negation, conditional, modality). However, presuppositions and CIs behave differently when it comes to embedding under an attitude predicate. In this environment, presuppositions do not project, whereas CIs do. In the literature of presuppositions, it is often claimed that attitude predicates and verbs of saying are considered to be “plugs,” which block off all presuppositions from the lower clauses (Karttunen 1973). For example, the possessive expression in (41a) creates the presupposition that 'Sam has a kangaroo,' but if (41a) is embedded by the attitude predicate believe as in (41b), the flow of presupposition is plugged/stopped:

(41) a. Sam’s kangaroo is sick.
   b. John believes that Sam’s kangaroo is sick.

This fact is corroborated by the following example:

(42) Sue believes that Sam’s kangaroo is sick, but that’s ridiculous—Sam doesn’t own a kangaroo. (Potts 2007a)

By contrast, as we discussed earlier, appositives and expressives can project out of the complement of an attitude predicate (Potts 2007a) (see also Quang 1971; Cruse 1986; Bach 1999b; Aoun et al. 2001; Taylor 2007). For example, (43a) has the CI meaning that 'Chuck is a confirmed psychopath,' and even if the sentence is embedded under the attitude predicate as in (43b), the CI projects to the matrix clause:

(43) a. Chuck, a confirmed psychopath, is a suitable babysitter.
   (CI: Chuck is a confirmed psychopath.)
   b. Sue believes that Chuck, a confirmed psychopath, is a suitable babysitter.

This is corroborated by the fact that the following continuation is infelicitous:

(44) Sue believes that Chuck, a confirmed psychopath, is a suitable babysitter—#but Chuck isn’t a psychopath. (Potts 2005, 2007a)

Recall that appositives do not always have to be speaker-oriented. But the important point here is that they can project out of an attitude predicate.

The difference between CIs and presuppositions in terms of projection can be highlighted if we embed the two kinds of triggering expressions under the plug. Sawada (2013a) provides the following test in order to argue that the diminutive meaning created by the name honorific suffix chan is a CI rather than a presupposition:

(45) Sensei-wa kore-wa Hanako-chan-no hon-da-to
Teacher-TOP this-TOP Hanako-HON.DIM-GEN book-PRED-COMP
sinzi-teiru. believe-TEIRU

At-issue: My teacher believes that this is Hanako’s book. CI: I (= the speaker) have a positive feeling toward Hanako and I am treating Hanako like a child. Potential presupposition: Hanako has a book. (= Does not project).
As we can see in (45), the diminutive meaning can project beyond presupposition plugs like *sinzi-teiru* ‘believe.’ (There is also a reading where *chan* is anchored to the subject.)

Now let us consider another property, backgroundedness. Presuppositions are usually backgrounded but CIs are not. As we discussed earlier, presuppositions offer information that is part of the common ground when they are uttered. Thus, their meanings are backgrounded. Although it is possible for true presupposition triggers to introduce novel information, this is accompanied by a particular discourse effect, viz. accommodation. On the other hand, CI expressions usually offer information that is not part of the common ground when they are uttered. They are discourse-new.9

Potts (2005) discusses the difference between a CI and a presupposition with regard to backgroundedness based on the following contrast:

(46) Lance Armstrong survived cancer.
   a. # When reporters interview Lance, a cancer survivor, he often talks about the disease.
   b. And most riders know that Lance Armstrong is a cancer survivor.

(Potts 2005:34)

According to Potts (2005), (46a) is infelicitous/redundant because the content of a supplement is part of the initial context. A supplement is a CI and thus cannot be backgrounded. However, (46b) is perfectly natural because *know* is a presupposition trigger and does not have the anti-backgroundedness property.

Before closing this chapter, let me briefly comment on the notion of dependency, which can potentially be a diagnostic for the difference between a CI and a presupposition. Earlier in this chapter, we considered that in the semantic approach to a presupposition, presupposition triggers a dependency between at-issue and presupposed content. This can be another diagnostic between presupposition and CIs. CIs do not have a dependency between at-issue and CI content. However, as we have discussed earlier, there is also an approach to pragmatic presupposition which does not consider presupposition in terms of logical dependency. In this book I will not use dependency as a diagnostic for determining whether a particular item induces a CI or a presupposition.

2.5 Conclusion

In this chapter we have looked at the landscape of scalar meanings and clarified the target phenomenon of this book, the dual-use phenomenon of scalar modifiers. We have also briefly discussed the semantic status of CI scalar modifiers and the difference between CI and presupposition. We will come back to these points in the subsequent chapters and discuss them in more detail. In the next section we will introduce a formal mechanism for analyzing the dual-use phenomenon and pragmatic properties of scalar modifiers in a theoretical way.

9 AnderBois et al. (2015) claim that appositives, which are often considered as typical CIs, directly impose their content on the common ground (context set).
3

The logic of conventional implicatures

3.1 Introduction

In Chapter 2, we considered the different types of scalar meaning used in natural language and highlighted the targeted phenomenon: the phenomenon of the dual use of scalar modifiers. We also briefly discussed the similarities and differences among the types of scalar meaning. The important point was that in natural language, a degree morphology that is used to express an at-issue meaning can also be used to express a meaning that corresponds to Grice’s concept of conventional implicatures (CIs).

In this chapter, we introduce the logic of conventional implicatures (CIs), which provides a starting point for analyzing the meanings of CI scalar modifiers and considering the relation between at-issue scalar meanings and CI scalar meanings in a more theoretical way.

More specifically, we introduce the type systems of conventional implicature (i.e. $L_{CI}$ and $L_{CI}^{+S}$) and various interpretive rules based on the systems, including CI application (Potts 2005), shunting application (McCready 2010), mixed application (McCready 2010; Gutzmann 2011), and expressive application (Gutzmann 2011; McCready 2010; Sawada 2013a), based on various examples.

3.2 Logics of conventional implicature (Potts 2005)

In this section, we provide an overview of Potts’ (2005) theory of CI, which is the foundation of this book: that is, the analysis of pragmatic scalar modifiers. As we briefly discussed in Chapter 1, Potts (2005) proposed a novel theory of CI based on the phenomena of expressives and supplements as in (1) and (2), which have not been studied seriously in the field of formal semantics:

(1) Supplements
   a. Lance Armstrong, the cyclist, is training now with his cycling buddies. (*nominal appositive*) (Potts 2005: 110)
   b. Ames was, as the press reported, a successful spy. (*as’ parenthetical*) (Potts 2005: 90)
   c. Ames, who was a successful spy, is now behind bars. (*supplementary relative*) (Potts 2005: 90)

d. Amazingly, they refused our offer. (*speaker-oriented adverb*) (Potts 2005: 90)
e. Thoughtfully, Ed destroyed the evidence for us. (*topic-oriented adverb*) (Potts 2005: 90)
f. Frankly, I am sick of your complaining. (*utterance modifier*) (Potts 2005: 145)

(2) Expressives
a. Ed refuses to look after Sheila’s damn dog. (Potts 2005: 158)
b. Right after he agreed to help out, that jerk Chuck boarded a plane for Tahiti. (Potts 2005: 158)
c. (Japanese verbal subject honorification)
   Sensei-wa eigo-ga o-wakari-ni naru. 
   teacher-top English-nom hon-understand-data become
   ‘The teacher understands English.’

Building on Karttunen and Peters’ (1979) two-dimensional theory of conventional implicature, Potts (2005) proposed a novel multidimensional compositional system $L_{CI}$, which is higher-order lambda calculus with at-issue and CI. His theory is similar to Karttunen and Peters’ (1979) two-dimensional theory of conventional implicature in that Potts’ theory analyzes truth-conditional and conventionally implicated meanings in the same way (i.e., a model theoretic). However, Potts’ theory is different from that of Karttunen and Peters (1979) in that Potts’ theory uses a type-driven system (Klein and Sag 1985) rather than being based on a rule-by-rule system. This type-driven system makes it possible to eliminate redundancy. The crucial point for Potts’ (2005) theory is that the system assumes there are two types, an at-issue type and a CI type in natural language, and that each type is used in different dimensions. The former is used for the at-issue meaning, and the latter is used for the CI meaning. Here is the type system of $L_{CI}$:

(3) The logic $L_{CI}$
a. $e^a$, $t^a$, $s^a$ are basic at-issue types for $L_{CI}$.
b. $e^c$, $t^c$, $s^c$ are basic CI types for $L_{CI}$.
c. If $\sigma$ and $\tau$ are at-issue types for $L_{CI}$, then $\langle \sigma, \tau \rangle$ is an at-issue type for $L_{CI}$.
d. If $\sigma$ is an at-issue type for $L_{CI}$ and $\tau$ is a CI type for $L_{CI}$, then $\langle \sigma, \tau \rangle$ is a CI type for $L_{CI}$.
e. If $\sigma$ and $\tau$ are at-issue types for $L_{CI}$, then $\langle \sigma \times \tau \rangle$ is a product type for $L_{CI}$.
f. The full set of types for $L_{CI}$ is the union of the at-issue types and CI types for $L_{CI}$.
   (Potts 2005: 55)

There are three basic types $e$ (entities), $t$ (truth values), and $s$ (worlds) and all the other complex types constructed from these types are functions. The crucial point of this system is that each type has an at-issue type and a CI type. The superscript $c$ stands for a CI type, and the superscript $a$ stands for an at-issue type. Based on this type system, Potts (2005) proposed various derivation rules for the at-issue and CI

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1 In this book we also introduce $d$ (the type of degrees), $i$ (the type of times), and $a$ (the type of speech acts) as basic semantic types.
meanings: (i) at-issue function application, (ii) at-issue intersection, (iii) CI application, (iv) isolated CIs, and (v) feature semantics. We now look at each rule in turn.

3.2.1 At-issue application and at-issue intersection
We now consider at-issue application and at-issue intersection. The at-issue application and the at-issue intersection are used to analyze the semantic phenomenon. The following is a rule for at-issue application.

(4) At-issue application

\[ \alpha(\beta) : \tau^a \]
\[ \alpha : \langle \sigma^a, \tau^a \rangle \quad \beta : \sigma^a \]

Potts (2005: 62) considered that this definition is identical in content to those of Klein and Sag (1985: 171) and Heim and Kratzer (1998: 44).²

Potts offered the rule for at-issue intersection as the second method for combining at-issue meanings:

(5) At-issue intersection

\[ \lambda X. \alpha(X) \land \beta(X) : \langle \sigma^a, \tau^a \rangle \]
\[ \alpha : \langle \sigma^a, \tau^a \rangle \quad \beta : \langle \sigma^a, \tau^a \rangle \]

This rule is used for a modification structure. As Potts states, there are alternatives to this rule, and it plays only a supporting role.

3.2.2 CI application
We now consider CI application. CI application plays a central role in the logic of \( \mathcal{L}_{CI} \). This is a feature of the logic for the CIs of Karttunen and Peters (1979) that a CI meaning always applies to an at-issue meaning to produce a CI meaning.

(6) CI application (Potts 2005: 65)

\[ \beta : \sigma^a \]
\[ \bullet \]
\[ \alpha(\beta) : \tau^e \]
\[ \alpha : \langle \sigma^a, \tau^e \rangle \quad \beta : \sigma^a \]

² Although I have not presented this in the rule in (4), there can be an optional material (CI) hanging around the course of derivation: for example, below \( \alpha \) and \( \beta \).
The important point of this rule is that it is a resource-insensitive application. An $\alpha$ that is of $\langle \sigma^a, \tau^c \rangle$ takes a $\beta$ of type $\sigma^a$ and returns $\tau^c$. At the same time, a $\beta$ is passed on to the mother node. Namely, $\beta$ is used (consumed) twice. The bullet • is a metalogical device for separating independent lambda expressions. This rule ensures that the at-issue dimension is insensitive to the presence of adjoined CI operators.

Let us consider how the CI application in (6) works based on the example of the speaker-oriented adverb fortunately (e.g., Potts 2005; Ernst 1984, 2002, 2009, and references therein). As we can see in (7), the meaning of a sentence with fortunately can be divided into two components: an at-issue component and a CI component.

(7) Fortunately, Beck survived.
   At-issue: Beck survived.
   CI: The proposition that Beck survived is fortunate (positive).

This division can be analyzed by Potts’ CI application. The following diagram shows the logical structure of (7) (we have omitted the tense information for the sake of simplicity):

(8) $\lambda w.\text{survive}_w(\text{beck}) : \langle s^a, t^a \rangle$

•

fortunately($\lambda w.\text{survive}_w(\text{beck})$) : $\langle s^a, t^c \rangle$

fortunately: $\lambda w.\text{survive}_w(\text{beck})$ :

$\langle \langle s^a, t^a \rangle, \langle s^a, t^c \rangle \rangle$ : $\langle s^a, t^a \rangle$

The modifier fortunately is a sentential modifier that applies to an at-issue proposition of type $t^a$ to produce a CI meaning of type $t^c$. Notice that the at-issue proposition (i.e., survive(beck)) is passed up to the mother node (the node above the bullet) in addition to being the argument of fortunately. This ensures that the at-issue meaning and the CI meaning are both logically and dimensionally independent of each other.

The expressive damn also involves a CI application.

(9) The damn Republicans are aggressively cutting taxes. (Potts 2005: 162)

Here there is a CI meaning that “Republicans are bad in the speaker’s opinion.” Potts (2005) provided the following lexical entry for damn ($\cap$ is the nominalization function of Chierchia 1984), which maps a predicate to a corresponding kind, and $\tau$ is an arbitrary type):

(10) $[[\text{damn}]] = \lambda X.\text{bad}^{\cap}(X) : \langle \langle t^a, t^a \rangle, t^c \rangle$

Potts (2005) then assumed that the DP domain of sentence (9) has a logical structure as in (11) alongside the syntactic structure (12):
3.2.3 Isolated CIs

We now consider a rule for isolated CIs. Potts (2005) claimed that the expressive *fucking* in (13a) and the supplemental expression in (13b) are isolated because they are not directed toward something that is not specified by anything in the sentence:

(13) a. That's fantastic fucking news! (Potts 2005: 65)

b. Luke—and you'll never believe this—ate fifty eggs. (Potts 2005: 65)

Gutzmann (2015) also observes that the expressive *ouch* serves neither as a function nor as an argument for anything in the rest of the sentence:

(14) Ouch, I have hit my thumb with the hammer. (Gutzmann 2015: 55)

As for these expressions, the following rule becomes relevant:

(15) Isolated CIs

\[
\beta : r^a \\
\alpha : t^e \\
\beta : r^a
\]

(Potts 2005: 66)

3.2.4 Feature semantics

We now consider a rule for feature semantics. Potts (2005) proposed the following rule:
(16) Feature Semantics
\[ \beta(\alpha) : \tau \]
\[ \alpha : \sigma \]
where \( \beta \) is a designated feature term of type \( \langle \sigma, \tau \rangle \).

This rule is utilized for the analysis of appositives like (17):

(17) Lance, a cyclist, is training.
(CI: Lance is a cyclist.) (Potts 2005: 97)

In Potts’ analysis, the comma plays an important role. Crucially, the comma is not introduced on a terminal node, either in the semantics or in the syntax. The expression comma is a type-shifting operator that shifts an at-issue function into a CI function (it corresponds to \( \beta \) in the rule of Feature Semantics):

(18) \[ \text{COMMA} = \lambda f \lambda x. f(x) : \langle \langle \text{ea}, \text{ta} \rangle, \langle \text{ea}, \text{tc} \rangle \rangle \] (Potts 2005: 98)

(19) Logical structure
\[
\text{lance: } e^a \\
\text{•} \\
\text{cyclist(lance): } t^c \\
\text{lance: } e^a \text{ comma(cyclist): } \langle e^a, t^c \rangle \\
\text{cyclist: } \langle e^a, t^a \rangle
\]

The meaning that Lance is a cyclist is CI because it does not contribute to the truth condition of the given proposition. It is a speaker-oriented supplemental meaning.

3.2.5 Parse tree interpretation
Thus far, we have looked at various kinds of compositional rules related to at-issue and CI meanings. We now consider how the meanings of CIs are ultimately interpreted in the semantic derivation. The important point is that once the CIs are computed, they do not pass up to the higher level. We now consider this point based on the following example:

(20) Dave, the boss, bribed Sue, an OSHA representative. (Potts 2005: 67)

(20) is the case of a nominal appositive (which contains comma intonation). Potts (2005) analyzes the logical structure of (20) as follows:
In these cases, the composition procedure leaves behind the CI material (Potts 2005: 99). For example, the CI meaning that ‘Sue is a OSHA representative’ is not inherited by dominating nodes or sent directly to a designated point in the root node. To make sure that the CI proposition is a root assertion, Potts (2005) proposed the following rule, which is called a parsetree interpretation:

(22) Parsetree interpretation
Let $T$ be a semantic parsetree with the at-issue term $\alpha : \sigma^a$ on its root node, and distinct terms $\beta_1 : t^c, \ldots, \beta_n : t^c$ on nodes in it. Then, the interpretation of $T$ is the $\langle [\alpha : \sigma^a], [\beta_1 : t^c], \ldots, [\beta_n : t^c] \rangle$ (Based on Potts 2005: 68)

3.3 Extension of the logics of CI: Shunting type and shunting application (McCready 2010)

In a seminal paper, McCready (2010) extended Potts’ logic of CI. McCready (2010) argued that adding a shunting type (the superscript $s$) to the logic of conventional implicatures is necessary in order to explain the semantic derivations of (i) objects that provide the main content of their utterance and (ii) mixed content that has an at-issue meaning and a CI meaning. We will now consider various kinds of expressions that involve shunting types. McCready (2010) argued that the following expressive content involves a shunting type:

(23) a. Man!
b. Thanks!
c. Ouch!
These particles do not modify any sentences. McCready (2009, 2010) argued that these kinds of stand-alone particles are CI-inducing propositional modifiers that apply to a proposition made available by the context. The crucial point of this analysis is that the unpronounced modified proposition is not a primary utterance meaning. For instance, the primary meaning in (23) is the CI that the speaker has an emotional feeling toward an implicit proposition $p$.

In order to explain this, McCready (2010) introduced a new type system $\mathcal{L}_{CI}^{+S}$:

(24) McCready’s modified type system: $\mathcal{L}_{CI}^{+S}$

The type system itself is identical to that of $\mathcal{L}_{CI}$ except that:

a. $e^s, t^s, s^s$ are basic shunting types for $\mathcal{L}_{CI}^{+S}$.

b. If $\sigma$ is an at-issue type for $\mathcal{L}_{CI}^{+S}$ and $\tau$ is a shunting type for $\mathcal{L}_{CI}^{+S}$, then $\langle \sigma, \tau \rangle$ is a shunting type for $\mathcal{L}_{CI}$.

c. If $\tau$ is a shunting type for $\mathcal{L}_{CI}^{+S}$ and $\tau$ is a shunting type for $\mathcal{L}_{CI}$, then $\langle \sigma, \tau \rangle$ is a shunting type for $\mathcal{L}_{CI}^{+S}$.

Based on this new type system, he introduced a new interpretation rule, called shunting application:3

(25) The shunting application (McCready 2010)

$$\alpha(\beta) : t^s$$

$$\alpha : \langle \sigma^a, \tau^s \rangle \quad \beta : \sigma^a$$

The superscript $s$ stands for a shunting type. Note that this rule is specific to certain CI meanings: that is, a resource-sensitive conventional implicature. This rule ensures that at the end of the derivation there is only a CI meaning. Unlike in Potts’ CI function application, the at-issue element $\beta$ is ‘shunted.’ It no longer exists by the time the meaning of the entire sentence is computed. In this theory, the denotation of man can be represented as follows:

(26) $[[\text{man}]] : (t^a, t^s) = \lambda p. \text{man}(p)$

(McCready 2010: 34)

McCready (2010) considered that the interpretation of the Japanese adverbial yokumo also involves shunting. He argued that yokumo in (13) has a primary CI meaning. Observe the following example:

(27) Yokumo ore-o damashi-ta-(na)!

YOKUMO me-ACC trick-PAST-NA

‘I can’t believe you had the gall to trick me.’

---

3 McCready (2010) uses derivation proofs rather than derivation trees. I will assume that they essentially yield the same results. See also McCready (2010) for this point.
An interesting point about McCready’s analysis of yokumo is that the proposition that yokumo applies is not an assertion but instead is presupposed common ground. McCready (2010) claimed that the fact that (27) is infelicitous as an answer to a question provides the evidence for the idea that the embedded proposition is not a proposition:

(28) Context: A asks B ‘Who did Austin marry?’
    #Yokumo Dallas to kekkon shita na!
    ‘He did an amazingly stupid and shocking thing by marrying Dallas!’
    (McCready 2010:39; McCready 2004)

This test strongly suggests that yokumo cannot be used in a situation in which an embedded proposition provides new information. If yokumo can embed a proposition, then the above sentence must be natural, but it is, in fact, infelicitous. Thus, we need to analyze the meaning of (27) as follows:

(29) yokumo(p)
    Presupposition: p is part of common ground
    CI: the speaker is surprised that p and the speaker hold a negative emotional attitude toward p.

McCready proposes the following lexical entry for the lexical content of yokumo:

(30) \[\text{[[yokumo]]}^* : (t^a, t^s) = \lambda p : \text{CG}_{s,k}(p).\text{bad}(p) \land \text{surprise}(p)\]
    (McCready 2010: 39)

In prose the denotation shows that (i) the at-issue proposition becomes a part of common ground when it is saturated by yokumo; (ii) the speaker construes p as bad; (iii) and he/she is surprised by the fact that p is true. (See McCready 2010 for other possible explanations of the lexical representation of yokumo.) This idea naturally fits with the idea of shunting. As the following logical structure shows, the operation of shunting ensures that the at-issue argument p is resource-sensitive and does not pass up to the higher level (cf. CI application):

(31) yokumo(p): t^s
    yokumo : (t^s, t^i) p : t^a

3.4 Mixed content

We now consider the phenomenon of mixed content. Recent literatures have shown that in natural language there are many kinds of so-called mixed content. Mixed contents are morphemes, which have both at-issue meaning and a CI meaning within the same lexical entry (Bach 2006; Williamson 2009; Horn 2007; McCready 2010; Gutzmann 2011; Kubota and Uegaki 2011).
(32) Juan is a Kraut.
At-issue: Juan is a German.
CI: The speaker has a negative attitude toward German people.
(McCready 2010: 22)

(33) This cur howled the whole night.
At-issue: This dog howled the whole night.
CI: The speaker has a negative attitude toward the dog. (Gutzmann 2011)

(34) (Japanese honorific irassharu 'come.HON')
Sensei-ga irasshaimashi-ta.
Teacher-NOM came.HON-PAST
'The teacher came.' (the teacher is being honored) (McCready 2010)

(35) Taro-ga Hanako-ni piano-o hii-te morat-ta.
Taro-NOM Hanako-DAT piano-ACC play BEN-PAST
at-issue: 'Taro made Hanako play the piano.' CI: 'Hanako's playing the piano was beneficial to Taro.' (Kubota and Uegaki 2011)

In (32), Kraut is mixed content because it is predicative of the at-issue content (i.e., the property of being a German) yet introduces a conventional implicature (i.e., the speaker's negative attitude toward Germans). Similarly, cur in (33) not only semantically means dog but also expresses a negative attitude toward members of the set. (34) and (35) are examples of the mixed content of verbs. In (34), the Japanese honorific verb irassharu has an at-issue meaning of 'to come,' but it also conventionally implies that the subject is deserving of honor. In (35), the benefactive morau indicates that the subject has caused the dative argument to do some action in the at-issue level, but in addition, it conventionally implies that the action was beneficial for the nominative argument.

To account for the interpretation of mixed content in a compositional way, McCready (2010) proposed an additional semantic rule for mixed content, which involves the shunting type s:4

(36) The logic L_{CI}^{±}

The following clauses are added to the type system of L_{CI}^{±S}:
(i) If σ and τ are at-issue types for L_{CI}^{±S}, and ζ and υ are shunting types for L_{CI}^{±S}, then σ × ζ, ⟨σ, τ⟩ × ζ, σ × ⟨ζ, υ⟩ are mixed types for L_{CI}^{±S}.
(ii) If σ, τ and ζ are at-issue types for L_{CI}^{±S} and υ is a shunting type for L_{CI}^{±S}, then ⟨σ, τ⟩ × ⟨ζ, υ⟩ is a mixed type for L_{CI}^{±S}.

4 Note that Kubota and Uegaki (2011) analyze in terms of the technique of continuations (e.g., Barker 2002), which does not utilize the notion of 'dimensions.'
In a mixed application, a shunting type is used because it is a resource-sensitive application. Recall that superscript s is used for a shunting type. McCready (2010: 20) furthermore assumed that the following rule applies to the final interpretation of the CI part of mixed content:

\[(38) \text{Final interpretation rule:} \quad \alpha \diamond \beta : \sigma^a \times t^s \quad \text{as follows:} \quad \alpha : \sigma^a \quad \beta : t^s \]

The rule is used when the CI part of the mixed content is or becomes propositional (of type t). The rule in (38) instructs us to replace the mixed type terms involving the conjunction ‘\(\diamond\)’ with terms conjoined by ‘\(\cdot\)’ when the CI part of the mixed content is propositional (of type t). We now consider how the meaning of the mixed content is computed in a compositional fashion based on example (32), repeated here:

\[(39) \text{Juan is a Kraut.}\]

At-issue: \(\text{Juan is a German.}\)

CI: \(\text{The speaker has a negative attitude toward German people.}\)

McCready (2010: 22)

McCready (2010) proposed the following lexical entry for \(\text{Kraut}\):

\[(40) \quad \text{[[Kraut]]} = \lambda x. \text{German}(x) \diamond \text{bad}([], \text{German}) : (e^a, t^a) \times t^s \text{ (where } \cap \text{ is the kind formation operator (e.g., Chierchia 1984))}\]

(McCready 2010: 21)

The interpretation of the meaning of \(\text{Kraut}\) involves the semantic operation of shunting because the argument for \(\text{Kraut}\) (here, Juan) is resource-sensitive. Example (41) shows the logical structure for (39):

\[(41) \text{The logical structure of the sentence with } \text{Kraut}\]

\(\text{German(Juan)} : t^a\)

\(\cdot\)

\(\text{bad}([], \text{German}) : t^s\)

\(\text{Juan } \lambda x. \text{German}(x) \diamond \text{bad}([], \text{German}) : (e^a, t^a) \times t^s\)

Regarding the interpretation of shunting type \(t^s\), McCready assumed that similar to the discussion of the CI of type \(t^s\), it is interpreted via the following parsetree:
Generalized Interpretation A

Let $T$ be a semantic parsetree with the at-issue term $\alpha: \sigma^a$ on its root node, and distinct terms $\beta_1: t^{(c,s)}, \ldots, \beta_n: t^{(c,s)}$ on nodes in it. Then the interpretation of $T$ is $\langle[[\alpha: \sigma^a]], [[\beta_1: t^{(c,s)}]], \ldots, [[\beta_n: t^{(c,s)}]]\rangle$. (Based on McCready 2010: 32)

Note that this interpretation rule cannot be used when an utterance lacks asserted content (e.g., the case of yokumo). To solve this issue, McCready (2010) added an additional rule and assumed that in cases in which a sentence lacks asserted content, it is still interpreted as a two-tuple but one with a first (left) element that is always satisfiable. We denote this trivial assertion by $T$.

Generalized Interpretation B

Let $T$ be a semantic parsetree with the at-issue term $\alpha: \sigma^{c,s}$ on its root node and distinct terms $\beta_1: t^{(c,s)}, \ldots, \beta_n: t^{(c,s)}$ on nodes in it. Then the interpretation of $T$ is $\langle T, [[\alpha: \sigma^a]], [[\beta_1: t^{(c,s)}]], \ldots, [[\beta_n: t^{(c,s)}]]\rangle$. (Based on McCready 2010: 32)

3.5 Expressive modifiers

Finally, we consider an interpretive rule concerning expressive modifiers. Potts (2005) claimed that CI content never applies to CI content. However, recent literature has shown that there are phenomena that do not seem to follow this idea (Gutzmann 2011, 2015; McCready 2010; Sawada 2013a). For example, Gutzmann (2011) claimed that expressives can apply to expressives based on the following examples:

(44) a. That fucking bastard Burns got promoted!
   b. Holy shit, my bike tire is flat again!
   c. I feel really fucking brilliant.
   (Gutzmann 2011: 129)

The following structure represents the logical structure of the nominal domain of the sentence (44a) (the demonstrative is omitted for the sake of simplicity):

```
  burns: ea
    •
    fucking(bastard)(burns): tc
    •
    burning(bastard)(ea, tc) burning(ea, tc)

  fucking: (ea, tc) bastard: (ea, tc)
```

McCready (2010) observed the following purely expressive expressions such as (46) where only the expressive application is relevant, as in (46):

(46) Totally ouch (, dude). (McCready 2010)
McCready (2010) claimed, based on McCready and Schwager’s (2009) analysis of intensifiers such as totally and fully, that totally in (45) would express that the speaker has maximal commitment to her justification for uttering ouch, itself an expressive item.

Sawada (2013a) claimed that the phenomenon of Japanese diminutive shifts also involves expressive modification. Sawada (2013a) argued that the phonological shift from [s] to [t] triggers a conventional implicature (CI) that “the speaker is uttering to you like a baby.” The interesting point is that this shift can apply to honorific expressions. For example, the performative honorific desu can be diminutivized into dechu, and the diminutivized performative honorific dechu can trigger the CI that the speaker is speaking like a baby in addition to an honorific CI meaning:

(47) a. Kore-wa boku-no hon-desu. (Normal polite speech)
    This-top I-gen book-perf.hon
    At-issue: This is my book. CI: I am talking to you in a polite way.

b. Kore-wa boku-no hon-dechu. (Baby polite speech)
    This-top I-gen book-perf.hon.dim
    At-issue: This is my book. CI: I am talking to you in a polite way ∧ I am talking to you like a baby.

Note that the diminutive shift from [s] to [ch] is fully productive. We can create a diminutive form from any lexical items that contain the consonant [s], as shown in:

(48) a. juusu/juuchu (Noun)
    ‘juice’/’juice.dim’ (the speaker is uttering the word like a baby)

b. asobu/achobu (Verb)
    play/play.dim (the speaker is uttering the word like a baby)

c. oishii/oichii (Adjective)
    delicious/delicious.dim (the speaker is uttering the word like a baby)

d. sosite/chochite/sochite (Function word)
    and/and.dim/and.dim (the speaker is uttering the word like a baby)

Sawada (2013a, 2014b) argued, building on the idea of Mester and Itô’s (1989) analysis of mimetic palatalization, that diminutive forms are morphologically complex. In this approach, the form dechu in (48) is considered to be derived by lexical association from a diminutive morpheme DIM, which has a phonological feature of [+delay release] and a CI meaning such as (49):

(49) \[[\text{DIM}]\] = λF.λp.F(p) = 1 ∧ c’ such that ∃d[d ≺!]\text{STAND}_{\text{mature}} ∧ \text{mature}(sp) = d ∧ d ≺! the degree of sp’s maturity in c] ∧ sp utters p
    (Sawada 2014b)

Here F corresponds to the performative honorific desu. As for the meaning of the performative honorific desu, Sawada (2013a, 2014b) assumed that it has the following CI meaning (see Potts and Kawahara 2004 for the detailed analysis of the semantics of performative honorifics in Japanese):

(50) \[[\text{desu}]\rangle’ = λp. c’ such that sp utters p in a polite way
Thus, if DIM and desu are combined, we get the meaning shown in (51):

\[ ([\text{DIM} \text{PERF} \text{HON}])'([\text{desu}]) = \lambda p. c' \text{ such that } sp \text{ utters } p \text{ in a polite way } = t \wedge c' \text{ such that } 3d[d <! \text{STAND} \text{mature} \wedge \text{mature}(sp) = d \wedge d <! \text{the degree of } sp\text{'s maturity in } c] \wedge sp \text{ utters } p \]

Example (52) shows the logical structure of (47b):

(52) Logical structure of (47b)

\[ \text{hon(kore): } t^a \]

\[ \text{DIM(desu)(hon(kore)): } t^e \]

\[ \text{hon(kore): } t^a \]

\[ \text{DIM(desu): } \langle t^a, t^e \rangle \]

\[ \text{kore-wa: } e^a \]

\[ \text{hon: } \langle e^a, t^a \rangle \]

\[ \text{‘this-TOP’} \]

\[ \text{‘book’} \]

\[ \text{DIM: } \langle \langle t^a, t^e \rangle, \langle t^a, t^e \rangle \rangle \]

\[ \text{desu: } \langle t^a, t^e \rangle \]

These phenomena suggest that we need to add the following information in the type system of \( L_{CT} \) and assume the interpretation rule as in (53):

(53) If \( \sigma \) and \( \tau \) are CI types for \( L_{CT} \), then \( \langle \sigma, \tau \rangle \) is a CI type for \( L_{CT} \).

(54) Expressive application (with a CI type)

\[ \alpha(\beta) : \tau^e \]

\[ \alpha : \langle \sigma^e, \tau^e \rangle \]

\[ \beta : \sigma^e \]

Note that there is also the possibility of having a rule such as (55) where a CI that has a shunting type applies to a CI that has a shunting type, \( \langle t^a, t^e \rangle \):

(55) Expressive application (with a shunting type)

\[ \alpha(\beta) : \tau^e \]

\[ \alpha : \langle \sigma^e, t^e \rangle \]

\[ \beta : \sigma^e \]

(56) If \( \sigma \) is a shunting type for \( L_{CT}^S \) and \( \tau \) is a shunting type for \( L_{CT}^S \), then \( \sigma, \tau \) is a shunting type for \( L_{CT}^S \).

This rule will naturally apply to purely expressive utterances, such as (46), but it does not apply to cases such as (44) and (47b) that also contain at-issue elements in the domain outside a modification structure. In (44) and (47b), CI application is also involved.
3.6 Chapter summary

In this chapter, we introduced the basic formal mechanisms of the logic of conventional implicature that are relevant for analyzing the dual-use phenomenon of scalar modifiers and the pragmatic aspects of scalar modifiers in a formal way. More specifically, we introduced the logics of conventional implicatures and showed that various kinds of interpretive rules or modes of composition (e.g., CI application, shunting application, mixed application) are involved in the phenomenon of CIs (e.g., epithets, honorifics, supplements, diminutives).

The following is a summary of type systems that are relevant to the interpretations of pragmatic scalar modifiers.

(57) The logic $L^{CI}$
(i) $e^a$, $t^a$, and $s^a$ are basic at-issue types for $L^{CI}$.
(ii) $e^s$, $t^s$, $s^s$ are basic CI types for $L^{CI}$.
(iii) If $\sigma$ and $\tau$ are at-issue types for $L^{CI}$, then $\langle \sigma, \tau \rangle$ is an at-issue type for $L^{CI}$.
(iv) If $\sigma$ is an at-issue type for $L^{CI}$ and $\tau$ is a CI type for $L^{CI}$, then $\langle \sigma, \tau \rangle$ is a CI type for $L^{CI}$.
(v) If $\sigma$ and $\tau$ are at-issue types for $L^{CI}$, then $\langle \sigma \times \tau \rangle$ is a product type for $L^{CI}$.
(vi) If $\sigma$ and $\tau$ are CI types for $L^{CI}$, then $\langle \sigma, \tau \rangle$ is a CI type for $L^{CI}$.
(vii) The full set of types for $L^{CI}$ is the union of the at-issue types and the CI types for $L^{CI}$.

(58) McCready’s modified type system: $L^{+S}_{CI}$
The type system itself is identical to that of $L^{CI}$ except that:
a. $e^s$, $t^s$, and $s^s$ are basic shunting types for $L^{+S}_{CI}$.
b. If $\sigma$ is an at-issue type for $L^{+S}_{CI}$ and $\tau$ is a shunting type for $L^{+S}_{CI}$, then $\langle \sigma, \tau \rangle$ is a shunting type for $L^{+S}_{CI}$.
c. If $\tau$ is a shunting type for $L^{+S}_{CI}$ and $\tau$ is a shunting type for $L^{+S}_{CI}$, then $\langle \sigma, \tau \rangle$ is a shunting type for $L^{+S}_{CI}$.

(59) The logic $L^{+S}_{CI}$
The following clauses are added to the $L^{+S}_{CI}$:
(i) If $\sigma$ and $\tau$ are at-issue types for $L^{+S}_{CI}$, and $\xi$ and $\nu$ are shunting types for $L^{+S}_{CI}$, then $\sigma \times \xi, \langle \sigma, \tau \rangle \times \xi, \sigma \times \langle \xi, \nu \rangle$ are mixed types for $L^{+S}_{CI}$.
(ii) If $\sigma$, $\tau$ and $\xi$ are at-issue types for $L^{+S}_{CI}$ and $\nu$ is a shunting type for $L^{+S}_{CI}$, then $\langle \sigma, \tau \rangle \times \langle \xi, \nu \rangle$ is a mixed type for $L^{+S}_{CI}$.
(iii) If $\sigma$ and $\tau$ are at-issue types for $L^{+S}_{CI}$, and $\xi$ and $\nu$ are shunting types for $L^{+S}_{CI}$, then $\sigma \times \xi, \langle \sigma, \tau \rangle \times \xi, \sigma \times \langle \xi, \nu \rangle$ are mixed types for $L^{+S}_{CI}$.
(iv) If $\sigma$, $\tau$ and $\xi$ are at-issue types for $L^{+S}_{CI}$ and $\nu$ is a shunting type for $L^{+S}_{CI}$, then $\langle \sigma, \tau \rangle \times \langle \xi, \nu \rangle$ is a mixed type for $L^{+S}_{CI}$.

5 Recall that we also introduce $d$ (the type of degrees), $i$ (the type of times), and $a$ (the type of speech acts) as basic semantic types.
(v) If $\sigma$ is a shunting type for $L^+_{CI}$ and $\tau$ is a shunting type for $L^+_{CI}$, then $\sigma, \tau$ is a shunting type for $L^+_{CI}$.

In the following chapters, we analyze the pragmatic aspects of scalar modifiers utilizing these formal tools. In analyzing their meanings, we also introduce new semantic rules in order to account for the meanings and interpretations of pragmatic scalar modifiers. For example, in Chapter 5, we introduce an extended rule for parsetree interpretation for an embedded speech act. In Chapter 8, we investigate the interpretations of embedded pragmatic scalar modifiers and propose that there is a shifting rule from a CI to a secondary at-issue entailment in the embedding context that involves non-speaker orientation (subject orientation).
Comparison with an indeterminate pronoun

4.1 Introduction

Let us now start analyzing the dual-use phenomenon of scalar modifiers. In this chapter we will focus on the dual-use phenomenon of comparison with an indeterminate pronoun in Japanese (and other languages) and consider the (non)parallelism between at-issue and not-at-issue truth scalar meanings in terms of dimensionality and compositionality. In Japanese, the meaning of comparison with indeterminateness is expressed by an “indeterminate pronoun” plus *yori-mo* ‘than-MO’ (Kuroda 1979: 96). Interestingly, if the indeterminate pronoun *nani* (‘what’) is used in this environment, the sentence can be ambiguous between two readings, as in:

(1) Nani-yori-mo tenisu-wa tanoshii.
    What-than-MO tennis-top fun
    a. at-issue: Tennis is more fun than anything. (*Individual reading*)
    b. at-issue: Tennis is fun. ([CI: The utterance that tennis is fun is more noteworthy than any other utterance related to tennis.]) (*Noteworthy reading*)

(2) Tenisu-wa nani-yori-mo tanoshii.
    Tennis-top what-than-MO fun
    a. at-issue: Tennis is more fun than anything. (*Individual reading*)
    b. at-issue: Tennis is fun. ([CI: The utterance that tennis is fun is more noteworthy than any other utterance related to tennis.]) (*Noteworthy reading*)

In the first reading of (1a), ‘tennis’ is compared with (contextually determined) alternative activities (e.g., baseball, reading, TV, etc.). In the second reading of (1b), the proposition/utterance ‘tennis is interesting’ is compared with alternative propositions in terms of noteworthiness/importance and is construed as being the most noteworthy (important). I will call the former reading the *individual* reading and the latter reading the *noteworthy* reading. Regarding sentence (2), it can also be seen as being ambiguous between the two readings, but the noteworthy reading behaves as a “parenthetical” (Potts 2005).

Note that the phenomenon of noteworthy comparison is not peculiar to Japanese, but is cross-linguistically pervasive. For example, in Korean, a sentence with
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mwues-pota-to ‘what-than-TO’ can be ambiguous between noteworthy and individual readings:

(3) (Korean)
Mwues-pota-to teynisu-nun caymi-itta.
What-than-to tennis-top fun-decl
Individual reading: Tennis is more fun than anything.
Noteworthy reading: More than anything, tennis is fun.

Similar phenomena can be observed in English as well. Although English explicitly distinguishes the individual reading from the noteworthy one in its surface structure, we can express the two readings using exactly the same degree morphemes (i.e., more, than). (4) represents an individual comparison reading and (5) represents a noteworthy comparison reading:

(4) Tennis is more fun than anything. (Individual reading)
(5) a. More than anything, tennis is fun. (Noteworthy reading)
   b. Tennis is, more than anything, fun. (Noteworthy reading)

These data strongly suggest that the phenomenon of noteworthy comparison is cross-linguistically pervasive and is not just a language-specific phenomenon.

In terms of the semantics/pragmatics interface, we can say that the meaning of individual comparison is semantic, while the meaning of nani-yori-mo in the noteworthy is discourse-pragmatic. The meaning of the individual nani-yori-mo is semantic in that its meaning is part of a propositional content. On the other hand, the meaning of the noteworthy comparison is discourse-pragmatic in that, even if we delete nani-yori-mo in the given utterance, we can calculate the truth condition of the given proposition. Intuitively, the noteworthy nani-yori-mo behaves like an utterance modifier. Why can the same degree morphology express different kinds of meaning? How is the concept of comparison used on a discourse-pragmatic level? What does the dual-use of scalar phenomena imply for the theory of meaning?

In this chapter we will investigate the similarities and differences between individual and noteworthy comparisons of nani-yori-mo in terms of the semantics and pragmatics interface and consider the role of scalarity in a discourse context. As for the similarities and differences between the two readings, it will be shown that, although these readings are compositionally and dimensionally different, there is a striking parallelism between the two in terms of scale structure. I will show that the multidimensional theory of conventional implicature (CI) (Potts 2005; McCreary 2010) can capture the similarities and differences between the two kinds of comparison in a systematic way.

As for the role of scalarity in a discourse context, I will argue that comparison plays an important part in structuring and relativizing multiple utterances, and the pragmatic notion of noteworthiness provides a speaker-oriented perspective, measuring to what extent an at-issue utterance contributes to the goal of the conversation.

The organization of this chapter is as follows: in section 4.2 we will consider the basic properties of and theoretical assumptions on the syntax and meaning of comparatives
in Japanese. Section 4.3 considers the empirical differences between noteworthy and individual comparisons. In 4.4 we will investigate the semantics of the individual *nani-yori-mo* and argue that the meaning of individual comparison with indeterminateness contributes to the truth-conditional aspect of meaning. Section 4.5 focuses on the meaning of noteworthy comparison and argues that the noteworthy *nani-yori-mo* contributes to CI. Section 4.6 analyzes the meaning of the noteworthy *nani-yori-mo* in terms of multidimensionality and section 4.7 considers where the meaning of note-worthiness/importance comes from and how we derive it. Section 4.8 approaches the use of noteworthy comparison from a discourse-pragmatic perspective. Section 4.9 concludes the chapter.

### 4.2 Comparatives in Japanese

This section considers the basic properties of Japanese comparatives. Japanese differs from languages like English in that it (usually) has no overt comparative morphology like the English *-er/more*, as shown in (6):

(6)  
\[ \begin{align*} 
\text{a.} & \quad \text{Tokyo-wa Sapporo-yori(-mo) atatakai.} \\
& \quad \text{Tokyo-top Sapporo-than-mo warm} \\
& \quad \text{‘It is warmer in Tokyo than in Sapporo.’} \\
\text{b.} & \quad \text{Taro-wa Hanako-ga kaita(-no)-yori(-mo) nagai ronbun-o kaita.} \\
& \quad \text{Taro-top Hanako-nom wrote-nm-than-mo long paper-acc wrote} \\
& \quad \text{‘Taro wrote a longer paper than Hanako wrote.’ (nm=nominalizer)} 
\end{align*} \]

The word *yori* ‘than’ in (6) is a marker of standard. Descriptively speaking, the standard of comparison in (6a) is ‘phrasal’ while that in (6b) is ‘clausal.’ (Notice that, unlike the environment of indeterminate pronouns, the particle *mo* in (6) is optional and does not affect the basic meaning of comparatives.) Let us now consider some theoretical assumptions about the semantic analysis of Japanese comparatives.¹

¹ We have so far considered the *yori* comparatives. However, Japanese has various other kinds of comparatives. Kennedy’s (2007a) analysis of explicit versus implicit comparison captures the variations among comparatives in Japanese. (i) is explicit comparison and (ib) is implicit comparison:

(i)  
\[ \begin{align*} 
\text{a.} & \quad \text{Tom is taller than Jim.} \\
\text{b.} & \quad \text{Compared to Jim, Tom is tall.} 
\end{align*} \]

Roughly speaking, in English an explicit comparison is one in which a comparative morphology (*-er/more*) is used, while an implicit comparison is one in which an unmodified positive form of a gradable predicate is used. Sawada (2009a) argues that two modes are different in pragmatics. (ib), but not (ia), implies (a) Jim is not tall and (b) Tom is not definitely tall (possibly borderline). Japanese *yori* comparatives have played an important role in the theoretical consideration of cross-linguistic variation in comparatives, and researchers have proposed various approaches to the issue. Regarding the semantics of phrasal comparatives, there is a question as to whether phrasal comparatives in Japanese are fundamentally clausal or not. I will adopt the assumption that phrasal comparatives in Japanese are base-generated as phrasal (Bhatt and Takahashi 2008).
Comparison with an indeterminate pronoun

Regarding the syntax/semantics of clausal comparatives, there has been an ongoing discussion as to whether the clausal complement of *yori* is a DP in the form of a free relative (Beck et al. 2004; Kennedy 2007b; Sudo 2015) or whether this clausal complement creates a full clause with degree abstraction structures as in English (Shimoyama 2006).

Finally, there has been a question as to where the meaning of comparison is encoded. One idea is that even though in Japanese there is no comparative morphology like the English word *more*, the language actually has a null comparative morpheme MORE (e.g., Beck et al. 2004). According to this idea, the meaning of the marker of standard *yori* is semantically null. Another idea is that the meaning of comparison is in the denotation of *yori* (Kennedy 2007a; Hayashishita 2009; Sawada 2013b). In this book I will assume that the standard marker *yori* has a meaning of comparison, as exemplified in (7):

(7) Tokyo-wa Sapporo-yori atatakai.
    Tokyo-top Sapporo-than warm
    ‘It is warmer in Tokyo than in Sapporo.’

I assume that the standard marker *yori* has the following meaning:

(8) \[[yori_{STANDARD}]\] = \(\lambda x\lambda g\lambda y.\max\{d'[g(d')(y)] \succ \max\{d''[g(d'')(x)]\}\}\)

As for the meaning of gradable adjectives, I follow the assumption that gradable predicates represent relations between individuals and degrees (Seuren 1973; Cresswell 1976; von Stechow 1984; Klein 1991; Kennedy and McNally 2005).

(9) \[[atatakai]\] = \(\lambda d\lambda z.warm(z) = d\)

The semantic structure of (7) can be represented as in (10):

---

2 Here, I follow the assumption that the standard of comparison in Japanese is type e, i.e., individual comparison rather than degree comparison (Kennedy 2007a). Note that there is also a negation-based approach to the semantics of comparison (i.e., “A-not-A” analysis) (e.g., Ross 1969; Seuren 1973; Schwarzschild 2008; Bhatt and Takahashi 2008, among many others). In this approach the meaning of (i) can be analyzed as (ii), using negation:

(i) a. A is taller than B.
   b. There is some expense threshold: A meets it and B does not.

Unlike (8), this approach does not directly encode the “greater than relation” between the two individuals in the denotation of MORE. This analysis was offered as an explanation for the occurrence of negative polarity items in comparatives. See Schwarzschild (2008) for a detailed discussion of the A-not-A analysis.
(10) The logical structure of the regular comparative sentence (7)

\[ S: ta \max \{d' | \text{warm(Tokyo) = } d'\} \succ \max \{d'' | \text{warm(Sapporo) = } d''\} \]

\[ \text{DP} \quad \text{AP} \]

\[ \text{Tokyo-wa: } ea \lambda y. \max \{d' | \text{warm(y) = } d'\} \succ \max \{d'' | \text{warm(Sapporo) = } d''\} : \langle ea, t^a \rangle \]

\[ \text{PP} \quad \text{A} \]

\[ \lambda g \lambda y. \max \{d'[g(d')(y)] \succ \max \{d''[g(d'')(Sapporo)] : \langle G(d', ea, t^a), (ea, t^a) \rangle \}
\]

\[ \text{DP} \quad \text{P} \quad \text{yori} \]

\[ \lambda x \lambda g \lambda y. \max \{d'[g(d')(y)] \succ \max \{d''[g(d'')(x)] : \langle ea, (G(d', ea, t^a)), (ea, t^a) \rangle \}
\]

4.3 The individual nani-yori-mo and the noteworthy nani-yori-mo

As we saw in section 4.1, a sentence with nani-yori-mo can be ambiguous between two kinds of interpretation: an individual reading and a noteworthy reading:

(11) Nani-yori-mo tennis-wa tanosii.

What-than-mo tennis-top fun

a. ‘Tennis is more fun than anything.’ (Individual reading)

b. ‘The utterance that tennis is interesting is more noteworthy than any other utterance.’ (Noteworthy reading)

In the individual reading, ‘tennis’ is compared with (contextually determined) alternative activities (e.g., soccer, research, a picnic, baseball, etc.). By contrast in the noteworthy reading, the utterance ‘tennis is interesting’ is compared with alternative propositions in terms of noteworthiness/importance and is construed as the most noteworthy (important). Sentence (11) is ambiguous between the two readings, while nani-yori-mo in the noteworthy reading behaves as a “parenthetical” (Potts 2005). Notice that the above ambiguity does not arise if there is a semantic mismatch between...
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*nani* and the target of comparison, as in (12), or if other indeterminate pronouns are used, as in (13):

(12) Nani-yori-mo Mary-wa yasashii.
    What-than-MO Mary-TOP kind
    Mary is kind. (Implicature: The utterance that Mary is kind is more noteworthy than any other utterance related to Mary.) (Noteworthy reading)

(13) Dare-yori-mo Mary-wa yasashii.
    Who-than-MO Mary-TOP kind
    'Mary is more kind than anyone.' (Individual reading)

This data clearly shows that the ambiguity between the individual and noteworthy readings arises only when the indeterminate pronoun is *nani* ‘what.’

There are several empirical differences between the individual nani-yori-mo and the noteworthy nani-yori-mo. First, the intensifier adverb *tometo* ‘very/really’ can appear in the noteworthy reading, but not in the individual reading, as shown in:

(14) Nani-yori-mo tennis-wa totemo tanoshii.
    What-than-MO tennis-TOP really fun
    ‘Tennis is really more fun than anything.’ (Individual reading) ‘The utterance that tennis is really fun is more noteworthy than any other utterance.’ (Note-
    worthy reading)

Second, the discourse marker *mazu* (‘first of all’) or the idiomatic expression *kani*-yori-mo can follow nani-yori-mo in the noteworthy reading, but not in the individual reading:

(15) a. Nani-yori-mo mazu tenisu-wa tanoshii.
    What-than-MO first of all tennis-TOP fun
    ‘First, tennis is more fun than anything.’ (No individual reading) ‘First of all, the utterance that tennis is fun is more noteworthy than any other utterance.’
    (Noteworthy reading)

    What-than-MO that-than-mo tennis-TOP fun
    ‘First, tennis is more fun than anything.’ (No individual reading) ‘First of all, the utterance that tennis is fun is more noteworthy than any other utterance.’
    (Noteworthy reading)

Third, the individual reading, but not the noteworthy reading, cannot arise in negative sentences, as shown in (16):³

³ Notice, however, that the following sentences with negation are natural:

(i) Kono mise-wa dono mise-yori-mo kyaku-ga ko-nai.
    This store-TOP which store-than-MO customer-NOM come-NEG
    ‘lit. This store does not have more customers than any store.’ (This store is more unpopular than any stores.)
The individual and the noteworthy nani-yori-mo

(16) Nani-yori-mo tennis-wa tanoshiku-nai.
What-than-mo tennis-TOP fun-NEG
'tennis is not more fun than anything.' (Individual reading)
'The utterance that tennis is not fun is more noteworthy than any other utterance.' (Noteworthy reading)

The above asymmetry can be reduced to a difference in their modification structures. Example (17) shows the modification structures of the individual and noteworthy readings in (1):

(17) Two types of nani-yori-mo
a. Individual comparison with a determinate pronoun (the scrambled case)

\[ S \]
\[ PP \text{ (scrambled)} \]
\[ Nani-yori-mo \]
\[ DP \]
\[ tenisu-wa \]
\[ 'tennis-TOP' \]
\[ AP \]
\[ ⟨PP⟩ \]
\[ A \]
\[ tanoshii \]
\[ 'fun' \]

b. Noteworthy comparison

\[ S \]
\[ AdvP \]
\[ Nani-yori-mo \]
\[ DP \]
\[ tenisu-wa \]
\[ 'tennis-TOP' \]
\[ DegP \]
\[ Deg \]
\[ pos \]
\[ AP \]
\[ tanoshii 'fun' \]

In the individual reading, nani-yori-mo attaches to the Deg P (MOREP + tanoshii). The surface position of nani-yori-mo is the result of scrambling. On the other hand, in the noteworthy reading, nani-yori-mo attaches to the entire sentence. It is base-generalized at the sentence's initial position as an adverbial phrase. (As we will discuss

(ii) Kono nabe-wa dono nabe-yori-mo nie-tei-nai.
This pan-TOP which pan-than-mo boiled-state-NEG
'This pan has been boiled less than any other pans.'

It may be possible to argue that these sentences are grammatical because, in them, negation is combined locally with gradable predicates and a NEG + predicate to form a "single" gradable predicate.
later, more precisely, the noteworthy nani-yori attaches to an utterance (SpeechActP).) Notice that the basic structure of the noteworthy reading is adjectival, with a null degree morpheme pos (e.g., Cresswell 1976; Kennedy 1999). We will discuss the meaning of the null morpheme pos in section 4.6. As for the example of the supplemental use of the noteworthy nani-yori-mo, we can posit the structure in (18):

(18) Supplemental, nani-yori-mo

\[
\begin{array}{c}
S \\
\text{DP} \\
\text{tenisu-wa} \\
\text{AdvP} \\
\text{nani-yori-mo} \\
\text{DegP} \\
\text{Deg} \\
\text{pos} \\
\text{AP} \\
\text{tanoshii 'fun'}
\end{array}
\]

In the case of parenthetical noteworthy reading, nani-yori-mo scopes over the adjectival domain (i.e., pos plus tanoshii) at least at the surface level.\(^4\)

The above structural differences can naturally explain the distributional differences between the individual nani-yori-mo and the noteworthy nani-yori-mo we observed in (14)–(16). First, the noteworthy nani-yori-mo, but not the individual nani-yori-mo, can co-occur with the intensifier totemo because totemo can only appear in a more or less adjectival environment (Tsujimura 2001) and cannot appear in a comparative environment:

(19) Tom-wa Hanako-yori-mo (*totemo) kashikoi.
    Tom-top Hanako-than-mo very smart
    'Tom is (*very) smarter than Hanako.'

We can say that totemo is a special kind of positive morpheme.

Second, the individual nani-yori-mo, but not the noteworthy nani-yori-mo, cannot precede the discourse marker mazu 'first of all' (= 15a), because mazu blocks the movement of the individual nani-yori-mo from the base position to the surface position. If there is mazu between the semantic use of nani-yori-mo and the rest of the comparative elements (subject, adjective, etc.) that contribute to the truth-conditional meaning of comparison, we cannot compute the meaning of the "semantic comparison" in a compositional fashion.

We can consider that this is a kind of intervention effect in the realm of the semantics/pragmatics interface. On the other hand, the noteworthy nani-yori-mo can

\(^4\) Intuitively, in the parenthetical reading, nani-yori-mo compares an at-issue predicate with every alternative predicate. In this chapter we will mainly focus on the noteworthy reading where nani-yori-mo is placed in the sentence’s initial position.
naturally precede mazu because, as we will discuss in detail later, both are discourse-pragmatic and they are logically and dimensionally different from the rest of the sentence.

Third, the individual nani-yori-mo, but not the noteworthy nani-yori-mo, cannot appear in a negation environment because, generally, free choice items do not arise in a negative context (Giannakidou 1998). Namely, free choice items behave like a positive polarity item (PPI). In this case we can say that since the individual nani-yori-mo is within the scope of negation (at least at the level of semantics), the resulting sentence is odd. However, the above reasoning does not apply to the case of the noteworthy nani-yori-mo because it is placed at a high level and scopes over an entire sentence. Namely, the noteworthy nani-yori-mo is above negation.

Note that a sentence with the noteworthy nani-yori-mo does not need to contain an adjective, as in the following example:5

(20) (Context: Please tell me where Japan is located?)
Nani-yori-mo nihon-wa ajia-ni aru.
What-than-mo Japan-top Asia-LOC exist
'More than anything, Japan is in Asia.'

4.4 The meaning of individual comparison

Let us first consider the meaning of the individual reading exemplified in (21):

(21) Tennis-wa nani-yori-mo tanoshii.
Tennis-top what-than-mo fun
'Tennis is more fun than anything.' (Individual reading)

I would like to point out first that we can express the meaning of individual comparison with indeterminateness by using various kinds of indeterminate pronouns:

(22) Indeterminate pronoun plus yori-mo
a. dare 'who' (dare-yori-mo)
b. ikura 'how much' (*ikura-yori-mo)
c. nani 'what' (nani-yori-mo)
d. itu 'when' (*itu-yori-mo)
e. dore 'which' (dore-yori-mo)
f. naze 'why' (*naze-yori-mo)
g. dono 'which (DEt)' (dono N-yori-mo)
h. doo 'how' (*doo-yori-mo)
i. doko 'where' (doko-yori-mo)

5 Thanks to Tom Grano for bringing this to my attention.
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Itu-yori-mo ‘when-than-mo’ sounds odd for some native speakers. Note that there is also an expression itu-mo-yori, but it means ‘than usual,’ not ‘than anytime.’ As the list in (22) shows, individual comparison with indeterminateness is not fully productive. It can only be used when the indefinite pronoun is dare ‘who,’ nani ‘what,’ dore ‘which,’ dono NP, or doko ‘where.’

In order to highlight the difference between the individual and noteworthy readings, this chapter only focuses on the semantics of individual comparison in which the indeterminate pronoun nani is used.

As I discussed earlier, I assume that the marker of standard yori has a comparative meaning (e.g., Kennedy 2007c; Hayashishita 2009; Sawada 2013b), as in (23) (the information of tense and world are omitted):

\[
[yori] = \{\lambda x \lambda g \lambda y. \text{max}\{d'[g(d'(y))], \text{max}\{d''[g(d''(x))]}\}
\]

The question is how to generate the meaning of nani-yori-mo. There are various approaches to the meaning of indeterminate pronouns and mo, but in this book, I use Hamblin’s (1973) semantics for Japanese indeterminate pronouns (Kratzer and Shimoyama 2002; Shimoyama 2006). In this system, nani ‘what’ in (21) introduces a set of individual alternatives, as in (24), where possible worlds and variable assignments are omitted for the sake of simplicity:

\[
[nani] = \{x \in De : \text{thing}(x) \land C(x)\}
\]

I posited a contextual operator C in (24) to make sure that nani ‘what’ only introduces contextually relevant alternatives. Nani in (24) then combines with yori in a pointwise manner. The denotation of nani-yori is composed by applying a functional application “pointwise”:

\[
\text{Pointwise Functional Application (Kratzer and Shimoyama 2002): If } \alpha \text{ is a branching node with daughters } \beta \text{ and } y, \text{ and } [[\beta]] \subseteq D_\sigma \text{ and } [[y]] \subseteq D_{(\sigma, r)}, \text{ then } [[\alpha]] = \{a \in D_\tau : \exists b \exists c[b \in [[\beta]] \land c \in [[y]] \land a = c(b)]\}
\]

The above function application says that if there is a representation like that in (26a), it is interpreted as in (26b):

\[
\text{Pointwise function application}
\]

\[
\begin{align*}
\beta(y) & \quad \gamma(x) \\
\alpha(y) & \quad c(b_1), c(b_2), \ldots, c(b_n) \\
\{c\} & \quad \{b_1, b_2, \ldots, b_n\}
\end{align*}
\]
If we apply this functional application to \textit{nani-yori} in the individual reading, we can derive the following meaning:

(27) The interpretation of \textit{nani-yori} via pointwise function application

\[
\text{nani-yori} \\
\text{yori(soccer), yori(baseball), \ldots, yori(basketball)}
\]

Note that the alternatives expand until they meet the universal operator \textit{mo}, which selects them as in (28):

(28) \[
[[\text{mo}]] = \{\lambda P \lambda g \lambda y \forall x \in \{\text{thing}\} \rightarrow P(g)(y)\} \quad (\text{where } x \text{ is an expanding individual variable in } P)
\]

Thus, if \textit{mo} is combined with \textit{nani-yori}, we get the following meaning:

(29) \[
[[\text{mo}]]([[\text{nani-yori}])] = \{\lambda g(d, (c, t)) \lambda z \forall x \in \{D_c : \text{thing} (x)\} \rightarrow \max(g)(z) > \max(g)(x)\}
\]

\textit{Nani-yori-mo} is then combined with the gradable predicate \textit{tanishii} ‘fun’.\footnote{Note that I am treating the predicate \textit{tanoshii} ‘fun’ as a gradable predicate. Some researchers call predicates like \textit{fun} and \textit{tasty} predicates of personal taste and provide a different analysis for them (Lasersohn 2005; Stephenson 2007), but in this book I will consider regular gradable predicates and predicates of personal taste to have the same semantic type (see Chapter 7 for a detailed discussion of the semantics of predicates of personal taste).}

(30) \[
[[\text{tanoshii}]] = \lambda d \lambda x . \text{fun}(x) = d
\]

The tree in (31) shows the logical structure of the individual reading of (21):

\[
\begin{array}{c}
\text{nani} \\
\{\text{soccer, baseball, basketball, \ldots}\} \\
\text{yori}
\end{array}
\]

\[
\begin{array}{c}
\text{yori(soccer), yori(baseball), \ldots, yori(basketball)} \\
\text{nani}
\end{array}
\]
Comparison with an indeterminate pronoun

(31) The logical structure of the individual reading in (21)

\[ S \]

\[ \{\forall x \in \text{thing} \rightarrow \max\{d' | \text{fun}(x) = d'\} > \max\{d'' | \text{fun}(x) = d''\} : \text{thing}(x) \land C(x)\} \]

Note that if 'tennis' is in the set of alternative individuals, the sentence will always be false. In order to avoid such a situation, we need to either remove 'tennis' from the set of contextually relevant alternatives or change \(\succ\) to \(\succeq\). This applies to the case of the noteworthy reading that we will discuss later. In this book I would like to posit that tennis is automatically excluded from the set of alternatives because 'tennis' has already been topicalized in the sentence.7 The crucial point here is that the comparison in (30) is made at the at-issue level.

7 Thanks to Chris Potts for pointing out this issue.
4.5 Noteworthy reading

4.5.1 Noteworthy nani-yori-mo is a CI

Let us now consider the meaning of noteworthy comparison. Noteworthy comparison is different from individual comparison in that its meaning is not part of “what is said.” It is a conventional implicature. As we discussed in Chapters 1 and 2, in the Gricean theory of meaning, CIs are considered to be part of the meaning of words, but these meanings are independent of “what is said” (e.g., Grice 1975; Potts 2005, 2007a; Horn 2008, 2013; McCreary 2009, 2010; Sawada 2010; Gutzmann 2011, 2012, 2013). The idea that it is independent from “what is said” is supported by the fact that the denial cannot target the meaning of noteworthy comparison. For example, if we say “no, that’s not true” after the noteworthy comparative utterance, the denial can only target the at-issue part of the utterance (i.e., Tokyo is safe):

   ‘More than anything, Tokyo is safe.’
B: Iya, sono kangae-wa tadashiku-nai-desu.
   ‘No, that idea is not true.’ (Tokyo is not safe.)

However, in the case of individual comparison the denial can target the description of metalinguistic comparison:

(33) A: Tokyo-wa doko-yori-mo anzen-desu.
   ‘Tokyo is safer than anywhere.’
B: Iya, sono kangae-wa tadashiku-nai-desu.
   ‘No, that idea is not true.’ (He is an economist.)

The speaker in (33B) is denying the comparative meaning that “Tokyo is safer than anywhere.” One might think that the meaning of the noteworthy nani-yori-mo is a presupposition rather than a CI. However, several pieces of empirical evidence suggest that the meaning of noteworthy comparison is a CI (rather than a presupposition).

First, the meaning of the noteworthy nani-yori-mo cannot be backgrounded. In the literature, it is often claimed that a presupposition is a proposition whose truth is taken for granted as background information and it is discourse-old. However, CIs have an anti-backgroundedness property (Potts 2005). For example, Potts (2005) claims that a supplement should be considered a CI (rather than a presupposition) because, unlike a presupposition, it cannot be backgrounded based on the following contrast:

(34) Lance Armstrong survived cancer.
   a. # When reporters interview Lance, a cancer survivor, he often talks about the disease.
   b. And most riders know that Lance Armstrong is a cancer survivor.
   (Potts 2005: 34)
Comparison with an indeterminate pronoun

According to Potts (2005), (34a) is infelicitous or redundant because the content of a supplement is part of the initial context. A supplement is a CI and thus cannot be backgrounded. However, (34b) is perfectly natural because know is a presupposition trigger and does not have the anti-backgroundedness property. If we look at the meaning of the noteworthy nani-yori-mo, we see that similarly to the case of a supplement, it has an anti-backgroundedness property. The noteworthy nani-yori-mo always provides new information. This is corroborated by the fact that if the meaning of the noteworthy nani-yori-mo is discourse-old, then the sentence becomes odd or redundant:

(35)  (Context: Speaker A is questioning speaker B, who was a professional tennis player.)

A: Naze tennis-o suru-no-desu-ka?
    Why tennis-ACC do-NODA-PREF.HON-Q
    'Why do you play tennis?'

B: Soo desune. Kore-ga ima-no boku-nitotte mottomo konomashii
    Let's see This-NOM this-TOP now-forme most-preferable
    kotae-desu. (#Nani-yori-mo) tenisu-wa tanoshii-kara-desu.
    answer-PREF.HON What-than-MO tennis-TOP fun-because-PREF.HON
    'This is the most preferable answer for my current situation. (#More than anything) I play tennis because it is fun.'

In this context, speaker B explicitly mentions that he is providing the most appropriate/preferable answer for his current situation (the situation as a nonprofessional tennis player). In this context, if speaker B uses nani-yori-mo 'more than anything,' his utterance sounds redundant. This suggests that the meaning of nani-yori-mo is a CI rather than a presupposition.

Additional evidence for the idea that the meaning of nani-yori-mo is a CI rather than a presupposition is that unlike presuppositions, the meaning of the noteworthy nani-yori-mo is highly speaker-oriented. It is not something that is shared between a speaker and an addressee prior to an utterance.

4.5.2 Noteworthy comparison operates on the speech act

Now let us consider the structural property of noteworthy comparison. I claim that noteworthy nani-yori-mo operates on speech acts. This idea is supported by the fact that noteworthy comparison can scope over speech acts/sentence types (Sadock and Zwicky 1985):

(36)  a. (Declarative)
    Nani-yori-mo Tokyo-wa anzen-da.
    What-than-MO Tokyo-TOP safe-PRED
    At issue: Tokyo is safe.
    CI: The assertion that “Tokyo is safe” is more noteworthy than any other assertion.
b. (Interrogative)
Nani-yori-mo naze anata-wa Chicago-ni iku-no?
What-than-mo why you-top Chicago-to go-Q
At issue: Why do you go to Chicago?
Cl: The question “why do you go to Chicago?” is preferable to any other question.

c. (Imperative)
Nani-yori-mo jugyoo-ni ki-nasai!
What-than-mo class-to come-IMP
At issue: Come to the class!
Cl: The command “come to the class!” is preferable to any other command.

The same phenomenon can be found in the Korean mwues-pota-to ‘what-than-TO’ and the English more than anything:

(37) a. (Korean, declarative)
Mwues-pota-to teynisu-nun caymi-itta.
what-than-TO tennis-TOP fun-DECL
Reading 1: ‘Tennis is more fun than anything.’ Reading 2: ‘More than anything, tennis is fun.’

b. (Korean, imperative)
Mwues-pota-to, sweup-ey (com) o-ala!
what-than-TO, class-LOC (COM) come-IMP
‘More than anything, come to the class!’

c. (Korean, interrogative)
Mwues-pota-to, Tokyo-ey way ka-ss-e?
What-than-TO, Tokyo-LOC why go-PAST-DECL
‘More than anything, why did you go to Tokyo?’

(38) a. More than anything, do not start training again until you are fully recovered.
(Imperative)

b. More than anything, why do you care so much? (www.circleofmoms.com/
.../what-s-the-appeal-in-naming-your-girl-a-boy-s-name-563913-)
(Interrogative)

However, there is a potential problem with the idea that noteworthy comparison operates on speech acts. As the following examples show, noteworthy comparison can appear in the middle of the sentence:

(39) a. Tenisu-wa nani-yori-mo tanoshii. (Noteworthy reading)
Tennis-TOP what-than-MO fun
‘Tennis is, more than anything, fun.’

b. Tennis is, more than anything, fun.
Here, \textit{nani-yori-mo} and \textit{more than anything} behave as parenthetical phrases. One way to analyze this is to assume that the parenthetical noteworthy \textit{nani-yori-mo/more than anything} operates on the speech act level at LF, despite the fact that at a superficial level it is placed inside the sentence. Another way to analyze (39) is to assume that the parenthetical \textit{nani-yori-mo} operates on a property and posit different semantics for it. For example, it may be possible to argue that the parenthetical \textit{nani-yori-mo} in (39a) and \textit{more than anything} in (39b) convey the following CI meaning:

\begin{equation}
\text{(40) The at-issue property is preferable to any other property for characterizing tennis.}
\end{equation}

I think that the former option is preferable because if we accept it, we don’t have to posit another lexical entry for the noteworthy \textit{nani-yori-mo}. However, in order to determine which approach is better, there must be more empirical investigations (especially as to whether the parenthetical \textit{nani-yori-mo} can appear in nondeclarative environments). I would like to leave this question for future research.

4.6 Analysis: The preference-based approach to noteworthy comparison

Let us now analyze the meaning of noteworthy comparison. The question is: if noteworthy comparison posits a scale of preference, where does the scalar meaning of noteworthyness/importance come from?

I will argue that the noteworthy \textit{nani-yori} posits a scale of preference and the meaning of “noteworthiness/importance” in noteworthy comparison is derived from interaction with the general pragmatic principle of “relevance to a goal” (Roberts 2012).

4.6.1 The semantics of metalinguistic comparison

Before moving on to the analysis of noteworthy comparison, let me introduce Giannakidou and Yoon’s (2011) analysis of metalinguistic comparison, which will provide important background. Giannakidou and Yoon (2011) assume that metalinguistic comparison involves a speaker’s preference: it expresses that the speaker prefers one sentence in a given context over another. Giannakidou and Yoon (2011) consider that there are two types of metalinguistic comparison: an emphatic preference type and an accuracy assessment type:

\begin{equation}
\text{(41) a. I would rather die than marry him. (Emphatic preference)}
\text{b. Your problems are more financial than legal. (Accuracy assessment)}
\end{equation}

\text{(McCawley 1988: 673)}

\text{8 Usually, the accuracy assessment type of comparison is labeled metalinguistic comparison (e.g., McCawley 1988; Morzycki 2011), but Giannakidou and Yoon (2011) treat emphatic preference and accuracy assessment as a natural class.}
Regarding the preference measure function, Giannakidou and Yoon (2011: 638) assume that the preference ordering of metalinguistic comparison is similar to the one we find with gradable volitional predicates such as *want* and *desire*. That is, the metalinguistic comparative morpheme denotes “prefer more.” Based on their analyses of the semantics of *want* (Stalnaker 1984; Heim 1992; Villalta 2008), Giannakidou and Yoon define the meaning of metalinguistic comparison (would rather type) as follows:

\[
[MORE_{ML}] = \lambda P \lambda Q [P \succ_{Des(a)(c)} Q]
\]

where \( \succ_{Des(a)(c)} \) is an ordering function such that: for \( P \) and \( Q \) and degrees \( d \) and \( d' \), the degree \( d \) to which \( a \) desires \( P \) in \( c \) is greater than the degree \( d' \) to which \( a \) desires \( Q \) in \( c \); \( a \) is the anchor of comparison; \( P \) and \( Q \) are Potts tuples for sentences \( \langle \Pi; \Sigma; a : t \rangle \). (Giannakidou and Yoon 2011: 639)

This is a denotation for the emphatic preferential case. Here, MORE is comparing \( P \) and \( Q \). \( P \) and \( Q \) are Potts tuples for sentences \( \langle \Pi; \Sigma; a : t \rangle \), where \( \Pi \) is a phonological representation, \( \Sigma \) is a syntactic representation, and \( a \) is a semantic representation of type \( t \) (see Potts 2007b for a detailed discussion of the compositional mechanism of the tuple). In the typical emphatic preferential case, it will be the propositions expressed by \( P \) and \( Q \) that are compared. On the other hand, regarding the meaning of accuracy assessment, Giannakidou and Yoon posit the following lexical entry:

\[
[MORE_{ML}] = \lambda u \lambda u' [u \succ_{Des(a)(c)} u']
\]

where \( \succ_{Des(a)(c)} \) is an ordering function such that: for \( u \) and \( u' \) and degrees \( d \) and \( d' \), the degree \( d \) to which \( a \) desires \( u \) in \( c \) is greater than the degree \( d' \) to which \( a \) desires \( u' \) in \( c \); \( a \) is the anchor of comparison; \( u \) and \( u' \) are quotations of sentences \( P \) and \( Q \).

In the accuracy assessment the speaker compares \( u \) and \( u' \), which are quotations of sentences \( P \) and \( Q \).

---

9 Heim (1992) defines the semantics of *want* as follows:

(i) \( a \) wants that \( \phi \) is true in \( w \) iff for every \( w' \in \text{Dox}_{a}(w) \): every \( \phi \)-world maximally similar to \( w' \) is more desirable to \( a \) in \( w \) than any non-\( \phi \)-world maximally similar to \( w' \). (Heim 1992: 193)

The denotation in (i) instructs us to compare, for every belief world, the set of its closest \( \phi \)-alternatives to the set of its closest non-\( \phi \)-alternatives.

Based on Heim’s (1992) discussion, Villalta (2008) defines the meaning of *want* as follows (\( \succ_{a,w} \) stands for is more desirable to \( a \) in \( w \)):

(ii) \[
[want_C]_G(p)(a)(w) = \{q : q \neq p \land q \in g(C) : \text{Sim}_{a,w}^C(Dox}_{a}(w) \cap p) \succ_{a,w} \text{Sim}_{a,w}^C(Dox}_{a}(w) \cap q)\}
\]

(Villalta 2008: 478)

In this view, the semantics of *want* involve comparison of \( p \) with the set of its contextual alternatives \( q \). The index \( C \) is a variable anaphoric to a contextually determined set of propositions.

10 Note that in Japanese emphatic preference and accuracy assessment comparison are lexically distinguished:
4.6.2 The formal analysis of noteworthy comparison with indeterminateness

Let us now consider the meaning of noteworthy comparison based on example (44):

(44) (Noteworthy reading, Japanese)
Nani-yori-mo tenisu-wa tanoshii.
What-than-MO tennis-TOP fun
‘Nani-yori-mo, tennis is fun.’

Note that the noteworthy nani-yori-mo is different from metalinguistic comparison with indeterminateness:

(45) They’re big, but more tall than anything.
I’m talking about guys like Vader and Yokozuna. (http://bleacherreport.com/articles/308028-where-have-all-the-big-men-gone) (cf. They are taller than anything.)

(46) He is more of a politician than anything.

These sentences are interpreted as metalinguistic comparatives. (45) says that the adjective tall is the most appropriate/precise property for describing the size of the subject and (46) says that a politician is the most appropriate/precise property for describing the character of the person denoted by the subject. Anything in (45) and (46) seems to be introducing a set of alternative properties. Unlike more than anything, more tall than anything or more of a politician than anything cannot be used as sentence-modifying adverbs, which supports this argument.

I propose that like metalinguistic comparison, noteworthy comparison posits a “desirability ordering function” (Giannakidou and Yoon 2011), but unlike metalinguistic comparison noteworthy comparison takes utterances, and the comparative

(i) Emphatic preference
Furuitaa-ni narukura-nara ryuunen-suru.
Permanent part-timer-to become-level-cond stay-on-do
‘I will stay in the same class for another year rather than become a permanent part-timer.’

(ii) Accuracy assessment
Taro-wa sensei-to i-yori-mo gakusya-da.
Taro-TOP teacher-as say-than-MO scholar-pred
‘Taro is more of a scholar than a teacher.’

Emphatic preference is expressed by the special conditional marker kura-nara ‘level-if’ and accuracy assessment is expressed by to i-yori ‘as say-than’.
Preference-based view of noteworthy comparison

meaning is calculated at the level of CI (see section 4.5.1 for a detailed discussion of the semantic status of noteworthy comparison).

I propose that the standard marker *yor* in the noteworthy comparison has the following definition (*U* is a variable for utterances/speech acts):

\[(47) \quad [[yor_{NW}]] = \lambda U \lambda U'[U' >_{Des(a)(c)} U] \]

where \( >_{Des(a)(c)} \) is an ordering function such that: for *U* and *U'*, and degrees \( d \) and \( d' \), the degree \( d \) to which \( a \) desires to utter \( U' \) in \( c \) is greater than the degree \( d' \) to which \( a \) desires \( U \) in \( c \).

*Yori* in (47) is different from the semantic use of *yor* in that it does not take a gradable predicate as its argument. Instead, it inherently has a gradable component of desirability. (See the denotation of the ordinary comparative *yor* in section 4.4.) As for the meaning of *nani* in noteworthy *nani-yori*, I assume that when it is used in the context of noteworthy comparison, it introduces a set of speech acts (*a* is a type of speech act), as in (48):

\[(48) \quad [[nani]] = \{U \in D_a: \text{speech act}(U) \land C(U)\} \]

The contextual domain variable **C** makes sure that the alternative speech acts are all related to the particular context. If we combine *yor* and *nani* ‘what’ in a pointwise fashion, we will get the following logical structure. The shunting type allows us to analyze the meaning of *nani-yori* as follows:

\[(49) \quad \text{PP}\{\lambda U'[U' >_{Des(a)(c)} U : \text{speech act}(U) \land C(U)] : (a^a, t^t)\} \]

\[ \text{DP} \]

\[ \text{P} \]

\[ \text{nani: } a^a \quad \text{yor}_{NW} : (a^a, (a^a, t^t)) \]

\[ \{U \in D_a : \text{speech act}(U) \land C(U)\} \]

\[ \{\lambda U U'[U' >_{Des(a)(c)} U]\} \]

*Nani-yori* is then combined with *mo*, which selects all the alternatives created by *nani*:

\[(50) \quad [[mo]] : \{(a^a, t^t), (a^a, t^t)\} \]

\[ = \{\text{AO}_{(a^a, t^t)} U U'[U \in \{\text{speech act}\} \rightarrow O(U')]\} \] (where \( U \) is an “expanding” speech act in \( O \))

The CI meaning in (50) is then combined with the main part of the utterance, a speech act.
Comparison with an indeterminate pronoun

Let us now turn our attention to the semantics of the speech act. As for the representation of speech act/clause-type systems, here I follow Stenius (1967), according to whom an illocutionary operator combines with a sentence radical meaning (typically, a proposition) to form a speech act (see also Krifka 2001; Tomioka 2010; Hara 2006). This approach assumes the following general type formation:

(51) a. Basic types: \( e \) entities, \( t \) truth values, \( p (=st) \) propositions, \( a \) speech acts.
    b. A speech act operator is a function from the type of sentence radical it selects
       as type \( a \).
    c. The variables for type \( a = \{ U, U', U'', \ldots \} \)

Let us now look at the meaning inside the proposition in (52):

(52) Tenusu-wa tanoshii.
    Tennis-TOP fun
    ‘Tennis is fun.’

As for the meaning of \( tanoshii \) ‘fun,’ I assumed the following meaning:

(53) \( \llbracket tanoshii \rrbracket = \lambda d \lambda x. \text{fun}(x) = d \)

Although this denotation was useful for deriving a meaning of semantic comparison, it does not fit the meaning of a simple adjectival sentence like (52). In (52) the sentence is not purely denoting the degree to which tennis is fun. Rather, it’s relating the degree of to a contextual standard. Sentence (52) roughly means that the degree of fun of tennis is greater than a contextual standard. In order to derive this context-dependent meaning, in this chapter I will follow the prevailing view that a relative gradable predicate combines with a null morpheme \( \text{pos}(itive) \). This turns the adjective into a property of individuals. The semantic function of \( \text{pos} \) is to relate the degree argument of the adjective to an appropriate standard of comparison (Cresswell 1976; von Stechow 1984; Kennedy and McNally 2005, among others):

(54) \( \llbracket \text{pos} \rrbracket = \lambda G \langle d, \langle e, t \rangle \rangle \lambda x. \exists d \ [d \geq \text{Stand} \land G(d)(x)] \)

When \( \text{pos} \) is combined with the adjective \( tanoshii \), we get an individual property, as in:

(55) \( \llbracket \text{pos} \rrbracket (\llbracket tanoshii \rrbracket) = \lambda x. \exists d [d \geq \text{Stand} \land \text{interesting}(x) = d] \)

We are now in a position to see the entire derivation of (44). If we put everything together, we get (56), showing the logical structure of (44):
The logical structure of the sentence with the noteworthy *nani-yori*

\[ \forall U[U \in \{\text{speech act}\} \rightarrow \text{ASSEPT}(\exists d \geq \text{Stand} \land \text{fun(tennis)} = d)] \rightarrow_{\text{cc}(a,c)} U : t' \]

**PP**

\[ \lambda U : \forall U[U \in \{\text{speech act}\} \rightarrow [U' \succ_{\text{cc}(a,c)} U : \text{speech act(U) } \land \text{C(U)}]]] : \langle a^a, t' \rangle \]

**NP**

\[ \lambda \alpha : \forall \alpha[\exists d \geq \text{Stand} \land \text{fun(tennis)} = d] : a^a \]

**S**

\[ \exists d \geq \text{Stand} \land \text{fun(tennis)} = d] : t'' \]

**PP**

\[ \lambda U : [U' \succ_{\text{cc}(a,c)} U : \text{speech act}(U) \land \text{C}(U)]] : \langle a^a, t' \rangle \]

**DP**

\[ \lambda \alpha : \forall \alpha \exists d \geq \text{Stand} \land \text{fun}(\text{tennis}) = d : \langle e^e, t'' \rangle \]

**Deg**

\[ \lambda x. \exists d \geq \text{Stand} \land \text{fun(x)} = d] : \langle e^e, t'' \rangle \]

**AP**

\[ \lambda \alpha : \exists d \geq \text{Stand} \land \text{G}(d) : \langle G^e, (e^e, t'') \rangle \]

\[ \lambda d. \text{fun(x)} = d \]
Comparison with an indeterminate pronoun

One potential problem with this analysis is that the at-issue speech act (assertion) itself is not represented at the root level despite the fact that it is performed. In order to avoid this problem, I will posit the following general rule for the interpretation of an (embedded) speech act, based on the concept of a parsetree in Potts (2005) and McCready (2010):

\[(57)\] Parsetree interpretation for an embedded speech act

Let \( T \) be a semantic parsetree with the CI term \( \alpha : \sigma^a \) on its root node, and distinct terms \( \beta_1 : a^a, \ldots, \beta_n : a^a \) on nodes in it. Then the interpretation of \( T \) is \( \langle [\langle \alpha : \sigma^a \rangle], [\langle \beta_1 : a^a \rangle], \ldots, [\langle \beta_n : a^a \rangle] \rangle \).

With this definition, the interpretation of (56) is determined by the CI term on its root node (\( t^s \)) as well as the speech act (\( a^a \)).

4.7 Deriving the meaning of “noteworthiness/importance”

In the above analysis, I claimed the noteworthy \( nani-yori-mo \) conventionally implicates that an at-issue utterance is preferable to any contextually relevant alternative and that there is no meaning like noteworthy/important in the logical structure.

The question is how we get a meaning of noteworthiness/importance in a noteworthy context with indeterminateness. In section 4.6.2, I claimed that noteworthy \( nani-yori-mo \) conventionally implicates that an at-issue utterance is preferable to any contextually relevant alternative, but the meaning of preference is not the same as the meaning of noteworthiness. Metalinguistic comparison also posits a scale of preference but it does not have a meaning of noteworthiness/importance.

I consider that the meaning of noteworthiness/importance emerges as a result of an interaction with the general pragmatic requirement of “relevance to a goal” (Roberts 2012). Roberts defines the notion “relevant” as follows:

11 It seems to me that this kind of rule is relevant for accounting for the phenomenon of the so-called embedding speech act in general (see Mittwoch 1977; Krifka 2002, 2014, among many others). It is well known that in some environments a speech act can be embedded in a subordinate clause such as a *because* clause:

(i) Peter is unhappy because, quite frankly, few people like him. (Krifka 2014)

The *because* clause appears to be a speech act because it allows the speech-act-modifying adverb *frankly speaking* to be present (Krifka 2014). Although I don’t have enough space to discuss (i) in detail, if we modify the root node \( \alpha : \sigma^a \) in (56) into \( \alpha : \sigma^{a_{frankly}} \), it seems that we can analyze these cases as well.

12 Regarding the notion of goal, I will assume, following Roberts (2012), that at any given point in discourse, there is a set of goals, which is the set of sets of individual interlocutor goals for all the interlocutors (i.e., \( G \)), and there is a set of common goals, which is the subset of \( G \) (i.e., \( G_{com} \)). \( G \) is closely related to the question under discussion (QUD) in that each accepted question corresponds to a common goal of the interlocutors (Roberts 2012):

(i) I, the set of interlocutors at \( t, G \), a set of sets of goals in effect at \( t \), such that for all \( i \in I \), there is a (possibly empty) \( G_i \) that is the set of goals that \( i \) is committed at \( t \) to trying to achieve, and \( G = \{ G_i | i \in I \} \), \( G_{com} = \{ g | \forall i : g \in G_i \} \), the set of the interlocutors’ common goals at \( t \). \( GQ = \{ g \in G_{com} | \exists a \in QUD \text{ such that } g \text{ is the goal of answering } a \} \) (Roberts 2012: 14)
The meaning of “noteworthiness/importance”

(58) A move $m$ is relevant at a given point in a collaborative, task-oriented interaction if and only if it promotes the achievement of an accepted goal of the interlocutors. (Roberts 2012: 9)

Based on the idea of relevance, I assume that there is a following general pragmatic principle like (59):

(59) **Principle of relevance to a goal** (Based on Roberts’ 2012 notion of relevance):
    Be relevant to a goal. (i.e. Make your utterance one which promotes the achievement of a goal.)

If we assume that the speaker tries to make his/her utterance one that promotes the achievement of a goal, utterance of the sentence with the noteworthy expression (nani-yori-mo/more than anything) will trigger the following non-monotonic inference:

(60) If a speaker signals that he/she prefers $U$ (a move) to any alternative utterance (move), given that the speaker must be relevant to the goal of the conversation, it is reasonable to think that the speaker considers $U$ to be the most relevant, thus more important/noteworthy.

(61) (Noteworthy reading, Japanese)
    Nani-yori-mo tenisu-wa tanoshii.
    What-than-MO tennis-TOP fun
    ‘Nani-yori-mo, tennis is fun.’

(62) The meanings of (61)
    a. At-issue: Tennis is fun.
    b. CI: The utterance “tennis is fun” is preferable to any contextually relevant alternative utterance.
    c. Conversational Implicature: The utterance “tennis is fun” is more noteworthy (important) than any contextually relevant alternative utterance.

For example, in the case of (44), if the speaker conventionally implicates that “tennis is fun” is the preferable utterance, given the principle of relevance to a goal, it is reasonable to assume that he/she considers this utterance to be the most noteworthy/important, as shown in:

(63) The meanings of (47)
    a. At-issue: Tokyo is safe.
    b. CI: The utterance “Tokyo is safe” is preferable to any contextually relevant alternative utterance.
    c. Conversational Implicature: The utterance “Tokyo is safe” is more noteworthy (important) than any contextually relevant alternative utterance.

Furthermore, Roberts (2012, 1996) posits that there are two kinds of goals at any given point in a discourse: the discourse goals, aiming to address particular questions in the QUD, and for the rest, their domain goals (intuitively, those things they want to accomplish in the world).
4.8 Discourse structure of \textit{nani-yori-mo}

In sections 4.5–4.7, we looked at the meaning of noteworthy comparison and how it is interpreted. In this section, we consider the use of noteworthy comparison from a discourse-pragmatic perspective and think about the role of scalarity in discourse context. It will be shown that there are two ways of timing the use of the noteworthy \textit{nani-yori-mo}: (i) using it at the beginning of sequences of utterances and (ii) signaling it at the end of sequences of utterances, with each use triggering a different pragmatic effect. When noteworthy comparison with indeterminateness is signaled at the beginning of a discourse sequence, it creates an effect of “priority listing” (i.e. the top-down strategy), whereas if it is signaled at the end of a discourse sequence, it creates an effect of “additive reinforcing” (i.e. the bottom-up strategy).

4.8.1 Strategy 1: The first utterance, the most noteworthy

Let us first look at the strategy wherein the first utterance is the most noteworthy. Observe the following conversation (A is going to visit Tokyo this summer and is asking a Japanese friend, B, about Tokyo):

(64) A: Tokyo-no ii tokoro-tte nan-desu-ka?
   Tokyo-gen good point-TE what-PERF.HON-Q
   ‘What is a good point of Tokyo? ’

   Let’s see what-than-MO Tokyo-TOP safe-PERF.HON
   ‘Let’s see. More than anything, Tokyo is safe.’

B: Soreni benri-mo ii-desu.
   Furthermore convenient-also good-PERF.HON
   ‘Also, Tokyo is also convenient.’

B: Mata oishii resutoran-mo takusan ari-masu.
   Also delicious restaurant-also many exist-PERF.HON
   ‘There are a lot of good restaurants.’

In this conversation, B replies to A’s question, starting out by saying that Tokyo is safe and continuing by saying that Tokyo is also convenient.

Let us consider the utterance moves in the top-down approach based on Roberts’ theory. Up to time $t$ there are various moves made by the interlocutors. Roberts defines this in terms of sets. In this theory there is a set $M$ that consists of moves and can have distinguished subsets: the set of assertions, the set of questions, and the set of suggestions. Furthermore, $M$ can have a subset $\text{Acc}$, which is the set of accepted moves.

(65) $M$, the set of moves ($m$) made by interlocutors up to $t$, with distinguished subsets:
   $A \subseteq M$, the set of assertions
   $Q \subseteq M$, the set of questions
   $S \subseteq M$, the set of suggestions
   $\text{Acc} \subseteq M$, the set of accepted moves (Roberts 2012: 14)
Furthermore, in this theory each move can be represented according to a precedence relationship (time):

(66) \( \prec \) is the precedence relation, a total order on \( M: m_i \prec m_k \) iff \( m_i \) is made/uttered before \( m_k \) in a discourse \( D \).

The order of any two elements under \( \prec \) will be reflected in the natural order of their indices, where for all \( m_i, i \in N \) (Roberts 1996, 2012: 16)

If we apply this idea to the discourse moves in (64), we can posit the following ordering:

(67) Strategy 1: Moves in (64)

\[ \text{nani-yori-mo}(m_i) \prec m_i + 1 \prec m_i + 2 \]  
(where \( m_i: \text{assert(Tokyo is safe)}, m_i + 1: \text{assert(Tokyo is also convenient)}, m_i + 2: \text{assert(There are a lot of good restaurants)} \)

The crucial point is that this is just an ordering based on time. In the conversation in (64), there is also another ordering that is based on the scale of preference/noteworthiness. On the scale of preference, the first utterance is considered the most preferable and the second and third utterances are considered to be below it on the scale of preference. If we relate the moves of utterance based on the scale of noteworthiness/importance, we will have the following top-down movement.

Since the first utterance (move) signals that it is the most preferable utterance (move), the second and third moves will be automatically situated below it. This creates a situation where utterances move from the top downward on the scale of preference.

The English *more than anything* and *above all* can also be used in the discourse-initial position:

(68) The example of *more than anything* (discourse-initial)

More than anything studying overseas is an opportunity to learn about yourself, discover new strengths and abilities, conquer new challenges, and solve new problems. (http://www.studyoverseas.gov.au/experiences.html)

(69) The example of *above all* (discourse-initial)

Above all it is important to point out that we can only maintain our prosperity in Europe if we belong to the most innovative regions in the world. (http://www.brainyquote.com/quotes/quotes/a/angelamerk325744.html)

The top-down strategy is conventionalized in the grammar of discourse. In natural language, there are many expressions that posit the assumption that “the earlier expressed, the more important.” The English expression *last but not least* is another good example:

(70) Last but not least, I'd like to thank all the catering staff.

The expression *last but not least* is used when the speaker’s final utterance is “not less important than discourse-given utterances.” This expression clearly suggests that “the first utterance is normally the most important.” Japanese also has an expression that can support this norm.
(71) Saigo-ni nari-mashi-ta-ga, kono purojekuto-o sapooto-shi-te
itadai-ta subete-no kata-ni fukaku kansya-itasimasu.
lit. ‘The following utterance is made at the end, but I would like to deeply thank
all of the people who supported this project.’

Notice that the speaker in (71) is using the concessive expression ga ‘but.’ The utter-
ance p-ga q implies that ‘generally, if q, then not p.’ (The status of the meaning of ga
‘but’ is controversial but we will not get into a discussion of that here. See Bach 1999a
for a discussion of the status of the meaning of the English but.)

The speaker uses the concessive marker ga because he/she thinks that thanking
his/her supporters is very important, and normally this should have been done earlier.
(The expression saigo-ni nari mashi ta-ga is almost a fixed expression that is used for
finishing a speech in a polite manner.)

The strategy of stating the most important information first is very effective because
there is never any guarantee that the conversation will continue until the speaker
has uttered everything he/she wants. Also, the listener may not be able to listen to
every utterance due to lack of attention or concentration, etc. Thus, it is very use-
ful to make the most noteworthy utterance at the beginning of a series of utterances.
Once the speaker utters the most noteworthy utterance, he or she has in a way satisfied
his/her purpose, because he/she has conveyed the most important information to the
addressee. The given utterance unilaterally entails the other utterances in terms of the
degree of noteworthiness. In fact, it often seems to be the case that the speaker only re-
lays the most noteworthy information and doesn’t move on to the successive utterance.

4.8.2 Strategy 2: The last utterance as the most noteworthy

However, there is another strategy for signaling noteworthy comparison. As the
following conversation shows, a speaker can signal the highest relative noteworthi-
ness at the end of a series of utterances:

(72) A: Tokyo-no itokoro-tte nan-desu-ka?
Tokyo-gen good point-te what-PERF.HON-Q
‘What are the good points of Tokyo?/What is a good point of Tokyo?’
B: Soo-desu-nee. Tokyo-wa benri-ga ii-desu.
Let’s see Tokyo-TOP convenience-nom good-PERF.HON
‘Let’s see. Tokyo is convenient.’
B: Tabemono-mo oishii-desu.
Food-also good-PERF.HON
‘The food is also good.’
B: Sosite nani-yori-mo, Tokyo-wa anzen-desu.
And what-than-MO Tokyo-TOP safe-PERF.HON
‘And more than anything, Tokyo is safe.’
If we relativize the above conversation in terms of the time scale we get the following ordering:

(73) Strategy 2: move in (72)
\[ m_i < m_i + 1 < \text{nani-yori-mo}(m_i+2) \]

(where \( m_i \): assert(Tokyo is convenient), \( m_i + 1 \): assert(Food is good in Tokyo),
\( m_i + 2 \): assert(Tokyo is safe)

The crucial point is that in (72) the speaker signals the last utterance is the most noteworthy/preferable at least at the level of implicature. This means that the speaker moves the conversation in a bottom-up fashion. If we combine the time scale and the preference scale, the discourse in (72) will have a bottom-up movement.

Note that for the listener, the relative ranking between the first move (=\( m_i \)) and the second move (=\( m_i+1 \)) is implicit (i.e., not clear), at least before the final utterance (the utterance with \text{nani-yori-mo 'more than anything'}). Until the third move, we do not have any information regarding which move is preferable. Exactly the same strategy can be observed in the English expression \text{more than anything} and \text{above all}:

(74) (The example of \text{more than anything}, discourse-final use)

I want to show the U.S. Ski Team how I can ski, I want to show the country how I can ski, and more than anything, I want to show the diabetes community what’s possible.

(http://sportssweatnsugar.wordpress.com/2012/03/14/i-want-to-show-the-diabetes-community-whats-possible/)

(75) (The example of \text{above all}, discourse-final use)

“I believe that we will have identified significant new pathways in coronary disease. I believe we will be moving toward a cure for those pathways and preventative strategies that apply to those. And above all I believe we will have completely reinvented the way of doing science in this space and I think that will be a major advance in itself," he responded. (http://www.medpagetoday.com/cardiology/cardiobrief/60681)

Strategy 2 is different from Strategy 1 in terms of the directionality of move. Strategy 2 is used when the speaker wants to convey the noteworthiness of his/her information in a cumulative way, i.e., from the bottom up. The fact that the noteworthy \text{nani-yori-mo} (and also the English \text{more than anything}) always co-occur with the conjunction \text{sorite/’and’} supports this observation. On the other hand, in the case of Strategy 1, the directionality of movement is from top to bottom on the scale of noteworthiness.

4.9 Conclusion

In this chapter I have investigated the semantics/pragmatics of two types of comparison with indeterminateness and considered their dimensionality and compositional-ity in meaning, as well as the role of scalarity in discourse structure. In terms of compositionality and dimensionality, I argue that although the meanings of the individual comparison and the comparison of noteworthiness are interpreted at different dimensions (the former is interpreted at the at-issue level, while the latter is interpreted at
Comparison with an indeterminate pronoun

the CI level), there is a striking parallelism between them in terms of scale structure. I explained the similarities and differences between the two kinds of comparison based on Potts’ multidimensional compositional system (Potts 2005; McCready 2010) in a fully compositional fashion.

The phenomenon of noteworthy comparison provides important insights for understanding the role of scalarity in a discourse context. The phenomenon of the noteworthy nani-yori-mo clearly shows that the concept of scalarity is important at the discourse-pragmatic level. The pragmatic notion of noteworthiness is important for the speaker/listener because the concept helps him/her to understand to what extent the at-issue information is significant for achieving his/her goals. If there were no such notion, we would have to pay attention to every utterance equally and take more time to achieve the goal (purpose) of the conversation. The notion of comparison is also important at the discourse-pragmatic level because it helps the speaker to manage his/her series of utterances and relativizes plural utterances based on the same property. In a way, pragmatic comparison is similar to the logical connective in that it helps us to connect other (potential) utterances, but in addition, pragmatic comparison relativizes the relationships between/among utterances.

The theoretical implications of this chapter are that scalarity in natural language is ubiquitous and that the scale structures at the level of semantics are extended to the discourse-pragmatic dimension in a parallel way. In Chapter 5 we will look at the phenomenon of minimizers and further investigate the relationship between at-issue scalar meaning, CI scalar meaning, and the role of scalarity in a discourse context.
Minimizer PPIs

5.1 Introduction

In the previous chapter we considered the dual-use phenomenon of comparison with indeterminateness. In this chapter we will investigate the dual-use phenomenon of minimizer PPIs with special reference to the Japanese minimizer *chotto*. In Japanese, there are various kinds of minimizers, each of which has different semantic/pragmatic characteristics. For example, *sukoshi* and *chotto* both mean ‘a low degree/amount’ and they can directly combine with a gradable predicate:

(1) a. Kono hon-wa {chotto/sukoshi} abit/abit takai.
   This book-top a bit/a bit expensive
   ‘This book is [a bit/a little] expensive.’

b. Kono sao-wa {chotto/sukoshi} magat-teiru.
   This rod-top a bit/a bit bend-state
   ‘This rod is [a bit/a little] bent.’

Roughly speaking, in (1a), *chotto* and *sukoshi* measure the degree of expensiveness and semantically denote that the degree of expensiveness is greater than a contextual standard by a small degree. On the other hand, in (1b), *chotto* and *sukoshi* measure the degree of “bentness” of the subject referent that is greater than a standard (zero point) by a small degree.

However, *chotto*, and not *sukoshi*, can also appear in an environment where there is no gradable predicate that it can directly modify:

(2) a. (Question)
   {Chotto/*sukoshi} hasami aru?
   a bit/a bit scissors exist
   ‘lit. Chotto aren’t there scissors?’

b. (Assertion)
   {Chotto/*sukoshi} kaimono-ni i-te ku-ru.
   a bit/a bit shopping-to go-te come-non.past
   ‘lit. Chotto I will go shopping.’

Matsumoto (1985, 2001) observes that this type of *chotto* is a “lexical hedge” like kind of (kinda) or sort of (sorta) (Lakoff 1972) and claims that it is used to weaken the degree of illocutionary force. I will call the minimizer in (1) a degree minimizer and the minimizer in (2) a speech act minimizer.
The following questions will naturally arise from the above observations. What is the relationship between the degree minimizer and the speech act minimizer? Why is it that there is an asymmetry between sukoshi and chotto in terms of the availability of a speech act use? What is the source of the variation in Japanese minimizers? In this chapter, we will investigate the dual-use phenomenon of chotto and try to answer these questions.

In considering these questions, I will first analyze the meaning of degree in sukoshi/chotto and claim that there is a slight semantic difference between sukoshi and chotto in the degree use. Although both sukoshi and chotto denote the meaning ‘a low degree’ at the at-issue level, they are different in terms of the measurement mode. While sukoshi signals that the speaker is measuring a degree in a precise manner, chotto signals that the given scale is not precise. I will claim that the notion of imprecise/precise measurement is a conventional implicature (CI) and we should treat the degree in sukoshi/chotto as mixed content in the sense of McCready (2010) and Gutzmann (2011) (see Chapter 3).

Regarding the meaning of the speech act minimizing use of chotto, we will claim that it conventionally implicates that the degree of imposition of a speaker’s speech act on the hearer is low as a pure expressive content.

What this means is that although there is a difference between the scalar meaning of the degree and the speech act chotto in terms of dimensionality (i.e., the former is an at-issue scalar meaning, while the latter is a CI scalar meaning), there is a relationship between them in terms of the manner of measurement (granularity level). In the degree chotto and the speech act chotto, there is information of impreciseness as a CI meaning. The degree of the imposition of the speaker’s utterance is something that cannot be measured in a precise manner. This is why only chotto can be used as a speech act minimizer.

In this chapter I will also look at English and Greek minimizers to show that the analysis of Japanese minimizers is useful for considering cross-linguistic variations. Finally we will consider the degree use and a speech act use of minimizers in terms of pragmatic strategy and show that both degree minimizers and speech act minimizers have a rich interaction with general pragmatic strategies (including politeness).

5.2 Some background on minimizers

This section provides some basic background on (at-issue) minimizers in English and Japanese.

5.2.1 Minimizers vs diminishers (English)

Bolinger (1972: 120) argues that a bit and a little are synonymous in a positive environment but react differently in a negative environment (see also Horn 1989: 400ff.):

\[
\begin{align*}
3a &. \text{I’m [a bit/a little] tired. MINIMIZER (positive)} \\
3b &. \text{I’m not a bit tired. (= I’m not at all tired.) MINIMIZER (negative)} \\
3c &. \text{I’m not a little tired. (= I’m pretty tired.) DIMINISHER}
\end{align*}
\]

In (3a), both a bit and a little are interpreted in the same way. However, things become different in a negative environment. Whereas (3b) means ‘I am not at all tired.’
(3c) means ‘I am pretty tired.’ Bolinger (1972) calls a bit in (3b) a minimizer and a little in (3c) a diminisher. Note that Bolinger regards a bit and a little in (3a) as MINIMIZERS (Bolinger 1972: 234).\(^1\) Let us call the minimizer in (3a) a minimizer PPI and the minimizer in (3b) a minimizer NPI. Some researchers claim that minimizer NPIs should be analyzed as containing a silent even (Heim 1984). According to this analysis, (3b) should be interpreted as ‘I’m not even a bit tired.’

5.2.2 Minimizers in Japanese

Unlike English, Japanese minimizers morphologically distinguish minimizer NPIs from minimizer PPIs. For example, sukoshi and chotto are minimizer PPIs, but if mo is attached to them, they are obligatorily interpreted as NPIs:\(^2\)

(4) a. Taro-wa {sukoshi/chotto} tsukare-teiru.
   Taro-TOP a bit/a little tire-perf
   ‘Taro is a bit/a little tired.’

   b. Taro-wa {sukoshi/chitto}-mo tsukare-tei-nai.
   Taro-TOP a bit/a bit-MO tire-perf-neg
   ‘Taro is not a bit tired.’ (= Taro is not tired at all.)

The above data clearly show that the particle mo plays an important role in distinguishing between positive and negative polarity items. Note that (4a) and (4b) become ungrammatical if we add negation in (4a) or if we delete negation in (4b):

   Taro-TOP a bit/a bit tire-perf-neg
   ‘Taro is not sukoshi/chotto tired.’

   b. *Taro-wa {sukoshi/chitto}-mo tsukare-tei-ru.
   Taro-TOP a bit/a bit-MO tire-perf-pres
   ‘Taro is sukoshi-mo tired.’

To obtain the meaning of a diminishment, Japanese does not use the degree word sukoshi/chotto. Instead, it uses a completely different expression: dokoro-dewa-nai:\(^3\)

(6) Taro-wa {sukoshi/chotto} tsukare-teiru-dokoro-de-wa-nai.
   Taro-TOP a bit/a bit tire-perf-place-de-top-neg
   ‘I am not just tired. (I am extremely tired.)’

\(^1\) Bolinger (1972: 123) claims that weak, small, partial, moderate, trivial, mild, lukewarm, insignificant, and few are also diminishers, e.g.:

1 a. I have no small respect for that man. ‘I’m pretty respectful.’ (cf. I have no great respect for that man. ‘I’m pretty unrespectful’)
   b. It was no mild reproof that they gave us.

\(^2\) Note that in (4b) there is a phonological change from chotto to chitto when the particle mo is attached to chotto.

\(^3\) We can also use the idiomatic expression nan-te-mono de-nu nai lit. ‘what-TE-thing-PRED-TOP-NEG.’ This expression also says that the current assessment with respect to degree is not appropriate at all.
The phrase ‘ADJ+ dokoro-de-wa-nai’ is an idiomatic expression indicating that adjective A is "not appropriate" to describe the situation. In (6) the speaker is saying that the current degree with respect to Taro’s tiredness (i.e., a bit tired) is not appropriate at all. Therefore, the speaker is implying that Taro is extremely tired. It seems that dokoro-de-wa-nai has a meaning of “metalinguistic negation” (e.g., Horn 1985, 1989; Burton-Roberts 1989a, b) in the sense that the speaker is talking about appropriateness or precision.

5.3 Empirical differences between the degree minimizer and the speech act minimizer

In section 5.2, we reviewed the basic properties of at-issue minimizers in English and Japanese, but as we noted in the introduction, the Japanese minimizer PPI chotto can be divided into two types: the degree type and the expressive type. In this section, we will consider the empirical differences between the two kinds of minimizers based on several diagnostics.

5.3.1 The attachment of focus particles: dake ‘only’ and contrastive wa

First, focus-sensitive operators can attach to degree minimizers, but they cannot attach to speech act minimizers. As Matsumoto (1985) observes, the focus particle dake ‘only’ can appear in (7a) but not in (7b):

(7) a. Kono doa-wa {chotto/sukoshi}-dake ai-teiru. This door-TOP a bit/a bit-only open-state

‘This door is open only a bit/little.’ (= this door is only slightly open)

b. * {Chotto-dake hasami nai? (Question) a bit-only scissors neg.exist

‘lit. Only chotto aren’t there scissors?’

Note that a similar asymmetry can be observed with regard to other focus particles such as contrastive wa:

(8) Degree minimizers with contrastive wa

Taro-wa {chotto/sukoshi}-wa benkyoo-shi-ta. Taro-TOP a bit/a bit-cont/top study-do-PAST

‘Taro studied [a bit]CT.’

(9) Speech act minimizers with contrastive wa

* {Chotto/sukoshi}-wa hasami nai? (Question) a bit-cont/top scissors neg.exist

‘lit. [chotto]CT aren’t there scissors?’

In (9) there is a (conventionalized) scalar implicature (e.g., Hara 2008; Sawada 2012) that “Taro didn’t study a lot.” On the other hand, in (10), there is no negative implicature in “the illocutionary force of my request is not a lot.”
5.3.2 Presence/absence of the Horn scale

The second diagnostic for distinguishing between the degree minimizer and the speech act minimizer is the presence or absence of the Horn scale. According to Horn (1972), quantitative scales are defined by entailment (see also Horn 1989; Gazdar 1979; Levinson 2000):

(10) A set of linguistic alternatives \( \langle x_1, x_2, \ldots, x_n \rangle \) such that \( S(x_i) \) unilaterally entails \( S(x_j) \), where \( S \) is an arbitrary simplex sentence frame, and \( x_j \succ x_j \), and where \( x_1, x_2, \ldots, x_n \) are
a. equally lexicalized items, of the same word class, from the same register; and
b. “about” the same semantic relations, or from the same semantic field.

In the case of degree minimizers, we can posit the following quantitative scale:

(11) \( \langle \text{totemo}, \text{sukoshi}/\text{chotto} \rangle \) (the degree minimizers)

\text{Totemo} is stronger than \( \text{sukoshi}/\text{chotto} \) because \( S(\text{totemo}) \) unilaterally entails \( S(\text{sukoshi}/\text{chotto}) \):

(12) (The sentence with \text{totemo} entails the sentence with \text{sukoshi}/\text{chotto})

a. \text{Kono sao-wa totemo magat-teiru.}
   ‘This rod is very bent.’

b. \text{Kono sao-wa \{sukosi/chotto\} magat-teiru.}
   ‘This rod is a bit bent.’

By contrast, in the case of speech act minimizers, there is no linguistic item that can serve as an alternative to the speech act \text{chotto}:

(13) \( \langle ?, \text{chotto} \rangle \) (the speech act minimizers)

Thus, the following sentences with the intensifier \text{totemo} ‘very’ are odd:

(14) \*\text{[Totemo/chotto] hasami aru?} (Question)

\text{Very/a bit scissors exist}

‘lit. Totemo/chotto aren’t there scissors?’

(15) \*\text{[Totemo/chotto] kaimono-ni i-te ku-ru.} (Assertion)

\text{Very/a bit shopping-to go-te come-non.past}

‘lit. Totemo/chotto I will go shopping.’

It is important to notice that the above two diagnostics are closely interrelated with each other. The speech act \text{chotto} cannot combine with the focus particles because it is impossible to posit a set of degree adverbs that are alternative to \text{chotto} (i.e., Horn scale). The exclusive \text{dake} and the contrastive \text{wa} are focus-sensitive particles in that by focusing on an element, they invoke a set of alternatives (e.g., Rooth 1985, 1992). These evidences suggest that degree minimizers are interpreted at a different level from speech act minimizers.
5.4 The meaning of degree minimizers

In section 5.3, we observed the empirical difference between the degree use and the speech use of minimizers. The question is, why is it that only chotto can be used as a speech act. However, there appears to be a semantic connection between the degree use and the expressive use as well. In this section, we will look at the meaning of degree minimizers in detail.

5.4.1 Sensitivity to scale structure

In order to understand the meaning of a degree minimizer, it is important to take into consideration the differences between relative and absolute gradable adjectives in terms of a standard of measurement. Graded adjectives can be classified into two types: absolute and relative. While relative gradable adjectives require one to posit a context-dependent standard of comparison, absolute gradable adjectives do not require this (e.g., Rotstein and Winter 2004; Kennedy and McNally 2005; Kennedy 2007a). Observe the following examples:

(16) a. Kono rope-wa nagai.
    This long
    ‘This rope is long.’ (Standard = a contextually determined standard)

   b. Kono sao-wa magat-teiru.
    This bend-perf
    ‘This rod is bent.’ (Standard = a minimum standard)

The adjective nagai in (16a) is a relative gradable adjective in that it posits a contextually determined standard. Thus, the truth value of (16a) can change according to context (comparison class). On the other hand, magat-teiru is an absolute gradable predicate in that it needs to posit a minimum standard. (16b), on the other hand, does not mean that the “bentness” of the rod surpasses some standard of comparison; it simply means that the rod has a non-zero level of “bentness.” Let us consider this distinction from the general perspective of the scale structure. Kennedy and McNally (2005) and Kennedy (2007a) hypothesize the following four scale structures:

(17) A typology of scale structures:
   a. (TOTALLY) OPEN SCALE
      ◦ − − − − − − − − − − − − − ◦
   b. LOWER CLOSED SCALE
      • − − − − − − − − − − − − ◦
   c. UPPER CLOSED SCALE
      ◦ − − − − − − − − − − − •
   d. (TOTALLY) CLOSED SCALE
      • − − − − − − − − − − •

   Totally open scales lack both minimal and maximal elements. Lower closed scales include a minimum but have no maximum. Upper closed scales include a maximum
The meaning of degree minimizers

with no minimum, and a totally closed scale includes both a minimum and a maximum (see also Paradis 2001 and Rotstein and Winter 2004). In this system, the gradable predicate nagai ‘long’ is an open-scale predicate, while the gradable predicate magat-teiru ‘bent’ has a lower closed-scale predicate.

One empirical test for the presence of a lower closed scale is that lower closed-scale adjectives are generally felicitous with partially whereas lower open-scale adjectives are not (Rotstein and Winter 2004):

(18)  a. ?? John is partially tall.
    b. ?? The rope is partially long.
    c. ?? The weather is partially warm.

(19)  a. The rod is partially bent.
    b. The door is partially open.
    c. The tower is partially inclined.

In Japanese (and English), lower closed-scale adjectives are also discernible based on entailment patterns: the negation of a lower closed-scale adjective entails its antonym (20), whereas the negation of a relative gradable adjective does not (21):

(20)  (Entailment patterns of a lower closed-scale adjective, (20a) entails (20b))
    a. Kono sao-wa magat-tei-nai.
       ENTAILS
       ‘This rod is not bent.’
    b. Kono sao-wa masugu-da.
       ‘This rod is straight.’

(21)  (Entailment patterns of a relative gradable adjective, (21a) does not entail (21b))
    a. Taro-wa se-ga height-nom takaku-nai.
       DOES NOT ENTAIL
       ‘Taro is not tall.’
    b. Taro-wa se-ga hikui.
       ‘Taro is short.’

The interpretation of sukoshi and chotto are sensitive to the scale structure of a gradable predicate.

The crucial point here is that the interpretation of the minimizers sukoshi and chotto is sensitive to the scale structure of the gradable predicate. If chotto/sukoshi are combined with a relative gradable predicate, the standard of measurement will be a contextual standard; if they are combined with a lower closed-scale predicate, the standard of measurement is a zero point:

(22)  a. Kono hon-wa [chotto/sukoshi] takai.
       ENTAILS
       ‘This book is a bit/little expensive.’ (i.e., the degree of expensiveness of this book is greater than a contextual standard by a small degree.)
b. Kono sao-wa {chotto/sukoshi} magat-teiru.
   This rod-
   top a bit/a bit bend-
   state
   ‘This rod is a bit/little bent.’ (i.e., the degree of bentness of this rod is greater than a minimum standard (zero point) by a small degree.)

5.4.2 The degree sukoshi/chotto are mixed content: A granularity-based approach

Although sukoshi and chotto have the same sensitivity in the scale structure, there is a slight difference in meaning between sukoshi and chotto (even though I have translated them as ‘a bit’). Descriptive grammars/dictionaries often say that chotto is more colloquial than sukoshi (Kamiya 2002). However, I argue that the difference between sukoshi and chotto has to do with the difference of the granularity level.

Although both sukoshi and chotto have the at-issue scalar meaning ‘a bit,’ they posit different levels of granularity at the CI component. Sukoshi conventionally implicates that the speaker is measuring degree precisely (i.e., positing a precise scale), whereas chotto conventionally implicates that the speaker is measuring degree imprecisely:

(23) a. Sukoshi semantically denotes that the given degree is low, but in addition to its meaning, it conventionally implicates that the speaker is measuring degree precisely (i.e., positing a precise scale).

b. Chotto semantically denotes that the given degree is low, but in addition to its meaning, it conventionally implicates that the speaker is measuring degree imprecisely (i.e., positing an imprecise scale).

Theoretically, this means that the degree chotto/sukoshi is “mixed content” (McCready 2010 and Gutzmann 2011) which has both at-issue scalar meaning and a CI meaning in a single word. In this approach, the sentence in (24) is analyzed as having two components:

(24) Kono sao-wa {sukoshi/chotto} magat-teiru.
   This rod-
   top a bit/a bit bend-
   state
   At-issue: This rod is a bit bent. (The degree of bentness of this rod is higher than the standard (zero) by a small degree.)
   CI from sukoshi: The speaker’s measurement is precise.
   CI from chotto: The speaker’s measurement is imprecise.4

Now let us consider further the precise/imprecise meaning triggered by sukoshi/chotto in detail. The idea that minimizers involve the notion of granularity is not new. Sassoon (2012) analyzes the meaning of slightly based on the notion of granularity. However, my analysis of sukoshi/chotto is different from her analysis of slightly in that I am assuming that the degree sukoshi and chotto are mixed content and that the granularity level is computed independently from other elements.

4 Interestingly, the difference between precise and imprecise measurement is found in the negative polarity counterparts of sukoshi and chotto as well (i.e., sukoshi-mo ‘a bit-even’ and chotto-mo ‘a bit-even’). Sukoshi-mo seems to convey that the speaker is measuring degrees in a precise way. By contrast, chotto-mo seems to convey that the speaker is measuring imprecisely.
Sassoon (2012) considers slightly as a pure granularity setter. According to her view, adjectives $G$ are interpreted relative to a coarse granularity level $g$, and $\text{slightly } G$ is interpreted relative to a fine granularity level $g_p$. In this analysis, the meanings of a gradable adjective and of a modified gradable adjective are equivalent, except for their levels of granularity.  

Although I agree with Sassoon’s (2012) idea that minimizers involve granularity, I will argue that sugoshi and chotto are not pure scale shifters. Rather, they are mixed content having an at-issue low degree meaning. One piece of evidence that supports the idea that the degree chotto/sugoshi is mixed content is that they cannot only modify a gradable predicate, but also combine with nouns, verbs, and measure phrases, etc.

(25) Kinoo {chotto/sugoshi} hashi-tta.
Yesterday a bit/a bit run-past
‘Yesterday, I ran for a bit.’

(26) (Quantity measurement)
Sugoshi-no mizu
a bit-GEN water
‘A bit of water’

(27) (Combination with a measure phrase)
Kono sao-wa 30-do-chotto maga-teiru.
this rod-TOP 30-degree-a bit bend-state
‘This rod is bent by 30 degrees and a bit more.’

These data clearly show that sugoshi and chotto have semantic content.

Furthermore, I do not consider that the granularity level of sugoshi/chotto is compared to the granularity level of a simple adjective (the adjective without sugoshi/chotto). Intuitively, it is difficult to judge the higher precision between “chotto $G$” and “$G$.”

Let us now consider the difference of granularity in sugoshi and chotto. There are several pieces of evidence to support the idea that sugoshi posits a precise scale while chotto posits an imprecise scale. First, evidence comes from the compatibility with genmitsuni iuto ‘strictly speaking.’ As example (28) shows, while it is perfectly natural to use sugoshi with genmitsuni iuto, chotto cannot naturally co-occur with genmitsuni iuto:

$^5$ Sassoon (2012) and Sassoon and Zevakhina (2012) define $\llbracket \text{s} \text{light G} \rrbracket$ based on the comparison with $\llbracket G \rrbracket$ as follows:

(i) a. $\llbracket G \rrbracket_p = \lambda x \in C : g(x) > d_s$
   b. $\llbracket \text{s} \text{lighty G} \rrbracket_p = \lambda x \in C : g_p(x) > d_s$, for $g_p$ is finer than $g$
   $(d_s$ represents a threshold external to the denotation)

$^6$ Note that it is a bit odd to use chotto in the quantity measurement. Furthermore, it is odd to use sugoshi to modify a measure phrase (directly).
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(28) (Context: A doctor is looking at the body fat percentage of a patient.)

-genmitsu-ni iu-to anata-wa [sukoshi /??chotto] futot-teiru.
Strict-ADV say-if you-TOP a bit /a bit fat-STATE

‘Strictly speaking, you are a bit fat.’ (Yusuke Kubota, personal communication)

Second, while chotto can naturally combine with an emotive gradable predicate, sukoshi cannot:

this job-TOP a bit / a bit unpleasant

‘This job is a bit unpleasant.’

This makes sense considering the granularity of sukoshi/chotto. It is not natural to use sukoshi with a gradable emotion predicate, as degrees of emotion cannot be measured in a precise manner.

Third, in a context in which a standard of measurement is not explicit (e.g., the context of shopping), chotto can naturally be used, but it is odd to use sukoshi in such context:

(30) (The context of shopping)

A: Kono jisyo ikura-desu-ka?
this dictionary how-much-HON-Q

‘How much is this dictionary?’

B: Kochira-wa 3-man-yen-ni nari-masu.
this-TOP 30000-yen-to become-HON

‘This will be 30,000 yen.’

A: {Chotto / ?sukoshi} takai-naa.
a bit / a bit expensive-PRT

‘Oh, it is a bit expensive.’

It is more natural to use chotto, because in the context of shopping, one does not usually evaluate a price based on a precise scale, simply referring to a norm as a standard of comparison.

Now the following question arises. Is the precision/imprecision component of sukoshi/chotto really a CI? CIs are part of the meanings of words, but they are independent of “what is said” (e.g., Grice 1975; Potts 2005, 2007a; Horn 2007, 2013; McCready 2010; Sawada 2010; Gutzmann 2012). Furthermore, CI expressions are (typically) speaker-oriented (e.g., Potts 2005, 2007a).

I argue that the precise/imprecise meaning triggered by sukoshi and chotto is a CI for the following reasons. First, the imprecise/precise meaning cannot be targeted by a denial:

This rod-TOP a bit / a bit bend-STATE

At-issue: This rod is a bit bent (The degree of bentness of this rod is higher than the standard (zero) by a small degree).

CI from sukoshi: The speaker’s measurement is precise.
CI from chotto: The speaker’s measurement is imprecise.
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(32) Iya sore-wa uso-da.
    ‘No, that is false.’

Second, the precise/imprecise components do not logically interact with logical operators. For example, they cannot be under the scope of a question operator or the antecedent of a conditional, as illustrated in (33):

(33) a. Conditional
    Moshi [chotto/sukoshi] okureru-baa-i-wa denwa-shi-masu.
    if a bit/a bit late-in case-TOP call-do-PERF.HON
    ‘In case I am a bit late, I will call you.’ CI of sukoshi: I am measuring the degree precisely. CI of chotto: I am measuring the degree imprecisely.

b. Question
    {Chotto/sukoshi} okure-temo ii-desu-ka?
    a bit/a bit late-even if OK-PERF.HON-Q
    ‘Can I be a bit late?’ CI of sukoshi: I am measuring the degree precisely. CI of chotto: I am measuring the degree imprecisely.

One may now wonder whether the (im)precise meaning is actually a presupposition, rather than a CI. I do not consider it to be presupposition. First, the information of (im)precise granularity is not taken for granted. The degree chotto/sukoshi offer information as to how precise the speaker’s measurement is and this information is not part of the common ground when they are uttered. This is new information. Another piece of evidence that supports the idea that the (im)precise meaning is a CI comes from the fact that unlike presuppositions, it can project beyond “presupposition plugs,” such as omou ‘think’ (verbs of thinking):

(34) Taro-wa kono hon-wa {sukoshi / chotto} takai-to
    Taro-TOP this book-TOP a bit /a bit expensive-that
    think-PROG-must
    ‘Taro must be thinking that this book is a bit expensive.’
    (CI meaning of chotto: The speaker’s manner of measurement is imprecise.)
    (CI meaning of sukowski: The speaker’s manner of measurement is precise.)

Notice that there is also a subject-oriented reading as well, but the crucial point is that the CI/not-at-issue meaning triggered by sukowski/chotto can project to the root level. This clearly contrasts with presupposition. Although presuppositions generally project, they cannot project beyond the complement of an attitude predicate (see Chapter 2 for detailed discussion of this point).

5.4.3 Compositionality of the degree minimizers

Let us now consider the compositional mechanism of degree minimizers, as in:
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(35) Kono sao-wa {sukoshi / chotto} magat-teiru.
    This rod-top a bit / a bit bend-state
    At-issue: This rod is a bit bent. (The degree of bentness of this rod is higher than the standard (zero) by a small degree.)
    CI from sukoshi: The speaker’s measurement is precise.
    CI from chotto: The speaker’s measurement is imprecise.

I propose that the meaning of the degree sukoshi/chotto can be represented as follows:

(36) \[
\langle\langle \text{da}, \langle \text{ea}, \text{ta} \rangle \rangle, \langle \text{ea}, \text{ta} \rangle \rangle \times \text{ts} = \lambda_G \langle \text{d}, \langle \text{e}, \text{t} \rangle \rangle \lambda_x \exists \partial \text{STAND}_G \land G(d(x)) \} \exists \partial \text{STAND}_{\text{precise}} \land \text{precise (the given scale)} = d_1\]

(37) \[
\langle\langle \text{da}, \langle \text{ea}, \text{ta} \rangle \rangle, \langle \text{ea}, \text{ta} \rangle \rangle \times \text{ts} = \lambda_G \langle \text{d}, \langle \text{e}, \text{t} \rangle \rangle \lambda_x \exists \partial \text{STAND}_G \land G(d(x)) \} \exists \partial \text{STAND}_{\text{precise}} \land \text{precise (the given scale)} = d_1\]

The left side of ♦ is an at-issue component and the right side of ♦ is a CI component (McCready 2010; Gutzmann 2011). The superscript a is an at-issue type and the superscript s is a shunting type (a special type for a CI).

The degree sukoshi/chotto is then combined with a gradable predicate via mixed application:

(38) Mixed application

\[
a(\gamma) \bullet \beta(\gamma) : \tau^a \times v^s
\]

Superscript a stands for an at-issue type and superscript s stands for a shunting type.

Superscript s is used for a special kind of CI triggering expression such as mixed content. I will also assume following McCready (2010: 20) that the following rule applies for the final interpretation of the CI part of mixed content:

(39) Final interpretation rule: Interpret \(a \bullet \beta : \sigma^a \times t^c\) as follows: \(a : \sigma^a \bullet \beta : t^c\)

As for the meaning of gradable predicates, they represent relations between individuals and degrees (Seuren 1973; Cresswell 1976; von Stechow 1984; Klein 1991; Kennedy 2007a).

(40) a. \([[\text{nagai}]] = \lambda \text{d}x. \text{long}(x) = d

b. [[\text{magat-teiru}]] = \lambda \text{d}x. \text{bent}(x) = d

Example (41) shows the semantic derivation of the sentence in (35) with chotto:
5.5 The meaning and use of the speech act minimizer

5.5.1 The meaning of the speech act chotto

Let us now consider the meaning of the speech act chotto and consider the relation between the degree minimizer and the speech act minimizer. The important point is that only chotto can be used as a speech act minimizer:

(42) [Chotto/*sukoshi] hasami aru? (Question)
    a bit/a bit scissors exist
    lit. ‘Chotto aren’t there scissors?’

(43) [Chotto/*sukoshi] kaimono-ni i-te ku-ru. (Assertion)
    a bit/a bit shopping-to come-NON.PAST
    lit. ‘Chotto I will go shopping’.

I argue that this is because the scale the speech act minimizer is positing is highly pragmatic, and we cannot measure degrees in a precise manner using the speech act minimizer. As we have observed in the introduction of this chapter, the speech act chotto behaves like a hedge, which Matsumoto (1985, 2001) refers to as speech act mitigation (see Searle and Vanderveken’s (1985) concept of the degree of illocutionary force). However, exactly what kind of scale is the speech act minimizer positing? I will argue that the speech act minimizer (chotto) weakens the degree of imposition of the speaker’s speech act on the addressee in the CI domain.

The notion of imposition is well discussed in the literature of politeness (e.g., Lakoff 1973; Brown and Levinson 1987), and has been considered a crucial concept for
understanding the nature/system of linguistic politeness. For example, in Brown and Levinson's (1987) politeness theory, the degree of imposition is considered to be one of the factors for determining the weightiness of the so-called face-threatening act (FTA) $x$. FTAs are communicative acts performed by the speaker that respect neither positive face (i.e., a desire for their self-image to be upheld), nor negative face (i.e., an individual’s right to freedom of action). Brown and Levinson consider that prior to performing an act $x$ that inherently threatens face (positive /negative face), the speaker assesses the weightiness of the threat using the following formula (Brown and Levinson 1987: 76):

$$W_x = D(S, H) + P(H, S) + R_x$$

$W_x$ is the numerical value that measures the weightiness of the FTA $x$, $D(S, H)$ is the value that measures the social distance between $S$ and $H$, $P(H, S)$ is a measure of the power that $H$ has over $S$, and $R_x$ is a value that measures the degree to which the FTA $x$ is rated an imposition in a given culture. Brown and Levinson (1987) argue that if the weightiness of the FTA is high, the speaker will use various strategies to minimize it. The particularly relevant strategies for our analysis of the speech act chotto are “Don’t coerce $H$” (strategy 2 of negative face); “Minimize the imposition, $R_x$” (strategy 4 of negative face); and “Avoid disagreement” (strategy 6 of positive face) which are highly relevant to the use of hedges/minimizers. For example, when Brown and Levinson (1987) explain strategy 4 (minimize the imposition, $R_x$), they use the example of minimizers such as just and a tiny bit:

(45) I just want to ask you if [I can borrow/you could lend me] a {tiny bit of/little/ single sheet of} paper. (Brown and Levinson 1987: 177)

Brown and Levinson argue that just in (45) minimizes the degree of imposition and narrowly delimits the extent of the FTA. Note that just is modifying the verb want, which takes the infinitival clause that includes the performative verb ask. However, at the level of the speech act, it weakens the degree of imposition of the speech (i.e., the speech act of making a request).

We can say that the speech act chotto behaves similarly to just in (45) in that it is weakening the degree of imposition of the speaker’s speech act on the addressee:

(46) (Polite refusal)

{Chotto/*sukoshi} jikan-ga nai-desu.
A bit/a bit time-nom neg.exist-perf.hon
‘Chotto I don’t have time.’ (I am refusing your request in a polite way.)

However, unlike just, clearly it does not modify any explicit gradable element within the sentence.
In terms of semantics/pragmatics interface, the speech act *chotto* is a pure CI in that it does not contribute to "what is said." This is corroborated by the fact that the presence or absence of *chotto* does not affect the at-issue content of the sentences. Furthermore, the meaning of the speech act *chotto* is independent of logical operators such as a modal and a question:

     A bit time-NOM not-may
     'Chotto, I may not have time.'

b. *Chotto* o-jikan ari-masu-ka?
     A bit POL-time have-PERF.HON-Q
     'Chotto, do you have time?' (speech act reading)

Note that I do not consider the meaning of the speech act *chotto* as presupposition. The meaning of speech act *chotto* is highly speaker-oriented, and it is not considered to be part of the common ground when it is uttered. Furthermore, unlike typical presupposition, the meaning of the speech act *chotto* can scope out of the complement of attitude predicates:

(48)  (Context: a secretary is telling a visitor about Prof. Yamada’s schedule.)
     Yamada-sensei-wa konsyuu-wa *chotto* jikan-ga nai-to
     Yamada-teacher-TOP this week-TOP *chotto* time-NOM NEG.EXIST-that
     omo-te-orare-masu.
     think-TE-SUB.HON-PERF.HON
     At-issue: Professor Yamada thinks that this week he does not have time.
     CI: I am weakening the force of my assertion.

In (48), the expressive *chotto* is speaker-oriented. The natural situation for (48) is one where the speaker (i.e., the secretary) is using *chotto* in order to weaken the illocutionary force of his/her speech act.

The speech act *chotto* conventionally implicates that the degree of the imposition of the speaker’s utterance on the hearer is low (and the speaker’s manner of measurement is imprecise).

(49)  \[ [[chotto^{EXPRESSIVE}}] : (a^n, t^c) \]
     \[ = \lambda u.\exists d [d \geq \text{STAND}_{\text{MIN.IMPOSITION}} \land \text{imposed-on-h}(u) = d] \land \exists d_1 [d_1 < \text{STAND}_{\text{precise}} \land \text{precise}(\text{the given scale}) = d_1] \]
     (where \( u \) is a variable for a speech act (utterance) and \( h \) is a hearer)

It makes sense that *sukoshi* has not developed the speech act use. *Sukoshi* cannot have a speech act use because it is inherently positing a precise scale, which does not fit with measuring the degree of imposition of a speech act. The degree of imposition of a speech act is not something that we can measure precisely.
5.5.2 Ambiguity between the amount minimizer and the speech act minimizer

The speech act minimizer does not always have to be in a sentence-initial position. There are cases where a sentence with a minimizer can be ambiguous between the amount reading and the expressive reading:

(51) Kono hon-wa {chotto/sukoshi} takai.
    This book-top a bit/a bit expensive
    a. Amount reading: The degree of expensiveness of this book is slightly greater than a standard.
    b. Expressive reading (with chotto): This book is expensive. (CI: The degree of commitment of the assertion is slightly greater than the minimum.)

In syntax (surface form), the speech act minimizer is situated in the adjectival domain, but semantically, it is interpreted at a speech act level. Note that example (52) with an upper closed-scale adjective clearly shows that a speech act minimizer can be situated immediately before an adjective. The following sentence only has an expressive reading:

(52) Upper-closed scale adjective
    Kono doa-wa kyoo-wa {chotto/sukoshi} shimat-tei-masu.
    This door-top today-top CHOTTO a bit close-perf-pol
    a. Degree reading: “The degree of closedness of this door is slightly greater than a maximum standard today.
    b. At-issue: This door is closed today. (CI: The degree of imposition of the assertion on the hearer is slightly greater than the minimum.)

We cannot get a degree reading in (52) because the adjective simat-teiru is an upper closed-scale adjective that posits a maximum standard. It does not make sense to say that the degree of “closedness” of a door is slightly greater than a maximum standard. Notice, however, that the sentence has an expressive reading. The natural context where we can get this reading is one where the speaker is weakening the degree of imposition of the assertion “this door is closed” on the hearer. This will avoid
the speaker’s imposition of his/her idea (which is factive) on the addressee. Example (52) clearly shows that the speech act chotto can be “in situ.”

Then, what about the case where there is no explicit speech act?

(53) A: Ima jikan ari-masu-ka?
    'Do you have time now?'

    B: Uun, ima-wa chotto.
    'Well, now, chotto (I don’t have time, I am busy).'

Here clearly, the sentence implicates that the addressee is replying to A’s question negatively. It does not make sense to interpret B’s utterance positively, given that the speaker is minimizing the imposition of his/her speech act. We can say that in this case, chotto is modifying an implicit speech act of refusal (i.e., I don’t have time as I am busy).

5.6 Other uses of expressive chotto

Chotto can also be used as an attention-getter (Matsumoto 1985):

(54) Chotto. Sumimasen.  
    CHOTTO excuse me
    ‘Chotto, excuse me.’ (Could you please tell me the way to the station?)

(55) (A student is eating lunch at a library and a librarian says)
    Chotto chotto, soko-no anata. Koko-de nani-o
    CHOTTO CHOTTO over there-gen you. Here-loc what-acc
    shi-teiru-no?
    do-ING-Q
    ‘Hey, you. What are you doing here?’

It may be possible that the attention-getting chotto is the result of the grammatic-alization/pragmaticalization of the expressive chotto. It does not modify a speech act and it functions as an “isolated expressive/CI” similarly to expresses such as hey and ouch (Kaplan 1999a, b) (see Chapter 3):

(56) a. Thanks!
    b. Good morning.
    c. Hey!
    d. Ouch!

There is another use of CI chotto, the female complaint marker chottoo:

(57) Chottoo. Yame-te!
    CHOTTOO stop-IMP
    ‘CHOTTOO stop it!’
This marker is phonologically different from other CI uses of chotto in that its final vowel is lengthened. Only female speakers can use this marker. The above discussion suggests that there are various types of CI chotto, making it necessary to distinguish the expressive chotto from other kinds of CI chottos.

5.7 Cross-linguistic variation of positive polarity minimizers

We have so far focused on the meanings of Japanese minimizers. In this section, we will briefly consider cross-linguistic variations of minimizers with special reference to English and Greek minimizers. In terms of granularity, it seems that the English a bit and a little are similar to the Japanese sukoshi. It has been pointed out in the literature that minimizers can naturally combine with absolute gradable predicates such as bent and open, which posit a minimum value (zero point) as a standard of measurement. However, they cannot usually combine with a relative gradable predicate, which posits a contextual standard (Rotstein and Winter 2004; Kennedy and McNally 2005; Kennedy 2007a), as shown in (58):

(58) ?? John is {slightly/a bit/a little} tall. (tall = a relative gradable adjective)

However, several researchers have recently shown that low-scale minimizers in English can, in fact, be combined with a relative gradable adjective if used for a “purpose/functional” reading (Kagan and Sascha 2011; Bylinina 2012; Solt 2012, 2015), as in (59):

(59)  a. This swimming pool is {slightly/a little/somewhat} deep for a three-year-old. (Bylinina 2012)
    b. The actress is slightly tall to play the part. (Solt 2015)
    c. The jacket sleeves are a bit long. (Solt 2015)

In these examples, the standard corresponds to the maximum degree that is suitable for a given function or purpose (Bylinina 2012; Solt 2012).

This intuition also occurs in the case of sukoshi and wazukani. When sukoshi and wazukani are used, the standard of measurement is specific, and it is odd to use them in a context where a vague contextual standard is involved. We can say that wazukani posits a more precise scale than sukoshi (although they both posit a precise scale).

The fact that the English a bit and a little cannot operate on a speech act also suggests that they are similar to sukoshi:

(60)  a. *{A bit/a little} are there scissors?
    b. *{A bit/a little} I am going to go to shopping.

Does this mean that a bit and a little cannot behave as CI minimizers? I think this is a tricky question because, in some cases, the English a bit and a little do seem to behave like CI minimizers:

(61)  This book is {a bit/a little} expensive.
One might think that a bit/a little in (61) is attenuating the degree of assertion that ‘this book is expensive.’ However, as the following examples show, unlike the case of chotto, a bit/a little cannot combine with upper closed-scale adjectives like closed and certain:

(62)  
- a. ?? The door is [a bit/a little] closed.  
- b. ?? This is [a bit/a little] certain.

If a bit/a little can function as CI minimizers, we would predict that the sentences in (62) would be natural, but in fact they are odd. For this reason, I believe that the English a bit/a little can only behave as at-issue minimizers.

On the other hand, the Greek minimizer ligi/ligo is similar to chotto. It can be used both in the context of amount measurement and expressive measurement, as shown in (63):

(63)  
- a. Ligi brizola bit. feminine steak parakalo? please (Amount reading)  
  A bit.FEMININE steak please  
  ‘Please give me a bit of steak.’
- b. Ligo brizola bit. neuter steak parakalo? please (Expressive reading)  
  A bit.NEUTER steak please  
  ‘LIGO, please give me steak.’ (Anastasia Giannakidou, personal communication)

Although extensive further surveys are necessary to clarify the entire picture of cross-linguistic variation, I think that variation can be explained based on the not-at-issue component (i.e., variation of the granularity level in the CI domain, and the possibility of a pure expressive).

### 5.8 Interaction with pragmatic strategies

Finally, let us discuss the uses of minimizers from a discourse-pragmatic perspective. I will show that both degree minimizers and speech act minimizers have a rich interaction with general pragmatic strategies.

It has been claimed that the use of the English minimizers a bit and a little is restricted to specific contexts (Bolinger 1972; Ernst 1984; Leech 1983; Quirk et al. 1985; Klein 1998). For example, Bolinger (1972) claims that in a sentence with a bit/a little, there is an implication of “more than expected,” so the use of these expressions is restricted to unfavorable (largely negative), conditional, and desiderative contexts, as in the following examples:

(64)  
- a. She’s a bit fat to please anyone.  
- b. He was a bit inconsiderate (*considerate).  
- c. Let’s be a bit cautious this time. (Bolinger 1972: 50)

Ernst (1984: 180) makes a similar observation. He observes that the adverbs a bit and a little combine naturally with negatively tinged adjectives such as stupid, embarrassed, and envious.
Minimizer PPIs

(65) Janet acted a bit/a little stupid(ly)/embarrassed/envious of her sister (Ernst 1984: 180)

Quirk et al. (1985: 447) claim that a bit and a little can only occur in a predicative position and with adjectives that have an “unfavorable” meaning and an implication of being more than wanted:

(66) a. The weather’s a bit (too) hot.
b. *The weather’s a bit lovely.
c. *a bit hot weather (Quirk et al. 1985: 447)

Klein (1998) argues that Dutch has comparable general restrictions for een beetje ‘a bit,’ wat ‘somewhat,’ and enigszins ‘somewhat.’ For example, the following sentence with onattent is natural, while the one with attent is unacceptable:

(67) Hij is een beetje onattent. (*attent ‘attentive’)
    He is a little inconsiderate
    (Klein 1998: 78)

A similar observation can be made with regard to the Japanese minimizers chotto and sukoshi:

(68) Taro-wa {chotto/?sukoshi} ab i t/ab i t kowai.
    Taro-top a bit/a bit frightening
    ‘Taro is a bit frightening.’

(69) ?? Taro-wa {chotto/sukoshi} ab i t/ab i t yasashii.
    Taro-top a bit/a bit kind
    ‘??Taro is a bit kind.’

(68) with sukoshi is not perfectly natural. This may be because the adjective kowai is ‘psychological,’ so it is difficult to posit a degree scale for it (i.e., a measurable scale). However, what is more important is that there is a clear contrast between (68) and (69). We can summarize the above discussion by using the following restriction:

(70) The Negative Evaluative Constraint (NEC): Minimizer PPIs can naturally combine with negative evaluative adjectives, but they cannot combine with positive evaluative adjectives.

Leech (1983) explains this negative evaluative restriction based on the following pragmatic principle:

(71) Pollyanna Principle:
    Participants in a conversation will prefer pleasant topics of conversation to unpleasant ones. (Leech 1983: 147)

The Pollyanna Principle ensures that minimizers can occur only in a context where the speaker’s utterance is construed negatively. According to Leech (1983: 148), “the understatement disguises a bad report in a form which on the face of it permits a good interpretation. The unfavorable interpretation is arrived at indirectly, by implicature, and is thus weakened.”

These data suggest that not only speech act minimizers like the expressive chotto, but also regular degree minimizers can be used for politeness/pragmatic strategy.
5.9 Conclusions

This chapter investigated the various meanings of Japanese minimizers with special attention given to the Japanese *chotto/sukoshi*. We observed that while *sukoshi* and *chotto* can both modify a gradable predicate, only *chotto* can modify an entire utterance (speech act). In addition, we considered the relationship between the degree minimizer (adjective-modifying minimizer) and the speech act minimizer *chotto* and the source of variation in minimizers.

As for the degree minimizers, I argued that the degree *sukoshi* and the degree *chotto* are actually mixed content. They have a “low degree” semantic content and contain different information with regard to the manner of measurement at the level of CI (the levels of granularity). While *sukoshi* conventionally implicates that the speaker is measuring degree precisely (i.e., positing a precise scale), *chotto* conventionally implicates that the speaker is measuring degree imprecisely (i.e., positing an imprecise scale).

I then claimed that there is a similarity between the degree *chotto* and the speech act *chotto* in terms of granularity level (the speaker’s manner of measurement). I argued that the speech act *chotto* conventionally implicates the degree of imposition of a given speech act on the addressee, and the degree imposition is something that cannot be measured in a precise way. The degree of imposition is highly subjective; thus, only *chotto* fits into this pragmatic function.

In the last part of this chapter, we briefly looked at the cross-linguistic variations of minimizers and considered the relationship between Japanese minimizers and English and Greek minimizers. I hope I have shown that although the degree and speech act minimizers are interpreted in different dimensions (the former is interpreted at the semantic level whereas the latter is interpreted at the CI level), there is a striking similarity between them in terms of the manner of measurement. In Chapter 9, we will discuss the development of the speech act *chotto* more deeply with historical data.
Chapter 4 and Chapter 5 investigated the dual-use phenomenon of comparatives with indeterminateness (e.g., the Japanese expression *nani-yori-mo*) and minimizer PPIs (e.g., the Japanese *chotto*) and considered the relationship between at-issue use and not-at-issue use in a formal way. What was common to *nani-yori-mo* and *chotto* was that in the pragmatic use they are located at a high level, the level above a proposition, and scope over an entire speech act. In this chapter, we will examine intensifiers with a special focus on the Japanese intensifiers *totemo* and *motto* as case studies of lower-level pragmatic scalar modifiers, which combine with a gradable element and have not-at-issue meanings.

Recent research in the field of semantics/pragmatics interface has given rise to a growing literature on the pragmatic use of intensifiers, and researchers have investigated the differences and similarities between at-issue intensifiers and not-at-issue intensifiers: e.g., *totally, fully* in English (McCready and Schwager 2009); German *ur* (McCready and Schwager 2009); Japanese *zenzen*.

As an illustration, let us consider the example of English *fully*. McCready and Schwager (2009) and Beltrama (2015) observe that in English intensifiers such as *fully* have both an at-issue use and an expressive/pragmatic use and the pragmatic *fully* behaves like an expressive:

\[(1)\]
\[\begin{align*}
  \text{a. The pipe is fully straight. (At-issue use)}  \\
  &\quad \text{(Kennedy and McNally 2005: 355)}  \\
  \text{b. Brenda is fully going to fly kick me! (Expressive use)}  \\
  &\quad \text{(McCready and Schwager 2009)}
\end{align*}\]

In (1a) the adverb *fully* is used at the level of semantics. It denotes that the relevant degree is at a maximum level on the scale of straightness (see, e.g., Kennedy and McNally 2005). On the other hand, in (1b) *fully* is used at the pragmatic level. McCready and Schwager (2009) argue that *fully* in (1b) behaves as an expressive. They claim *fully* conventionally implicates that the speaker is maximally epistemically committed to his/her justification for his/her use of the proposition. Beltrama (2015) provides a similar analysis with a detailed investigation of its relationship with other uses of *fully* from a diachronic perspective.

Introduction

Structurally, the pragmatic use of *fully* is a higher-level pragmatic scalar modifier in that it is placed above a sentential level (in this case it modifies a proposition). In this respect, it is similar to *nani-yori-mo* and *chotto*.

However, if we look closely at the phenomenon of intensifiers from a broader perspective, we see that there are also cases of "lower-level pragmatic intensifiers" which are situated at a low level (below the sentential level) and directly modify a gradable predicate.

For example, the Japanese intensifier *totemo* has a dual use: a degree use and an expressive use:

(2) Kono ie-wa *totemo* ookii.
   This house-top *totemo* very big
   ‘This house is very big.’

(3) a. (Ability modal)
    Tetsuya-nado *totemo* {deki-nai/*dekiru}.
    Staying up all night-nado *totemo* can-neg/can
    ‘Staying up all night is impossible.’ (Implication: I am emphasizing the impossibility.)

    b. (Epistemic modal)
    Taro-ga shaken-ni ukaru-nado *totemo* {arisooni-nai/*arisoo-da}.
    Taro-nom exam-in pass-nado *totemo* likely-neg/likely-pred
    ‘It is unlikely that Taro will pass the exam.’ (Implication: I am emphasizing the unlikelihood.)

Descriptively, in the degree use *totemo* combines with a gradable predicate and intensifies the degree of the predicate at the at-issue level. By contrast, in the expressive/negative use, *totemo* combines with a negative modal predicate and intensifies the degree of unlikelihood/inability at the not-at-issue level. For example, in (2a) *totemo* emphasizes a degree of inability to stay up all night, whereas in (3b) *totemo* intensifies the unlikelihood of Taro passing the exam. The important point is that the expressive/negative use of *totemo* is directly combined with a gradable modal and situated low. It does not modify the entire sentence. Another interesting point about the expressive/negative *totemo* is that it can only appear in a negative environment. The positive versions of the sentences are ill-formed.

The Japanese comparative intensifier *motto* also has a dual use and in its pragmatic use behaves as a lower-level pragmatic scalar modifier. It has been claimed in the literature that the Japanese adverb *motto* has multiple meanings (e.g., Watanabe 1985; Sano 1998, 2004). Sano (2004) classifies the uses of *motto* into two types: the “degree” type and the “negative” type. For example, *motto* in (4) is considered to be a degree type:

(4) (Degree *motto*)
    Taro-wa jiro-yori *motto* hayaku hashi-tta.
    Taro-TOP jiro-than still.much.more fast run-PAST
    ‘Jiro ran fast, but Taro ran much faster still.’
Sentence (4) says that ‘Jiro ran fast, but Taro ran much faster still.’ Thus, we can paraphrase it by saying although both Taro and Jiro ran fast, Taro’s running speed was much faster than Jiro’s running speed.

In contrast, (5) can be ambiguous between a degree reading and a negative reading. (Note: if we put a stress on motto, the degree reading becomes salient; Sano 2004): 

(5) (Negative motto)
Kono mise-no keeki-wa motto oishi-katta.
This store-gen cake-top motto delicious-past

a. Degree reading: This store’s cake was even more delicious than a contextual store’s cake.

b. Negative reading: This store’s cake was delicious. (Implied: It is not delicious now.)

In the degree reading, the sentence is interpreted as an “elliptical” comparison. It is similar to (4) in that the sentence conveys that although the store’s cake and a contextual store’s cake were both delicious, the given store’s cake was much more delicious. By contrast, the negative reading conveys the speaker’s complaint about the utterance situation, i.e., the store’s cake is not delicious now.

In this chapter, we will consider the following questions with special reference to the not-at-issue uses of the Japanese intensifiers totemo and motto:

(6) a. What are the semantic characteristics of the negative uses (not-at-issue uses) of totemo? Why is it that it has to appear in a negative environment?

b. What is the meaning of the negative motto? Does the negative use of motto have a comparative meaning similar to the degree use?

c. What are the differences between totemo and motto and higher-level pragmatic intensifiers like fully?

As for the meaning of the negative totemo, I will argue that the negative totemo combines with a negative gradable modal predicate (epistemic/ability modal) and intensifies the unlikelihood or impossibility of a given proposition p (the proposition without negation or the modal) and refuses to update the common ground (the context set) with the at-issue proposition \( p \). I will then argue that the negative totemo can only occur in a negative environment because it presupposes that the maximum probability degree of a gradable modal predicate \( G \) is 0.

Regarding the meaning of the negative motto, I will argue that it combines with an at-issue gradable predicate and conventionally implicates that the degree of the target in an expected situation is much greater than the target’s current degree. It will be explained that the negative implication triggered by the negative motto comes from the large gap between a current degree and an expected degree.

As for the difference between higher-level and lower-level pragmatic scalar modifiers, it will be shown that while higher-level pragmatic scalar modifiers implicitly posit pragmatic scales such as noteworthiness and imposition (that are not linguistically realized), lower-level pragmatic scalar modifiers recycle the scale of an at-issue gradable predicate. It will be shown that this type of CI scalar modifier has a “mixed-type” CI trigger (McCready 2010; Gutzmann 2011), which recycles the
measure-function dimension of an at-issue modified predicate in computing the CI scalar meaning.

6.2 The intensifier *totemo*

For our first case study of the lower-level pragmatic intensifier, we consider the dual-use of the Japanese intensifier *totemo* 'very.' We will look first at the semantic use of *totemo* and then the negative use of *totemo*, which is an instance of the lower-level pragmatic intensifier.

6.2.1 The semantics of at-issue *totemo*

The Japanese intensifier *totemo* 'very' can intensify the degree associated with a gradable predicate:

(7) Kono *ie-wa* *totemo ookii.*
   This *house-top very big* 'This house is very big.'

As is argued in the literature on Japanese linguistics, the intensifier *totemo* 'very/really' is more or less "restricted" to adjectival predication (e.g., Watanabe 1990; Tsujimura 2001), and cannot appear in a comparative environment:

(8) a. (Comparative)
    *Kono hon-wa ano hon-yori-mo *totemo omoshiroi.*
    This *book-top that book-than-MO very interesting* 'This book is very more interesting than that book.'

   b. (Adjectival)
    *Kono hon-wa *totemo omoshiroi.*
    This *book-top very interesting* 'This book is very interesting.'

I posit the following lexical entry for the semantic *totemo*. (Superscript _a_ stands for an at-issue type. This type is used for calculating an at-issue meaning.)

(9) \[
    [[*totemosem*]] = \langle \lambda GADJ \lambda x \lambda t \lambda w \exists d [d > !!STAND \land G(d)(x)(t)(w)] \rangle
\]

In prose, the semantic *totemo* denotes that the degree of target _x_, with respect to the scale associated with _G_, is much greater than a standard at _t_ in _w_. ">!!STAND" means "much greater than a standard" (Kennedy and McNally 2005) (cf. Kennedy and McNally’s (2005) analysis of the English *very*).

Compositionally speaking, the semantic *totemo* directly combines with a gradable predicate. As for the meaning of this gradable predicate, recall that I am assuming it represents the relationships between individuals and degrees (Seuren 1973; Cresswell 1976; von Stechow 1984; Klein 1991; Kennedy and McNally 2005):

(10) \[
    [[*ookii*]] : \langle \lambda d \lambda x \lambda t \lambda w . \text{big}(x)(t)(w) = d \rangle
\]
The logical structure of sentence (7) is illustrated in (11):

(11)  
\[ \exists d [ d > !!\text{STAND} \land \text{big(this house)}(t_0)(w_0) = d ] \]

\[ \lambda w \exists d [ d > !!\text{STAND} \land \text{big(this house)}(t_0)(w) = d ] \]

\[ \lambda t \lambda \lambda w \exists d [ d > !!\text{STAND} \land \text{big(this house)}(t)(w) = d ] \]

\[ \lambda G_{AD} \lambda x \lambda t \lambda w \exists d [ d > !!\text{STAND} \land G(d)(x)(t)(w) ] \]

Note that as regards tense I will assume a referential theory of tense (e.g., Partee 1973, 1984; Heim 1994; Kratzer 1998; Hacquard 2006) in which tenses are treated as pronouns, or variables, on a par with individuals. Under this theory, tenses contribute temporal variables and also give temporal orientation.\(^1\) In terms of type, “pres” and “past” have a type \(i\).

There is also a more traditional quantificational analysis of tense, but in this book I will use a referential theory of tense for the sake of simplicity. I think that the referential theory of tense makes the analyses of the pragmatic scalar modifiers simpler in that we do not need to assume that the expressive \textit{totemo} take a tense operator as its argument. (See, e.g., Ogihara 1995 for the comparison between the two approaches.)

Similarly as for worlds, I will treat world variables as pronouns (Percus 2000; Hacquard 2006). More specifically I will assume that world variables are bound, either by a default binder \((\lambda w_0)\) in a matrix context that maps to the actual world, or by a binder provided by, e.g., a modal.

\(^1\) More specifically, Kratzer (1998) defines the meaning of pres(ent) and past as follows:

\begin{enumerate}
  \item a. \([\text{pres}]^{d,c} \) only defined if \(c\) provides an interval \(t\) that includes \(t_0\) (the utterance time). If defined, \([\text{pres}]^{d,c} = t\).
  \item b. \([\text{past}]^{d,c}\) only defined if \(c\) provides an interval that precedes \(t_0\). If defined, then \([\text{past}]^{d,c} = t\).\]
6.2.2 The negative totemo is an expressive/CI

Let us now discuss the semantic status of the negative totemo. As we observed in the introduction, totemo can intensify a negative modal statement:

(12) a. Ame-wa totemo yami-soo{ni nai/∗-da}.  
Rain-top totemo stop-seem-to NEG/pred  
‘The rain does not seem to stop.’ (Implication: I am emphasizing the unlike-lihood.)

b. Tetsuya-nado totemo {deki-nai/∗dekiru}-daroo.  
Staying up all night-nado very can-neg/can-possibly  
‘Possibly, staying up all night is impossible.’ (Implication: I am emphasizing the impossibility.)

I claim that the negative totemo is an expressive which emphasizes the impossibility/inability of an at-issue/given proposition at the level of CIs. Roughly speaking, expressives express a certain type of evaluative attitude or emotion (e.g., amazement, pleasure, likes, and dislikes). Typical examples of expressives are damn and man:

(13) a. I have to mow the damn lawn. (Potts 2005: 7)

b. Man, I got an A on my calculus test! (McCready 2009: 675)

Damn in (13a) expresses a speaker’s heightened emotion toward the lawn (see Potts 2005, 2007a). On the other hand, man in (13b) expresses an emotional attitude of the speaker toward the proposition (McCready 2010). We can say that the negative totemo is also an expressive. The negative totemo is an expressive in that it expresses a speaker’s heightened emotion toward a given proposition (the proposition without a modal and negation). That is, it emphasizes that the given proposition is extremely unlikely or impossible.

The important property of an expressive is that its meaning is anchored to the speaker and the time and place of utterance (Cruse 1986; Potts 2005, 2007a). Cruse (1986) explains the property of an expressive as follows:

(14) “Another characteristic distinguishing expressive meaning from propositional meaning is that it is valid only for the utterer, at the time and place of utterance. This limitation it shares with, for instance, a smile, a frown, a gesture of impatience […]” (Cruse 1986: 272).

For instance, the expression damn in the above-mentioned sentence has the property of an expressive in that its meaning is anchored to the speaker and the time and place of utterance (Potts 2005, 2007a). The same explanation can be made for the negative totemo. The negative totemo is anchored to the speaker and time and the place of the utterance.

Note that the expressive/negative totemo can be paraphrased by the idiomatic expressive expression totemo-janai-ga ‘lit. very-NEG-although’:

(15) Tetsuya-o suru-nado {totemo/totemo_ja.nai.ga} deki-nai.  
Staying up all night-ACC do-nado TOTEMO/TOTEMO_JA.NAI.GA can-neg  
‘Staying up all night is impossible.’ (Implication: I am emphasizing the impossibility.)
Although totemo-janai-ga contains a negative morpheme and the clause-linker ga 'but,' they are not literally interpreted. In (15), totemo-janai-ga as a whole serves to strengthen the impossibility or inability of a given proposition. The expression totemo-janai-ga, however, cannot be used as a normal at-issue intensifier:

(16) Koko-wa {totemo/*totemo.ja.nai.ga} anzen-desu.  
Here-TOP very/TOTEMO.JA.NAI.GA safe-pred  
'It is very safe here.'

This fact also supports the idea that the negative totemo has an expressive property. In terms of the semantic status of the negative totemo, it is safe to assume that it is a CI. The following evidence support this idea. First, as we can see in the following conversation, denial cannot target the CI part of totemo:

Such a difficult problem-TOP I-to- TOP TOTEMO solve-can-NEG  
'I can't solve such a difficult problem.' (CI: I am emphasizing the impossibility.)
B: Iya, sonna-hazu-nai  
No such-thing-NEG  
'No, that should not be right.' (You are a smart person!)

In this conversation, speaker B is challenging the at-issue part of (17A) (i.e., I can't solve such a difficult problem), but not the CI part. It would be odd to think that speaker B is challenging the CI part of A’s utterance, because that would mean he/she is objecting to A’s feeling.

Note that the situation becomes quite different in the case of the semantic totemo. The meaning of the semantic totemo can be challenged by saying (18B):

(18) A: Kono hon-wa totemo tsumaranai.  
this book-TOP very boring  
‘This book is very boring.’
B: Iya, sonna-hazu-nai  
No such-thing-NEG  
‘No, that should not be right.’

The second piece of evidence for the idea that the negative totemo is independent of “what is said” is that the negative totemo cannot be under the scope of logical operators. Let us consider this on the basis of an example in which the modal negative sentence with totemo is embedded under another modal expression such as daroo ‘probably’:

(19) Tetsuya-o suru-nado totemo deki-nai-daroo.  
Staying up all night-ACC do-NADO TOTEMO can-NEG-EPL.MOD  
‘Probably, staying up all night will be impossible for him/her.’ (Implication: I am emphasizing the degree of impossibility.)

Here, the meaning of totemo does not fall within the scope of daroo. That is, the speaker is not saying that there is a possibility of an emphatic emotion toward the impossibility.
Note that this phenomenon cannot be observed in the semantic *tometo*. In the following sentence, the meaning of *tometo* falls within the scope of *daroo*.

(20) Taro-wa * totemo* isogashii-daroo.
    Taro-TOP very busy-EP.MOD
    ‘Probably Taro is very busy.’

Let us now consider the case where the sentence with the negative *tometo* occurs in the past tense:

(21) (Ability modal) Tetsuya-nado Staying up all night-nado * totemo* {deki-na-katta/∗deki-ta}.
    can-neg-past/can-past
    ‘Staying up all night was impossible.’ (Implication: I am emphasizing the impossibility.)

Here, the speaker is not reporting that in the past he or she was emphasizing the impossibility. The speaker’s emotion itself is anchored to the utterance situation and it cannot be in the scope of the past tense.

By contrast, in the case of the adjective-modifying use of *tometo* (i.e., the semantic *tometo*), if it is embedded in the past tense, its meaning is within the scope of the past tense:

(22) Kono mise-no keeki-wa * totemo* ooki-katta.
    This store-gen cake-top very big-PAST
    ‘This store’s cake was very big.’

In (22), the speaker reports that in the past the store’s cake was very big. Given the above arguments, we can conclude that the negative *tometo* is a CI or an expressive, and its meaning is logically and dimensionally independent of “what is said.”

The third piece of evidence is concerned with the scope of negation:

(23) Tetsuya-nado * totemo* deki-nai.
    Staying up all night-nado very can-NEG/can
    ‘Staying up all night is impossible.’ (Implication: I am emphasizing the impossibility.)

Unlike typical NPIs, the negative *tometo* never falls within the scope of negation. There is no reading that “it is not the case that I am emphasizing the possibility.”

What does this mean? I argue that the negative *tometo* is not a logical NPI (which is licensed by negation or downward-entailing/nonveridical operators; e.g., Ladusaw 1980; Giannakidou 1998). Rather, it is a CI-inducing expression/expressive (e.g., Grice 1975; Potts 2005), which intensifies the unlikelihood or impossibility of a given proposition and refuses to update the common ground (the context set) with the at-issue proposition. This chapter proposes a new class of NPIs—discourse-oriented NPIs.
6.2.3 Formal analysis of the negative totemo

Let us analyze the meaning of the negative totemo in a more theoretical fashion based on the following example:

(24) Tetsuya-o suru-nado totemo deki-na-katta.
     Staying up all night-do-NADo very can-NEG-PAST
At-issue: Staying up all night was impossible.
CI: I am emphasizing the impossibility of staying up all night.

I will assume that the negative totemo is mixed content (McCready 2010; Gutzmann 2012) that takes a “negative modal predicate” (e.g., deki-nai ‘unlikely’) at both at-issue and CI levels but intensifies the degree only at the CI level, as shown in (25):

\[
\begin{align*}
\text{[(totemoneg)]} = & \lambda G_{\text{MODAL}} \lambda p \lambda t \lambda w \exists d \left( d \geq \text{STAND} \land G(d)(p)(t)(w) \right) \\
\text{\Large \bigstar} & \lambda G_{\text{MODAL}} \lambda p \lambda t \lambda w \exists d' \left( d' > \text{!!STAND} \land G(d')(p)(t)(w) \right)
\end{align*}
\]

(where \(\max(G_{\text{MODAL}}) = 0, p(t)(w) \) is expected to be true, \(p(t) \cap (\cap cg) = \emptyset\))

The left side of \(\bigstar\) is an at-issue domain, and the right side of \(\bigstar\) is a CI domain. In the at-issue dimension, it semantically denotes that the degree of a proposition \(p\) with respect to a gradable modal predicate \(G_{\text{MODAL}}\) is greater than a standard at \(t\) in \(w\). Namely, in the at-issue component, the negative totemo behaves as a pos(itive) morpheme (see Kennedy 2007 among others for the semantics of pos). In the CI dimension, it intensifies the degree of \(G_{\text{MODAL}}\) of the given proposition.\(^2\)

Notice that the negative totemo also has several presupposition components: (i) the maximum degree of \(G\) is 0 in terms of probability, (ii) the at-issue proposition \(p\) (the proposition without a negative gradable modal) is expected to be true, and (iii) the speaker assumes that there is no overlap between the common ground (Stalnaker 1978) and the at-issue proposition. (We will see later that these components play a crucial role in explaining the polarity sensitivity and pragmatic function of the negative totemo.)

The crucial assumption behind the analysis is that similar to regular adjectives, negative modal expressions such as deki-nai ‘impossible’ and soo-ni-nai ‘unlikely’ are gradable predicates (cf. Lassiter 2011; Klecha 2012). This idea is supported by the fact that it can combine with scalar modifiers/measure phrases, as shown in:

\(^2\) Note that the proposition \(p\) itself can contain negation, as shown in:

(i) Tanpo-no jou-to-o tuuchi-shi-nai-nado totemo shinji-rare-nai.
     Mortgage-gen transfer-ACC notice-do-NEG-NADo totemo believe-can-NEG
     ‘It is unbelievable that the bank does not notify the transfer of the mortgage.’ (CI: I am emphasizing the impossibility.)
     (http://www.nikkeibp.co.jp/article/sj/20130227/541867/?ST=pbizboard&shbpt=0)
The intensifier **totemo**

(26) a. **100 paasento deki-nai.**

100 percent can-NEG

'100 percent impossible'

b. Yaya **ari-soo-ni nai.**

A bit exist-likely-to NEG

'A bit unlikely'

We can define the meaning of **deki-nai** and **so-ni nai**, as in (27):

(27) a. \[ [\text{deki-nai}] : (d^a, \langle \langle i^a, \langle s^a, t^a \rangle \rangle, \langle i^a, \langle s^a, t^a \rangle \rangle) \]

\[ \lambda d \lambda p \lambda t \lambda w. \text{impossible}_\text{ABILITY}(p(t)(w)) = d \]

b. \[ [\text{so-ni nai}] : (d^a, \langle \langle e^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle, \langle i^a, \langle s^a, t^a \rangle \rangle) \]

\[ \lambda d \lambda x \lambda t \lambda w. \text{unlikely-to-V}(x)(t)(w) = d \]

There is a single word **muri** which has the same meaning as **deki-nai**:  

(28) \[ [\text{muri}] : (d^a, \langle \langle i^a, \langle s^a, t^a \rangle \rangle, \langle i^a, \langle s^a, t^a \rangle \rangle) \]

\[ \lambda d \lambda p \lambda t \lambda w. \text{impossible}_\text{ABILITY}(p(t)(w)) = d \]

Let us consider how the meaning of the negative **totemo** is computed in a compositional fashion. As we have shown in (25), the negative **totemo** is mixed content. This means that we need to introduce a semantic mechanism that can compute the meaning of at-issue and CI dimensions simultaneously. Following McCready (2010) and Gutzmann (2012), I assume that the meaning of mixed content is computed via mixed application:

(29) **Mixed application**

\[ \alpha(y) \bullet \beta(y) : \tau^a \times v^s \]

Superscript \(a\) stands for an at-issue type, and superscript \(s\) stands for a shunting type. The shunting type \(s\) is used for the semantic interpretation of CI involving an operation of shunting; cf. Potts’ (2005) CI application. When the derivation of the CI component of mixed content completes, the following rule applies for the final interpretation of the CI part:

(30) **Final interpretation rule:** Interpret \(\alpha \bullet \beta : \sigma^a \times s^t\) as follows: \(\alpha : \sigma^a \bullet \beta : s^t\)

(Based on McCready 2010)
Example (31) shows the logical structure of (24):

(31)

\[ \exists d [d \geq \text{STAND} \land \text{impossible}_{\text{ABIL}}(\text{I-stay-up-all-night at PAST in } w_0) = d] \]

\[ \exists d' [d' > !\text{STAND} \land \text{impossible}_{\text{ABIL}}(\text{I-stay-up-all-night at PAST in } w_1) = d'] \]

\[ \lambda w \exists d [d \geq \text{STAND} \land \text{impossible}_{\text{ABIL}}(\text{I-stay-up-all-night at PAST in } w) = d] \]

\[ \lambda w \exists d' [d' > !\text{STAND} \land \text{impossible}_{\text{ABIL}}(\text{I-stay-up-all-night at PAST in } w) = d'] \]

Recall that I am treating tense and world as pronouns, on a par with individuals. Then why is it that the negative totemo has to combine with a negative modal gradable predicate rather than a positive modal gradable predicate?

(32) *Tetsuya-o suru-nado totemo dekiru.

Staying up all night-ACC do-NADO TOTEMO can

At-issue: Staying up all night is possible.

CI: I am emphasizing the possibility. (Use condition: I am refusing to update the context set with the at-issue proposition.)

One might think that the above analysis allows the situation where the negative totemo takes a positive modal gradable predicate. I argue that \(G_{\text{MODAL}}\) has to be a negative gradable modal predicate because the negative totemo presupposes that the maximum degree of \(G_{\text{MODAL}}\) is 0 in terms of probability as represented in the parenthetical part in (25):\(^3\)

(33) \(\max(G_{\text{MODAL}}) = 0\)

\(^3\) I thank Eric McCready for valuable discussion regarding this point.
If a given $G_{MODAL}$ is a positive modal gradable predicate like arieru 'likely', then its maximal degree will be 1 (i.e., 100 percent). Thus, the sentence becomes infelicitous. However, if a modal predicate is negative, its maximal degree will be 0 (i.e., 0 percent). Thus, the resulting sentence is acceptable. (See Sawada (forthcoming) for the theoretical implications of this analysis for the theory of polarity sensitivity.) This analysis is compatible with the idea that a modal gradable predicate like likely is basically a relative gradable predicate (because it refers to a contextual standard) but can behave as an absolute gradable predicate (having a closed scale; Kennedy and McNally 2005) when it co-occurs with the proportional modifier $n$% (Lassiter 2011; Klecha 2012).

Then the questions is: why is it that the negative totemo has to occur with a modal? I would like to claim that the negative totemo has to occur with modality because it is a degree head that appears above a proposition. The negative totemo needs a measure function dimension and the gradable modal provides it. This implies that if a modal is not a gradable predicate, the sentence with the negative totemo becomes ill-formed. This prediction is borne out:

(34) *Taro-wa gakusei-de-wa totemo nai-hazuda.
   Taro-top student-pred-top TOTEMO NEG-must
   'Taro must not be a student.'

Hazuda is a sentential modal (not a gradable modal), and thus cannot interact with totemo.

6.2.4 Discourse-pragmatic properties of the negative totemo

Let us now consider the discourse-pragmatic properties of the negative totemo in detail. In the situation of dialogue, totemo is used under the assumption that the hearer expects the at-issue proposition $p$ to be true:

(35) A: Kono mondai tok-e-masu-ka?
   This problem solve-can-perf.hon-q
   'Can you solve this problem?'

   B: Iya, boku-ni-wa totemo tok-e-masen.
   No I-to-top TOTEMO solve-can-NEG.PERF.HON
   'No, I can't solve this problem.' (I am emphasizing the inability.)

In this conversation speaker A expects that B can solve the problem. Namely, in terms of form it is an open question but there is expectation of a positive answer. As Watanabe (2002) observes, the negative totemo is often used in a context where the speaker thinks that the at-issue proposition/event is preferable or necessarily the case. The requirement that $p$ is expected means that the proposition is not new information. This is supported by the fact that it is unusual to use ga, which conveys new information:

(36) Tetsuya [-nado/??-ga] totemo deki-nai.
   Staying up all night -NADO/NOM TOTEMO CAN-NEG
   At-issue: Staying up all night is impossible.
   CI: I am emphasizing the impossibility.
The discourse particle *nado* signals that the given proposition/event is currently under discussion and that the speaker construes it negatively.

Crucially, the above asymmetry disappears if we delete the negative *totemo*:

(37) Tetsuya
    *Staying up all night* -nado/-ga
    deki-nai.
    can-neg

    'Staying up all night is impossible.'

Notice that it is not always the hearer who expects $p$ to hold. As the following example shows, it can be a speaker, not the addressee, who expects $p$:

(38) Kibou-suru
    Hope-do
    daigaku-ni-wa
    university-to-top
    totemo
    totemo
    ukari-soo-ni-nai.
    pass-likely-to-neg

At-issue: It is highly unlikely that I can pass the entrance examination of a desired university. (http://www.gmm.co.jp/maeda.html)

The important point about the use of the negative *totemo* is that it is refusing to update the expected proposition $p$ with a common ground. The final part of the CI component conveys that the intersection between the set of possible worlds in which the at-issue proposition is true and the context set is empty:

(39) Refusal of $p$ (in dynamic semantics)

$$p \cap cs = \emptyset$$

This emptiness triggers a negative emotion of “rejection/refusal.”

The rejection of update is quite different from the usual negation. In dynamic semantics literature, a simple negative proposition ($\neg p$) is usually assumed to create a new context set that contains no worlds in which $p$ is true (I abbreviate $\cap cg$ as $cs$):

(40) Negation of $p$ (in dynamic semantics)

$$cs[\neg p] = cs - cs[p]$$

Notice, however, that the sentence with the negative *totemo* has an at-issue component as well, and in the at-issue component a negative modal statement (e.g., $\neg$ABLE($p$)) is interpreted like a normal negative sentence. Thus it may be that there are two kinds of information update in the sentence with the negative *totemo*: one is creating a new context set that contain no worlds in which a negative modal statement (e.g., $\neg$ABLE($p$)) is true and the other is refusing to update $p$ with a common ground.

### 6.3 The comparative morpheme *motto*

Let us now consider the second case study of a lower-level pragmatic intensifier, the Japanese expressive/negative *motto*. As we observed in the introduction, it has been claimed in the literature that the Japanese adverb *motto* has multiple meanings (e.g., Watanabe 1985; Sano 1998, 2004). Sano (2004) classifies the uses of *motto* into two types: the "degree" type and the "negative" type. For example, *motto* in (41) is an example of the degree type:
The comparative morpheme motto

(41) (Degree motto)
Taro-wa Jiro-yori motto hayaku hashi-tta.
Taro-TOP Jiro-than still.much.more fast run-PAST
"Jiro ran fast, but Taro ran much faster still."

Sentence (41) says that ‘Jiro ran fast, but Taro ran much faster still.’ Thus, we can paraphrase it by saying although both Taro and Jiro ran fast, Taro’s running speed was much faster than Jiro’s running speed.

In contrast, (42) can be ambiguous between a degree reading and a negative reading.
(Note: if we put a stress on motto, the degree reading becomes salient; Sano 2004):

(42) (Negative motto)
Kono mise-no keeki-wa motto oishi-katta.
This store-GEN cake-TOP MOTTO delicious-PAST
a. Degree reading: This store’s cake was even more delicious than a contextual store’s cake.
b. Negative reading: This store’s cake was delicious. (Implied: It is not delicious now.)

In the degree reading the sentence is interpreted as an “elliptical” comparison. It is similar to (41) in that the sentence conveys that although the store’s cake and a contextual store’s cake were both delicious, the given store’s cake was much more delicious. By contrast, the negative reading conveys the speaker’s complaint about the utterance situation: i.e., the store’s cake is not delicious now. I will argue that the negative motto is an expressive and is an instance of the lower-level pragmatic intensifier.

6.3.1 The meaning of the degree motto

Before looking at the meaning of the negative/expressive motto (which is an instance of a lower-level pragmatic scalar modifier), let us first investigate the meaning of the degree motto. I argue that typically the degree motto compares two individuals and denotes that there is a large gap between the two at the at-issue level. However, the degree motto also triggers a presupposition that the standard of comparison satisfies a (contextual) standard of G. Observe the following sentence:

(43) (Explicit comparative with yori)
Hanako-no keeki-wa Taro-no keeki-yori(-mo) motto oishii-katta.
Hanako-GEN cake-TOP Taro-GEN cake-than-MO MOTTO delicious-POL
At-issue: Hanako’s cake is much more delicious than Taro’s cake. Presupposition: Taro’s cake is delicious.

In the above sentence there is a presupposition that Taro’s cake is delicious. The inference that Hanako’s cake is also delicious comes from the relative relationship between Hanako’s cake and Taro’s cake, i.e., [Hanako’s cake > Taro’s cake].

The idea that the degree motto has a presupposition is supported by the fact that even if sentence (43) is negated with external negation to iu-wake-de-wa nai ‘it is not the case that,’ the norm-related meaning of the standard of comparison still remains:
(44) Hanako-no keeki-wa Taro-no keeki-yori motto oishii-to
Hanako-GEN cake-TOP Taro-GEN cake-than still.much.more delicious-it
iu-wake-de-wa-nai.
is not the case that
At-issue: It is not the case that Hanako's cake is even more delicious than Taro's
cake. Presupposition: Taro's cake is delicious.

Another piece of evidence for the idea that the degree motto has a presupposition
comes from the so-called “Hey, wait a minute!” test (von Fintel 2004; Shanon 1976).
We can target the presupposition part of the utterance by saying, “Hey, wait a minute!
I didn’t know that . . . ,” which signals the speaker’s objection to the assumed back-
ground of “what is said.” We can naturally utter, “Hey, wait a minute! I didn’t know that
Taro’s cake was delicious!” in order to challenge the presupposition in (10) and (11).

(45) Chotto matte! Taro-no keeki-ga oishii-nante shira-na-katta-yo!
A bit wait Taro-GEN cake-NOM delicious-NANTE KNOW-NEG-PAST-YO
‘Hey, wait a minute! I didn’t know that Taro’s cake is delicious.’

Note that the degree motto has a meaning of ‘much’ in the at-issue component. This
idea is supported by the fact that the sentence with the degree motto becomes odd if
there is no large gap between the target and a given standard in terms of degree, as
shown in:

(46) (Context: Taro is 196 centimeters tall and Jiro is 197 centimeters tall.)
a. ?? Taro-wa Jiro-yori motto se-ga takai.
Taro-TOP Jiro-than MOTTO height-NOM tall
‘Taro is still much taller than Jiro.’
b. ?? Taro-wa se-ga takai-ga Jiro-wa motto se-ga takai.
Taro-TOP height-NOM tall-but Jiro-TOP MOTTO height-NOM tall
‘Taro is tall but Jiro is still much taller.’

The sentences in (46) are odd because there is not enough gap between the target
and the standard. (Note that the ‘much’ component is not a presupposition because
the sentence with the external negation to-iu-wake-de-wa-nai ‘it is not the case that’
can negate the ‘much’ part.)

Now let us analyze the meaning of the degree motto. In this book I will assume
that (i) the standard marker yori has a meaning of comparison (e.g., Kennedy 2007c;
Hayashishita 2009; Sawada 2013b), and that (ii) the degree motto is a special kind of
comparative morpheme that “selects” (Kennedy 2007c) for a special standard yori PP
(cf. Sawada’s 2014a analysis of motto where motto has a comparative meaning and the
standard marker yori is considered to be semantically null). The degree motto is special
in the sense that it “selects” (Kennedy 2007c) for a special standard yori PP.

(47) [[yorimOTTO]] =
\lambda x \lambda y \lambda g(d, e, i(x, t)) \mu \lambda t \lambda w : \exists ! d [d \geq \text{Stand} \land g(d)(x)(t)(w)].
max[d, g(d)(y)(t)(w)] \triangleright max[d, g(d)(x)(t)(w)]
(48) Lexical entry of the degree motto

\[
\begin{array}{c}
motto_{\text{degree}} \\
\text{CAT} = \text{DEG} \\
\text{SEL} = \text{Standard} : \text{DP} + yori_{\text{motto}} \\
\text{SEM} = \text{none}
\end{array}
\]

Structurally, the degree motto selects a yori PP (which consists of DP and yori_{MOTTO}).

(49) Hanako-no keeki-wa Taro-no keeki-yori(-mo) motto oishi-Ratta.
Hanako-GEN cake-TOP Taro-GEN cake-than-MO MOTTO delicious-PAST
At-issue: Hanako's cake is much more delicious than Taro's cake. Presupposition: Taro's cake is good.

The following example shows the logical structure of sentence (49):

(50) \[
\begin{align*}
S_0 & : \exists d \quad [d \geq \text{Stand} \land \text{big}(\text{Taro's-cake})(t)(w) = d] \\
\text{max}(d) \big(\text{big}(\text{Hanako's-cake})(t)(w) = d\big) > & ! \text{max}(d) \big(\text{big}(\text{Taro's-cake})(t)(w) = d\big)
\end{align*}
\]
Recall that here we will treat tense and world as pronouns, on a par with individuals (Hacquard 2006; Percus 2000). Note that the incomplete sentence can be ambiguous between the “than something” reading and the “than now” reading:

(51) Kono mise-no keeki-wa izen-wa motto oishi-katta.
This store-gen cake-top old days-top MOTTO delicious-PAST
a. Degree reading 1 (the “than something” reading): In the old days, this store’s cake was still much more delicious (than a contextual store’s cake).

b. Degree reading 2 (the “than now” reading): In the old days, this store’s cake was still much more delicious (than now).

Motto can select for yori PP implicitly in the logical structure.

(52) a. \[[\text{yoriMOTTO]} = \lambda x \lambda y \lambda z : \exists d [d \geq \text{Stand} \land g(d)(x)(t)(w)] \]
max\{d|g(d)(y)(t)(w)\} ≻!! max\{d|g(d)(x)(t)(w)\}

b. \[[\text{yoriMOTTO]} = \lambda t' \lambda x : \exists d [d \geq \text{Stand} \land g(d)(x)(t')(w)] \]
max\{d|g(d)(x)(t)(w)\} ≻!! max\{d|g(d)(x)(t')(w)\}

6.3.2 The meaning of the negative motto

Let us now consider the meaning of the negative motto. In this section I will argue that the negative motto is also a comparative morpheme, but unlike the degree motto it compares the utterance situation of a particular individual to an alternative situation (expected situation) at the level of CI. The negative motto has the property of an expressive (Cruse 1986; Kaplan 1999a, b; Potts 2005, 2007a). Similarly to damn, it makes a statement about the “current situation.”

Furthermore, similarly to ordinary expressives, it has the property of independence. That is, we cannot challenge the comparative meaning triggered by the negative motto by saying “No, that’s not true!”

(53) Kono mise-no keeki-wa motto oishi-katta.
This store-gen cake-top MOTTO delicious-PAST
At-issue: This store’s cake was delicious. CI: The expected degree (i.e., the degree of deliciousness of the store’s cake in the past in the actual world) is much greater than the current degree of deliciousness of the store’s cake.

The meaning triggered by the negative motto is not a presupposition. It is not background information. This is supported by the fact that it is not felicitous to say, “Hey, wait a minute! I didn’t know that your expected degree is much greater than the current degree!” after a sentence with the negative motto.

Let us now analyze the meaning of negative motto. I argue that the negative motto does not select for a yori phrase. There is no operation of selection. Rather, the negative motto itself has an expressive comparative meaning. This assumption naturally explains why the negative motto cannot co-occur with yori.

Compositionally speaking, in the sentence with the negative motto, there are two kinds of scalar meaning, an at-issue adjectival meaning in the at-issue component and an intensified comparative meaning in the CI component. This means that we need
the gradable predicate g (here oishii 'delicious') in both dimensions (although there is only one such gradable predicate in these sentences):

(54) Kono mise-no keeki-wa motto oishi-katta.
This store-gen cake-top MOTTO delicious-PAST
At-issue: This store's cake was delicious. CI: The degree of deliciousness of the store's cake in the past was much greater than the current degree of deliciousness of the store's cake.

I would like to assume that the negative motto is "mixed" content (McCready 2010; Gutzmann 2011) in that it has a positive meaning in the at-issue component and an intensified comparative meaning in the CI component. (The left side of ♦ is the at-issue component and the right side of ♦ is the CI component):

(55) \[
\text{[motto}_\text{NEG}] = \lambda g\lambda x\lambda t\lambda w.\exists d (d \geq \text{Stand} \land g(d)(x)(t)(w))\bullet \lambda g\lambda x\lambda t\lambda w.\max\{d|g(d)(x)(t)(w)\} >!\max\{d|g(d)(x)(t_0)(w_0)\} (\text{where } t_0 = \text{current time, } w_0 = \text{the actual world})
\]

(56) is a rule for mixed content that involves an operation of shunting (McCready 2010):^4

(57) Mixed application (McCready 2010: 20)
\[
\alpha(\gamma) \bullet \beta(\gamma) : t^a \times v^a
\]

\[
\alpha \bullet \beta : (\sigma^a, t^a) \times (\sigma^a, v^a) \quad \gamma : \sigma^a
\]

The following rule applies for the final interpretation of the CI part of the mixed content (McCready 2010: 20):

(58) Final interpretation rule: Interpret \( a \bullet \beta : \sigma^a \times t^a \) as follows: \( a : t^a \bullet \beta : t^a \)

The rule is used when the CI part of the mixed content is propositional (of type t). Example (59) illustrates part of the derivation of sentence (53):

---

^4 Recall that superscript a stands for an at-issue type and superscript s stands for a shunting type. Superscript s is used for a special kind of CI triggering expression such as mixed content.
Intensifiers

(59)
$$\lambda t \lambda w \exists d [d \geq \text{STAND} \land \text{big(this-store's-cake)}(t)(w) = d] \bullet \lambda t \lambda w. \max[d] \text{big(this-store's-cake)}(t)(w) > \text{!!max}[d] \text{big(this-store's-cake)}(t_0)(w_0) = d]$$

In the case of (53), the tense variable corresponds to the past and the world variable corresponds to the current world.

The maximal degree of deliciousness of the store's cake in the past in the actual world is much greater than the maximal degree of deliciousness of the store's cake at the current time in the actual world.

(60) CI meaning of (53)
$$\lambda t \lambda w. \max[d] \text{big(this-store's-cake)}(t)(w) = d] \bullet \text{!!max}[d] \text{big(this-store's-cake)}(t_0)(w_0) = d] \text{ (where } t_0 = \text{now, } w_0 = \text{actual world)}$$

However, the negative motto can be used in various intensional contexts, including commands, conditionals, modals, and questions. I propose that there are three types in the use of the negative motto:

(61)

<table>
<thead>
<tr>
<th>Type</th>
<th>Expected degree</th>
<th>Standard of comparison</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>The past degree in the actual world</td>
<td>The present degree in the actual world</td>
<td>Simple past tense</td>
</tr>
<tr>
<td>Type II</td>
<td>The present degree in a non-actual world</td>
<td>The present degree in the actual world</td>
<td>Epistemic modal (with present tense), question (present), imperative, conditional</td>
</tr>
<tr>
<td>Type III</td>
<td>The past degree in the non-actual world</td>
<td>The present degree in the actual world</td>
<td>Epistemic modal (with past tense)</td>
</tr>
</tbody>
</table>

The important point is that the expected situation is automatically determined by the environment in which motto is used. We don't have to stipulate “expected
situation" in the semantics of the negative motto. Instead, it arises compositionally. Let us consider each type in turn.

In Type I, a comparison is made between the degree in the past in the actual world and the current degree in the actual world:

(62) (Simple past tense)
Kono mise-no keeki-wa motto oishi-katta.
This store-gen cake-top MOTTO delicious-PAST
At-issue: This store’s cake was delicious in the past in the actual world. CI: The degree of deliciousness of the store’s cake in the past in the actual world is much greater than the current degree of deliciousness of the store’s cake.

The illustration in (63) shows the basic logical structure of Type I ($\alpha \bullet \beta$ corresponds to the negative motto):

(63) Basic logical structure of Type I

\[
\begin{align*}
\alpha(y)(w_0) : t^a & \\
\cdots & \\
\beta(y)(w_0) : t^s & \\
\alpha(y) \bullet \beta(y) : & \\
\langle s^a, t^a \rangle \times \langle s^a, t^s \rangle & \\
\text{'}Current World' & \\
\alpha \bullet \beta : & \\
\langle i^a, \langle s^a, t^a \rangle \rangle \times \langle i^a, \langle s^a, t^s \rangle \rangle & \\
\text{'}PAST' & \\
\end{align*}
\]

(64) CI meaning of Type I

\[
\max\{d | \text{delicious(this-store’s-cake)(PAST)(w_0) = d}\} \gg \gg \max\{d | \text{delicious(this-store’s-cake)(t_0)(w_0) = d}\}
\]

This means that the maximal degree of deliciousness of the store’s cake in the past in the actual world is much greater than the maximal degree of deliciousness of the store’s cake at the current time in the actual world.

Let us now look at Type II. In Type II, a comparison is made between the current degree in a non-actual world and the current degree in the actual world:

(65) (Epistemic modal)
Kono mise-no keeki-wa motto oishii-hazu-da.
This store-gen cake-top MOTTO delicious-must-pred
At-issue: This store’s cake should be delicious now in the actual world. CI: The current degree of deliciousness of the store’s cake in a non-actual world is much greater than the current degree.
(66) (Question)
Motto hayaku hasher-e-masu-ka?
MOTTO fast ran-CAN-PERF.NON-Q
At-issue: Can you run fast? CI: The current degree of the addressee’s running speed in a non-actual world is much greater than his/her current running speed in the actual world.

(67) (Conditional)
(Sore-ga) motto oishi-kereba minna kau-deshoo.
It-nom MOTTO delicious-COND everyone buy-will
At-issue: If it is delicious, everyone will buy it. CI: The current degree of deliciousness of the cake (= it) in some non-actual world is much greater than its current degree in the actual world.

(68) (Imperative)
Motto hayaku hashir-e!
MOTTO fast run-IMP
At-issue: Run fast! CI: The current running speed in a non-actual world is much greater than the current running speed in the actual world.

The logical structure of Type II is a bit complicated. The problem is that the CI component of motto (i.e., here \( \beta(\gamma) \)) cannot be within the scope of logical/intensional operators:5

(69) Logical structure of Type II (not final)

This means that the world variable in \( \beta(\gamma) \) (= CI meaning) is saturated indirectly by an existential closure:

5 Recall that CIs are logically independent of "what is said."
(70) Logical structure of Type II (final)

\[ \text{Intensional operator}(\alpha(y)) : t^a \]

\[ \begin{align*}
\alpha(y) : (s^a, t^a) \\
\beta(y) : t'(via \text{existential closure}) \\
\end{align*} \]

\[ \text{Intensional operator}: (s^a, t^a), t^a \]

\{ 're 'imperative,' hazuda 'must,'
\ tara 'if,' yoo 'let's' \}

\[ \alpha \bowtie \beta : \quad y : i^a \]

\[ (i^a, (s^a, t^a)) \times (i^a, (s^a, t^a)) \text{ PRESENT} \]

For example, the following shows the CI meaning of (65):

(71) CI meaning of Type II

\[3w. \max \{d | \text{delicious}(\text{this-store's-cake})(\text{PRESENT})(w) = d \} \gg \max \{d | \text{delicious} (\text{this-store's-cake})(t_0)(w_0) = d \}\]

The maximal degree of deliciousness of the store's cake at the current time in a non-actual world is much greater than the maximal degree of deliciousness of the store's cake at the current time in the actual world.

In Type III a comparison is made between the past degree in some non-actual world and the current degree in the actual world. The world variable is saturated via existential closure.

(72) Motto with past tense epistemic modal

Kono mise-no keeki-wa motto oishi-katta-hazu-da.

This store-gen cake-top motto delicious-past-must-pred

At-issue: This store's cake should have been delicious.

CI: The degree of deliciousness of the store's cake in the past in some world is much greater than the current degree.

(73) Logical structure of Type III

\[ \text{Intensional operator}(\alpha(y)) : t^a \]

\[ \begin{align*}
\alpha(y) : (s^a, t^a) \\
\beta(y) : t'(via \text{an existential closure}) \\
\end{align*} \]

\[ \text{hazuda 'must':} (s^a, t^a), t^a \]

\[ \alpha \bowtie \beta : \quad y : i^a \]

\[ (i^a, (s^a, t^a)) \times (i^a, (s^a, t^a)) \text{ PAST} \]
The following shows the CI meaning of (72).

(74) CI meaning of Type III
\[ \exists w. \max \{ d \mid \text{delicious}(\text{this-store's-cake})(\text{PAST})(w) = d \} >! \max \{ d \mid \text{delicious}(\text{this-store's-cake})(t_0)(w_0) = d \} \]

The maximal degree of the store's cake in the past in a non-actual world is much greater than the maximal degree of the store's cake at the current time in the actual world.

6.3.3 Deriving the meaning of negativity in the negative motto

In the previous section we analyzed that like the degree motto, the negative motto is a comparative morpheme, but unlike the degree motto it compares a current situation and an expected situation at the level of conventional implicature (CI). I argued that the speaker's negative evaluation of the utterance situation in question comes from the large gap between the expected degree and the current degree. Namely, in this analysis the negative inference in the sentence with the negative motto is derived as a conversational implicature, as shown in (75):6

(75) Kono mise-no keeki-wa motto oishi-katta.
This store-gen cake-top motoo delicious-past
At-issue: This store's cake was delicious in the past in the actual world. CI: The degree of deliciousness of the store's cake in the past in the actual world is much greater than the current degree of deliciousness of the store's cake.
(Conversational implicature: The store's cake is not good now.)

The idea that the negative inference is a conversational implicature is supported by the fact that it can be cancelable (Sawada 2014a):

(76) a. (Context: the speaker is eating a cake at a restaurant.)
Kono mise-no keeki-wa motto oishi-katta-to omou.
This store-gen cake-top motoo good-past-that think
At-issue: I think that this store's cake was good.
CI: The degree of deliciousness of this store's cake in the past is much higher than the current degree.
(Conversational implicature: The store's cake is not good now.)

b. Maa ima-demo juubun oishii-desu-ga.
'Well, this cake is good now, too, though.'

The natural situation for uttering (76b) is one where the speaker first thinks that the current quality of the store's cake is bad (because there is a large gap between an expected degree and a current degree), but on second thought the speaker considers it to still be good, compared to an ordinary standard.

6 Note that in the case of (74) the negative inference can be observed even if there is no motto. However, this is derived from the use of the past tense. By using the past tense, the sentence conversationally implicates that the proposition is not true now.
The above idea is crucially different from the negation-based approach to the negative *motto* (Watanabe 1985 and Sano 2004, 1998) where the negative *motto* is analyzed as a kind of contrastive negative marker. Watanabe (1985) and Sano (2004) argue that, in a sentence with the negative *motto*, the speaker “denies one side and assigns a suitable degree to the other.” That is to say, this approach assumes that the negative *motto* is a kind of contrastive negative marker. Although the negation-based account can show the negativity of the negative *motto* explicitly it cannot explain the fact that the negative meaning is cancelable. Furthermore, our comparison-based approach is conceptually better than the negation-based approach in that the former, but not the latter, can clearly capture the semantic relationship between the degree *motto* and the negative *motto*. (See Sawada 2014a for detailed discussion regarding the semantic status of the negativity of the negative *motto*.)

6.3.4 *Explaining the distribution patterns of the negative motto*

Our proposed analysis of the meaning of the negative *motto* can naturally explain its distribution patterns. The negative *motto* cannot arise in a comparison between two different individuals, because the essence of the negative *motto* is to compare one individual based on two different times/worlds.

(77) Kono mise-no keeki-wa ano mise-no keeki-yori-(mo) motto
This store-gen cake-top that store-gen cake-than-MO MOTTO
ooki-katta.
big-PAST
Degree reading: This store’s cake was still much/even more delicious than that store’s cake.

Furthermore, the negative *motto* cannot arise in a simple present tense sentence, because we cannot make a comparison if there is no contrast between the utterance situation and an alternative expected situation in terms of time/world.

(78) Present tense
?? Taro-wa motto kashikoi.
Taro-TOP MOTTO smart
Degree reading: Taro is still much smarter.

A CI component becomes a contradiction if we use a simple present tense.

6.4 Higher-level pragmatic intensifiers and lower-level pragmatic intensifiers

Finally, let us consider the phenomenon of pragmatic intensifiers from a broader perspective. In this chapter we focused on the CI use of the Japanese *totemo* and *motto*. These intensifiers are lower-level pragmatic scalar modifiers in that they directly combine with a gradable predicate and trigger a CI meaning using a scale associated with a gradable predicate.
However, in natural language there are many pragmatic intensifiers that are placed higher in the logical structure. For example, the English *totally* and *fully* have a CI use (McCready and Schwager 2009; Beltrama 2015):

(79) **Totally**

Ilaria is totally coming to the party. (McCready and Schwager 2009)

(80) **Fully**

Brenda is fully going to fly think me! (McCready and Schwager 2009)

McCready and Schwager (2009) and Beltrama (2015) assume that *totally* is a proposition-taking operator. As McCready and Schwager (2009) and Beltrama (2014) observe, basically, the expressive intensifier *totally/fully* can only appear in a declarative sentence:?

(81) a. He totally didn’t show up. (Declarative)

b. *Who totally went to the party? (Interrogative)

c. *Totally go buy me a beer! (Imperative) (McCready and Schwager 2009)

Based on the above facts, McCready and Schwager (2009) proposed the following lexical meaning for the CI use of *totally*:

(82) \[ [[\text{totally-sup}]] : \langle t^a, t^c \rangle = \lambda p. [\text{the speaker is maximally epistemically committed to her justification for her use of } p]\]

Note that the pragmatic scalar modifiers such as *nani-yori-mo/chotto* are placed even higher than the pragmatic scalar modifiers *totally/fully*. This is, *nani-yori-mo/chotto* modify a speech act, while the expressive *totally/fully* modify a proposition, as shown in (83):

(83) **Varieties of higher-level pragmatic scalar modifiers**

```
<table>
<thead>
<tr>
<th>Speech act modifier</th>
<th>Propositional modifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e.g., <em>nani-yori-mo, chotto</em>)</td>
<td>(e.g., <em>fully, totally</em>)</td>
</tr>
</tbody>
</table>
```

This idea is supported by the fact that there is an asymmetrical ordering relationship between *more than anything* and *totally*.

? Notice, however that *totally* is fine with advice imperatives and rhetorical questions (McCready and Schwager 2009):

(i) A: Should I go to the party? B: Totally go, dude! (Advice imperative) (McCready and Schwager 2009)

(ii) Who totally didn’t do their work yesterday? (Rhetorical question) (McCready and Schwager 2009)
Higher-and lower-level pragmatic intensifiers

(84) a. More than anything, Bill totally hates natto.  
     b. More than anything, Bill is totally thinking that he is not guilty.

(85) a. *Totally, more than anything, Bill hates natto.  
     b. *Totally, more than anything, Bill is thinking that he is not guilty.

The preceding discussion predicts that the CI use of totemo and motto can naturally co-occur with higher-level pragmatic scalar modifiers. This prediction is borne out as shown in examples (86)–(89):

(86) a. Kono mise-wa mukashi-wa donna-deshi-ta-ka?  
       This store-top old days-top how-perf.hon-past-q  
     ‘How was this store in the old days?’

b. (The noteworthy nani-yori-mo plus the expressive motto)  
       Nani-yori-mo mukashi-wa motto oishi-katta-yo.  
       What-than-MO old days-TOP MOTTO delicious-PAST-PRT  
     ‘In the old days, the food of the restaurant was motto delicious.’  
     (CI: The degree of deliciousness of the store food was much higher than the current degree.)  
     (Implicature: The food of the restaurant is not good now.)

(87) (The expressive chotto plus the expressive motto)  
       Chotto motto hayaku renraku-shi-te hoshii.  
     ‘Chotto, I want you to contact motto early.’  
     CI via chotto: I am weakening the degree of imposition of my speech act.  
     CI via motto: The expected timing of contact is much earlier than the current timing.  
     (Implicature: you are slow in contacting me.)

(88) a. Nande paatii-o si-na-katta-no?  
       Why party-ACC do-NEG-PAST-Q  
     ‘Why didn’t you hold a party?’

b. (The noteworthy nani-yori-mo plus the expressive totemo)  
       Iroirona riyyu-ga aru-kedo nani-yori-mo isogashiku-te totemo  
       many reasons-nom exist-but what-than-MO busy-TE TOTEMO  
       junbi deki-na-katta-kara-desu.  
       prepare can-NEG-PAST-because-perf.hon  
     ‘I have many reasons, but more than anything, I was busy and it is totemo impossible to prepare for it.’  
     CI via totemo: I am emphasizing the impossibility.  
     CI via nani-yori-mo: Among various possible utterances, the at-issue utterance is the most important.

---

8 Natto is fermented soybeans.
(89) (The expressive _chotto_ plus the expressive _totemo_)

Chotto sonna koto-wa boku-ni-wa totemo deki-masen.

_chotto_ such thing-top _I-to-top_ _totemo_ can-neg.pol

’Chotto, it is _totemo_ impossible to do such a thing.’ (CI via _chotto_: I am weakening the degree of imposition of my speech act on the hearer.) (CI via _totemo_: I am emphasizing the impossibility.)

The interesting point is that the expressive _chotto_ and the expressive intensifier _totemo/motto_ can co-occur within a single utterance. We can naturally explain this based on the level of modification. The former is a higher-level pragmatic scalar modifier (which modifies a speech act) and the latter are lower-level pragmatic scalar modifiers (which modify a gradable predicate).

**6.5 Conclusion**

Chapter 6 investigated the expressive uses of intensifiers with special reference to the Japanese intensifier _totemo_ and the comparative adverb _motto_. I argued that the expressive _totemo_ and _motto_ belong among lower-level pragmatic scalar modifiers that recycle the scale of an at-issue gradable predicate in order to derive their CI meanings. The expressive _totemo_ combines with a negative gradable modal and conventionally implies that the at-issue proposition (without negation and modal) is highly unlikely or impossible and refuses to update the common ground with the at-issue proposition. The negative/expressive _motto_ combines with an at-issue gradable predicate locally, and conventionally implies that the degree of the target in an expected situation is much greater than the target’s current degree.

I then explained that these modifiers are fundamentally different from higher-level pragmatic intensifiers, such as the expressive _totally_, in terms of the level of modification and compositionality. While higher-level pragmatic scalar intensifiers modify a speech act/proposition, lower-level pragmatic scalar modifiers directly combine with a gradable predicate. In terms of compositionality, I argued that the expressive/negative _totemo_ and the expressive/negative _motto_ need to be analyzed as mixed content (McCready 2010) that involves an operation of shunting. In the next chapter we will look at the lower-level pragmatic scalar modifiers _kaette_ and _yoppodo_ and further address the interpretive mechanisms of lower-level pragmatic scalar modifiers.
Counter-expectational scalar adverbs

7.1 Introduction

In this chapter we will investigate the pragmatic aspects of counter-expectational scalar adverbs, with special reference to the Japanese counter-expectational intensifier yoppodo and the scale-reversal adverb kaette. The phenomenon of yoppodo and kaette is another case study of lower-level pragmatic scalar modifiers, whose pragmatic (counter-expectational) scalar meanings are derived by utilizing the scale of at-issue scalar modifiers.

The adverbs yoppodo and kaette have several unique properties that ordinary scalar modifiers do not have. Let us observe typical examples of these modifiers. The following is a typical example of yoppodo used in an adjectival environment:

(1) (Context: Taro is looking at a ramen restaurant from the outside. He sees a lot of people waiting in front of the restaurant.)
Ano raamen-ya-wa yoppodo oishii *(nichigainai).
That ramen-restaurant-top YOPPDOO delicious -must
At-issue: That ramen restaurant must be very delicious.
Not-at-issue: The degree I inferred via extraordinary evidence is above my expectation.

In (1), the speaker observes that there are many people waiting in front of a ramen restaurant. Based on this evidence, the speaker infers an unexpectedly high degree of deliciousness. An interesting point is that in the adjective-modifying environment, yoppodo always has to co-occur with an evidential modal. If there is no evidential modal in (1), the sentence becomes ill-formed.

Kaette is also quite different from an ordinary scalar modifier. Although it is a degree adverb that combines with a gradable predicate, it does not regulate the degree of the gradable predicate. Rather, it reverses a scale and conveys that the opposite situation is generally true:

1 As we will discuss in detail, unlike the other pragmatic scalar modifiers, such as nani-yori-mo (Chapter 4), chotto (Chapter 5), motto, or totemo (Chapter 6), the scalar adverbs yoppodo and kaette do not have a (pure) at-issue use. However, historically speaking, their meanings are clearly derived from at-issue meaning. As we will discuss in detail in Chapter 9, kaette is derived from the verb kueru ‘to reverse’ and yoppodo originally comes from yoki holo ‘appropriate degree’ and it had at-issue meanings of ‘approximately’ and ‘extremely’.

Counter-expectational scalar adverbs

(2) (Context: The speaker has lost his way in a subway station in Tokyo. More than five lines intersect at the station.)
Tokyo-wa kaette fuben-da. Tokyo-top reversal inconvenient-pred
At-issue semantics: Tokyo is inconvenient.
Not-at-issue: Generally speaking, Tokyo is considered to be convenient.

In (2) although the speaker admits that Tokyo is generally convenient, in this current situation, Tokyo is not convenient. The sentence conveys that the at-issue proposition is unexpectedly true.

Since kaette and yoppodo are locally combined with a gradable, we can say that they are instances of lower-level pragmatic scalar modifiers, but with unexpected meanings. The following questions will naturally arise from these observations:

(3) a. How can we analyze the meanings and uses of yoppodo and kaette?
b. Where do the unexpected meanings of yoppodo and kaette come from?
c. What are the similarities and differences between yoppodo/kaette and other kinds of counter-expectational expressions?

In this chapter, I will argue that although yoppodo and kaette are both instances of lower-level pragmatic scalar modifiers (which utilize the scale associated with a gradable predicate in order to derive their not-at-issue meanings), each scalar modifier has unique semantic/pragmatic characteristics, and the way their expected meaning is derived is quite different.

As for yoppodo, I will argue that it is mixed content in that it not only semantically denotes that the degree (inferred via extraordinary evidence) is high, but also conventionally implicates that the degree is above a speaker’s expectation. I will then claim that the requirement of the co-occurrence with an evidential modal in an adjectival environment can be explained by assuming that the judge in the CI component must be the same as the judge in the at-issue dimension.

As for kaette, although it also expresses some kind of unexpectedness, its meaning is radically different from that of yoppodo. I will argue that kaette reverses a scale and conventionally implicates that the opposite of the at-issue proposition is normally true. It will be argued that the unexpected meaning is derived via the contrast between the at-issue situation and the expected situation. One question that arises from the meaning of kaette is whether kaette is a CI or a presupposition. Although kaette seems to have a presupposition-like property in that its meaning often corresponds to a shared meaning/understanding, I will, however, argue that it is a special kind of CI because (i) it is highly attitudinal in nature, (ii) unlike typical presuppositions, it can be projective (i.e., it can project out of a complement of an attitude predicate), and (iii) the presupposition-like meaning comes from its lexical meaning of “usually.” (This point is quite different from typical presupposition triggers like stop or the definite article the, which do not contain the meaning of “usually.”)

The different semantic properties of yoppodo and kaette suggest that there are two types of counter-expectational expressions that use scalarity: a relative type, which represents “above expectation,” and a reversal type, which expresses counter-expectation via polarity reversal. In the final part of this chapter, we will
The counter-expectational intensifier yoppodo

compare yoppodo/kaette with other counter-expectational expressions and suggest a typology of counter-expectational expressions. I will claim that the how exclamative (Rett 2011) belongs to a relative type (similar to yoppodo), while counter-expectational connectives like but and exclamative markers like wow belong to a third type of counter-expectational expressions, a non-scalar (polarity reversal) type, although they are similar to the scale-reversal type (e.g., kaette) in terms of having a property of contrast.

7.2 The Japanese counter-expectational intensifier yoppodo

Let us first examine the semantic and pragmatic characteristics of yoppodo. As the following examples shows, yoppodo is clearly an intensifier. It cannot co-occur with a nongradable predicate:

(4) *Taro-wa yoppodo gakusei-nichigainai.
   Taro-TOP YOPPDO student-must
   ‘Taro must be a student.’

However, unlike ordinary intensifiers, yoppodo has complex semantic and pragmatic characteristics: its co-occurrence requirement with an evidential modal and its property of expressive meaning/CI.

7.2.1 Co-occurrence with an evidential modal

First, let us discuss the co-occurrence with an evidential modal. As we observed in the introduction, in an adjectival environment, yoppodo must co-occur with an evidential modal (see also Sawada 2016b). More specifically, yoppodo must co-occur with a marker that involves an “inferential evidential.” Inferential evidentials are those types of evidential where “the speaker draws an inference on the basis of available physical evidence” (de Haan 2013). Let us consider some examples:

(5) a. (Context: The speaker is looking at a ramen restaurant from the outside. He sees a lot of people waiting in front of the restaurant.)
   Ano ramen-ya-wa yoppodo oishii-nichigainai.
   That ramen-store-TOP YOPPDO delicious-must
   At-issue: That ramen restaurant must be very delicious.
   Not-at-issue: The degree I inferred via extraordinary evidence is above my expectation.

b. (Context: The speaker noticed that Hanako is sleeping during class. The speaker knows that Hanako is a very serious student and she never sleeps during class.)
   Hanako-wa yoppodo tukare-teiru-no-daroo.
   Hanako-TOP YOPPDO tire-TEIRU-NODA-possibly
   At-issue: Hanako must be very tired. Not-at-issue: The degree I inferred via extraordinary evidence is above my expectation.

2 Aikhenvald (2014) considers the inferred evidential (or inferential evidential) to be based on visible or tangible evidence or results.
c. (Context: The speaker saw Taro running away after he saw a very small spider.)

Taro-wa kumo-ga yoppodo kowai-rashii.
Taro-TOP spider-NOM YOPPDO SCARY-RASHII

At-issue: It seems that Taro is very terrified of a spider.
Not-at-issue: The degree I inferred via extraordinary evidence is above my expectation.

Nichigainai in (5a), no-daroo in (5b), and rashii in (5c) are inferential evidential markers.3

In these examples, the speaker infers a high degree based on unusual evidence and conveys that this degree, inferred via evidence, is counter-expectational. For example, in (5a) the speaker infers a high degree of deliciousness of the ramen restaurant based on the unusual situation (evidence), and also conveys that this degree is above his/her expectation. Similar inferential reasoning is observed in (5b) and (5c). (As we will discuss in detail in section 7.2.2, a speaker’s unexpected feeling is not at-issue. It is a conventional implicature.) The crucial point is that, as Watanabe (1987) also observes, if there is no evidential modal, the sentences become ill-formed. For example, if we delete nichigainai from (5a), the whole sentence becomes ill-formed:

(6) *Ano raamen-ya-wa yoppodo oishii.
That ramen-store-TOP YOPPDO delicious

‘That ramen restaurant is yoppodo delicious.’

This connection suggests that there is a dependency between yoppodo and evidential modals similar to modal concord (e.g., Geurts and Huitink 2006; Zeijlstra 2008) or “modal matching” (Grosz 2010) in German discourse particles. Grosz (2010) and Kaufmann (2013) claim that German modal particles such as ruhig require a modal just as yoppodo does, although yoppodo is not a discourse particle. As we will discuss in section 7.4, in non-adjectival environments such as comparatives and conditionals, yoppodo is not required to co-occur with an inferential evidential marker. Note that this dependency is not found in typical intensifiers. For example, it is perfectly natural to use totemo in both modal and non-modal environments:

(7) a. Ano raamen-ya-wa totemo oishii.
That ramen-store-TOP very delicious

‘That ramen restaurant is very delicious.’

3 Notethat rashii also has a hearsay evidential use (McCready and Ogata 2007), but yoppodo cannot be used with a hearsay evidential:

(i) (The speaker heard that Taro is very busy.)

#Taro-wa yoppodo isogashii-rashii.
Taro-TOP YOPPDO BUSY-REPORT
‘I heard that Taro is yoppodo busy.’

See McCready and Ogata (2007) for detailed discussion of the various uses of rashii.
b. Ano raamen-ya-wa totemo oishii-nichigainai.
   That ramen-store-TOP very delicious-must
   'That ramen restaurant must be very delicious.'

Notice also that yoppodo in the adjectival sentence cannot interact with nonevidential modals like kamoshirenai 'may' and daroo 'possibly.' Neither kamoshirenai nor daroo have an inferential evidential component; they thus cannot co-occur with yoppodo, as is clear from (8):

(8) ?? Ano raamen-ya-wa yoppodo oishii-{kamoshirenai/daroo}.
   That ramen-store-TOP YOPPODO delicious-may/possibly
   At-issue: That ramen restaurant may be very delicious.

However, if the particle no is added to kamoshirenai and daroo (i.e., no-kamoshirenai, no-daroo), then (8) becomes natural, as in (9):

(9) Ano raamen-ya-wa yoppodo oishii-no-{kamoshirenai/daroo}.
   That ramen-store-TOP YOPPODO delicious-NODA-may/possibly
   At-issue: That ramen restaurant may be very delicious. Not-at-issue: The degree
   I inferred via extraordinary evidence is above my expectation.

In (9), no-kamoshirenai and no-daroo behave like evidential modals, presumably due to the meaning of the discourse particle no(da) (see H. Sawada 2006).

Readers will now wonder where the requirement of co-occurrence with an evidential modal comes from. We will discuss this question in detail in Chapter 9, but here I will just suggest that the requirement comes from the semantic change undergone by yoppodo. Yoppodo originally came from yoki hodo 'appropriate degree,' and it was also used as an approximator meaning 'approximately,' 'almost,' 'nearly.' These approximators are often considered to have a property of vagueness (Sauerland and Stateva 2007). Williamson (1994) considers that vagueness is an epistemic phenomenon that can be characterized in terms of absence of knowledge. It seems that it is not accidental that the current adjectival use of yoppodo requires an evidential modal if we consider that yoppodo originally was used to indicate epistemic vagueness.

7.2.2 The speaker’s unexpected feeling is a CI

Another important characteristic of yoppodo is that it has an expressive/not-at-issue meaning. Intuitively, the speaker uses yoppodo when he/she is surprised at the situation driving the utterance. In (10), the speaker infers an unexpectedly high degree of deliciousness for the ramen restaurant (i.e., cause) in order to explain the unusual situation (i.e., consequence). Note that inferential evidential markers such as nichigainai infer a cause from a consequence (Rivière 1981; H. Sawada 2006):

(10) (Context: Taro is looking at a ramen restaurant from the outside. He sees more than fifty people waiting in front of the restaurant.)
Counter-expectational scalar adverbs

Ano raamen-ya-wa yoppodo oishii-nichigainai.
That ramen-store-top YOPPDOO delicious-must
At-issue: That ramen restaurant must be very delicious.
Not-at-issue: The degree I inferred via extraordinary evidence is above my expectation.

Here, the speaker observes an utterance situation (with surprise) and infers a cause, trying to explain the situation. I would like to define the lexical meaning of yoppodo as follows:

(11) The lexical meaning of yoppodo (in an adjectival environment): semantically, yoppodo denotes high degree and additionally conventionally implicates that the degree a judge infers through extraordinary evidence is above the judge’s expectation (where a judge is a speaker in nonembedded environment).

This means that yoppodo (the adjective-modifying use) is mixed content (McCready 2010; Gutzmann 2012); it has an intensified meaning at the at-issue level and inferential/counter-expectational meanings at the CI level. The crucial point here is that in order to use yoppodo naturally, the evidence has to be abnormal. If the observed evidence is not abnormal, as in (12), the sentence with yoppodo (but not totemo) becomes odd:

(12) (Context: Taro is looking at a ramen restaurant from the outside. He sees some people waiting in front of the restaurant.)
Ano raamen-ya-wa [{??yoppodo/totemo} oishii-nichigainai.
That ramen-store-top YOPPDOO/very delicious-must
‘That ramen restaurant must be yoppodo/totemo delicious.’

Here, seeing some people waiting outside the restaurant is not something that causes the speaker to infer an abnormally high degree of deliciousness.

Let us now verify that yoppodo has a CI meaning. In the Gricean approach, CI is considered to be independent of “what is said” (the at-issue meaning) (Grice 1975; Potts 2005; Horn 2007; McCready 2010; Sawada 2010, 2014a; Gutzmann 2012). There are several pieces of evidence for the idea that yoppodo’s CI meaning ‘that the inferred degree is unexpected,’ is a CI. First, it never interacts with logical operators. As example (13) shows, the not-at-issue meaning that “the inferred degree is beyond a judge’s expectation” is not within the scope of an evidential modal and question.4

4 Note that negation is not a good test for checking the independence/projective behavior of yoppodo. It is known that an evidential modal cannot be within the scope of negation (e.g., H. Sawada 2006; see also de Haan 1997):

(i) *Ano raamen-ya-wa yoppodo oishii-nichigaina-kunai.
That ramen-restaurant-top YOPPDOO delicious-must-NEG
‘That ramen restaurant must not be yoppodo delicious.’
The counter-expectational intensifier yoppodo

(13) (Context: Taro is looking at a ramen restaurant from outside. He sees a lot of people waiting in front of the restaurant.)

Ano raamen-ya-wa yoppodo oishii-no-daroo-ka.
That ramen-store-TOP YOPPODO delicious-NODA-possibly-Q

At-issue: Is it the case that ramen restaurant is very delicious?
Not-at-issue: The degree I inferred via extraordinary evidence is above my expectation.

The second piece of evidence is that the CI meaning cannot be challenged by a normal objection: “No, that will be false” cannot challenge the CI/not-at-issue component in (14), supporting the idea that it is independent of “what is said”:

(14) A: Ano raamen-ya-wa yoppodo oishii-nichigainai.
That ramen-store-TOP YOPPODO delicious-must

At-issue: That ramen restaurant must be very delicious.
Not-at-issue: The degree I inferred via evidence is above my expectation.

B: Iya, sore-wa uso-daroo.
No that-TOP false-epistemic
‘Well, that will be false.’

Notice that yoppodo has an at-issue meaning of ‘very.’ This conclusion is supported by the fact that an addressee can challenge the at-issue (intensification) part of (14A) by uttering the sentence in (15):

(15) Iya, sonnan-demo nai-to omoun-da-kedo.
No such level-DEM not-that think-PRED-but
’Well, I don’t think that it is that high . . .’

Note that regular intensifiers, like the Japanese totemo ‘very,’ do not trigger this kind of unexpected meaning, as exemplified in (16):5

(16) (Context: Taro is looking at a ramen restaurant from outside. He sees a lot of people waiting in front of the restaurant.)

Ano raamen-ya-wa totemo oishii-nichigainai.
That ramen-store-TOP very delicious-must

At-issue: That ramen restaurant must be very delicious.

The sentence in (16) denotes that the degree of deliciousness of the food served at the ramen restaurant is high, but it does not convey that this degree is unexpected. Before closing this section, let me mention that yoppodo’s not-at-issue meaning is not a presupposition. In the literature, it is assumed that the utterance of a sentence with presupposition p is felicitous only if p is entailed by the context.6 For example, the sentence with the presupposition too (e.g., Tom ate sushi, too) is felicitous only if the implication that there is a true alternative proposition (i.e., Someone

5 Notice, however, that there is also an expressive/CI use of totemo, which intensifies the unlikelihood/impossibility of a given proposition (see Chapter 6).
6 Tonhauser et al. (2013) call this a strong contextual felicity constraint.
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besides Tom ate sushi) is entailed by the context. Yoppodo does not have this contextual felicity constraint. The not-at-issue meaning that a judge has an unexpected feeling is discourse-new and it is not entailed by the context.

7.2.3 Formal analysis of the evidential use of yoppodo

Let us now analyze the meaning of the sentence with yoppodo in a formal way based on the following example:

(17) (Context: The speaker is looking at a ramen restaurant from the outside. He sees a lot of people waiting in front of the restaurant.)
Ano ramen-ya-wa yoppodo oishii-nichigainai.
That ramen-store-top YOPPDO delicious-must
At-issue: That ramen restaurant must be very delicious.
Not-at-issue: The degree I inferred via extraordinary evidence is above my expectation.

How, then, can these lexical properties be analyzed? I propose that yoppodo (the adjective-modifying use) is mixed content (McCready 2010; Gutzmann 2012) and has a meaning like (17). It has an intensified meaning at the at-issue level (the left side of ♦) and inferential/counter-expectational meanings at the CI level (the right side of ♦) ("≻!!STAND" means "much greater than a standard" (Kennedy and McNally 2005):

(18) $[[yoppodo]] = \lambda \xi x \lambda w \exists d[d \succ!!STAND \land G(d)(x)(t)(w)]\bowtie
\land d \succ d'$ for $j$ (where $w$ is bound by an evidential modal, $j$ infers the given $d$ via extraordinary evidence $j$ is consistent with the judge of the evidential modal, and $d'$ is a speaker's degree of expectation)

In the at-issue component, yoppodo semantically denotes that the degree associated with a gradable predicate is much greater than the contextual standard at the at-issue level. In the CI component, yoppodo conventionally implies that (i) a judge $j$ infers the given degree via extraordinary evidence and (ii) the given degree is above the judge's expectation. Note that here I am assuming that the CI meaning is nonquantificational and $d$ in the CI dimension is a free variable, which is anaphoric to the degree in the at-issue component. (See Sudo 2012 for the anaphoric approach to the relationship between at-issue and presupposition.)

Note also that in the lexical meaning of yoppodo there is a requirement that the word variable $w$ is bound by an evidential modal. This ensures that yoppodo in the adjectival environment always co-occurs with an evidential modal. Notice that there is also a requirement that the judge of the CI component is consistent with the evidential modal.\footnote{Note that there is also a Kaplanian-style indexical approach where a judge is introduced as a new index alongside the world and time indices as in (i) (Lasersohn 2005):

(i) $[[yoppodo]]^{w,t,j} = \lambda \xi x \exists d[d \succ!!STAND \land G(d)(x)(watt)]\bowtie \land d \succ d'$

(where $w$ is bound by an evidential modal, $j$ infers the given $d$ via extraordinary evidence, $j$ is consistent with the judge of the evidential modal, and $d'$ is a speaker's degree of expectation)
Yoppodo is then combined with a gradable adjective. The important point is that only the at-issue part of yoppodo logically interacts with other at-issue (semantic) elements. To ensure that the meaning of mixed content is computed in a compositional fashion, McCready (2010) proposes compositional rule(s) for mixed content, which involve(s) the shunting type \( s \), as in:

\[
(19) \text{Mixed application} \quad a(y) \bullet \beta : t^a \times v^s
\]

\[
\alpha \bullet \beta : (s^a, t^a) \times v^s \quad \gamma : \sigma^a
\]

Note that \( \alpha \) and \( \beta \) form a single lexical item (mixed content). The crucial point of the rule in (19) is that it is resource-sensitive. Note that the rule is different from Potts’ CI application, in which the at-issue argument of the CI-inducing element is passed up to the level above—in other words, the application is resource-insensitive. 8

If \( \beta \) is complete (does not have a variable), then the bullet \( \bullet \) is introduced to separate the at-issue dimension from the CI dimension as in (20):

\[
(20) \text{Final interpretation rule: Interpret } \alpha \bullet \beta : \sigma^a \times t^i \text{ as follows: } \alpha : \sigma^a \bullet \beta : t^i
\]

Regarding the meaning of gradable predicates, I assume that they represent relationships between individuals and degrees (Seuren 1973; Cresswell 1976; von Stechow 1984; Klein 1991; Kennedy 2007a), as in: 9

\[
(21) \text{[[ooshii]]} : \langle d^a, \langle e^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle \rangle = \lambda d \lambda x \lambda t \lambda w. \text{delicious}(x)(t)(w) = d
\]

As for the modal \textit{nichigainai} ‘must,’ I posit the lexical meaning reflected in (16): 10

\[
(22) \text{[[nichigainai]]}^{\text{wgt}} : \langle s^a, t^a \rangle = \lambda p_{(w,t)} \forall w' \text{ compatible with the evidence in } w_0 : p(w') = 1
\]

Under this view, the content of a sentence is a function from world–time–individual triples \( \langle w, t, j \rangle \) to truth values. In this book, I will not assume indexes and will treat \( j \) as a free variable. This idea is similar to the idea of individual anchor of the attitude (see Farkas 1992; Giannakidou 1998; Giannakidou and Stavrou 2009).

8 See McCready (2010) for a detailed discussion of the difference between a resource-sensitive CI application (shunting application) and Potts’ resource-insensitive one.

9 Note that here I am analyzing a so-called predicate of personal taste as a regular gradable predicate. Lasersohn (2005) introduces an individual index \( i \) alongside the world and time indices:

(i) \([[\text{fun}]])^{w,t,i,c} = \{ \text{the set of things that are fun for individual } i \text{ in world } w \text{ at time } t \}

Lasersohn (2005) argues that a sentence with a predicate of personal taste has a stable content, but that the truth value of this content \( t \) is relativized to individuals. In this book, I will assume that a predicate of personal taste is a kind of a gradable predicate and they both have the same semantic type. Yoppodo is not sensitive to predicates of personal taste and can combine not only with a predicate of personal taste, but also with various kinds of gradable adjectives, including \textit{isogashii} ‘busy,’ \textit{takai} ‘expensive,’ \textit{omoi} ‘heavy,’ \textit{fukai} ‘deep,’ etc.

10 There is also a possibility that the evidential component of \textit{nichigainai} is not-at-issue (CI/ presupposition). See, e.g., Portner (2009), von Fintel and Gillies (2010), and McCready (2010) for discussion of the semantic status of evidentiality.
The following example illustrates the logical structure of (17):

(23) The semantic derivation of \textit{yoppodo} (the evidential type)
\[
\forall w' \text{ compatible with the evidence in } w_0: \\
\exists d [d > !!S \text{TAND} \land \text{delicious}(\text{that-ramen-restaurant})(t)(w) = d] = 1 \text{ for } j_i
\]

\[
\lambda w \exists d [d > !!S \text{TAND} \land \text{delicious}(\text{that-ramen-restaurant})(t)(w) = d] \ni \lambda t \exists d [d > !!S \text{TAND} \land \text{delicious}(\text{that-ramen-restaurant})(t)(w) = d]
\]

\[
\lambda t \lambda w \exists d [d > !!S \text{TAND} \land \text{delicious}(\text{that-ramen-restaurant})(t)(w) = d]
\]

\[
\lambda t \lambda w \exists d [d > !!S \text{TAND} \land \text{delicious}(\text{that-ramen-restaurant})(t)(w) = d]
\]

\[
\lambda x \lambda t \lambda w \exists d [d > !!S \text{TAND} \land \text{delicious}(x)(t)(w) = d] \ni \lambda p \langle s, t \rangle \forall w' \text{ compatible with the evidence in } w_0: \\
p(w') = 1 \text{ for } j_i
\]

7.2.4 *The interpretation of yoppodo in an embedded context*

The interesting feature of \textit{yoppodo} is that the relationship with an evidential marker is deeply related to the issue of projectability. That is, whether \textit{yoppodo}’s CI meaning can project out of a complement of an attitude predicate depends on the position of the evidential modal. If \textit{yoppodo} is embedded under an attitude predicate and there is an evidential modal in the embedded clause, then \textit{yoppodo} is always subject-oriented:

(24) (Context: Taro saw a lot of people waiting in front of the ramen restaurant and thought that this situation was unusual.)
Taro-wa [ano ramen-ya-wa yoppodo oishii-nichigainai]-to
Taro-TOP that ramen-restaurant-TOP yoppodo delicious-must-that
omo-tteiru.
‘Taro thinks that the ramen restaurant must be yoppodo delicious.’ (Only a
subject-oriented reading is available.)

The illustration in (25) shows the basic structure of (24):

(25) The structure of the embedded yoppodo (subject-oriented)

However, if yoppodo is embedded under an attitude predicate and there is an eviden-
tial modal (a concord element) in the main clause, then yoppodo is always speaker-
oriented:

(26) (Context: The speaker observes that Taro goes to the ramen restaurant KIKUYA
every day.)
Taro-wa [ano ramen-ya-wa yoppodo oishii]-to
Taro-TOP that ramen-restaurant-TOP YOPPDO delicious-must
omo-tteiru-nichigainai.
think-TEIRU-must
‘Taro must think that that ramen restaurant is yoppodo delicious.’ (Only a
speaker-oriented reading is available.)
The illustration in (27) shows the basic structure of (26):

(27) The structure of the embedded *yoppodo* (= speaker-oriented)

```
  DP
   /\                                                 /\
  Taro-wa "Taro-TOP"            nichicaginai 'must'
     /\                                             /\
    DP                                           DegP
       |                                               |
      Adj oishii 'delicious'
     /\                                           /\
    Deg yoppodo                                      omo-tteiru 'think-TEIRU'
      |                                               |
      DP                                      anoraamenya-wa 'that ramen restaurant-TOP'
```

Note that if the modal in the main clause is not an inferential evidential marker, the sentence becomes ill-formed:

(28) (Context: The speaker notices that Taro goes to the ramen restaurant KIKUYA every day.)

*Taro-wa [ano ramen-ya-wa *yoppodo oishii*-to
Taro-TOP that ramen-store-TOP YOPPDOO delicious-that
omo-tteiru-kamoshirenai.
think-TEIRU-may
'Taro may think that that ramen restaurant is *yoppodo* delicious.'

Things are radically different in the case of ordinary intensifiers like *totemo*. The presence or absence of an evidential modal in the main clause does not change the projection. In (29) and (30), *totemo* is anchored to the subject of the sentences:

(29) (Context: Taro sees a lot of people waiting in front of the ramen restaurant and thinks that this situation is unusual.)

*Taro-wa [ano ramen-ya-wa *totemo oishii-nichigainai*-to
Taro-TOP that ramen-store-TOP very delicious-must-that
omo-tteiru.
think-TEIRU
'Taro thinks that that ramen restaurant must be very delicious.' (*totemo* 'very' = subject-oriented)
The counter-expectational intensifier yoppodo

(30)  (Context: The speaker notices that Taro goes to the ramen restaurant KIKUYA every day.)
Taro-wa [ano ramen-ya-wa totemo oishii]-to
Taro-top that ramen-store-top very delicious-that
omo-teiru-nichigainai.
think-TEIRU-must
'Taro must think that that ramen restaurant is very delicious.' (totemo ‘very’ = subject-oriented)

The questions then are: why is it that there is no speaker-oriented reading in (24)? Why is it that there is no subject-oriented reading in (26)? I argue that this is because yoppodo lexically requires consistency in judge identity between yoppodo and the evidential modal. In (24), there cannot be a speaker-oriented reading because if such a reading is attempted, a conflict will arise in terms of the judge. In (26), since nichigainai ‘must’ is embedded under an attitude predicate, the person who evaluates the proposition (based on the evidence) has to be the subject (Taro). The CI component of yoppodo should adjust to the judge because it does not have modal force itself. On the other hand, (26) does not have a subject-oriented reading because nichigainai is located in the main clause. Since yoppodo does not have modal force, its judge needs to be the same as the judge of nichigainai.

7.2.5 Notes on the other uses of yoppodo

In this chapter, we have observed that in an adjectival environment yoppodo must co-occur with an evidential modal. An interesting point is that in a non-adjectival environment, this requirement disappears. For example, yoppodo can appear in comparative and conditional environments, where inferential evidential markers do not arise (see also Watanabe 1987):

(31) Comparative use
( Context: It is extremely hot in Tokyo. Since it is extremely hot, it is also impossible to walk outside.) (Comparison)
Okinawa-no hoo-ga (Tokyo-yori) yoppodo suzushii-desu.
Okinawa-GEN direction-NOM Tokyo-than YOPPODO cool-PERF.HON
At-issue: It is much cooler in Okinawa than in Tokyo. CI: I am making an abnormal ranking based on the extraordinary situation (i.e., it is extremely hot in Tokyo).

(32) Conditional use
( Context: The addressee does not study at all despite the fact that the final exam will be held next week.) (Conditional)
Yoppodo isyoukenmei benkyoo shi-na-kerenba siken-ni ukara-nai-yo.
YOPPODO hard study do-NEG-COND exam-to pass-NEG-YO
At-issue: You will not be able to pass the exam unless you study very hard. CI: I am positing an unexpectedly high degree given the unusual situation.
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In (31), the speaker is indirectly conveying that the given utterance situation is abnormal by conveying that Okinawa is much cooler than Tokyo. In (32), the speaker is positing that an unexpectedly high degree of effort is necessary in order for the addressee to pass the exam given the current unusual situation (i.e., the addressee has not studied at all).

Yoppodo also has a volitional use. In this use yoppodo co-occurs with a volitional modal expression and conveys a counterfactual meaning similar to ‘almost’:

(33) Volitive use
(Context: The speaker’s boss is always rude to me.)
Yoppodo i-tte yar-oo-ka-to omo-tta.
YOPPDOO say-TE give-volitive-that think-PAST
At-issue: I had a desire to say a bad word.
CI: I had an extraordinarily high desire to say a bad word (to the boss), but I did not say a bad word.

In (33), yoppodo co-occurs with a volitive modal, emphasizing the speaker’s strong willingness to exhibit negative behavior, but at the same time it conveys that the speaker did not perform the action. In these examples, yoppodo does not co-occur with an evidential modal. In fact, in these environments, evidential modality does not naturally co-occur with an evidential modal.

11 Note that as an example of conditional use of yoppodo, there is an expression yoppodo-no koto ‘yoppodo-GEN thing.’ This expression is always used in the context of ‘unless’:

(i) Yoppodo-no koto-ga nai-kagiri, watashi-wa gakkou-o yasuma-nai.
YOPPDOO-GEN thing-nom NEG-unless 1-TOP school-ACC absent-NEG
‘I will not be absent from school unless something unexpected happens.’

Here there is no speaker attitude toward an utterance situation. This use of yoppodo is slightly different from other uses of yoppodo, although it also denotes an unexpectedly high degree.

As the following sentence shows, if we insert nihigainai into the comparative sentence (31), the sentence sounds odd:

(ii) Yoppodo isyoukenmei benkyoo shi-teiru-nichigainai.
YOPPDOO hard study do-NEG-COND pass-NEG-YO
‘You will not be able to pass the exam unless you study very hard.’

12 Aregardvolitive use, evidential modality cannot be used because volitive modality and evidential modality are semantically incompatible.
The Japanese scale-reversal adverb kaette

Let us now turn our attention to the meaning and use of the scale-reversal adverb kaette. Unlike yoppodo, kaette does not convey a meaning of unexpectedness via a "greater than relationship" (i.e., above expectation). Rather, the adverb kaette conveys a meaning of unexpectedness by signaling that the opposite of the at-issue situation is normally true. Let us consider the following sentences:

(34) a. Kono basyo-wa kaette kiken-da.
   This place TOP kaette dangerous-pred
   ‘This place is dangerous.’
   (Not-at-issue: In a normal situation, this place is considered safe.)

b. Konbini-no kooi-hii-no-hoo-ga resutoran-no koohii-yori-mo kaette oishii.
   Convenience store GEN coffee GEN-direction NOM restaurant GEN coffee than MO kaette tasty
   ‘A convenience store’s coffee is tastier than a restaurant’s coffee.’
   (Not-at-issue: A restaurant’s coffee is normally tastier than a convenience store’s coffee.)

In (34a), the speaker conveys that in a normal situation the place is safe. In (34b), the speaker indicates that a restaurant’s coffee is normally tastier than a convenience store’s coffee. Unlike the evidential yoppodo, there is no modal-matching requirement.

Intuitively, kaette is similar to the counter-expectational but in that it reverses general expectations. We can roughly paraphrase (35a) as in (35b):

   This place TOP kaette dangerous-pred
   ‘This place is dangerous.’
   (Not-at-issue: This place is usually considered safe.)

b. Generally this place is considered to be safe, but in this situation it is dangerous.

However, it is important to note that unlike but, kaette is a scalar modifier, not a clause-linker. As example (36) shows, if kaette is attached to a nongradable predicate, the resulting sentence becomes ill-formed:

(36) *Taro-wa kaette gakusei-da.
   Taro TOP kaette student pred
   ‘Taro is kaette a student.’

In this section we will investigate the meaning and interpretive mechanism of kaette.

7.3 Scale reversal and counter-expectation

Now let us first consider the scale-reversal property of kaette. As we observed in section 7.3, the main function of kaette is to convey that the at-issue situation is abnormal by indicating that the opposite situation is usually true. Namely, the sentence with kaette is true only in a special situation. As can be seen in example (37),
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if the at-issue proposition is something that is true according to common sense, the sentence sounds odd:

(37) ?? Resutoran-no koohii-no-hoo-ga konbini-no
Restaurant-gen coffee-gen-direction-nom convenience store-gen
koohii-yori-mo kaette oishii.
coffee-than-mo KAETTE tasty
'A restaurant's coffee is tastier than a convenience store's coffee.'
(Not-at-issue: A convenience store's coffee is normally tastier than a restaurant's coffee.)

Furthermore, the reversal function of kaette correctly explains why example (38) sounds odd:

(38) (Context: A building is 100 m tall. The Tokyo Tower is 333 m tall.)
?? Kono tatemono-no hoo-ga Tokyo tawaa-yori kaette takai.
This building-gen direction-nom Tokyo tower-than REVERSAL tall
At-issue: This building is taller than the Tokyo Tower. CI: Generally, the Tokyo Tower is taller than this building.

The above sentence is odd because the relative relationship between kono tatemono 'this building' and the Tokyo Tower cannot change depending on context.

Note, however, that if we insert the verb mie-ru ‘appear,’ the sentence becomes perfectly natural:

(39) (Context: A building is 100 m tall. The Tokyo Tower is 333 m tall.)
Kono tatemono-no hoo-ga Tokyo tawaa-yori kaette takaku-mie-ru.
This building-gen direction-nom Tokyo tower-than REVERSAL tall-look-pres
At-issue: This building looks taller than the Tokyo Tower. CI: Generally, the Tokyo Tower looks taller than this building.

The sentence in (39) is natural because the proposition is evaluated from a particular perspective, and it is not describing the situation objectively.

7.3.2 The semantic status of kaette: Presupposition or a CI?
Let us investigate the status of the meaning triggered by kaette. The question is whether the meaning triggered by kaette is a CI or a presupposition.

(40) Kono basyo-wa kaette kiken-da.
This place-top KAETTE dangerous-pred
'This place is dangerous.'
(Not-at-issue: In a normal situation, this place is considered safe.)

First, it is safe to assume that the meaning of kaette is not at-issue. First, a simple denial iya chigau-yo "No, that's false" can only target the at-issue part.
(41) A: Toho-no hoo-ga basu-yori-mo kaette hayai.
   Walking-gen direction-nom bus-than-mo KAETTE fast.
   At-issue: Walking is faster than the bus.
   Not-at-issue: In a normal situation, the bus is faster than walking.

B: Iyaa, sore-wa uso-da-to omu.
   Well that-top false-pred-that think
   ‘Well, I think that’s false.’

Furthermore, the fact that the meaning of kaette cannot be scoped over by a question or conditional suggests that it is not at-issue. 13

(42) Koko-wa kaette kiken-desu-ka-nee. (Confirmation-seeking)
   Here-top KAETTE dangerous-pred-q-nee
   ‘Is it true that this place is safe? (I think that this place is actually dangerous.)’
   (CI: I think normally this place is safe.)

(43) Koko-ga kaette kiken-to-iu-koto-de ar-eba
   This place-nom KAETTE dangerous-that say-thing-pred exist-cond
   idoo-somasyoo.
   move-let's
   ‘Let's move if it is true that this place is kaette dangerous.’

The question is whether kaette should be analyzed as a CI or as a presupposition. At a first glance, the meaning of kaette seems like a presupposition rather than a CI. As we discussed in Chapter 2, a presupposition is an inference or proposition whose truth is taken for granted in the utterance of a sentence. Since kaette signals that ‘generally the opposite is true,” the information is general knowledge and seems to be part of a common ground. 14

However, in this book I will assume that kaette is a special kind of CI trigger for the following reasons.

First, kaette is highly attitudinal, similar to other CIs/expressives. The main function of using kaette is to overturn one's own assumption/common sense and signal

---

13 Notice also that kaette cannot naturally arise with negation.

(i) # Koko-wa kaette kiken-toiu wakedewanai.
   This place-top KAETTE dangerous-it is not the case that
   ‘It is not the case that this place is dangerous.’
   Generally, this place is considered to be safe.

This is presumably because if there is an external negation, the effect of reversing common sense disappears and using kaette becomes meaningless.

14 More formally, based on the idea of Karttunen (1974), we define presupposition as follows:

(i) p is a presupposition of S iff S can be felicitously uttered only in contexts that entail p.

Here, the conversational context includes a common ground, the set of propositions believed and accepted by the conversation participants (Stalnaker 1978). It is safe to say that the meaning triggered by kaette is not a semantic presupposition, because it is possible to determine the truth value of the given proposition even if the meaning triggered by kaette is false. Namely, there is no logical dependency between the at-issue meaning and the meaning triggered by kaette.
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that the at-issue proposition (which is usually not true) is true in an abnormal situation. The simple sentence is speaker-oriented in a similar manner to CIs. It expresses a speaker’s attitude toward an utterance situation (i.e., the utterance situation is abnormal). Second, the presuppositionhood of kaette comes from its lexical meaning. Kaette conveys that “usually the opposite is true” and the meaning of “usually” makes kaette presuppositional. Notice that typical presupposition triggers like stop and know do not have the meaning of “usually.” The final supporting evidence for the idea that kaette is a CI is its projectivity. Unlike typical presuppositions, the meaning of kaette can project out of the complement of an attitude predicate. For example, in the following sentence kaette can be both speaker-oriented and subject-oriented:

(44) (With kamoshirenai ‘may’)
Taro-wa [konbini-no kooiii-no-hoo-ga
TARO-TOP convenience store-GEN coffee-GEN-direction-NOM
resutoran-no kooiii-yori-mo kaette oishii]-to
restaurant-GEN coffee-than-TO KAETTE tasty-that
omo-teiru-kamoshirenai.
think-TEIRU-may
At-issue: Taro may think that a convenience store’s coffee is tastier than a restaurant’s coffee.
Reading 1 (Subject-oriented reading, secondary at-issue): For some worlds w′′ compatible with the speaker’s knowledge, for all worlds w′ compatible with Taro’s beliefs in w′, a restaurant’s coffee is [normally] tastier than a convenience store’s coffee for Taro in w′.
Reading 2 (Speaker-oriented reading, CI): A restaurant’s coffee is [normally] tastier than a convenience store’s coffee for me.)

The fact that there is a speaker-oriented reading suggests that kaette’s projective behavior is different from typical presuppositions, which cannot project out of the complement of an attitude predicate (see Chapters 2 and 8). Note that if there is no modal in the main clause, kaette cannot be speaker-oriented. (We will discuss this point in detail in Chapter 8.)

Based on the above argument, in this book I will assume that kaette is a special kind of CI that lexically has a generic meaning.

7.3.3 Compositional analysis of kaette

Let us now analyze the meaning of kaette in a more theoretical fashion. I assume that kaette in the simple adjectival sentence like (45) has a meaning like (46):

(45) Kono basyo-wa kaette kiken-da.
This place-TOP KAETTE dangerous-PRED
‘This place is dangerous.’
(Not-at-issue: In a normal situation, this place is considered safe.)

(46) \[[\text{kaette}_\text{pos}]\] = 
\[\lambda P_{\text{pos}}, \lambda x, \lambda t, \lambda w : P_{\text{pos}}(x)(t)(w) \land \lambda P_{\text{pos}}, \lambda x, \lambda t, \lambda w. \text{normal}(\neg P_{\text{pos}}(x)(t)(w))\] for \(j\)
(where \(j\) is consistent with the judge in the at-issue dimension)
In this analysis, kaette is a special kind of mixed content. The at-issue part of kaette behaves as an identity function. It does not have a concrete lexical meaning. In the CI component, it implies that it is normal that $P$ is not true of $x$ at $t$ in $w$ for a judge. I assume that since kaette does not modify a degree, it does not directly modify a gradable predicate. Rather, it combines with the constituent that consists of a positive morpheme $pos$ and a gradable predicate, $pos$ (adjective). The semantic function of $pos$ is to relate the degree argument of the adjective to an appropriate standard of comparison (Cresswell 1977; von Stechow 1984; Kennedy and McNally 2005, among others):

\[(47) \quad [(pos)] = \lambda g \lambda x \lambda t \lambda w \exists d [d \geq \text{Stand} \land g(d)(x)(t)(w)]\]

With this approach, the meaning of sentence (45) can be analyzed as follows:

\[(48) \quad \text{The logical structure of (45)}\]

Now consider the meaning of kaette in a comparative environment. In the case of a comparative sentence with kaette, the $pos$ morpheme is unnecessary because there is no norm-related meaning in comparison. I assume that kaette is polymorphic and has a slightly different denotation in the comparative environment:
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\[ ([kaette_{\text{comp}}]) = \lambda P_{\text{comp}} \lambda g \lambda x \lambda t \lambda w. P(g)(x)(t)(w) \] \[ \lambda \lambda P_{\text{comp}} \lambda g \lambda x \lambda t \lambda w. \text{normal}(\neg P(g)(x)(t)(w)) \] for \( j \)

Example (51) shows the logical structure of (50):

(50) Konbini-no kohii-no-hoo ga resutoran-no kohii-yori-mo kaette oishii.

At-issue: A convenience store’s coffee is tastier than a restaurant’s coffee.
Not-at-issue: A restaurant’s coffee is normally tastier than a convenience store’s coffee.

(51) The logical structure of the comparative sentence with kaette

\[ \text{max}(\text{tasty}(\text{the convenience store’s coffee})(t)(w)) > \text{max}(\text{tasty}(\text{the restaurant’s coffee})(t)(w)) \]

\[ \lambda w. \text{max}(\text{tasty}(\text{the convenience store’s coffee})(t)(w)) > w \]

\[ \lambda w. \text{normal}(\neg \text{max}(\text{tasty}(\text{the convenience store’s coffee})(t)(w))) \]

\[ \lambda w. \text{max}(\text{tasty}(\text{the restaurant’s coffee})(t)(w)) > \text{max}(\text{tasty}(\text{the restaurant’s coffee})(t)(w))) \] for \( j \)

DP

konbini-no kohii-no-hoo ga 'the convenience store’s coffee'

\[ \lambda g \lambda x \lambda t \lambda w. \text{max}(\text{tasty}(\text{the convenience store’s coffee})(t)(w)) > \text{max}(\text{tasty}(\text{the restaurant’s coffee})(t)(w))) \] for \( j \)

PP

Adv

kaette

restoran-no kohii-yori 'than the restaurant’s coffee'

\[ \lambda g \lambda x \lambda t \lambda w. \text{max}(\text{tasty}(\text{the restaurant’s coffee})(t)(w)) > \text{max}(\text{tasty}(\text{the restaurant’s coffee})(t)(w))) \] for \( j \)
7.4 The variety of counter-expectational expressions

We have focused on the meaning and use of **yoppodo** and **kaette**. This chapter compares **yoppodo** and **kaette** to other kinds of counter-expectational expressions. In the literature, it is often claimed that wh-exclamatives have a counter-expectational meaning:

(52) (Wh-exclamatives)
   a. What delicious desserts John bakes!
   b. How TALL Michael is!

   Rett (2011) claims that wh-exclamatives posit a scalar expectation. Namely, they express that the speaker expected a gradable property to be instantiated only up to a particular degree, and the actual value exceeded that expectation (Rett 2011: 422). (See also Zanuttini and Portner 2003; Castroviejo Miró 2010; Rett 2008, 2011; Gutzmann 2015 for the meaning of wh-exclamatives.) Since wh-exclamatives refer to the degree associated with a gradable predicate and express a meaning of “above expectation,” they have similar semantic characteristics to **yoppodo**. Note that in English there is also a sentence exclamation, which does not involve a wh-question:

(53) (Sentence exclamation)
   Wow, John bakes delicious desserts!

   Rett (2011) claims that sentence exclamations express a non-scalar expectation: that the speaker expected \( p \), but ‘not \( p \)’. In (53), the intensity is not directly involved with the degree of deliciousness. The connective has also been considered to have a property of counter-expectation:

(54)
   a. John is tall, but he is no good at basketball. (Lakoff 1971: 133)
   b. Shaq is huge, but he is agile. (Bach 1999b)

   As Toosarvandani (2014) observes, in the counter-expectational use of **but**, there is an implication/expectation that if the first conjunct holds, the second conjunct does not hold. The counter-expectational **but** then explicitly denies these expectations by the second conjunct itself. For example, in (54a) if John is tall, we might expect him to be good at basketball, but the second conjunct denies it. This characteristic of “denial” of the expectation is also seen in the modifier **kaette**:

(55) Toho-no-hoo-ga basu-yori-mo kaette hayai.
   Walking-gen-direction-nom bus-than-mo **KAETTE** fast
   At-issue: Walking is faster than the bus.
   CI: Usually, the bus is faster than walking.

   However, it is important to note that **kaette** is a scalar modifier, while the counter-expectational **but** is a non-scalar connective. Both the sentence with **kaette** and the sentence with **but** can be regarded as examples of “one sentence, two propositions” (in the sense of Bach 1999b); while **kaette** only has one proposition in the at-issue domain, **but** has two propositions within the at-issue domain.

   Based on this analysis, I would like to propose the following variation in counter-expectational expressions:
(56) Typology of counter-expectational expressions

7.5 Chapter summary and discussions

In this chapter we have investigated the meaning and use of counter-expectational scalar modifiers with special reference to the Japanese scalar modifiers *yoppodo* and *kaette*. We showed that *yoppodo* and *kaette* are both a kind of scalar modifier, each of which has complex semantic/pragmatic properties.

Regarding *yoppodo*, I argue that it is a high-degree-denoting intensifier, but is not a pure at-issue intensifier like *very*. In an adjectival environment, it always co-occurs with an evidential modal, and based on the evidence, it conventionally implicates that the degree of a target inferred via evidence is above a judge’s expectation. This results in the explanation of an abnormal situation. As for *kaette*, we showed that it utilizes the scale of an at-issue gradable predicate and conventionally implicates that the opposite situation is usually true. This pragmatically infers that the at-issue proposition is true only in an abnormal context. With regard to the meaning triggered by *kaette*, we discussed in detail whether it should be analyzed as a CI or a presupposition, and argued that it is a special kind of CI in that it lexically has a meaning “usually p,” which is naturally construed as common sense.

We then considered the typology of counter-expectational expressions and suggested that there are two types of scale-based counter-expectational expressions: a relative type, expressing counter-expectational meaning via a relative comparison with a speaker’s expected degree, and a scale-reversal type, expressing counter-expectational meaning by flipping the directionality of scale. I hope that this chapter has shown that the adverbs *yoppodo* and *kaette* are another case of lower-level pragmatic scalar modifiers, whose pragmatic (counter-expectational) scalar meanings are derived by utilizing the scale of at-issue scalar modifiers.
8

Interpretations of embedded pragmatic scalar modifiers

8.1 Introduction

In the previous chapters we discussed various kinds of pragmatic scalar modifiers including noteworthy comparative modifiers (Chapter 4) as in (1), minimizers (Chapter 5) as in (2), intensifiers (Chapter 6) as in (3) and (4), and counter-exceptional scalar adverbs (Chapter 7) as in (5) and (6). We also clarified that the meanings of pragmatic scalar modifiers are derived from conventional implicature (CI) and are logically and compositionally different from semantic scalar modifiers:

(1) Nani-yori-mo tenisu-wa tanoshii.
   What-than-MO tennis-TOP fun
   a. At-issue: Tennis is more fun than anything.
   b. At-issue: Tennis is fun. CI: The utterance “tennis is fun” is preferable to any alternative utterance (noteworthy reading).

(2) Chotto jikan-ga nai-desu.
   A little time-NOM NEG.EXIST-PERF.HON
   At-issue: I don’t have time.
   CI: I am weakening the degree of imposition of my assertion on the hearer.

(3) Motto hayaku hashi-re!
   MOTTO fast run-IMP
   a. Run even faster! (Degree reading)
   b. Run fast! (CI: the expected running speed is much higher than the current speed.) (Negative reading)

(4) Tetsuya-o suru-nado totemo {deki-nai/*dekiru}.
   Staying up all night-ACC SO-NADO TOTEMO can-NEG/can
   ‘Staying up all night is impossible.’ (CI: I am emphasizing the impossibility.)

(5) (Context: The speaker noticed that Hanako is sleeping during class. The speaker knows that Hanako is a very serious student and she never sleeps during class.)
   Hanako-wa yoppodo tsukare-teiru-noda-possibly
   Hanako-TOP YOPPDOO tire-TEIRU-NODA-possibly
   At-issue: Hanako must be very tired.
   CI: The degree I inferred via extraordinary evidence is above my expectation.
Embedded pragmatic scalar modifiers

(6) (Context: the speaker has lost his way in a subway station in Tokyo. More than five lines intersect at the station.)

Tokyo-wa kaette fuben-da.
Tokyo-top reversal inconvenient-pred.

At-issue semantics: Tokyo is inconvenient.
CI: Generally speaking, Tokyo is considered to be convenient.

The important characteristics of these pragmatic scalar modifiers were that their meanings are logically independent of any operators and they are speaker-oriented. Furthermore, they predicate something of the utterance situation (i.e., nondisplaceability in the sense of Potts 2007a). In this chapter, we will consider interpretations of pragmatic scalar modifiers in the embedded environment, i.e., the environment where scalar modifiers are embedded in the complement of an attitude predicate, as shown in (7):!

(7) SUBJ believes [. . . Scalar modifier PRAG . . . ].

How are pragmatic scalar modifiers interpreted in the embedded environment of (7)? In the literature of projective content, it has been observed that expressives and appositives in embedded environments like (7) can have either a speaker-oriented interpretation or a subject-oriented interpretation depending on the context (e.g., Amaral et al. 2007; Harris and Potts 2009). Do the pragmatic scalar modifiers behave like typical expressives? If so, how can we explain this fact in a theoretical/compositional way?

Note that here, the "parenthetical use" of belief predicates (Urmson 1952; Hooper 1975; Simons 2007; Hacquard 2014) is not being considered. In this use, the content of the embedded clause, not the main clause, constitutes the main point of the utterance.

(i) A: Why isn’t Louise coming to our meetings these days?
B: Henry believes/I believe that she’s left town. (Simons 2007)

Note that in Japanese, the parenthetical belief predicate and the regular belief predicate are lexically distinguished. H. Sawada (1993) argues that the verb omou ‘think’ in the first person and present tense behaves as a parenthetical expression (similarly to the English I think/I guess), while omo-tteiru ‘think-TEIRU’ behaves as a regular belief predicate based on the following examples:

(ii) A: Watashi-wa Tom-ga sinhanin-da-to omou.
I-top Tom-NOM real criminal-pred-that think
‘I think Tom is a real criminal.’
B: Hontou-desu-ka?
Real-perf.hon-q
‘Really?’

I-top now-even Tom-NOM real criminal-pred-that think-TEIRU
‘I still think that Tom is a real criminal.’
B: Hontou-desu-ka?
Real-perf.hon-q
‘Really?’ (H. Sawada 1993: 173)

According to H. Sawada (1993), the meaning of omou in (ii) is not within the semantic scope of B’s question, while the meaning of omo-tteiru is within the semantic scope of B’s utterance. Because the purpose of this chapter is to investigate the interpretation of embedded pragmatic scalar modifiers, it will only focus on the nonparenthetical use of a belief predicate.

1 Note that here, the "parenthetical use" of belief predicates (Urmson 1952; Hooper 1975; Simons 2007; Hacquard 2014) is not being considered. In this use, the content of the embedded clause, not the main clause, constitutes the main point of the utterance.
In this chapter, we argue two major points regarding the interpretation of embedded pragmatic scalar modifiers and CIs. The first major point is concerned with the subject-oriented interpretation of embedded CIs and pragmatic scalar modifiers. We argue that when they are embedded in the complement of an attitude predicate and they have subject orientation, their meanings become secondary at-issue (they are not CIs). Theoretically, we propose that an embedded clause C, which consists of an at-issue meaning of type $t^a$ and a CI meaning of type $t^c$, can shift into an at-issue product type $\langle t^a \times t^c \rangle$ (where the first $t^a$ is a primary entailment and the second $t^c$ is a secondary at-issue entailment) if C is embedded in an attitude predicate and the judge of C is the attitude holder of the predicate. The crucial point behind this analysis is that the shift from the CI to the secondary at-issue meaning applies at the root level of the embedded clause. We show that before the embedded pragmatic modifier is combined with an attitude predicate, the meaning of the embedded pragmatic modifier or projective content behaves as a pure CI. We show that this semantic shift is general enough to apply to other CI expressions.

The second major point is concerned with the variety of projections. Unlike higher-level pragmatic scalar modifiers and other typical expressives, lower-level pragmatic scalar modifiers can project out of the complement of an attitude predicate (i.e., can have a speaker orientation) only when there is an appropriate speaker-oriented modal in the main clause.

\begin{enumerate}
\item Projection of not-at-issue meaning via modal support

Lower-level pragmatic scalar modifiers can project out of the complement of an attitude predicate (as a CI) only when there is an appropriate speaker-oriented modal in the main clause.

I will explain the phenomenon of the projection of a not-at-issue meaning via modal support by assuming that a lower-level pragmatic scalar modifier requires that there is consistency between an at-issue level and the CI level in terms of the judge. I will also suggest that this requirement for the consistency of the judge comes from the recycling property of lower-level pragmatic scalar modifiers. I also show that there are variations among lower-level pragmatic scalar modifiers regarding what kind of modal can support their projections, and that these variations can be naturally explained by the lexical meaning.

The theoretical implication of this chapter is that the interpretation of embedded pragmatic scalar modifiers involves semantic and pragmatic mechanisms, and it is not only a matter of indexicality. In this chapter, we also show that lower-level pragmatic scalar modifiers belong to a new class of projective content: dependent projective content.

\section{Typical CIs in an embedded environment}

\subsection{Speaker orientation and non-speaker orientation}

Before we start discussing the speaker/non-speaker orientation of pragmatic scalar modifiers, it is necessary to define what speaker orientation is. Following Harris and Potts (2009), we define the notion of speaker orientation as follows:
Definition of speaker-orientedness: A clause $C$ with denotation $p$ is speaker-oriented in utterance $U$ if, and only if, in uttering $U$, the speaker expresses, with $C$, a commitment to $p$. (Harris and Potts 2009: 524)

In an ordinary sentence like (10), it will be the speaker who commits to the proposition.

As Harris and Potts note, if we utter the clause in (10) with the intention of sincerely asserting it, then we express, in virtue of this utterance, our public commitment to the proposition that Ohio is the birthplace of aviation.2

Recently, important theories and classifications have been proposed for projective content, which include presuppositions and CI. Particularly well-investigated phenomena are expressives and appositives, such as those in (11):

(11) a. That bastard Kresge is famous. (Potts 2007a: 168) (CI: Kresge is bad in the speaker’s opinion.)
   b. Lance, a cyclist, is training. (CI: Lance is a cyclist.) (Potts 2005: 97)

Potts (2005) argues that meanings of expressives and appositives are CIs (Grice 1975) and that they are logically and dimensionally independent of “what is said” (see Chapters 1 and 3). Potts (2005) also contends that CIs are different from presuppositions in terms of projection. In contrast to typical presuppositions, CIs can project even if they are embedded in the complement of an attitude predicate such as believe and verbs of saying (which function as a presupposition plug, in terms of Karttunen 1973) (see also Potts 2007a):

(12) a. Sue believes that that bastard Kresge should be fired. (#I think he’s a good guy.) (Potts 2007a: 170)
   b. Sheila believes that the agency interviewed Chuck, a confirmed psychopath, just after his release from prison. (Potts 2005: 115)

Potts (2005) claims that appositives and expressives are invariably speaker-oriented, regardless of their syntactic environment. This characteristic is clearly different from the projective behavior of typical presuppositions. For example, the possessive expression in (13a) creates the presupposition “Sam has a kangaroo,” but if (13a) is embedded under the attitude predicate believe, the flow of presupposition is plugged/stopped, as shown in (13b). Under the theory of presupposition, attitude predicates (such as believe and verbs of saying) are considered to be plugs, which block off all presuppositions from the lower clauses (Karttunen 1973).

(13) a. Sam’s kangaroo is sick.
   (Presuppose: Sam has a kangaroo.)

2 Harris and Potts (2009) claim that speaker orientation is a relation between an individual and a linguistic structure, but that the relationship depends not only on semantic denotations but also on utterances and their complex pragmatics.
Typical CIs in an embedded environment

b. John believes that Sam’s kangaroo is sick. (Does not presuppose: Sam has a kangaroo.)

The fact that the presupposition in (13a) is not projected in (13b) is corroborated by the following example:  

(14) Sue believes that Sam’s kangaroo is sick, but that’s ridiculous—Sam doesn’t own a kangaroo. (Potts 2007b)

However, recent studies have shown that contrary to Potts’ (2005) initial claim, CI expressions such as appositives and expressives can actually have non-speaker orientation (e.g., Wang et al. 2005; Karttunen and Zaenen 2005; Sauerland 2007; Amaral et al. 2007; Potts 2007a; Harris and Potts 2009). For example, Amaral et al. (2007) show that the following sentences have a subject-anchored interpretation:

(15) a. (Context: Joan is crazy. She’s hallucinating that some geniuses in Silicon Valley have invented a new brain chip that’s been installed in her left temporal lobe and permits her to speak any number of languages she’s never studied): Joan believes that her chip, which she had installed last month, has a twelve-year guarantee. (Amaral et al. 2007: 735–6)

b. (Context: We know that Bob loves to do yard work and is very proud of his lawn, but also that he has a son Monty who hates to do yard chores. So Bob could say (perhaps in response to his partner’s suggestion that Monty be asked to mow the lawn while he is away on business)): Well, in fact Monty said to me this very morning that he hates to mow the friggin’ lawn. (Amaral et al. 2007: 736)

Harris and Potts (2009) presented corpus and experimental evidence to indicate that appositives and expressives are generally speaker-oriented, but certain discourse conditions can counteract this preference. A non-speaker orientation becomes the dominant interpretation if certain discourse conditions are met. Harris and Potts (2009) claimed that expressives and appositives are inherently underspecified for their orientation. The authors suggested that, semantically, there is a free variable that determines the epistemic anchor or judge. Because there is no general morphological convention for specifying this information directly, it must always be left to the context.

In this view, expressives, such as damn and friggin’, have a judge variable $j$ as in (16) and the value of $j$ is determined by the context (we modified the meaning of damn slightly as we discussed in Chapter 3 and add a judge variable $j$ as follows):

\[
[[\text{damn}]] : (\langle t^a, t^b \rangle, t^c) = \lambda X. \text{bad}(\forall X) \text{ for } j
\]

For example, in principle, the following sentence can be considered to have two kinds of CIs:

3 Karttunen (1973) claims that plugs block off the projection of presuppositions. See Chapter 2.
(17) Sue believes that that bastard Kresge should be fired.
   At-issue: Sue believes that Kresge should be fired at \( t_0 \) and in \( w_0 \): \( t^a \)
   CI1 (subject-oriented): Kresge is bad for Sue.
   CI2 (speaker-oriented): Kresge is bad for me.

Note that expressives, such as *damn* and *bastard*, do not have a variable for the tense and the world. We assume that the expressives are anchored to a current time and a current world by default. This idea is related to Potts’ (2007) idea of nondisplaceability. Potts (2007a) claims that expressives predicate something of the utterance situation (i.e., a current time and a current world). As we will see, however, embedded expressives are not always anchored to the current time and world.

8.2.2 Shifting from a CI to a secondary at-issue entailment
   in a subject-oriented reading

Although the indexicality approach of the interpretation of embedded expressives discussed in section 8.2.1 can capture the difference between the speaker orientation and the non-speaker orientation, this approach does not seem to explain that embedded expressives that have a non-speaker orientation have an “at-issue” property. Non-speaker and subject-oriented expressives must be within the semantic scope of the operators in the main clause. For example, in the past tense example (18), the expressive *friggin’*, which is subject-oriented, is clearly within the semantic scope of the past tense:

(18) (Subject-oriented reading, *friggin’* = Monty’s perspective) Monty said to me two years ago that he hated to mow the friggin’ lawn, but now, he doesn’t mind.  
   (Subject-oriented reading)

In the subject-oriented reading, *friggin’* has to be within the scope of the matrix tense. In the sequence-of-tense reading, which is the most salient, the time of Monty’s speech corresponds to the time of Monty’s hate, that is, the time when Monty had a negative attitude toward the lawn, as in (19):

(19) Monty said to me two years ago that he hated to mow the friggin’ lawn, but now, he doesn’t mind. (embedded clause = past tense)

The important point, however, is that *friggin’* is an expressive; it is related to Monty’s attitude in the past. It is not the primary meaning. How can we analyze the meaning of the subject-oriented embedded *friggin’*? We propose that in the subject-oriented reading, the embedded expressive shifts from a CI to a secondary at-issue entailment:

(20) Shifting from a CI to a secondary at-issue entailment: A clause \( S \), which consists of an at-issue meaning of type \( t^a \) and a CI meaning of type \( t^c \) (or \( t^s \)), can shift into an at-issue product type \( (t^a \times t^c) \) if, and only if, \( S \) is embedded in an attitude predicate or a verb of saying and the judge of the CI in \( S \) is the attitude holder of the predicate (where the first \( t^a \) is the primary at-issue entailment and the second \( t^c \) is the secondary at-issue entailment.)
The secondary at-issue meaning is semantic (part of “what is said”), but it is not the main at-issue meaning. (Potts 2005 used this notion for an analysis of but and even.) The crucial point of the shift is that it applies at the root level of the embedded clause. This is the point where the embedded clause is combined with an attitude predicate. Before the semantic shift is applied at the root of the embedded clause, the expressive behaves as a CI triggering expression, and its meaning is independent of the at-issue elements (i.e., it cannot be scoped over by any logical operators). This point becomes crucial when we discuss the example in which the embedded clause contains a logical operator. More technically, the semantic shift from a CI to a secondary at-issue entailment applies after parsetree interpretation unifies the at-issue meaning and the CI meaning of the embedded clause (see Chapter 3 for the idea of parsetree interpretation):


Let $T$ be a semantic parsetree with the at-issue term $\alpha : \sigma^a$ on its root node, and distinct terms $\beta_1 : t^{(c,a)}, \ldots, \beta_n : t^{(c,a)}$ on nodes in it. Then, the interpretation of $T$ is the $\langle [[[\alpha : \sigma^a]], [[\beta_1 : t^{(c,a)}]], \ldots, [[\beta_n : t^{(c,a)}]] \rangle$ (Based on McCready 2010: 32)

The crucial point is that this semantic shift occurs at the embedded root level after the parsetree interpretation. We now consider how to interpret a subject-oriented embedded expressive based on the following example:

(22) (Subject-oriented reading, friggin’ = Monty’s perspective)

Monty said to me two years ago that he hated to mow the friggin’ lawn, but now, he doesn’t mind. (Subject-oriented reading)

To analyze the interpretation of an embedded subject-oriented expressive, however, it is necessary first to clarify the interpretation of the embedded tense. Recall that in this book we adopt the referential theory of tense (Partee 1973, 1984; Heim 1994):

---

4 The proposed shift from a CI to a secondary at-issue entailment is similar to Portner’s (2007) semantic mechanism for the interpretation of embedded topics. Portner (2007) considers that a topic has an expressive meaning, and he claims that if it is embedded under the attitude predicate, it can be either speaker-oriented or subject-oriented:

(i) John said that, as for Maria, she is nice. (Portner 2007)

The topic phrase “as for Maria” in (i) can be interpreted with respect to either the main utterance (i.e., speaker orientation) or the reported act of saying (i.e., subject orientation). Portner (2007) claims that in the case of a subject-oriented reading, the content of the topic’s semantics will have to be related to the world of the reported speech act rather than that of the speech act of the utterance itself. Theoretically, he claims that this is done by the special use of the embedding verb say, which is sensitive to both dimensions of meaning (the at-issue dimension and the expressive dimension). That is, the verb say combines with a pair $(A, C)$ ($A =$ At-issue and $C =$ a CI), and states all of the worlds compatible with what the subject’s referent $s$ says in $w$ are in $A$. In addition, the verb say takes all of the expressive meanings in $C$ and relates them to the embedded context $(i, w)$. I think that my approach and Portner’s (2007) approach are compatible, but there are some differences as well. Unlike Portner’s approach, I am assuming that (i) there is a difference between primary at-issue meaning and secondary at-issue meaning, and (ii) the shift from a CI to a secondary at-issue entailment is a general constraint, and it is not done by a special attitude predicate (although the rule is related to the context of an attitude predicate).
Embedded pragmatic scalar modifiers

Kratzer 1998; Hacquard 2006 among many others) in which tenses are treated as pronouns, or variables, on par with individuals (see Chapter 6). In the referential theory of tense, tenses contribute temporal variables, and tenses give temporal orientations. In Kratzer’s (1998) system, the two main tenses are indexical pronouns (present and past):

\((23)\)  
\[\text{a. } [[[\text{pres}}]]^g_c \text{ only defined if } c \text{ provides an interval that includes } t_0 \text{ (the utterance time). If defined, } [[[\text{pres}}]]^g_c = t.\]
\[\text{b. } [[[\text{past}}]]^g_c \text{ only defined if } c \text{ provides an interval that precedes } t_0. \text{ If defined, then } [[[\text{past}}]]^g_c = t.\]

In terms of type, \textit{pres} and \textit{past} have type \(i\).

Things are quite different in the embedded tense. In English, there is the phenomenon of the sequence of tense, in which the lower past tense is interpreted as referring to a time that is the same time referred to by the higher past tense. For example, in (22) the time at which Monty hates to mow the lawn is the same as Monty’s utterance. This means that the embedded tense is not indexical as in (23). We assume, following Kratzer (1998), that English has indexical tenses and zero tenses. Zero tenses are lexically indexed variables that have no presuppositions and must be bound by a local antecedent (e.g., a pres or a past) and arise in the embedding context under attitude verbs:

\((24)\)  
\[[[\varnothing n]]^g_c = g(n)\]

As for the world, recall that we assume that an embedded world variable must be bound, either by a default binder (\(w_0\)) in a matrix context that maps to the actual world or by a binder provided by a modal, for example.

Based on this setup, we analyze the subject-oriented reading in (22). The illustration in (25) shows the logical structure of the embedded clause:

\(5\) There is also a more traditional view of tense in which the tense is treated as an operator. In this book, I use the referential theory because the referential theory makes the analysis of pragmatic scalar modifiers simpler. We do not have to assume that pragmatic scalar modifiers take a tense operator as their arguments.

\(6\) As we will see in the following sections, Japanese tense behaves differently from English tense regarding the embedded context.
(25) The interpretation of the embedded clause
\[ \text{hates-to-mow}(\xi. \text{lawn}(x))(\text{he}) \text{ at } t \text{ in } w: t^o \]

\[ \lambda w. \text{hates-to-mow}(\xi. \text{lawn}(x))(\text{he}) \text{ at } t \text{ in } w: (s^o, t^o) \]

\[ t \text{ (zero tense): } t^o \]

\[ \lambda \xi \lambda w. \text{hates-to-mow}(\xi. \text{lawn}(x))(\text{he}) \text{ at } t \text{ in } w: (i^o, (s^o, t^o)) \]

\[ \text{he: } e^o \]

\[ \lambda \xi \lambda \xi \lambda w. \text{hates-to-mow}(\xi. \text{lawn}(x))(\text{he}) \text{ at } t \text{ in } w: (e^o, (i^o, (s^o, t^o))) \]

\[ \lambda \lambda \xi \lambda w. \text{hates-to-mow}(\xi. \text{lawn}(x))(\text{he}) \text{ at } t \text{ in } w: e^o, (i^o, (s^o, t^o)) \]

\[ \text{hates-to-mow} \]

\[ \lambda \lambda \lambda \xi \lambda \lambda w. \text{hates-to-mow}(\xi. \text{lawn}(x))(\text{he}) \text{ at } t \text{ in } w: e^o, (i^o, (s^o, t^o)) \]

\[ \text{ex.lawn}(x): e^o \]

\[ \lambda x. \text{lawn}(x): (e^o, t^o) \]

\[ \text{friggin'(lawn) for } j: t^o \]

\[ \lambda \xi \text{P} \xi \text{x}. \text{P}(x): ((e^o, t^o), e^o) \]

\[ \text{friggin': } ((e^o, t^o), t^o) \]

\[ \text{lawn: } (e^o, t^o) \]

\[ \lambda \xi \text{lawn}(x) \]
Embedded pragmatic scalar modifiers

At the root level of an embedded clause, we receive the following meaning via parsetree interpretation:

(26) (Via parsetree interpretation)
\( \langle \text{hates-to-mow}(x \text{ lawn}(x))(\text{he}) \text{ at } t \text{ in } w; t^a, \text{ friggin’(lawn) for } j; t^b \rangle \)

After the shift from the CI to the secondary at-issue entailment is applied to (26), we get a meaning like (27):

(27) (Via shifting from a CI to a secondary at-issue entailment)
\( \langle \text{hates-to-mow}(x \text{ lawn}(x))(\text{he}) \text{ at } t \text{ in } w, \text{ friggin’(lawn) for } j; (t^a \times t^b) \rangle \)

The following figure shows the rest of the semantic derivation:\[7\]

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7 The predicate say and the embedded clause are combined via intensional function. Application (Heim and Kratzer 1998; Stephenson 2007): If \( a \) is a branching node and \( \{ \beta, \gamma \} \) the set of its daughters, then, for any possible word \( w \), time \( t \), and any assignment \( g \), if \( [[\beta]]^{E,w,t} \) is a function whose domain contains \( \lambda w'. \lambda t'([y])^{E,w,t'} \) then \( [[a]]^{E,w,t} = [[\beta]]^{E,w}((\lambda w'. \lambda t.([y])^{E,w,t'})). \)
(28) The logical structure of the subject-oriented reading

Monty says ⟨Monty-hates-to-mow-the-lawn at PAST in \( w_0 \), friggin' (lawn) for \( j_i \)⟩ at PAST in \( w_0 \)

\[ \lambda t \omega \text{Monty says} \langle \text{Monty-hates-to-mow-the-lawn at PAST in } t \text{ in } w, \text{friggin' (lawn) for } j_i \rangle \text{ at } t \text{ in } w \]

Monty \( i \), \( \lambda t \omega \text{Monty says} \langle \text{Monty-hates-to-mow-the-lawn at } t \text{ in } w, \text{friggin' (lawn) for } j_i \rangle \text{ at } t \text{ in } w \)

\[ \lambda w \text{Monty says} \langle \text{Monty-hates-to-mow-the-lawn at } t \text{ in } w, \text{friggin' (lawn) for } j_i \rangle \text{ at } t \text{ in } w \]

\[ \lambda w (\lambda x \lambda t \omega . x \text{ says} \langle \text{Monty-hates-to-mow-the-lawn at } t \text{ in } w, \text{friggin' (lawn) for } j_i \rangle \text{ at } t \text{ in } w) \]

\[ \lambda w (\lambda t (\lambda x \lambda t \omega . x \text{ say } p(t)(w)) \text{ says} \langle \text{Monty-hates-to-mow-the-lawn at } t \text{ in } w, \text{friggin' (lawn) for } j_i \rangle \text{ at } t \text{ in } w) \]

\[ \lambda t \textbf{Embedded S} \textbf{(after shifting from CI to a secondary at-issue)} \]

\[ \langle \text{Monty-hates-to-mow-the-lawn at } t \text{ in } w, \text{friggin' (lawn) for } j_i \rangle \]
Readers might now believe that we can get the same semantic result by positing a new lexical entry of *friggin’* for a subject-oriented reading, which has a secondary at-issue entailment from the beginning. However, as we will see in the following discussion, the semantic shift from a CI to a secondary at-issue entailment does not happen from the beginning. Until it is combined with an attitude predicate, it behaves as a CI in terms of compositionality. It does not semantically interact with any logical operators. We should briefly point out that the interpretation of embedded *friggin’* becomes complicated if the embedded clause has a “present tense,” as in (29):

(29) (Subject-oriented reading, *friggin’* = Monty’s perspective)
    Monty said to me two years ago that he hates to mow the friggin’ lawn.

This sentence is complicated because it has a “double access reading” (Ogihara 1996; Abusch 1997, among many others). The sentence is relevant to a past situation and to a present situation. We first consider a double access reading based on a simpler sentence, which does not contain an expressive. Comrie (1985: 115) stated that unlike (30a), (30b) is used “when the speaker is reporting a (real or imaginary) illness which he believes still has relevance.”

(30) a. John said that he was ill.
    b. John said that he is ill.

This discussion predicts that the expressive in (29) can be anchored to the past and the present if the embedded clause has the present tense. This prediction is borne out. The expressive *friggin’* in (29) is obligatorily anchored to the present and to the past (i.e., obligatory double access). This is supported by the fact the sentence in (31) sounds somewhat odd.

(31) ?? Monty said to me two years ago that he hates to mow the friggin’ lawn, but now, he doesn’t mind. (Embedded clause = present tense)

This fact is consistent with the hypothesis that subject-oriented embedded expresses obligatorily give rise to the double-access effect when the embedded tense is present. At this point, how to explain the double-access interpretation of the embedded expressive is not clear, but it seems that some kind of pragmatic mechanism is necessary in order to account for the double-accessed embedded expressive. I leave this issue for future study.

8.3 Interpretations of higher-level pragmatic scalar modifiers in embedded contexts

8.3.1 The expressive chotto

We now consider embedded higher-level pragmatic scalar modifiers. In Chapter 3, we proposed that the expressive *chotto* operates on a speech act and minimizes the degree of imposition of a speaker’s speech acts on the hearer (notice that here I have added a judge variable *j*):
(32) \[[\text{chotto}_\text{EXPRESSIVE}]\] : (a², t²)
\[
= \lambda u.\exists d [d \gtrless \text{STAND}_{\text{MIN.IMPOSITION}} \wedge \text{imposed-on-h(u)} = d] \wedge \exists d_1 [d_1 < \text{STAND}_{\text{precise}} \wedge \text{precise}(\text{the given scale}) = d_1 \text{ for } j]
\]
(\text{where } u \text{ is a variable for a speech act (utterance), } h \text{ is a hearer, } j \text{ is a judge})

Can the expressive chotto be embedded in an attitude predicate? As we will see, like the expressive friggin', chotto can be embedded, and it can be speaker-oriented and subject-oriented. This means that chotto can project out of the complement of an attitude predicate.

In the following example, the embedded expressive chotto is anchored to the subject:

(33) (Subject-oriented reading)
\text{Taro-wa chotto jikan-ga nai-to omo-tta.}
\text{Taro-top chotto time-nom neg.exist-that think-PAST}
At-issue: Taro thought that he didn’t have time.
Expressive (subject-oriented): Taro is weakening the force of his assertion.

The simplified logical structure of this sentence can be represented as follows: like the case of English expressives, in the subject-oriented reading the embedded chotto is within the semantic scope of the past tense. The expressive feeling signaled by chotto is Taro’s past feeling.\(^8\)

(34) Subject-oriented reading

```
Yamada

chotto

 Assert

\phi_i 'don't have time'

ome-tteiru 'believe'
```

However, in (35), the expressive chotto can naturally be anchored to the speaker.\(^9\)

---

\(^8\) In this case, since chotto modifies the embedded speech act, it may be natural to consider that the embedded clause is a kind of direct quotation.

\(^9\) Note that the embedded clause in (35) is indirect quotation. In the embedded clause the honorific particle o is expressed by the speaker (not the teacher).
Embedded pragmatic scalar modifiers

(35) (Speaker-oriented reading. Context: A secretary is telling a visitor about Prof. Yamada’s schedule.)

\[\text{Yamada-sensei-wa konshuu-wa chotto o-jikan-ga} \]
\[\text{Yamada-teacher-top this.week-top CHOTTO HON-time-nom} \]
\[\text{nai-to omo-te-orare-masu.} \]
\[\text{NEG.EXIST-that think-TE-SUB.HON-PERF.HON} \]

At-issue: Professor Yamada thinks that this week, he does not have time.
CI: I [the speaker] am weakening the force of my assertion. (Speaker-oriented)

In (35), the expressive *chotto* can be speaker-oriented. The natural situation for (35) is one in which the speaker (i.e., the secretary) uses *chotto* to weaken the illocutionary force of his or her speech act. On this reading, there is a mismatch between the surface structure and the logical structure. Namely, in the logical structure, *chotto* has scope over the entire utterance:

(36) Speaker-oriented reading

```
chotto
S
ASSERT
Yamada teacher,
Embedded S omo-tte-orareru ‘think.SUB.HON’
<chotto> φi don’t have time
```

The following sentence is ambiguous between a speaker-oriented reading and a subject-oriented reading:

(37) Yamada-sensei-wa konshuu-wa chotto jikan-ga nai-to

\[\text{Yamada-teacher-top this.week-top CHOTTO time-nom NEG.EXIST-that} \]
\[\text{omo-ttei-masu.} \]
\[\text{think-TE-PERF.HON} \]

At-issue: Professor Yamada thinks that this week, he does not have time.
Expressive (reading 1, speaker-oriented): I am weakening the force of my assertion. (Speaker-oriented)
Expressive (reading 2, subject-oriented): Professor Yamada is weakening the force of his assertion.
8.3.2 The noteworthy nani-yori-mo and more than anything

We now consider the interpretation of the embedded nani-yori-mo and more than anything. In Chapter 4, we discussed how the noteworthy nani-yori-mo operates at the level of the speech act. If nani-yori-mo is embedded in an attitude predicate, then it is always subject-oriented:

(38) Taro-wa [Shizuoka-wa nani-yori-mo sumiyasui]-to omo-teiru.
Taro-top Shizuoka-top what-then-mo easy to live-that think-teiru
‘Taro thinks that nani-yori-mo Shizuoka is an easy place to live in.’
Subject-oriented reading: (CI: Taro thinks that the proposition that Shizuoka is an easy place to live in is preferable to any other proposition related to Shizuoka.)

(39) Mary-wa [Taro-wa nani-yori-mo yasashii]-to omo-teiru-nichigainai.
Mary-top Taro-top what-than-mo kind-that think-teiru-must
At-issue: Mary must think that Taro is kind.
Subject-oriented reading: (For all worlds compatible with Mary’s beliefs, the proposition “Taro is kind” is preferable to any other proposition related to Taro.)

In these sentences, there is no speaker-oriented reading, such as “The proposition that Shizuoka is easy to live in is preferable to any other proposition related to Shizuoka for me.” Why is there no speaker-oriented reading in (38) and (39)? For example, if there were a speaker-oriented reading in (38), it would be similar to the following:

(40) The impossible reading of (38) (= speaker-oriented)
1. At-issue: Taro thinks that Shizuoka is easy to live in.
2. Not-at-issue: “Shizuoka is easy to live in” is the most noteworthy utterance among the alternatives for me.

However, we cannot interpret (38) as (40). The combination of 1 and 2 is pragmatically odd. They are not (pragmatically) related to each other, and the resulting interpretation sounds odd. The same observation can be made for the English more than anything:

(41) a. Mary thinks that, more than anything, Tokyo is safe.
b. Mary believes that, more than anything, Taro is kind.

More than anything in (41a) and (41b) can naturally be anchored to the subject (i.e., Mary). However, it is hard to get a speaker-oriented reading in (41a) and (41b). For example, the intended speaker-oriented meaning of (41a) cannot be interpreted as (42):

(42) The impossible reading of (41a) (= speaker-oriented)
1. At-issue: Taro thinks that Tokyo is safe.
2. Not-at-issue: “Tokyo is safe” is the most noteworthy utterance among the alternatives for me.

The combination of (a) and (b) is not natural. They are not (pragmatically) related to each other, and the resulting interpretation sounds odd. The only way more than anything could possibly have a speaker-oriented meaning in (41a) is if it is in terms of the whole sentence:
### Embedded pragmatic scalar modifiers

(43) 1. At-issue: Mary thinks that Tokyo is safe.
2. Not-at-issue: “Mary thinks that Tokyo is safe” is the most noteworthy utterance among the alternatives for me.

Note, however, the speaker-oriented meaning in (42) is much better expressed by the sentence in which *more than anything* is placed in the sentence-initial position (i.e., placed syntactically in the higher clause; Thomas Grano, personal communication).

8.3.3 Totally
We now consider the expressive use of the English *totally*. In the simple (unembedded) context, *totally* strengthens the speaker’s assertion:

(44) Mary is totally coming to the party! (*totally* = speaker oriented)

However, if we embed the expressive *totally*, its strengthens the subject's reported belief (e.g., Beltrama 2015; Irwin 2014):

(45) a. Tom told me that Mary is totally coming to the party!
   b. Tim believes that Mary is totally coming to the party! (*totally* = subject-oriented)

It is natural to consider that *totally* in these sentences is (secondary) at-issue. It is within the scope of semantic operators—that is, attitude predicates.10

### Interpretations of embedded lower-level pragmatic scalar modifiers

We now consider the interpretation of embedded lower-level pragmatic scalar modifiers. As we have discussed throughout the book, unlike higher-level pragmatic scalar modifiers, lower-level pragmatic scalar modifiers directly modify a gradable predicate to convey their pragmatic (not-at-issue) meaning. The interesting point about lower-level pragmatic scalar modifiers is that they can (systematically) project only when there is a modal in the main clause:

(46) Projection of not-at-issue meaning via modal support: The not-at-issue meaning of lower-level scalar modifiers can project out of the complement of an attitude predicate only if there is a modal in the main clause.

This point is radically different from the typical expressives we discussed in previous sections. We explain the generalization by assuming that lower-level pragmatic scalar modifiers lexically require that their judge should be consistent with the judge in the at-issue level.

10 However, some native speakers may consider that there is a speaker-oriented reading if we posit a context in which the speaker uses a belief report to mark evidentiality. In this context, the main point of the assertion is not to report a belief but to assert that Mary is coming to the party, and therefore, it is possible to get speaker orientation. See Urmson (1952), Hooper (1974), Simons (2007), and Hacquard (2014). See also n. 1. Thanks to Thomas Grano for his valuable comments and discussions.
We also show that there are variations among lower-level pragmatic scalar modifiers regarding (i) the kind of modal that supports their projections and (ii) whether the given embedded lower-level pragmatic scalar modifier obligatorily refers to the degree of the embedded gradable predicate (kaette, yoppodo do, but the negative totemo and motto do not necessarily have to modify an embedded gradable predicate). These differences can be construed as lexicon-specific characteristics.

8.4.1 Interpretations of the embedded expressive totemo
We now consider the projective behavior of the expressive use of totemo. In Chapter 6, we observed that the Japanese intensifier totemo ‘very’ not only can intensify the degree of a gradable predicate but can also intensify a negative modal statement as an expressive:

(47) a. Tetsuya-nado totemo deki-na-katta.
  Staying up all night-NADO very can-neg-past
  ‘Staying up all night was impossible.’ Not-at-issue: I am emphasizing the impossibility.
  b. Ame-wa totemo yami-soo{-ni -da}.
  Rain-top totemo stop-seem-to neg/pred
  ‘The rain does not seem to stop.’ (Not-at-issue: I am emphasizing the unlikelihood.) (Epistemic)

In Chapter 6, we claimed that totemo in (47) is an expressive CI that intensifies the unlikelihood or impossibility of a given proposition and refuses to update the common ground (the context set) with the at-issue proposition. For example, totemo in (47a) intensifies the impossibility of staying up all night and refuses to update the common ground with the proposition “I stay up all night.” More theoretically, we proposed that the negative totemo is mixed content (McCready 2010; Gutzmann 2011) that takes a “negative modal predicate” (e.g., deki-nai ‘unlikely’) in both at-issue and CI levels but intensifies the degree only at the CI level. In the following denotation, we have added a judge variable j:

(48) \[
[[\text{totemo}_{\text{NEG}}]] = \lambda G_{\text{MODAL}} \lambda p \lambda t \lambda w \exists d \left[d > \text{STAND} \land G(d)(p)(t)(w)\right] \\
\overset{\wedge}{\lambda} G_{\text{MODAL}} \lambda p \lambda t \lambda w \exists d' \left[d' > !\text{STAND} \land G(d')(p)(t)(w) \text{ for } j\right] \\
(\text{where } \max(G) = 0, p(t)(w) \text{ is expected to be true, } p(t) \cap (\cap cg) = \emptyset, j \text{ is consistent with the judge of } G)
\]

Let us now consider how the embedded negative totemo is interpreted. If the expressive totemo is embedded under an attitude predicate, it is anchored to the subject:\n
\footnote{Note that the embedded clause is interpreted as an indirect quotation. The deictic expression is interpreted relative to the speaker.}
Embedded pragmatic scalar modifiers

(49) (Subject-oriented reading)
Taro-wa ano shigoto-o owaraseru-koto-nado totemo deki-nai-to
Taro-TOP that job-ACC finish-NM-NADO TOTEMO can-NEG-that
omo-tta.
think-PAST
At-issue: Taro thought that it is impossible to finish the job.
Expressive: For all worlds \( w' \) compatible with Taro’s beliefs, Taro emphasizes
the impossibility of finishing that job in \( w' \) (= Taro’s expressive emotion is
in the past)

Note that even if we add a modal in the main clause, the perspective does not
change. It is still subject-oriented:

(50) (Subject-oriented reading)
Taro-wa ano shigoto-o owaraseru-koto-nado totemo deki-nai-to
Taro-TOP that job-TOP-ACC finish-NM-NADO TOTEMO can-NEG-that
omo-daroo.
think-will
At-issue: Taro will think that staying up all night is impossible.
Expressive (subject-oriented): For some worlds \( w'' \) compatible with the
speaker’s knowledge in \( w_0 \), and for all worlds \( w' \) compatible with Taro’s beliefs
in \( w'' \), Taro emphasizes the impossibility in \( w' \) (= Taro’s expressive emotion is
in the epistemic worlds)

The fact that we can naturally utter sentence (51) after (50) supports the idea that
(50) is subject-oriented:

(51) Demo watashi-wa mattaku muri-da-to-wa omowa-nai.
But I-TOP at all impossible-pred-that-TOP think-NEG
‘But I don’t think that it is totally impossible for Taro.’

However, interestingly, if the modal in the main predicate is a “negative gradable
modal,” the embedded totemo can project (i.e., can have speaker orientation):

(52) Taro-wa tetsuya-nado totemo dekiru-to omoi-sooni-nai.
Taro-TOP staying up all night-NM-NADO TOTEMO can-that think-likely-NEG
At-issue: It is unlikely that Taro thinks that he can stay up all night.
Expressive (CI): I am emphasizing the unlikelihood of Taro’s thinking that he
can stay up all night.

(53) Taro-wa siai-ni-wa totemo kat-eru-to omoi-sooni-nai.
Taro-TOP game-to-TOP TOTEMO win-can-that think-likely-NEG
At-issue: It is unlikely that Taro thinks that he can win the game.
Expressive (CI): I am emphasizing the unlikelihood of Taro’s thinking that he
can win the game.
In sentences (52) and (53), there is a concord-like relationship between *totemo* and the modal in the main clause. (Recall that the negative *totemo* always has to co-occur with a negative modal predicate.)

The fact that it is odd to say the following sentence after (52) or (53) supports the idea that (52) and (53) have speaker orientation:

(54) ?? Demo watashi-wa totemo ariso-o-ni-nai-to-wa omonowa-nai.

But I-TOP TOTEMO likely-LINK-NEG-that-TOP think-NEG 'But I don’t think that it is completely impossible for Taro.'

Let us now analyze a subject-oriented sentence and a speaker-oriented sentence in a formal way. Before moving on to the analyses of the two readings, however, we must say a few words regarding the interpretation of the embedded tense in Japanese. It is well-known that in Japanese, tenses in complement clauses are relative. Namely, the embedded tense is interpreted in the scope of the matrix tense (Ogihara 1995, 1996; Arregui and Kusumoto 1998; Kubota et al. 2012). Observe the following example:

(55) John-wa Mary-ga byooki-da it-ta.

John-TOP Mary-NOM sick-pred that say-PAST 'John said that Mary was sick.' (Simultaneous reading only)

In (55), although there is a present tense in the embedded clause, the event described in the embedded clause is interpreted as a past event. The time when Mary is sick is the same time as the time of John’s utterance. Although there are various approaches for the relative tense or simultaneous reading as in (55), in this book we assume, following Lungu and Demirdache’s (2015) idea, that the embedded present tense in Japanese behaves as an anaphoric tense or zero tense (Kratzer 1998). Recall that a zero tense or anaphoric tense is a time variable with no time construal and must be bound by an antecedent (present, past in the main clause).

We now consider the interpretation of (56), which has only a subject-oriented reading.

(56) Taro-wa tetsuya-nado totemo deki-nai-to omo-tta.

Taro-TOP staying up all night-NADO TOTEMO can-NEG-that think-PAST 'At-issue: Taro thought that staying up all night is impossible.'

Expressive: Taro emphasized the impossibility of staying up all night.

Similar to the case of the subject-oriented *friggin’,* before being combined with an attitude predicate, the negative *totemo* in the embedded clause behaves as a CI:
The logical structure of the embedded clause in (56)

\[ \exists d [d \geq \text{STAND} \land \text{impossible}_{\text{ABL}}(\text{Taro-stays-up-all-night at } t \text{ in } w) = d] \]

\[ \exists d' [d' >!! \text{STAND} \land \text{impossible}_{\text{ABL}}(\text{Taro-stays-up-all-night at } t \text{ in } w) = d' \text{ for } j] \]

\[ \lambda w \exists d [d \geq \text{STAND} \land \text{impossible}_{\text{ABL}}(\text{Taro-stays-up-all-night at } t \text{ in } w) = d] \]
\[ \lambda w \exists d' [d' >!! \text{STAND} \land \text{impossible}_{\text{ABL}}(\text{Taro-stays-up-all-night at } t \text{ in } w) = d' \text{ for } j] \]

\[ \lambda t \lambda w \exists d [d \geq \text{STAND} \land \text{impossible}_{\text{ABL}}(\text{Taro-stays-up-all-night at } t \text{ in } w) = d] \]
\[ \lambda t \lambda w \exists d' [d' >!! \text{STAND} \land \text{impossible}_{\text{ABL}}(\text{Taro-stays-up-all-night at } t \text{ in } w) = d' \text{ for } j] \]

\[ \lambda t \lambda w. \text{Taro-stays-up-all-night at } t \text{ in } w \]

\[ \lambda p \lambda t \lambda w. \text{impossible}_{\text{ABL}}(p)(t)(w) \]

\[ \lambda p \lambda t \lambda w. \text{impossible}_{\text{ABL}}(p)(t)(w) \text{ for } j \]

\[ \lambda GMODAL \lambda p \lambda t \lambda w. \text{impossible}_{\text{ABL}}(p)(t)(w) \]

\[ \lambda GMODAL \lambda p \lambda t \lambda w. \text{impossible}_{\text{ABL}}(p)(t)(w) \text{ for } j \]

\[ \lambda d \lambda p \lambda t \lambda w. \text{impossible}_{\text{ABL}}(p)(t)(w) = d \]

\[ \lambda d \lambda p \lambda t \lambda w. \text{impossible}_{\text{ABL}}(p)(t)(w) \text{ for } j \]
At the root of the embedded clause (to which the parsetree interpretation has been applied), the semantic shift from CI to a secondary at-issue meaning is applied, and we get the following meaning:

\[(58) \langle \exists d \left[ d \geq \text{STAND} \land \text{impossible}_\text{ABILITY} (\text{Taro-stays-up-all-night} (t)(w)) = d \right], \exists d' \left[ d' > \text{!!STAND} \land \text{impossible}_\text{ABILITY} (\text{Taro-stays-up-all-night} (t)(w) = d' \text{ for } j) \right]\]

The following figure shows the rest of the semantic derivation of (56):

\[(59) \text{The logical structure of the sentence (56) (= Subject-oriented)}\]

\[\lambda w \forall w' \text{ compatible with Taro's beliefs in } w :\]

\[
\begin{align*}
\langle \exists d \left[ d \geq \text{STAND} \land \text{impossible}_\text{ABILITY} (\text{Taro-stays-up-all-night} (PAST)(w_0)) = d \right], \\
\exists d' \left[ d' > \text{!!STAND} \land \text{impossible}_\text{ABILITY} (\text{Taro-stays-up-all-night} (PAST)(w_0) = d' \text{ for } j) \right]\end{align*}
\]

Note that *totemo* is subject-oriented because *totemo*’s judge is consistent with Taro.

We now consider the logical structure of the speaker-oriented reading based on the following example:

\[(60) \text{Taro-wa tetsuya-nado totemo dekiru-to omoi-sooni-nai.}\]

Taro-top staying up all night-NADO TOTEMO can-that think-likely-NEG

At-issue: It is unlikely that Taro thinks that he can stay up all night.
Expressive (CI): I am emphasizing the unlikelihood of Taro’s thinking that he can stay up all night.

In the speaker-oriented reading, the judge of *totime* is consistent with the judge of the modal *sooni-nai* ‘unlikely.’ The crucial point is that *totime* emphasizes the degree of the ‘unlikelihood of thinking’ although *totime* is not directly combined with a modal. I assume that LF *totime* modifies *omoi-sooni-nai* ‘unlikely to think.’ Namely, in the case of the speaker-oriented reading, there is a mismatch between the syntax and the logical structure, as shown in example (61):

(61) The basic structure of the speaker-oriented reading of (60)

![Logical structure diagram]

We now consider this structure in detail. The illustration (62) shows the semantic derivation of the embedded clause:

(62) Logical structure of the embedded clause of (60)
Notice that the embedded \textit{totemo} scopes over the gradable expression \textit{omoi-soo-nai} ‘unlikely to think’ in the main clause.

Example (63) shows the entire semantic derivation of a speaker-oriented reading:

(63)  The entire logical structure of sentence (60) (= speaker-oriented)

\[
\exists d \ni \text{Taro-can-stay-up-all-night at } t_0 \text{ in } w' = 1 = d \text{ for } j_i = \text{sp}\]

As this logical structure shows, the judge of \textit{totemo} is consistent with the judge of the modal \textit{sooni-nai} ‘unlikely’ due to the lexical requirement that \textit{totemo}’s judge must be consistent with the judge of \textit{G}.
8.4.2 Interpretations of the embedded expressive yoppodo

Let us now consider the embedded examples of the counter-expectational intensifier yoppodo. In Chapter 7 we clarified that in the adjectival environment yoppodo has to always co-occur with an evidential modal (see also Sawada 2016b):

(64) (Context: The speaker is looking at a ramen restaurant from the outside. He sees a lot of people waiting in front of the restaurant.)
Ano raamen-ya-wa yoppodo oishii-nichigainai.
That ramen-store-TOP YOPPDOO delicious-must
At-issue: (The food in) that ramen restaurant must be very delicious.
CI/expressive: The degree I inferred via extraordinary evidence is above my expectation.

Crucially, this concord-like relationship between yoppodo and an evidential modal is also relevant in the embedded context. There can be multiple relationships. If yoppodo is embedded under an attitude predicate and there is an evidential modal in the embedded clause, then yoppodo is always subject-oriented:

(65) (Context: The speaker is pointing to a restaurant. The other day Taro saw a lot of people waiting in front of the restaurant and said to the speaker that the situation is abnormal. The speaker describes Taro’s thought.)
Taro-wa [ano raamen-ya-wa yoppodo oishii-nichigainai]-to
Taro-TOP that ramen-store-TOP YOPPDOO delicious-must-that omo-teiru.
think-TEIRU
At-issue: Taro thinks that (the food in) that ramen restaurant must be very delicious.
Expressive (secondary at-issue): The degree Taro inferred via extraordinary evidence is above his expectation according to Taro’s belief. (Only the subject-oriented reading is available.)

However, if yoppodo is embedded under an attitude predicate and there is an evidential modal (a concord element) in the main clause, then yoppodo is always speaker-oriented:

12 Notice that the embedded clause is construed as an indirect quotation. The demonstrative ano is interpreted relative to the speaker.

13 Note that if the modal in the main clause is not an inferential evidential marker, the sentence becomes ill-formed:

(i) (Context: The speaker notices that Taro goes to the ramen restaurant KIKUYA every day.)
*Taro-wa [ano raamen-ya-wa yoppodo oishii]-to omo-teiru-kamoshirenai.
Taro-TOP that ramen-store-TOP YOPPDOO delicious-that think-TEIRU-may
’Taro may think that (the food in) that ramen restaurant is yoppodo delicious.’
Embedded pragmatic scalar modifiers

(66) (Context: The speaker notices that Taro goes to the ramen restaurant KIKUYA every day.)

Taro-wa [ano ramen-ya-wa yoppodo oishii]-to
Taro-TOP that ramen-store-TOP YOPPDO delicious-that
omo-tteiru-nichigainai.
think-TERU-must
At-issue: Taro must think that (the food in) that ramen restaurant is very delicious. CI: The degree I inferred via extraordinary evidence is above my expectation. (Only the speaker-oriented reading is available.)

Notice that if there are two modals in a single sentence, one in the embedded clause and the other in the main clause, the sentence can be ambiguous between a speaker-oriented reading (where the CI meaning of yoppodo is matched with the modality in the main clause) and a subject-oriented reading (where the CI meaning of yoppodo is matched with the modality in the embedded clause):

(67) Taro-wa [ano ramen-ya-wa yoppodo oishii-nichigainai]-to
Taro-TOP that ramen-store-TOP YOPPDO delicious-must-that
omo-tteiru-nichigainai.
think-TERU-must
'Taro must think that that ramen restaurant must be yoppodo delicious.'

There may be a preference for yoppodo to interact with the nearest modal, but it seems that it can interact with the modal in the main clause if we posit an appropriate context.

In any case, the evidence shows that the embedded yoppodo can be speaker-oriented only when there is an evidential modal in the main clause.14

In terms of the status of meaning, yoppodo's counter-expected meaning is (secondary) at-issue in the case of subject-oriented reading. The counter-expectational meaning is within the semantic scope of the attitude predicate (i.e., it is expressed in Taro's belief.) On the other hand, in the case of the speaker-oriented reading, the counter-expectational meaning is outside the scope of the attitude predicate.

The following examples further support the idea that the expressive component in the subject-oriented reading is (secondary) at-issue, while the expressive component in the subject-oriented reading is a CI:

---

14 This point is radically different in the case of ordinary intensifiers like totemo. The presence or absence of an evidential modal in the main clause does not change the projection. In (a) and (b), totemo is anchored to the subject of the sentences:

(i) a. (Context: Taro sees a lot of people waiting in front of the ramen restaurant and thinks that this situation is unusual.)

Taro-wa [ano ramen-ya-wa totemo oishii-nichigainai]-to omo-tteiru.
Taro-TOP that ramen-store-TOP very delicious-must-that think-TERU
'Taro thinks that that ramen restaurant must be very delicious.' (Totemo 'very' = subject-oriented)

b. (Context: The speaker notices that Taro goes to the ramen restaurant KIKUYA every day.)

Taro-wa [ano ramen-ya-wa totemo oishii]-to omo-tteiru-nichigainai.
Taro-TOP that ramen-store-TOP very delicious-that think-TERU-must
'Taro must think that that ramen restaurant is very delicious.' (Totemo 'very' = subject-oriented)
Embedded pragmatic scalar modifiers

(68) (Subject-oriented reading, with a past tense)
Taro-wa [ano ramen-ya-wa yoppodo oishii-nichigainai]-to Taro-TOP that ramen-store-TOP YOPODO delicious-must-that omo-tta. 
think-PAST 
At-issue: Taro thought that (the food in) that ramen restaurant must be very delicious.
Expressive (secondary at-issue): For all worlds \( w' \) compatible with Taro’s beliefs in \( w \), the degree he inferred via extraordinary evidence was above his expectation in \( w' \). (Only the subject-oriented reading is available.)

(69) (Speaker-oriented reading, with a past tense)
Taro-wa [ano ramen-ya-wa yoppodo oishii]-to Taro-TOP that ramen-store-TOP YOPODO delicious-that omo-ta-nichigainai. 
think-PAST-must 
At-issue: Taro must have thought that (the food in) that ramen restaurant is very delicious.
CI: The degree I inferred via extraordinary evidence is above my expectation. (Only the speaker-oriented reading is available.)

While \textit{yoppodo} in (68) is semantically within the scope of the attitude predicate and the past tense, \textit{yoppodo} in (69) is not within the semantic scope of the attitude predicate and the past tense.

The questions then are: why is it that there is no speaker-oriented reading in (68)? Why is it that there is no subject-oriented reading in (69)? I argue that this is because \textit{yoppodo} lexically requires that there is a consistency between \textit{yoppodo} and the evidential modal in terms of a judge. In (68), there cannot be a speaker-oriented reading because if such a reading is attempted, a conflict will arise in terms of the judge. Since \textit{nichigainai} ‘must’ is embedded under an attitude predicate, the person who evaluates the proposition (based on the evidence) has to be the subject (Taro). The CI component of \textit{yoppodo} should adjust to the judge because it does not by itself have modal force. Likewise, (69) does not have a subject-oriented reading because \textit{nichigainai} is located in the main clause. Since \textit{yoppodo} does not have modal force, its judge needs to be the same as the judge of \textit{nichigainai}.

Let us now consider how the speaker-oriented reading and the subject-oriented reading are interpreted compositionally. As for the lexical meaning of \textit{yoppodo}, I assumed the following meaning (see Chapter 7):

\[ ([\textit{yoppodo}]) = \lambda G \lambda x \lambda t \lambda w \exists d [d > \text{!!STAND} \land G(d)(x)(t)(w)] \land d > d' \text{ for } j \] (where \( w \) is bound by an evidential modal, \( j \) infers the given \( d \) via extraordinary evidence, \( j \) is consistent with the judge of the evidential modal, and \( d' \) is a speaker’s degree of expectation)

In the at-issue component, \textit{yoppodo} semantically denotes that the degree associated with a gradable predicate is much greater than the contextual standard at the at-issue level. In the CI component, \textit{yoppodo} conventionally implies that (i) a judge \( j \) infers the
given degree via extraordinary evidence and (ii) the given degree is above the judge's expectation. Note that there is also a requirement that the word variable w is bound by an evidential modal. This ensures that *yoppodo* in the adjectival environment always co-occurs with an evidential modal. Notice that there is also a requirement that the judge of the CI component is consistent with the evidential modal. We will see that this restriction becomes crucial in analyzing the projective behavior of *yoppodo*.

As for the meanings of the evidential modal *nichigainai* and the attitude predicate and the belief predicate *omou* 'think'/*omo-teiru* 'think-STATE,' I assume the following denotations:

(71) \[
\begin{align*}
\text{\text{[nichigainai]}_{w}} &= \lambda p_{(s, t, w)}, \forall w' \text{ compatible with the evidence in } w_0: p(w) = 1 \\
\end{align*}
\]

(72) \[
\begin{align*}
\text{\text{[omou]}_{w}} &= \lambda p_{u, (s', t)} \lambda x \lambda t \lambda w \forall w' \text{ compatible with } x's \text{ beliefs in } w: p(t)(w) = 1 \\
\end{align*}
\]

Let us first consider the subject-oriented reading of *yoppodo*. The crucial point of the reading is that inside the embedded clause, it behaves as a CI, and the CI meaning is shifted into a secondary at-issue entailment when the embedded clause is combined with an attitude predicate. The following example shows the logical structure of embedded clause:

(73) The logical structure of the embedded clause in (68) (= subject-oriented reading)

```
Embedded S

\forall w' \text{ compatible with the evidence in } w_0:
\exists d [d > !!STAND \land \text{ delicious(this-ramen-restaurant)(t)(w) = d} = 1] \text{ for } j_i
```

```
\text{DP}
\text{ano raamen-ya-wa 'This ramen restaurant-TOP'}
```

```
\lambda t \lambda w \exists d [d > !!STAND \land \text{ delicious(this-ramen-restaurant)(t)(w) = d}]
```

```
\lambda x \lambda t \lambda w \exists d [d > !!STAND \land \text{ delicious(x)(t)(w) = d}]
```

```
\text{yoppodo oishii 'delicious'}
\lambda d \lambda x \lambda t \lambda w \text{ delicious(x)(t)(w) = d}
```

The parsetree interpretation is then applied to the embedded clause and the shift from a CI to a secondary at-issue entailment is applied after that:
(74) Parse tree interpretation: Generalized interpretation (McCready 2010) Let $T$ be a semantic parse tree with the at-issue term $\alpha : \sigma^a$ on its root node, and distinct terms $\beta_1 : t^{[c_1]}$, ..., $\beta_n : t^{[c_n]}$ on nodes in it. Then, the interpretation of $T$ is the $[[\alpha : \sigma^a]], [[\beta_1 : t^{[c_1]}]], ..., [[\beta_n : t^{[c_n]}]]$ (Based on McCready 2010: 32)

(75) Shifting from a CI to a second at-issue entailment:
A clause $S$, which consists of an at-issue meaning of type $t^a$ and a CI meaning of type $t^c$ (or $t^s$) can shift into an at-issue product type $(t^a \times t^c)$ if, and only if, $S$ is embedded under an attitude predicate or a verb of saying and the judge of the CI in $S$ is the attitude holder of the predicate (where the first $t^a$ is a primary entailment and the second $t^c$ is a secondary entailment).

The following example shows the logical structure of the entire sentence (= subject-oriented reading):

(76) Logical structure of sentence (68) (=Subject-oriented reading)
As for determining the judge in the subject-oriented reading, the judge of *yoppodo* corresponds to the judge of the embedded modal, i.e., Taro (due to the lexical requirement of *yoppodo*). The following shows the final part of the derivation in (68):

(77) The final interpretation of (68):

\[ \forall w'^{''} \text{ compatible with Taro's beliefs in } w_0; \exists d[d > !!\text{STANDARD} \land \text{delicious(this-ramen-restaurant)(PAST)}(w') = d] = 1 \text{ for } Taro, \quad d > d' \text{ for } ji \text{ at PAST in } w'' = 1 \]

Let us now consider the semantic derivation of the speaker-oriented reading based on example (69). In the speaker-oriented reading, there is no semantic shift from a CI to a secondary at-issue entailment. Its expressive meaning is a CI and projects out of the attitude predicate. This is illustrated by the following derivation:

(78) The logical structure of sentence (69)

\[
\forall w'^{''} \text{ compatible with the evidence in } w_0; \forall w' \text{ compatible with Taro's beliefs in } w': \exists d[d > !!\text{STANDARD} \land \text{delicious(this-ramen-restaurant)(PAST)}(w') = d] = 1 \text{ for } ji
\]

\[
\exists d[d > !!0.2615 \land \text{delicious(this-ramen-restaurant)(PAST)}(w') = d] = 1 \text{ for } ji
\]

\[
\lambda w \forall w'^{''} \text{ compatible with Taro's beliefs in } w; \exists d[d > !!\text{STANDARD} \land \text{delicious(this-ramen-restaurant)(PAST)}(w') = d] = 1
\]

\[
\lambda x \lambda t \lambda w \exists d[d > !!\text{STANDARD} \land \text{delicious(this-ramen-restaurant)(PAST)}(w') = d] = 1
\]

\[
\lambda x \lambda t \lambda w \exists d[d > !!\text{STANDARD} \land \text{delicious(that-ramen-restaurant)(PAST)}(w') = d] = 1
\]

\[
\lambda p \langle i, s, t \rangle \lambda x \lambda t \lambda w \exists d[d > !!\text{STANDARD} \land \text{delicious(this-ramen-restaurant)(PAST)}(w') = d] = 1
\]

\[
\lambda d \exists x \lambda t \lambda w \text{delicious(x)(t)(w) = d}
\]

\[
\lambda d \lambda x \lambda t \lambda w \text{delicious(x)(t)(w) = d}
\]
Finally, the above derivation will have both an at-issue and a CI meaning:

(79) \( \forall w'' \text{ compatible with the evidence in } w_0 : \forall w' \text{ compatible with Taro's beliefs in } w' : \exists d[d \succ \text{ STAND} \land \text{ delicious(this-ramen-restaurant)(PAST)}(w') = d] = 1 = 1 \) for \( ji : t' \), \( d \succ d' \) for \( ji \) at \( t_0 \) in \( w_0 : t' \)

In the speaker-oriented reading, the judge of the CI component in *yoppado* corresponds to the judge of the modal in the main clause.

8.4.3 Interpretations of the embedded negative/expressive motto

In Chapter 6, we mentioned that the Japanese comparative adverb *motto* has two different uses, a degree use and a negative use:

(80) Kono mise-no keeki-wa motto oishi-katta.

This store-gen cake-top MOTTO delicious-PAST

a. Degree reading: This store's cake was [even/still much] more delicious than a contextual store's cake.

b. Negative reading: At-issue: This store's cake was delicious.

CI: My expected degree of deliciousness is much higher than the current degree.

We then argued that the negative *motto* conventionally implies that the expected degree is much greater than the target's current degree. The CI in the negative reading is not within the semantic scope of the past tense. We showed that it is often used when the speaker conveys a negative attitude (complaint) toward the utterance situation, that is, the store's cake is not delicious now.

We now consider how the negative *motto* is interpreted in an embedded environment. If the negative *motto* is embedded in the complement of an attitude, it usually has only a subject-oriented reading:

(81) (Only subject-oriented)

Hanako-wa kono mise-no keeki-wa mukashi-wa motto
Hanako-top this store-gen cake-top old days-top MOTTO oishi-katta-to think-PAST

delicious-PAST-that think-PAST

At-issue: Hanako thought that this store's cake was delicious.

(Secondary at-issue: Hanako thought that the expected degree of deliciousness (i.e., the deliciousness in the past) was much higher than the current degree.)

In this sentence, there is only a subject-oriented reading. Here, the current degree corresponds to the current degree in the past. However, if we insert the deontic modal *bekida* in the main clause, then the negative *motto* can be either subject-oriented or speaker-oriented:

---

15 Here *kono* ‘this’ is interpreted relative to the speaker. The embedded clause is interpreted as an indirect quotation.
(82) Hanako-wa kono mise-no keeki-wa motto oishi-katta-to
Hanako-top this store-gen cake-top motto delicious-past-that
think-should

At-issue: Hanako should think that this store's cake was delicious.
Expressive 1 (subject-oriented, secondary at-issue): For all worlds \( w'' \) compatible with the rule in \( w_0 \) and for all worlds \( w' \) compatible with Hanako's beliefs in \( w'' \), the expected degree of deliciousness of this store's cake is much higher than the current degree for Hanako in \( w' \).
Expressive 2 (speaker-oriented, CI): The expected degree of deliciousness of this store's cake is much higher than the current degree for me.

In the subject-oriented reading, the gap denoting meaning is within the semantic scope of the deontic modality and the attitude predicate. However, in the speaker-oriented reading, the speaker (not Hanako) is considering that there is a gap between the expected degree and the current degree. The speaker-oriented reading becomes salient when the speaker thinks that the current store's cake is not delicious but Hanako said to the speaker that it is really delicious.\(^{16}\) Crucially, the gap denoting meaning is not within the semantic scope of the deontic modality.

The following examples also can be ambiguous between a speaker-oriented reading and a subject-oriented reading:

---

\(^{16}\) Note that there can be another kind of speaker-oriented reading in which the embedded _motto_ modifies _omou-bekida_ 'should think' in the main clause (Yusuke Kubota, personal communication). In this reading, the speaker is complaining about the current degree of seriousness of the thought.

The following contrast clearly shows the difference between the "genuine embedded case" (which refers to an embedded degree) and the "superficial embedded case":

(i) (Superficial embedded case, speaker-oriented reading)

Taro-wa Hanako-ga motto seishain-ni nara-nakereba.naranai-to
Taro-top Hanako-nom motto full-time worker-to become-must-that
honkide omou-bekida.
think-should

At-issue: Taro should seriously think that Hanako must become a full-time worker.
Expressive: Taro should more think about Hanako becoming a full-time worker. (The degree of Taro's seriousness of thought is low for the speaker.)

(ii) (Genuine embedded reading)

Taro-wa Hanako-ga moto seishain-rashiku nara-nakereba.naranai-to
Taro-top Hanako-nom motto full-time worker-like become-most-that
honkide omou-bekida.
think-should

At-issue: Taro should seriously think that Hanako must behave as a full-time worker.
Expressive: The expected degree of full-time worker likeness is much higher than now for the speaker. (The degree of Taro's full-time worker likeness is low.)

In (i), because there is no gradable predicate in the embedded clause, _motto_ in the embedded clause has to refer to the degree of _omou bekida_ 'should think' in the main clause (_motto_ cannot be directly combined with _shakaijin_ ("motto syukaijin"). However, in (ii) because there is a gradable predicate _rashiku_ 'like' (i.e., _shakaijin-rashiku_ 'a working adult-like'), the embedded _motto_ can refer to the degree of the embedded gradable predicate. The interesting point is that (i) and (ii) are different in terms of the truth condition. While (i) can be naturally be uttered in the situation in which Taro is not a working adult, in (ii) Taro has to be a working adult.
Embedded pragmatic scalar modifiers

(83) Taro-wa motto ishokenmei benkyo shi-naito.ikenai-to
Taro-top motto hard study do-must-that
think-should-pred
At-issue: Taro should think that he must study hard.
Expressive 1 (subject-oriented, secondary at-issue): For all worlds $w''$ compatible with the rule in $w_0$ and for all worlds $w'$ compatible with Taro’s beliefs in $w''$, the expected degree of study effort is much higher than the current degree for Taro in $w'$.
Expressive 2 (speaker-oriented, CI): The expected degree of study effort is much higher than the current degree for me.

(84) Taro-wa motto shikkarishita ronbun-o kaka-nakerebanaranai-to
Taro-top motto solid paper-acc write-must-that
think-should
At-issue: Taro should think that he should write a solid paper.
Expressive 1 (subject-oriented, secondary at-issue): For all worlds $w''$ compatible with the rule in $w_0$ and for all worlds $w'$ compatible with Taro’s beliefs in $w''$, the expected degree of solidness of a paper is much higher than the current degree for Taro in $w'$.
Expressive 2 (speaker-oriented, CI): The expected degree of solidness is much higher than the current degree for me.

Note that the epistemic modality does not support the speaker orientation (projection) of the negative motto as shown in:

(85) Hanako-wa kono mise-no keeki-wa mukashi-wa motto
Hanako-top this store-gen cake-top old days-top motto
oshi-katta-to delicious-past-that think-state-may
At-issue: Hanako may think that this store’s cake was delicious.
Expressive (subject-oriented, secondary at-issue): For some worlds $w''$ compatible with the speaker’s knowledge in $w_0$, and for all worlds $w'$ compatible with Hanako’s beliefs in $w''$, the expected degree of deliciousness of this store’s cake is much higher than the current degree for Hanako in $w'$.

In the sentence in (85), the negative motto can only be anchored to the subject. Then why is it that the expressive motto can be speaker-oriented (can project) if there is a deontic modal in the main clause? We consider that this is because the meaning of the deontic modality conveys the speaker’s complaint. The negative motto also conveys the judge’s complaint; thus, it is natural to consider that the judge of motto and the judge of the deontic modality are the same (see also Sawada 2016a).

One might now wonder whether a speaker-oriented reading and a subject-oriented reading are different in terms of the logical structure. Some people might consider that a speaker-oriented reading is purely pragmatic and does not have a distinct logical
Embedded lower-level pragmatic scalar modifiers

structure. However, the following two tests clearly show that the speaker-oriented reading and the subject-oriented reading are different, and each has a different logical representation. First, if we add the discourse particle koo 'like' between the expressive motto and an adjective, the sentence has only a speaker-oriented reading:

(86) (The example with the discourse particle koo 'like')
   Taro-wa motto koo shikkarishita ronbun-o kaka-nakerebanaranai-to
   Taro-top motto like solid paper-acc write-must-that
   think-should
   At-issue: Taro should think that he must write a solid paper.
   Expressive, Reading 1 (speaker-oriented, CI): The expected degree of solidness is much higher than the current degree for me.

In (86), the discourse particle koo is speaker-oriented, and it behaves like a hedge. Koo is used when the speaker is not thinking about the most appropriate gradable predicate he or she should use. Crucially, in this situation motto cannot be anchored to the subject.

Second, if we use the reflexive jibun 'self' in the embedded clause, then there will be only a subject-oriented reading. H. Sawada (1993) claims that if there is a reflexive jibun in the embedded clause, then the perspective of the embedded clause has to be the antecedent of jibun (i.e., the subject of the entire sentence). However, if a pronoun is used in the embedded clause, then the perspective of the embedded clause has to be a speaker based on an example such as the following:

(87) Yamadai-wa [Hanako-ga {jibuni-ni/*karei-ni} ki-ga aru-to
   Yamada-top Hanako-nom self-to/him-to emotion-nom exist-that
   think-teiru.
   ‘Yamada thinks that Hanako likes him.’ (Based on H. Sawada 1993)

According to Sawada (1993: 312–20), the sentence with jibun is natural, but the sentence with kare 'he' is odd because the content of the embedded clause belongs to Yamada’s thought, and thus, the viewpoint of the embedded clause must be described from Yamada’s perspective.

This idea predicts that if jibun is inserted in the embedded clause, then there is only a subject-oriented reading. This prediction is borne out as shown in (88):

(88) Taro-wa jibun-wa motto shikkarishita ronbun-o
   Taro-top self-top motto solid paper-acc
   kaka-nakerebanaranai-to omou-bekida.
   write-must-that think-should
   At-issue: Taro should think that he must write a solid paper.
   Expressive (subject-oriented, secondary at-issue): For all worlds \( w' \) compatible with the rule in \( w_0 \) and for all worlds \( w' \) compatible with Taro’s beliefs in \( w'' \), the expected degree of solidness of a paper is much higher than the current degree for Taro in \( w' \).
The expected degree of solidness is much higher than the current degree for Taro. These tests predict that it is odd to use the reflexive jibun and the discourse particle koo 'like' in the same clause. This prediction is borne out as shown in the following example:

(89) (The combination of jibun and koo)
   ?? Taro-wa jibun-wa motto koo shikkarishita ronbun-o
   Taro-top self-top MOTTO like solid paper-ACC
   kaka-nakerebanaranai-to omou-bekida.
   write-must-that think-should
   'lit. Taro should think that jibun should write motto koo solid paper.'

These empirical facts show that a speaker-oriented reading and a subject-oriented reading have different logical structures.

Let us now analyze the speaker-oriented reading and the subject-oriented reading in a compositional way based on the following example:

(90) Hanako-wa kono mise-no keeki-wa motto oishi-katta-to
    Hanako-top this store-gen cake-top MOTTO delicious-PAST-that
    omo-bekida.
    think-should
    At-issue: Hanako should think that this store's cake was delicious.
    Expressive 1 (subject-oriented, secondary at-issue): For all worlds $w''$ compatible with the rule in $w_0$ and for all worlds $w'$ compatible with Hanako's beliefs in $w'$, the expected degree of deliciousness of this store's cake is much higher than the current degree for Hanako in $w'$.
    Expressive 2 (speaker-oriented, CI): The expected degree of deliciousness of this store's cake is much higher than the current degree for me.

As for the meaning of negative motto I assume the following ($t_0 = current\ time$, $w_0 = the\ actual\ world$):

(91) $[[\text{mottoEXPRESSIVE}]] : \langle G^a, \langle e^a, \langle p^a, \langle s^a, t^a \rangle \rangle \rangle \rangle \times \langle G^b, \langle e^b, \langle p^b, \langle s^b, t^b \rangle \rangle \rangle \rangle = \lambda g \lambda x \lambda t \lambda w. [d \geq \text{STAND} \land g(d)x(t)w]$
    $\lambda g \lambda x \lambda t \lambda w. \max \{d[g(d)(x)(t)w]\} \neq \max \{d[g(d)(x)(t_0)w_0]\}$ for $j$ (where $j$ is consistent with a judge in the at-issue level)

Notice that I have added the lexical constraint that the judge of the CI must be consistent with a judge in the at-issue level.

As for the deontic modal bekida, I assume that it has the following meaning:

(92) $[[\text{bekida}]] = \lambda p \langle \lambda t, \lambda w. \forall w' \text{ compatible with the rules in } w_0 : p(w')(t) = 1 \text{ for } j \rangle$

As is the case with the other lower-level pragmatic scalar modifiers, inside the embedded clause the negative motto behaves as a CI (regardless of whether it is speaker-oriented or not). The following example shows the logical structure of the embedded clause:
Embedded lower-level pragmatic scalar modifiers

(93) Interpretation of the embedded clause in (90)

\[ \exists d [ d \geq \text{STAND} \land \text{delicious(this-store's-cake)(PAST)\((w) = d\)} ] \]

\[ \max [ d | \text{delicious(this-store's-cake)(PAST)\((w) = d\) = \text{PAST}} ] \]

\[ \max [ d | \text{delicious this-store's-cake)\((t_0)(w_0) = d\) for } j] \]

\[ \lambda w. \exists d [ d \geq \text{STAND} \land \text{delicious(this-store's-cake)(PAST)\((w) = d\) } ] \]

\[ \lambda w. \max [ d | \text{delicious(this-store's-cake)(PAST)\((w) = d\) = \text{PAST}} ] \]

\[ \max [ d | \text{delicious this-store's-cake)\((t_0)(w_0) = d\) for } j] \]

In the subject-oriented reading, the CI meaning of the negative motto becomes a secondary at-issue entailment after the application of parsetree interpretation:

(94) Parsetree interpretation and semantic shift from CI to a secondary at-issue entailment

\[ ( \exists d [ d \geq \text{STAND} \land \text{delicious(this store's cake)(past)\((w) = d\) } ] \]

\[ \max [ d | \text{delicious(this store's cake)(past)\((w) = d\) = \text{PAST}} ] \]

\[ \max [ d | \text{delicious this store's cake)\((t_0)(w_0) = d\) for } j] : \{ t^n \times t^m \} \]

The following example shows the rest of the semantic derivation of the subject-oriented reading of (90):
The logical structure of the entire sentence in (90) (subject-oriented reading)

∀w′′ compatible with the rules in w0:
∀w′ compatible with Taro’s beliefs in w′′:
⟨∃d [d ⪰ STAND ∧ delicious(this-store’s-cake)(PAST)(w′) = d], max[d] delicious(this-store’s-cake)(PAST)(w′) = d⟩ at t in w′ = 1

λwλt ∈ W0 compatible with Taro’s beliefs in w:
⟨∃d [d ⪰ STAND ∧ delicious(this-store’s-cake)(PAST)(w) = d], max[d] delicious(this-store’s-cake)(PAST)(w) = d⟩ at t in w

λxλtλw ∀w′ compatible with x’s beliefs in w:
p(w′)(t) = 1 for jsp

In this reading, the judge of motto (in the embedded clause) corresponds to the subject of the entire sentence. Note that if the main clause has a past tense, then the expressive meaning triggered by motto corresponds to the subject’s past feeling. This means that the standard of comparison of motto is the degree in the current time and the current world “in the past situation.”

We now consider a speaker-oriented reading. A speaker-oriented reading is simpler in that it does not involve a semantic shift. The following example shows the logical structure of the speaker-oriented reading of (90):
(96) The logical structure of the entire sentence in (90) (speaker-oriented reading)

\[ \forall w' \text{ compatible with the rules in } w_0, \forall w' \text{ compatible with Taro's beliefs in } w': \exists d \geq \text{STAND} \land \text{delicious(this store's cake)(PAST)}(w_j) = d \text{ at } t \text{ in } w' = 1 \text{ for } j \]

Note that the addition of an epistemic modality, such as *kamoshirenai* 'may,' does not help the embedded *motto* become speaker-oriented.

(97) Hanako-wa kono mise-no keeki-wa motto oishi-katta-to
Hanako-top this store-gen cake-top motto delicious-past-that
omo-kamoshiranai.

think-may

At-issue: Hanako may think that this store's cake was delicious.

Expressive 1 (subject-oriented, secondary at-issue): For some worlds \( w' \) compatible with a speaker's knowledge in \( w_0 \) and for all worlds \( w' \) compatible with Hanako's beliefs in \( w' \), the expected degree of deliciousness of this store's cake is much higher than the current degree for Hanako in \( w' \).
Why is it that the expressive motto cannot be speaker-oriented in (97)? We propose that this is because the meaning of the epistemic modality is not pragmatically consistent with the expressive meaning of the negative motto. In the case of (90), the deontic modality conveys a speaker’s complaint, and the negative motto also conveys a judge’s complaint. Thus, proposing that the judge of motto and the judge of the deontic modality are the same is natural. However, in the case of (90), no semantic consistency exists between motto and the epistemic modality.

8.4.4 Interpretations of the embedded kaette

Finally, we consider the embedded interpretation of the scale-reversal adverb kaette. In Chapter 7, we considered that kaette conventionally implies that “generally, the opposite is true”:

At-issue: This place is dangerous.
CI: In a normal situation, this place is considered safe.

b. Konbini-no kohhii-no-hoo-ga resutoran-no kohhii-yori-mo kaette oishii.
At-issue: A convenience store’s coffee is tastier than a restaurant’s coffee.
CI: A restaurant’s coffee is normally tastier than a convenience store’s coffee.

Similarly to other kinds of lower-level pragmatic scalar modifiers, the embedded kaette needs to have a modal in order to project out of the complement of an attitude predicate. More specifically, kaette requires an epistemic/evidential modal in the main clause.

If kaette is embedded under an attitude predicate and there is no modality in the main clause, kaette can only be subject-oriented:

(99) Taro-wa [konbini-no kohhii-no-hoo-ga]
Taro-top convenience store-gen coffee-gen-direction-nom resutoran-no kohhii-yori-mo kaette oishii]-to omo-ta.
At-issue: Taro thought that a convenience store’s coffee is tastier than a restaurant’s coffee.
CI: Taro thought that a restaurant’s coffee is normally tastier than a convenience store’s coffee. (Only the subject-oriented reading is available.)

However, if there is an epistemic/evidential modal in the main clause, the embedded kaette can be ambiguous between speaker-oriented and subject-oriented:\[17]

\[17\] Some native speakers of Japanese consider that the following sentence, which does not have an epistemic/evidential modality, can have a speaker-oriented reading (David Oshima, personal communication):
Embedded lower-level pragmatic scalar modifiers

At-issue: Taro may think that a convenience store's coffee is tastier than a restaurant's coffee.

Reading 1 (Subject-oriented reading, secondary at-issue): For some worlds \( w'' \) compatible with the speaker's knowledge, for all worlds \( w' \) compatible with Taro's beliefs in \( w'' \), a restaurant's coffee is [normally] tastier than a convenience store's coffee for Taro in \( w' \).

Reading 2 (Speaker-oriented reading, CI): A restaurant's coffee is [normally] tastier than a convenience store's coffee for me.

We can differentiate a speaker-oriented reading and a subject-oriented one based on several tests. First, if we posit a special context, we can provide an example where only a speaker-oriented reading is available. For example, (102) can only have a speaker-oriented reading:

(i) Saikin-no wakamono-wa famiresu-no pasuta-no hoo-ga
These days-gen young people-top family restaurant-gen pasta-gen direction-nom
senmonten-no pasta-yori kaette oishii-to omo-teiru.
specialist-gen pasta-than kaette delicious-that think-teiru
At-issue: These days, young people think that a family restaurant's pasta is more delicious than a specialist restaurant's pasta.

CI: Generally, a specialist restaurant's pasta is more delicious than a family restaurant's pasta for me.

It seems to me that the speaker-oriented reading can arise in the above example because there is a phrase saikin-no wakamono 'young people in these days.' Saikin-no wakamono is a speaker-oriented expression in that it is often used in a situation where a speaker criticizes young people's behaviors. This sentence is different from a pure reportative sentence where there is no speaker's evaluation. Note that this sentence also has a subject-oriented reading as well. I thank David Oshima for the valuable comments and discussions.
Embedded pragmatic scalar modifiers

(102) (Context: A speaker likes Japanese food very much, but Bill does not like Japanese food at all.)
Bill-wa pasuta-no hoo-ga udon-yori-mo kaette
Bill-TOP pasuta-GEN direction-NOM udon-than-mo KAETTE
 delicious-that think-TEIRU-may
'Bill may think that pasta is kaette more delicious than udon.'

In this example, there cannot be a subject-oriented reading because according to the context, Bill does not like Japanese food, thus it is odd for Bill to have an opinion that "normally udon is tastier than pasta." On the other hand, if we add the reflexive zibun, only the subject-oriented reading is available. For example, the following sentence, which contains the reflexive zibun, only has a subject-oriented reading.

(103) Taro-wa [jibun-no nakadewa insutanto kooihii-no-hoo-ga
Taro-TOP self-GEN inside instant coffee-GEN-direction-NOM
kissagen-no kooihii-yori-mo kaette oishii]-to omo-tta.
coffee shop-GEN coffee-than-mo KAETTE tasty-that think-PAST
At-issue: Taro thought that for him instant coffee is tastier than restaurant coffee.
The meaning triggered by kaette (secondary at-issue): For all worlds w' compatible with Taro's beliefs in w', a coffee shop's coffee was normally tastier than instant coffee for Taro in w'. (= Taro thought that the opposite is normally true.) (Only the subject-oriented reading is available.)

Recall that when the reflexive jibun is in the embedded clause, the perspective of the embedded clause is the subject of the sentence. Note that the meaning triggered by kaette is secondary at-issue (not a CI). It is Taro's assumption in the past.

Then why is it that kaette can project out of the complement of an attitude predicate only when there is an evidential/epistemic modal? Unlike the negative motto, the deontic modal beki does not support the projection of kaette.

(104) (With the deontic modal beki 'should')
Taro-wa [konbini-no kooihii-no-hoo-ga
Taro-TOP convenience store-GEN coffee-GEN-direction-NOM
resutoran-no kooihii-yori-mo kaette oishii]-to omou-bekida.
restaurant-GEN coffee-than-mo KAETTE tasty-that think-should
At-issue: Taro should think that a convenience store's coffee is tastier than a restaurant's coffee.
Subject-oriented reading, secondary at-issue: For all worlds w'' compatible with the rule in w0 and for all worlds w' compatible with Hanako's beliefs in w'', a restaurant's coffee is [normally] tastier than a convenience store's coffee for Taro in w'.

I claim that this is due to the nature of reversal. In order to reverse a judge's previously established assumption, the judge has to recognize the gap/difference between
his/her established assumption and the current situation. If a modal is added to
the main clause, the whole proposition is evaluated by the speaker, enabling him
or her to contrast his/her assumption and the (unusual) utterance situation. On
the other hand, if there is no epistemic modal/evidential modal, the sentence only
reports a subject's belief. The speaker cannot commit himself or herself to reversing his
or her established assumption. In the at-issue dimension, the sentence only reports
Taro's belief.

Let us now analyze the speaker-oriented and subject-oriented reading based on the
following example:

(105) (With kamoshirenai ‘may’)
Taro-wa [konbini-no koohii-no-hoo-ga
Taro-top convenience store-gen coffee-gen-direction-NOM
restoran-gen-coffee-than-MO KAETTE tasty-that
omo-teiru-kamoshirenai.
think-TEIRU-may
At-issue: Taro may think that a convenience store's coffee is tastier than a res-
taurant's coffee.

Reading 1 (Subject-oriented reading, secondary at-issue): For some worlds \( w' \)
compatible with the speaker's knowledge, and for all worlds \( w \) compatible with
Taro's beliefs in \( w' \), a restaurant's coffee is [normally] tastier than a conveni-
ence store's coffee for Taro in \( w' \).

Reading 2 (Speaker-oriented reading, CI): A restaurant's coffee is [normally]
tastier than a convenience store's coffee for me.

As for the meaning of kaette, we assumed the following denotation in Chapter 7:

(106) \([\text{kaette}_{comp}] = \lambda P_{comp} \lambda x \lambda t \lambda w. \pi(g(x)(t)(w))\)

As for the epistemic modal kamoshirenai ‘may,’ I will assume the following
meaning:

(107) \([\text{kamoshirenai}] = \lambda P \in \gamma \exists w' \exists u' \exists v' \exists w' \subseteq \lambda \forall w \in \gamma \exists w' \pi(g(x)(t)(w))\)
The following example shows the logical representation of the embedded clause of (100):

(108) The logical structure of the embedded clause in (100)

\[
\begin{align*}
\text{max}[d'] \text{ delicious(the-convenience-store's-coffee)}(t)(w) &= d' \\
\text{max}[d'] \text{ delicious(the-restaurant's-coffee)}(t)(w) &= d' \\
\text{normal}(\neg \text{max}[d'] \text{ delicious(the-convenience-store's-coffee)}(t)(w) &= d') \\
\text{max}[d'] \text{ delicious(the-restaurant's-coffee)}(t)(w) &= d') \\
\end{align*}
\]

\[
\begin{align*}
\lambda w. \text{max}[d'] \text{ delicious(the-convenience-store's-coffee)}(t)(w) &= d' > \\
\lambda w. \text{max}[d'] \text{ delicious(the-restaurant's-coffee)}(t)(w) &= d' > \\
\lambda w. \text{normal}(\neg \text{max}[d'] \text{ delicious(the-convenience-store's-coffee)}(t)(w) &= d') > \\
\text{max}[d'] \text{ delicious(the-restaurant's-coffee)}(t)(w) &= d')) \text{ for } j
\end{align*}
\]

DP

\[
\begin{align*}
\lambda x \lambda w. \text{max}[d'] \text{ delicious(x)(t)(w) &= d'} > \\
\lambda x \lambda w. \text{max}[d'] \text{ delicious(the-restaurant's-coffee)}(t)(w) &= d'} > \\
\lambda x \lambda w. \text{normal}(\neg \text{max}[d'] \text{ delicious(x)(t)(w) &= d') > \\
\text{max}[d'] \text{ delicious(the-restaurant's-coffee)}(t)(w) &= d')) \text{ for } j
\end{align*}
\]

\[
\begin{align*}
\lambda x \lambda w. \text{max}[d'] \text{ delicious(x)(t)(w) &= d'} > \\
\lambda x \lambda w. \text{normal}(\neg \text{max}[d'] \text{ delicious(x)(t)(w) &= d') > \\
\lambda x \lambda w. \text{delicious(z)(t)(w) &= d} > \\
\text{max}[d'] \text{ delicious(the-restaurant's-coffee)(t)(w)]}) \text{ for } j
\end{align*}
\]

PP

\[
\begin{align*}
\lambda g \lambda x \lambda w. \text{max}[d'] \text{ delicious(g')(x)(t)(w)} > \\
\lambda g \lambda x \lambda w. \text{normal}(\neg \text{max}[d'] \text{ delicious(g')(x)(t)(w)} > \\
\lambda g \lambda x \lambda w. \text{delicious(z)(t)(w) &= d} > \\
\text{max}[d'] \text{ delicious(the-restaurant's-coffee)(t)(w)]}) \text{ for } j
\end{align*}
\]

Adv

\[
\begin{align*}
\text{restoran-no kookhi-yori} > \\
\text{than the restaurant's coffee} > \\
\text{max}[d'] \text{ delicious(the-restaurant's-coffee)}(t)(w)
\end{align*}
\]

(109) Parse tree interpretation

\[
\begin{align*}
\text{max}[d'] \text{ delicious(the-convenience-store's-coffee)}(t)(w) &= d' > \text{max}[d'''] \text{ delicious(the-restaurant's-coffee)}(t)(w) &= d'''; \text{ for } j; t''
\]

In the subject-oriented reading, the meaning triggered by \textit{kaette} becomes secondary at-issue, as shown in (110), and we get the following logical structure:
(110) After the application of shifting from a CI to a secondary at-issue meaning
\[
\langle \text{max}[d'] \text{ delicious(the-convenience-store's-coffee)}(t)(w) = d' \rangle \rightarrow \text{max}[d'] \text{ delicious(the-restaurant's-coffee)}(t)(w) = d',
\]
\[
\text{normal} \langle \langle \text{max}[d'] \text{ delicious(the-convenience-store's-coffee)}(t)(w) = d' \rangle \rightarrow \text{max}[d'] \text{ g(d')}(the-restaurant's-coffee)(t(w)) \rangle \rangle \text{ for } j : \langle t^a \times t^b \rangle
\]

The following example shows the entire derivation of the subject-oriented reading of (100):

(111) The logical structure of the subject-oriented reading in (100)

\[
\lambda w \forall x \lambda p \lambda t \lambda w \text{ compatible with } w', \lambda x' \text{ compatible with } x'
\]

\[
\text{w' compatible with } x' \text{ knowledge in } w: \langle \text{max}[d'] \text{ delicious(the-convenience-store's-coffee)}(t)(w') = d' \rangle \rightarrow \text{max}[d'] \text{ delicious(the-restaurant's-coffee)}(t)(w') = d',
\]
\[
\text{normal} \langle \langle \text{max}[d'] \text{ delicious(the-convenience-store's-coffee)}(t)(w') = d' \rangle \rightarrow \text{max}[d'] \text{ g(d')}(the-restaurant's-coffee)(t(w')) \rangle \rangle \text{ for } j : \langle t^a \times t^b \rangle
\]

\[
\text{w' compatible with } x' \text{ knowledge in } w: \langle \text{max}[d'] \text{ delicious(the-convenience-store's-coffee)}(t)(w') = d' \rangle \rightarrow \text{max}[d'] \text{ delicious(the-restaurant's-coffee)}(t)(w') = d',
\]
\[
\text{normal} \langle \langle \text{max}[d'] \text{ delicious(the-convenience-store's-coffee)}(t)(w') = d' \rangle \rightarrow \text{max}[d'] \text{ g(d')}(the-restaurant's-coffee)(t(w')) \rangle \rangle \text{ for } j : \langle t^a \times t^b \rangle
\]
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The speaker-oriented reading, on the other hand, does not involve any semantic operators. The following example shows the logical structure of the speaker-oriented reading of (100):

(112) The logical structure of the speaker-oriented reading in (100)

\[ \exists w \text{ compatible with the } j_i's \text{ knowledge in } w_0: \]
\[ \max [d'] \text{ delicious(the-convenience-store's-coffee)(t)(w') = d'} \]
\[ \succ \max [d''] \text{ delicious(the-restaurant's-coffee)(t)(w') = d''} \]
\[ = 1 \text{ for } j_i(= sp) \]

As the above derivation shows, in the speaker-oriented reading, the judge of the CI part of kaette is consistent with the judge of the modal.

8.5 Conclusion and discussions

In this chapter, we investigated interpretations of embedded pragmatic scalar modifiers and considered the semantic mechanism of subject- and speaker-oriented interpretations of embedded pragmatic scalar modifiers and CIs. For a subject-oriented reading, we proposed that there is a shift from a CI to a secondary at-issue entailment:
Conclusion and discussions

(113) Shifting from a CI to a secondary at-issue entailment:
A clause $S$, which consists of an at-issue meaning of type $t^a$ and a CI meaning of type $t^c$ (or $t^s$) can shift into an at-issue product type ($t^a \times t^a$) if, and only if, $S$ is embedded under an attitude predicate or a verb of saying and the judge of the CI in $S$ is the attitude holder of the predicate (where the first $t^a$ is a primary entailment and the second $t^a$ is a secondary entailment).

We showed that the semantic shift is a general phenomenon, and various kinds of embedded CI expressions (typical expressives, higher-level pragmatic scalar modifiers, and lower-level pragmatic scalar modifiers) are involved in this shift.

For a speaker-oriented reading of embedded pragmatic scalar modifiers, we showed that lower-level pragmatic scalar modifiers have the distinctive property of projection as in:

(114) Speaker-oriented reading
Unlike higher-level pragmatic scalar modifiers, lower-level pragmatic scalar modifiers can project out of the complement of a belief predicate only if there is a speaker-oriented modal in the main clause.

We also showed that there are variations among lower-level pragmatic scalar modifiers in what type of modal can support their projections:

(115) Variety of lower-level pragmatic scalar modifiers
a. In the case of yoppodo, an evidential modal in the main clause supports the projection (speaker-oriented reading).
b. In the case of totemo, an ability or epistemic modal in the main clause supports the projection (speaker-oriented reading).
c. In the case of motto, a deontic modal in the main clause supports the projection (speaker-oriented reading).
d. In the case of kaette, an epistemic modal or evidential modal in the main clause supports the projection (speaker-oriented reading).

We showed that each lower-level pragmatic scalar modifier can be different regarding what kind of modal can support the projection of the lower-level pragmatic scalar modifier (speaker orientation). In the case of yoppodo, an evidential modal supports the projection of the lower-level pragmatic scalar modifier, and in the case of totemo, a negative gradable modal supports the projection of the lower-level pragmatic scalar modifier. As for motto, a deontic modality tends to support the projection of the lower-level pragmatic scalar modifier, and in the case of kaette, evidential and epistemic modals support the projection of the lower-level pragmatic scalar modifier. We argued that these variations can be accounted for by the lexical meaning of each pragmatic scalar modifier.

These points are theoretically important for the following reasons. First, a subject-oriented reading of lower-level pragmatic scalar modifiers clearly shows that CIs can become at-issue in a certain environment and that a systematic interaction exists between an at-issue level and a CI level. This means that multidimensionality and
unidimensionality are interrelated in the compositional mechanisms of pragmatic scalar modifiers.

Second, the conditional projective behavior of lower-level pragmatic scalar modifiers provides a new perspective for the theory and classification of projective content. In this chapter, we explained this conditional projection by assuming that lower-level pragmatic scalar modifiers require that their judge must be consistent with the judge at the at-issue level. This means that there can be a semantic interaction between projective content and external judge-sensitive expressions. This point is different from appositives and expressives, in which the perspective shifting is contextual (Harris and Potts 2009; i.e., not dependent on the presence or absence of modality or related expressions).

Finally, these claims naturally lead to the following question: Why is it that lower-level pragmatic scalar modifiers have the constraint that their judge must be consistent with the judge at the at-issue level? Although this is still a speculation, I would like to tentatively suggest that this constraint comes from their recycling property. Unlike higher-level pragmatic scalar modifiers, lower-level pragmatic scalar modifiers recycle the scale of at-issue gradable predicates to induce a not-at-issue meaning. This means that the at-issue and not-at-issue dimensions are semantically relevant. Thus, it seems natural to have the requirement that the judge of a CI must be consistent with the judge of an at-issue meaning.
Historical development of pragmatic scalar modifiers

9.1 Introduction

Thus far, we have investigated various kinds of dual-use phenomenon of scalar modifiers in terms of the semantics/pragmatics interface: i.e., comparison with indeterminateness (Chapter 4), minimizers (Chapter 5), intensifiers (Chapter 6), scale-reversal adverbs (Chapter 7), and interpretations of pragmatic scalar modifiers in the embedded environment (Chapter 8).

More specifically, we have shown that scalarity plays an important role in signaling various kinds of pragmatic information, including politeness, priority of utterance, and the salience of discourse context (not just measuring objects/things), and that the scalar meaning in the discourse domain (i.e., CI scalar meaning) can be analyzed in the same way as a semantic use of scalar modifiers using a multidimensional composition system.

In this chapter we will consider the relationship between at-issue and not-at-issue scalar meanings from a historical point of view. More specifically, we will consider the following questions:

(1) a. Can the semantic change of a scalar modifier be understood under a general grammaticalization path?
   b. Is the semantic change of a degree modifier lexically random? Or is there any explanation behind the development of pragmatic scalar modifiers?
   c. What does the language change of scalar modifiers suggest for the theories of language change or linguistic theory in general?

In this chapter, we will discuss the dual-use phenomenon of scalar modifiers in terms of language change and try to answer these questions. The main point I would like to make is that although the directionality of semantic change of scalar modifiers can be captured under a general path of semantic change/grammaticalization (i.e., propositional > (textual) > expressive) (Traugott 1982), as in (2), the semantic shift of scalar modifiers is not lexically at random. I will argue that the semantic change of scalar modifiers is constrained/regulated by their lexical and morphosyntactic properties.

(2) propositional > (textual > ) expressive (Traugott 1982: 257)
Regarding the constraint at a lexical level, it will be argued based on the data on minimizers (Chapter 5) and intensified comparative adverbs (Chapter 6), that semantic change does not occur if the source meaning does not fit with a mode of expressive. As for the morphosyntactic level, I will argue, based on the data on noteworthy comparison (Chapter 4) and intensified comparison (Chapter 6), that there is a general constraint that the elements that are used only for expressing a particular CI meaning must form a constituent, and if the at-issue morphosyntactic environment does not satisfy this requirement, a semantic change never happens. We will show that this constraint is deeply connected to the issue of semantic compositionality.

The dual-use phenomenon of scalar modifiers also provides important insights for the relationship between semantic change and syntactic change. In the syntactic approach to language change, it is often claimed that the grammaticalization is always “upwards” in the structural hierarchy of functional categories (Roberts and Roussou 2003; Van Gelderen 2004). Although this tendency can be observed for “higher-level” pragmatic scalar modifiers where the pragmatic modifiers operate at a speech act level (e.g., the noteworthy nani-yori-mo (Chapter 4) and the expressive minimizer (Chapter 5)), there are cases where pragmatic scalar modifiers appear at the same level as semantic scalar modifiers, i.e., lower-level pragmatic scalar modifiers (e.g., the negative motto (Chapter 6) and the scale-reversal adverb kaette (Chapter 7)). The lower-level pragmatic scalar modifiers directly modify an at-issue predicate (similarly to the case of semantic scalar modifiers) and make use of the predicate for expressing a speaker’s emotion/attitude. We will claim that the dual-use phenomenon of scalar modifiers strongly suggests that semantic change and syntactic change do not always occur in parallel.

9.2 Semantic/pragmatic approaches to language change

Before discussing the mechanism of semantic change of scalar modifiers, let us first review some theories of semantic change/grammatization. In this section, we will consider the semantic/pragmatic approach to language change.

9.2.1 Directionality of semantic change

Grammaticalization has been studied extensively from semantic/pragmatic perspectives. In the literature it has been assumed that there is a certain tendency to directionality in semantic change. For example, Traugott (1982) claims that there is a developmental semantic cline in grammaticalization:

(3) propositional > (textual >) expressive (Traugott 1982: 257)

“Textual” is a grammatical element that has to do with a cohesive discourse. These include various connectives, such as and and therefore, as well as relativizers and complementizers (Traugott 1982: 248). The term “expressive” is understood as affective, attitudinal, and emotive. It “bears on the recourses a language has for expressing personal attitudes to what is being talked about, to the text itself, and to others in the speech situation” (Traugott 1982: 248).
Recent semantic/pragmatic approaches to grammaticalization often assume that the semantic change in (3) can be understood under the notions of subjectivity/intersubjectivity (e.g., Traugott 1989, 1995; Hopper and Traugott 2003; Traugott and Dasher 2005; Narrog 2012). Traugott (2010: 35) defines the notions of subjectification and intersubjectification as in (4) and posits a cline as in (5):

(4) Subjectification and intersubjectification are the mechanisms by which:
   a. Meanings are recruited by the speaker to encode and regulate attitudes and beliefs (subjectification), and
   b. Once subjectified, may be recruited to encode meanings centered on the addressee (intersubjectification).
(5) non-/less subjective > subjective > intersubjective (Traugott 2010: 35)

In Traugott (2010), subjectivity is understood as regulating attitude and belief, while intersubjectivity is understood as addressee-centered. Traugott and Dasher (2005) consider that intersubjectivity is relevant to the interaction between speaker/writer and addressee/reader and it involves social deixis.1

According to them, intersubjective meanings impact directly on the self-image or “face” needs of the speaker/writer or addressee/reader (Brown and Levinson 1987) and the typical examples of intersubjective expressions are honorifics, hedges, and politeness markers.2

The following examples can be regarded as examples of subjectification:

(6)
   a. Epistemic modals may arise from verbs of desire or volition (will).
   b. Concessives arise from temporals (Early Middle English while ‘during’ > Early Modern English ‘although’).
   c. Focus markers arise from manner adverbials (Old English anlice ‘simply, especially’ > only).
   d. Very was borrowed in Middle English from Old French verai ‘true’ (a cognitive evaluation), and in Early Modern English, it became a scalar particle as in ‘the very height of her career’ (a subjective evaluation) (Traugott 1989: 35).

---

1 Nuyts (2001) uses the term “intersubjectivity” in referring to evidence known to or accessible to a larger group of people who share the same conclusion as the speaker. See also Portner (2009) for the discussion on Nuyts’ (2001) notion of intersubjectification.

2 With regard to semantic change, the term pragmatization is also often used (Ajmer 1997; Diewald 2011), but some researchers make a sharp distinction between grammaticalization on the one hand and pragmatization on the other. For example, Ajmer considers that grammaticalization is concerned with the derivation of grammatical forms and constructions (mood, aspect, tense, etc.) from words and lexical structures, whereas “pragmatized items” (i.e., items having undergone a process of pragmatization) involve a “speaker’s attitude to the hearer” (Ajmer 1997: 2). On the other hand, Diewald (2011) claims that pragmatization is a subprocess of grammaticalization. In this book, I will interpret the term grammaticalization broadly and consider that pragmatization can be integrated into and understood within the notion of grammaticalization.
Development of pragmatic scalar modifiers

On the other hand, the following are examples of intersubjectification:

(7)  a. Old Japanese saburahu 'wait (for an occasion or order) in a specific location' (non-honorific) > Late Old Japanese Humble Subject be in the vicinity of Respected Referent (referent honorific; subjectified) > Early Middle Japanese -sabura/-soorau 'be-Polite' (addressee-honorific style; intersubjectified).

   (Traugott and Dasher 2002: 263–76)

b. Old English well 'in a good manner', 'certainly, definitely' (in clause-initial position) > Middle English 'if this is so/OK then' > Modern English hedging function. (Traugott and Dasher 2005: 175–6)

The question is: how can we theoretically explain the above semantic clines/changes in a theoretical way? Broadly speaking, there are two approaches to explaining semantic change: a metaphor-based approach (Sweetser 1990) and an invited inference-based approach (Traugott and Dasher 2005).

9.2.2 A metaphor-based account

One major approach to semantic change is a metaphor-based approach. This approach considers that the development of grammaticalization is strongly motivated by metaphoric processes, and the unidirectionality of change can be explained by the inherent unidirectionality of a metaphorical connection (Claudi and Heine 1986; Sweetser 1990; Bybee et al. 1994, among many others). For example, Sweetser (1990) claims that there is a metaphorical link between the deontic/root may and the epistemic may: logical possibility is the mental (or epistemic) analogue of permission or ability in the real world. Sweetser claims as follows:

(8)  Given that the epistemic world is understood in terms of the sociophysical world, we can see why general sociophysical potentiality, and specifically social permission, should be the sociophysical modality chosen as analogous to possibility in the world of reasoning. May is an absent potential barrier in the sociophysical world, and the epistemic may is the force-dynamically parallel case in the world of reasoning. The meaning of epistemic would thus be that there is no barrier to the speaker’s process of reasoning from the available premises to the conclusions expressed in the sentence qualified by may.

   (Sweetser 1990: 59)

The following are examples of Sweetser’s analysis of may:

(9)  a. John may go.

   'John is not barred by (me or some other) authority from going.'

b. John may be there.

   'I am not barred by my premises from the conclusion that he is there.'

   (Sweetser 1990: 61)

Sweetser (1990) shows that the metaphoric linking between/among different domains (content domain, epistemic domain, and conversational/speech act domain) is not just a matter of modality, but can be viewed in a wide range of linguistic phenomena, including conjunction, subordination, and conditionals.
9.2.3 Invited inference theory of semantic change (a metonymy-based account)

Another major approach to semantic change is the so-called invited inference theory of semantic change (Traugott and Dasher 2005; see also Traugott and König 1991; Hopper and Traugott 2003; Levinson 2000). The central idea of this theory is that semantic change proceeds by conventionalization of pragmatic inference (see also Geis and Zwicky 1971; Brown and Levinson 1987). More specifically, Traugott and Dasher (2002) assume the following steps:

(a) In a first state, an item L possesses a coded meaning $M_1$.
(b) In concrete utterance situations, this item L can be used in sentences that give rise to certain pragmatic implicatures, referred to as Invited Inferences (IIN).
(c) These inferences can be exploited innovatively in the associative stream of speech and are reweighted.
(d) These processes eventually lead to conventionalization of certain inferences for certain sentences that contain the item L. These conventionalized inferences are also called Generalized Invited Inferences (GIIN).
(e) At the final stage II, the conventionalized invited inferences give rise to a new coded meaning for item L which is then ambiguous between meaning $M_1$ and (new) meaning $M_2$. (Traugott and Dasher 2005: 38; Eckardt 2006: 40)

This approach is metonymic in the sense that the “semanticization” of pragmatics involves a profile shift from pragmatic status to coding status. However, Traugott and Dasher (2005) also consider that this metonymic shift may be enabled by metaphors that preexist and serve as frames for the shift, and may result in what appear synchronically to be metaphors. As a concrete example, let us consider how Traugott and Dasher (2005) analyze the semantic change of *as*/*so long as* in English. Traugott and Dasher observe that in Old English and Middle English the spatial meaning as already coexisted with the temporal ‘for the same length of time as’, as in (12):

(a) *pa het Ælfred cyng timbran lang scipu ongen ða æscas; then ordered Alfred kind build-INF long ships against those warships*  
*pa waeran fulneah tu swa lange swa pa oðru they were nearly twice as long as the others*  
‘Then King Alfred ordered long ships to be built to battle the warships; they were almost twice as long as the other ships.’
*(850–950 ChronA90) (Traugott and Dasher 2005: 36)*

(b) *wring purh linenne clað on þæt eage swa lange swa him δearf wring through linen cloth on that eye as long as him need sy be-subjunct*  
‘Squeeze (the medication) through a linen cloth into the eye as long as he needs.’
*(850–950 Lacnunga: 100) (Traugott and Dasher 2005: 36)*
By hypothesis, this medical instruction was meant to be understood as meaning “for
the length of time that he needs”; in addition, there is an invited inference “provided
that he needs it.”

This concessive meaning can be inferred in examples from nearly a thousand years
of textual history, but appears to have become a more salient and plausibly intended
meaning (i.e., a GIIN) during the seventeenth century:

(13) They whose words doe most shew forth their wise vnderstanding, and whose
lips doe vter the purest knowledge, so as long as they understand and speake as
men, are they not faine sundry waies to excuse themselves?
(1614 Hooker:5) (Traugott and Dasher 2005: 37)

According to Traugott and Dasher (2005), at this stage, the conditional reading has
become a GIIN of temporal as/so long as. But the temporal is still available. Namely
the sentence could mean “for the length of time that they understand and speak as
men, i.e. “as long as they live”.

By the mid-nineteenth century, however, we find examples in which the conditional
appears to have been semanticized (i.e., is the only plausible reading):

(14) ‘Then it doesn’t matter which way you go,’ said the Cat. ‘—so long as I get some-
where,’ Alice added as an explanation.
(1865 Carroll, chapter 6: 51) (Traugott and Dasher 2005: 37)

Invited inferencing has been hypothesized to play a significant role in the develop-
ment of auxiliaries, discourse markers, honorifics, etc. In the chief cognitive mechan-
ism underlying the changes via invited inferencing metonymy is broadly construed
(Traugott and Dasher 2005).

9.3 Syntactic approach to language change

Diachronic change/grammaticalization has also been investigated extensively in terms
of syntax. In this section, we will introduce two main approaches to syntactic change:

Roberts and Roussou (2003) claim that grammaticalization involves the creation
of new functional material, either through the reanalysis of existing functional
material or through the reanalysis of lexical material. The central claims of Roberts
and Roussou (2003) are as follows:

(15) a. The diachronic movement of a given morpheme is always “upwards” in
the structural hierarchy of functional categories (Roberts and Roussou
2003: 36).
b. Successive upward reanalysis along the functional hierarchy is thus how we
define grammaticalization paths (Roberts and Roussou 2003: 202).
c. The grammaticalization path is traversed by the loss of steps of head move-
ment, leading to changes from Move to Merge (Roberts and Roussou
2003: 71).
According to Roberts and Roussou, at the earlier diachronic stage, Y underwent movement to X, leaving a trace/copy in the launching site. At the later diachronic stage, the element formerly merged as Y is merged directly as X (i.e., Y becomes a new category X). Schematically, the following shows the structural change:

(16) \[[\text{XP} Y + X]\text{TP} \ldots TV \ldots ] > [\text{XP} Y = X]\text{TP} \ldots Y \ldots ]\]

(Roberts and Roussou 2003: 198)

As an illustration, let us consider the case of the diachronic change in the English modal. Roberts and Roussou (2003) assume the following syntactic change for the English modal:

(17) English modal
\[[TP V + T]\text{VP} \ldots TV \text{TP}] > [TP T]\text{VP}\]

(Roberts and Roussou 2003: 195)

The formal change in the English modal is thus the loss of movement and the associated change of category of V from V to T. The theoretical idea behind this is that a change always involves structural simplification (i.e., the loss of movement). Roberts and Roussou (2003) claim that this kind of reanalysis occurred in various linguistic phenomena, including Romance future/conditional, Greek future \textit{tha}, subjunctive particle \textit{na}, serial verb constructions, demonstratives, negative words, clitic agreement (Northern Italian), and affixal agreement (Welsh and Indo-European).

Van Gelderen (2004) also assumes that elements climb higher up the tree as they grammaticalize. However, in contrast to Roberts and Roussou’s analysis, Van Gelderen (2004) proposes a different explanation for the idea:

(18) Late Merge
Merge as late as possible. (Van Gelderen 2004: 28)

According to this principle, if a verb, for example, is less relevant to the argument structure, it will tend to merge higher (e.g., IP or CP), rather than merge early (e.g., in VP) and then move. Van Gelderen claims that this principle is relevant to a wide range of phenomena of diachronic change, including modality (Traugott 1972; Lightfoot 1979), perfect marking, progressive infinitive markers, and complementizers.

We have so far considered two different approaches to grammaticalization—a semantic/pragmatic approach and a syntactic approach—independently, but note that some researchers take both syntactic and semantic properties into consideration for analyzing the directionality of language change (e.g., Narrog 2012). 3

3 For example, Narrog (2012) proposes the following two hypotheses for directionality of change:

(i) a. Semantic change involving grammatical categories of the verb generally proceeds from categories with narrow scope (i.e., categories relatively lower on a hierarchy of grammatical categories) to categories with the same or wider scope (i.e., categories on the same or on a higher level on a hierarchy of grammatical categories).

b. Semantic change generally proceeds in the direction of the same or a higher degree of speech act orientation (Narrog 2012: 89).

The former is a structural hypothesis and the latter is a functional hypothesis.
9.4 Dual-use phenomenon and semantic change

Based on this background, let us now investigate the language change of scalar modifiers. In terms of meaning, it is possible to consider that all types of semantic changes of pragmatic scalar modifiers can be captured under the general semantic path from a propositional meaning to a textual/expressive meaning (Traugott 1982). However, crucially not all scalar modifiers can undergo semantic change. It will be shown that the semantic change of scalar modifiers is constrained or regulated by various factors, including morphosyntactic and semantic properties of scalar modifiers. I will also show that there are pragmatic scalar modifiers that appear in the same syntactic position as a semantic scalar modifier, suggesting that not all scalar modifiers move “upwards” when they change their meanings.

9.4.1 The development of noteworthy comparison (Chapter 4)

Let us first investigate the syntactic/semantic change of the Japanese nani-yori-mo 'what-than-MO.' In Chapter 4, we claimed that the comparative expression nani-yori-mo can express two kinds of meaning:

(19) (Modern Japanese)
Nani-yori-mo tenisu-wa tanoshii.
What-than-MO tennis-Top fun

Reading 1 (individual reading): At-issue semantics: Tennis is more fun than anything. Reading 2 (noteworthy reading): At-issue semantics: Tennis is fun.

CI: The utterance that tennis is fun is more noteworthy than any alternative utterance.

In the first reading, nani-yori-mo is comparing ‘tennis’ with (contextually determined) individual alternatives (e.g., soccer, basketball, reading, picnicking, etc.) in the at-issue dimension (at the level of semantics). On the other hand, in the second reading, nani-yori-mo is comparing ‘tennis is fun’ with contextually determined utterance alternatives on the scale of “noteworthiness” at the level of conventional implicature. Historically, it is safe to assume that the individual use of nani-yori-mo was used earlier than the noteworthy use of nani-yori-mo. The first data of individual nani-yori in Nihon Kokugo Daijiten (2nd edition), which is the most comprehensive/unabridged Japanese dictionary, is from Bunshoshu, which was written in the late twelfth century.\(^4\)

(20) (Historical data, the individual use of the Japanese nani-yori)
Nani-yori-wa sita nuku ku-koso kanashi-kere. Omou
What-than-wa tongue pull pain-focus sad-PRT Think
koto-o-mo iwa-se-ji-no hata.
thinG-ACC-MO say-cause-NEG.volitional-NM punishment

\(^4\) In Nihon Kokugo Daijiten, the explanation of the meaning of a lexical item is written in a chronological order and in each example there is a source (i.e., the title of a book and the date of publication). It is considered that the oldest example of a particular meaning roughly corresponds to the time in which it was used for the first time in a written work. See the following webpage for the data: <http://www.japanknowledge.com/contents/hanrei/niikkoku/niikkoku08.html#niikkoku08-1>. 
'It is the pain of pulling a tongue that is sadder than anything. It is a punishment that does allow one to say what he/she thinks.' (Bunsyoshu, late twelfth century, from Nihon Kokugo Daijiten, 2nd edition)

The second example is a poem by Saigyo, a warrior who later became a priest/poet. It was written when he saw a painting of a scene in Hell.

In contrast, the first example of the noteworthy use of nani-yori in Nihon Kokugo Daijiten is from the Kabuki play Tōkaidō Yotsuya Kaidan, written in 1825:

(21) (Historical data, the noteworthy use of the Japanese nani-yori)
Mazu nani-yori-wa kore-nite sakazuki.
First of all what-than-wa here-LOC sake cup
'First of all, more than anything, let’s exchange cups of sake (for a marriage).'</(Tōkaidō Yotsuya Kaidan, 1825, from Nihon Kokugo Daijiten, 2nd edition)

Semantically, the historical data seem to support the idea that the meaning of a lexical item tends to change from a propositional meaning to a textual/expressive meaning. In terms of Traugott’s semantic cline (propositional > (textual) > expressive), the noteworthy nani-yori-mo has changed from a propositional meaning to a textual meaning. Clearly the noteworthy nani-yori-mo is relativizing an at-issue utterance to its alternative (potential) utterances; thus, we can consider it as a kind of discourse connective.

Structurally, the noteworthy nani-yori-mo operates at the level of a speech act; therefore, the development of the noteworthy nani-yori-mo seems to support Roberts and Roussou’s (2003) and Van Gelderen’s (2004) view that the directionality of language change/grammaticalization is structurally always “upwards.”

The question is how the meaning of noteworthy comparison developed. We suggest there was a metaphorical extension from an individual comparison to a speech act comparison, and this was the important step in the development of the meaning of noteworthy nani-yori-mo. Recall that it is nani (not the other kinds of indeterminate pronouns) that makes it possible to make a speech act comparison (see Chapter 4).

The fact that nani can refer to a speech act makes sense because speech acts are metaphorically treated as the exchange or transfer of objects from one interlocutor to the other (see Sweetser 1990: 20):

(22) [[nani]] = {x ∈ D_e : thing (x)} ∧ C(x)
(23) [[nani]] = {U ∈ D_a : speech act (U) } ∧ C(U)

What is puzzling is that in the noteworthy reading, no explicit gradable predicate, such as noteworthy, exists in the surface sentence.

In Chapter 6 we claimed that the standard marker yori posits a scale of preference:

(24) [[yori_{NW}]] : (a^a, (a^a, t^t)) = {λU_1 λU_2[ U' > D_{es}(a)} U}

But the degree of preference is not the same as the degree of noteworthiness/importance. Metalinguistic comparison, which also posits a scale of preference (Giannakidou and Yoon 2011), does not convey the meaning of noteworthiness/importance.
In Chapter 4, we claimed that the meaning of noteworthy is derived by discourse-pragmatic reasoning:

\[(25) \text{If a speaker signals that he/she prefers } U \text{ (a move) to any alternative utterance (move), given that the speaker must be relevant to the goal of the conversation, it is reasonable to think that the speaker considers } U \text{ to be the most relevant, thus more important/noteworthy.}\]

What is interesting is that the phenomenon of noteworthy comparison can be found in languages other than Japanese. For example, we see the same ambiguity in the expression *mwues-pota-to* 'what-than-TO':

\[(26) \text{(Modern Korean)}

\[
\begin{align*}
\text{Mwues-pota-to} & \quad \text{teynisu-nun}
\end{align*}
\]

\[
\begin{align*}
\text{fun-decl} & \quad \text{caymi-itta.}
\end{align*}
\]

\[a. \text{ At-issue semantics: Tennis is more interesting than anything.}
\]

\[b. \text{ At-issue semantics: Tennis is interesting. CI: The utterance that tennis is interesting is more noteworthy than any alternative utterance.}\]

Notice that in English, as well, the meaning of noteworthy expression can be expressed based on the same degree of morphology for expressing an individual comparison. However, unlike Japanese and Korean, in English, the individual reading and the noteworthy reading are distinguished by their surface form:

\[(27) \text{a. Tennis is more interesting than anything. (Individual reading)}
\]

\[b. \text{More than anything, tennis is interesting. (Noteworthy reading)}\]

Crucially (27a) cannot express a meaning of noteworthy comparison. In order to get a noteworthy reading, the CI contributing elements *more, than,* and *anything* must form a constituent.

Based on this discussion, I will propose the following descriptive generalization on the constituency of CI:

\[(28) \text{Generalization on the constituency of CI: The elements that are used for expressing a particular CI must form a constituent.}\]

I consider that this generalization is a natural consequence of the system of semantic compositionality. Suppose that the sentence (27a) can be analyzed as (29) (although such analysis is impossible in reality):

\[(29) \text{Impossible interpretation of (27a)}

\[
\begin{align*}
\text{Tennis is more interesting than anything. (Noteworthy reading, intended)}
\end{align*}
\]

\[\text{At-issue: Tennis is interesting.}
\]

\[\text{CI: The utterance that tennis is interesting is more noteworthy than any alternative utterance.}\]

5 We assume that there is a pragmatic principle of relevance to a goal behind the reasoning:

(i) Principle of relevance to a goal (based on Roberts’ 2012 notion of relevance): Be relevant to a goal (i.e., make your utterance one which promotes the achievement of a goal).
The discussion so far strongly suggests that the morphosyntactic property of scalar expressions/constructions can regulate their semantic change. It will be shown that the generalization on the constituency of CI becomes important when we discuss the development of expressive intensified comparison.  

9.4.2 The development of the expressive minimizer in Japanese (Chapter 5)  
Let us now look at the semantic change of Japanese minimizers. In Chapter 5, we observed that "chotto" can have both a degree use (= semantic) and an expressive use (= pragmatic), but "sukoshi" can only have a degree use:

(30) (Degree type, Modern Japanese)  
Kono hon-wa {chotto/sukoshi} takai.  
This book-top a bit/a bit expensive  
‘This book is a bit/little expensive.’

(31) (Expressive type, Modern Japanese)  
{Chotto/*sukoshi} hasami aru? (Question)  
A bit/a bit scissors exist  
At-issue: Do you have scissors?

CI: The degree of imposition of my request is greater than a minimum. Historically speaking, it seems correct to say that the expressive use of "chotto" developed later than the degree use. According to Nihon Kokugo Daijiten, a degree use of "chotto" is found in Shikishō, the commentary on the ancient Chinese historical record Shiki written in 1477, whereas the expressive use of "chotto" is found in Kyōgenki (Scripts of Kyōgen) in 1660:

---

6 One potential counterexample for this generalization is a subject honorific construction. In Japanese, the phrase o…ni naru implicates that a speaker honors a subject referent at the level of CI (Potts and Kawahara 2004; Potts 2005):  
(i) Yamada sensei-ga o-warai-ni nat-ta.  
Yamada teacher-nom sub.hon-laugh-dat sub.hon-past  
At-issue: Professor Yamada laughed. CI: The speaker honors Professor Yamada.  
(ii) Yamada sensei-ga wara-tta.  
Yamada teacher-nom laugh-past  
At-issue: Professor Yamada laughed.  
However, we should not consider that the phenomenon of the Japanese subject honorific is a counterexample to the generalization in (28). As Potts and Kawahara’s (2004) and Potti’s (2005) analyses of Japanese subject honorification suggest, we should understand that the phrase o…ni naru as a whole triggers a single honorific meaning. The meaning of subject honorification cannot be divided into parts. I would like to assume that the phrase is a kind of productive construction.
Development of pragmatic scalar modifiers

(32) (Historical data)
Katubi-wa hana-no saki-ga chotto akari-te
A nose like a scorpion-top nose-gen head-nom a bit red-te
getting-PAST-ZO
‘As for the scorpion-like nose, it was getting a bit reddish.’ (Shikishō, 1477, from Nihon Kokugo Daijiten, 2nd edition)

(33) (Historical data)
Iya chotto futari isakai-o mesare-mashi-te
Well a bit two people quarrel-ACC make.HON-PERF.HON-TE
de-yari-mashi-te gozaru.
go out.SUB.HON-give-PERF.HON-TE BE.HON
‘Well, umm, the two people made a quarrel and they went out.’ (Kyougenki, 1660, from Nihon Kokugo Daijiten, 2nd edition)

The minimizer *sukoshi* has a long history. The first example of *sukoshi* in Nihon Kokugo Daijiten is from Manyoshu, which was written in the late eighth century:

(34) (Historical data)
Tamakushige sukoshi hiraku-ni shirakumono hako-yori idete.
Toiletries case a bit open-then white cloud box-from go out
‘When he opens a toiletries case a bit, a white cloud come out of the box.’ (Manyoshu 9.1740, late eighth century, from Nihon Kokugo Daijiten)

However, crucially it does not have an expressive use. Why didn’t *sukoshi* develop the expressive use? The key to answering this question is that there is a slight difference in meaning between *sukoshi* and *chotto* in nonexpressive use. Intuitively, the sentence with *chotto* sounds subjective/attitudinal, while the sentence with *sukoshi* sounds objective. (30) with *sukoshi* sounds objective in that there is an implication that the speaker has a specific standard in his/her mind (e.g., another book or a specific price), and based on that he/she is measuring the degree of expensiveness. Namely, here the speaker is measuring the gap based on evidence. On the other hand, (30) with *chotto* sounds subjective because there is an implication that the speaker is not measuring the gap between a standard and a given degree based on evidence.

The above difference leads us to consider that Japanese minimizers are in fact “mixed content” (McCready 2010). In Chapter 5, we proposed the following meanings for the degree *sukoshi/chotto*:

(35) \[ [[sukoshi]] : \langle (d^a, (e^a, t^a)), (e^a, t^a) \rangle \times t^a \]
\[ = \lambda G(d^a,e^a, t^a) \lambda x.\exists d[d \geq \text{STAND}_G \land G(d)(x)] \forall \exists d_i[d_i > \text{STAND}_{\text{precise}} \land \text{precise}(\text{the given scale}) = d_i] \]

(36) \[ [[chotto]] : \langle (d^a, (e^a, t^a)), (e^a, t^a) \rangle \times t^a \]
\[ = \lambda G(d^a,e^a, t^a) \lambda x.\exists d[d \geq \text{STAND}_G \land G(d)(x)] \forall \exists d_i[d_i < \text{STAND}_{\text{precise}} \land \text{precise}(\text{the given scale}) = d_i] \]
The left side of ♦ is an at-issue component and the right side of ♦ is a CI component (McCready 2010; Gutzmann 2011).

This analysis of sukoshi/chotto can naturally explain why chotto, but not sukoshi, can be used as an expressive realm.

(37) \[[\text{chottoEXPRESSIVE}] : \langle a^x, t' \rangle\]

\(= \lambda u. \exists d \geq \text{STAND}_\text{MIN.IMPOSITION} \land \text{imposed-on-}h(u) = d \land \exists d_1 \text{precise(h1)} \geq \text{STAND}_\text{precise} \land \text{precise} \text{(the given scale)} = d_1\)

(where \(u\) is a variable for a speech act (utterance) and \(h\) is a hearer).

From a pragmatic point of view, it makes sense that chotto developed the expressive use because the degree chotto’s CI meaning that “I am measuring the gap in an imprecise fashion” has an attitudinal flavor and semantically it fits with the context of hedging/understatement. Let us consider this based on the following example:

(38) Kono karee suupu-wa chotto karai-desu.
    This curry soup is a bit enough-gen-pref.hon
    Reading 1 (degree reading): This curry soup is a bit hot for me. (CI: I am measuring the degree in an imprecise way.)
    Reading 2 (expressive reading): This curry soup is hot for me (CI: I am weakening the degree of imposition of my assertion on you.)

This sentence can be ambiguous between a degree reading and an expressive reading. In the degree reading, the meaning of chotto has an at-issue degree meaning, but it also conveys that the speaker is measuring the degree in an imprecise fashion. The crucial point is that the degree reading pragmatically infers that the speaker is being hesitant of conveying information to the addressee in a precise manner. We can say that the expressive chotto developed as the result of conventionalization of this pragmatic inference of hesitancy/hedging.

On the other hand, we cannot get a pragmatic inference of hesitancy from the sentence with the degree sukoshi:

(39) Kono karee suupu-wa sukoshi karai-desu.
    This curry soup is a bit enough-gen-pref.hon
    At-issue: This curry soup is a bit hot. CI: My measurement is based on evidence.
    (Heading is not salient)

Sukoshi conventionally implicates that the speaker is measuring degree precisely. Thus the use of sukoshi does not fit with the situation where the speaker wants to convey that “I am hesitant of conveying unpleasant information to you.” This sentence will naturally fit with an official context where the speaker needs to report how hot the curry soup is, but it does not fit with the emotional context. In summary, this discussion strongly suggests that the semantic change in Japanese minimizers is not lexically random, but rather highly restricted by their lexical pragmatic properties.
9.4.3 The development of intensified comparison (Chapter 6)

Now let us consider the mechanism of semantic change in an intensified comparison. In Chapter 6, we discussed the dual-use phenomenon of the Japanese degree adverb *motto*, a degree use and a negative use.

(40) (Imperative, Modern Japanese)

```plaintext
Motto hayaku hashi-re!
MOTTO fast run-IMP
a. Run even faster! (Degree reading)
   b. Run fast! (Implied: You are running slowly now.) (Negative reading)
```

In the degree reading, *motto* presupposes that a standard of comparison satisfies a contextual standard associated with a gradable predicate (here *hayaku* ‘fast’), and based on this presupposition it denotes that the targeted degree is much greater than the standard. By contrast, in the negative reading, *motto* behaves as an expressive and conventionally implicates that the targeted degree is much greater than the current degree at the level of CI.

Historically, it seems that the adverb *motto* is a relatively new lexical item. The oldest example of *motto* in *Nihon Kokugo Daijiten* is from *Sharebon*, written in 1770:

(41) (Historical data)

```plaintext
A: Dokoe-nari-to iki-masu-bei.
Where-ever-to go-PERF.HON-volition
'I will go anywhere.'

B: Son-nara motto mie-o shi-te ko-yoo-monoo.
So-if MOTTO luxurious dress-ACC do-TE come-will-IRREALIS
'It that is so, you could have come with motto luxurious appearance.' (Sharebon, Tatsumine, 1770, from Nihon Kokugo Daijiten, 2nd edition)
```

It seems that *motto* in (41B) can be ambiguous between the degree reading (meaning ‘still much more’/’even more’) and the negative reading (i.e., the expressive reading). If the speaker thinks that the current degree of luxurious appearance is greater than a contextual standard, the sentence can be interpreted as a degree reading. However, if the speaker thinks that the current degree is not satisfactory, the negative reading will become salient.

The following example, however, seems to have only a negative/expressive reading:

(42) (Historical data)

```plaintext
Mada tannee-kara motto sake ka-te koi-da.
Yet short-because MOTTO sake buy-TE come-PRED
'Because sake is not enough, motto buy it.'
(CI: My expected degree of quantity of sake is much greater than the current quantity.)
(Kokkeibon, Ukiyoburo, 1809–13, Nihon Kokugo Daijiten, 2nd edition)
```

Clearly, this sentence is used in a situation where the speaker is complaining about the current quantity of sake; thus, it seems natural to consider that *motto* in example (42) is the negative *motto* (i.e., expressivized *motto*).
Dual-use phenomenon and semantic change

Since *motto* seems to be a relatively new lexical item, the historical path of the item is not clear. However, if we apply the general tendency of semantic change, it seems natural to presume that the negative use was developed later than the degree use. The question is how the negative *motto* developed. It seems that the negative *motto* emerged in an environment like (43):

(43) (Modern Japanese)

Kono mise-no keeki-wa izen-wa motto oishi-katta.

This store-gen cake-top old days-top motto delicious-past

a. Degree reading 1 (the “than something” reading): In the old days, this store's cake was still much more delicious (than a contextual store's cake).

b. Degree reading 2 (the “than now” reading): In the old days, this store's cake was still much more delicious (than now).

c. Expressive reading (the “negative” reading): In the old days, this store's cake was delicious. (CI: The deliciousness of this store's cake in the past was much greater than the current degree of deliciousness.)

In this sentence, there are two kinds of degree readings. In degree reading 1, the sentence compares the deliciousness of the store's cake and the deliciousness of a contextual store's cake. In degree reading 2, the sentence compares the degree of deliciousness of the store's cake in the past and the “current” degree of deliciousness of the store's cake. Crucially, the intensified comparative meaning in the two readings is part of semantics. Unlike the case in the expressive reading, the denial “no, that’s not true” can target the comparative meaning.

I think it is the “than now” reading like (43b) that is the source for the development of the expressive *motto*. It seems natural to consider that the expressive comparison in (43c) comes from the semantic shift of the reading in (43b). Let us consider this idea in more detail. In this book, we have assumed that the standard marker *yori* has a meaning of comparison (rather than positing a null comparative morpheme *more/-er* and assuming that the null comparative morpheme has a meaning of comparison) (see Chapter 3). In Chapter 6, building on Kennedy’s (2007c) idea of selection, we assumed that the degree *motto* implicitly/explicitly “selects” for a *yori* PP.

More specifically, we assumed that the degree *motto* is a special kind of adverb which selects for a standard *yori* PP whose degree of standard satisfies a contextual standard (i.e., greater than a contextual standard) and there is a large gap between the degree and a targeted degree as in (56). We can represent the lexical entry of the degree *motto* as follows:

(44) \[[yori_{MOTTO}] = \lambda x \lambda g \langle d, e, i(s, t), w \rangle . \exists d [d \geq \text{Stand} \land g(d)(x)(t)(w)].
\]

(45) Lexical entry of the degree *motto*

\[
\begin{array}{c}
\text{mottoDegree} \\
\text{CAT} = \text{DEG} \\
\text{SEL} = \text{Standard} : \text{DP} + yori_{MOTTO} \\
\text{SEM} = \text{none}
\end{array}
\]
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The above lexical entry says that the degree motto selects a yori PP which consists of DP and yoriMOTTO.

The crucial point of the temporal type of degree motto (motto 2) is that if we use it, it tends to convey a negative meaning that the current degree is not really satisfactory. Although there is a norm-related presupposition that the current degree satisfies a contextual standard, we still get a negative inference that “the current degree is lower than expected.” It seems natural to conclude that it is this negative inference that is the source of the negative motto. It is possible to assume that the negative inference has been strengthened and is now conventionalized for expressing the large gap at the expressive level, as in (46):

\[
\begin{align*}
\text{[[motto\text{NEG}]}} & = \\
\lambda g\lambda x\lambda t\lambda w.\exists d \{d \geq \text{Stand} \land g(d)(x)(t)(w)\} \diamond \lambda g\lambda x\lambda t\lambda w.\max\{d|g(d)(x)(t)(w)\}
\end{align*}
\]

The negative motto has a CI meaning of comparison and no longer selects a yori PP.

Let us now consider the negative inference from a broader perspective. The question is to what extent this kind of duality of intensified comparison is pervasive. It seems that it is cross-linguistically general that intensified comparison can convey negativity:

\[
\begin{align*}
\text{(47) A: } & \text{Is the cake at this store big?} \\
\text{B: Well, it used to be much bigger. (Implication: This store's cake is currently not big.)}
\end{align*}
\]

From (47B) we get the implication that the current size of the store’s cake is not big. The intensified comparative meaning in (47B) is semantic (i.e., ”part of what is said”). This is corroborated by the fact that if we say “No, that’s not true” after (47B), the denial targets the comparative meaning:

\[
\begin{align*}
\text{(48) A: } & \text{It used to be much bigger.} \\
\text{B: No, that's not true.}
\end{align*}
\]

Why can the meaning of intensified comparison in English be used in an expressive realm? We would argue that whether an intensified comparative can project to the non-truth conditional meaning or not in a given language depends on whether or not the language obligatorily uses a comparative morpheme more/-er to express a meaning of comparison.

In English, in order to express a meaning of intensified comparison, it is necessary to use a comparative morpheme more/-er. On the other hand, in Japanese there is no morphological separation between a more/-er component and a much component:

\[
\begin{align*}
\text{(49) The (elliptical) intensified comparison in English} \\
\text{a. } & \text{DegP much [ADJ-er]} \\
\text{b. } & \text{DegP much [more ADJ]}
\end{align*}
\]

\[
\begin{align*}
\text{(50) The (elliptical) intensified comparison in Japanese} \\
\text{[DegP motto ADJ]}
\end{align*}
\]
In Japanese, the information of comparison and intensification can be packed in a single morpheme. Then why is it that the configuration in (49) does not fit with expressivization? In principle, we could analyze the meaning of (51) as (52):

(51) This store’s cake used to be much bigger.

(52) (Impossible analysis) At-issue: It used to be big. 
CI/expressive meaning: The size of this store’s cake in the past was much greater than the current size.

However, this analysis is impossible due to the issue of compositionality. We cannot analyze (51) as (52) because *much* and *more*-er do not form a constituent, thus violate the generalization on the constituency of CI:

(53) **Generalization on the constituency of CI:** The elements that are only for a particular CI meaning must form a constituent.

Theoretically, we could assume that since sentence (51) derives two kinds of scalar meaning in the intended meaning (i.e., a positive adjectival meaning at the at-issue level and a comparative meaning at the CI level), *more/-er* is behaving like a “mixed content” (McCready 2010) that takes a gradable predicate *big* and returns a positive meaning at the at-issue level and a comparative meaning at the CI level via mixed application in (54):

(54) Mixed application (McCready 2010)

```
\alpha (y) \bullet (y) : t^a \times v^i
\alpha \bullet \beta : (\sigma^a, t^a) \times (\sigma^a, v^p)
\gamma : \sigma^a
```

However, this idea yields an ill-formed logical structure:

(55) Approach 1

```
much
    pos(big) \bullet more(big)
```

```
more/-er_{MIXED}
  \big
  (i.e., pos\bullet comp)
```

The logical structure in (55) is problematic because *pos(big)* cannot interact with *much*. *Much* is supposed to be saturated only by *more(big)*, but the above representation does not allow this.

One might instead assume a different logical representation where the expressive *more/-er* behaves as a pure CI triggering expression and it combines with *big* via CI application in (57) as shown in (56):
(56) Approach 2

```
        much
          *
more/-er(big)
```

(Pure CI expression)

(57) CI application (Potts 2005: 65)

```
\beta : \sigma^a
        *
\alpha(\beta) : \tau^c
```

\alpha : (\sigma^a, \tau^c) \quad \beta : \sigma^a

However, the logical representation in (57) is also problematic. \textit{Much} should only be saturated by the constituent \textit{more/-er(big)}, but the composition system does not allow this.\footnote{There is also a possibility that \textit{much} is a CI modifier that takes the CI meaning of \textit{more/-er(big)}. However, the same problem arises even if we assume this. It is impossible for \textit{much} to take only \textit{more/-er(big)} as its argument and ignore the at-issue element \textit{big}.}

We cannot ignore the existence of big. I claim that the source of the problems in (56) comes from the following fundamental rule concerning the at-issue element:

(58) **Compositionality of the at-issue element**: The at-issue element must be either an argument of a predicate (function) or a predicate (function) itself.

In the foregoing discussion, we argued that if a language morphologically distinguishes a “much” component and a comparative morpheme, that language cannot express a meaning of intensified comparison at the level of CI due to the issue of semantic compositionality. What is interesting is that even if a language can express a complex comparative meaning based on one lexical item, if a given comparative morpheme does not have a gap component, it does not seem to be able to express a meaning of expressive comparison. For example, the Chinese comparative morpheme \textit{geng ‘even more’} and the Japanese \textit{sarani ‘even more’} have a complex comparative meaning ‘even more’, but they do not have an expressive use:

(59) (Modern Chinese)

```
Dangshi Zhangsan geng gaoxing.
At that moment Zhangsan **geng** happy
a. At that moment Zhangsan was even happier (than somebody).
```
b. At that moment Zhangsan was even happier (than now). (Zhiguo Xie, personal communication)

(60) (Modern Japanese)
Anoko-wa Hanako-wa sarani siawase-datta.
At that time-top Hanako-top still.more happy-PAST
a. Degree reading 1: At that time, Hanako was still/even happier than somebody.
b. Degree reading 2 (time): At that time, Hanako was still/even happier than now.

I think it makes sense that geng and sarani do not have an expressive use. Since there is no distance component inside the lexical meaning of geng/sarani, it is impossible to specify the degree of expressivity. If the gap happens to be large, the speaker’s negative emotion toward a current degree is strong like the case of motto, but such a situation is not guaranteed because of the lack of distance component. If the gap happens to be small, there will be no negative emotion toward the current situation.

To summarize, the phenomenon of intensified comparison suggests that the semantic change of intensified comparison is constrained/regulated by both morphosyntactic and lexical semantic properties of their expressions.

9.4.4 The development of the Japanese counter-expectational intensifier yoppodo

We now consider the historical development of yoppodo. According to Nihon Kokugo Daijiten, in earlier use, yoppodo comes from yoki hodo ‘good degree,’ and it had the meaning ‘appropriate/decent degree’:

(61) (Historical data)
Teki 80-man -ki-ni mikata enemy 80-ten thousand -horseman-and ally 500-yo-ki, yohhodo-no aite-nari. 500-and plus more-horseman moderate-gen opponent-pred
‘The enemy has 80 thousand warriors on horseback, and my ally has 500 warriors on horseback. They are decent opponents.’
(Taiheiki 14, late fourteenth century, Kangun Hakone o hikisirizoku koto (官軍援護経緯事), from Nihon Kokugo Daijiten, 2nd edition)

Yoppodo then developed the meaning ‘approximately,’ ‘more or less,’ or ‘roughly,’ as shown in (62):

(62) (Historical data)
Shoujouou-kara-wa yohhodo hyaku-yo-nen ar-au-zo. King Shoujou-from-top approximately 100-over-year away from-will-zo
‘Approximately more than 100 years have passed since King Shoujou.’
(Shikishou 5. Shinshikohonki, 1477, from Nihon Kokugo Daijiten, 2nd edition)

These literal and approximator uses of yoppodo do not exist in Modern Japanese. In the kinsei ‘modern’ period (the sixteenth to nineteenth centuries), yohhodo/yoppodo
was gradually used for intensification, meaning 'a very high degree that exceeds an appropriate level.'

(63) (Historical data, 'extremely')

Kono shi-no ashiki kakugo-no naki-wa yoppodo
This four-gen bad though-gen none-top extremely
jin-no michi nare-domo mada koujou-ni-wa
compassionate-gen idea be-although still progress-dat-top
itara-nu-zo.
reach-NEG-PRT

'Although having not four bad things is an extremely compassionate idea, you have not still reached progress.' (Shunkansho, 1629, from Nihon Kokugo Daijiten, 2nd edition)

The expressive intensifier use of yoppodo seems to be new. The first example of the pragmatic yoppodo in Nihon Kokugo Daijiten is from Omoide no ki (1900–1) written by Tokutomi Roka:

(64) (Historical data, counter-expectational intensifier (expressive))

Jituni saisho-wa gakusei-yori-mo sensei-no
To tell the truth in the beginning-top student-than-MO teacher-GEN
kazu-ga yoppodo ooka-tta kurai-de.
number-NOM YOPPODO many-PAST level-PRED

'To tell the truth in the beginning, the situation was that the number of teachers was much higher than the number of students.' (Implication: Usually, the number of teachers is lower than the number of students.) (Omoide no ki, written by Tokutomi Roka, 1900–1, from Nihon Kokugo Daijiten, 2nd edition)

In this example, yoppodo does not just intensify a comparison. Instead, the word also conveys that the situation is abnormal. We know that normally the number of students is larger than the number of teachers, but the sentence says that the number of teachers was much larger than the number of students. The sentence clearly implies that "usually the opposite is true."

This kind of counter-expectational meaning is conventionalized in Modern Japanese. In Modern Japanese, when yoppodo is used in a comparative sentence, the word always conveys that normally the opposite is true, in addition to intensifying the gap (see also Watanabe 1987).

(65) (Modern Japanese) (Context: Tokyo is very hot.)

Yoppodo Okinawa-no hoo-ga Tokyo-yori szushii.
YOPPODO Okinawa-GEN way-NOM Tokyo-than cool
At-issue: It is cooler in Okinawa than in Tokyo.
CI: Normally, Tokyo is much cooler than Okinawa.
(Conversational implicature: Tokyo is extremely hot).

The natural context for (65) is that Tokyo is so hot that the speaker thought that Okinawa, a very hot place, is much cooler. Clearly, this is an exaggeration, but the speaker makes an exaggeration in order to convey that Tokyo is extremely hot.
Then the question is: Why is it that *yoppodo* in the adjectival environment has to co-occur with an evidential modal in Modern Japanese?

(66) Modern Japanese
(Context: Taro is looking at a ramen restaurant from the outside. He sees a lot of people waiting in front of the restaurant.)

Ano ramen-ya-wa *yoppodo* oishii"(-nichigainai).

That ramen-restaurant-TOP YOPPDOO delicious-must

At-issue: That ramen restaurant must be very delicious.
Not-at-issue: The degree I inferred via extraordinary evidence is above my expectation.

I would like to think that this is because *yoppodo* had a vague meaning similar to ‘approximately.’ Approximators are often considered to have the property of vagueness (Sauerland and Stateva 2007). In this approach, vagueness is an epistemic phenomenon that can be characterized in terms of the absence of knowledge (e.g., Williamson 1994). It seems that it is not accidental that the current adjectival use of *yoppodo* requires an evidential modal if we consider that *yoppodo* was originally used to show epistemic vagueness.

Note that *yoppodo* in modern Japanese can be used as an “expressive approximator”:

(67) Modern Japanese

Yoppodo-i-tte rar-ou-to omo-tta.

Almost say-TE give-volitional-that think-PAST

‘I thought I should say a negative word to him/her (but I didn’t).’ (= I was almost going to say my idea to him/her.)

This use of *yoppodo* is semantically similar to ‘almost’ but it is an expressive in that its meaning does not contribute to the propositional content. It conveys that the speaker had a strong negative feeling toward a particular target, and he/she almost put a bad/negative idea (here, a negative word) into practice. This use of *yoppodo* is the result of semantic change or pragmatalization of the meaning of ‘approximately.’

9.4.5 The development of the counter-expectational scale adverb kaette

Let us consider the historical development of the scale-reversal adverb *kaette*. In Chapter 7 we discussed the scale-reversal meaning of *kaette* in sentences like (68):

(68) Modern Japanese

Koko-wa kaette kiken-da.

Here-TOP REVERSAL dangerous

At-issue: It is dangerous here.
CI: Generally, it is safe here.

---

8 I am not sure why *yoppodo* does not require a modal in a comparative environment but it may be that the comparative sentence with *yoppodo* can convey that the at-issue sentence is quite unlikely without using a modal.
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In Modern Japanese, kaette usually takes a gradable predicate as its argument like (68). This kind of reverse meaning has been used since the old days. *Nihon Kokugo Daijiten* mentions that the adverb kaette stems from the verb kaeru (かいる), which means ‘to reverse.’ It says that by adding the particle te, kaette becomes the reversal adverb meaning ‘contrary to expectation.’ The first example of the adverb kaette in *Nihon Kokugo Daijiten* is from Shoki, written in 720.9

(69) (Historical data)
Mikado kono toki-ni nozomi-te iki tsushima-ni ooku kakushi
Emperor this time-at wait-TE iki Tsushima-at many hidden
ikusa-o oki-te ita-ramu-o ukakai-te koroshi-tame-e. Kaerite
soldier-ACC place-TE arrive-seem-ACC time-TE kill-POL-IMP reversal
na azamu-kare-tamahi-so.
NEG trick-PASSIVE-POL-do not
‘You emperor should wait for this time and place many hidden soldiers at Iki and Tsushima, and time their arrival and kill them. Please never be tricked contrary to expectation.’ (Shoki, Bidatsu 12 nen kono toshi, 720, from *Nihon Kokugo Daijiten*, 2nd edition)

Fundamentally, there seems to be no difference between the use of kaette in (68) and the current use of kaette. It reverses the polarity of a predicate and conventionally implicates that the opposite is normally true of the subject. In the data in (68), akazumuka-re ‘tricked’ may not be considered a typical example of a gradable predicate, but kaette is invoking an opposite/antonym of the predicate (i.e., to trick).

9.4.6 The development of the Japanese *totemo* ‘very’: The phenomenon of degrammaticalization

In this chapter we have discussed the semantic change of *totemo*. In Chapter 6 we investigated the dual-use phenomenon of the Japanese intensifier *totemo*, as in:

(70) a. Degree use (Modern Japanese)
Kono ie-wa *totemo* ookii.
This house-TOP very big
‘This house is very big.’

b. Expressive/negative use (Modern Japanese)
Tetsuya-nado *totemo* [deki-nai/*dekiru].
Staying up all night-NADO very can-NEG/can
‘Staying up all night is impossible.’ (Implication: I am emphasizing the impossibility.)

*Totemo* in (70a) is semantic. It intensifies the degree of an at-issue gradable predicate at the semantic/at-issue level. By contrast, *totemo* in (70b) modifies the negative gradable predicate and emphasizes the degree of impossibility at the CI level.

9 Na is a special negative particle which is always combined with so. The combination of *na* and *so* expresses a single negation. Thus, it can be viewed as a kind of negative concord.
Conclusion and theoretical implications

An interesting point about the semantic *totemo* is that it developed later than the negative *totemo*. *Totemo* originally had a pragmatic/expressive meaning and the at-issue intensifier use was developed later. Namely, there was a semantic change from expressive to propositional—i.e., the direction of semantic change was reversed.

Roughly speaking, there were three stages in the semantic change of *totemo*. Historically, *totemo* had adverbial meanings like 'in any case' or 'after all.' This usage was not polarity-sensitive, and it appeared in both positive and negative environments:

(71) a. (Historical data)
   Totemo nogare-zara-n-mono-yueni...
   TOTEMO escape-NEG-MOD.EPISTEMIC-thing-because
   'Because it is impossible to escape in any case,...'
   (Heikemonogatari, early thirteenth century, from Nihon Kokugo Daijiten, 2nd edition)

   b. (Historical data)
   Totemo sina-ba kataki-no jin-no mae-nite-kosono sina-me.
   TOTEMO die-COND enemy-GEN camp-GEN front-LOC-FOC die-volition
   'If I die anyway, I will die in front of the enemy’s camp.'
   (Enkyobon Heikemonogatari 5, from Nihon Kokugo Daijiten, 2nd edition)

Here, *totemo* expresses a speaker’s feeling of resignation. However, by the end of the Edo period (late nineteenth century), *totemo* became polarity-sensitive, and it established the negative *totemo* (which still is used in contemporary Japanese) (see Harima 1993) (Stage II):

(72) (Historical data)
   Totemo Tokyo-ni i-ttemo benkyoo-nado-wa deki-nai.
   TOTEMO Tokyo-LOC be-even if study-NADO-TOP can-NEG
   'It is really impossible to study even if I live in Tokyo.' (Inakakyoshi, 1909, written by Tayamakatai, from Nihon Kokugo Daijiten, 2nd edition)

This use corresponds to the negative *totemo* in modern Japanese. However, during the Taisho period (1912–26) (Stage III), *totemo* developed an adjective-modifying use meaning 'very.' Since then, *totemo* has been used as the negative *totemo* as well as the adjective-modifying *totemo*.

It is interesting that the negative *totemo* (expressive) was developed earlier than the semantic *totemo* (semantic intensifier). It is somewhat surprising because semantic change normally occurs from propositional to expressive (e.g., Traugott 1989). It may be possible to consider that the adjective-intensifying use of *totemo* developed as a result of expanding the domain of selection (not just a negative modal predicate but also a gradable adjective).

9.5 Conclusion and theoretical implications

In this chapter, we considered the dual-use phenomenon of scalar modifiers in terms of historical perspective. We discussed to what extent the dual-use phenomenon of
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Scalar modifiers is pervasive, what kind of mechanism is involved behind the development of pragmatic scalar modifiers, if any, and what the dual-use phenomenon suggests for the relationship between the semantics/pragmatics interface and language change.

What we found from our analyses/observations on the historical change of scalar modifiers is that the change from a semantic scalar meaning to a pragmatic scalar meaning is not lexically random. Although the change from a semantic scalar meaning to a pragmatic scalar meaning can be analyzed under the concept of a general path of semantic change (propositional (> textual) > expressive), the change is regulated/constrained by their lexical and morphosyntactic properties. As for the lexical level, we argued based on data taken from minimizers and intensified comparative adverbs in Japanese that the semantic change of scalar modifiers can happen only when their meanings semantically fit the expressive mode. As for the morphosyntactic aspect of semantic change, we proposed the following generalization for the constituency of CI expressions:

(73) Generalization on the constituency of CI expressions:
The elements that are used for expressing a particular CI must form a constituent.

I think that these points are crucial for the theories of semantics/pragmatics interface and language change. Although it has often been assumed that language change is not fully predictable, the phenomenon of scalar modifiers suggests that there are environments that promote/do not promote semantic shifts. We showed that the multidimensional approach to a semantic/pragmatic interface is useful for capturing these environments in an explicit way.

This chapter also showed that the dual-use phenomenon of scalar modifiers provides important insights for the relationship between syntactic change and semantic change. In the syntactic approach to language change, it is often claimed that the change is always “upwards” in the structural hierarchy of functional categories (Roberts and Roussou 2003; Van Gelderen 2004). Although this tendency can be observed for “higher-level” pragmatic scalar modifiers, such as the noteworthy nani-yori-mo and the expression minimizer chotto ‘a bit,’ there are cases where pragmatic scalar modifiers directly modify an at-issue gradable predicate at a lower level (similar to the case of semantic scalar modifiers), such as the negative/expressive motto and the scale-reversal adverb kaette. The lower-level pragmatic scalar modifiers are syntactically in the same position as the semantic scalar modifiers, but unlike semantic scalar modifiers, the lower-level scalar modifiers recycle a predicate for expressing a not-at-issue meaning (CI). This clearly suggests that semantic change and syntactic change do not necessarily happen in tandem:

(74) Semantic change and syntactic change are not always in parallel.
10

Conclusion

10.1 Introduction

This book investigated the pragmatic aspects of scalar modifiers from the standpoint of the semantics/pragmatics interface. More specifically, we focused on the phenomena of comparatives with indeterminate pronouns (Chapter 3), positive polarity minimizers (Chapter 4), intensifiers/expressives (Chapter 5), and counter-expectational adverbs (Chapter 6). In doing so, we considered the following points:

(1) a. Similarities and differences between semantic scalar modifiers and pragmatic scalar modifiers;
   b. Varieties of pragmatic scalar modifiers (lower-level vs higher-level pragmatic scalar modifiers);
   c. Interpretation of embedded pragmatic scalar modifiers; and
   d. Historical development of pragmatic scalar modifiers.

In this chapter, we briefly summarize these points and consider the theoretical implications of the phenomenon of pragmatic scalar modifiers. We also compare our multidimensional approach to other alternative approaches: that is, the relevance-theoretic approach and Bach’s approach, which does not assume the notion of a CI. Finally, we will provide some future directions for studies of pragmatic scalar modifiers and not-at-issue content.

10.2 Summary and discussion

10.2.1 The relationship between semantic scalar modifiers and pragmatic scalar modifiers

In this book, we considered the similarities and differences between semantic scalar modifiers and pragmatic scalar modifiers based on the dual-use phenomenon, as in (2)–(5):

(2) Nani-yori-mo tenisu-wa tanoshii.
   What-than-MO tennis-TOP fun
   a. (Individual reading) At-issue: Tennis is more fun than anything.
   b. (Noteworthy reading) At-issue: Tennis is fun. CI: The utterance “tennis is fun” is more noteworthy than any other utterance.

Conclusion

(3) Chotto doi-te kure-masu-ka?
A bit leave give-PERF.HON-Q
a. Degree reading: At-issue: Can you move a bit? CI: I am measuring the degree imprecisely.
b. Expressive reading: At-issue: Can you move? CI: I am weakening the degree of imposition of my request.

(4) Kono mise-no keeki-wa motto oishi-katta.
This store-GEN cake-TOP MOTTO delicious-PAST
a. At-issue: This store’s cake was even more delicious than a contextual store’s cake. (Degree reading)
b. At-issue: This store’s cake was delicious. CI: The degree of deliciousness of the store’s cake in the past (in the actual world) is much greater than the current degree of deliciousness of the store’s cake. (Negative reading)

(5) a. This book-wa totemo takai.
This book-TOP very expensive
‘This book is very expensive.’
b. Tetsuya-nado totemo {deki-nai/*dekiru}. (Ability)
Stay up all night-NADO TOTEMO can-NEG/can
‘Staying up all night is impossible.’
(Implication: I am emphasizing the impossibility.)

We also looked at pragmatic scalar modifiers, such as yoppodo and kaette, that do not exhibit the dual-use phenomenon synchronically but are derived historically from at-issue content:

(6) (Context: The speaker is looking at a ramen restaurant from the outside. He sees a lot of people waiting in front of the restaurant.)
Ano raamen-ya-wa yoppodo oishii-nichigai.
That ramen-store-TOP YOPPODO delicious-must
At-issue: That ramen restaurant must be very delicious.
Not-at-issue: The degree I inferred via extraordinary evidence is above my expectation.

(7) Toho-no hoo-ga basu-yori-mo kaette hayai.
Walking-GEN direction-NOM bus-than-MO KAETTE fast.
At-issue: Walking is faster than the bus.
Not-at-issue: In a normal situation, the bus is faster than walking.

Based on various diagnostics, such as scope, denial, and embedding, we argued that the semantic and pragmatic scalar meanings are interpreted from different dimensions; that is, pragmatic scalar meanings are pragmatic (non-truth-conditional), whereas semantic scalar modifiers are semantic (truth-conditional).

Despite the above differences (nonparallelism) between pragmatic scalar modifiers and semantic scalar modifiers, this book showed that there is a striking parallelism between them in terms of scale structure. We analyzed the similarities and differences
between at-issue scalar meaning and CI scalar meaning based on a multidimensional composition system with the abstract notion (type) of degree. This means that both semantic scalar meanings and pragmatic scalar meanings can be analyzed under the same semantic/compositional mechanism.

10.2.2 Two types of pragmatic scalar modifiers

In this work, we considered the variation of pragmatic scalar modifiers and proposed that there are two types: a higher-level pragmatic scalar modifier and a lower-level pragmatic scalar modifier:

(8) A higher-level pragmatic scalar modifier

\[
S' \quad \underline{\text{DegP}} \quad S
\]

\[
\text{scalar modifier}_{\text{PRAG}} \quad \text{speech act/proposition}
\]

(9) A lower-level pragmatic scalar modifier

\[
S \quad \underline{\text{DP/S}} \quad \underline{\text{DegP}} \quad \underline{\text{AdjP}}
\]

\[
\text{entity/proposition} \quad \text{scalar modifier}_{\text{PRAG}} \quad \text{gradable predicate}
\]

We showed that although both higher-level pragmatic scalar modifiers and lower-level pragmatic scalar modifiers trigger CI (non-truth-conditional) scalar meanings, they are different in terms of compositionality, scalarity, and pragmatic functions. In terms of compositionality and scalarity, we showed that higher-level pragmatic scalar modifiers modify a speech act (e.g., *more than anything, chotto*) or proposition (e.g., *fully*), and lower-level pragmatic scalar modifiers directly combine with at-issue gradable predicates. In terms of the level of modification, lower-level pragmatic scalar modifiers and semantic scalar modifiers are the same. Focusing on scalarity, higher-level pragmatic scalar modifiers posit a discourse-oriented measure–function dimension (e.g., noteworthy, important, committed) that is not expressed linguistically. For example, the CI comparative *nani-yori-mo* 'more than anything' operates on speech acts and posits a scale of importance, while the Japanese CI minimizer *chotto* 'a little' modifies a speech act and reduces the degree of imposition of the speech act.
Conclusion

on the addressee. We also show that the expressive intensifier fully/totally modifies a proposition (not a speech act) and intensifies the degree of commitment. By contrast, the lower-level pragmatic scalar modifiers utilize/recycle a scale of at-issue gradable predicates to trigger a CI scalar meaning. For example, in the case of the negative/expressive motto, it conveys that there is a large gap between the current degree and an expected degree associated with a gradable predicate. In the case of kaette it reverses a scale and conventionally implicates that the opposite of the at-issue proposition is normally true.

Finally, the higher-level pragmatic scalar modifiers and lower-level pragmatic scalar modifiers are different in terms of pragmatic function (although they are both non-truth-conditional and speaker-oriented by default; Potts 2005, 2007a). Higher-level pragmatic scalar modifiers convey how the speaker construes the at-issue proposition or speech act. They are concerned with the manner of representation of the information. For example, in the case of the noteworthy nani-yori-mo, we showed that it conveys that the given utterance is the most important in contributing to the goal of conversation and that the concept of comparison relativizes potential utterances. This helps the speaker to convey the most important information to the addressee in the shortest amount of time. In the case of the expressive chotto, we clarified that it weakens the degree of imposition of an at-issue speech act on its audience. Chotto plays an important role in moving the conversation to its goal in an economical way, as it helps to avoid the speaker’s risk of engaging in a ‘face-threatening’ act (FTA; Brown and Levinson 1987). 1

In the case of lower-level pragmatic scalar modifiers, in contrast, they express a speaker’s evaluation of the utterance situation. Unlike higher-level scalar modifiers, lower-level pragmatic scalar modifiers convey that there is a contrast/gap between an utterance situation and a speaker’s expectation/opinion with respect to the degree of a target. For example, speakers use the negative motto to convey a negative feeling toward the degree in the current situation. The negative totemo (Chapter 6) conventionally implies that the at-issue proposition (which is expected to be accepted in discourse) is highly impossible. Yoppodo (Chapter 7) co-occurs with an evidential modal and conveys that the degree inferred via evidence is above the speaker’s expectation. This results in the explanation that the utterance situation is abnormal. In the case of kaette, it conventionally implies that the opposite of an at-issue situation is normally true to convey that the current situation is abnormal. Since the lower-level pragmatic scalar modifiers refer to the degree associated with a gradable predicate, it makes sense that they have a function of contrast between an utterance situation and a speaker’s expectation/opinion concerning the degree of a target. There is a co-relationship between form and meaning.

10.2.3 Interpretations of embedded pragmatic scalar modifiers

We also investigated the interpretations of embedded pragmatic scalar modifiers and argued for the following points:

1 FTAs are communicative acts performed by the speaker that respect neither positive face (i.e., a desire for a person’s self-image to be upheld) nor negative face (i.e., an individual’s right to freedom of action).
(10) a. In the non-speaker-oriented reading (which is anchored to the attitude holder), there is a semantic shift from a CI to a secondary at-issue entailment; and
b. Unlike higher-level pragmatic scalar modifiers/typical CIs (e.g., expressives and appositives) and typical presuppositions, in the lower-level pragmatic scalar modifiers the CI meaning can be speaker-oriented (i.e., can project out of the complement of an attitude predicate) only when there is a modal/speaker-oriented discourse expression in the main clause.

In (10a), we argued that the shift from a CI to a secondary at-issue entailment takes place when the embedded clause combines with the attitude predicate/verbs of saying, and inside the embedded clause, the pragmatic scalar modifiers/expressives behave as a CI. Regarding (10b), we suggested that this property comes from the "recycling property" of lower-level pragmatic scalar modifiers.

10.2.4 Semantic change

In this book, we also discussed the pragmatic aspects of scalar modifiers from a historical perspective. We discussed the extent to which the pragmatic use of scalar modifiers is pervasive from a diachronic perspective. We argued that although there is a directionality of semantic change of scalar modifiers that can be captured under a general path of semantic change/grammaticalization (i.e., propositional > (textual) > expressive; Traugott 1982), the semantic shift of scalar modifiers is not lexically random. We argued that the semantic change of scalar modifiers is constrained/regulated by their lexical and morphosyntactic properties. Regarding the constraint at a lexical level, we argued that semantic change does not occur if the source meaning does not fit with a mode of expressive. As for the morphosyntactic level, we argued that there is a general constraint such that elements used only for expressing a particular CI meaning must form a constituent, and if the at-issue morphosyntactic environment does not satisfy this requirement, a semantic change never occurs.

10.2.5 Discussion and theoretical implications

Based on these summaries, we now discuss the theoretical implications of our claims/proposals. The table in (11) summarizes the relationship between semantic scalar modifiers and pragmatic scalar modifiers.

(11) The relationship between pragmatic scalar modifiers and semantic scalar modifiers

<table>
<thead>
<tr>
<th></th>
<th>Pragmatic scalar modifiers</th>
<th>Semantic scalar modifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Status of scalar meaning</td>
<td>- CI (non-truth-conditional) by default</td>
<td>- At-issue (truth-conditional)</td>
</tr>
<tr>
<td></td>
<td>- Secondary at-issue (embedded subject-oriented reading)</td>
<td></td>
</tr>
</tbody>
</table>
Conclusion

(ii) Function
- Regulating the speaker’s manner of conveying information
  Predicating the utterance situation
- Expressing the degree of things/events
  - Not predicating the utterance situation

(iii) Source of the measure–function dimension
- Invisible pragmatic scalar
  (higher-level pragmatic scalar modifiers)
  - A scale of at-issue gradable predicates
- Ascale of at-issue gradable predicates

(iv) Projection
Highly projective
(but lower-level pragmatic scalar modifiers project only when there is an appropriate speaker-oriented modal in the main clause)
Nonprojective

(v) Numbers
Not many (due to the constraint on semantic change)
Many

Our analyses of pragmatic scalar modifiers and their relationship with semantic scalar modifiers appear to have some important implications for theories of the semantics/pragmatics interface. First, it is theoretically important that the concept of scalarity is utilized in signaling various aspects of pragmatic information, including politeness, priority of utterance, speaker’s complaint/rejection, and the salience of discourse context (not just measuring objects/things). Furthermore, the scale structure at the discourse level can be analyzed in the same way as a semantic scale structure using the notion of degree and a multidimensional composition system (Potts 2005; Karttunen 1979). These points strongly suggest that although there is a difference between semantic and pragmatic (not-at-issue) meaning, there is also a shared conceptual basis between at-issue scalar meaning and CI scalar meaning. We think that the phenomenon of dual use of scalar modifiers provides strong linguistic evidence for the existence of Potts’ (2005) multidimensional composition system, whereby at-issue meaning and CI meaning are compositional but computed along different dimensions. The dual-use phenomenon linguistically represents what the system is doing.

Second, the interpretation of embedded pragmatic scalar modifiers/CIs discussed in this book also provides a new perspective on the relationship between semantics and pragmatics. In Chapter 8, we showed that when the embedded pragmatic scalar modifier is anchored to the subject, its meanings are within the semantic scope of the at-issue operators in the main clause. We claimed that when the embedded clause is combined with an attitude predicate/verbs of saying, a semantic shift from a CI to a secondary at-issue entailment occurs. Crucially, inside the embedded clause, the pragmatic scalar modifier/expressive behaves as a CI. This suggests that the logics of conventional implicatures are flexible, and the semantic type can change in the course of derivation.
Third, the projective behavior of lower-level pragmatic scalar modifiers provides important insights for the theory of projection. In Chapter 8 we claimed that lower-level pragmatic scalar modifiers, such as motto, totemo, kaette, and yoppodo, can project only when there is an appropriate modal/speaker-oriented element in the main clause. For example, in Chapter 8 we showed that kaette can project only when there is an epistemic/evidential modal in this clause:

\[ (12) \] Taro-wa [konbini-no koohii-no-hoo-ga Taro-TOP convenience store-GEN coffee-GEN-direction-NOM kissaten-no koohii-yori-mo kaette oishii]-to coffee shop-GEN coffee-than-MO KAETTE tasty-that omo-teiru-(kamoshirenai).

"Taro (may) think that a convenience store’s coffee is tastier than a coffee shop’s coffee."

t. Not-at-issue, subject-oriented reading (with and without a modal): A coffee shop’s coffee is (generally) tastier than a convenience store’s coffee for Taro.

t. Not-at-issue, speaker-oriented reading (with a modal): A coffee shop’s coffee is (generally) tastier than a convenience store’s coffee for me (i.e., the speaker).

The natural context of the speaker-oriented reading in (12b) is that the speaker observes that Taro buys coffee at the convenience store every day and he/she begins to think that the opposite of his/her previous assumption could be true. The phenomenon of projection via modal support seen in the case of lower-level pragmatic scalar modifiers strongly shows that there can be an interaction between projective content and external judge-sensitive (at-issue) elements in terms of the judge (although they are logically independent). This is different from the cases of appositives and expressives, in which their perspective shifting is contextual/pragmatic (Harris and Potts 2009). This book suggested that there is variation in the projective behavior of not-at-issue content/CI and that both pragmatic and semantic factors must be taken into consideration when accounting for the variation.

Fourth, in relation to the third point, the interpretation of embedded lower-level pragmatic scalar modifiers provides an important perspective on the varieties of projective content. In their seminal paper on a taxonomy of projective content, Tonhauser et al. (2013) proposed the parametric property "obligatory local effect," as given in (13).3

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2 Some native speakers consider that a sentence without a modal can be speaker-oriented if we replace ‘Taro’ with a speaker-oriented expression like saikin-no wakamono-wa ‘young people these days’ (David Oshima, personal communication). This is because saikin-no wakamono-wa is a highly speaker-oriented expression that is often used in the context of a speaker’s evaluation/criticism.

3 Tonhauser et al. (2013) also proposed the “strong contextual felicity” property. Strong contextual felicity refers to a particular condition on the felicitous use of a trigger, namely that it can be used felicitously only if some implication associated with the trigger is established in the utterance context.
OBLIGATORY LOCAL EFFECT: A projective content $m$ with trigger $t$ has obligatory local effect if and only if, when $t$ is syntactically embedded in the complement of a belief predicate $B$, $m$ necessarily is part of the content that is targeted by, and within the scope of, $B$. (Tonhauser et al. 2013: 93)

According to this parameter, typical presupposition triggers, such as *stop*, will be classified as having an obligatory local effect because their presuppositional implications do not project beyond the belief predicate. For example, the possessive expression in (14a) creates the presupposition that “Sam has a kangaroo,” but if (14a) is embedded under the attitude predicate *believe*, the flow of presupposition is blocked, as shown in (14b):

(14) a. Sam’s kangaroo is sick. (Presupposition: Sam has a kangaroo.)
   b. John believes that Sam’s kangaroo is sick.

This is corroborated by the example in (15):

(15) Sue believes that Sam’s kangaroo is sick, but that’s ridiculous—Sam doesn’t own a kangaroo. (Potts 2007b)

However, typical CIs can be classified as not having an obligatory local effect. For example, appositives and expressives, which are often assumed to trigger CIs, do not have an obligatory local effect because they are typically anchored to a speaker (e.g., Potts 2005, 2007a, 2015; Amaral et al. 2007; Harris and Potts 2009; Tonhauser et al. 2013).

(16) a. Sue believes that that bastard Kresge should be fired. (#I think he’s a good guy.) (Potts 2007a: 170)
   b. Sheila believes that the agency interviewed Chuck, a confirmed psychopath, just after his release from prison. (Potts 2005: 115)

Although the parameter of obligatory local effect may be useful for distinguishing a typical presupposition trigger (such as a stop) from a typical CI expression (such as an appositive or expressive) in terms of projection, it does not seem to capture the difference between typical CIs/presuppositions and lower-level pragmatic scalar modifiers. We may be able to say that lower-level pragmatic scalar modifiers have the property of a nonlocal effect, but it is difficult to capture the fact that they are “basically” local (i.e., they are the opposite of typical CIs in this respect).

Finally, let us consider the fundamental question of why there are such phenomena as dual uses in scalar modifiers. It seems that this is due to the abstractness and flexibility of the notion of scalarity. It seems intuitively correct to say that we can use the notion of scalarity quite flexibly. For example, we can use it to measure objects according to certain measure–function dimensions (height, width, speed, etc.). However, we also use scalarity to determine how important, noteworthy, or committed the given utterance or proposition is. In other words, the notion of scalarity can be used for both “object/thing” and “language.”
Comparison with alternative views

The existence and definition of conventional implicature has been the subject of heated debate in post-Gricean theories of meaning and communication, and various approaches beyond the multidimensional approach we used in this monograph have been proposed. This section considers how alternative approaches analyze the dual-use phenomenon of scalar modifiers. Specifically, we consider Bach’s (1999b) theory and Blakemore’s (1987; 2002) relevance theory, comparing them to the multidimensional approach.

10.3.1 Bach (1999b)

Bach (1999b) argued that CIs are a myth. According to this author, some putative conventional implicatures (alleged conventional implicature devices; ACID), like those of *but*, are really entailments. The list of ACIDs is as follows:

(17) Adverbs: already, also, barely, either, only, scarcely, still, too, yet
Connectives: but, nevertheless, so, therefore, yet
Implicative verbs: bother, condescend, continue, deign, fail, manage, stop
Subordinating conjunctions: although, despite (the fact that), even though
(Bach 1999b: 333)

Bach’s argument is based on the indirect quotation (IQ) test:

(18) IQ test: An element of a sentence contributes to what is said in an utterance of that sentence if and only if there can be an accurate and complete indirect quotation of the utterance (in the same language), which includes that element, or a corresponding element, in the “that” clause that specifies what is said.
(Bach 1999b: 340)

Bach (1999b) claimed that the *that* clause in an indirect quotation specifies “what is said” in the utterance being reported, and ACIDs can occur in specifications of “what is said.”

Let us consider the case of *but*. Grice (1975) assumed that *but* induces a conventional implicature of contrastiveness:

(19) Shaq is huge but he is agile.
At-issue: Shaq is huge and he is agile.
CI: There is some sort of contrast between being huge and being agile.

---

4 Recall that Japanese does not formally distinguish between direct and indirect quotation. Thus, a sentence can be ambiguous from this standpoint. A sentence can only be interpreted as indirect, if we embed a first-person pronoun watashi or deictic expressions like kore ‘this’ and relate their meanings to the “speaker.” See Chapter 8.
However, (19) can be embedded under the that clause as an indirect quotation:

(20) Marv said that Shaq is huge but that he is agile.

Bach (1999b) concluded from this that the meaning of but is actually a part of “what is said,” and is not a CI. However, Bach (1999b) admitted that there are many expressions with meanings that do not seem to contribute to “what is said.” For example, expressions like moreover and in other words in (21) do not contribute to “what is said” because they cannot pass the IQ test, as shown in (22):

(21) a. Moreover, Bill is honest.
    b. In other words, Bill is a liar.

(22) a. # John said that moreover, Bill is honest.
    b. # John said that in other words, Bill is a liar.
    (Bach 1999b: 341)

What, then, is the status of the meanings of moreover and in other words? Bach claims, following Grice (1989), that they are vehicles for the performance of second-order speech acts. (See also Rieber’s 1997 tacit performative analyses of discourse connectives.) In other words, they belong to the domain of speech acts.5

I think that Bach’s (1999b) arguments based on the IQ test are important and compelling. Regarding the embeddable case, (20), it is natural to consider that it is at-issue. In our theory, this can be viewed as the result of shifting from a CI to a secondary at-issue entailment.

Regarding the unembeddable case, (22), it is true that moreover and in other words signal speech acts. However, it seems to us that this does not necessarily mean that the speech act cannot be analyzed via conventional implicature. Indirect speech acts are often analyzed as conventionalized/short-circuited conversational implicature (e.g., Morgan 1978). We tend to discuss speech acts and conventional implicatures independently, but the notions are not exclusive.

10.3.2 The relevance theory approach

Relevance theory also denies the existence of conventional implicature, but the theoretical consequences and implications of this claim are quite different from those of Bach (1999b). Relevance theory assumes that there are two types of meaning—“conceptual” and “procedural”—for encoded semantic content (Sperber and Wilson 1986[1995]; Blakemore 1992, 1987, 2002; Carston 2002). Conceptual meanings contribute concepts to the logical form (propositional scheme) of an utterance and are

5 According to Rieber (1997), expressions like but are tacit performatives. For example, he argues that (i) should be analyzed as (ii), which contains the performative verb suggest:

(i) Sheila is rich but she is unhappy.
(ii) Sheila is rich and (I suggest that this contrasts) she is unhappy.
    (Rieber 1997: 54)
Comparison with alternative views

representational (e.g., 'cat,' 'book,' 'play'). In contrast, procedural meanings do not contribute to any concept; instead, “they appear to function more like filters on, or pointers to, the pragmatic inferences the hearer is to carry out” (Carston 2002: 161).6

Relevance theory (e.g., Blakemore 1987, 1992, 2002 and Carston 2002) claims that the standard cases of Gricean conventional implicature, such as but, moreover, and therefore, are examples of linguistic expressions that encode procedural meaning. They “do not contribute to a propositional representation, but simply encode ‘instructions’ for processing propositional representation” (Blakemore 1992: 151). They indicate, guide, constrain or direct the inferential phase of comprehension (Carston 2002: 161). Let us consider this theory, using the examples of so and after all:

(23) a. David isn’t here.
    b. So Barbara’s in town. (Blakemore 1987: 150)

(24) You have to have another drink. After all it is your birthday.
    (Blakemore 1987: 140)

According to the relevance-theoretic approach, so is considered to have a procedural meaning, which indicates that the interpretation of the clause that follows it is a conclusion. In contrast, after all is considered to have a procedural meaning that indicates that the proposition it introduces is evidence for an assumption that has just been made accessible (Blakemore 1987: 140). Let us now consider how Blakemore’s relevance theory approach can be used to analyze the meanings of scalar modifiers discussed in this book.

With regard to the case of the noteworthy nani-yori-mo in (25), this theory treats the meaning of the individual nani-yori-mo as conceptual, and the meaning of the noteworthy nani-yori-mo as procedural:

(25) Nani-yori-mo tennis-wa tanoshii.
    What-than-mo tennis-top fun
    a. Tennis is more fun than anything. (Individual reading)
    b. More than anything, tennis is fun. (Noteworthy reading)

The noteworthy nani-yori-mo is similar to discourse connectives, such as after all, above all, and moreover, in that it encodes instructions for processing propositional representation. More specifically, it indicates that the proposition it introduces is the “most noteworthy proposition.”

According to this theory, a semantic scalar meaning is treated as conceptual, while pragmatic scalar meaning is treated as procedural (at least in the case of nani-yori-mo). Although the basic idea of the distinction between conceptual and procedural is intuitive and attractive, this two-way distinction is problematic for the dual-use

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6 Note that the distinction between conceptual and procedural meaning is not equivalent to the distinction between truth-conditional and non-truth-conditional assertions. For example, it has been claimed that pronouns and mood indicators encode procedures, but also affect the truth conditions of the utterances that contain them (Wilson and Sperber 1993). Furthermore, it has been argued by Wilson and Sperber (1993) and Ilantiou-Trouki (1993) that sentence adverbs, such as seriously, encode constituents of conceptual representations even though they do not contribute to the truth conditions of the utterances that contain them.
phenomenon, because according to the theory, conceptual meanings are “representational” but procedural meanings are “NOT representational.” Therefore, this theory does not seem to capture the fact that a semantic scalar modifier and a pragmatic scalar modifier can have exactly the same scalar meanings. However, if we want to preserve the distinction between conceptual and procedural, we must consider that the meaning of the noteworthy nani-yori-mo is conceptual and procedural. However, the theory does not allow this option. The multidimensional approach is superior to these alternative approaches, as not only does it enable us to capture the difference between truth-conditional (at-issue) and non-truth-conditional meanings (CIs), but it also allows us to naturally capture the “similarities” between them.

### 10.4 Future directions

Finally, let us discuss directions for future studies. First, it will be important to further deepen the theoretical implications discussed in section 10.2.5 in a more theoretical way. In addition to these points, there are several directions for future research. Let us note some of them.

#### 10.4.1 Multidimensionality versus unidimensionality

First, it is important to keep thinking about the compositionality of pragmatic scalar modifiers. In this book, we analyzed the pragmatic/CI meaning of pragmatic scalar modifiers based on multidimensional composition systems (Potts 2005; McCready 2010). However, some researchers have recently argued that appositives which have been considered to be typical CIs should actually be analyzed by a unidimensional fashion. In Potts (2005), the semantic content of appositive (nonrestrictive) relative clauses was considered a CI, and this was independent of at-issue meaning. (For example, in the sentence ‘Lance, a cyclist, is training,’ the appositive part ‘a cyclist’ has been considered to be independent of the rest of the sentence.) However, AnderBois et al. (2015) claimed that there is mounting evidence from various anaphoric processes that the two kinds of content must be integrated into a single, incrementally evolving semantic representation.

Martin (2016) also used a unidimensional approach to propose a novel account of supplements in a unidimensional dynamic semantics that gives supplements both an incremental interpretation and the capacity to take scope. The central idea is that the comma intonation associated with supplements triggers a kind of quantifier phrase modification.

We should also recognize that a more radical multidimensional approach was proposed by Gutzmann (2015). Gutzmann (2015) proposed a new multidimensional logic called “a multidimensional logic for hybrid semantics.” The important feature of this theory is that every expression (including ordinary at-issue content) will be translated into the intermediate logical language as an ordered pair, where the first projection of that pair corresponds to the expression’s truth-conditional content and the second projection represents its use-conditional content. In this approach, a
description element like Sheila does not have use-conditional content, but can be conserved as having an empty use-conditional dimension.

It seems that the unidimensional approach explains the at-issue and “CI” distinction from a scope and an information update perspective, while the multidimensional approach utilizes the notion of dimensionality to differentiate between them. In this book, we argued that the dual-use phenomenon can best be captured by dimensional difference, but it would be interesting to look at the phenomenon from recent approaches to CIs as well.

10.4.2 Information structure and not-at-issue content

The relationship between CIs and information structure will also be important for the study of theories of CIs. In this book, we mainly considered the meaning of pragmatic scalar modifiers from a sentential level, but it will also be important to look at them from the perspective of information structure.

In Chapter 6 we briefly discussed the discourse structure of the noteworthy nani-yori-mo (and other similar expressions like more than anything and above all). First, we argued that the Japanese nani-yori-mo signals that the given utterance is preferred, representing the discourse move of moving the conversation toward a particular goal:

(26) Nani-yori-mo Hanako-wa yasashii. (Japanese)
    what-than-MO Hanako-TOP kind
At-issue: Hanako is kind.
Not-at-issue: The utterance that Hanako is kind is more noteworthy than any other utterance related to Hanako. (Noteworthy reading)

In (26), nani-yori-mo ‘what-than-MO’ (and more than anything) express a goal-internal comparison in the sense that they are used in a situation where the discourse is moving toward a specific goal (i.e., to answer the question “What kind of person is Hanako?”).

Crucially, the pragmatic function of nani-yori-mo/more than anything can change depending on the discourse context. If a noteworthy comparison with indeterminateness is signaled at the beginning of the discourse sequence, it creates an effect of “priority listing” (i.e., a top-down strategy), whereas if it is signaled at the end of discourse sequence, it creates an effect of “additive reinforcing” (i.e., a bottom-up strategy):

(27) Top-down strategy
A: Tokyo-no ii tokoro-tte nan-desu-ka
Tokyo-GEN good point-TE what-PERF.HON-Q
‘What is a good point of Tokyo?’/’What are the good points of Tokyo?’
Let’s see Nani-yori-mo Tokyo-TOP safe-PERF.HON
‘Let’s see. More than anything, Tokyo is safe.’
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B: Sore-ni (Tokyo-wa) benri-mo ii-desu. In addition to that Tokyo-top convenient-also good-perf.hon 'In addition to that, Tokyo is also convenient.'

(28) Bottom-up strategy
A: Tokyo-no ii tokoro-tte nan-desu-ka? Tokyo-gen good point-te what-perf.hon-q 'What are the good points of Tokyo?,' 'What is a good point of Tokyo?'
B: Soo-desu-nee. Tokyo-wa benri-ga ii-shi tabemono-mo Let's see Tokyo-top convenience-nom good-and food-also oishii-desu. good-perf.hon 'Let's see. Tokyo is convenient, and the food is also good.'
B: Soshite nani-yori-mo, Tokyo-wa anzen-desu. And what-than-MO Tokyo-top safe-perf.hon 'And more than anything, Tokyo is safe.'

This suggests that the use of noteworthy comparison is sensitive to the dynamic sequence of discourse. In this book, we only focused on the noteworthy nani-yori-mo, but the not-at-issue use of sore-yori 'than it' also has a discourse-dependent pragmatic function. In the CI use, the Japanese comparative expression sore-yori-mo can modify an entire utterance U and signals that the given U is preferable:

(29) (What kind of person is Mary?)
A: Atama-ga ii-desu. Head-nom good-perf.hon 'She is smart.'
B: Iya sore-yori(-mo) mazu yasashii-desu. Well it-than-MO first kind-perf.hon 'Sore-yori(-mo), first, she is a kind person.'

This is a goal-internal comparison in the sense that speaker B is comparing two utterances under the same goal. Interestingly, however, sore-yori can also be used to shift the goal/topic of a conversation. In (30B), the speaker is signaling that his/her goal is preferable to the goal associated with a previous utterance.

(30) A: Ima-kara tenisu shi-yoo. now-from tennis do-let's 'Let's play tennis from now on.'
B: Sore-yori-(mo) shukudai-wa owa-tta-no? it-than-MO homework-top finish-Past-q 'Sore-yori-mo, did you finish your homework?'

It seems that sore-yori can shift the goal of conversation if the at-issue utterance is not relevant to the "current" Question Under Discussion (QUD) (e.g., Grice 1975; Roberts 1996, 2012). Recently, many important ideas have been proposed regarding
Future directions

the information update of not-at-issue content and the relationship with discourse structure/question under discussion (e.g., Simons et al. 2010; Murray 2014; Rett and Murray 2013; AnderBois et al. 2015). It would be interesting to consider how the variability of pragmatic functions of pragmatic scalar modifiers can be analyzed in terms of the theory of information structure/discourse update.

10.4.3 The interaction between expressives and at-issue content

Finally, it would be worth considering the interaction between expressives and at-issue content. In Chapters 6 and 7, we observed that yoppodo (with a simple adjective) and totemo need to co-occur with an appropriate modal. For example, we showed that yoppodo with a simple gradable predicate must co-occur with an evidential modal:

(31) Ano raamen-ya-wa yoppodo oishii-=“(nichigainai).
That ramen-restaurant-TOP YOPPODO delicious-must
At-issue: That ramen restaurant must be very delicious.
Not-at-issue: I am inferring the degree via evidence, and the degree is above my expectation.

If there is no modal, the sentence becomes ill-formed. This property of yoppodo is somewhat puzzling considering that yoppodo’s not-at-issue meaning is independent of “what is said,” and does not semantically interact with any logical operators. A similar phenomenon can be observed in German particles like the modal particle JA (with obligatory stress; Grosz 2011; Kaufmann 2013), which require a modal. In addition, there is the phenomenon of the Japanese discourse particle sekkaku. McCready and Sudo (2012) discussed the meaning of the adverb sekkaku, claiming that content external to the local context of the adverbial is relevant in determining felicity/grammaticality. It is worth considering how these kinds of “dependent” phenomena can be explained in a theoretical fashion.
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