An utterance situation-based comparison

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Abstract The Japanese comparative adverb *motto* has two different uses. In the degree use, *motto* (typically) compares two individuals and denotes that there is a large gap between the target and a given standard with a norm-related presupposition. On the other hand, in the so-called 'negative use' it conveys the speaker's attitude (often negative) toward the utterance situation. I argue that similarly to 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)/expressive. I argue 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. The theoretical implications of this paper are that there is a natural extension from semantic comparison to expressive comparison and that there is a type in natural language that can be called an 'indirect expressive', as opposed to 'direct expressives' like *bastard* and *man* (Potts, The logic of conventional implicatures, 2005, 2007a; McCready, Linguist Philos 31:671–724, 2009; 35:243–283, 2012).

1 Introduction

Recent studies of degree expressions have shown that there is a (cross-linguistic) tendency in which a degree morpheme that is used in a semantic realm can also be used in an expressive realm (e.g. McCready and Schwager 2009; Sawada 2009a, 2010, 2013a; Gutzmann and Turgay 2013.) For example, McCready and Schwager

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(2009) claim that the English intensifier *fully* has both an at-issue use and an expressive/pragmatic use:

(1)   a.   The pipe is fully straight.   (*At-issue use*)

(Kennedy and McNally 2005, p. 355)

     b.   Brenda is fully going to fly kick me!   (*Expressive use*)

(McCready and Schwager 2009)

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. 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 that conventionally implicates that the speaker is maximally epistemically committed to his/her justification for his/her use of the proposition. McCready and Schwager (2009) show that the dual use of intensifiers like (1) is cross-linguistically pervasive based on the examples of the German *ur* and the Japanese particle *zenzen* 'lit. at all.'

The dual-use phenomenon can also be observed in minimizers. For example, it has been observed that the Japanese minimizer *chotto* 'lit. a bit' has an at-issue use and an expressive use:

(2)   a.   Kono   sao-wa   chotto   magat-teiru.   (*At-issue use*)
          This   rod-TOP   a bit   bend-STATE
          'This rod is a bit bent.'

     b.   Chotto   hasami   aru?   (*Expressive use*)
          A bit   scissors   exist
          '*Chotto* do you have scissors?'

(Matsumoto 1985; Sawada 2010)

In (2a) *chotto* directly modifies the gradable predicate *magat-teiru* 'bent' and semantically denotes that the degree of bentness of the target is slightly greater than the minimum standard (i.e. zero degrees). On the other hand, in (2b) *chotto* is used at an expressive level and its meaning is not part of what is said. Sawada (2013a) argues that *chotto* in (2b) conventionally implicates that the degree of imposition of the speaker's speech act on the addressee is low.

It is interesting that the dual-use phenomenon can be observed in comparative morphemes as well. It is observed in the literature that the Japanese comparative adverb *motto* has two kinds of uses: a 'degree' use and a 'negative' use (e.g. Watanabe 1985; Sano 2004). For example, *motto* in (3) is considered to be a degree use:

(3)   Hanako-no   keeki-wa   Taro-no   keeki-yori(-mo)   motto   oishi-katta.
      Hanako-GEN cake-TOP Taro-GEN cake-than-MO   MOTTO delicious-PAST
      Degree reading: Hanako's cake was {still much/even} more delicious than Taro's cake.

(3) is used in a positive context where both Hanako's cake and Taro's cake are delicious, but Hanako's cake is still much more delicious. In contrast, (4) 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)]:

(4) 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 contextually-determined 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 conveys that although the given store's cake and a contextually-determined store's cake were both delicious, the former was much more delicious. On the other hand, in the negative reading, it conveys the speaker's complaint about the utterance situation, i.e. the store's cake is not delicious now.

What is puzzling about the dual-use phenomenon of *motto* is that unlike the phenomena of *fully* (= 1) and *chotto* (= 2), there seems not to be a relationship between two kinds of uses (at least, not in a clear way). Unlike the reading in (4a) the reading in (4b) does not express comparison between two individuals. It only focuses on a particular individual (here the store's cake). Is there any relationship between the degree reading and a negative reading?

Note that the distribution pattern of the degree use and that of the negative use are not always the same. Besides the past tense, the degree reading and the negative reading can also arise in various kinds of intensional contexts such as commands, conditionals, modals, and questions:

(5) Imperative

    Motto   hayaku   hashi-re!
    MOTTO   fast   run-IMPERATIVE

    a. Run even faster!   (*Degree reading*)
    b. Run fast! (Implied: You are running slowly now.) (*Negative reading*)

(6) Conditional

    [(Sore-ga)   motto   oishi-kereba]   kau-deshoo.
    It-NOM   MOTTO   delicious-COND   buy-will.POLITE

    a. If it is still much more delicious than a contextually-determined cake, I will buy it. (*Degree reading*)

    b. Negative reading: If it is *motto* delicious, I will buy it. (Implied: The cake is not delicious.) (*Negative reading*)

(7) Epistemic modal
Kono mise-no keeki-wa motto oishi-katta-hazu-da.
This store-GEN cake-TOP MOTTO delicious-PAST-should-PRED
a. This store's cake should have been still much more delicious than a contextually-determined cake. (*Degree reading*)
b. Negative reading: This store's cake should have been delicious. (Implied: It is not delicious now.) (*Negative reading*)

However, the negative reading never arises with the simple present tense, as in (8):

(8) Present tense
??Kono mise-no keeki-wa motto oishii.
This store-GEN cake-TOP MOTTO delicious
'This store's cake was still much more delicious than a contextually-determined store's cake.'
(only degree reading available)

Furthermore, as we observed earlier, the negative reading does not arise in explicit comparisons with the *yori* 'than' PP:

(9) Hanako-no keeki-wa Taro-no keeki-yori(-mo) motto
Hanako-GEN cake-TOP Taro-GEN cake-than-MO MOTTO
oishi-katta.
delicious-PAST
Degree reading: Hanako's cake was {still much/even} more delicious than Taro's cake.

Since the degree reading and the negative reading are both derived from the same lexical source, it is natural to consider that there should be some relationship between them. However, in reality the function of degree *motto* and that of the negative *motto* are quite different. The former semantically compares two different individuals x and y using the scale associated with a gradable predicate.[1] On the other hand, the negative *motto* targets one individual x, and expresses the speaker's attitude (often negative) toward the utterance situation involving x. Is there a semantic connection between the degree use and the negative use of *motto*? If so, in what sense? The purpose of this paper is to investigate the dual-use property of the Japanese degree adverb *motto* and to consider the relationship between comparison and expressivity in natural language.

I will argue that similarly to 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). More specifically, I argue that the negative *motto* conventionally implicates that the degree of the target in an expected situation is much greater than the target's current degree and that the speaker's attitude (often negative) toward the utterance situation comes from this

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[1] Notice that the degree *motto* can also compare two different times in the domain of semantics (at-issue level). We will discuss this point in Sect. 4.

large gap. I will show that the similarities and differences between the two kinds of meaning of *motto* can naturally be captured based on a multidimensional theory of meaning (Potts 2005; McCready 2010; Gutzmann 2012).

We will also consider an alternative approach (the contrastive negative approach) where negative *motto* conventionally implicates that 'the opposite of an at-issue gradable predicate is true with respect to a particular individual now.' We will however, argue that although the negation-based account can also naturally explain the distributional property of the negative *motto*, the comparison-based approach is superior to the negation-based approach in that the former, but not the latter, can properly explain (i) the cancellable property of the negative implication, (ii) the interpretation of the sentence with a lower-closed scale adjective, (iii) the non-redundant property of negative implication, and (iv) the negative *motto* always co-occurs with a gradable predicate.

The theoretical implications of this paper are that there is a natural extension from semantic comparison to expressive comparison and that there is an 'indirect' expressive mode that conveys the speaker's emotion toward the target through comparison with its alternative [as opposed to 'direct' expressives like *bastard* (Potts 2005, 2007a) and *man* (McCready 2009, 2012)].

This paper is structured as follows. Section 2 considers some empirical differences between the degree *motto* and the negative *motto*. Section 3 provides an overview of some previous studies of the negative *motto* and the degree *motto*. Section 4 focuses on the meaning of the degree *motto* and shows that it involves an at-issue meaning of intensified comparison with a norm-related presupposition concerning a standard of comparison. Section 5 investigates the pragmatic properties of the negative *motto* in terms of the semantics/pragmatics interface and claims that the negative *motto* compares the utterance situation and the expected situation at the level of CI (expressive realm). In Sect. 6 we will analyze its meaning and distribution patterns, using a multidimensional approach. Section 7 considers an alternative approach to the negative *motto*, i.e. the negation-based approach, and compares our comparison-based approach to the negation-based approach. We will claim that the former is superior to the latter. Section 8 considers the meaning of the negative *motto* in terms of a big picture and proposes that there is a type in natural language that can be called indirect expressive as opposed to a direct expressive. Section 9 is the conclusion.

2 The degree *motto* and the negative *motto*: empirical differences

Based on the above set up, let us now consider the empirical differences between the degree *motto* and the negative *motto*.

2.1 Phonological difference

First there is a significant different between the degree *motto* and the negative *motto* in terms of intonation. Sano (2004) argues that the negative *motto* is phonologically different from the degree *motto* based on the example of *motto* plus *nagai* 'long':

(10) **a** Degree *motto*   **b** Negative *motto*

     motto nagai   *motto na gai*
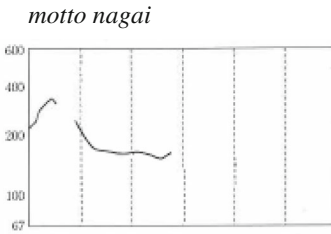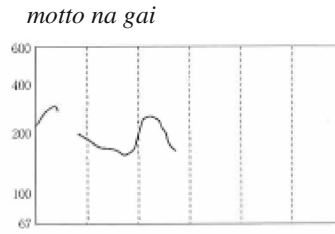
(Sano 2004: 11)

As the above figures show, in the case of the degree *motto*, *motto* receives a high pitch accent relative to the gradable predicate. On the other hand, in the case of the negative *motto*, the adjective also receives a high pitch accent, just as high as *motto*.[2]

The crucial point is that the accent pattern of degree *motto* is unmarked, but that of negative *motto* is marked (cf. Sano 2004). Generally, we put stress on a degree adverb, but in the case of the negative *motto* we put stress on the predicate part. For example, the intensifier *totemo* has the same pattern as the degree *motto* in terms of accent:

(11) a. Kono   mise-no   keeki-wa   **totemo**   ooki-katta.
        This   store-GEN cake-TOP very   big-PAST
        'This store's cake was very big.'
    b. ?? Kono mise-no   keeki-wa   totemo   **ooki**-katta.
        This   store-GEN cake-TOP very   big-PAST
        'This store's cake was very BIG.'

(11a) is natural but (11b) is quite odd. This suggests that negative *motto* is not a regular degree adverb.

2.2 Distribution patterns

The degree *motto* and the negative *motto* are different in terms of distribution patters as well. The following sentence can be ambiguous between a degree reading and a negative reading:

(12) Motto   hayaku   hashi-re!
      MOTTO   fast   run-IMPERATIVE
      a. 'Run still much faster!'   (*Degree reading*)
      b. 'Run fast!' (Implies: you are not running fast.) (*Negative reading*)

In reading (12a), the sentence is interpreted as an 'elliptical' comparison, which lacks a standard of comparison. On the other hand, reading (12b) implies that the subject is not running fast now.

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[2] In the above figure there is no large difference between the degree *motto* and the negative *motto* in terms of the level of stress, but some native speakers may consider the level of stress in the negative *motto* to be much lower than that in the degree *motto*.

However, a degree reading never arises in a situation where there is a standard of comparison (i.e. the *yori*-phrase/clause):

(13) a. Kono hon-wa   ano hon-yori(-mo) motto   omoshiroi.
         This book-TOP that book-than-MO MOTTO   interesting.
         'This book is still much more interesting than that book.'
         (No negative reading)
     b. Kono hon-wa   Taro-ga   katta-no-yori(-mo)   motto   takai.
         This book-TOP Taro-NOM   bought-NM-than(-MO) MOTTO
         'This book is still much more expensive than what Taro bought.'
         (*No negative reading*)

Furthermore, the negative *motto* cannot arise in present-tense sentences:

(14) Present tense
      ?? Kono   mise-no   keeki-wa   motto   oishii.
          This   store-GEN   cake-TOP   MOTTO   delicious
          'This store's cake was still much more delicious than a contextually-determined store's cake.'
          (*Only degree reading available*)

Sentence (14) can only have a degree reading. How can we explain the empirical difference between the degree *motto* and the negative *motto*?

3 Previous analyses of *motto*

Before embarking on our analysis of the multiple uses of *motto*, let us first review some previous analyses of *motto*: Kinoshita's viewpoint approach and Watanabe's (1985) and Sano's (2004) analysis of *motto*.

3.1 Kinoshita (2001): a viewpoint approach

Kinoshita (2001) states that the two seemingly different meanings of *motto* can be explained based on one lexical entry and that the expression *motto* is a 'viewpoint' expression that forces us to construe the standard of comparison to be either (i) the current situation (i.e. now) or (ii) a discourse given entity. According to her analysis, the standard of comparison in the following sentence is *ima-yori* 'than now' or a discourse salient individual ('than someone'):

(15) Motto   hayaku hashi-re.
     MOTTO fast   run-IMPERATIVE
     'Run MOTTO faster than now!'

She further claims that the standard of comparison in sentences with *motto* can be situated either in the positive zone (A) or the negative zone (~A). This view leads us to think that the difference between a 'degree' reading and a 'negative' reading is a

matter of the polar orientation of a standard that is fixed by context (see also Kawabata 2002). For example, if the standard of comparison in (15) is in the positive extension (i.e. either the addressee's current running speed is fast or the running speed of a contextually determined third person is fast), the sentence is automatically interpreted as having a 'degree' reading. By contrast, if the standard of comparison is in a negative extension (i.e. the addressee's current running speed is slow or the running speed of a contextually determined third person is slow), the sentence is interpreted as having a 'negative' reading.

Although the 'contextual' approach seems to be elegant in that it can capture the two kinds of reading in a principled way, there are problems with it. First, under this approach it is not clear why there is no negative reading when an individual comparison is made explicitly. The following sentence does not trigger a negative reading:

(16) Hanako-yori-mo   motto   hayaku hashi-re. (*Only degree reading*)
     Hanako-than-MO MOTTO fast   run-IMPERATIVE
     'Run still much faster than Hanako!'

Second, the contextual approach does not seem to explain why the negative *motto* reading does not arise with the present tense.

(17) Present tense
     ?? Kono   mise-no   keeki-wa   motto   oishii.
     This   store-GEN   cake-TOP   MOTTO   delicious
     'This store's cake was still much more delicious than a contextually-determined store's cake.'
     (*Only degree reading available*)

3.2 Watanabe (1985) and Sano (2004): the negative *motto* as a contrastive negation

Unlike Kinoshita (2001), Watanabe (1985) and Sano (2004) argue that there are multiple lexical items (constructions) for *motto*, a degree use and a negative use.[3] For example, *motto* in (18) is considered to be a degree use:

(18) Taro-wa   (Jiro-yori-mo) motto   se-ga   takai. (*Degree reading*)
     Taro-TOP Jiro-than-MO MOTTO height-NOM tall
     'Taro is still much taller (than Jiro).'

Watanabe (1985) and Sano (2004) both assume that the degree *motto* compares two individuals in a positive context. Watanabe (1985) claims that the degree *motto* is used in a context where the standard y (here Jiro) can be said to be A (here tall), although it is not sufficiently so. Sano (1998, 2004) argues, based on Okumura's (1995) observations on *motto*, that a sentence with degree *motto* is used in a

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[3] Watanabe (1985) posits more than two 'models' (constructions) for *motto*, but these can be reduced to a 'degree' use and a 'negative' use.

situation where both the target and the standard are A (A = adjective). In (18) there is an implication that both Taro and Jiro are tall.

On the other hand, Watanabe (1985) and Sano (2004) argue that, in a sentence with the negative *motto* it has a meaning of denial: the speaker 'denies a given gradable predicate and assigns a suitable alternative gradable predicate.' Watanabe (1985) and Sano (2004) assume that the sentence with the negative *motto* has an underlying representation/structure like (19):

(19) (¬A-de-wa   naku) motto   A.
     ¬A-PRED-TOP NEG   MOTTO   A
     '(not ¬A, but) A.'   (Watanabe 1985, p. 71; Sano 2004, p. 13)

Let us consider the above idea based on the following example:[4]

(20) Hannin-wa   (sonna roojin-de-wa   naku) motto   wakai otoko-
     Robber-TOP   that   old man-PRED-TOP NEG   MOTTO   young man-
     da-tta.
     PRED-PAST
     'A robber/murderer is not such an old man, but it was a young man.'
                                                  (Watanabe 1985, p. 71)

According to Watanabe (1985) and Sano (2004), in (20) the speaker denies the (current) assumption that a robber/murderer is an old man and claims that the robber/murderer was a young man. Note that even if we omit the parenthetical part, we can automatically recover it. That is, the parenthetical part is signaled by the use of the negative *motto*. Note also that there is a contrast between the parenthetical part and the main clause in terms of time. The omitted part is concerned with the current time/utterance situation, while the proposition in the main clause takes the past tense. In this sense it is not a normal contrastive negative sentence like "I am not poor but rich."

Although the negation-based account can explicitly capture the negativity/contrastiveness behind the use of the negative *motto*, in this paper I will propose an alternative approach to the meaning of the negative *motto*. I will pursue the idea that similarly to the degree *motto*, the negative *motto* is also a comparative morpheme, but unlike the degree *motto*, it compares an expected degree and a current degree with respect to a particular individual and denotes that there is a large gap between the two in the expressive realm (at the CI level). It will be shown that our comparison-based approach can also capture Watanabe and Sano's insight that there is negativity/contrastiveness behind the use of the negative *motto*.

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[4] Watanabe (1985) also provides the following example to account for his idea:

(i) (Watashi-wa ima-wa   binboo-da-ga)   mukashi-wa   motto   kanemochi-da-tta.
    I-TOP   now-TOP   poor-PRED-but   old days-TOP MOTTO   rich -PRED-PAST
    '(I am poor right now but), I was rich.'   (Watanabe 1985, p. 71)

Here there is no negation inside the parenthesis but there is a word, *binboo* 'poor', which is an antonym of *kanemochi* 'rich'. This suggests that the Watanabe (1985) considers it possible that NOT A can be an antonym of A.

4 The meaning of degree *motto*

Before analyzing the meaning of the negative *motto*, let us first investigate the meaning of the degree *motto*, which will be the foundation for the analysis of the negative *motto*. As we observed in the introduction, the following sentence is used in a positive context where both Hanako's cake and Taro's cake are delicious, but Hanako's cake is still much more delicious:

(21) Explicit comparative with *yori*
Hanako-no   keeki-wa Taro-no   keeki-yori(-mo) motto   oishi.
Hanako-GEN cake-TOP Taro-GEN cake-than-MO   MOTTO delicious
'Hanako's cake is {still much/even} more delicious than Taro's cake.'

We can analyze the meaning of sentence (21) as having two components, an at-issue component and a presupposition component:

(22) The meaning of (21)
   a. At-issue: Hanako's cake is much more delicious than Taro's cake.
   b. Presupposition: Taro's cake is delicious.

Under this analysis, the inference that the target of comparison (in this case Hanako's cake) is also A (in this case delicious) comes from the relative relationship between Hanako's cake and Taro's cake, i.e. [Hanako's cake > Taro's cake].

There are at least two pieces of evidence for the idea that the norm-related meaning regarding the standard of comparison is a presupposition. First, even if sentence (21) is negated, the norm-related meaning of the standard of comparison still remains[5]:

(23) Hanako-no   keeki-wa   Taro-no   keeki-yori   motto
Hanako-GEN cake-TOP   Taro-GEN cake-than   still.much.more
oishii-*to iu-wake-de-wa-nai.*
delicious-it is not the case
'It is not the case that Hanako's cake is even more delicious than Taro's cake.'
Presupposition: Taro's cake is delicious.

Second, we can target the presupposition part of the utterance by saying, *Hey, wait a minute! I didn't know that S* (where S corresponds to the presupposition). According to von Fintel (2004) and Shanon (1976), '*Hey, wait a minute! I didn't know that S*' signals the speaker's objection to the assumed background of what is said. For example, we can naturally utter *Hey wait a minute! I didn't know that John has a dog!* in order to challenge the presupposition created by the possessive phrase *John's dog*:

(24) A: John's dog is very dangerous.
       Presupposition (through the use of the possessive): John has a dog.
     B: Hey wait a minute! I didn't know John has a dog.

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[5] Note that the phrase *to iu wake-de-wa-nai* is an idiomatic negative phrase that is used for external negation.

Similarly to the case in (24), we can naturally challenge the presupposition in (21) by saying (25):

(25) Chotto matte! Taro-no   keeki-ga   oishii-towa   shira-na-katta-yo!
     Wait a minute Taro-GEN cake-NOM delicious-that know-NEG-PAST-YO
     'Hey, wait a minute! I didn't know that Taro's cake is delicious.'

Note that *motto* has an intensified comparative meaning whereby the target of comparison exceeds the standard of comparison by a large amount on the given scale (Okumura 1995). The idea that the degree *motto* has an intensified meaning is corroborated 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 the following example:

(26) (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
          Taro-TOP height-NOM tall-but Jiro-TOP MOTTO   height-NOM
          takai.
          tall
          'Taro is tall but Jiro is still much taller.'

If Taro is 196 centimeters tall and Jiro is, say, 205 centimeters tall, then the sentences in (26) would be perfectly natural, but in the above context, the sentences sound odd. The above fact suggests that the degree *motto* compares the target and the standard (based on a contextual standard) but also measures the gap between them.

The question is how we can analyze the special kind of intensified comparison in a formal way. Based on the standard assumption that comparative morphemes (MORE) have a comparative meaning, I assume that the degree *motto* is a special kind of comparative morpheme and has the following denotation[6]:

(27)

$$\overbrace{\phantom{\exists d[d \geq \text{Stand} \wedge g(d)(y)(t)(w)].}}^{\text{presupposition}}$$

$$[[\text{motto}_{\text{DEGREE}}]] = \lambda g_{<d, <e,<i<s,t>>>>}\lambda y\lambda x\lambda t\lambda w{:}\exists d[d \geq \text{Stand} \wedge g(d)(y)(t)(w)].$$
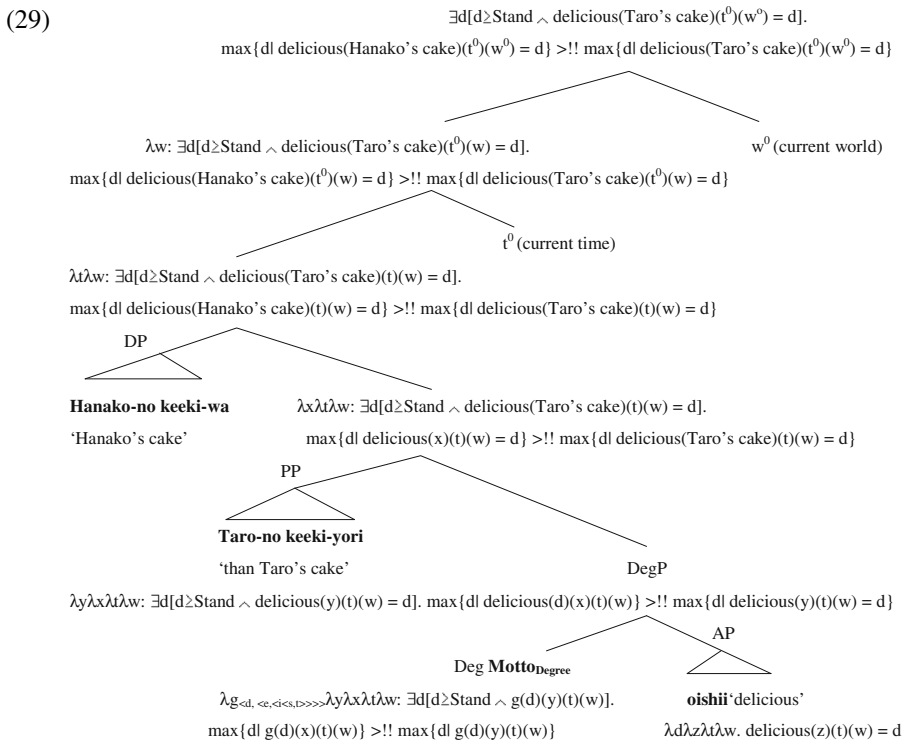$$\max\{d|\ g(d)(x)(t)(w)\} >!! \max\{d|\ g(d)(y)(t)(w)\}$$

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[6] There is also an alternative approach whereby a standard marker *yori* 'than', but not a comparative morpheme, encodes a meaning of comparison. Under this approach, the degree *motto* is considered to be a special morpheme that makes a standard *yori*-PP have a meaning of intensified comparison (with a norm-related presupposition). Although both approaches work, in this paper I will just assume for simplicity's sake that the degree *motto* itself has an intensified comparative meaning with a norm-related presupposition. (See Sawada (2013b) for a detailed discussion of the theories of the semantics of Japanese comparatives.)

The degree *motto* in (27) (i) presupposes that the degree of the standard y is greater than or equal to the (contextual) standard of a gradable predicate g at time t in w, and semantically denotes that (ii) the maximal degree of the target, x, is much greater than that of the standard, y, on the scale of g at t in w. '$>!!$' stands for 'greater than a contextual standard by a large amount' (Kennedy and McNally 2005).

Let us now consider how the degree *motto* logically interacts with other elements based on example (21). As for the meaning of gradable adjectives, I assume that they denote relations between individuals and degrees (see Seuren 1973; Cresswell 1977; von Stechow 1984; Heim 1985; Klein 1991, and Kennedy and McNally 2005), as in (28):

(28) $[[ookii]] = \lambda d\lambda z\lambda t\lambda w. \ big(z)(t)(w) = d$

The following figure shows the logical structure of the sentence (21):

(29)

$\exists d[d \geq Stand \wedge delicious(Taro's\ cake)(t^0)(w^o) = d].$
$max\{d|\ delicious(Hanako's\ cake)(t^0)(w^0) = d\} >!! \ max\{d|\ delicious(Taro's\ cake)(t^0)(w^0) = d\}$

$\lambda w: \exists d[d \geq Stand \wedge delicious(Taro's\ cake)(t^0)(w) = d].$ w^0 (current world)
$max\{d|\ delicious(Hanako's\ cake)(t^0)(w) = d\} >!! \ max\{d|\ delicious(Taro's\ cake)(t^0)(w) = d\}$

t^0 (current time)

$\lambda t\lambda w: \exists d[d \geq Stand \wedge delicious(Taro's\ cake)(t)(w) = d].$
$max\{d|\ delicious(Hanako's\ cake)(t)(w) = d\} >!! \ max\{d|\ delicious(Taro's\ cake)(t)(w) = d\}$

DP

Hanako-no keeki-wa $\lambda x\lambda t\lambda w: \exists d[d \geq Stand \wedge delicious(Taro's\ cake)(t)(w) = d].$
'Hanako's cake' $max\{d|\ delicious(x)(t)(w) = d\} >!! \ max\{d|\ delicious(Taro's\ cake)(t)(w) = d\}$

PP

Taro-no keeki-yori

'than Taro's cake' DegP

$\lambda y\lambda x\lambda t\lambda w: \exists d[d \geq Stand \wedge delicious(y)(t)(w) = d]. \ max\{d|\ delicious(d)(x)(t)(w) = d\} >!! \ max\{d|\ delicious(y)(t)(w) = d\}$

AP

Deg **Motto$_{Degree}$** oishii 'delicious'

$\lambda g_{<d, \ <e, \ <i<s,t>>>}\lambda y\lambda x\lambda t\lambda w: \exists d[d \geq Stand \wedge g(d)(y)(t)(w)].$ **oishii** 'delicious'
$max\{d|\ g(d)(x)(t)(w)\} >!! \ max\{d|\ g(d)(y)(t)(w)\}$ $\lambda d\lambda z\lambda t\lambda w. \ delicious(z)(t)(w) = d$

Regarding tense and world, in the following argument I will treat them as pronouns, on a par with individuals (Hacquard 2006; Percus 2000).

Note that as we have observed in the previous sections the degree *motto* can be used in a situation where there is no explicit comparative standard. In such environment strictly speaking there can be two kinds of degree *motto*, i.e. the "than now" reading and the "than something" reading:

(30) 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 ('than something' reading): In the old days, this store's
     cake was still much more delicious than a contextually-determined store's cake.
     b. Degree reading 2 ('than now' reading): In the old days, this store's cake
     was still more delicious than now.

The above ambiguity leads us to posit the following two lexical items for implicit
degree *motto*:

(31) a. $[[\text{motto}_{\text{DEGREE.IMP}}]] = \lambda g_{<d,\ <e,<i,<s,t>>>>} \lambda x \lambda t \lambda w:$
           $\exists d[d \geq \text{Stand} \wedge g(d)(s)(t)(w)].$
           $\max\{d|\ g(d)(x)(t)(w)\}$
           $> !!\ \max\{d|\ g(d)(s)(t)(w)\}$
           (where s is a contextually determined individual.)

      b. $[[\text{motto}_{\text{DEGREE.IMP\_TIME}}]] = \lambda g_{<d,\ <e,<i<s,t>>>>} \lambda x \lambda t \lambda w:$
           $\exists d[d \geq \text{Stand} \wedge g(d)(x)(t_0)(w)].\ \max\{d|\ g(d)(x)(t)(w)\} > !!\ \max\{d|\ g(d)(x)(t_0)(w)\}$
           (where t_0 is a current time)

(31a) is used for the "than something" reading where a comparison is made between
two individuals and (31b) is used for the "than-now" reading where a comparison is
made between now and a non-present time (e.g. the past). Crucially, however, both
kinds of comparison are made in the domain of semantics (at-issue meaning).

5 The negative *motto* is an expressive comparative morpheme

5.1 The negative *motto* has an expressive meaning

So far we have considered the meaning of the degree *motto*. Let us now consider the
meaning of the negative *motto*. My main claim for the meaning of the negative
motto is that like the degree *motto*, it is a comparative morpheme, but unlike the
degree *motto*, it compares a current degree and an expected degree with respect to a
particular individual in the expressive realm (at the level of CI). More specifically, I
will claim that the negative *motto* conventionally implicates that the expected
degree of the targeted individual is much greater than the target's current degree,
and the speaker's negative attitude toward the utterance situation conversationally
arises from the large gap.
   Under this approach the meaning of the following sentence involves three kinds
of meanings, at-issue meaning, a CI, and a conversational implicature:

(32) Kono   mise-no   keeki-wa   motto   ooki-katta.   (*Negative reading*)
     This   store-GEN   cake-TOP   MOTTO   big-PAST
     At- issue: This store's cake was big.
     CI: The previous size of this store's cake is much bigger than the current size.
     Conversational implicature via CI: This store's cake is small now.

The important point about the negative *motto* is that it has the property of an expressive (Cruse 1986; Kaplan 1999; Potts 2005, 2007a). Cruse explains the property of an expressive as follows:

(33) '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, p. 272)

For instance, the expression *damn* in the following sentence has the property of an expressive in that its meaning is always anchored to the speaker and the time and place of utterance (Potts 2005, 2007a):

(34) I have to mow the damn lawn. (Potts 2005, p. 7)

Similarly to *damn*, the negative *motto* makes a statement about the 'current situation' by the speaker:

(35) Mukashi-wa   motto   oishi-katta   kioku-ga   arun-desu-ga…
Old days-TOP MOTTO delicious-PAST memory-NOM have-PRED.POL.but
'I have a memory in my mind that in the old days it was *motto* delicious, but…'

(http://okwave.jp/qa/q174464.html)

Here the speaker has a negative evaluation of the utterance situation. Notice, however, that *motto* in (35) is not directly conveying that 'the food is not delicious now.' Instead, the speaker conveys it via comparing it to a previous situation, when the food was good.

In terms of the status of meaning, we can say that the comparative meaning of the negative *motto* is a CI (Grice 1975; Potts 2005)[7]:

(36) Potts' definition of CI:
    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.'

The CI component of the negative *motto* is independent of 'what is said' because we cannot challenge the comparative meaning triggered by the negative *motto* by saying 'No, that's not true!'

One might think that the meaning triggered by the negative *motto* should be analyzed as a presupposition rather than a CI. One might think that the negative *motto* is a presupposition trigger. However, the following reasons lead us to reject that view.

First, the meaning of the negative *motto* has a property of anti-backgrounding. Unlike presupposition triggers, the information of the negative *motto* is discourse-

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[7] Strictly speaking, Potts' definition of CI is slightly different from Grice's in that unlike Grice (1975, 1989), Potts (2005, 2007b considers CI expressions to have a property of speaker-orientedness. See Horn (2007, 2013) and Salmon (2011) for the detailed discussion on the distinction between Potts's CIs and the Grice's notion of conventional implicature.

new. That is, it does not offer information that is part of the common ground when it is uttered. This is corroborated by the fact that it is odd to challenge the CI meaning by saying "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*.

(37) A: 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: My expected degree of this store's cake is much greater than the current degree.
          (Implied: This store's cake is not good now.)

     B: (#) Chotto mat-te!   Anata-no   kitaichi-ga   genjoo-yori-mo
           A bit   wait-IMP   you-GEN   expectation   current-than-MO
                                          degree-NOM
           zutto   takai   tokoro-ni aru-nante   sira-na-katta-yo.
           much   hight   place-LOC BE-COMP   know-NEG-PAST-YO
           'Hey wait a minute! I didn't know that your extected degree is much greater than the current degree!'

Speaker B's reply sounds not natural.[8]

Second, unlike presuppositions, the meaning of negative *motto* can project beyond 'presupposition plugs' such as the attitude predicate[9]:

(38) Kimi-wa   kono mise-no   keeki-wa   motto   oishi-katta-to
     You-TOP   this store-GEN cake-TOP   MOTTO   delicious-PAST-that
     omo-teiru-kamoshirenai-ga…
     think-ING-may-but
     At-issue: You may be thinking that this store's cake was delicious, but…'
     CI: My expected degree of deliciousness of this cake is much greater than the current degree.

The fact that the negative *motto* in (38) can be speaker-oriented and interpreted at a matrix level seems to support the idea that the meaning of *motto* is a CI rather than a presupposition.[10]

Based on the above discussion, although there is still an ongoing debate with respect to the theoretical status of CI, I will assume that the meaning of intensified comparison triggered by the negative *motto* is a CI, rather than a presupposition (See Potts 2005; 2013; Schlenker 2007, 2012; Tonhauser et al. 2013) for detailed discussions on the theoretical status of CI and the potential differences between a CI and a presupposition.)

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[8] However, there is a possibility that this sentence sounds unnatural because we just do not talk in this way. Thus the dialogue in (37) may not be an ideal test for considering the status of the meaning of the negative *motto*. I thank the reviewer for pointing out this issue.

[9] Thanks to Yusuke Kubota for a valuable discussion on the embeddability of the CI *motto* and for providing me with the interesting data.

[10] Note that there is also another reading whereby the CI *motto* is attributed to the subject, but whether we can get this subject-oriented reading or not is basically irrelevant to the distinction between presuppositions and CIs.

5.2 Context-sensitivity of the speaker's evaluation

We have so far observed examples where the negative *motto* expresses the speaker's negative attitude about the utterance situation. However, as we can see in the following examples, it can also be used in a situation where the speaker has a 'positive' attitude about the utterance situation:

(39) (The use of negative *motto* with a positive attitude)
      Kono mise-no   keeki-wa motto   takai-to   omo-ttei-ta.
      This store-GEN cake-TOP MOTTO expensive-that think-TEIRU-PAST
      I thought this store's cake was expensive. (Implied: This store's cake is not
      expensive now.)

(40) (The use of negative *motto* with a positive attitude)
      Taro-no   keeki-wa   motto   mazu-katta-hazu-da.
      Taro-GEN cake-TP   MOTTO   bad-PAST-must-PRED
      a. Taro's cake should have been still much/even worse.
      b. Taro's cake should have been bad. (Implied: Taro's cake is good now.)

(39) and (40) convey the speaker's positive attitude toward the utterance situation. The important point in examples of this kind is that in a positive evaluation environment, an at-issue predicate is evaluated as 'negative.' For example, in (39) the main predicate *takai* 'expensive' is used, and in (40) the main predicate is *mazui* 'bad (taste)', and they are both normally evaluated as negative. On the other hand, the examples in which we observed the speaker's attitude to be negative all included gradable predicates that have a positive evaluative meaning (at least in the given context), such as *oishii* 'delicious' and *ookii* 'big' (see, e.g. (35), (37)).

What this suggests is that the propositional content of the sentence indicates which interpretation is to be made, positive or negative. If the main predicate has a positive evaluative meaning (e.g. *yasui* 'cheap', *oishii* 'good'), the speaker's evaluation of the utterance situation is negative (i.e. bad), while if the main predicate has a negative evaluative meaning (e.g. *takai* 'expensive', *mazui* 'bad'), the speaker's evaluation of the utterance situation is positive (good). In this sense the expressive meaning of the negative *motto* is context dependent, similar to the case of *man* and *bastard* (Potts 2007a; McCready 2009, 2012).[11] In the remainder of

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[11] For example, McCready (2009) argues that the sentence-initial *man* has the effect of expressing some emotional attitude of the speaker toward the content in its scope, and exactly what this attitude is, is determined by the propositional content of the sentence, as we can see from the following example:

(i)   Man, I got an A on my calculus test!! (positive)
(ii) Man, I wrecked my ear this morning. (negative)
                                (McCready 2009, p. 675)

McCready (2009) observes that when the content is something that is ordinarily understood as positive (such as getting an A on a test), *man* expresses a positive emotion. On the other hand, when the content is negative, *man* expresses a negative emotion. McCready (2012) proposes a way to resolve underspecified emotive content based on the notion of 'normality' and the relevant discourse-pragmatic principles.

this paper I will use the term 'negative implicature', but readers should be aware that this is a pure polarity reversal implicature and is not related to a negative emotion of 'badness' on the speaker's part.

5.3 A negative inference without *motto*

Notice that in some environments, a negative implication can arise even without *motto*:

(41) Kono   mise-no   keeki-wa   oishi-katta.
      This   store-GEN   cake-TOP   delicious-PAST
      This store's cake was delicious, right?
      (Inference: This store's cake is not delicious now.)

We can say the negative implicature in (41) is a conversational implicature (specifically, a scalar implicature). Musan (1997, pp. 279, 283) argues that a present-tense sentence is more informative than a past-tense sentence in terms of time interval, and claims that when the past tense is used the sentence automatically triggers implicatures concerning the end of the situation time of the main predicate via Grice (1975)'s Maxim of Quantity, "Be as informative as is required." We can say that here, (41) conversationally implicates that 'this store's cake is not delicious now.'[12]

One might think from the above observations that *motto* has nothing to do with a negative inference. However, this assumption is not correct. This is corroborated by the fact that although the negative *motto* lexically triggers a negative/scale-reversal implicature, simple past-tense sentences do not always induce negative implicatures. In the following conversation, (42A) does not induce any negative implication, but (42A′) induces a negative implication:

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[12] Note that the contrastive topic phrase can also trigger a negative implicature:

(i) Kono mise-no   keeki-wa   mukashi-wa   oishi-katta-desu.
     This store-GEN   cake-TOP   old days-CT.TOP   delicious-PAST-PRED.POL-YO
     'This store's cake was delicious in the [old days]_{CT}.'
     (Inference: But it is not delicious now.)

The negative implicature in (i) seems to be more explicit than in (41), in that the speaker clearly contrasts the current situation and the previous situation using the contrastive topic marker. Here the contrastive topic introduces a set of alternatives (in this case 'now') and conveys that 'it is not good now.' There are various approaches to the meaning of contrastive topics, and various researchers have proposed various ideas for their status, viz. presupposition, CI, and conversational implicature. (See Kuno 1973; Lee 2006; Oshima 2008; Hara 2006; Yabushita 2008; Tomioka 2010; Sawada 2012 for a discussion of the meaning of contrastive topics.)

(42) Q: Konsyuu   Denny's-de   pankeeki-o   tabe-yoo-to
         This week   Denny's-LOC   pancake-ACC   eat-plan to-that
         omo-tteiru-no-
         think-TEIRU-NO
         desu-ga,   asoko-no   pankeeki-o tabe-ta-koto-ga
         PRED.POL-but   there-GEN   pancake-ACC eat-PAST-experience-NOM
         ari-masu-ka?
         have-PRED.POL-Q
         'I am planning to eat a pancake at Denny's, but have you ever eaten
         a pancake there?'

   A: Hai.   Asoko-no pankeeki-wa   oishi-katta-desu-yo.
         Yes   there-GEN pancake-TOP   delicious-PAST-PRED.POL-YO
         'Yes,   the pancake there was delicious.'

   A′:   (#) Hai. Asoko-no   pankeeki-wa   motto
         Yes   there-GEN   pancake-TOP   MOTTO
         oishi-katta-desu-yo.
         delicious-PAST-PRED.POL-YO
         'Yes, the pancake there was *motto* delicious.'

Unlike (42A), in (42A′) there is a negative implication that 'the pancake at Denny's is not good now.' Actually (42A′) sounds a bit odd, because although it would be enough to convey the addressee's past experience of eating pancakes at Denny's, (42A′) is contrasting the past degree of deliciousness and the current degree of deliciousness of Denny's pancakes. This is clearly irrelevant information. Anyway, the above data clearly shows that the negative *motto* does contribute to the emergence of a negative implication.

6 Analysis: the comparison-based approach to the negative *motto*

6.1 Compositionality of the negative *motto*

Let us now analyze the meaning of the negative *motto* in a more formal way based on the hypothesis that it is also a comparative morpheme, but its comparative meaning is in the domain of CI. In this approach, the negative *motto* compares the utterance situation to an alternative expected situation and suggests that there is a large gap between them. The speaker's negative attitude toward the utterance situation comes from this large gap.

(43) Kono   mise-no   keeki-wa   motto   ooki-katta. (*Negative reading*)
     This   store-GEN   cake-TOP   MOTTO   big-PAST
     At-issue: This store's cake was big.
     CI: The previous size of this store's cake is much bigger than the current size.
     Conversational implicature via CI: This store's cake is small now.

The question is how the CI meaning and an at-issue meaning are computed. The important point is that there are two kinds of scalar meanings in the sentence with *motto*, i.e. an adjectival meaning (at the at-issue level) and a comparative meaning (at a CI level), both of which involve the adjective *ookii* 'big'. However, this situation becomes a problem if we consider the negative motto to be a pure CI triggering expression.
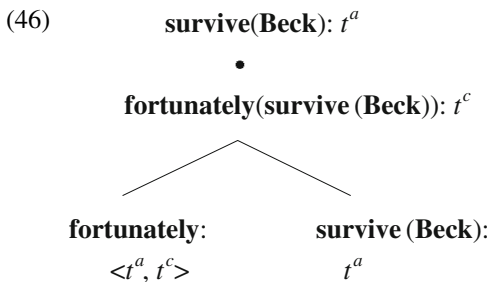
Let us suppose that the negative *motto* is a pure CI triggering expression that conventionally implicates a meaning of intensional comparison. The pure CI triggering expression can naturally be analyzed using Potts's (2005) CI application. Building on Karttunen and Peters's (1979) two-dimensional theory of CI/presupposition, Potts (2005) proposes a novel compositional rule for a pure CI expression:

(44)
$$\beta : \sigma^a$$
$$\bullet$$
$$\alpha\,(\beta) : \tau^c$$

$$\alpha: <\sigma^a, \tau^c> \qquad\qquad \beta: \sigma^a$$

(Potts 2005)
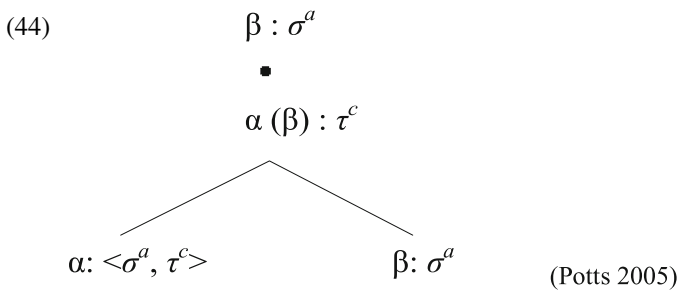
Let us first consider the CI application in (44) based on the example of a sentence with the adverb *fortunately*:

(45) Fortunately, Beck survived.

If we combine *fortunately* with the proposition *Tom survived* via the CI application in (44), we will get the following logical representation (here I neglect information about world and time):
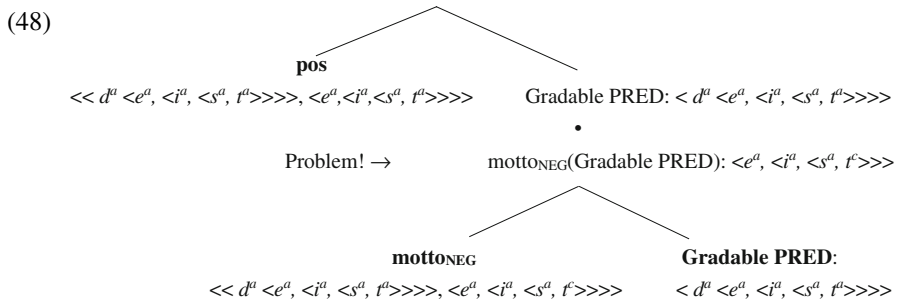
(46)
$$\mathbf{survive}(\mathbf{Beck}): t^a$$
$$\bullet$$
$$\mathbf{fortunately}(\mathbf{survive}\,(\mathbf{Beck})): t^c$$

$$\mathbf{fortunately}: \qquad \mathbf{survive}\,(\mathbf{Beck}):$$
$$<t^a, t^c> \qquad\qquad t^a$$

(Based on Potts 2005: 64)

The CI application in (44) ensures that the at-issue meaning "Beck survived" is always insensitive to the presence of the adverb *fortunately*. Notice that the meaning of *fortunately* is context-sensitive. Whether a particular proposition *p* is counted as fortunate or not depends on context. In this paper I will assume that a particular proposition p can be counted as fortunate just in case the degree of fortunateness of *p* is above a contextually determined standard (Stand$_c$) as in (47)[13]:

(47) [[fortunately]]: $<t^a, t^c>$
$\qquad\qquad\qquad = \lambda p.\exists d[d \geq \text{Stand}_c \wedge \text{fortunate}(p) = d]$

See Mayol and Castroviejo (2013) and Bonami and Goddard (2008) for detailed discussions of the meaning and distribution patterns of the evaluative adverbs.
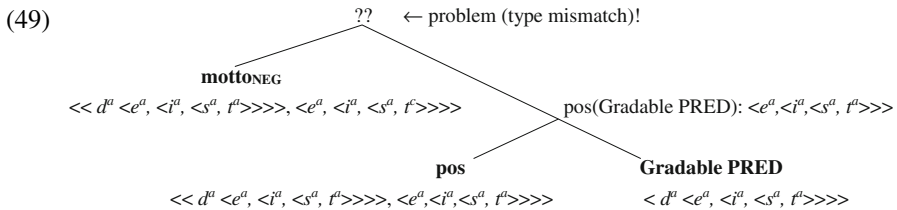
Let us now consider the compositionality of the negative *motto* under the pure CI view. Under this view, the negative *motto* and a gradable predicate will be combined based on the CI application in (44), creating a logical structure as in (48):

(48)

$$\textbf{pos}$$
$$<< d^a <e^a, <i^a, <s^a, t^a>>>>, <e^a,<i^a,<s^a, t^a>>>>$$ Gradable PRED: $< d^a <e^a, <i^a, <s^a, t^a>>>>$

$$\bullet$$

Problem! →   motto$_{\text{NEG}}$(Gradable PRED): $<e^a, <i^a, <s^a, t^c>>>$

$$\textbf{motto}_{\text{NEG}}$$ $$\textbf{Gradable PRED:}$$
$$<< d^a <e^a, <i^a, <s^a, t^a>>>>, <e^a, <i^a, <s^a, t^c>>>>$$ $$< d^a <e^a, <i^a, <s^a, t^a>>>>$$

In (48), the negative *motto* first combines with an at-issue gradable predicate via the CI application in order to make an intensional comparative meaning at the level of CI, and the gradable predicate that is passed up to the node above the black bullet then combines with the *pos* morpheme in order to make an at-issue adjectival meaning. The *pos* morpheme relates the degree argument of the adjectives to an appropriate standard of comparison (Cresswell 1977; von Stechow 1984; Kennedy and McNally 2005, among others). At first, this idea seems to account for the fact that the sentence with the negative *motto* has two kinds of scalar meaning, i.e. an adjectival meaning and a comparative meaning. However, it turns out that this

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[13] The reviewer questioned whether a position on a scale of fortunateness can be well-defined. I agree that the position of a scale of fortunateness is not easy to define because fortunateness is not something that can be measured based on a measure phrase. However, it seems safe to consider that *unfortunate* is a relative gradable predicate (e.g., *tall, expensive*) in that its meaning is context sensitive: whether some event/fact is fortunate or not depends on an underlying comparison class. For example, if the speaker is a university student, it may be unfortunate to lose 100 dollars, but if the speaker is a billionaire, it may not be as unfortunate.

approach is problematic in terms of compositionality. The meaning of $\mathbf{motto_{NEG}}$(**Gradable PRED**) is still not complete, but it has to stop its semantic derivation. We might think of another idea where the *pos* morpheme first combines with a gradable predicate based on a regular at-issue semantic composition system and then *motto* combines with **pos**(**Gradable PRED**) via a CI application. However, this idea too is problematic. As the following figure shows, $\mathbf{motto_{NEG}}$ cannot make use of the degree argument, so it is impossible for it to make an intensional comparison:

(49)

$$?? \quad \leftarrow \text{problem (type mismatch)!}$$

$\mathbf{motto_{NEG}}$
$$\ll d^a <e^a, <i^a, <s^a, t^a>>>>, <e^a, <i^a, <s^a, t^a>>>>$$

pos(Gradable PRED): $<e^a,<i^a,<s^a, t^a>>>$

pos
$$\ll d^a <e^a, <i^a, <s^a, t^a>>>>, <e^a,<i^a,<s^a, t^a>>>>$$

Gradable PRED
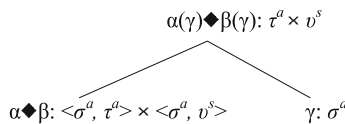$$< d^a <e^a, <i^a, <s^a, t^a>>>>$$

The above discussions lead us to consider the negative *motto* to be 'mixed' content (McCready 2010; Gutzmann 2011) that have both an at-issue meaning and a CI meaning, as shown in (50)(The left side of ♦ is the at-issue component and the right side of ♦ is the CI component):

(50) $[[\text{motto}_{NEG}]] = \lambda g \lambda x \lambda t \lambda w. \exists d[d \geq \text{Stand} \wedge g(d)(x)(t)(w)] \blacklozenge \lambda g \lambda x \lambda t \lambda w.$
$\max\{d| g(d)(x)(t)(w)\} >!! \max\{d| g(d)(x)(t_0)(w_0)\}$
(where t_0 = current time, w_0 = the actual world)
$: \ll d^a, <e^a, <i^a, <s^a, t^a>>>, <e^a, <i^a, <s^a,$
$t^a>>> \times \ll d^a, <e^a, <i^a, <s^a, t^a>>>, <e^a, <i^a,$
$<s^a, t^s>>>$

(51) shows the compositional rule for mixed content that involves an operation of shunting (McCready 2010):

(51) Mixed application

$$\alpha(\gamma) \blacklozenge \beta(\gamma): \tau^a \times \upsilon^s$$

$$\alpha \blacklozenge \beta: <\sigma^a, \tau^a> \times <\sigma^a, \upsilon^s> \qquad \gamma: \sigma^a$$

(Based on McCready 2010: 20)

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, p. 20) that the following rule applies for the final interpretation of CI part of mixed content:

(52) Final interpretation rule: Interpret α♦β: $\sigma^a \times t^s$ as follows:

　　α: σ^a

　　 •

　　β: t^s

The rule in (52) instructs us to replace mixed type terms involving the conjunction '♦' with terms conjoined by a '•' when the CI part of mixed content is propositional (of type t).

Note that although the shunting type s and a CI type c are both used for the semantic representation of CI, they are different in terms of resource sensitivity. As we discussed earlier, the CI type is used for CI application, which is a resource-insensitive application. On the other hand, the shunting type s is used for a resource-sensitive shunting operation. As the following rule shows, McCready's (2010) shunting application has a resource-sensitive property:
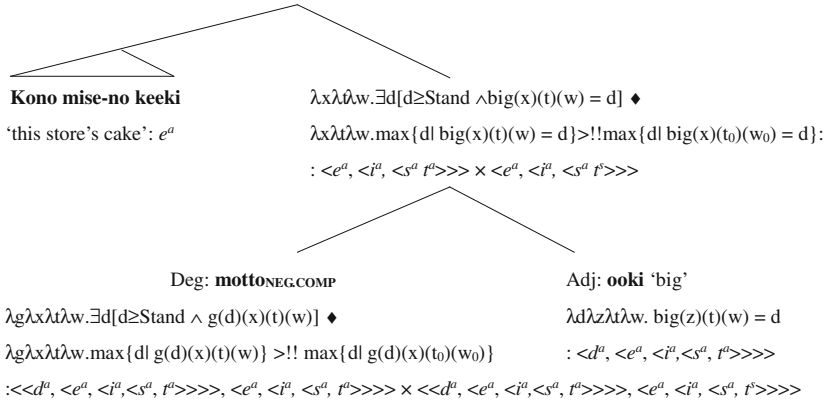
(53) The shunting application (McCready 2010)

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

α: $<\sigma^a, \gamma^s>$ 　　　　　β: σ^a
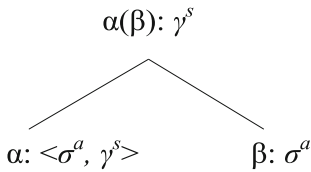
Unlike in Potts's CI function application, the at-issue element β is 'shunted.' It no longer exists by the time the meaning of the entire sentence is computed.

If we apply the rule in (51) to sentence (43), we get the following logical structure:

(54)　　λtλw.∃d[d≥Stand ∧big(this store's cake)(t)(w) = d] ♦

　　　　λtλw.max{d| big(this store's cake)(t)(w) = d}>!!max{d| big(this store's cake)(t$_0$)(w$_0$) = d}

　　　　: $<i^a, <s^a\ t^a>> \times <i^a, <s^a\ t^s>>$

　　　　Kono mise-no keeki　　　　λxλtλw.∃d[d≥Stand ∧big(x)(t)(w) = d] ♦

　　　　'this store's cake': e^a　　　　λxλtλw.max{d| big(x)(t)(w) = d}>!!max{d| big(x)(t$_0$)(w$_0$) = d}:

　　　　　　　　　　　　　　　　: $<e^a, <i^a, <s^a\ t^a>>> \times <e^a, <i^a, <s^a\ t^s>>>$

　　　　　　　Deg: **motto$_{NEG.COMP}$**　　　　　　Adj: **ooki** 'big'

　　λgλxλtλw.∃d[d≥Stand ∧ g(d)(x)(t)(w)] ♦　　　　λdλzλtλw. big(z)(t)(w) = d

　　λgλxλtλw.max{d| g(d)(x)(t)(w)} >!! max{d| g(d)(x)(t$_0$)(w$_0$)}　　: $<d^a, <e^a, <i^a, <s^a, t^a>>>>$

　　:$<<d^a, <e^a, <i^a, <s^a, t^a>>>>, <e^a, <i^a, <s^a, t^a>>>> \times <<d^a, <e^a, <i^a, <s^a, t^a>>>>, <e^a, <i^a, <s^a, t^s>>>>$

(55) shows the topmost CI meaning of (43):

(55) $\lambda t \lambda w.\ \max\{d | \text{big(this store's cake)}(t)(w) = d\} >!!\ \max\{d | \text{big(this store's cake)}(t_0)(w_0) = d\}$

$\underbrace{\hspace{6cm}}_{\text{expected situation}}$ $\underbrace{\hspace{6cm}}_{\substack{\text{utterance situation} \\ \text{(where } t_0 = \text{now, } w_0 = \text{actual world)}}}$

Note that (55) is still not complete. We need to evaluate the information on tense and world. In the case of (43) we can say that the tense variable corresponds to the past and the world variable corresponds to the current world.

However, as we observed in the introduction, the negative *motto* can be used in various intensional contexts, including commands, conditionals, modals, and questions. I propose that there are three types of expected situations:

(56) Possible variations of the negative *motto*

	Expected degree	Standard of comparison	Environment
Type I	The past degree in the actual world	The present degree in the actual world	Simple past tense
Type II	The present degree in a non-actual world	The present degree in the actual world	Epistemic modal (with present tense), question (present), imperative, conditional
Type III	The past degree in the non-actual world	The present degree in the actual world	Epistemic modal (with past tense)

The important point is that we can derive the expected degree of each type compositionally. We do not have to stipulate the notion "expected degree" in the lexical item of the negative *motto*.[14] Let us consider each type individually.
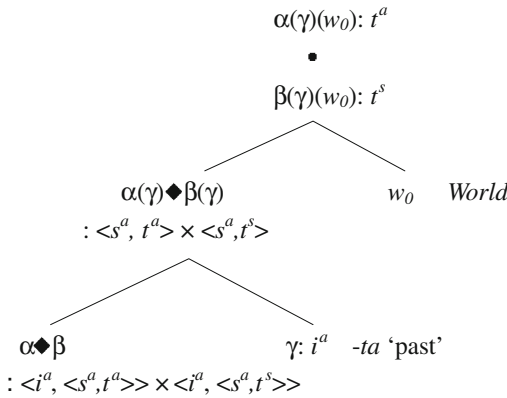
6.1.1 Type I

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. A typical example of this type is a sentence in the simple past tense:

(57) 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.

---

[14] Thanks to the reviewer for the valuable comments regarding this point.

The following logical structure shows the semantic structure of Type I in an abstract way:

(58)   Basic logical structure of Type I

$$\alpha(\gamma)(w_0): t^a$$

•

$$\beta(\gamma)(w_0): t^s$$

$$\alpha(\gamma) \blacklozenge \beta(\gamma) \qquad\qquad w_0 \quad \textit{World}$$
$$: <s^a, t^a> \times <s^a, t^s>$$

$$\alpha \blacklozenge \beta \qquad\qquad \gamma: i^a \quad \textit{-ta} \text{ 'past'}$$
$$: <i^a, <s^a, t^a>> \times <i^a, <s^a, t^s>>$$

Recall that we will treat tense and world as pronouns, on a par with individuals (Hacquard 2006; Percus 2000). By default, the topmost world variable corresponds to the actual world. In the end we get the following meaning:

(59) CI meaning of Type I
      $\max\{d| \text{ delicious(this store's cake)(PAST)}(w_0) = d\} >!! \max\{d| \text{ delicious}$
      $(\text{this store's cake})(t_0)(w_0) = d\}$

In prose, (59) says that the maximum degree of deliciousness of the store's cake in the past in the actual world is much greater than the maximum degree of deliciousness of the store's cake at the current time in the actual world.
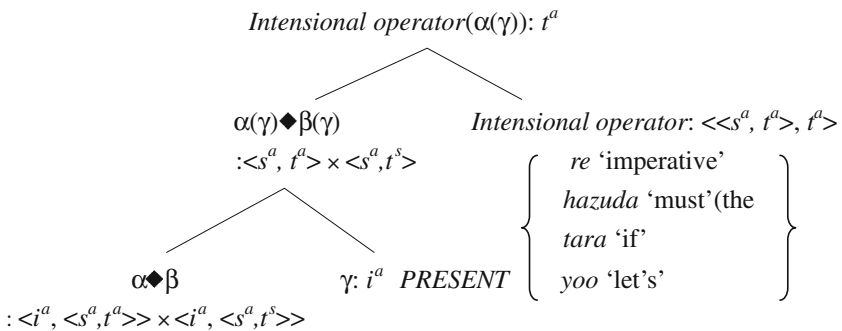
6.1.2 Type II

Now let us consider the logical structure of the sentences in 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:

(60) Kono mise-no   keeki-wa motto   oishii-hazu-da.   (*Epistemic modal*)
      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.

(61) Motto   oishii   keeki-wa   ari-masu-ka   (*Question*)
     MOTTO   delicious   cake-TOP   exist-perf.hon-Q
     At-issue: Is there a delicious cake?
     CI: The current degree of deliciousness of the store's cake in a non-actual
     world is much greater than the current degree.

(62) (Sore-ga) motto   oishi-kereba   minna   kau-deshoo. (*Conditional*)
     It-NOM   MOTTO delicious-COND everyone buy-will
     At-issue: If it is delicious, I 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.

(63) Motto   hayaku   hashir-e!   (*Imperative*)
     MOTTO   fast   run-IMPERATIVE
     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 following figure schematically shows the logical structure of Type II sentences
in an abstract way:

(64) Logical structure of Type II (not final)

$$\textit{Intensional operator}(\alpha(\gamma)): t^a$$

$$\alpha(\gamma) \blacklozenge \beta(\gamma)$$
$$: <s^a, t^a> \times <s^a, t^s>$$

$$\textit{Intensional operator}: <<s^a, t^a>, t^a>$$

$$\left\{ \begin{array}{l} \textit{re} \text{ 'imperative'} \\ \textit{hazuda} \text{ 'must'(the} \\ \textit{tara} \text{ 'if'} \\ \textit{yoo} \text{ 'let's'} \end{array} \right\}$$

$$\alpha \blacklozenge \beta \qquad\qquad \gamma: i^a \quad \textit{PRESENT}$$
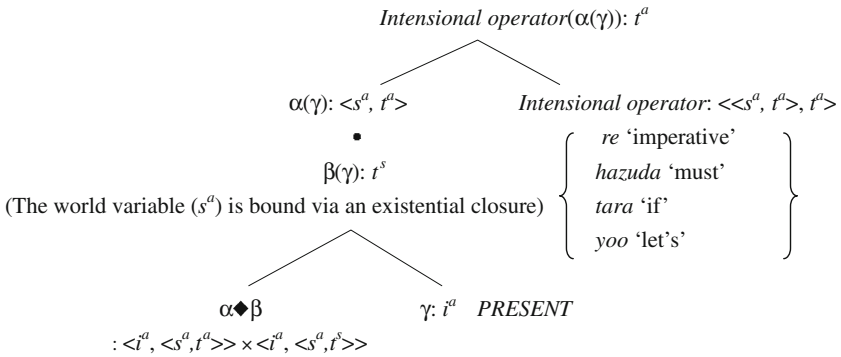$$: <i^a, <s^a, t^a>> \times <i^a, <s^a, t^s>>$$

Note that here the CI meaning (i.e. $\beta(\gamma)$) cannot be within the scope of logical
operators. Recall that CIs are logically independent of 'what is said.' For example,
in the case of the modal operator *hazuda* 'must', the word itself can only take an at-
issue proposition as its argument. (It does not take the CI meaning as its argument):

(65) $[[hazuda]]^{w,g} = \lambda p <s^a, t^a>$. $\forall w'$ compatible with the
     evidence in w_0: $p(w') = 1$

This means that the world variable in $\beta(\gamma)$ (= CI meaning) is saturated indirectly by
an existential closure:

(66) Logical structure of Type II

$$Intensional\ operator(\alpha(\gamma)):\ t^a$$

$\alpha(\gamma):\ <s^a,\ t^a>$ $Intensional\ operator:\ <<s^a,\ t^a>,\ t^a>$

•

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

(The world variable (s^a) is bound via an existential closure)

{
  re 'imperative'
  hazuda 'must'
  tara 'if'
  yoo 'let's'
}

$\alpha \blacklozenge \beta$ $\gamma:\ i^a$ *PRESENT*

$:\ <i^a,\ <s^a,t^a>> \times <i^a,\ <s^a,t^s>>$

Here the world variable (s^a) in the CI component is bound via an existential closure in $\beta(\gamma)$ and the final interpretation rule (52) is applied. Notice that in the above representation, the CI meaning of type t^s is not represented at the root node. Based on McCready 2010), I will assume that if the CI meaning of type t^s is not at the root node, it is interpreted via the following parse tree interpretation (see also Potts (2005)):

(67) Parsetree interpretation
      Let $\mathcal{T}$ be a semantic parsetree with the at-issue term α: σ^a on its root node, and distinct terms β_1: $t^{\{c,s\}}$,…, β_n: $t^{\{c,s\}}$ on nodes in it. Then the interpretation of $\mathcal{T}$ is $\langle [[\alpha:\ \sigma^a]],\ [[\beta_1:\ t^{\{c,s\}}]],…,\ [[\beta_n:\ t^{\{c,s\}}]] \rangle$.

                                                                (McCready 2010, p. 32)

In the end we will get the following CI meaning for the sentences in (60)–(63):

(68) CI meaning of Type II
      $\exists w.\max\{d|\ delicious(this\ store's\ cake)(PRESENT)(w) = d\}\ >!!$
      $\max\{d|\ delicious(this\ store's\ cake)(t_0)(w_0) = d\}$

(68) states that the maximum degree of deliciousness of the store's cake at the current time in a non-actual world is much greater than the maximum degree of deliciousness of the store's cake at the current time in the actual world.

The reviewer pointed out that the "binding problem" (Karttunen and Peters 1979) will arise if the negative *motto* co-occurs with existential modals like *kamoshirenai* 'may'. I agree with the reviewer's comment. When the negative *motto* co-occurs with the existential modal, the at-issue dimension contains an existential quantification over worlds (via *kamoshirenai*) and the CI component also contains an existential quantification over worlds via existential closure. This situation is problematic because, since the multidimensional/two-dimensional theory assumes that the CI dimension is separate from the at-issue one, there is no guarantee that there is a link between the at-issue dimension and the CI dimension in terms of world evaluation.

However, it turned out that the existential modal *kamoshirenai* 'may' cannot co-occur with the negative *motto*:

(69) (Looking at the cake)
    ?? Kono mise-no   keeki-wa   motto   oishii-kamoshirenai.
    This store-GEN   cake-TOP   MOTTO   delicious-may
    At-issue: This store's cake may be delicious.
    CI: The current degree of deliciousness of the cake in some non-actual world is much greater than the current degree in the actual world.

At this point I am not sure why the negative *motto* cannot naturally arise with the existential modal but it seems that this oddity is consistent with my analysis of the negative *motto*. I thank the reviewer for the valuable comment.

6.1.3 Type III

Let us now consider the logical structure of the sentences in Type III. 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.

(70) *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.

The following figure shows the logical structure of (70) in an abstract fashion:

(71)   Logical structure of (70) (= Type III)

$$hazu\text{-}da(\alpha(\gamma)): t^a$$

$$\alpha(\gamma): <s^a, t^a> \qquad hazu\text{-}da \text{ 'must'}: <<s^a, t^a>, t^a>$$

$$\bullet$$

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

$$\alpha \blacklozenge \beta \qquad \gamma: i^a \ PAST$$

$$: <i^a, <s^a, t^a>> \times <i^a, <s^a, t^s>>$$
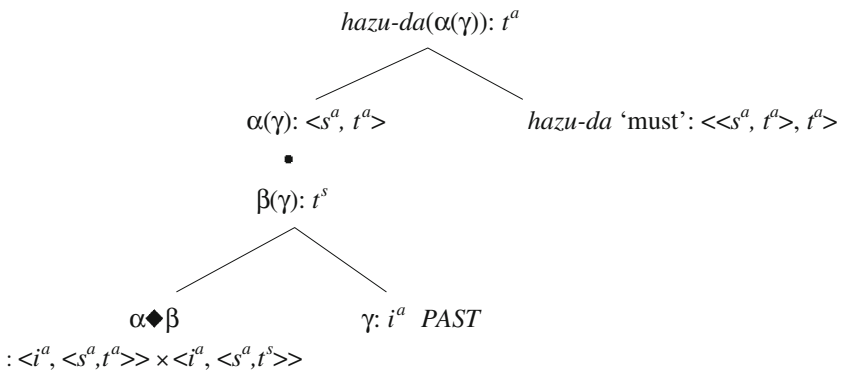
In the end we will get the following CI meaning for (70):

(72) The CI meaning of Type III
      $\exists w.\max\{d|$ delicious(this store's cake)(PAST)(w) = d$\}$ >!! max$\{d|$ delicious
      (this store's cake)(t$_0$)(w$_0$) = d$\}$

In prose, (72) says that 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.

6.2 Non-local use of the negative *motto*

We have so far considered how the negative use of *motto* is interpreted in a compositional way. Note that the negative *motto* does not always have to combine with a gradable predicate locally. It can be placed before other discourse-oriented elements:

(73) Motto   nante iuka   koo kireena   mono-da-to
      MOTTO   how should I say like beautiful thing-PRED-that
      omo-ttei-ta-   nda-yo.
      think-TEIRU-PAST   NODA-PRT
      At-issue: I was thinking that it is a beautiful thing.
      CI: The degree of beauty I expect from the thing is much greater than the
      actual current degree.
                                    (http://www.pixiv.net/novel/show.php?id=1091606)

(74) Motto   koo   tanoshii   hanashi-o   shi-yoo-yo!
      MOTTO   like   interesting   talk-ACC   do-let's-PRT
      At-issue: Let's talk about something interesting.
      CI: The degree of fun I expect is much greater than the current degree of fun.
                                          (http://www.ncode.syosetu.com/n1088w/26/)

Although *motto* is not adjacent to the gradable predicate, semantically it modifies the gradable predicate. The discourse particles like *nante ikuka* and *koo* can be treated as parenthetical.[15] In this paper we will not go into detail on the compositionality of the non-local use of *motto*, but we can say that in such cases *motto* can also be analyzed basically in the same way as for local uses of *motto*.

6.3 Explaining the empirical differences between the degree *motto* and the negative *motto*

Let us now go back to the empirical differences we observed in Sect. 2. In this section we will show that our analyses of the degree *motto* and the negative *motto* can explain the empirical differences between them. In Sect. 2.1 we observed that there is a

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[15] I thank Daiko Takahashi for the valuable comment regarding the non-local use of *motto*.

significant difference between the negative *motto* and the degree *motto* in terms of intonation: while the degree *motto* gets a stress on *motto*, in the case of the negative *motto*, the adjectival part is stressed. We can now make the case that this difference has to do with meaning. It is natural that the degree *motto* receives a stress because in environments where it is used, its main function is to highlight a specific relative relationship between the target entity and a given standard. By focusing on *motto*, the speaker creates a set of alternative comparative relationships, e.g. < greater than, slightly greater than > and automatically excludes such possibilities.

On the other hand, in the case of the negative *motto*, the speaker puts the focus on an at-issue gradable predicate. It is natural that an at-issue gradable predicate is stressed because the at-issue part of a sentence with negative *motto* is a simple adjectival structure, and whether "x is currently an ADJ" is the question under discussion.

In Sect. 2.2 we also observed that there is a difference between the negative use and the degree use in terms of distribution patterns. We observed that the negative *motto* cannot arise in an explicit comparative environment, nor can it be used in present-tense sentences[16]:

(75) Kono   mise-no   keeki-wa   ano   mise-no   keeki-yori-(mo)
      This   store-GEN   cake-TOP   that   store-GEN   cake-than-MO
      motto   ooki-katta.
      MOTTO   big-PAST
      Degree reading: This store's cake was {still much/even} more delicious than that store's cake.

(76) *Present tense*
      ?? Kono   mise-no   keeki-wa   motto   oishii.
         This   store-GEN   cake-TOP   MOTTO   delicious
         'This store's cake was still much more delicious than a contextually-determined store's cake.' (only degree reading available)

Regarding (75), we can now explain that the sentence does not have a negative reading because the essence of the negative *motto* is to compare one individual based on two different times/worlds. As for the example of the present tense in (76), we can now say that the sentence cannot be interpreted as a negative reading

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[16] One might think that the negative *motto* can actually arise if the standard of comparison is *ima-yori* 'than now':

(i) Kono mise-no   keeki-wa (izen-wa)   ima-yori-mo   motto   oishi-katta.
     This store-GEN cake-TOP old days-TOP   now-than-MO   MOTTO   delicious-PAST
     'In the old days, this store's cake was {still much more/even more} delicious
     than now.'

However, we should consider *motto* in the above example as the degree *motto*. First, it is stressed (see Sect. 2.1). Second, although there can be a weak negative implicature that 'this store's cake is not necessarily delicious now', the intensified comparative meaning in (i) is clearly semantic. If we utter 'No, that is not true' after (i), the denial can target the intensified comparison meaning.

because we cannot make a comparison if there is no contrast between the utterance situation and an alternative situation in terms of time/world, as in (77):

(77) CI meaning of (76)
      $\max\{d|$ delicious(this store's cake)$(t_0)(w_0) = d\}\ >!!\ \max\{d|$ delicious(this store's cake)$(t_0)(w_0) = d\}$

The interesting point is that if the particle *noda* is attached to the simple present sentence, the sentence becomes natural[17]:

(78) Kimi-wa   motto   kashikoi-nda.
      You-TOP   MOTTO   intelligent-NODA
      'You are *motto* intelligent'

I would like to argue that the above sentence is natural because *noda* in (78) behaves as a proposition-taking operator, and the sentence can be classified as a Type II sentence. The sentence is natural in a context where the addressee's current performance in his/her school is bad but the speaker knows that the addressee is actually smart, although the addressee does not notice this fact. Claims that *noda* is often used in sentences that depict the speaker's own personal feelings or personal situation, and says that sentences with *noda* often convey things that the addressee does not know. Tanomura (2002, p. 35) gives the following example to support this idea:

(79) Nihongo-ni-wa   "toodai-moto   kurashi"-to-iu
      Japanese-in-TOP   lighthouse-below   dark-COM-say
      kotowaza-ga
      proverb-NOM
      {ari-masu /aru-ndesu}-ga watashi-ni-mo   kono
      be-PRED.POL/be-NODA.POL-but I-to-also   this
      kotowaza-doori-no   keiken-ga   ari-masu.
      proverb-same-GEN   experience-NOM   be-PRED.POL
      'In Japanese there is a proverb "We are apt to overlook important things
      that lie near at hand," and I have had the experience as stated in this proverb.'
                                                    (Tanomura 2002, p. 35)

The proverb *toodai moto kurashi* means that "we are apt to overlook important things that lie near at hand." Tanomura (2002, p. 35) claims that if the speaker is talking to an addressee who (seems to) know the proverb, it is odd to use *noda* in the utterance. However, if the speaker is talking to a foreign person who does not seem to know the proverb, it is more natural to use *noda* in the utterance.

Interestingly, a similar phenomenon can be observed in the German discourse particle *doch*:

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[17] I thank Hisako Ikawa for bringing this fact to my attention.

(80) Max ist doch   auf See.
      Max is   DOCH   at   Sea

<div align="right">(Zimmermann 2011, p. 2013)</div>

Zimmermann (2011) observes that (80) signals that the speaker takes the listener not to be aware of the fact at the time of utterance. Theoretically speaking, Zimmermann claims that *doch* is an expressive that conveys that the descriptive content is 'not activated' at the time of utterance (see also Linder 1991). Building on Zimmermann's analysis of the German discourse partible *doch*, I assume the following CI meaning for *noda* in (81):

(81) $[[noda]] : <<s^a, t^a>, t^c> =$
      $\lambda p. p(w_0) = 1 \wedge$ sp assumes $p(w_0)$ not to be activated at the current state of the discourse.

Recall that "non-activated" means that the speaker takes the listener not to be aware of the fact. In terms of compositionality, *noda* in (81) takes a proposition and returns a CI meaning (via Potts' CI application) that the speaker assumes that the at-issue proposition is not activated at the current stage of the discourse (see Sect. 6.1 for the semantic mechanism of Potts's CI application).

There is a lot of literature on the meaning/use of *noda*. The meaning of *noda* in (81) seems to only capture a part of the various meanings of the word (some researchers use the concept of 'explanation' (e.g. Alfonso 1966; Kuno 1973), 'evidence of judgment', 'order', 'recollection', etc. (see Tanomura 2002). However, it seems safe to assume that the above lexical meaning can at least explain why (78) is natural. Since *noda* only takes an at-issue proposition as its argument, the world variable of the CI component remains free at the stage of composition with *noda*. Thus, a world variable is bound by the existential closure:

(82) CI meaning of Type II
      $\exists w. \max\{d | \text{intelligent(you)}(t_0)(w) = d\} >!! \max\{d | \text{intelligent(you)}(t_0)(w_0) = d\}$

This creates a contrast between the target and a standard of comparison.

6.4 Summary of Sect. 6

To summarize, in this section we proposed that the negative *motto* is also a kind of comparison but unlike the degree *motto*, it is used in the realm of CI/expressive. More specifically I argued that the negative *motto* compares an expected degree and a current degree with respect to a particular individual and conventionally implicates that the former is much greater than the latter on the scale associated with a given gradable predicate. We classified three kinds of environments in which the negative *motto* is used (Types I–III) and showed that the proposed semantics can naturally explain the scalar meaning of each type. We also explained which environments are impossible based on the proposed semantics of the negative *motto*.

<div align="right"></div>

One might wonder how we can explain the similarity between the degree *motto* and the negative *motto*. The reviewer suggested that Schlenker's (2006) proposal about the symmetry between quantification over individuals, times, and worlds seems to be highly relevant for understanding the relationship between the degree *motto* and the negative *motto*, especially because I have taken up Percus' (2000) view of worlds as variables. Schlenker (2006) claims that a single abstract cognitive system underlies individual, temporal, and modal talk in natural language. He treats times and possible worlds in the way that we treat individuals. The reviewer also suggested that some kind of shifting would help to derive the negative *motto* (three types) and the ordinary degree *motto*, or at least to further the parallel between them.

I agree with the reviewer's comments. I also think that Schlenker's approach is helpful in capturing the relationship/parallelism between the degree *motto* (ordinary comparison) and the negative *motto* (expressive comparison). It seems to me that there is a shift from (83a) to (83b):

(83) a. The degree *motto* (ordinary comparison): Comparison of two individuals based on the same time/world
      b. The negative *motto* (expressive comparison): Comparison of two different times /worlds regarding the same individual.

At this point I do not have an explicit formalism regarding the shift from (83a) to (83b), but I would like to further investigate the mechanism of shifting in the future.

7 An alternative approach: the negation-based approach

In Sect. 3.2 we reviewed Watanabe and Sano's approach wherein the negative *motto* has an underlying meaning of contrastive negation:

(84) a. Motto   A.
          MOTTO   A
      b. (¬A-de-wa   naku) motto   A.
          ¬A-PRED-TOP   NEG   MOTTO   A
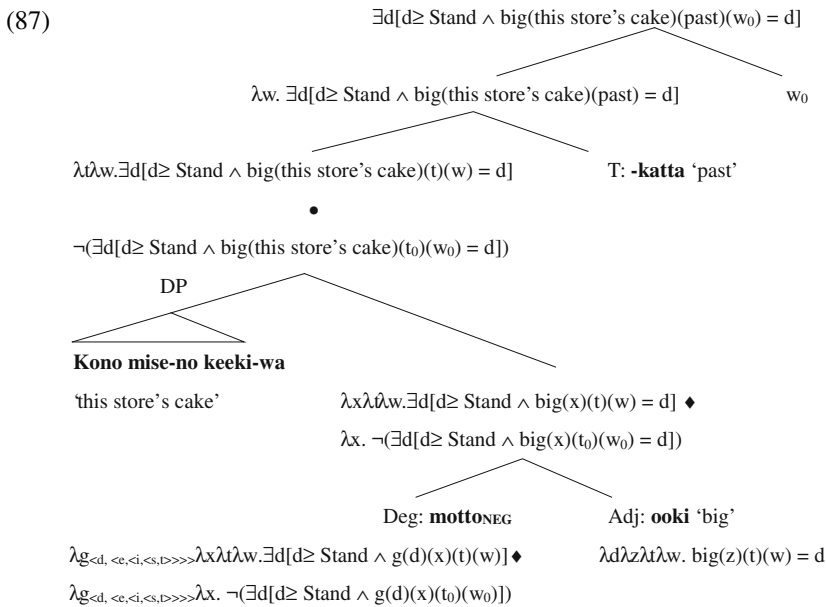   '(not ¬A, but) A.'

Based on the property of the negative *motto* we discussed in Sect. 5, we can analyze the negative *motto*'s underlying contrastive negative meaning as a CI. Under this view, sentence (85) conventionally implicates that 'this store's cake is not delicious now.'

(85) Kono mise-no   keeki-wa   motto   oishi-katta. (*Negative reading*)
      This   store-GEN   cake-TOP MOTTO   delicious-PAST
      At-issue: this store's cake was delicious.
      CI: This store's cake is not delicious now.

We can then assume the following lexical item for the negative *motto*:

(86) The meaning of negative *motto* (the negation-based account)
      $[[\text{motto}_{\text{CONTRAST}}]]$ =
      $\lambda g_{<d,<e,<i<st>>>>}\lambda x\lambda t\lambda w.\ \exists d[d\geq \text{Stand}\wedge g(d)(x)(t)(w)]\blacklozenge$
      $\lambda g_{<d,<e,<i,<st>>>>}\lambda x.\ \neg(\exists d[d\geq \text{Stand}\wedge g(d)(x)(t_0)(w_0)]\ )$ (where t_0 = now)

The CI component of (86) says that (i) it is not the case that individual x satisfies a contextual standard provided by a gradable predicate g now, and (ii) the current situation is bad. The following figure represents the logical structure of (85):

(87) $\exists d[d\geq \text{Stand} \wedge \text{big(this store's cake)(past)}(w_0) = d]$

              $\lambda w.\ \exists d[d\geq \text{Stand} \wedge \text{big(this store's cake)(past)} = d]$ w_0

$\lambda t\lambda w.\exists d[d\geq \text{Stand} \wedge \text{big(this store's cake)}(t)(w) = d]$ T: **-katta** 'past'

                                      $\bullet$

$\neg(\exists d[d\geq \text{Stand} \wedge \text{big(this store's cake)}(t_0)(w_0) = d])$

              DP

Kono mise-no keeki-wa

'this store's cake' $\lambda x\lambda t\lambda w.\exists d[d\geq \text{Stand} \wedge \text{big}(x)(t)(w) = d]\ \blacklozenge$
                              $\lambda x.\ \neg(\exists d[d\geq \text{Stand} \wedge \text{big}(x)(t_0)(w_0) = d])$

              Deg: **motto$_{\text{NEG}}$**   Adj: **ooki** 'big'

$\lambda g_{<d,<e,<i,<s,t>>>>}\lambda x\lambda t\lambda w.\exists d[d\geq \text{Stand} \wedge g(d)(x)(t)(w)]\blacklozenge$ $\lambda d\lambda z\lambda t\lambda w.\ \text{big}(z)(t)(w) = d$
$\lambda g_{<d,<e,<i,<s,t>>>>}\lambda x.\ \neg(\exists d[d\geq \text{Stand} \wedge g(d)(x)(t_0)(w_0)])$

At the end of the semantic derivation, we get the following truth-condition:

(88) The meaning of (85)

$$\begin{bmatrix} \exists d[d\geq \text{Stand} \wedge \text{big(this store's cake)(past)}(w_0) = d] \\ \bullet \\ \neg(\exists d[d\geq \text{Stand} \wedge \text{big(this store's cake)}(t_0)(w_0) = d]) \end{bmatrix}$$

Notice that this approach can also naturally explain the distribution patterns of the negative *motto*. That is, the negation-based account can also naturally explain why (i) a negative reading cannot arise in an explicit individual comparison and (ii) the negative *motto* cannot be used with the present tense:

(89) Taro-wa   Jiro-yori   motto   hayaku   hashi-tta. (*Only degree reading*)
      Taro-TOP   Jiro-than   still.much.more   fast   run-PAST
      'Taro ran still much faster than Jiro.'

(90) Taro-wa   motto   kashikoi. (*Only degree reading*)
      Taro-TOP   MOTTO   smart
      Negative reading:*Taro is *motto* smart.
      Degree reading: Taro is still much smarter.

(89) cannot have a negative reading because the negative *motto* cannot apply to two different individuals. Furthermore, (90) cannot have a negative reading because the negative *motto* forces us to compare/contrast an individual based on different worlds/times.

The question is which approach is better, a comparison-based approach or a negation-based approach. I will argue that although both approaches can naturally capture the distribution patterns of the negative *motto*, the comparison-based approach is better than the negation-based approach for the following three empirical reasons.

First, the comparison-based approach, but not the negation-based approach, can naturally explain the fact that the negative implication is 'cancellable.'

(91) (Context: the speaker is eating a cake at a restaurant.)
      a. Kono   mise-no   keeki-wa   motto   oishi-katta-to   omou.
          This   store-GEN   cake-TOP   MOTTO   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   now-even   enough   good-PRED.POL-though
          'Well, this cake is good now, too, though.'

The natural situation for uttering (91b) 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. The comparison-based approach, but not the negation-based approach, can naturally explain this fact. In the comparison-based approach the negative inference is a conversational implicature, which is triggered by a large gap between the current degree and an expected degree.

Second, the comparison-based approach, but not the negation-based approach, can naturally explain the interpretation of a sentence with negative *motto* that contains a 'lower-closed gradable predicate', which is different from other types of gradable predicates such as lower-open gradable predicates in that it posits a minimum point. One empirical test for the property of having a lower-closed scale is the presence of entailment patterns (Kennedy and McNally 2005; Kennedy 2007; Sawada and Grano 2011). The negation of a lower-closed scale adjective entails its opposite, as in (92), whereas the negation of an open-scale gradable adjective does not, as in (93):

(92) Entailment patterns of a lower-closed scale adjective:
    a. Kono sao-wa   magat-tei-**nai**. => b Kono sao-wa   massugu-da.
        This   rod-TOP bend-TEIRU-NEG   This   rod-TOP   straight-PRED
        'This rod is not bent.'   'This rod is straight.'

(93) Entailment patterns of a relative gradable adjective)
    a. Taro-wa   se-ga   takaku-**nai**. ≠> b. Taro-wa   se-ga   hikui.
        Taro-TOP height-NOM tall-NEG   Taro-TOP height-NOM short
        'Taro is not tall.'   'Taro is short.'

Based on this set up let us observe the meaning of the following sentence:

(94) Context: Tom is looking at the Leaning Tower of Pisa.
      Pisa-no   syatou-wa   motto   katamui-teiru-to   omo-ttei-ta.
      Pisa-GEN leaning tower-TOP MOTTO inclined-TEIRU-that think-TEIRU-PAST
      'I was thinking that the leaning tower of Pisa is *motto* inclined.'

The gradable predicate *katamui-teiru* 'inclined' is a lower-closed scale because the negation entails its opposite. Interestingly, the two approaches we are examining make different predictions regarding the interpretation of (94). The negation-based approach predicts that sentence (94) can only be used in a situation wherein the Leaning Tower of Pisa is straight now, because this theory assumes that the negative *motto* negates the at-issue gradable predicate in the domain of CI. On the other hand, the comparison-based approach predicts that the sentence can be used even if the Leaning Tower of Pisa is actually inclined. The reality is that the sentence can naturally be uttered even if the Leaning Tower of Pisa is actually inclined. The speaker is just conveying that there is a large gap between the current degree and an expected degree with respect to the degree of incline of the Leaning Tower of Pisa.

Third, the comparison-based approach, but not the negation-based approach, can account for the fact that negative implicature can be old/backgrounded. Potts (2005, pp. 33, 112) claims that unlike presupposition, CI expressions usually offer information that is not part of the common ground when they are uttered. That is, CI expressions offer new information. For example, the following discourse flow is odd because the content of the appositive is backgrounded:

(95) Lance is a cyclist. #Lance, the cyclist, battled cancer. (Potts 2007b)

Let us now observe the following sentence:

(96) Watashi-wa ima-wa   binboo-da-ga   mukashi-wa   motto
      I-TOP   now-TOP   poor-PRED-although old days-TOP   MOTTO
      kanemochi-da-tta.
      rich-PRED-PAST
      '(Although I am poor right now), I was rich.' (Watanabe 1985)

The two theories make different predictions regarding the acceptability of this sentence. The negation-based approach predicts that the sentence will be odd because the CI meaning 'I am poor right now' is not new. However, in reality the sentence sounds perfectly natural. The comparison-based approach, on the other hand, can naturally explain why (96) is natural. The meaning 'I am now poor' triggered by the negative *motto* is not a CI but a conversational implicature.[18]

Fourth, the comparison-based approach, but not the negation-based approach, can naturally account for the fact that the negative *motto* can only combine with a gradable predicate.[19] For example, *motto* cannot combine with the non-gradable predicate *appaato* 'apartment':

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[18] The reviewer questioned whether CI expressions always offer new information. The reviewer pointed out that although honorifics are often assumed to be CIs, they can certainly be repeated indefinitely, even once the honorification relation is something all parties are well aware of.

I think that this is an important point. I agree with the reviewer's comment that honorifics do not always offer new information. It seems to me that an honorific is somewhat different from other CI expressions in that it is concerned with the mode of speaking, which is usually consistent throughout the course of the utterance. Once the speaker uses an honorific, he/she needs to continue using it unless he/she wants to change the mode of speaking. I thank the reviewer for bringing this matter to my attention.

[19] This fact also supports the idea that the negative *motto* cannot be analyzed as the aspectual marker *still*. As the example shows, when the adverb *mada* 'still' is used in the past tense, it can induce a similar pragmatic effect as the negative *motto*:

(i) Taro-wa   ano koro-wa   {mada/motto}   chiisa-katta.
     Taro-TOP   that time-TOP still /MOTTO   small-PAST
     'At that time Taro was still/motto small.'
     (Implication: Taro is not small now.)

However, *mada* is different from the negative *motto* in that it can combine with a non-gradable predicate (noun) like *gakusei* 'student':

(ii) Taro-wa   ano koro-wa   {mada/*motto} gakusei-da-tta.
      Taro-TOP   that time-TOP still /MOTTO   student-PRED-PAST
      'At that time Taro was still/motto a student.'
      (Implication from the sentence with *mada*: Taro is not a student now.)

Furthermore, unlike the negative *motto*, *mada* 'still' can naturally appear in the present tense. Thanks to Tamara Vardomskaya, Anastasia Giannakidou, Jason Merchant, and the audience of the Workshop on Semantic Variation (University of Chicago, 2013) for their valuable discussions regarding the difference/similarity between *still* and the negative *motto*.

(97) * Kono   tatemono-wa   mukashi-wa   motto   apaato-da-tta.
        This   building-TOP   old days-TOP MOTTO apartment-PRED-PAST
        'In the old days, this building was motto an apartment.'

The negation-based account does not seem to naturally explain this fact.

  Finally, the 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*.[20]

  For the above empirical and conceptual reasons, I conclude that the comparison-based approach is superior to the negation-based approach.

8 Direct and indirect expressives

In this paper we have shown that there is a mode of expressive comparison in natural language. But what does the existence of expressive comparison mean? I think that the existence of expressive comparison strongly suggests that there are two modes of expressives in natural language, direct and indirect:

(98) a. Direct expressives: In direct expressives, the speaker directly expresses his/her attitude/construal toward the target.
      b. Indirect expresssives: In indirect expressives, the speaker expresses his/her attitude or construal toward the target through comparison/contrast with its alternative.

The current literature on expressives has uncovered various pragmatic functions they have:

(99) a. That *bastard* Kresge is famous. (target = Kresge)
                                          (Potts 2007a, p. 168)
      b. *Man*, I got an A on my calculus test!! (target = proposition)
                                          (McCready 2009, p. 675)
      c. Brenda is *fully* going to fly kick me! (target = proposition)
                                          (McCready and Schwager 2009)
      d. *Chotto*   hasami   aru?   (target = speech act)
          A bit   scissors   exist
          '*Chotto* do you have scissors?' (Matsumoto 1985; Sawada 2010)

Strictly speaking, we may be able to differentiate between evaluative expressives like *bastard* and *man* and non-evaluative expressives like *fully* and the Japanese *chotto*.

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[20] One might consider that since the negative *motto* cannot appear with the *yori* PP, it is a non-comparative intensifier, which conventionally implies that "my expected degree is very high". However, since the negative *motto* always evaluates the current situation, this is certainly not enough. It is necessary to introduce an alternative, and note that there is a large gap between current degree and the expected degree. In this sense, the negative *motto* is semantically a comparative morpheme, although it cannot appear with the *yori*-PP. I thank Jason Merchant and Anastasia Giannakidou for their valuable discussions regarding this issue.

Bastard in (99a) and the sentence initial *man* in (99b) convey a positive or negative meaning toward the target (Kresge in the case of *bastard* and the given proposition in the case of the initial *man*). One the other hand, *fully* in (99c) and *chotto* in (99d) do not seem to have an evaluative (positive/negative) meaning. Rather, they express the speaker's stance toward the target. McCready and Schwager (2009) argue that *fully* in (99c) conventionally implicates that the speaker is maximally epistemically committed to his/her justification of the proposition, and Sawada (2013a) claims that *chotto* conventionally implicates that the degree of imposition of his/her speech act on the addressee is low (slightly greater than a minimum standard).

However, although each expressive can have different pragmatic functions, they are all considered to be direct expressives in the sense that they are directly conveying the speaker's emotion/stance toward the target (whether it is an individual, a proposition, or a speech act). The negative *motto* is different from these direct expressives. It expresses the speaker's attitude/construal toward the target (here the utterance situation) through comparison with its alternative.

9 Conclusion

In this paper we investigated the multiple meanings of *motto* in terms of its semantics/pragmatics: there is a degree use and a negative use. In the degree use, *motto* compares two individuals and denotes that there is a large gap between the target and a given standard (with a norm-related presupposition.) On the other hand, in the negative use ('expressive use') it conveys the speaker's evaluation (often negative) toward the utterance situation.

We argued that similarly to the degree *motto*, the negative *motto* is a comparative morpheme, but unlike the degree *motto*, it compares the current situation and an expected situation at the level of CI/expressive. More specifically, I claimed that the negative *motto* conventionally implicates that the degree of the target in the expected situation is much greater than the target's current degree and that the speaker's attitude (often negative) toward the utterance situation comes from the large gap between the current situation and the expected situation.

We also considered an alternative approach wherein the negative *motto* has a contrastive/negative meaning inside the lexical item of *motto*. We showed that although the alternative approach can also naturally capture the intuitive meaning of contrastiveness and its distribution patterns, the comparison-based approach has more advantages.

This paper has a number of theoretical implications for studies of the meaning and use of natural language. First, this paper showed that there is a natural extension from semantic comparison to expressive comparison. We showed that the meaning of expressive comparison can be analyzed basically in the same way as the semantics of 'regular' comparatives. I think that it is crucial that *motto* can compare a current situation and an expected situation (a non-actual situation). We can view the phenomenon of the negative *motto* as empirical evidence for the idea of ordering of worlds [e.g. the necessity and possibility modals (Kratzer 1981); the semantics of 'want' (Heim 1992)].

Second, this paper suggests that there is a type of indirect expressive in natural language. Many studies have examined the meaning/use of expressives that directly

express the speaker's attitude/emotion toward the target (whether the target is an individual, proposition, or speech act.) However, the phenomenon of the negative *motto* suggests that there is also a mode of indirect expressive, which expresses the speaker's attitude toward the target by comparing it with another element.

In future research I would like to investigate the extent to which the extension/ shift from a semantic intensified comparison to an expressive intensified comparison is cross-linguistically general. It seems that if we examine the English comparative with the intensifier *much*, there is a similar pragmatic effect as the negative *motto*:

(100) A: Is the cake at this store big?
       B: Well, it used to be much bigger.
          (Implication: This store's cake is currently not big.)

In (100B) we can observe the implication that the current size of the store's cake is not big. If we posit the right context, (100B) can be understood as an indirect ("polite") way of responding negatively (Thomas Grano, personal communication).

However, unlike the case of the negative *motto*, the intensified comparative meaning in (100B) 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 (100B), the denial targets the comparative meaning:

(101) A: It used to be much bigger.
       B: No, that's not true.

Why can't the meaning of intensified comparison in English be used in an expressive realm? It seems to me that this has to do with the morpho-syntactic/compositional properties of English comparatives. Unlike the case of Japanese *motto*, in English it is necessary to use multiple degree morphemes (the comparative morpheme *er/more* and the intensifier *much*) to express the meaning of intensified comparison:

(102) The (elliptical) intensified comparison in English

    a. [$_{DegP}$ much   [A-er]]

    b. [$_{DegP}$ much   [more A]]

(103) The (elliptical) intensified comparison in Japanese
    [$_{DegP}$ motto   ADJ]

It may be that if a language requires multiple degree morphemes (Deg) to convey a meaning of elliptical/incomplete intensified comparison, the language may not be

capable of having a mode of expressive intensified comparison due to the issue of compositionality.

Interestingly, a similar observation can be made in Japanese as well. At first glance, *zutto* 'much' looks similar to *motto* in that it can be used to express the meaning of intensified comparison:

(104) Hanako-no   keeki-wa Taro-no   keeki-yori(-mo) zutto
      Hanako-GEN   cake-TOP Taro-GEN   cake-than-MO   much
      oishi-katta.
      delicious-PAST
      'Hanako's cake was much more delicious than Taro's cake.'

However, there is no expressive meaning in *zutto*. It seems to me that *zutto* cannot be used as an expressive comparative morpheme because it is merely a gap denoting expression. This idea is corroborated by the fact that *zutto* cannot appear in an elliptical comparative environment such as that observed in (105)[21]:

(105) ?? Hanako-no   keeki-wa   zutto   oishi-katta.
         Hanako-GEN   cake-TOP   much   delicious-PAST
         Intended: Hanako's cake was much more delicious.

The question is where the semantic meaning of the comparison in (104) originates. If *zutto* is not a comparative morpheme, there must be an element that denotes a semantic meaning of comparison. Although there could be various approaches to the semantics of (104), one possible approach is to assume that the null comparative morpheme MORE causes it to combine with *zutto* 'much.'[22]

These observations and data seem to suggest that the expressivization/ pragmaticalization of intensified comparison (i.e., a change from a semantic meaning to an expressive meaning) (e.g., Traugott 1995; Hopper and Traugott 2003; Diewald 2011; Narrog 2012; Gutzmann 2013) is not fully general; rather, it is

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[21] Notice, however, that the following sentence with *zutto* can be natural:

(i) Hanako-no   keeki-no   hoo-ga   zutto   oishi-katta.
    Hanako-GEN   cake-GEN   direction-NOM   much   delicious-PAST
    'Between Hanako's cake and a contextually-determined cake, Hanako's cake was much more delicious.

We can say that the above sentence is natural because there is a comparative marker *no hoo-ga*. *No hoo-ga* is a kind of comparative marker that signals that the speaker is choosing one individual out of two alternatives (Sawada 2009b; Kubota and Matsui 2010; Matsui and Kubota 2012). I thank Mamoru Saito and Keiko Murasugi for the valuable discussions regarding the use of *zutto*.

[22] As I briefly pointed out in footnote 6, there is also an alternative approach where the standard marker *yori*, rather than a null comparative morpheme, denotes a meaning of comparison. In this view, comparative morphemes are semantically null and it only specifies a particular type of comparison. For example, in the case of the degree *motto*, the comparative morpheme specifies that the standard marker *yori* has the following meaning:

(i) $[[yori_{MOTTO}]] = \lambda x \lambda g_{<d, \ <e,<i<s,t>>>>} \lambda y \lambda t \lambda w: \exists d[d \geq Stand \wedge g(d)(x)(t)(w)].$
    $max\{d| g(d)(y)(t)(w)\} >!! max\{d| g(d)(x)(t)(w)\}$

This approach would consider that as for the negative *motto* it has a CI meaning of comparison. We can assume that the negative *motto* received a CI meaning through the course of semantic change (expressivization).

regulated by various linguistic factors (morpho/syntactic properties and semantic compositionality).

Research on comparison and gradability has begun to uncover cross-linguistic variation in the meaning of comparatives (e.g., Beck et al. 2004; Kennedy 2007, 2009; Nakanishi 2007; Sawada 2009b, 2013b; Beck et al. 2009; Merchant 2009; Bhatt and Takahashi 2011; Kubota and Matsui. 2010; Liu 2010; Morzycki 2011; Giannakidou and Yoon 2011; Shimoyama 2012; Alrenga et al. 2012; Grano and Kennedy 2012; Bogal-Allbritten 2013; Bochnak 2013; Sudo to appear; Schwarzschild to appear). I think that it is worth investigating the cross-linguistic variation of gradability and comparison in terms of the dimensional shift.

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