

Vagueness and Adverbial Polarity Items

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Introduction: Japanese reference grammars often state that the degree adverbs *zenzen* and *mattaku* both serve to strengthen the force of an expressed negation (similarly to *at all* in English), as in (1):

- (1) Okane-ga {*zenzen* /*mattaku*} nai.
money-NOM ZENZEN/ MATTAKU NEG.EXIST
'I don't have money at all.'

However, *mattaku* and *zenzen* are not uniform in terms of scalarity and polarity. In sentence (1), *zenzen* is natural in a situation where the speaker actually has a little money, whereas *mattaku* is unacceptable in such a situation. Descriptively, we can summarize this distinction as follows: '*Zenzen* not P' implies 'a little P' but '*mattaku* not P' entails 'completely not P.' (P= gradable predicate).

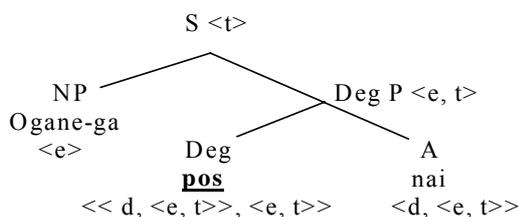
The purpose of this paper is to investigate the relation between vagueness and adverbial polarity items (PIs) and argue that there are two types of adverbial PIs in Japanese, absolute and relative, which is similar to the case with gradable adjectives (e.g. Kennedy and McNally 2005; Kennedy 2007). *Mattaku* is absolute in the sense that it denotes the minimum endpoint of a scale, while *zenzen* is relative in the sense that it denotes that the actual degree is 'far removed' from the contextually determined standard. This paper shows that the lexical semantics of PIs is diverse (Giannakidou 1998, 2006; Yoshimura 2007).

Semantics of *zenzen* and *mattaku*: What are the semantics of *zenzen* and *mattaku*? Before answering this question, it is necessary to consider the semantics of simple negative sentences, such as (2):

- (2) (Context: the speaker has to pay \$500 rent for his/her apartment.)
Okane-ga nai.
money-NOM NEG.EXIST
'I don't have money.'

(2) does not mean that the speaker has zero money. Instead, it means that 'the actual amount of money is less than a contextually determined standard' (e.g. Morita 1994). Here, I would like to assume that the adjectival *nai* can behave as a 'relative' gradable adjective when it co-occurs with a gradable noun (e.g. money, time) (cf. Furukawa 2005). Here, I follow the assumption that unmodified APs (type <d, <e,t>>) actually contain a 'null degree morpheme' *pos* whose function is to relate the degree argument of the adjectives to an appropriate standard of comparison (e.g. Cresswell 1977; von Stechow 1984; Kennedy and McNally 2005), as shown in Figure 1. (3) shows the compositional semantics of (2):

Figure 1



- (3) a. $\llbracket \text{nai} \rrbracket = \lambda d \lambda x. \neg (\text{exist}_{\text{gradable}}(x)=d)$
 b. $\llbracket \text{pos} \rrbracket = \lambda G \lambda x. \exists d [d \geq \text{Stand} \wedge G(d)(x)]$
 c. $\llbracket \text{pos} \rrbracket (\llbracket \text{nai} \rrbracket) = \lambda x. \exists d [d \geq \text{Stand} \wedge \neg (\text{exist}_{\text{gradable}}(x)=d)]$
 d. $\llbracket \text{pos} \rrbracket (\llbracket \text{nai} \rrbracket) (\llbracket \text{okane} \rrbracket) = \exists d [d \geq \text{STAND} \wedge \neg (\text{exist}_{\text{gradable}}(\text{money})=d)]$

Notice that the denotation of the adjectival *nai* in (3a) is decomposed into the negative operator and the verb *aru* 'exist'. While *nai*_{ADJ} and *aru*_V are in different grammatical categories, semantically, they form a polar antonym. *Aru* can also behave as a vague/relative predicate.

So what is the meaning of *zenzen*? I propose that *zenzen* is a degree morpheme similarly to *pos* and has the denotation shown in (4a), where $d <!! \text{STAND}$ is a context-dependent relation that means

‘less than a given standard by a large amount’ (cf. *much*, Kennedy and McNally 2005) ((4) shows the compositional semantics of (1) with *zenzen*. The denotation of *nai* is shown in (3a)):

- (4) a. $\llbracket \text{zenzen}_1 \rrbracket = \lambda G \lambda x. \exists d [d < !! \text{STAND} \wedge G(d)(x)]$
 b. $\llbracket \text{zenzen}_1 \rrbracket (\llbracket \text{nai} \rrbracket) = \lambda x. \exists d [d < !! \text{STAND} \wedge \neg (\text{exist}_{\text{gradable}}(x)=d)]$
 c. $\llbracket \text{zenzen}_1 \rrbracket (\llbracket \text{nai} \rrbracket) (\llbracket \text{okane} \rrbracket) = \exists d [d < !! \text{STAND} \wedge \neg (\text{exist}_{\text{gradable}}(\text{money})=d)]$

(4c) does not necessarily mean that I have zero money. It is equivalent to saying that the actual amount of money I have is far removed from the contextually determined standard. Thus, we can say that *zenzen* is a relative PI.

As for the denotation of *mattaku*, I argue that it can be represented in (5a) ((5) shows the compositional semantics of (1) with *mattaku*. The denotation of *nai* is shown in (3a)):

- (5) a. $\llbracket \text{mattaku} \rrbracket = \lambda G \lambda x. \forall d [d < \text{STAND} \rightarrow G(d)(x)=d]$
 b. $\llbracket \text{mattaku} \rrbracket (\llbracket \text{nai} \rrbracket) = \lambda x. \forall d [d < \text{STAND} \rightarrow \neg (\text{exist}_{\text{gradable}}(x)=d)]$
 c. $\llbracket \text{mattaku} \rrbracket (\llbracket \text{nai} \rrbracket) (\llbracket \text{okane} \rrbracket) = \forall d [d < \text{STAND} \rightarrow \neg (\text{exist}_{\text{gradable}}(\text{money})=d)]$

Mattaku nai is context independent. (5c) means that the amount of money is actually zero. Thus, we can say that *mattaku* is an absolute PI.

The above discussion shows that *zenzen* and *mattaku* have differing degree of quantificational force. *Zenzen* has an existential force, whereas *mattaku* has a universal force. This naturally explains why ‘*zenzen* not P’ has a positive implicature. I argue that the positive implicature of ‘*zenzen* not P’ is a Q implicature, which derives from a scale $\langle \text{mattaku not P}, \text{zenzen not P} \rangle$. (The items are ordered from strongest to weakest). ‘*Zenzen* not P’ Q implies that ‘ $\neg (\text{mattaku not P})$ ’.

Positive *zenzen*: My argument explains why *zenzen*, but not *mattaku*, can appear in a positive assertion that contains a ‘relative’ gradable adjective like that in (6B):

- (6) A: Kono hon-wa omoshiroku-nai-ne.
 This book-TOP interesting-NEG-COMFIRMATION
 ‘This book is not interesting. Right?’
 B: {*Zenzen* /**mattaku*} omoshiroi-yo
 ZENZEN/ MATTAKU interesting-INTERJECTION
 ‘It IS interesting.’

There is no endpoint on the scale of interestingness. Since *zenzen*, but not *mattaku*, is relative and does not denote an endpoint, it can be used with an upward directed scale that lacks an endpoint. The denotation of (6B) with *zenzen* can be represented as in (7):

- (7) $\llbracket \text{zenzen}_2 \rrbracket (\llbracket \text{omoshiroi} \rrbracket) = \lambda x. \exists d [d > !! \text{STAND} \wedge \text{interesting}(x)=d]$

There is a question as to whether *zenzen* in (6B) is a PI. I argue that it can still be regarded as a PI. ‘*Zenzen* P’ **presupposes** that P is considered false with regard to the subject (i.e. the book) from the addressee’s standpoint, according to the speaker’s individual epistemic model. Sentence (6B) with *zenzen* becomes odd if it is uttered without any negative background. Therefore, we may postulate that although the positive *zenzen* in (6B) does not occur in a downward entailing context or a nonveridical context, *zenzen* is **rescued** (Giannakidou 1998, 2006) by its **negative presupposition**.

Theoretical Implications: It has been argued that the base meaning of PIs requires an ‘even-like’ flavor (e.g. Heim 1984; Lee and Horn 1994; Lahiri 1998; Chierchia 2006). However, sentence (1) with *zenzen* cannot necessarily be paraphrased by *mo* ‘even’, although if *mattaku* is used, such a paraphrase is possible:

- (8) Okane-ga ichi-en-mo nai.
 money-NOM one-yen-even NEG.EXIST
 ‘I don’t have even 1 yen.’ (=I have zero money.)

This suggests that PIs cannot be reduced to a single semantic source. This paper argues that the lexical semantics of PIs are diverse (Giannakidou 1998, 2006; Yoshimura 2007).

Selected References:

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