Inherently context-sensitive gradable adjectives[1]

Yurika Aonuki — *Massachusetts Institute of Technology*

Abstract. In most analyses of languages that are argued to have degrees as semantic primitives (e.g., Cresswell 1976; von Stechow 1984), gradable adjectives (GAs) receive context-independent denotations. When evaluativity (i.e., norm-relatedness) arises, it is added to the meaning of GAs by a covert operator (e.g., *pos* in Cresswell 1976, von Stechow 1984; EVAL in Rett 2007, 2008) or a pragmatic process (Rett 2014). In this paper, I argue that Japanese takes the opposite route to evaluativity: Japanese GAs are inherently context-dependent, and evaluativity arises by default. Empirical evidence comes from 1) obligatory differential readings of measure phrases (MPs) occurring with positive forms of GAs and 2) evaluativity of equatives and degree questions involving GAs. In fact, cross-linguistically, the two phenomena, the unavailability of absolute MP readings occurring with a GA and evaluativity of that GA in equatives and degree questions, are observed to be related (Bierwisch 1989; Winter 2005; Krasikova 2009; Sassoon 2011; Breakstone 2012; Bochnak 2013), which motivated proposals that (some) relative GAs in English are inherently context-dependent (Sassoon 2011; Breakstone 2012). I demonstrate that all relative GAs in Japanese exhibit this link and motivate their inherently context-dependent denotations.

Keywords: evaluativity, measure phrases, degree semantics, Japanese

1. Introduction

Evaluativity (i.e., norm-relatedness (Bierwisch 1989)) is an inference that a given degree exceeds the contextual standard. In analyses of languages that are argued to have degrees as primitives, i.e., Beck et al.'s (2009) + Degree Semantics Parameter languages,[2] gradable adjectives(GAs) receive context-independent denotations, and when evaluativity arises in positive constructions, equatives, and degree questions, it is contributed by a covert morpheme such as *pos* (Cresswell 1976; von Stechow 1984) and EVAL (Rett 2007, 2008) (see Section 2.1) or derived pragmatically (Rett 2014).

However, there is another analytical option, which is to say that (some) relative GAs[3] are inherently context-dependent. In fact, this line of approach has been pursued even for English (Breakstone 2012; Sassoon 2011), in light of the observation that relative GAs that disallow absolute MPs to occur with their positive forms (1a) are consistently evaluative in degree questions and equatives (1b) (Bierwisch 1989; Winter 2005; Krasikova 2009; Sassoon 2011; Breakstone 2012; Bochnak 2013).

(1) a. *3 feet short

b. #How short is the giant? #He's as short as Goliath. (Breakstone 2012:114(5c))

Breakstone (2012) summarizes this link as Bierwisch's observation (2): if a GA does not allow an MP to occur with its positive form, that GA is evaluative in equatives and degree questions.

[1]I would like to thank Adam Albright, Sigrid Beck, Ryan Bochnak, Lucas Champollion, Kai von Fintel, Danny Fox, Martin Hackl, Vera Hohaus, Yoad Winter; and the audiences of the *UBC Linguistics Outside the Classroom*, the *UBC Semantics Discussion Group*, and *SuB 28* for discussions and feedback.

[2]See Bochnak et al. (2020) for arguments against such a binary view.

[3]See Rotstein and Winter (2004) and Kennedy and McNally (2005) for classes of GAs. Relative GAs refer to GAs whose standards are context-dependent (Kennedy and McNally 2005).

(2) Bierwisch's observation (adapted from Breakstone 2012:114(4))
*MP Adjective in Positive form ⇒ Adjective is evaluative in equatives and questions.

A similar link between MP compatibility and evaluativity is observed in Japanese. In fact, all relative GAs in Japanese[4] disallow absolute MPs to occur with their positive forms (3), and all of them are evaluative in equatives (4) and degree questions.

(3) *Context: Out of the blue*
#Biru A-wa 10m taka-i.
Building A-TOP 10m tall-NPST
intended: 'Building A is 10m tall.'

(4) Biru A-wa Biru B izyoo-ni
Building A-TOP Building B izyoo-ni
taka-i
big-NPST
'Building A is as tall as Building B.'
→ Building A and B are tall.

Based on these data, I will argue that all relative GAs in Japanese are inherently context-dependent. The idea of inherent context dependency in Japanese relative GAs has been proposed by Oda (2008), who builds on a suggestion in Beck et al. (2004). However, Oda's (2008) analysis does not connect the MP readings with evaluativity in equatives and degree questions (see Section 3.4). By identifying inherent context dependency of relative GAs as the unified source of the MP interpretations and wider distribution of evaluativity in Japanese, I connect the Japanese facts to the cross-linguistic literature on evaluavitity. In turn, my analysis sheds light on a novel analytical option for MP interpretations in English (Section 5.2).

2. Previous approaches to evaluativity

This section reviews sources of evaluativity identified in the previous literature. I focus on semantic approaches to evaluativity arising with relative GAs since they are the most relevant for the current purpose (See Rett (2014) for an analysis of evaluativity as an implicature).

2.1. Adding evaluativity

The standard denotations of relative GAs in degreeful languages like English are context-independent. An example of a relational denotation of a GA is given in (5). Constructions with relative GAs are thus expected to be non-evaluative by default, and evaluativity is added by some other means. For example, the evaluativity entailment in positive constructions (6) is attributed to the covert morpheme *pos* (7a) (Cresswell 1976; von Stechow 1984; Kennedy and McNally 2005).

(5) $[\![\text{tall}]\!] = \lambda d.\ \lambda x.\ \text{Tall}(x) \geq d$

(6) Kim is tall.

(7) a. $[\![\text{pos}]\!] = \lambda G_{det}.\ \lambda x.\ \exists d[\text{standard}(d)(G)(C)\ \&\ G(d)(x)]$ (K&M 2005:350(13))
b. $[\![(6)]\!] = [\![\text{pos}]\!]([\![\text{tall}]\!])(\text{Kim}) = 1$ iff $\exists d[\text{standard}(d)([\![\text{tall}]\!])(C)\ \&\ \text{Tall}(\text{Kim}) \geq d]$

Rett (2007, 2008) points out that while *pos* contributes two things, evaluativity and existential closure over the degree argument of a GA, the former arises in constructions that do not require the latter, including in equatives and degree questions. She proposes to replace *pos* with another covert element EVAL, which only contributes evaluativity (8).

[4]Most of the literature on degree semantics in Japanese, including this paper, focuses on canonical adjectives (*kēyōshi*). I set aside another class called nominal adjectives (Nishiyama 1999) (*kēyōdōshi*). Oshima et al. (2019) surveyed 200 canonical adjectives and nominal adjectives, respectively, and concluded that neither have a strong tendency to be absolute (i.e., minimum and/or maximum standard) predicates.

(8) $[\![\text{EVAL}_i]\!] = \lambda D_{dt}.\ \lambda d.\ D(d)\ \&\ d > s_i$ (Rett 2007:231(9))

Occurrence of EVAL is unrestricted, so every degree construction has denotations with and without EVAL by default. However, EVAL is sometimes obligatory due to triviality or markedness. Evaluativity as a result of triviality is observed in positive constructions (9a). The non-evaluative denotations of positive constructions are trivial (9b), and therefore only the evaluative readings are allowed (9c).

(9) a. Amy is tall.
b. *Without EVAL: $\exists d[\text{Tall}(\text{Amy},d)]$
c. With EVAL: $\exists d[\text{Tall}(\text{Amy},d)\ \&\ d > s_{tall}]$ (Rett 2007:219(27))

Evaluativity as a consequence of markedness is observed in equatives and degree questions involving a negative antonym GA. For example, without EVAL, the equative in (11a) is in mutual entailment with its positive counterpart (10a).[5] Being marked with respect to the positive counterpart, equatives with negative antonym GAs receive an obligatory evaluative reading involving EVAL (11c).

(10) a. Amy is as tall as Betty. (Rett 2007:217(18))
b. Without EVAL: $\{d_1\text{: Tall}(a,d_1)\} = \{d_2\text{:Tall}(b,d_2)\}$
c. With EVAL: $\{d_1\text{: Tall}(a,d_1)\ \&\ d_1 > s_{tall}\} = \{d_2\text{:Tall}(b,d_2)\ \&\ d_2 > s_{tall}\}$

(11) a. Amy is as short as Betty. (Rett 2007:217(19))
b. *Without EVAL: $\{d_1\text{: Short}(a,d_1)\} = \{d_2\text{:Short}(b,d_2)\}$
c. With EVAL: $\{d_1\text{: Short}(a,d_1)\ \&\ d_1 > s_{short}\} = \{d_2\text{:Short}(b,d_2)\ \&\ d_2 > s_{short}\}$

2.2. Bierwisch's (1989) observation and inherent context dependency

Recall from Section 1 that evaluativity of equatives and degree questions constructed with a given GA is linked to that GA's incompatibility with absolute MPs (Bierwisch 1989; Winter 2005; Krasikova 2009; Sassoon 2011; Breakstone 2012; Bochnak 2013), as summarized by Breakstone (2012) in (2). As Sassoon (2011) points out, in addition to negative antonym GAs (1) following the pattern in (2), there are also many antonym pairs in which both positive (12) and negative members exhibit the same pattern.

(12) a. *20°warm b. ?How warm is the ice-cream?
c. ?This ice-cream is as warm as that one. (Sassoon 2011:532(6),(9))

Proposals to account for Bierwisch's observation (2) tend to attribute evaluativity to the denotations of GAs themselves. I will review two such proposals for English.

2.2.1. Sassoon (2011)

Sassoon (2011) argues that Rett's EVAL account, which relies on pragmatic competition between positive and negative members of antonym pairs, cannot capture the cases in which

[5]This mutual entailment only holds between the 'exactly' readings and not the 'at least' readings of equatives. Rett (2007) argues that the 'exactly' reading is the denotation of an equative. Rett (2014), on the other hand, takes the 'at least' reading to be the semantic denotation and argues that the 'exactly' reading results from strengthening due to a pragmatic competition with a comparative.

both members are evaluative. Sassoon (2011) proposes that what MP-incompatible, evaluative GAs have in common regardless of their polarity is that their zero is relative. In contrast, MP-compatible GAs like *tall* are associated with scales with an absolute zero, or ratio scales. She argues that according to measurement theory, only ratio scales license absolute MPs. A property P's zero is absolute iff it is index-independent (13a) and corresponds to absence of the given property (13b), and relative otherwise, where the set of indices W_c represents the context set (Stalnaker 1978).

(13) a. $\forall w_1,w_2 \in W_c$[Zero(P, w_1)=Zero(P, w_2)] (adapted from Sassoon 2011:537(18))
b. $\forall w \in W_c[\forall x \notin \text{Zero(P, w)} \rightarrow \text{f(P, w)(x)}>0]$ where Zero(P,w) = $\{x \in D_e$: f(P, w)(x)=0$\}$

According to Sassoon (2011), a relative zero need not but can equal the norm, i.e., the contextual standard of the kind specified by *pos*. When it does, the GA resembles minimum-standard GAs (Kennedy and McNally 2005) in that a degree is considered to exceed the contextual standard merely by being on the scale, giving rise to evaluativity in equatives and degree questions as well as comparatives. One remaining question is what factors influence whether a relative zero does or does not equal the contextual standard, both empirically and analytically.

2.2.2. Inherently evaluative adjective denotation

Also aiming to account for Bierwisch's (1989) observation (2), Breakstone (2012) takes the idea of context-dependent GAs one step further and claims that all GAs are inherently evaluative.

(14) a. $[\![\text{tall}]\!]^c = \lambda d.\ \lambda x.\ \text{Height(x)} \geq d\ \&\ d > \text{standard}_c$
b. $[\![\text{short}]\!]^c = \lambda d.\ \lambda x.\ \text{Height(x)} \leq d\ \&\ d < \text{standard}_c$ (Breakstone 2012:116(13))

In a sense, his proposal is a mirror image of Rett (2007, 2008). Lack of evaluativity is derived by an 'anti-evaluative' morpheme called the 'Standard Shifting Morpheme' (SSM) (15).

(15) $[\![\text{SSM Adj}]\!]^c = [\![\text{Adj}]\!]^{c_0}$ where context $c_0 \equiv c$, except that standard_{c0}(Adj)=0 (tentative)
(Breakstone 2012:117(14a))

This SSM is prohibited when its application would lead to triviality, trivial falsity, or contradiction.[6] For example, SSM cannot apply to positive forms because the result would be trivial.

However, he eventually relaxes the denotation of SSM to allow the standard to be a salient degree (16).

(16) $[\![\text{SSM}_d\ \text{Adj}]\!]^c = [\![\text{Adj}]\!]^{c_d}$ where context $c_d \equiv c$, except that
standard_{cd}(Adj) = d: a salient degree (Breakstone 2012:121(28))

This is necessary in order to account for the lack of evaluativity in comparatives with a negative antonym GA like *short*. For example, in (17)[7], the denotation without the SSM would be evaluative contrary to the empirical fact (17a), and the denotation with the SSM shifting the standard to absolute zero (15) would be contradiction (17b). The desired interpretation is

[6]In addition, for positive but MP-incompatible relative GAs like *warm*, Breakstone (2012) speculates that they have an independent ban on SSM.

[7]I have simplified Breakstone's analysis of comparatives. He assumes that the comparative morpheme *-er* takes, in addition to two predicates of degrees corresponding to the associate's and the standard's degrees, a variable over a generalized quantifier over degrees, which is existentially closed in the absence of an MP.

derived by shifting the contextual standard to the salient degree contributed by the *than* clause (16), in this case Mary's height (17c).

(17) John is shorter than Mary. (Breakstone 2012:122(32))

a. $\{d'|\text{height}(J)\leq d' \ \&\ d'<\text{std}_c\} \setminus \{d''|\text{height}(M)\leq d'' \ \&\ d''<\text{std}_c\} \neq \varnothing$

b. $\{d'|\text{height}(J)\leq d' \ \&\ d'<0\} \setminus \{d''|\text{height}(M)\leq d'' \ \&\ d''<0\} \neq \varnothing$

c. $\{d'|\text{height}(J)\leq d' \ \&\ d'<\text{height}(M)\} \setminus \{d''|\text{height}(M)\leq d'' \ \&\ d''<\text{height}(M)\} \neq \varnothing$

To explain why negative antonym GAs like *short* do not allow an MP to occur with their positive forms, he assumes that MPs have a precondition against vagueness (18).

(18) MP denotation $[\![\text{n units}]\!] = \lambda D_{dt}$. D is not vague. $|D| \geq n$ (Breakstone 2012:118(20))
D is not vague if D is a total function on the domain of degrees, *Deg*

Even with this precondition against vagueness, with the relaxed definition of SSM in (16), Breakstone's system seems to wrongly predict that differential readings should be available for some instances of MPs occurring with positive forms of MP-compatible GAs like *tall*. This is because a salient degree is not always vague: in (19), SSM should be able to shift the standard to the height of 10m, which is salient in the context.

(19) *Context: Building B is 10m 50cm tall.* Building A is 10m tall. #Building B is 50cm tall.

Breakstone's underlying assumption seems to be that the 'salient degree' picked out by SSM can only be the absolute zero or the standard of comparison overtly contributed by a *than* phrase. However, it is not clear to me what definition of saliency can include these two cases and exclude a degree specified in the immediately preceding clause (19). In fact, in Japanese, making a degree salient in the preceding sentence licenses an otherwise anomalous *MP Adjective* sequence (3) to have a differential MP interpretation (20).

(20) *Context: As in (19)*
Biru A-wa 10m-da. Biru B-wa 50cm taka-i.
Building A-TOP 10m-COP Building B-TOP 50cm tall-NPST
'Building A is 10 m tall. Building B is 50cm taller.'

This suggests that, while seemingly unsuccessful for English, inherently context-dependent denotations of GAs may be the right approach for Japanese. While strictly speaking the generalization in (2) does not hold in Japanese because *MP Adjective* sequences are not entirely ungrammatical, a slightly modified version in (21) captures the Japanese facts.

(21) Modified Bierwisch's observation
If *MP Adjective* in the positive form does not have an absolute MP reading, that adjective is evaluative in equatives and degree questions.

I will argue below that inherently context-dependent denotations of GAs straightforwardly capture both MP interpretations and distribution of evaluativity in Japanese.

3. Obligatory differential MP interpretation

3.1. Data

Japanese GAs uniformly disallow absolute interpretations of MPs (3 repeated as 22) (Snyder et al. 1995; Beck et al. 2004; Oda 2008). This pattern is shared with languages such as Russian (Krasikova 2009) and Spanish (Bosque 1999 cited in Schwarzschild 2005).

(22) #Biru A-wa 10m taka-i
Building A-TOP 10m tall-NPST
intended: 'Building A is 10m tall.'

Where Japanese differs from other languages that disallow absolute MP interpretations is that, if there is a salient, precise degree to serve as the standard, *MP Adj* receives a differential interpretation rather than being ungrammatical (20 repeated as 23).

(23) *Context: Building B is 10m 50cm tall.*
Biru A-wa 10m-da. Biru B-wa 50cm taka-i.
Building A-TOP 10m-COP Building B-TOP 50cm tall-NPST
'Building A is 10 m tall. Building B is 50cm taller.'

3.2. Previous accounts

This section discusses previous approaches to the obligatory differential MP readings in Japanese (Hayashishita 2007, 2009; Kubota 2011; Sawada and Grano 2011). What they have in common is that they maintain context-independent denotations of GAs and introduce the standard degree responsible for differential readings by a covert morpheme.

3.2.1. Hayashishita (2007, 2009): Differential *pos*

Hayashishita (2007, 2009) proposes that the *pos* morpheme in (24) is responsible for the differential MP readings. While he presents it as a variant of the *pos* morpheme proposed for positive constructions in English (7a), Hayashishita's version is inherently differential; in (24), d_2 corresponds to the gap between x's degree of G-ness and the standard degree.

(24) Hayashishita's *pos* morpheme
$[\![pos]\!] = \lambda d_2.\lambda G_{det}.\lambda x.\exists d_1[\text{standard}(d_1)(d_2)(G)(C) \wedge G(d_1)(x)]$
where standard$(d_1)(d_2)(G)(C)$ iff d_1 exceeds the standard of G-ness by d_2, given the comparison class C (Hayashishita 2007:96(64))

Hayashishita uses his differential *pos* morpheme to account for evaluativity of equatives and degree questions (see Section 4.1) as well. While the analytical move to attribute differential MP interpretations and evaluativity to the same source is shared with my proposal, attributing them to *pos* in (24) faces issues that do not arise in my account. Both the denotation and distribution of Hayashishita's *pos* deviate from the original proposal for the English counterpart (von Stechow 1984; Kennedy and McNally 2005): the standard *pos* morpheme only contributes evaluativity and existential closure over degrees, and it only occurs in the absence of MPs and degree operators. Hayashishita leaves open the question of whether his version of *pos* works for English.

3.2.2. Kubota (2011), Sawada and Grano (2011): MPs requiring a lower bound

Unlike Hayashishita (2007, 2009), for Kubota (2011) and Sawada and Grano (2011), requirements of MPs themselves trigger their differential interpretations. The general idea shared between the two proposals is that an MP requires the denotation it combines with to denote a

measure function[8] with a lower bound and that (coerced) comparatives are derived minimum-standard adjectives. I will review the implementation by Kubota (2011).[9]

Kubota (2011) argues that MPs are accompanied by a null degree head δ (25). The function stnd is shared with his denotation of *pos*, and it returns a contextually salient degree in the absence of an overt standard phrase (See Section 5.1 for further discussion on the nature of stnd). In (26a), repeated from (20), stnd would return the height of Building A.

(25) $[\![\delta]\!] = \lambda g_{ed}.\ \lambda d.\ \lambda x.\ g(x) - \text{stnd}(g) \geq d$ (Kubota 2011:8(20))

(26) a. *Context: Building B is 10m 50cm tall.*
Biru A-wa 10m-da. Biru B-wa 50cm taka-i.
Building A-TOP 10m-COP Building B-TOP 50cm tall-NPST
'Building A is 10 m tall. Building B is 50cm taller.'

b. $[\![$ (26a) $]\!]$ = tall(Building B) - stnd(tall) $\geq$ 50 cm (modelled on Kubota 2011:8(22a))

By attributing differential readings of MPs to the requirements of a covert element that only occurs in presence of an MP (Kubota 2011; Sawada and Grano 2011), one must give up on unifying differential MP interpretations with evaluativity in equatives and degree questions, which do not allow modification by MPs. In fact, Kubota (2012) attributes the latter to overt functional elements in these constructions (see Section 4.2).

3.3. Analysis of obligatory differential MPs

I propose that all relative GAs in Japanese are inherently context-dependent (28): they take an extra argument d′, which is to be filled by the denotation of an accompanying covert degree variable that picks out a salient degree through assignment (28b).[10]

(28) a. $[\![$ taka- 'tall' $]\!]^{g,w} = \lambda d'.\ \lambda d.\ \lambda x.\ \text{TALL}(x)(w) \geq d > d'$

b. $[\![d_{d,3}]\!]^{g,w} = g(3)$

I take MPs to denote generalized quantifiers over degrees, or 'predicates of gaps' (Schwarzschild 2005), and propose the denotations exemplified in (29). The use of the function CM as opposed to directly predicating D of 50cm reflects the idea that degrees do not necessarily correspond to units of measurements (e.g., Schwarzschild 2020). Note also that the use of MIN(D) in the denotation achieves the same effect as Breakstone's (2012) precondition against vagueness (18) and Kubota's (2011) and Sawada and Grano's (2011) requirement for having a minimum standard, as MIN(D) would be undefined if D does not have a precise minimum element.

[8]Both Kubota (2011) and Sawada and Grano (2011) assume that GAs denote measure functions.

[9]For Sawada and Grano (2011), the requirement for a minimum standard is encoded in a covert Meas head (Svenonius and Kennedy 2006), and in the absence of an overt standard phrase, a covert coercion operator is inserted below Meas to add a contextually salient degree as the minimum standard.

[10]Strictly speaking, the context dependency comes not from the denotation in (28a) but from the accompanying pronoun (28b), which fills the first degree argument of (28a). I have chosen this implementation over a perhaps more straightforwardly contextually-dependent GA denotation in (27) because, as I demonstrate below, the standard degree corresponding to g(3) can be bound by two overt lexical items.

(27) $[\![$ taka-$_3$ 'tall' $]\!]^{g,w} = \lambda d.\ \lambda x.\ \text{TALL}(x)(w) \geq d > g(3)$

(29) $[\![50\text{cm}]\!]^{g,w}=\lambda D_{dt}.\ \textsc{cm}(|D|) \geq 50$ where $|D| = \textsc{max}(D) - \textsc{min}(D)$

Ignoring the contribution of the non-past tense, the meaning of (20), repeated as (30a), is derived in (30), where the MP is base-generated as a sister of the GA but QR-ed due to type mismatch. The final denotation (30e) says that the function CM returns the number 50 when it takes the set of degrees d that Building B is tall to and that is greater than the contextually salient degree g(3). In this case, g(3) corresponds to the height of the Building A, 10m, which was made salient in the previous sentence. g(3) must not be vague because it will correspond to MIN(D), which rules out a reading in which Building B is 50cm taller than, e.g., the presumed average height of buildings when it has not been made precise in the discourse.

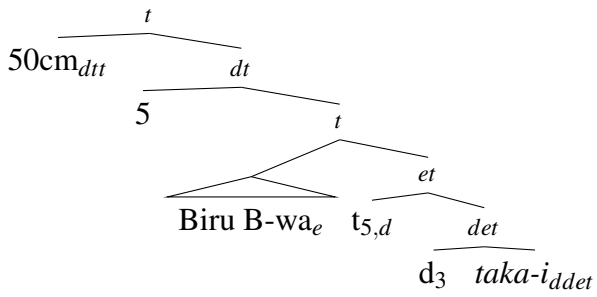
(30) a. *Context: Building B is 10m 50cm tall.*
Biru A-wa 10m-da. Biru B-wa 50cm taka-i.
Building A-TOP 10m-COP Building B-TOP 50cm tall-NPST
'Building A is 10 m tall. Building B is 50cm taller.'

b. $[\![\ d_3\ \text{taka-i}\ ]\!]^{g,w} = \lambda d.\ \lambda x.\ \textsc{tall}(x)(w) \geq d > g(3)$

c. $[\![\ t_{5,d}\ d_3\ \text{taka-i}\ ]\!]^{g,w} = \lambda x.\ \textsc{tall}(x)(w) \geq g(5) > g(3)$

d. $[\![\ \text{Biru B-wa}\ t_{5,d}\ d_3\ \text{taka-i}\ ]\!]^{g,w} = 1$ iff $\textsc{tall}(\text{Building B})(w) \geq g(5) > g(3)$

e. $[\![\ 50\text{cm}\ 5\ \text{Biru B-wa}\ t_{5,d}\ d_3\ \text{taka-i}\ ]\!]^{g,w} = 1$ iff $\textsc{cm}(|\lambda d.\ \textsc{tall}(\text{Building B})(w) \geq d > g(3)|) \geq 50$



In (30a), the standard of comparison can be made overt with a post-position, *yori*, as in (31).

(31) Biru B-wa Biru A yori 50cm taka-i
Building B-TOP Building A yori 50cm tall-NPST
'Building B is 50cm taller than Building A.'

I assume that *yori* comes with an index over measure functions, which picks out a salient measure function via assignment (32)[11](Hayashishita 2009; Hohaus 2015; Oda 2020); in (31), it would be the measure function for height. In addition, the covert degree variable d_3 is bound by a lambda, and this argument slot is filled by the denotation of the *yori* phrase. The denotation of (31) in (33e) ends up being identical to (30e) because HEIGHT(Building A)(w) in (33e) is the denotation of g(3) in (30e).

(32) $[\![\ \text{yori}_{1,ed}\ ]\!]^{g,w} = \lambda x.\ g(1,ed)(x)$ (based on Hohaus 2015:157(339))

[11]I assume, following Sudo (2015), that a seemingly clausal complement of *yori* is a relative clause.

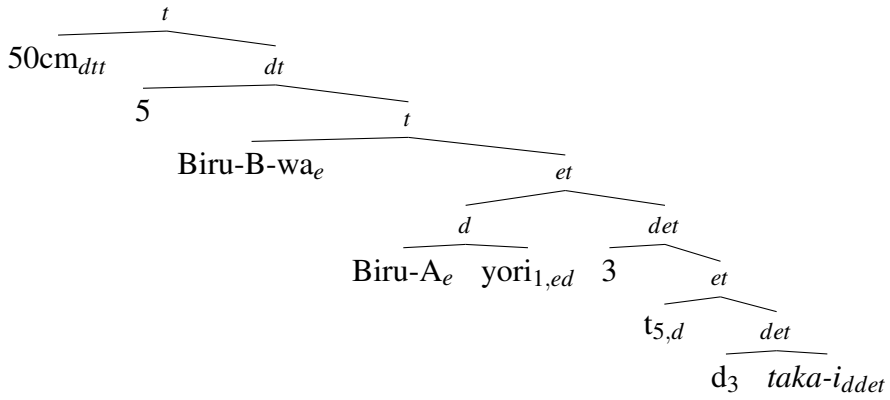
(33) a. $[\![3\ t_{5,d}\ d_3\ \text{taka-i}]\!]^{g,w} = \lambda d.\ \lambda x.\ \textsc{tall}(x)(w) \geq g(5) > d$

b. $[\![\text{Biru A yori}]\!]^{g,w} = g(1,ed)(\text{Building A}) = \textsc{height}(\text{Building A})(w)$

c. $[\![\text{Biru A yori } 3\ t_{5,d}\ d_3\ \text{taka-i}]\!]^{g,w} = \lambda x.\ \textsc{tall}(x)(w) \geq g(5) > \textsc{height}(\text{Building A})(w)$

d. $[\![5 \text{ Biru B-wa Biru A yori } 3\ t_{5,d}\ d_3\ \text{taka-i}]\!]^{g,w} = \lambda d.\ \textsc{tall}(\text{Building B})(w) \geq d > \textsc{height}(\text{Building A})(w)$

e. $[\![50\text{cm } 5 \text{ Biru B-wa Biru A yori } 3\ t_{5,d}\ d_3\ \text{taka-i}]\!]^{g,w} = 1$ iff $\textsc{cm}(|\lambda d.\ \textsc{tall}(\text{Building B})(w) \geq d > \textsc{height}(\text{Building A})(w)|) \geq 50$



3.4. Comparison with Oda (2008)

My proposal is not the first proposal for context-dependent, inherently differential denotations of GAs in Japanese. Such an idea has been put forth by Oda (2008), who adopts the denotation suggested by Beck et al. (2004) in (34a), where the degree argument d' corresponds to the difference between the absolute degree of x and the contextual standard c. Taking MPs to denote a degree, she argues that (34a) correctly derives the differential MP reading of a sentence analogous to (30a), as in (34b).

(34) a. $[\![\textit{takai}]\!] = \lambda d'.\ \lambda x.\ \max(\lambda d.\text{tall}(d)(x)) = c + d'$ (Beck et al. 2004:342(e.n.15(ib)))

b. $[\![(30a)]\!]^{g,w} = 1$ iff $\max(\lambda d.\text{tall}(d)(\text{Building B})) = c + 50\text{cm}$

However, there is one significant difference between my proposal and Oda's (2008) denotation in (34a), which reflects her claim that Japanese does not allow abstraction over degrees, i.e., it has the negative setting for Beck et al.'s (2004) Degree Abstraction Parameter. Subsequent works have identified evidence for abstraction over degrees in Japanese (e.g., Shimoyama 2012, Sudo 2015). One such piece of evidence is scope ambiguity in sentences with a differential MP and a modal. The original example in English (35) comes from Heim (2000), who attributes the ambiguity to scope interactions between the modal and the comparative operator *-er*.

(35) a. (This draft is 10 pages.) The paper is required to be exactly 5 pages longer than that.

b. 'Exact' reading $\forall w \in \text{Acc}: \max\{d: \text{long}_w(p,d)\} = 15\text{pp}$

c. 'Minimum' reading $\max\{d: \forall w \in \text{Acc}: \text{long}_w(p,d)\} = 15\text{pp}$

(adapted from Heim 2000:48(28))

The same ambiguity is replicated with a modal *hitsuyoo-ga a-ru* in Japanese (36).

(36) Ronbun-wa shitagaki yori tyoodo 5 peeji nagai hitsuyoo-ga a-ru
paper-TOP draft than exactly 5 page long need-NOM exist-NPST
'The paper needs to be exactly 5 pages longer than the draft.'
(adapted from Sudo 2015:45(109))

My denotations of GAs predict this scope ambiguity, which depends on the landing site of the MP with respect to the modal, similarly to Beck's (2012) proposal for English.

(37) a. 'Exact' reading ∀>MP
$[\![$[tyoodo 5pp 7 Ronbun-wa shitagaki yori$_1$ 3 $t_{7,d}$ d_3 naga-i] hitsuyoo-ga ar-u$]\!]^{g,w}$ = 1
iff $\forall w'[w' \in \text{DEON}(w) \rightarrow \text{PAGE}(|\lambda d.\ \text{Long}(\text{paper})(w') \geq d > \text{LENGTH}(\text{draft})(w')|)=5]$

b. 'Minimum' reading MP>∀
$[\![$tyoodo 5pp 7 [Ronbun-wa shitagaki yori$_1$ 3 $t_{7,d}$ d_3 naga-i hitsuyoo-ga ar-u]$]\!]^{g,w}$ = 1
iff $\text{PAGE}(|\lambda d.\ \forall w'[w' \in \text{DEON}(w) \rightarrow \text{LONG}(\text{paper})(w') \geq d > \text{LENGTH}(\text{draft})(w')]|)=5$

Another consequence of the inability to abstract over degrees in Oda (2008)'s proposal is that it does not seem to extend to equatives and degree questions, which involve abstraction over degrees (Beck et al. 2009). Therefore, the inherent context sensitivity in Oda's denotation cannot be characterized as the source of the wider distribution of evaluativity (See Section 4.1),[12] in contrast to my proposal (see Section 4.4).

4. Evaluativity

4.1. Wider distribution of evaluativity with GAs

Japanese shows much wider distribution of evaluativity than English. Equative-like[13] constructions involving a GA and a particle *izyoo* ('≥') (38) or *kurai* ('≈') (39) are always evaluative in Japanese, regardless of whether the GA is a positive (a) or negative (b) member of a polar antonym pair (Hayashishita 2007, 2017; Kubota 2012; Oda 2015).

(38) a. Biru A-wa Biru B izyoo-ni taka-i
Building A-TOP Building B izyoo-DAT tall-NPST
'Building A is as tall as Building B.' → Building A and B are tall.

b. Biru A-wa Biru B izyoo-ni hiku-i
Building A-TOP Building B izyoo-DAT short-NPST
'Building A is as short as Building B.' → Building A and B are short.

(39) a. Biru A-wa Biru B kurai taka-i
Building A-TOP Building B kurai tall-NPST
'Building A is about as tall as Building B.' → Building A and B are tall.

b. Biru A-wa Biru B kurai hiku-i
Building A-TOP Building B kurai short-NPST
'Building A is about as short as Building B.' → Building A and B are short.

[12] In Oda (2015) she allows abstraction over degrees and attributes evaluativity of *izyoo* equatives to a version of *pos*.

[13] While I will refer to constructions like (38)-(39) as equatives from now on, their semantics differs from that of equatives in English. In addition to being evaluative, they lack an 'exactly' reading; in fact, both Hayashishita (2007) and Kubota (2012) would describe (38)-(39) as comparatives. I suspect that *izyoo* equatives lack the strengthened, 'exactly' readings because being evaluative, they do not enter a Quantity competition with comparatives (see e.g., Rett 2014).

Degree questions (41) constructed with *kurai* are also evaluative even with the positive member of an antonym pair.[14]

(41) Biru A-wa dono kurai taka-i no?
Building A-TOP which kurai tall-NPST Q
'How tall is Building A?' → Building A is tall.

4.2. Previous analysis: Kubota (2012)

Kubota (2012) accounts for the data in Section 4.1 by encoding evaluativity in the morphemes *izyooni* and *kurai* (42). This strategy is partially motivated by the need to reflect his observation that the evaluativity inference is presupposed for the standard of equatives but not for the associate (see Kubota 2012:37-8).

(42) $[\![\text{kurai}]\!] = \lambda x.\ \lambda g_{ed}.\ \lambda y.\ g(y) \approx g(x)$ $\underline{\text{defined if } g(x) \geq \text{stnd}(g)}$
(adapted from Kubota 2012:42(14))

Kubota's proposal predicts that any construction with *izyoo* and *kurai* would be evaluative by default. I will demonstrate that this is a wrong prediction.

4.3. Lack of evaluativity with GNs

Contrary to the prediction of Kubota's denotations of *izyoo* and *kurai*, once we replace the positive GAs in (38a), (39a), and (41) with morphologically related gradable nominals (GNs), the evaluativity inference is no longer available (45)-(46).[15]

(44) Biru A-wa Biru B izyoo-no taka-sa-da
Building A-TOP Building B izyoo-GEN big-N-COP
'Building A is as tall as Building B.' ↛ Building B is tall.

(45) Biru A-wa Biru B kurai-no taka-sa-da
Building A-TOP Building B kurai-GEN big-N-COP
'Building A is as tall as Building B.' ↛ Building B is tall.

(46) Biru A-wa dono kurai-no taka-sa-na-no?
Building A-TOP which kurai-GEN big-N-COP-Q
'How tall is Building A?' ↛ Building A is tall.

The lack of evaluativity in corresponding constructions with GNs shows that the source of evaluativity in equatives and degree questions with GAs cannot be *izyoo* and *kurai*. I propose that instead, what gives rise to evaluativity is the inherent context dependency of GAs, which is not shared with GNs.

[14]The patterns I discuss in Section 4.1 and 4.3 hold for degree demonstratives as well (40).
(40) Biru A-wa kono kurai taka-i
Building A-TOP this kurai taka-NPST
'Building A is about this tall.' → Building A is tall.

[15]Similarly, in his 2007 paper, Hayashishita presents examples like (43) as evidence that the evaluativity cannot be attributed to *izyoo* and *kurai*. Notice the lack of evaluativity and occurrence of the optional GN, *nagasa*.
(43) John-wa 10m gurai-no (nagasa-no) turizao-o katta.
John-TOP 10m kurai-GEN length-GEN fishing.rod-ACC bought
'John bought a fishing rod that is 10m long.' (Hayashishita 2007:105(96))

4.4. Analysis of evaluativity

My inherently context-sensitive denotations of GAs account for the evaluative inference in equatives and degree questions formed with GAs. To account for the lack of such inference in corresponding constructions formed with GNs, I propose that the nominalizer *-sa* is one of the two morphemes that can bind the variable over a contextually salient degree accompanying a GA, the other being the standard marker *yori* (see Section 3.3). Recall the denotation of the GA *taka-* 'tall' (47), repeated from (28).

(47) a. $[\![$ taka- 'tall' $]\!]^{g,w} = \lambda d'.\ \lambda d.\ \lambda x.\ \text{TALL}(x)(w) \geq d > d'$

b. $[\![\ d_{d,3}\ ]\!]^{g,w} = g(3)$

Izyoo and *kurai* have the denotations in (48) and (49), respectively. Use of the MAX operator for the standard of comparison but not the associate is to capture the asymmetry that evaluativity is only presupposed for the former (Kubota 2012).

(48) $[\![izyoo]\!]^{g,w} = \lambda x.\ \lambda P_{det}.\ \lambda y.\ \lambda d.\ P(d)(y)=1\ \&\ d \geq \text{MAX}[\lambda d'.P(d')(x)=1]$

(49) $[\![kurai]\!]^{g,w} = \lambda x.\ \lambda Q_{det}.\ \lambda y.\ \lambda d.\ Q(d)(y)=1\ \&\ d \approx \text{MAX}[\lambda d'.Q(d')(x)=1]$

The denotation of the adjectival equative in (38a), repeated in (50a), is derived as in (50), where existential closure over degrees takes place as the last step.[16]

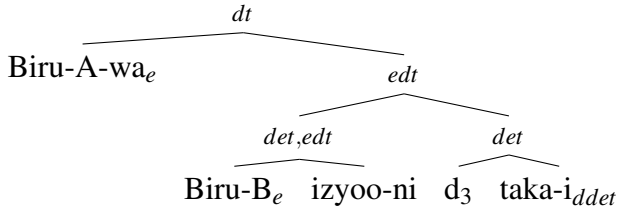
(50) a. Biru A-wa Biru B izyoo-ni taka-i
Building A-TOP Building B izyoo-DAT taka-NPST

'Building A is as tall as Building B.' → Building A and B are tall.

b. $[\![$Biru B izyoo-ni$]\!]^{g,w} = \lambda P_{det}.\ \lambda y.\ \lambda d.\ P(d)(y)=1\ \&\ d \geq \text{MAX}[\lambda d'.P(d')($Building B$)=1]$

c. $[\![$Biru B izyoo-ni d_3 taka-i$]\!]^{g,w} = \lambda y.\ \lambda d.\ \text{TALL}(y)(w) \geq d > g(3)\ \&\ d \geq \text{MAX}[\lambda d'.$ $\text{TALL}($Building B$)(w) \geq d' > g(3)]$

d. $[\![$Building A-wa Biru Bo izyoo-ni d_3 taka-i$]\!]^{g,w} = 1$ iff $\exists d.\ \text{TALL}($Building A$)(w) \geq d > g(3)\ \&\ d \geq \text{MAX}[\lambda d'.\text{TALL}($Building B$)(w) \geq d' > g(3)]$

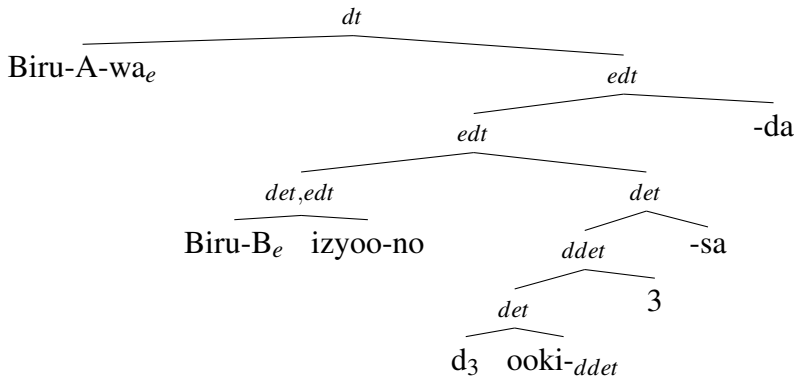


In contrast, the nominal equative in (44) is not evaluative because the nominalizer *-sa* (51) binds the degree variable accompanying the GA and plugs in the absolute zero degree.

(51) $[\![$-sa$]\!]^{g,w} = \lambda P_{ddet}.\ \lambda d.\ \lambda x.\ P(0)(d)(x)=1$

(52) $[\![(44)]\!]^{g,w} = 1$ iff $\exists d.\ \text{TALL}($Building A$)(w) \geq d > 0\ \&\ d \geq \text{MAX}[\lambda d'.\text{TALL}($Building B$)(w) \geq d' > 0]$

[16]The reason for not existially closing the degree argument in the denotations of *izyoo* and *kurai* is that, it seems that the degree argument of *x izyoo/kurai no Adj-sa* is sometimes manipulated further (see (56) in Section 4.5).



4.5. Evaluativity with GNs

There are two cases in which constructions with GNs are evaluative. One case is when the GN is a negative member of an antonym pair, as in the equative in (53). It may be that markedness competition with the positive counterpart is responsible for evaluativity of this type (Rett 2014). I leave open the question of how antonymity should be modelled in my framework.

(53) Hana-wa Taro kurai-no chiisa-sa-da
Hana-TOP Taro kurai-GEN small-N-COP
'Hana is about as short as Taro.'→ Taro and Hanako are short.

The other instance of evaluativity in GN constructions involves the verbal ending *ar-u*. Watanabe (2013) observes that in (54), the *ar-u* ending is evaluative (54b), while the *de-ar-u* ending is neutral (54a). He analyzes the syntactic structures of the two constructions as in (55), where the sole semantic difference is that there is *pos* in (54b) but not in (54a).

(54) a. Kono biru-wa taka-sa-ga 20m de-ar-u.
this building-TOP tall-N-NOM 20m de-ar-NPST
'This building is 20m tall.' (adapted from Watanabe 2013:281(51))

b. Kono biru-wa taka-sa-ga 20m ar-u.
this building-TOP tall-N-NOM 20m ar-NPST
'This building is 20m tall.' → The building is tall.
(adapted from Watanabe 2013:281(50))

(55) a. (54a) [TP [vP [PredP [DP ...]Pred de]v ar]T u]

b. (54b) [TP [vP [PredP [DegP ... Deg pos]Pred ∅]v ar]T u]
(based on Watanabe 2013:274(31)(32),282(55))

These constructions bear similarities to the GN constructions discussed in Section 4.3. In fact, the *-da* ending in (44-45), which I glossed as a copula, is a contraction of *de-ar-u* (Nakayama 1998 cited in Nishiyama 1999; Urushibara 1994), and it can be replaced by *ar-u*, giving rise to evaluativity (56 building on 44).

(56) Biru A-wa Biru B izyoo-no taka-sa-ga ar-u
Building A-TOP Building B izyoo-GEN big-N-NOM ar-NPST
'Building A is as tall as Building B.'→ Building A is tall.

This raises a question of whether (56) involves *pos* as well. However, there are reasons to

believe that the source of evaluativity in (54b) and (56) is not *pos*. First, there is a semantic difference between (54a) and (54b) other than evaluativity. The former has the 'exactly 20m' reading, and the latter has the 'greater than 20m' reading; if the building is 30m tall, the former is false, but the latter is true. Second, Watanabe (2013) argues that *pos* can only specify a vague standard, which predicts that evaluativity should always be felt in *ar-u* constructions. However, evaluativity is not felt in *MP ar-u* constructions analogous to (54b) if there is a precise and salient degree (57); a contrastive topic marker *-wa* is attached to the MP (58); or a standard phrase is added (59), suggesting that the standards of *ar-u* constructions are not always vague.

(57) *Context: You have to be at least 120cm to ride the roller coaster.*
Hana-wa shinchoo-ga 125cm ar-u kara no-rer-u
Hana-TOP height-NOM 125cm ar-NPST because ride-can-NPST
'Hana is 125cm tall, so she can ride (the roller coaster).' $\nrightarrow$ Hana is tall.

(58) Hana-wa chiisa-i. Shinchoo-ga 120cm-wa ar-u kedo 130cm-wa
Hana-TOP small-NPST height-NOM 120cm-TOP ar-NPST but 130cm-TOP
na-i
NEG-NPST
'Hana is short. Her height is greater than 120cm but less than 130cm.' $\nrightarrow$ Hana is tall.

(59) Kono biru-wa ano biru yori taka-sa-ga ar-u
this building-TOP that building yori tall-N-NOM ar-NPST
'This building is taller than that building.' $\nrightarrow$ 'This building' is tall.
(based on Watanabe 2013:292(85a))[17]

It may be that the verbal element *ar-* is not the same between *ar-u* (54b) and *de ar-u* (54a), as *ar-* is highly homophonous, also being a main verb meaning 'to exist' and a resulatative marker (Martin 2003). If that is the case, one possibility is that *ar-* in *ar-u* contributes evaluativity by taking a covert degree variable similar to the one accompanying GAs and adds to the predicate it combines with the reading that the relevant degree exceeds the degree picked out by the variable. Using the variable instead of *pos* allows it to pick a salient degree other than the vague contextual standard (57, 58) (see Section 5.1) and to be bound by *yori* (59), just like the variable accompanying a GA in regular comparatives (see Section 3.3).

5. Remaining issues and implications

5.1. Flexible nature of context sensitivity

Before concluding, this section elaborates on remaining issues and implications. One question that my analysis raises concerns the nature of the free degree variable accompanying GAs. In order to characterize context sensitivity of GAs as the unified source of both obligatory differential MP interpretations and evaluativity of equatives and degree questions, it is crucial that this free variable picks out 'contextually salient' degrees of slightly different nature in the two cases. For differential MP interpretations, it picks out a precise degree that has been made salient, linguistically or non-linguistically. For evaluativity, the variable picks out a vague contextual standard of the kind picked out by the *pos* morpheme in English (Cresswell 1976; von Stechow 1984; Kennedy and McNally 2005), such as the presumed average degree of

[17] Watanabe (2013) presents a version with a differential MP and marks it as '?'. Without the MP, the version in (59) seems perfectly fine, which suffices for my purpose of illustrating non-vague standards in *ar-u* constructions.

entities that are the same kind as the associate. An implicit assumption in my account is that the latter option is the default. This accounts for the evaluativity inferences in equatives and degree questions, as well as positive forms without MPs.

Deviation from this default is usually (though not always; see (65)) triggered by an overt element. For example, as argued in Section 3.3, when there is an MP, the need for MIN(D) to be defined rules out the vague contextual standard as the value of the free variable. Another construction in which empirical facts require similar non-default assignment is a *hoo* comparative (Matsui and Kubota 2012) without an overt standard. As Matsui and Kubota (2012) point out, *hoo* comparatives differ from regular comparatives in that they are uttered most naturally as an answer to a *which* question (60). While Matsui and Kubota (2012) focus on cases with an overt standard marked with *yori*, (60) is perfectly felicitous without one, and its interpretation is non-evaluative just like regular comparatives.

(60) *Context: "Which is taller, Building A or B?"*
Biru A-no-hoo-ga (Biru B yori) taka-i
Building A-GEN-hoo-NOM (Building B yori) tall-NPST
'Building A is taller (than Building B).' (based on Matsui and Kubota 2012:(15a,16a))

Following Matsui and Kubota (2012)'s analysis of *hoo* (62) as adding a presupposition that the cardinality of comparison class C that x belongs to is two, my analysis predicts the denotation of (60) without the *yori* phrase in (64), assuming that in the absence of an MP, a covert existential operator (63) undergoes QR.[18]

(62) $[\![\text{hoo}_C]\!]^{g,w} = \lambda \text{x: x} \in \text{C \& |C|=2. x}$ (Matsui and Kubota 2012:7(17))

(63) $[\![\exists]\!]^{g,w} = \lambda \text{D}_{dt}. \exists \text{d[D(d)=1]}$

(64) $[\![$ (60) without the *yori* phrase $]\!]^{g,w} = 1$ iff $\exists$d[TALL(Building A)(w) $\geq$ d $>$ g(3)]
defined iff Building A $\in$ C & |C|=2

In order to not derive evaluativity, the degree assigned to the free variable g(3) must be a salient degree that Building A exceeds but Building B doesn't; the most plausible candidate is the height of Building B. If my account is on the right track, there may be a principle for when the assignment deviates from the default and picks out a salient degree other than the contextual standard.

To be clear, this issue is not specific to my account, and it is quite likely that the empirical picture requires this flexibility. Kubota (2011) explicitly remarks on this issue in his account of differential MP interpretations in Japanese. He uses the function stnd, which takes the denotation of a GA and returns a salient degree along the relevant dimension, in both his denotation of *pos* in positive constructions and the denotation of δ, which appears with MPs (see Section 3.2.2). Therefore, stnd must be able to return a vague contextual standard in the former and a precise, salient degree in the latter. Kubota (2011) remarks that this is the right approach to

[18] While this is somewhat ad-hoc, it is in line with Rett's (2007; 2008; 2014) argument that the two contributions of *pos*, namely existential closure over degrees and evaluativity, should be separated. An overt MP is licensed in the same position as well (61).
(61) Biru A-no-hoo-ga (Biru B yori) 50cm taka-i
Building A-GEN-hoo-NOM (Building B yori) 50cm tall-NPST
'Building A is 50cm taller (than Building B).'

Japanese because it seems that stnd can pick out a precise degree in positive constructions as well (65). In (65), the output of stnd, or in my account, the value assigned to the free degree variable, is 10m, not e.g., the presumed average length of wires.

(65) *Context: A needs a wire that is exactly 10m for making a high-precision antenna. B hands A a wire. A measures it with a high-precision ruler, and it is 10m 2mm.*
Kore-wa naga-i-kara dame-da! (adapted from Kubota 2011:9(23))
this-TOP long-NPST-because useless-COP
'This one won't work since it's too long!' (lit. 'This one won't work since it's long!')

5.2. MP interpretations in English

Positive forms of GAs in Japanese give rise to differential interpretations when combined with an MP. This differs from positive but MP-incompatible relative GAs in English (e.g., *warm*). As Bierwisch (1989) points out for *short*, if one attempts to interpret an otherwise ungrammatical *MP Adjective* sequence, the resulting interpretation is not a differential reading but an absolute reading with an evaluativity inference. This reading is brought out in (66).

(66) *Context: How is the pool's temperature?* It's so warm. It's (about) 35 °C warm.

If GAs like *warm* have denotations analogous to GAs in Japanese (67), the reading in (66) can be derived by assuming that, unlike in Japanese, MPs in English denote a degree (68). In (68), the temperature of the pool is no less than 35 °C, which is in turn greater than the contextual standard, g(3). Unlike in Japanese, where g(3) would correspond to MIN(D) of an MP and therefore must be precise, in English, g(3) can continue to refer to the vague contextual standard, which results in evaluativity.

(67) a. $[\![\text{warm}]\!]^{g,w} = \lambda d'.\ \lambda d.\ \lambda x.\ \text{WARM}(x)(w) \geq d > d'$
b. $[\![d_{d,3}]\!]^{g,w} = g(3)$

(68) $[\![(66)]\!]^{g,w} = 1$ iff $\text{WARM}(\text{the pool})(w) \geq 35\ °C > g(3)$

If this is the right approach, then the difference in MP interpretations between Japanese GAs and positive but MP-incompatible relative GAs in English may correspond to a parametric difference in whether MPs denote generalized quantifiers over degrees (Schwarzschild 2005) or simply denote a degree. Of course, a question still remains as to why the reading in (68), which was only brought out by establishing evaluativity in the previous sentence, is not more easily available in English.

6. Conclusion

I have demonstrated that Japanese relative GAs uniformly exhibit the cross-linguistically observed link between incompatibility with absolute MPs and evaluativity, summarized in (21) (Bierwisch 1989; Winter 2005; Krasikova 2009; Sassoon 2011; Breakstone 2012; Bochnak 2013). While assuming inherently context-dependent denotations of all relative GAs in English (Breakstone 2012) wrongly predicts differential MP readings to be available for MPs occurring with positive forms of GAs in the presence of a salient precise degree, these readings are exactly the right predictions for Japanese. I proposed that both MP readings and distribution of evaluativity in Japanese are explained by inherently context-dependent denotations of all relative GAs. My proposal predicts that context dependency is the default unless the free degree variable responsible for context dependency is bound by overt lexical items, namely a

standard marker *yori* and a nominalizer *-sa*. Japanese provides a clear picture of what inherent context dependency in degreeful languages would look like, and, as I suggested in Section 5.2, provides a hint for the semantics of idiosyncratic (Schwarzschild 2005) classes of positive but MP-incompatible relative GAs in other languages.

References

Beck, S. (2012). DegP scope revisited. *Natural Language Semantics 20*, 227–272.

Beck, S., S. Krasikova, D. Fleischer, R. Gergel, S. Hofstetter, C. Savelsberg, J. Vanderelst, and E. Villalta (2009). Crosslinguistic variation in comparison constructions. *Linguistic Variation Yearbook 9*(1), 1–66.

Beck, S., T. Oda, and K. Sugisaki (2004). Parametric variation in the semantics of comparison: Japanese vs. English. *Journal of East Asian Linguistics 13*(4), 289–344.

Bierwisch, M. (1989). The semantics of gradation. In M. Bierwisch and E. Lang (Eds.), *Dimensional Adjectives*, pp. 71–261. Berlin: Springer-Verlag.

Bochnak, M. R. (2013). Scale exhaustivity and the modification condition. In *Semantics and Linguistic Theory 23*, pp. 116–135.

Bochnak, M. R., M. Bowler, E. A. Hanink, and A. Koontz-Garboden (2020). Degreefulness is the result of functional inventory, not a parameter. *Handout from Sinn und Bedeutung 25*.

Breakstone, M. Y. (2012). Inherent evaluativity. In *Sinn und Bedeutung 16*, pp. 113–126.

Cresswell, M. J. (1976). The semantics of degree. In *Montague grammar*, pp. 261–292. Elsevier.

Hayashishita, J.-R. (2007). *Izyoo (ni)-* and *gurai-* comparatives: Comparisons of deviation in Japanese. *Gengo Kenkyu 132*, 77–109.

Hayashishita, J.-R. (2009). Yori-comparatives: A reply to beck et al.(2004). *Journal of East Asian Linguistics 18*(2), 65–100.

Hayashishita, J.-R. (2017). Reconfirming *izyoo (ni)-* and *gurai-* comparatives as comparisons of deviation. *Journal of East Asian Linguistics 26*(2), 163–187.

Heim, I. (2000). Degree operators and scope. In *Semantics and Linguistic Theory 10*, pp. 40–64.

Hohaus, V. (2015). *Context and composition: How presuppositions restrict the interpretation of free variables*. Ph. D. thesis, Dissertation, Tübingen, Universität Tübingen.

Kennedy, C. and L. McNally (2005). Scale structure and the semantic typology of gradable predicates. *Language 81*(2), 1–37.

Krasikova, S. (2009). Norm-relatedness in degree constructions. In *Proceedings of Sinn und Bedeutung 13*, pp. 275–290.

Kubota, Y. (2011). Phrasal comparatives in Japanese: A measure function-based analysis. *Empirical Issues in Syntax and Semantics 8*, 267–286.

Kubota, Y. (2012). The presuppositional nature of *izyoo (-ni)* and *gurai* comparatives: a note on Hayashishita (2007). *Gengo Kenkyu 141*, 33–47.

Martin, S. E. (2003). *A reference grammar of Japanese*. University of Hawaii Press.

Matsui, A. and Y. Kubota (2012). Comparatives and contrastiveness: Semantics and pragmatics of Japanese *hoo* comparatives. In *Proceedings of formal approaches to Japanese linguistics 5*, pp. 126–139. MIT Working Papers in Linguistics Cambridge, MA.

Nishiyama, K. (1999). Adjectives and the copulas in Japanese. *Journal of East Asian Linguistics 8*(3), 183–222.

Oda, T. (2008). *Degree constructions in Japanese*. University of Connecticut.

Oda, T. (2015). Degree variables by choose degree in izyooni 'than'-clauses. In *Proceedings of the 29th Pacific Asia Conference on Language, Information and Computation*, pp. 404–412.

Oda, T. (2020). Indirectly determined comparison and difference: The case of Japanese. In *Proceedings of the 34th Pacific Asia Conference on Language, Information and Computation*, pp. 496–504.

Oshima, D. Y., K. Akita, S.-i. Sano, and S.-i. Sano (2019). Gradability, scale structure, and the division of labor between nouns and adjectives: The case of Japanese. *Glossa 4*(1).

Rett, J. (2007). Antonymy and evaluativity. In *Semantics and Linguistic Theory 17*, pp. 210–227.

Rett, J. (2008). *Degree modification in natural language*. Ph. D. thesis, Rutgers The State University of New Jersey.

Rett, J. (2014). *The semantics of evaluativity*. Oxford University Press.

Rotstein, C. and Y. Winter (2004). Total adjectives vs. partial adjectives: Scale structure and higher-order modifiers. *Natural language semantics 12*, 259–288.

Sassoon, G. W. (2011). Be positive! norm-related implications and beyond. In *Proceedings of Sinn und Bedeutung 15*, pp. 531–546.

Sawada, O. and T. Grano (2011). Scale structure, coercion, and the interpretation of measure phrases in Japanese. *Natural Language Semantics 19*(2), 191–226.

Schwarzschild, R. (2005). Measure phrases as modifiers of adjectives. *Recherches linguistiques de Vincennes* (34), 207–228.

Schwarzschild, R. (2020). From possible individuals to scalar segments. In *Interactions of degree and quantification*, pp. 231–270. Brill.

Shimoyama, J. (2012). Reassessing crosslinguistic variation in clausal comparatives. *Natural Language Semantics 20*, 83–113.

Snyder, W., K. Wexler, and D. Das (1995). The syntactic representation of degree and quantity: Perspectives from Japanese and child English. *Journal of Semantics 10*, 269–300.

Stalnaker, R. C. (1978). Assertion. In *Pragmatics*, pp. 315–332. Brill.

Sudo, Y. (2015). Hidden nominal structures in Japanese clausal comparatives. *Journal of East Asian Linguistics 24*(1), 1–51.

Svenonius, P. and C. Kennedy (2006). Northern norwegian degree questions and the syntax of measurement. *Phases of interpretation 91*, 133–161.

Urushibara, S. (1994). *Syntactic categories and extended projections in Japanese*. Ph. D. thesis, Brandeis University.

von Stechow, A. (1984). Comparing semantic theories of comparison. *Journal of semantics 3*(1-2), 1–77.

Watanabe, A. (2013). Non-neutral interpretation of adjectives under measure phrase modification. *Journal of East Asian Linguistics 22*, 261–301.

Winter, Y. (2005). Cross-categorial restrictions on measure phrase modification. *Linguistics and Philosophy 28*(2), 233–267.