Evaluativity in Japanese degree constructions

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Contents

1 Introduction

1.1 Proposal

I will argue that two existing puzzles in Japanese degree semantics can be attributed to inherent evaluativity (i.e., norm-relatedness) encoded in a covert adjectival suffix:

1. Wider distribution of evaluativity inference across degree constructions with gradable adjectives (GAs) but not corresponding gradable nominals (GNs)
2. Obligatory differential readings of measure phrases (MPs) occurring with GAs.

[0]I am grateful for discussions with and feedback by Martin Hackl, Kai von Fintel, Vera Hohaus, Yoad Winter, the audience of the *UBC Linguistics Outside the Classroom*, and the *UBC Semantics Discussion Group*.

1.2 Some existing proposals for sources of evaluativity

1.2.1 The *pos* morpheme in positive constructions

In positive ('bare') constructions (1c), the covert *pos* morpheme (1b) (Cresswell 1976; Stechow 1984) 1) existentially binds the degree argument of a GA (1a) and 2) introduces evaluativity (Rett 2007, 2008, 2014).

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

b. $[\![\text{pos}]\!] = \lambda G_{det}.\ \lambda x.\ \exists d[\text{standard}(d)(G)(C)\ \&\ G(d)(x)]$ (Kennedy and McNally 2005:350(13))

c. $[\![\text{John is pos tall}]\!] = [\![\text{pos}]\!]([\![\text{tall}]\!])(J) = 1$ iff $\exists d[\text{standard}(d)([\![\text{tall}]\!])(C)\ \&\ \text{Tall}(J) \geq d]$

1.2.2 Quantity implicature in positive constructions

Rett (2007, 2008, 2014) proposes to split the two roles of *pos*. In Rett (2014), evaluativity is an implicature that arises when the construction is otherwise trivial or equivalent to another, less marked construction.

The denotation of a positive construction without evaluativity is trivial (2a). Due to the maxim of Quantity, this denotation is strengthened with evaluativity (2b).

(2) a. $[\![\text{John is tall}]\!] = 1$ iff $\exists d[\text{Tall}(J) \geq d]$ (modelled on Rett 2014:(74))

b. $\exists d[\text{Tall}(J) \geq d\ \&\ d > \text{standard}_{tall}]$

1.2.3 Quantity + Manner implicatures in equatives and degree questions

Equatives and degree questions containing negative antonym GAs are evaluative.

(3) a. Mary is as short as John. $\rightarrow$ Mary and John are short.

b. How short is John? $\rightarrow$ John is short.

Because a comparative (4a) asymmetrically entails the 'at least' denotation of the equative (4b), the latter gets strengthened to the 'exactly' reading due to a Quantity competition (4c).

(4) a. $[\![\text{Mary is shorter than John}]\!] = 1$ iff $\textsc{max}[\lambda d.\ \text{Short}(M) \geq d] > \textsc{max}[\lambda d'.\ \text{Short}(J) \geq d']$

b. $[\![\text{Mary is as short as John}]\!] = 1$ iff $\textsc{max}[\lambda d.\ \text{Short}(M) \geq d] \geq \textsc{max}[\lambda d'.\ \text{Short}(J) \geq d']$

c. $\textsc{max}[\lambda d.\ \text{Short}(M) \geq d] = \textsc{max}[\lambda d'.\ \text{Short}(J) \geq d']$

The 'exact' readings of equatives with the positive and negative members of an antonym pair are identical (5).

(5) a. Mary is as short as John.
$\textsc{max}[\lambda d.\ \text{Short}(M) \geq d] = \textsc{max}[\lambda d'.\ \text{Short}(J) \geq d']$

b. Mary is as tall as John.
$\textsc{max}[\lambda d.\ \text{Tall}(M) \geq d] = \textsc{max}[\lambda d'.\ \text{Tall}(J) \geq d']$

The equative with the negative antonym GA, being marked wrt the positive counterpart, receives evaluativity as a Manner implicature (6).[1]

(6) Mary is as short as John.
$\textsc{max}[\lambda d.\ \text{Short}(M) \geq d\ \&\ d > \text{standard}_{short}] = \textsc{max}[\lambda d'.\ \text{Short}(J) \geq d'\ \&\ d' > \text{standard}_{short}]$

[1]This section is not an exhaustive list. Other sources of evaluativity include vague predicates (e.g., Krasikova (2009) on Russian, Bochnak (2015) on Washo; cf. Deal and Hohaus 2019 on Nez Perce); inherently evaluative adjective denotations (Breakstone 2012); relative zero and scale non-exhaustivity (Sassoon 2011; Bochnak 2013), and partial (lower-closed) GAs (Rett 2007, 2008, 2014).

2 Wider distribution of evaluativity in Japanese

2.1 Equatives, degree questions, and degree demonstratives with GAs

Equative-like[2] constructions involving a GA and a particle *izyoo* ('$\geq$') (7) or *kurai* ('$\approx$') (8) are always evaluative in Japanese (Hayashishita 2007, 2017; Kubota 2012; Oda 2015).

(7) Hana-wa Taro izyoo-ni ooki-i
Hana-TOP Taro izyoo-COP big-NPST
'Hana is as tall as Taro.' $\rightarrow$ Taro and Hana are tall.

(8) Hana-wa Taro kurai ooki-i
Hana-TOP Taro kurai big-NPST
'Hana is about as tall as Taro.' $\rightarrow$ Taro and Hana are tall.

Degree questions involving *kurai* are also evaluative (9).

(9) Hana-wa dono kurai ooki-i no?
Hana-TOP which kurai big-NPST Q
'How tall is Hana?' $\rightarrow$ Hana is tall.

Same pattern with degree demonstratives involving *kurai* (10).

(10) Hana-wa kono kurai ooki-i
Hana-TOP this kurai ooki-NPST
'Hana is about this tall.' $\rightarrow$ Hana is tall.

2.2 Previous analyses

Hayashishita (2007, 2017): Evaluativity is encoded in a covert *pos* morpheme.

Unlike *pos* in English (Stechow 1984; Kennedy and McNally 2005), Hayashishita's *pos* morpheme is inherently differential (11a).

(11) a. $[\![pos]\!] = \lambda d_2.\lambda G_{det}.\lambda x.\exists\, d_1[\text{standard}(d_1)(d_2)(G)(C) \wedge G(d_1)(x)]$
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))

b. $[\![izyoo(ni)]\!]\ \lambda G_{dt}.\lambda Q_{dt}.\ \text{MAX}(Q) > \text{MAX}(G)$ (Hayashishita 2007:98(70a))

c. $[\![(7)]\!] = [\![[\text{Op}_2 \text{ Taro-ga } t_2 \text{ pos ookii izyoo-ni}][\text{Op}_1 \text{ Hana-wa pos ookii}]]\!] = \text{MAX}(\lambda d_2.\exists d_1[\text{standard}(d_1)(d_2)([\![\text{ooki}]\!])(C)\ \&\ [\![\text{ooki}]\!](d_1)(\text{Hana})]) > \text{MAX}(\lambda d_2.\exists d_1[\text{standard}(d_1)(d_2)([\![\text{ooki}]\!])(C)\ \&\ [\![\text{ooki}]\!](d_1)(\text{Taro})])$[3]

Kubota (2011): Evaluativity is encoded in *izyooni* and *kurai*.

Kubota points out that evaluativity is only presupposed for the standard and not the associate (see Appendix for the data). He encodes this asymmetry in the denotations of *izyooni* and *kurai*.[4]

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

2.3 Equatives, degree questions, and degree demonstratives with GNs

Evaluativity inference is absent in equatives (13, 14), degree question (15), and degree demonstratives (16) with morphologically related gradable nominals (GNs).

(13) Hana-wa Taro kurai-no ooki-sa-da
Hana-TOP Taro kurai-COP big-N-COP
'Hana is about as tall as Taro.' $\nrightarrow$ Taro is tall.

(14) Hana-wa Taro izyoo-no ooki-sa-da
Hana-TOP Taro izyoo-COP big-N-COP
'Hana is as tall as Taro.' $\nrightarrow$ Taro is tall.

[2] *Izyoo* equatives do not have an 'exactly' reading because, as I demonstrate, being inherently evaluative, it is not subject to a Quantity competition with a comparative, which is non-evaluative.

[3] Hayashishita (2007, 2017) maintains a clausal analysis of the complement of *izyoo* and *kurai* in sentences like (7)-(8), while Kubota (2012) proposes a phrasal analysis. Indeed, the complements of these morphemes can be overtly clausal, and the GA can be different from that of the matrix clause (Hayashishita 2007, 2017). I remain agnostic about whether a superficially phrasal complement of *izyoo* and *kurai* should also receive a clausal analysis. Although I provide a phrasal analysis below, my ideas can be captured in a clausal analysis as well.

[4] Hayashishita (2017) maintains his differential *pos* morpheme (11a) but include a presupposition in the denotation of *izyooni* and *kurai* that the output of MAX(G) is positive for the standard, assuming that it could be negative for the associate.

(15) Hana-wa dono kurai-no ooki-sa-na-no?
Hana-TOP which kurai-GEN big-N-COP-Q
'How tall is Hana?' $\nrightarrow$ Hana is tall.

(16) Hana-wa kono kurai-no ooki-sa-da
Hana-TOP this kurai-GEN big-N-COP
'Hana is this tall.' $\nrightarrow$ Hana is tall.

In fact, in his 2007 paper, Hayashishita argues that the evaluativity inference cannot be encoded in *izyoo* and *kurai* because of the lack of evaluativity in (17a, 17b). Note the optional GNs.

(17) a. John-wa 5kg izyoo-no (omosa-no) sakana-o turiageta.
John-TOP 5kg izyoo-GEN weight-GEN fish-ACC pulled-up
'John fished a fish that weighs more than 5kg.'

b. 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))

2.4 Analysis

2.4.1 Equatives with GAs and GNs

I propose to 1) decompose GAs and GNs into a root and an adjectival and nominal suffix, respectively (see e.g., Koontz-Garboden and Francez 2010; Menon and Pancheva 2014; Francez and Koontz-Garboden 2015, 2017; Hanink et al. 2019; Hanink and Koontz-Garboden 2020 on property concept roots), and 2) encode evaluativity in the adjectival suffix.

The covert adjectival suffix (19) takes a root and adds evaluativity. The nominal suffix *-sa* (20) is semantically vacuous.

(18) $[\![\sqrt{ooki}\text{ 'big'}]\!]^{g,i,C}$=$\lambda$d. λx. Big(d)(x)(w)=1

(19) $[\![\text{-}\varnothing_{Adj}]\!]^{g,i,C}$=$\lambda$G$_{det}$. λd. λx. G(d)(x)=1 & d $\geq$ STANDARD(G)

(20) $[\![\text{-}sa_N]\!]^{g,i,C}$=$\lambda$G$_{det}$. λd. λx. G(d)(x)=1 (semantically vacuous)

The denotations of *izyoo* (21) and *kurai* (22) include existential closure over degrees for the associate and the MAX operator for the standard.

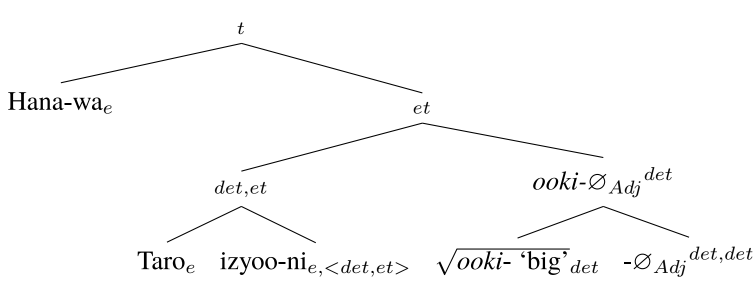
(21) $[\![izyoo]\!]^{g,i,C}$= λx. λQ$_{det}$. λy. $\exists$d[Q(d)(y)=1 & d $\geq$ MAX[λd$'$.Q(d$'$)(x)=1]]

(22) $[\![kurai]\!]^{g,i,C}$= λx. λQ$_{det}$. λy. $\exists$d[Q(d)(y)=1 & d $\approx$ MAX[λd$'$.Q(d$'$)(x)=1]]

The denotation of (7), repeated in (23a), is in (23b) (See Appendix for the full derivation).

(23) a. Hana-wa Taro izyoo-ni ooki-i
Hana-TOP Taro izyoo-DAT ooki-NPST
'Hana is as tall as Taro.' $\rightarrow$ Taro and Hanako are tall.

b. $[\![$Hana-wa Taroo izyoo-ni $\sqrt{ooki}$ 'big'-$\varnothing_{Adj}]\!]^{g,i,C}$
= 1 iff $\exists$d[Big(d)(Hana)(w)=1 & d > STANDARD($[\![\sqrt{ooki}\text{ 'big'}]\!]^{g,i,C}$) & d$\geq$MAX[$\lambda$d$'$.Big(d$'$)(Taro)(w)=1 & d$'$ > STANDARD($[\![\sqrt{ooki}\text{ 'big'}]\!]^{g,i,C}$)]]



The denotation of the nominal equative (14), repeated in (24), is identical to (23b) except for the lack of reference to the standard (25).

(24) Hana-wa Taro izyoo-no ooki-sa-da
Hana-TOP Taro izyoo-GEN big-N-COP
'Hana is as tall as Taro.' $\nrightarrow$ Taro is tall.

(25) $[\![(24)]\!]^{g,i,C}$
= $[\![$Hana-wa Taroo izyoo-no $\sqrt{ooki}$ 'big'-sa$_N$-da$]\!]^{g,i,C}$
= 1 iff $\exists$d[Big(d)(Hana)(w)=1 & d $\geq$ MAX[λd$'$.Big(d$'$)(Taro)(w)=1]]

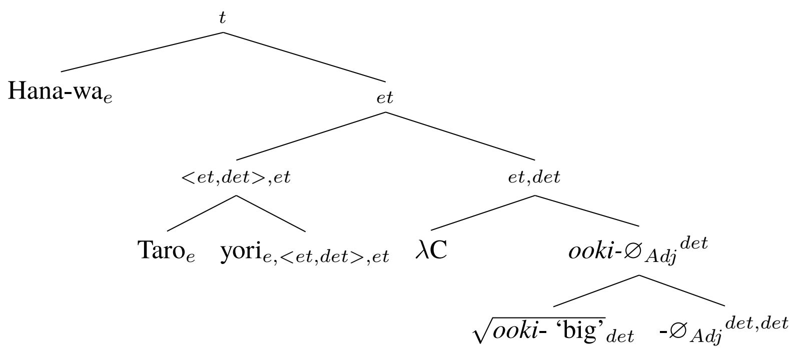
2.4.2 What about comparatives?

(26) Hana-wa Taro yori ooki-i
Hana-TOP Taro yori big-NPST
'Hana is taller than Taro.'

In my analysis of comparatives (26), the standard-marking postposition *yori* (27) replaces the comparison class C with a singleton set containing its first argument. For concreteness, I assume that a lambda binder over the comparison class is inserted to resolve a type mismatch (28).

(27) $[\![\text{yori}]\!]^{g,i,C}$ = λx. $\lambda Q_{et,det}$. λy. $\exists$d[Q({x})(d)(y)=1]

(28) $[\![(26)]\!]^{g,i,C}$ = 1 iff $\exists$d[Big(d)(Hana)(w)=1 & d > STANDARD($[\![\sqrt{\textit{ooki}}\text{ `big'}]\!]^{g,i,\{Taro\}}$)]



3 MP interpretation

3.1 On absolute and differential readings

Japanese GAs uniformly disallow absolute interpretations of measure phrases (MPs) (29) (Snyder et al. 1995; Beck et al. 2004; Oda 2008). This pattern is shared with e.g., Russian (Krasikova 2009) and Spanish (Bosque 1999 cited in Schwarzschild 2005).

(29) #Kono biru-wa 15m taka-i
this building-TOP 15m tall-NPST
intended: 'This building is 15m tall.'

However, if there is a salient degree to serve as the standard, *MP Adj* receives a differential interpretation (30).

(30) Ano biru-no taka-sa-wa 30m-da-kara kono biru-wa 15m taka-i
that building-GEN tall-N-TOP 30m-COP-because this building-TOP 15m tall-NPST
'That building is 30m tall, so this building is 15m taller.' (i.e., this building is 45m tall.)

Kubota (2011) and Sawada and Grano (2011) point out that absolute readings are available with minimum-standard GAs.

(31) Kono poster-wa 10° katamui-te-i-ru
this poster-TOP 10° tilt-te-i-NPST
'This poster is 10° tilted.'

3.2 Previous analyses and the need for abstraction over degrees

Kubota (2011) and Sawada and Grano (2011)

- Comparatives (with an overt or covert standard) are derived minimum-standard predicates.
- MPs only combine with minimum-standard predicates.
- GAs denote measure functions of type <e,d> (Kennedy and Levin 2008).
- MPs denote degrees (type d).

Problem with the <e,d> analysis of GAs:
There are indications that Japanese has abstraction over degrees (e.g., Shimoyama 2012; Sudo 2015; cf. Beck et al. 2009). For example, some modals exhibit scope ambiguity with differential comparatives (32) (Sudo 2015; Heim 2000 on English). This is challenging for the measure function analysis of GAs.

(32) Ronbun-wa shitagaki yori tyoodo 5 peeji nagai hitsuyoo-ga aru
paper-TOP draft than exactly 5 page long need-NOM exist
'That paper needs to be exactly 5 pages longer than the draft.' (adapted from Sudo 2015:45(109))
✓"exact" reading
✓"minimum" reading

3.3 Analysis

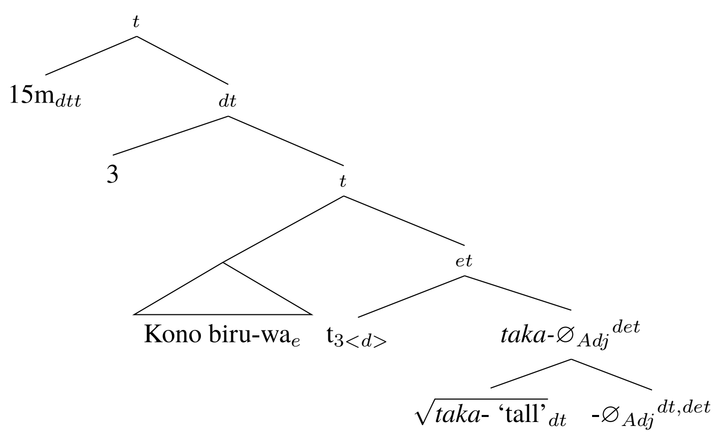
My inherently evaluative adjective denotations also account for the obligatory differential readings of MPs. I take MPs to denote 'predicates of gaps' of type <dt,t> (33) (Schwarzschild 2005, 2020). An MP is base-generated as a sister of a GA but QR-ed due to type mismatch.

(33) $[\![15\text{m}]\!]=\lambda D_{dt}.\ \textsc{meter}(|D|)=15$
where $|D| = \textsc{max}(D) - \textsc{min}(D)$

Denotation for the second clause of (30) (repeated in (34a)) is in (34b) (See Appendix for the derivaiton).

(34) a. ... kono biru-wa 15m taka-i
... this building-TOP 15m tall-NPST
'... this building is 15m taller.' (i.e., this building is 45m tall.)

b. $[\![(30)]\!] = [\![15\text{m } 3 \text{ Kono biru-wa } t_3 \sqrt{taka} \text{ 'tall'-}\varnothing_{Adj}]\!]^{g,i,C}$
$= 1$ iff $\textsc{meter}(|\lambda d.\ \text{Tall}(d)(\text{this building})(w)=1 \ \&\ d > \textsc{standard}([\![\sqrt{taka} \text{ 'tall'}]\!]^{g,i,C})|)=15$



The scope readings of (32) depend on the landing site of the MP with respect to the modal (cf. Breakstone et al. 2011 on English).

(35) Scope ambiguity in (32)

a. $\forall$ > MP 'exact' reading
$[\![[\text{tyoodo 5 peeji}]\ \big[3 \text{ Ronbun-wa } t_3 \sqrt{naga} \text{ 'long'-}\varnothing_{Adj}\big] \text{ hitsuyoo-ga ar-u}]\!]^{g,i,C}$
$= 1$ iff $\forall w'[w' \in \textsc{deon}(w) \rightarrow \textsc{page}(|\lambda d.\ \text{Long}(d)(\text{the paper})(w')=1\ \&$
$d > \textsc{standard}([\![\sqrt{naga} \text{ 'long'}]\!]^{g,i',\{draft\}})|)=5]$

b. MP > $\forall$ 'minimum' reading
$[\![[\text{tyoodo 5 peeji}]\ \big[3 \text{ Ronbun-wa } t_3 \sqrt{naga} \text{ 'long'-}\varnothing_{Adj} \text{hitsuyoo-ga ar-u}\big]\ ]\!]^{g,i,C}$
$= 1$ iff $\textsc{page}(|\lambda d.\ \forall w'[w' \in \textsc{deon}(w) \rightarrow \text{Long}(d)(\text{the paper})(w')=1\ \&$
$d > \textsc{standard}([\![\sqrt{naga} \text{ 'long'}]\!]^{g,i',\{draft\}})]|)=5$

3.4 No minimum-standard GAs in Japanese

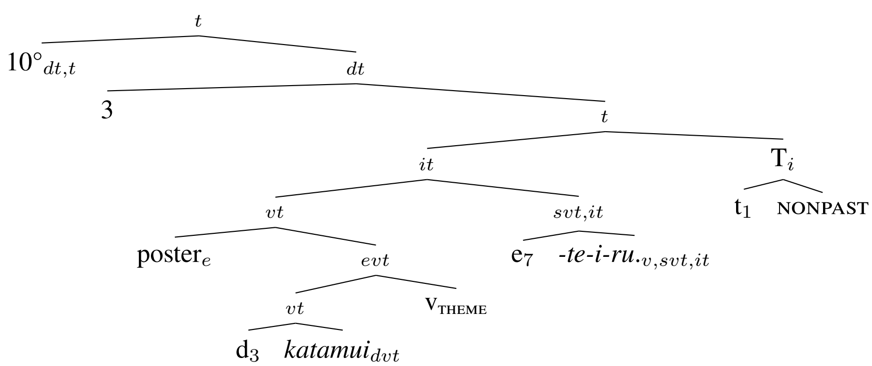
What Kubota (2011) and Sawada and Grano (2011) treat as minimum-standard GAs all have the form of Verb + *-te i-ru*.[5] In eventuality-based degree semantics (Wellwood 2015, 2019), Verb + *-te i-ru* receives a straightforward compositional account (37) informed by the existing analyses of *-te-i-ru* as an aspectual marker (36) (Ogihara 1998; Kaufmann and Kaufmann 2018). See Appendix for the full derivation.

(36) $[\![\textit{-te-i}]\!]^{g,i,C}$ = $\lambda e_v.\ \lambda G_{svt}.\ \lambda t''.\ \exists e',i'[i' \in \textsc{meta}_{<w,t''>}\ \&\ e' \supset\subset e\ \&\ [G(w')(e' \bigoplus e)=1 \vee G(w')(e')=1 \&\ \textsc{result}(e')=e]\ \&\ t'' \subseteq \tau(e)]$
(building on Ogihara (1998) and Kaufmann and Kaufmann (2018))

(37) a. Kono poster-wa 10° katamui-te-i-ru
this poster-TOP 10° tilt-te-i-NPST
'This poster is 10° tilted.'

b. $[\![$katamui 'tilt'$]\!]^{g,i,C}$ = $\lambda d.\ \lambda e_v.\ \textsc{tilt}(e)(w)=1\ \&\ \mu(e) \geq d$

c. $[\![(31)]\!]$=$[\![$10° 3 poster d_3 katamui 'tilt' $\textsc{th}_{theme}$ e_7 -te-i t_1 NONPAST$]\!]^{g,i,C}$ = 1 iff $\textsc{degree}(|\lambda d.\ \exists e',i'[i' \in \textsc{meta}_{<w,g(1)>}\ \&\ e' \supset\subset g(7)\ \&\ [\textsc{tilt}(e' \bigoplus g(7))(w')=1\ \&\ \textsc{theme}(e' \bigoplus g(7))=\text{poster}\ \&\ \mu(e' \bigoplus g(7)) \geq d] \vee [\textsc{tilt}(e')(w')=1\ \&\ \textsc{theme}(e')=\text{poster}\ \&\ \mu(e') \geq d\ \&\ \textsc{result}(e')=g(7)]\ \&\ g(1) \subseteq \tau(g(7))]|)=10$
defined if $t \leq g(1)$



4 Implication: Two paths to evaluativity in Japanese

Unlike positive GNs (13 repeated as 38), negative GNs do give rise to evaluativity in equatives (39) and degree questions.

(38) Hana-wa Taro kurai-no ooki-sa-da
Hana-TOP Taro kurai-GEN big-N-COP
'Hana is about as tall as Taro.'$\nrightarrow$ Taro is tall.

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

This requires an account involving a Markedness competition (Rett 2014): due to semantic identity, the marked form, (39), gets evaluativity.

(40) a. $[\![(38)]\!]^{g,i,C}$ = 1 iff $\exists d[\text{Big}(d)(\text{Hana})(w)=1\ \&\ d \approx \textsc{max}[\lambda d'.\text{Big}(d')(\text{Taro})(w)=1]]$

b. $[\![(39)]\!]^{g,i,C}$ = 1 iff $\exists d[\text{Small}(d)(\text{Hana})(w)=1\ \&\ d \approx \textsc{max}[\lambda d'.\text{Small}(d')(\text{Taro})(w)=1]]$

c. (39) with evaluativity
$\exists d[\text{Small}(d)(\text{Hana})(w)=1\ \&\ d > \textsc{standard}([\![\sqrt{\textit{chiisa}}\text{ 'small'}]\!]^{g,i,C}\ \&\ d \approx \textsc{max}[\lambda d'.\text{Small}(d')(\text{Taro})(w)=1\ \&\ d'$
$> \textsc{standard}([\![\sqrt{\textit{chiisa}}\text{ 'small'}]\!]^{g,i,C}]]$

[5]In *-te-i-ru*, *-te* is a sentence-final particle, *-i-* is a light verb stem, and *-ru* is a non-past tense (Kaufmann 2020:404(fn.25)). Authors differ in whether they assign one denotation to *-tei-* as a whole (e.g., Kiyota 2008; Kaufmann and Kaufmann 2018) or provide a compositional account treating them as two morphemes (e.g., Ogihara 1998). While I follow Ogihara's compositional analysis, since *-te* is semantically vacuous under the relevant readings (i.e., resultatives) in his analysis, I treat the sequence as if it is a single morpheme.

Open question: The Markedness account wouldn't work for *izyoo* constructions. The positive (41) and negative (42) forms can't be semantically identical (43) because they are not strengthened to the 'exactly' reading.

(41) Hana-wa Taro izyoo-no ooki-sa-da
Hana-TOP Taro izyoo-GEN big-N-COP
'Hana is as tall as Taro.' $\nrightarrow$ Taro is tall.

(42) Hana-wa Taro izyoo-no chiisa-sa-da
Hana-TOP Taro izyoo-GEN small-N-COP
'Hana is as short as Taro.' $\rightarrow$ Taro and Hanako are short.

(43) a. $[\![(41)]\!]^{g,i,C}$ = 1 iff $\exists$d[Big(d)(Hana)(w)=1 & d $\geq$ MAX[λd$'$.Big(d$'$)(Taro)(w)=1]]

b. $[\![(42)]\!]^{g,i,C}$ = 1 iff $\exists$d[Small(d)(Hana)(w)=1 & d $\geq$ MAX[λd$'$.Small(d$'$)(Taro)(w)=1]]

One indication of the lack of the 'exactly' reading is in (44).

(44) *Hana-wa **chyoodo** Taro izyoo-no ooki-sa-da
Hana-TOP **exactly** Taro izyoo-GEN big-N-COP
intended: 'Hana is exactly as tall as Taro.'

5 Conclusion

- Japanese instantiates the long-observed correlation between evaluativity and (absolute) MP incompatibility (Bierwisch 1989; Winter 2005; Krasikova 2009; Sassoon 2011; Breakstone 2012; Bochnak 2013) at the level of the grammatical category of adjectives.
- Encoding evaluativity in the adjectival suffix accounts for 1) evaluativity of equatives, degree questions, and degree demonstratives with GAs; 2) lack of such evaluativity with morphologically related GNs; and 3) obligatory differential MP readings with GAs.
- My account does not require reference to scale structure (cf. Sawada and Grano 2011; Kubota 2011).
- The obligatory differential reading of *MP Adj* requires an analysis distinct from languages in which this sequence is ungrammatical (see Krasikova 2009 on Russian).
- Evaluativity inferences of GAs and negative GNs require distinct analyses (cf. Sassoon 2011; Bochnak 2013 on positive but MP-incompatible GAs (*heavy, fast*) and negative GAs (*short*) in English).

6 Appendix

Evaluativity presupposed for the standard

(45) a. Context: John is short. Mary is tall.

John-ga Mary {izyoo-ni, kurai} ookik-ereba, tenjoo-ni todoi-ta daroo
John-NOM Mary izyoo-GEN kurai big-COND ceiling-DAT reach-PAST should
'If John was (about) as tall as Mary, he would have been able to reach the ceiling.'

b. Context: John is tall. Mary is short.

#John-ga Mary {izyoo-ni, kurai} ookik-ereba, tenjoo-ni atama-o butsuke-naka-tta daroo
John-NOM Mary izyoo-GEN kurai big-COND ceiling-DAT head-ACC hit-NEG-PAST should
'If John was (about) as tall as Mary, he wouldn't have bumped his head into the ceiling.'

(Modelled on Kubota (2012):37-8(8))

Derivation for (7)/(23a)

(46) a. Hana-wa Taro izyoo-ni ooki-i
Hana-TOP Taro izyoo-GEN ooki-NPST
'Hana is equally tall as or taller than Taro.' $\rightarrow$ Taro is tall.

b. Suffixation of -$\varnothing_{Adj}$
$[\![\sqrt{ooki}\text{ 'big'-}\varnothing_{Adj}]\!]^{g,i,C}$
$= \lambda d.\ \lambda x.\ \text{Big}(d)(x)(w)=1\ \&\ d > \textsc{standard}([\![\sqrt{ooki}\text{ 'big'}]\!]^{g,i,C})$

c. *izyoo-ni* phrase
$[\![\text{Taroo izyoo-ni}]\!]^{g,i,C}$
$= \lambda Q_{det}.\lambda x.\ \exists d[Q(d)(x)=1\ \&\ d \geq \textsc{max}[\lambda d'.Q(d')(\text{Taro})=1]]$

d. Combining the adjective with the *izyoo-ni* phrase
$[\![\text{Taroo izyoo-ni } \sqrt{ooki}\text{ 'big'-}\varnothing_{Adj}]\!]^{g,i,C}$
$= \lambda x.\ \exists d[\text{Big}(d)(x)(w)=1\ \&\ d > \textsc{standard}([\![\sqrt{ooki}\text{ 'big'}]\!]^{g,i,C})\ \&\ d \geq \textsc{max}[\lambda d'.\text{Big}(d')(\text{Taro})(w)=1\ \&\ d' > \textsc{standard}([\![\sqrt{ooki}\text{ 'big'}]\!]^{g,i,C})]]$

e. Adding the subject
$[\![\text{Hana-wa Taroo izyoo-ni } \sqrt{ooki}\text{ 'big'-}\varnothing_{Adj}]\!]^{g,i,C}$
$= 1 \text{ iff } \exists d[\text{Big}(d)(\text{Hana})(w)=1\ \&\ d > \textsc{standard}([\![\sqrt{ooki}\text{ 'big'}]\!]^{g,i,C})\ \&\ d \geq \textsc{max}[\lambda d'.\text{Big}(d')(\text{Taro})(w)=1\ \&\ d' > \textsc{standard}([\![\sqrt{ooki}\text{ 'big'}]\!]^{g,i,C})]]$

Derivation for (26)

(47) a. Hana-wa Taro yori ooki-i
Hana-TOP Taro yori big-NPST
'Hana is taller than Taro.'

b. $[\![\text{Taro yori}]\!]^{g,i,C} = \lambda Q_{et,det}.\ \lambda y.\ \exists d[Q(\{\text{Taro}\})(d)(y)=1]$

c. $[\![\text{Taro yori } \lambda C\ \sqrt{ooki}\text{ 'big'-}\varnothing_{Adj}]\!]^{g,i,C}$
$= \lambda Q_{et,det}.\ \lambda y.\ \exists d[Q(\{\text{Taro}\})(d)(y)=1\ (\lambda C.[\![\sqrt{ooki}\text{ 'big'-}\varnothing_{Adj}]\!]^{g,i,C})$
$= \lambda y.\ \exists d[\text{Big}(d)(y)(w)=1\ \&\ d > \textsc{standard}([\![\sqrt{ooki}\text{ 'big'}]\!]^{g,i,\{Taro\}})]$

d. $[\![(26)]\!]^{g,i,C} = 1 \text{ iff } \exists d[\text{Big}(d)(\text{Hana})(w)=1\ \&\ d > \textsc{standard}([\![\sqrt{ooki}\text{ 'big'}]\!]^{g,i,\{Taro\}})]$

Derivation for (30)

(48) a. ... kono biru-wa 15m taka-i
... this building-TOP 15m tall-NPST
'That building is 30m tall, so this building is 15m taller.' (i.e., this building is 45m tall.)

b. Suffixation
$[\![\sqrt{taka}\text{ 'tall'-}\varnothing_{Adj}]\!]^{g,i,C}$
$= \lambda d.\ \lambda x.\ \text{Big}(d)(x)(w)=1\ \&\ d > \textsc{standard}([\![\sqrt{taka}\text{ 'tall'}]\!]^{g,i,C})$

c. Taking the trace as an argument
$[\![\ t_3\ \sqrt{taka}\text{ 'tall'-}\varnothing_{Adj}\ ]\!]^{g,i,C}$
$= \lambda x.\ \text{Big}(g(3))(x)(w)=1\ \&\ g(3) > \textsc{standard}([\![\sqrt{taka}\text{ 'tall'}]\!]^{g,i,C})$

d. Adding the subject
$[\![$Kono biru-wa v_{TH} t_3 $\sqrt{taka}$ 'tall'-$\varnothing_{Adj}$ $]\!]^{g,i,C}$
= 1 iff Big(g(3))(this building)(w)=1 & g(3) > STANDARD($[\![\sqrt{taka}$ 'tall'$]\!]^{g,i,C}$)

e. Lambda abstraction over degrees
$[\![$3 Kono biru-wa v_{TH} t_3 $\sqrt{taka}$ 'tall'-$\varnothing_{Adj}]\!]^{g,i,C}$
= λd. Big(d)(this building)(w)=1 & d > STANDARD($[\![\sqrt{taka}$ 'tall'$]\!]^{g,i,C}$)

f. Combining with the QR-ed MP
$[\![$(30)$]\!]$ = $[\![$15m 3 Kono biru-wa t_3 $\sqrt{taka}$ 'tall'-$\varnothing_{Adj}]\!]^{g,i,C}$
= 1 iff METER(|λd. Big(d)(this building)(w)=1 & d > STANDARD($[\![\sqrt{taka}$ 'tall'$]\!]^{g,i,C}$)|)=15

Derivation for (31)

(49) a. Kono poster-wa 10° katamui-te-i-ru
this poster-TOP 10° tilt-te-i-NPST
'This poster is 10° tilted.'

b. $[\![$*-te-i*$]\!]^{g,i,C}$ = λe_v. λG_{svt}. $\lambda t''$. $\exists$e',i'[i' $\in$ META$_{<w,t''>}$ & e'$\supset\subset$e & [G(w')(e'$\bigoplus$e)=1 $\vee$ G(w')(e')=1& RESULT(e')=e] & t'' $\subseteq$ τ(e)]
(building on Ogihara (1998) and Kaufmann and Kaufmann (2018))

c. $[\![$katamui 'tilt'$]\!]^{g,i,C}$ = λd. λe_v. TILT(e)(w)=1 & μ(e) $\geq$ d

d. $[\![$*10°*$]\!]$ = λD_{dt}. DEGREE(|D|)=10

e. $[\![$NONPST$]\!]^{g,i,C}$ = λt: $t_i \leq$ t. t

f. Taking the trace as an argument
$[\![d_3$ katamui 'tilt'$]\!]^{g,i,C}$ = λe_v. TILT(e)(w)=1 & μ(e) $\geq$ g(3)

g. Event identification (Kratzer 1996)
$[\![$ d_3 katamui 'tilt' $\text{TH}_{theme}]\!]^{g,i,C}$ = λx. λe_v. TILT(e)(w)=1 & THEME(e)=x & μ(e) $\geq$ g(3)

h. Taking the subject
$[\![$poster d_3 katamui 'tilt' $\text{TH}_{theme}]\!]^{g,i,C}$ = λe_v. TILT(e)(w)=1 & THEME(e)=poster & μ(e) $\geq$ g(3)

i. *-te-i* taking an eventuality variable
$[\![e_7$ -te-i$]\!]^{g,i,C}$ = λG_{svt}. $\lambda t''$. $\exists$e',i'[i' $\in$ META$_{<w,t''>}$ & e'$\supset\subset$g(7) & [G(w')(e'$\bigoplus$g(7))=1 $\vee$ G(w')(e')=1& RESULT(e')=g(7)] & t'' $\subseteq$ τ(g(7))]

j. Combining the vP and Asp through Intensional Functon Application
$[\![$poster d_3 katamui 'tilt' TH_{theme} e_7 -te-i$]\!]^{g,i,C}$ = $\lambda t''$. $\exists$e',i'[i' $\in$ META$_{<w,t''>}$ & e'$\supset\subset$g(7) & [TILT(e'$\bigoplus$g(7))(w')=1 & THEME(e'$\bigoplus$g(7))=poster & μ(e'$\bigoplus$g(7)) $\geq$ g(3)] $\vee$ [TILT(e')((w'))=1 & THEME(e')=poster & μ(e') $\geq$ g(3)& RESULT(e')=g(7)] & t'' $\subseteq$ τ(g(7))]

k. Adding the tense
$[\![$poster d_3 katamui 'tilt' TH_{theme} e_7 -te-i t_1 NONPAST$]\!]^{g,i,C}$ = 1 iff $\exists$e',i'[i' $\in$ META$_{<w,g(1)>}$ & e'$\supset\subset$g(7) & [TILT(e'$\bigoplus$g(7))(w')=1 & THEME(e'$\bigoplus$g(7))=poster & μ(e'$\bigoplus$g(7)) $\geq$ g(3)] $\vee$ [TILT(e')((w'))=1 & THEME(e')=poster & μ(e') $\geq$ g(3)& RESULT(e')=g(7)] & g(1) $\subseteq$ τ(g(7))] defined if t $\leq$ g(1)

l. Abstraction over degrees
$[\![$3 poster d_3 katamui 'tilt' TH_{theme} e_7 -te-i t_1 NONPAST$]\!]^{g,i,C}$ = λd. $\exists$e',i'[i' $\in$ META$_{<w,g(1)>}$ & e'$\supset\subset$g(7) & [TILT(e'$\bigoplus$g(7))(w')=1 & THEME(e'$\bigoplus$g(7))=poster & μ(e'$\bigoplus$g(7)) $\geq$ d] $\vee$ [TILT(e')((w'))=1 & THEME(e')=poster & μ(e') $\geq$ d & RESULT(e')=g(7)] & g(1) $\subseteq$ τ(g(7))] defined if t $\leq$ g(1)

m. Adding the QR-ed MP
$[\![$10° 3 poster d_3 katamui 'tilt' TH_{theme} e_7 -te-i t_1 NONPAST$]\!]^{g,i,C}$ = 1 iff DEGREE(|λd. $\exists$e',i'[i' $\in$ META$_{<w,g(1)>}$ & e'$\supset\subset$g(7) & [TILT(e'$\bigoplus$g(7))(w')=1 & THEME(e'$\bigoplus$g(7))=poster & μ(e'$\bigoplus$g(7)) $\geq$ d] $\vee$ [TILT(e')((w'))=1 & THEME(e')=poster & μ(e') $\geq$ d & RESULT(e')=g(7)] & g(1) $\subseteq$ τ(g(7))]|)=10
defined if t $\leq$ g(1)

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