






# Equative *hodo* and the Polarity Effects of Existential Semantics

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**Abstract.** This paper investigates the semantics and pragmatics of the Japanese equative marker *hodo*, which has the interesting property that it patterns as a negative polarity item on some but not all of its uses. We argue that the distributional patterns characterizing *hodo* derive from its weak existential semantics, which result in a trivial meaning in certain configurations. We further propose a pragmatic account of the presuppositional effects found with *hodo*, and discuss potential extensions to other data in Japanese and beyond. Overall, our findings add to other recent work demonstrating that the presence or absence of maximality represents an important dimension of cross-linguistic variation in the semantics of equative constructions.

**Keywords:** Equatives · Polarity effects · *hodo* · Existential semantics

## 1 Introduction

Cross-linguistic variation in the semantics of equative constructions has been the subject of considerable recent interest (see e.g. [2, 14, 15, 18]). Points of discussion have included the form of equative constructions in different languages, the use of the same equative marker to form scalar and non-scalar equatives, and the (im)possibility of negation in the standard clause.

We contribute to this body of research with an investigation of the Japanese equative marker *hodo*. What is interesting about *hodo* is that it exhibits a broader distribution than better-studied equative markers in languages such as English. In some of these uses, but not others, it is polarity sensitive, a pattern that has not to our knowledge been previously observed.

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We propose an analysis of *hodo* according to which it does not express a relation between two maximal degrees, but instead has weak existential semantics. Polarity-based restrictions then arise as a result of triviality of meaning in certain configurations. We demonstrate that the analysis can be refined to account for prepositional effects in *hodo* sentences, and also extend the investigation to related data in Japanese and beyond.

## 2 Data

### 2.1 Polarity Sensitivity of *hodo*

The examples in (1a)–(1b) illustrate a use of *hodo* that corresponds to English ‘*as ... as*’, where (1a) features a phrasal standard and (1b) a clausal standard. Here *hodo* appears to be a negative polarity item, being grammatical in the negative sentences but not their positive counterparts. In the positive sentences, *hodo* must be replaced with another equative marker, *kurai*, per (2a)–(2b).

- (1) a. *Taro-wa Jiro-hodo se-ga \*takai/takaku-nai.*  
 Taro-TOP Jiro-hodo height-NOM tall/tall-NEG  
 ‘Taro \*is/is not as tall as Jiro.’
- b. *Taro-wa Jiro-ga nonda-hodo biiru-o \*nonda/noma-nakat-ta.*  
 Taro-TOP Jiro-NOM drank-hodo beer-ACC drank/drink-NEG-past  
 ‘Taro \*drank/didn’t drink as much beer as Jiro did.’
- (2) a. *Taro-wa Jiro-kurai se-ga takai.*  
 Taro-TOP Jiro-kurai height-NOM tall  
 ‘Taro is as tall as Jiro.’
- b. *Taro-wa Jiro-ga nonda-kurai (takusan) biiru-o nonda.*  
 Taro-TOP Jiro-NOM drank-kurai (much) beer-ACC drank  
 ‘Taro drank as much beer as Jiro did.’

In this, *hodo* differs from equative markers such as English *as*, which is not polarity sensitive (e.g. *Taro is / isn’t as tall as Jiro*).

*Hodo*, however, is not a negative polarity item in a standard sense. The clausal complement of *hodo* may include negation, in which case the matrix predicate has to be affirmative, as shown in (3). The sentence yields a comparative interpretation.

- (3) *Taro-wa [Jiro-ga noma-nakat-ta-hodo] (takusan) biiru-o*  
 Taro-TOP [Jiro-NOM drink-NEG-Past-hodo] (much) beer-ACC  
*nonda/\*noma-nakat-ta.*  
 drank/drink-NEG-Past  
 (Lit.) ‘Taro drank as much beer as Jiro didn’t drink.’  
 ‘Taro drank more beer than Jiro did.’

Another case that differs from *hodo* in (1a)–(1b) is a context where a phrasal *hodo* is embedded in a relative clause and the whole sentence yields a superlative interpretation. *Hodo* in this context requires negation in the matrix predicate.

- (4) *Taro-wa* [*Jiro-hodo se-ga takai hito*]-*o mita-koto-ga*  
 Taro-TOP [Jiro-hodo height-NOM tall person]-ACC saw-fact-NOM  
 \**aru/nai*.  
 be/NEG  
 ‘Taro has \*seen/never seen a person as tall as Jiro.’

The example in (5), however, illustrates a distinct use of *hodo*, which corresponds more closely to English ‘*so...that*’. On this use, it is not polarity sensitive, being acceptable in positive as well as negative sentences.

- (5) *Taro-wa basukettooboru senshu-ni nar-eru-hodo se-ga*  
 Taro-TOP basketball player-to become-can-hodo height-NOM  
*takai/takaku-nai*.  
 tall/tall-NEG  
 ‘Taro is/is not so tall that he could become a basketball player.’

Thus *hodo* is quite unlike ‘ordinary’ polarity items, but instead displays an interesting and variable pattern of polarity sensitivity.

## 2.2 Additional Effects

Sentences with *hodo* exhibit additional presuppositional effects (cf. [3, 5, 10] on similar patterns with equative *kurai* and comparative *izyoo(-ni)*). Specifically, ‘*as’-hodo* sentences introduce standard-oriented presuppositions on both the standard of comparison and the subject. In an example such as (1a), the standard – here, Jiro – must count as a clear case of ‘tall’; this explains why a *hodo* comparison to 209 cm tall Giant Baba is felicitous, whereas comparison to 145 cm tall Ikeno Medaka is odd:

- (6) *Taro-wa Giant Baba/#Ikeno Medaka-hodo se-ga takaku-nai*.  
 Taro-TOP Giant Baba/Ikeno Medaka-hodo height-NOM tall-NEG  
 ‘Taro is not as tall as Giant Baba/#Ikeno Medaka.’

Likewise, the subject – here Taro – must also count as ‘tall’: (1a) conveys that Taro is tall but not as tall as Jiro, and would be infelicitous if Taro’s being tall were not already part of the common ground.

In the case of ‘*so’-hodo*, there is similarly a presupposition on the standard of comparison; thus (5) would be odd if ‘basketball player’ were replaced with ‘jockey’. But there is no presupposition on the subject; (5) could be felicitously uttered in a context where nothing was known about Taro’s height.

Hayashishita [3,5] takes the similar effect on *kurai* and comparative marker *izyoo-(ni)* as lexically encoded comparison of deviation. These markers are claimed to encode differences between a contextually given standard and the degrees to which the subject/the standard reaches. The effect becomes conspicuous in a highly unlikely context where Taro's height and his 3 year old son's height are compared. In (7a), only *izyoo-ni* has a reasonable reading because the comparison is made between how far Taro's height is away from the average height of adults and how far his son is away from the average height of 3-year-olds. The use of *yoru* here strikes us as odd, because of our common knowledge that a father should be taller than his 3-year-old son. If we apply this context to *hodo*, the result is that it resists it, as in (7b).

- (7) a. *Taro-wa san-sai-no musuko-izyoo-ni/#yoru se-ga hikui.*  
 Taro-TOP 3-year.old-GEN son-izyoo-ni/yori height-NOM short  
 (Lit.) 'Taro is shorter than his 3 year old son.'
- b. *#Taro-wa san-sai-no musuko-hodo se-ga takaku-nai.*  
 Taro-TOP 3-year.old-GEN son-hodo height-NOM tall-NEG  
 '#Taro isn't as tall as his 3 year old son.'

This suggests that *hodo* is not a *izyoo-ni* cousin with respect to a comparison of deviation analysis.

### 3 Explaining Variable Polarity Sensitivity

Standard degree-based semantic analyses treat equative markers as degree quantifiers that introduce a maximality operator, as in the following analysis of a simple English case (see e.g. [1] and references therein):

- (8) Taro is as tall as Jiro.  
 $\max\{d : \text{Taro is } d\text{-tall}\} \geq \max\{d : \text{Jiro is } d\text{-tall}\}$

However, on the basis of differences in the behavior of equative constructions in English and Slovenian, Crnič & Fox [2] argue that maximality is not an inherent component of the semantics of the equative. Rather, they propose, equative semantics derive from the presence of separate existential and maximality operators, the latter of which is optional in some languages (in particular Slovenian), but is inserted when needed to avoid a trivial meaning.

The crucial data are the following: Both English *as . . . as* and Slovenian *tako . . . kot* can be used with a positive clausal standard, per (9). Both are analyzed as involving a maximality operator over the set of degrees introduced by the standard clause.

- (9) a. John drove as fast [as Mary did].  
 b. *Janez se je peljal tako hitro [kot se je Marija].*  
 Janez self aux drive dem fast than self aux Mary  
 ‘John drove as fast as Mary did.’

By contrast, the English example is bad with negation in the standard clause. Surprisingly, though, its Slovenian counterpart remains acceptable. The proposed explanation is that in English, maximality is obligatory; but in (10a), maximization fails (there is no maximum degree  $d$  such that Mary didn’t drive  $d$  fast). In Slovenian, however, maximality may be optionally omitted, allowing (10b) to surface.

- (10) a. \*John drove as fast [as Mary didn’t].  
 b. *Janez se je peljal tako hitro [kot se Marija ni].*  
 Janez self aux drive dem fast than self Mary neg.aux  
 ‘John drove as fast as Mary didn’t.’

As further support, the authors observe that the presence of a multiplicative modifier (as in *twice as fast*) requires maximality in the standard clause; when such a modifier is present in Slovenian, a negated standard clause is likewise ungrammatical.

We propose that Japanese *hodo* instantiates a third possibility: whereas maximality is mandatory in English and optional in Slovenian, our claim is that *hodo* never introduces maximality, but instead necessarily has weak existential semantics. Polarity-based distributional restrictions then result from triviality.

Formally, we assume that gradable predicates such as *se-ga takai* ‘tall’ relate individuals to degrees (as in [6]), and are monotonic, meaning that if Taro 180 cm tall, he is 170 cm tall, 160 cm tall, etc.:

$$(11) \llbracket \textit{se-ga takai} \rrbracket = \lambda d \lambda x. \mu_{\textit{HEIGHT}}(x) \geq d$$

We then propose the following lexical entry for *hodo*, on which it takes as arguments a set of degrees  $D$ , a gradable predicate  $P$ , and an individual  $x$ , and introduces a variable over degrees  $d^*$  which is constrained to be an element of  $D$ , and which is subsequently existentially bound, per (12):

$$(12) \llbracket \textit{hodo} \rrbracket = \lambda D_{(dt)} \lambda P_{(d,et)} \lambda x. P(d^*)(x), \text{ where } d^* \in D$$

We apply this first to ‘*as*’-*hodo*, i.e. the use of *hodo* on which it may be paraphrased by English equative *as ... as*. In (13) we give the constituency of the ungrammatical positive version of (1a).

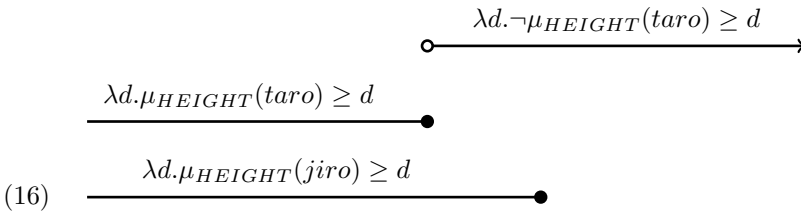
- (13) Taro-wa [[Jiro-hodo] se-ga takai]  
 Intended: ‘Taro is as tall as Jiro.’

Here the first argument of *hodo* is provided by the proper name *Jiro*. On the surface this is not of the right semantic type, being of type *e*, whereas *hodo* requires an argument of type  $\langle dt \rangle$ . We propose that the type mismatch might be resolved in one of two ways. As one option, we might follow the approach of Hayashishita [4] for *yoru* in taking the standard to be contextually determined on the basis of the complement of *hodo*, as shown in (14a). Alternately, we might take the standard in (13) to be covertly clausal (see again [1] and references therein for discussion), including an elided copy of the gradable predicate and null operator movement, as in (14b). For concreteness we assume the latter approach, though nothing crucial depends on this.

- (14) a.  $f(\llbracket jiro \rrbracket) = \lambda d. \mu_{HEIGHT}(jiro) \geq d$
- b.  $\llbracket Op_i jiro t_i se-ga takai \rrbracket = \lambda d_i. \mu_{HEIGHT}(jiro) \geq d_i$

The following then presents the full derivation for (13). After existential closure over the variable  $d^*$ , the meaning we derive is that there is **some** degree of height that Jiro has that Taro also has. But with the monotonic semantics for *se-ga takai* ‘tall’ in (11), this meaning is entirely trivial: as illustrated in (16), there will always be some degree of height that the two individuals share. We take this to be the source of ungrammaticality.

- (15) a.  $\llbracket jiro-hodo se-ga takai \rrbracket = \lambda x. \mu_{HEIGHT}(x) \geq d^*$ ,  
      where  $\mu_{HEIGHT}(jiro) \geq d^*$
- b.  $\llbracket taro-wa jiro-hodo se-ga takai \rrbracket = \mu_{HEIGHT}(taro) \geq d^*$   
      After existential closure:  
       $\exists d^* : \mu_{HEIGHT}(jiro) \geq d^* [\mu_{HEIGHT}(taro) \geq d^*]$



In (17) and (18) we present the corresponding constituent structure and semantic interpretation for the negative version of (1a).

- (17) Taro-wa  $\llbracket Jiro-hodo \rrbracket$  se-ga takaku-nai  
      ‘Taro isn’t as tall as Jiro.’
- (18)  $\llbracket taro-wa jiro-hodo se-ga takaku-nai \rrbracket$   
      =  $\exists d^* : \mu_{HEIGHT}(jiro) \geq d^* [\neg \mu_{HEIGHT}(taro) \geq d^*]$

Referring back to the illustration in (16), the effect of negation in the matrix clause is to invert the set of degrees it introduces. The sentence thus expresses

a relation between an upper-bounded set of degrees (the set of Jiro’s heights) and a lower-bounded one (the set of heights that Taro doesn’t have). In this configuration, an ‘*as*’-*hodo* sentence is not trivial: (18) says that there is some degree of height that Jiro has that Taro **doesn’t** have, i.e. that Taro is shorter than Jiro.

Observe that in (18), existential closure takes scope over the negation operator introduced in the matrix clause. We assume that the opposite scope relationship is also in principle possible, but is blocked on account of triviality, being the negation of the trivially true (15b).

The analysis developed here also extends to clausal examples such as (1b), with a similar choice regarding how to derive a first argument of the right semantic type for *hodo*. It can also capture more complex examples such as (4), where *hodo* occurs in a relative clause: *hodo* composes in situ as shown in (20) and the composition proceeds as usual, with existential closure coming in at the end to bind the degree variable  $d^*$ . This yields the interpretation in (21), which states that there is some degree of height that Jiro has such that Taro has not seen a person of that height.

- (19) Taro-wa [Jiro-hodo se-ga takai hito]-o mita-koto-ga nai.  
 ‘Taro has never seen a person as tall as Jiro.’

- (20) a.  $\llbracket \text{Jiro-hodo se-ga takai} \rrbracket = \lambda x. \mu_{\text{HEIGHT}}(x) \geq d^*$ ,  
 where  $\mu_{\text{HEIGHT}}(\text{jiro}) \geq d^*$   
 b.  $\llbracket \text{Jiro-hodo se-ga takai hito-o} \rrbracket = \lambda x. \text{person}(x) \wedge \mu_{\text{HEIGHT}}(x) \geq d^*$ ,  
 where  $\mu_{\text{HEIGHT}}(\text{jiro}) \geq d^*$

- (21)  $\llbracket (19) \rrbracket = \exists d^* : \mu_{\text{HEIGHT}}(\text{jiro}) \geq d^* [\neg \exists x [\text{person}(x) \wedge \mu_{\text{HEIGHT}}(x) \geq d^* \wedge \text{saw}(\text{taro}, x)]]$

A possible objection to this analysis of ‘*as*’-*hodo* comes from the construction in which an external negation licenses *hodo*:<sup>1</sup>

- (22) [Taro-ga Jiro-hodo se-ga takai to-iu-koto ]-wa nai.  
 [Taro-NOM Jiro-hodo height-NOM tall COMP-say-fact]-TOP NEG  
 ‘It is not the case that Taro is as tall as Jiro.’

In (22), if the negation takes scope over the clause, the predicted interpretation would be trivial:

- (23)  $\neg \exists d^* : \mu_{\text{HEIGHT}}(\text{jiro}) \geq d^* [\mu_{\text{HEIGHT}}(\text{taro}) \geq d^*]$

We claim that (22) does not give us a blow, because we assume that the existential semantics comes from existential closure and (22) is analyzed on a par with (4): *hodo* is composed in situ and negation comes next and existential

<sup>1</sup> We thank J.R. Hayashishita for pointing this out.

closure is applied at the end to take scope over negation, which results in a non-trivial interpretation. The licensing of *hodo* thus exhibits a peculiar behavior, because a usual NPI, such as *nidoto* has to obey the clause-mate condition, as shown in (24).

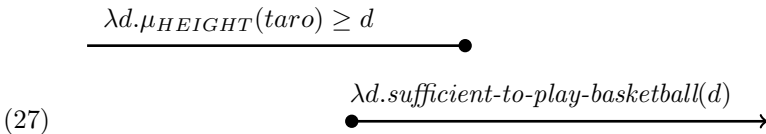
- (24) \**[Taro-ga nidoto kuru to-iu-koto]-wa nai.*  
 [Taro-NOM again come COMP-say-fact]-TOP NEG  
 ‘It is not the case that Taro comes again.’

Finally, we derive a prediction. Negation in the matrix clause had the effect of reversing the set of degrees it introduces, creating a configuration on which the resulting meaning is non-trivial. We then predict a parallel effect when negation is present in a clausal standard, such that it (rather than the matrix clause) introduces a lower-bounded set of degrees. This prediction is borne out, as illustrated by the previously discussed (3), which demonstrates that in the case of a negated clausal standard for *hodo*, it is the positive sentence that is grammatical, while the negated one is ill-formed.

We turn now to ‘*so*’-*hodo*, that is, the use of *hodo* on which it would be paraphrased with English *so . . . that*. Here, we draw on Meier’s [13] analysis of *so . . . that*, according to which the clausal complement of ‘*so*’-*hodo* is covertly modalized, with the set of degrees derived as the standard of comparison being those degrees that are sufficient for the referenced state of affairs to obtain. In (5), whose structure is given in (25), the modalized proposition is as in (26a), and the corresponding set of degrees is the set of heights that would be sufficient for one to be a basketball player, per (26b). Importantly, this set is lower bounded, as illustrated in (27); e.g., if the minimum height to play basketball is 2 m, the relevant set of degrees is  $\{d : d \geq 2m\}$ .

- (25) Taro-wa [[basukettobooru senshu-ni nar-eru-hodo] se-ga takai]  
 ‘Taro is tall enough to become a basketball player.’

- (26) a. PRO is  $d$  tall in  $w \rightarrow$  PRO can $_{w,h}$  become a basketball player in  $w$   
 b.  $\lambda d. \textit{sufficient-to-play-basketball}(d)$



On this basis we derive the following as the interpretation for (25):



(28)  $\exists d^* : \text{sufficient-to-play-basketball}(d^*)[\mu_{\text{HEIGHT}}(\text{taro}) \geq d^*]$

Crucially, (28) is not trivial but rather expresses the contingent proposition that Taro has some degree of height that would be sufficient for him to be a basketball player. In contrast to the case with ‘*as*’-*hodo* in a positive context, the sentence is therefore felicitous.

A ‘*so*’-*hodo* sentence can be felicitously negated, as in (29). Here in contrast to the case of negated ‘*as*’-*hodo* we take existential quantification to scope under negation, as in (30a). Just as before we assume that the opposite scope (30b) is also in principle possible, but here would result in a trivial meaning (trivially true, since assuming that Taro has finite height there will necessarily be some degree of height that he doesn’t have that would be sufficient to be a basketball player).

(29) Taro-wa [[basukettobooru senshu-ni nar-eru-hodo] se-ga takaku-nai]  
 ‘Taro isn’t tall enough to become a basketball player.’

(30) a.  $\neg \exists d^* : \text{sufficient-to-play-basketball}(d^*)[\mu_{\text{HEIGHT}}(\text{taro}) \geq d^*]$  ✓  
 b.  $\exists d^* : \text{sufficient-to-play-basketball}(d^*)[\neg \mu_{\text{HEIGHT}}(\text{taro}) \geq d^*]$  ✗

To summarize this section, the variable polarity sensitivity of *hodo* on its ‘*as*’ versus ‘*so*’ uses can be related to difference between a standard that is an upper-bounded set of degrees and one that is an lower-bounded set.

## 4 Explaining Presuppositional Effects

As discussed in Sect. 2.2, *hodo* sentences exhibit additional presuppositional effects, which are similar but not identical to those observed for other Japanese comparative markers such as *izyoo(-ni)*. To briefly recap the relevant pattern, negated ‘*as*’-*hodo* introduces norm-oriented presuppositions on both the subject and the standard of comparison. By contrast, ‘*so*’-*hodo* has a presupposition on the standard but not on the subject.

One possibility to account for these patterns would be to posit a lexical presupposition as a part of the semantics of *hodo* itself, along the lines proposed by Kubota [10] for *izyoo(-ni)* and *kurai* constructions. However, the lexical approach predicts that this presuppositional effect is not cancelled out in any context. We argue that this prediction is not borne out.

*Hodo* may be appended by contrastive topic marker *wa* or concessive marker *mo* ‘even’. As argued by Sawada [16], these markers may reverse the effects that comparative markers may have. In (31a), the standard is understood to be ‘tall’, while in (31b), the complement of *hodo* should be short.

- (31) a. *Taro-wa Giant Baba/#Ikeno Medaka-hodo-wa se-ga*  
 Taro-TOP Giant Baba/Ikeno Medaka-hodo-CT height-NOM  
*takaku-nai.*  
 tall-NEG
- b. *Taro-wa #Giant Baba/Ikeno Medaka-hodo-mo se-ga*  
 Taro-TOP Giant Baba/Ikeno Medaka-hodo-even height-NOM  
*takaku-nai.*  
 tall-NEG

If the lexical approach were on the right track, (31b) would be judged unnatural, because the effect of concessive *mo* and the alleged presupposition of *hodo* contradict. We thus will not take the lexical presupposition approach.

We also do not see an obvious way that Hayashishita's analysis of *izyoo-(ni)* in terms of comparison of deviation could be extended to *hodo*, given the differences in behavior between the two documented in Sect. 2.2.

We propose instead that a more parsimonious account of the presuppositions of *hodo* can be achieved by deriving them pragmatically. In this, we follow an approach developed by Simons [17] and Leffels et al. [12], according to which presupposition-like interpretive patterns are analyzed as manner implicatures relative to simpler alternatives. By way of example, Leffels and colleagues derive the implication (or presupposition) of *John was not very late* that John was late as an implicature that the simpler *not late* does not obtain.

With regards to *hodo* specifically, we take these patterns to arise as the consequence of competition with the structurally simpler form obtained by deleting the *hodo* constituent (cf. Katzir [7] on structurally defined alternatives). Here we observe a parallel to the account proposed for interpretive effects in 'compared to' constructions proposed by Sawada [16], which similarly relies on principles of economy.<sup>2</sup>

Following current practice, we analyze the unmodified form of gradable adjectives as involving a null 'positive' morpheme *pos*, which introduces a contextually determined threshold  $\theta_c$ , as in (32); this yields (33) as the semantics of the simpler alternatives to the '*as*'-*hodo* sentences in (13)/(17).

$$(32) \llbracket pos \rrbracket = \lambda P_{\langle d,et \rangle} \lambda x. P(\theta_c)(x)$$

- (33) a. *Taro-wa se-ga takai / takaku-nai.*  
 Taro-TOP height-NOM tall / tall-NEG  
 'Taro is / isn't tall'
- b.  $\mu_{HEIGHT}(taro) \geq \theta_c / \neg \mu_{HEIGHT}(taro) \geq \theta_c$

Consider the grammatical negative example in (18). If Jiro did not have some degree of height that is greater than the contextually determined standard  $\theta_c$ ,

<sup>2</sup> We thank a LENLS reviewer for bringing this parallel to our attention.

there would be no reason to describe an individual as *Jiro-hodo se-ga takaku-nai* ‘not Jiro-hodo tall’, since in that case it would be possible to use the simpler *se-ga takaku-nai* ‘not tall’. Similarly, if Taro’s height were not at least  $\theta_c$ , he could likewise be described simply as *se-ga takaku-nai* ‘not tall’, without the need to invoke Jiro’s height. Thus ‘*as*’-*hodo* sentences require a context of utterance in which it is established that both the complement of *hodo* and the subject have a measure that exceeds the contextual standard introduced by *pos*.

A similar explanation can be applied to the standard of comparison in ‘*so*’-*hodo* sentences: (25) is felicitous because ‘basketball player’ introduces a higher standard than simply ‘pos tall’; if this were not the case, the simpler positive form could have been used instead. But since the *hodo* sentence in this case produces a more informative assertion about the subject (Taro) than its simpler alternative, it is not blocked by the latter; there are therefore no presupposition-like effects with respect to the subject.

We further note that our account might be refined by construing the degrees over which *hodo* quantifies not simply as degrees, but more specifically as possible thresholds  $\theta_c$  for the positive form of *se-ga takai* ‘tall’. On this view, (18) states that there is some possible threshold for tall according to which Jiro counts as tall but Taro does not; (25), that there is a threshold of tallness at or above which one can play basketball and Taro has at least that height. This would be to say that *hodo* sentences are a variety of positive construction. Such a view would be consistent with the observation that *hodo* cannot be used to express so-called crisp judgments (see [8]): (18) would be infelicitous if Jiro were only a few millimeters taller than Taro, but instead requires there to be a significant difference in height between the two. We also note a connection to Klein’s [9] theory of comparatives, according to which *Taro is taller than Jiro* is analyzed essentially as expressing ‘there is some way of construing *tall* such that Taro is tall and Jiro is not tall’. The difference in the present case is that to say that ‘there is some way of construing *tall* such that both Taro and Jiro are tall’ is trivially true, resulting in ill-formedness.

## 5 Extensions

In the preceding two sections, we have shown that the equative marker *hodo* can receive a unified analysis that covers both its ‘*as*’ and ‘*so*’ uses. We see potential to extend this account also to other uses of *hodo*, and potentially to other lexical items in Japanese and beyond.

To start, observe that *hodo* has a use on which it composes with a numerical expression to produce an approximative interpretation, per (34). The present analysis of *hodo* might be extended to such data by taking the numerical expression (here, *50-nin*) to supply a set of degrees that saturates the first argument position of *hodo*. This might be achieved by taking the interpretation of the numerical expression to be coerced to that of its pragmatic halo (see [11]). The resulting interpretation is that in (35).

- (34) *50-nin hodo-no hito-ga paatii-ni kita.*  
 50-CL hodo-GEN people-NOM party-to came  
 ‘About 50 people came to the party.’

- (35)  $\exists d^* \in HALO(50) \exists x [people(x) \wedge came-to-party(x) \wedge |x| = d^*]$

Although the compositional implementation remains to be worked out in detail, and may require a slightly different lexical entry for *hodo*, the core elements of the analyses of its *as* and *so* uses are retained.

Looking more broadly, it is interesting to consider whether aspects of the present analysis of *hodo* might be extended to the equative marker *kurai*, which also has presupposition effects, but which is a positive polarity item rather than a negative polarity item. A potentially promising direction to pursue in explaining the difference between the two items is that *kurai* obligatorily includes maximality as a part of its semantics. We must however leave a fuller exploration of this possible connection to future work.

Finally, we observe that the sorts of patterns under discussion here are not restricted to Japanese: German *dermaßen* ‘to such an extent’ exhibits similar behavior. Specifically, *dermaßen...dass* ‘to such an extent that’ is like ‘*so*’-*hodo* in being acceptable in both positive and negative sentences, whereas *dermaßen...wie* ‘to such an extent as’ is like ‘*as*’-*hodo* in requiring the presence of negation. Thus the present work draws attention to a previously unrecognized and perhaps more general pattern in equative semantics.

## 6 Conclusions

We have shown that the distributional and interpretive effects characterizing *hodo* can be explained on the basis of a weak existential semantics, which yields a trivial interpretation in certain configurations, coupled with pragmatic competition with the simpler positive form. Previous work by Crnič & Fox has shown that the obligatory versus optional presence of a maximality operator is a dimension along which the semantics of equative constructions may vary cross-linguistically. We have argued that Japanese *hodo* instantiates a third possibility (which may be present in other languages as well): *hodo* never introduces maximality, the consequence being a more restricted and seemingly idiosyncratic distribution relative to better-studied equative markers. Our findings thus contribute to a fuller picture of variation in the semantics of degree constructions across languages.

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