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ORIGINAL RESEARCH

Sense-based low-degree modifiers in Japanese and English: their relations to experience, evaluation, and emotions

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Abstract

This study investigates the meanings of the Japanese low-degree modifiers *kasukani* 'faintly' and *honokani* 'approx. faintly' and the English low-degree modifier *faintly*. I argue that, unlike typical low-degree modifiers such as *sukoshi* 'a bit' in Japanese and *a bit* in English, they are sense-based in that they not only semantically denote a small degree but also convey that the judge (typically the speaker) measures the degree of predicates based on their own sense (the senses of sight, smell, taste, etc.) at the level of conventional implicature (CI) (e.g., Grice (in: Cole, Morgan (Eds.), Syntax and semantics iii: speech acts, Academic Press, New York, 1975), Potts (The logic of conventional implicatures, Oxford University Press, Oxford, 2005), McCready (Semant Pragmat 3:1–57, 2010. https://doi.org/10.3765/sp.3.8, Sawada (Pragmatic aspects of scalar modifiers. Ph.D. Dissertation, University of Chicago, 2010), Gutzmann (Empir Issues Syntax Semant 8:123–141, 2011)). I will also show that there are variations among the sense-based low-degree modifiers with regard to (i) the kind of sense, (ii) the presence/absence of positive evaluativity, and (iii) the possibility of direct measurement of emotion and will explain the variations in relation to the CI component. A unique feature of sense-based low-degree modifiers is that they can indirectly measure the degree of non-sense-based predicates (e.g., emotion) through sense (e.g., perception). I show that the proposed analysis can also explain the indirect measurement in a unified way. This paper shows that like predicates of personal taste such as *tasty* (e.g., Pearson (J Semant 30(1):103–154, 2013. https://doi.org/10.1093/jos/ffs001), Ninan (Proc Semant Linguist Theory, 24:290–304, 2014. https://doi.org/10.3765/salt.v24i0.2413), Willer & Kennedy (Inquiry, 1–37, 2020. https://doi.org/10.1080/0020174X.2020.1850338)), sense-based low-degree modifiers trigger acquaintance inference. The difference between them is that, unlike predicates of personal taste, sense-based low-degree modifiers co-occur with gradable predicates and their experiential components signal the manner/way in which the degree of the predicate in question is measured.

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1 Introduction

In recent years, the concept of experience/acquaintance has received increasing attention in the field of formal semantics, especially since the semantic study of predicates of personal taste. For example, predicates of personal taste such as *tasty* or *fun* differ from ordinary adjectives such as *tall* and *deep* in that the former elicits 'acquaintance inference': the utterance of simple sentences containing predicates of personal taste (such as *tasty* and *fun*) typically suggests that the speaker has first-hand knowledge of the item being evaluated as they have directly experienced it (e.g., MacFarlane, 2014; Ninan, 2014; Pearson, 2013; Willer & Kennedy, 2020; Kennedy &Willer, 2022). For example, the following sentence containing the adjective *delicious* draws the inference that the speaker has actually drunk matcha tea:

(1) Matcha tea is delicious.
(Acquaintance inference: The speaker has drunk matcha tea.)

If the speaker does not have direct experience and only has indirect evidence (e.g., popularity of matcha), the speaker should use a modal (e.g., *Matcha tea must be delicious*).

By contrast, as many researchers have observed, this type of acquaintance inference does not arise obligatorily from sentences with ordinary adjectives. For example, from the following sentence with the adjective *deep*, we do not obligatorily receive the inference that the speaker has experienced the depth of Suruga Bay:

(2) Suruga Bay is deep. (Acquaintance inference is not triggered obligatorily.)

Here, sentence (2) is natural even if the speaker actually experienced (perhaps with special equipment) the depth of Suruga Bay.[1] However, such experience is not required, and the speaker can also utter this sentence based on some indirect evidence (e.g., information on a map).

In this paper, I will pursue the idea that this kind of distinction by the necessity of experience is also seen in low-degree adverbs. While there are various types of low-degree modifiers in Japanese and English, they can be broadly classified into two: Class 1 low-degree modifiers and Class 2 low-degree modifiers. For example, it seems that the English adverbs *a bit*, *a little*, and *slightly* and the Japanese adverbs *sukoshi* and *chotto* can be classified as Class 1 low-degree modifiers, while the English adverb *faintly* or the Japanese adverbs *kasukani* 'faintly' and *honokani* 'approx. faintly' can be classified as Class 2 low-degree modifiers:

(3) Class 1 low-degree modifiers
   a. English: *a bit*, *a little*, *slightly*
   b. Japanese: *sukoshi* 'a bit', *chotto* 'a bit'

[1] Suruga Bay, the deepest bay in Japan, is 2,500 meters at its deepest point.

(4) Class 2 low-degree modifiers

a. English: *faintly*

b. Japanese: *kasukani* 'faintly', *honokani* 'faintly'

Both Class 1 and Class 2 low-degree modifiers semantically represent a low degree. However, their distribution patterns are not the same.[2] Similar to Class 1 low-degree modifiers, Class 2 low-degree modifiers such as *faintly*, *kasukani*, and *honokani* can co-occur with gradable predicates such as *sweet/amai* 'sweet' and *bright/akarui* 'bright':

[2] In terms of polarity sensitivity, *sukoshi*, *chotto*, *kasukani*, and *honokani* are all positive polarity items (PPIs) in that they cannot appear in negative environments:

(i) *Kono sake-wa {sukoshi / chotto / kasukani / honokani} amaku-nai.
this sake-TOP a.bit / a.bit / faintly / *honokani* sweet-NEG
'This sake is not {a bit / faintly / *honokani*} sweet.'

Note that, in the case of *sukoshi* and *chotto*, adding *mo* 'even' after the items make them a negative polarity (NPI) (with phonological change in *chitto-mo*):

(ii) Kono sake-wa {sukoshi-mo / chitto-mo} amaku-nai.
this sake-TOP a.bit-even / a.bit-even sweet-NEG
'This sake is not (even) a bit sweet.'

Note also that *chotto* 'a bit' also has a speech act use, which weakens the degree of illocutionary force and functioning at a pragmatic/speech act level (e.g., Matsumoto, 1985; Sawada, 2010, 2018); in such cases, *chotto* can be used in negative environments:

(iii) Kono sake-wa chotto yoku-nai.
this sake-TOP a.bit good-NEG
'This sake is not good.'
(I am weakening the degree of illocutionary force) (Example provided by a reviewer)

Another possibility is that *chotto* has an at-issue meaning of 'a bit', but it modifies *yoku-nai*. In such cases, *yoku-nai* is understood as a single negative grabable predicate meaning 'bad' and *nai* is not construed as regular negation. I thank a reviewer for providing the example.

As with the Japanese low-degree modifiers, the English *faintly* is a PPI in that it does not appear with negation:

(iv) *This sake is not faintly sweet.

As for *a little* and *slightly*, they normally behave as a PPI, but can appear with negation if the sentence is interpreted as a metalinguistic reading/litotes (see Bolinger 1972: 122; Horn 1989: 401; for the detailed discussions on the behavior of *a little*).

(v) a. He is a little ill. ('He is not a little ill' is acceptable only with a metalinguistic reading.)
b. The rod is slightly bent. ('The rod is not slightly bent' is acceptable only with a metalinguistic reading.)

As for *a bit*, as discussed in Bolinger (1972) and Horn (1989), it can occur in both positive and negative environments, and when it occurs with negation, the negation denotes the absence of a minimal quantity (Bolinger, 1972; Horn, 1989):

(vi) a. I am a bit tired.
b. I am not a bit tired. (= I am quite rested) (Bolinger, 1972: 120)

Some native speakers may think that *a little* can be used to convey the meaning of (vib). I thank a reviewer for bringing this to my attention.

(5) a. This green tea is {a bit / a little / faintly} sweet.
b. Kono sake-wa {sukoshi / chotto / kasukani / honokani} amai.
this sake-TOP a.bit / a.bit / faintly / *honokani* sweet
'This sake is {a bit/faintly} sweet.'

(6) a. The sky is {a bit / a little / faintly} bright.
b. Sora-ga {sukoshi / chotto / kasukani / honokani} akarui.
sky-NOM a.bit / a.bit / faintly / *honokani* bright
'The sky is {a bit/faintly} bright.'

However, unlike Class 1 low-degree modifiers, Class 2 low-degree modifiers such as *faintly*, *kasukani*, and *honokani* cannot co-occur with gradable predicates such as *takai* 'expensive':[3]

(7) a. This coffee is {a bit / a little / ??faintly} expensive.
b. Kono koohii-wa {sukoshi / chotto / ??kasukani / ??honokani} takai.
this coffee-TOP a.bit / a.bit / faintly / *honokani* expensive
'This coffee is {a bit/faintly} expensive.'

Since Bolinger (1972), many studies have investigated the meaning and distributions of degree modifiers (positive polarity minimizers) (e.g., Horn, 1989; Kennedy, 2007; Sawada, 2010; Kagan & Alexeyenko, 2011; Bylinina, 2012; Sassoon, 2012; Solt, 2012). However, these studies are concerned with Class 1 low-degree modifiers; to the best of my knowledge, no study has focused on Class 2 low-degree modifiers.

What are the differences between Class 1 and Class 2 low-degree modifiers? How can we explain the limited distribution of Class 2 low-degree modifiers? How does the distinction between Class 1 and Class 2 low-degree modifiers relate to the difference between predicates of personal taste and regular gradable predicates?

This study investigates the meanings and distribution patterns of Class 2 low-degree modifiers such as *kasukani/honokani* in Japanese and *faintly* in English to show that, unlike Class 1 low-degree modifiers, Class 2 low-degree modifiers are sense-based and need to co-occur with a sense-related expression to satisfy the requirement that they be sensory measurements.

After reviewing the basic semantic properties of Class 1 low-degree modifiers in Sect. 2, in Sect. 3 I will focus on the meaning and use of *kasukani* and claim that, unlike ordinary low-degree modifiers (Class 1), it requires that a judge (typically a speaker) measures the degree of the gradable predicate in question based on their own senses (e.g., the senses of sight, smell, and taste). More theoretically, the analysis in Sect. 4 and 5 shows that *kasukani* is mixed content (McCready, 2010; Gutzmann, 2011) in that it not only denotes a low scalar meaning in the at-issue component, but also implies that the judge (typically the speaker) has measured the degree based on their own senses (e.g., sight, smell, taste, and hearing) at the level of conventional implicature (CI) (e.g., Grice, 1975; Potts, 2005; McCready, 2010; Sawada, 2010, 2018; Gutzmann,

[3] Here only some of the Class 1 and Class 2 modifiers are listed; for the behavior of *slightly*, see Sect. 2.

2011, 2012). Thus, I show that the experiential components of sense-based low-degree modifiers restrict the environments in which they can be used.

This means that sense-based low-degree modifiers trigger acquaintance inference similar to the predicate of personal taste such as *fun* or *tasty*. However, as we will discuss in detail in Sect. 4, sense-based low-degree modifiers have several different aspects from the usual predicate of personal taste. First, in terms of compositionality, sense-based low-degree modifiers belong to a new kind of acquaintance inference-triggering expression in that it can turn a neutral predicate into a predicate of personal taste. For example, *akarui* 'bright' is a sense-related adjective in that it has to do with light, but the expression itself does not obligatorily trigger an acquaintance inference. For example, we can say *Kinsei-wa akarui* 'Venus is bright' without actually looking/having looked at Venus. We can acquire the fact from a science book. However, if *kasukani* is combined with *akarui* 'bright' (i.e., *kasukani akarui* 'faintly bright'), then it obligatorily triggers an acquaintance inference regarding the level of brightness.

Second, sense-based low-degree modifiers and predicates of personal taste have different properties in terms of projection. Previous studies of predicate of personal taste have reported that the experiential meaning of predicate of personal taste disappears in conditional, interrogative, and modality environments (e.g., Pearson, 2013; Ninan, 2014; Willer & Kennedy, 2020). However, in the case of sense-based low-degree modifiers, their experiential meaning is strongly projected even if they are embedded in these environments, and as a result, the resulting sentences often become odd because the acquaintance inference is not justified.[4] I will suggest that this strong projective property is due to sense-based low degree modifier's function that they signal the 'manner' of measurement, and the experience is an immediate direct sensory experience.

Although Class 2 sense-based low-degree modifiers (*kasukani*, *honokani*, and *faintly*) are all related to sense, their meanings and distribution patterns are not the same. As shown in Sect. 6, *honokani* is more restricted than *kasukani* (and *faintly*), and I claim that *honokani* only allows a judge to measure the degree based on their sense of "brightness'', "perfume'', or "sweetness''. It also has a positive evaluative meaning toward the degree. By contrast, English *faintly* has a broader distribution pattern than *kasukani* (and *honokani*). Based on corpus data (the British National Corpus (BNC) and the Corpus of Contemporary American English (COCA)) and examples in dictionaries and on the Internet, I will observe in Sect. 7 that, unlike *kasukani/honokani*, *faintly* can directly combine with not only sense-related gradable predicates such as *sweet* and *visible*, but also emotive predicates:

(8) a. My brother just dislikes the taste of meat and is faintly surprised that other people do not. (BNC)
b. I am faintly amused by it. (example from the Internet)
c. Sandwiches were faintly embarrassing because I would have to go out and eat them in the car park because you couldn't eat in the library, and I would have to leave. (COCA)

I will explain these points by assuming that each sense-based low-degree modifier has a different selectional restriction in the non-at-issue domain.

[4] I thank the editor and a reviewer for their valuable comments regarding this point.

An important feature of the sense-based measurement is that there is a case of indirect measurement. For example, although *kasukani* cannot directly combine with an emotive predicate as in (9a), it can combine with an emotive predicate if there is a sense-related expression such as *mie-ru* 'look' at a structurally higher level as shown in (9b):

(9) a. Hanako-wa {??kasukani / sukoshi} odoroi-ta.
Hanako-TOP faintly / a.bit surprise-PST
'Hanako was {faintly/a bit} surprised.'

b. Hanako-wa {kasukani / sukoshi} odoroi-ta-yooni mie-ta.
Hanako-TOP faintly / a.bit surprise-PST-like look-PST
'Hanako looked {faintly/a bit} surprised.'

In (9b), *kasukani* is syntactically/semantically modifying an emotive predicate and denoting that the degree of surprise is slightly greater than zero, but the measurement is done through the speaker's perception (sense of sight). Section 8 investigates the mechanism of this kind of "indirect measurement'' based on the data of *kasukani* and *faintly*, showing that the proposed CI-based analysis can also successfully explain its mechanism.

This study shows that, like a predicate of personal taste such as *tasty* (e.g., Pearson, 2013; Ninan, 2014; Willer & Kennedy, 2020), a sense-based low-degree modifier triggers the acquaintance inference. The difference between them is that, unlike a predicate of personal taste, a sense-based low-degree modifier co-occurs with a predicate and its experiential component signals the manner/way of measurement concerning the predicate (i.e., immediate sensory experience). I will argue that the experiential component of sense-based low-degree modifiers is satisfied via their interaction with other (sensory-related) elements in the sentence, suggesting that it is a kind of concord phenomenon.

2 Meanings of typical (Class 1) low-degree modifiers

Before looking at the meaning and distribution patterns of sense-based low-degree modifiers (Class 2), let us first consider the meaning of a typical low-degree modifier and the environment in which it occurs as a starting point for discussion. This section will particularly focus on the following low-degree modifiers: *a bit*, *a little*, and *slightly* in English and *sukoshi* and *chotto* in Japanese.

2.1 English typical (Class 1) low-degree modifiers

Kennedy (2007) argues that *slightly* is sensitive to the scale structures of gradable adjectives and serves as a diagnostic for distinguishing relative adjectives and lower-closed absolute gradable predicates. As the following examples show, *slightly* can naturally combine with an absolute gradable adjective that inherently has a minimum standard (S_{min}) (lower-closed scale), but it cannot naturally combine with a relative

adjective that posits a norm-related contextually determined standard S_n(a so-called distributional standard):[5]

(10) a. slightly {bent, bumpy, dirty, worried} (absolute gradable adjective, lower-closed)

b. ??slightly {tall, deep, expensive, likely} (relative adjective) (Kennedy, 2007: 34)

Figure (11) graphically shows the scale structure of absolute gradable predicates and Figure (12) shows the scale structure of relative gradable predicates; here, only the former is suitable for the use of *slightly*:

(11) Scale structure of *bent* (lower-closed) (e.g., *slightly bent*)

(12) Scale structure of *tall* (e.g., ??*slightly tall*)

However, it has been claimed recently that *slightly* can combine with a relative gradable adjective if the adjective is coerced to have a "functional reading" (Kagan & Alexeyenko, 2011; Solt, 2012; Bylinina, 2012):

(13) Functional reading

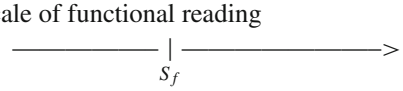
a. However, if you end up with a less-than-perfect joint, you can cope with this situation by recutting the joint (you did cut the board slightly long, right?). (http://www.woodbin.com/misc/copemolding.htm) (Solt, 2012: 2)

b. The actress is slightly tall to play the part. (Solt, 2015: 116)

c. This swimming pool is {slightly/a little bit/somewhat} deep for a 3-year old. (Bylinina, 2012: 8)

In a functional reading, there is a functional standard (S_f) that corresponds to the maximum degree that is suitable for a given function or purpose, and it is considered similar to the interpretation of an excessive degree (e.g., *too long/tall/deep*), as shown in:

(14) Scale of functional reading



Solt (2012) and Bylinina (2012) consider that *a bit* and *a little* also trigger a functional reading if they are combined with a relative gradable adjective. Solt (2015: 116) also claims that the felicity of relative gradable adjectives under a functional reading

[5] The distributional standard is determined with reference to the distribution of items in the comparison class (Kagan & Alexeyenko, 2011; Solt, 2012; Bylinina, 2012)), and it is used in the interpretation of an unmodified relative gradable adjective (see Kennedy, 2007).

suggests that these standards are potentially precise. According to Sassoon (2012), *slightly* + ADJECTIVE are interpreted in relation to a fine granularity level g_p. With regard to a standard, Sassoon (2012) also claims that, when *slightly* is combined with relative adjectives such as *tall*, it requires an external specific threshold for the standard of measurement.

2.2 The meaning and distribution of Japanese *sukoshi*/*chotto*

Let us now turn our attention to Japanese low-degree modifiers. As the following examples show, both *chotto* and *sukoshi* can naturally combine with a relative gradable predicate and an absolute gradable predicate:

(15) (Absolute gradable predicate)

Kono tatemono-wa {chotto / sukoshi} katamui-tei-ru.
this building-TOP a.bit / a.bit incline-STATE-Non.PST

'This building is a bit inclined.'

(16) a. (Relative gradable predicate, functional reading)

Kono T-shatsu-wa watashi-ni-wa {sukoshi / chotto} ookii.
this T-shirt-TOP I-to-TOP a.bit / a.bit big

'This T-shirt is a bit big for me.'

b. (Relative gradable predicate, norm-related reading))

Kono hon-wa bunkobon-to shi-te-wa {chotto / sukoshi} takai.
this book-TOP paperback-as do-TE-TOP a.bit / a.bit expensive
'This book is a bit expensive for a paperback.'

Notice that as the examples in (16) show that both *chotto* and *sukoshi* can have both a functional reading and a norm-related reading (Sawada, 2019). This point is different from the English *slightly*.[6]

Regarding the difference between *sukoshi* and *chotto*, descriptive grammars and dictionaries often mention that *chotto* is more colloquial or casual than *sukoshi* (e.g.,

[6] Japanese also has *wazukani* 'slightly' that is used in the context of extremely precise measurement, and there is only a functional reading in that case:

(i) a. (Relative gradable predicate, functional reading)
(Context: To administer the drug, the white blood cell count must be lower than a standard.)

Taro-no hakkekyuu-no atai-wa wazukani takai.
Taro-GEN white.blood.cell-GEN value-TOP slightly high

'Taro's white blood cell count is slightly high.'

b. (Relative gradable predicate, norm-related reading)

??Kono hon-wa bunkobon-to shi-te-wa wazukani takai.
this book-TOP paperback-as do-TE-TOP slightly expensive

'This book is slightly expensive for a paperback.'

(Kamiya, 2002). Sawada (2018) claims that *sukoshi* conventionally implicates that the speaker has measured a degree precisely, while *chotto* conventionally implicates that the speaker is measuring a degree imprecisely.[7]

While there is a semantic difference between *sukoshi* and *chotto* and a difference with respect to pragmatic function, an important thing to note here is that both can co-occur with any predicate of degree and, in particular, with both sensory and non-sensory adjectives. In this respect, they differ significantly from the sense-based low-degree modifier, which will be discussed in detail in this paper.

3 Basic properties of Japanese *kasukani* 'faintly'

Let us now start considering the meaning of sense-based low-degree modifiers. In doing so, the meaning and distribution of Japanese *kasukani* 'faintly' will be considered first, which will be a foundation for considering other types of sense-based low-degree modifiers.

3.1 Sensory and experiential properties of *kasukani*

To the best of my knowledge, there have been no studies on the Japanese *kasukani* in the field of semantics, but a dictionary search reveals several noteworthy descriptions of the word. For example, *Koujien*, a well-known Japanese dictionary, has an entry for the nominal adjective *kasuka* and states that *kasuka* expresses "the way in which the shape, color, sound, smell, etc. of an object can be slightly recognized." It also states that *kasuka* describes "a situation that is difficult to recognize." The *Meikyo Japanese Dictionary* defines the meaning of *kasuka* 'faint' as "a state of being barely recognizable by the senses, memory, etc." and "an extremely feeble appearance."[8]

Kasukani is an adverb with *-ni* attached to *kasuka* 'faint'. As the following examples show, *kasukani* can combine with various kinds of expressions that involve senses:

(17) a. (Sense of taste)
Kono sake-wa {kasukani / sukoshi / chotto} amai.
this sake-TOP faintly / a.bit / a.bit sweet
'This sake is {faintly/a bit} sweet.'

b. (Sense of smell)
Minto-ga {kasukani / sukoshi / chotto} kao-ru.
mint-NOM faintly / a.bit / a.bit smell-Non.PST
'It smells {faintly/a bit} of mint.'

c. (Sense of hearing)

[7] *Chotto* has a speech act modifying use that weakens the degree of illocutionary force (e.g., Matsumoto, 1985; Sawada, 2010; 2018):

(i) Chotto, pen ari-masu-ka?
a.bit pen exist-POLITE-Q
'*Chotto*, do you have a pen?'

[8] Historically, *kasuka* 'faint' also meant 'shabby looking' or 'poor looking'.

Chapel-no kane-ga {kasukani / sukoshi / chotto} kikoe-ru.
chapel-GEN bell-NOM faintly / a.bit / a.bit can.hear-Non.PST
'The sound of the chapel bell is {faintly/a bit} heard.'

d. (Sense of sight)

Fuji-san-ga {kasukani / sukoshi / chotto} mie-ru.
Fuji-mount-NOM faintly / a.bit / a.bit can.see-Non.PST
'Mt. Fuji is {faintly/a bit} visible.'

e. (Sense of touch)

Totte-ga mada {kasukani / sukoshi / chotto} atatakai.
handle-NOM still faintly / a.bit / a.bit warm
'The handle is still {faintly/a bit} warm.'

f. (Memory)

Kodomo-no toki koko-ni ki-ta-koto-o {kasukani / sukoshi / chotto}
child-GEN time here-to come-PST-thing-ACC faintly / a.bit / a.bit
oboe-tei-ru.
remember-STATE-Non.PST
'I faintly remember coming here when I was a child./I remember a little bit about coming here when I was a child.'

Notice that *kasukani* can also be used for measuring the degree of memory as in (17f). The degree of memory is not measured based on a physical sense, but I assume that memory is also connected to sense.

Although *kasukani* is sense-based, typical low-degree modifiers such as *sukoshi* and *chotto* are also fine in these examples. Thus, looking at these sentences alone does not clearly distinguish between *kasukani* and *sukoshi*/*chotto*. The contrast arises when we consider sentences with a non-sense-related predicate. Unlike typical low-degree modifiers, *kasukani* cannot combine with a gradable predicate that has nothing to do with sense:

(18) a. (Relative gradable predicate, functional reading)

Kono T-shatsu-wa watashi-ni-wa {??kasukani / sukoshi / chotto} ookii.
this T-shirt-TOP I-to-TOP faintly / a.bit / a.bit big
'This T-shirt is {faintly/a bit} big for me.'

b. (Relative gradable predicate, norm-related reading))

Kono hon-wa bunkobon-to shi-te-wa {??kasukani / chotto / sukoshi} takai.
this book-TOP paperbook-as do-TE-TOP faintly / a.bit / a.bit expensive
'This book is {faintly/a bit} expensive for a paperbook.'

Intuitively, *kasukani* is used to indicate that the degree is not zero (although it is close to zero). As such, it does not fit with measurements based on a functional standard or a contextual norm. For example, when I say, as a functional measurement, that a T-shirt is a little big for me, I am not reporting that in relation to zero degree. Moreover, when we measure price as a norm-related reading, we do not measure it in relation to zero degree.

From this point, it seems correct to say that *kasukani* is sensitive to scale structure. It cannot combine with a relative gradable predicate that posits a "contextual standard".

However, sensitivity of scale structure alone is not enough for the explanation of the use of *kasukani*. Even if a gradable predicate lexically posits an end (zero) point, *kasukani* cannot combine with it if it is not sense related. For example, *katamui-tei-ru* 'inclined' and *magat-tei-ru* 'bent' have a lower-closed scale but cannot naturally combine with *kasukani*:

(19) (Absolute gradable predicate)

a. Kono tatemono-wa {??kasukani / chotto / sukoshi} katamui-tei-ru.
this building-TOP faintly / a.bit / a.bit incline-STATE-Non.PST
'This building is {faintly/a bit} inclined.'

b. Kono sen-wa {??kasukani / chotto / sukoshi} magat-tei-ru.
this line-TOP faintly / a.bit / a.bit bend-STATE-Non.PST
'This line is {faintly/a bit} bent.'

The examples (19) with *kasukani* are strange because *katamui-tei-ru* 'inclined' and *magat-tei-ru* 'bent' are not sense related. Note, however, that, if we add *mie-ru* 'look' at the end of the sentences, the sentence with *kasukani* becomes more natural:

(20) (With *mie-ru* 'look')

Kono tatemono-wa kasukani katamui-tei-ru-yooni mie-ru.
this building-TOP faintly incline-STATE-Non.PST-like look-Non.PST

'This building looks faintly inclined.'

In this sentence, the speaker is measuring the degree of inclination through perception. We will discuss this type of indirect measurement in detail in Sects. 3.3 and 8.

So far, we have observed the examples of *kasukani* that relate to a specific sense. However, sensory measurement by *kasukani* does not always need to be specific. Observe the following sentence:

(21) Aki-no kehai-o kasukani kanji-ru.
autumn-GEN sign-ACC faintly feel-Non.PST
'I feel a faint sign of autumn.'

Although the predicate *kanji-ru* 'feel' is concerned with sense, it does not lexically specify sense. Depending on the context/situation, a relevant sense can be sight, smell, touch, etc. Note also that a measurement by multiple senses is also possible when the main predicate is *kanji-ru* 'feel':

(22) (Conjoined case, multi-senses)
Yuzu-no kaori-to sanmi-o kasukani kanji-ru.
citrus-GEN perfume-and acidity-ACC faintly feel-Non.PST
'I feel the perfume and acidity of citrus faintly.'

Here, the degree of *kanji-ru* 'feel' is measured based on the senses of smell and taste.[9]

Similar to *kanji-ru* 'feel', the verb *su-ru* 'lit.do' also naturally co-occurs with *kasukani*. The *Meikyo Japanese Dictionary* mentions that this kind of *su-ru* means "to be able to feel sound, taste, smell, etc. through the sense organs.''[10]

(23) a. (Sense of taste)

Remon-no fuumi-ga kasukani su-ru.
lemon-GEN flavor-NOM faintly do-Non.PST

'This tastes faintly of lemon.'

b. (Sense of smell)

Sekken-no kaori-ga kasukani su-ru.
soap-GEN scent-NOM faintly do-Non.PST

'There is a faint scent of soap.'

c. (Sense of sound)

Taki-no oto-ga kasukani su-ru.
waterfall-GEN sound-NOM faintly do-Non.PST

'There is a faint sound of waterfall.'

d. (Sense of touch)

Kasukani hito-no te-no nukumori-ga su-ru.
faintly human-GEN hand-GEN warmth-NOM do-Non.PST

'I can feel the faint warmth of human hands.'

The examples in (20)–(23) clearly show that *kasukani* is deeply related to the judge's (usually the speaker's) direct experience. It also predicts that if a speaker does not have direct experience of a sense, they cannot use *kasukani*. As the following examples show, this prediction is borne out:

(24) (Context: The speaker is drinking coffee.)

Kono koohii-wa {kasukani / sukoshi} amai.
this coffee-TOP faintly / a.bit sweet

[9] Note that the following example is odd because the first and second parts are unrelated:

(i) (Conjoined case, non-multi-sense)

?? Aijou-to kaori-o kasukani kanji-ru.
love-and perfume-ACC faintly feel-Non.PST

'I feel the love and perfume faintly.'

[10] Note that *su-ru* is not compatible with the sense of sight.

(i) (Sense of sight)

Mukouni fuji-san-ga kasukani {*su-ru / mie-ru}.
over.there Fuji-mount-NOM faintly do-Non.PST / can.see-Non.PST

'Mt. Fuji can be seen faintly over there.'

'This coffee is {faintly/a bit} sweet.'

(25) (Context: The speaker is looking at a label. According to the label, on a scale of 1 to 5, the sweetness of the coffee is 1.)

Kono koohii-wa {??kasukani / sukoshi} amai.
this coffee-TOP faintly / a.bit sweet

'This coffee is {faintly/a bit} sweet.'

(24) is natural because the speaker measures the degree of sweetness based on their own sense. In contrast, (25) sounds odd with *kasukani* because the speaker does not measure the degree of sweetness of coffee based on their own sense.[11]

The above discussions suggest that *kasukani* is very similar to predicates of personal taste that require direct experience (e.g., Pearson, 2013; Ninan, 2014; Willer & Kennedy, 2020; Kennedy & Willer, 2022), particularly a sense-related predicate of personal taste such as *tasty*:[12]

(26) a. This coffee is tasty.
b. This sushi is delicious.

For example, Pearson (2013) describes the requirement of direct sensory experience in predicates of personal taste as follows:

(27) To assert that x is P for some taste predicate P, one typically must have direct sensory experience of the relevant kind based on which whether x is P is judged. [...] To assert that *shortbread is tasty*, I must have tasted shortbread. If I have good reason to believe that shortbread is tasty, say because a reliable expert has told me so, I might say, *Apparently, shortbread is tasty*, but not *Shortbread is tasty*.

(Pearson 2013: 117)

In the following sections, we will discuss the similarities and differences between a predicate of personal taste and a sense-based low-degree modifier when they become relevant. One puzzling point is the fact that *kasukani* cannot naturally co-occur with *oishii* 'tasty':

(28) ??Kono keeki-wa kasukani oishii.
this cake-TOP faintly delicious
'This cake is faintly delicious.'

[11] Note that the sentence with *kasukani amai* sounds natural if a speaker is looking at a label that explicitly says "this coffee is faintly sweet'':

(i) (Context: The speaker is looking at a coffee description that says it is faintly sweet.)

Mite, kono koohii-wa kasukani amai-yo.
look this coffee-TOP faintly sweet-PRED.POLITE

'Look, this coffee is faintly sweet.'

I consider this sentence to be metalinguistic as opposed to a pure measurement. The speaker is not measuring degrees themself, but states a fact furnished by another. In this paper, I will not discuss this kind of example.

[12] A predicate such as *fun* is also considered to be a typical example of a personal taste (see, e.g., Lasersohn, 2005), but it seems that, unlike *tasty*, *fun* is not dependent on a particular sense.

I will address this issue in Sect. 5 and explain it in terms of the scale structures of *kasukani* and taste predicates.

3.2 The barely-recognizable component of *kasukani*

Another important feature of *kasukani* is that it is used in situations where the speaker is somehow aware of the low degree. According to *Nihon Kokugo Daijiten*, *kasukani* represents the degree of a thing, such that it can barely be recognized through the exercise of perception or memory. In other words, *kasukani* 'faintly' not only has a low degree meaning but also denotes that the degree in question is barely recognizable. One might consider that *kasukani* is semantically similar to *bonyari* 'dimly':

(29) Fuji-san-ga {kasukani / bonyari} mie-ru.
Fuji-mount-NOM faintly / dimly can.see-Non.PST
'Mt. Fuji is {faintly/dimly} visible.'

Kasukani and *bonyari* share the meaning of "barely". However, they are not semantically the same. *Kasukani* has a low degree meaning but *bonyari* does not. Furthermore, unlike *kasukani*, *bonyari* can only be used in contexts relevant to visual perception or memory and cannot be used in situations relevant to smell, hearing, or touch:

(30) a. (Sense of sight)
Fuji-san-ga {kasukani / bonyari} mie-ru.
Fuji-mount-NOM faintly / dimly can.see-Non.PST
'Mt. Fuji is {faintly/dimly} visible.'

b. (Memory)
Watashi-wa sono toki-no koto-o {kasukani / bonyari}
I-TOP that time-GEN thing-ACC faintly / dimly
oboe-tei-ru.
remember-STATE-Non.PST
'I faintly/dimly remember the moment.'

c. (Sense of taste)
Kono sake-wa {kasukani / *bonyari} amai.
this sake-TOP faintly / dimly sweet
'This sake is {faintly/dimly} sweet.'

d. (Sense of smell)
Minto-ga {kasukani / *bonyari} kao-ru.
mint-NOM faintly / dimly smell-Non.PST
'It smells {faintly/dimly} of mint.'

e. (Sense of hearing)
Chapel-no kane-ga {kasukani / ?bonyari} kikoe-ru.
chapel-GEN bell-NOM faintly / dimly can.hear-Non.PST
'The sound of the chapel bell is {faintly/dimly} heard.'

Table 1 List of adjectives/adverbs co-occurring with *kasukani* (frequency 2 or more)

Adjective/adverb	Frequency
akai 'red'/akaku 'redly'	8
amai 'sweet'/amaku 'sweetly'	7
shiroi 'white'/shiroku 'whitely'	5
akarui 'bright'/akaru.ku 'brightly'	4
atatakai 'warm' /atatakaku 'warmly'	2
arai 'harsh'/ araku 'harshly'	2
kiiroi 'yellow'/kiiroku 'yellowly'	2

f. (Sense of touch)
Totte-ga mada {kasukani / *bonyari} atatakai.
handle-NOM still faintly / dimly warm
'The handle is still {faintly/dimly} warm.'

3.3 Distributions of *kasukani*: Corpus studies

In the previous sections, we observed that *kasukani* measures degrees based on the senses. In this section, we confirm the validity of this observation using NINJAL-LWP for BCCWJ. We show that some corpus data may appear to be counterexamples at first glance, but closer observation shows that they are not counterexamples.

In looking at data, we searched for examples in which *kasukani* and "adjectival form'' co-occurs, and found 54 hits. Strictly speaking, there are two patterns of "adjectival forms": *i*-form (an adjective) and *ku*-form (an adverbial form of adjective). After eliminating examples with annotation problems (six examples), two examples from haiku and poetry collections, and cases in which *kasukani* is linearly adjacent to an adjective but structurally modifies a verb rather than an adjective (two examples), 44 examples remained.

Table 1 lists the adjectival forms that co-occurred with *kasukani* with a frequency of 2 or more.

The following are some of the examples that appeared in the corpus:

(31) a. (Sense of sight (color), with *akaku* 'red')
Raara-no hoho-ga kasukani akaku na-ttei-ru.
Lara-GEN cheek-NOM faintly red become-STATE-Non.PST
'Lara's cheeks are faintly red.' (Example from BCCWJ)

b. (Sense of taste, with *amai* 'sweet')
Kajitte-miru-to nama-no jagaimo-no yoo-da-ga kasukani amai
bite-try-when raw-GEN potato-GEN like-PRED-but faintly sweet
aji-ga su-ru.
flavor-NOM do-Non.PST
'When I bite into it, it tastes like a raw potato, though it has a faintly sweet flavor.' (Example from BCCWJ)

c. (Sense of sight (color), with *shiroi* 'white')

Romen-no yuudootai-to shatai-no aida-de tokiori
road.surface-GEN inductive.strip-and car.body-GEN between-LOC occasionally
kasukani shiroi denkoo-ga chi-ttei-ta.
faintly white light-NOM scatter-ing-PST

'Occasionally, a faint white electric light was scattered between the inductive strip on the road surface and the body of the car.' (Example from BCCWJ)

d. (Sense of sight, with *akaruku* 'bright')

Zenpou-no hayashi-no oku-ga kasukani akaruku nat-ta.
ahead-GEN forest-GEN depth-NOM faintly bright become-PST

'The depths of the forest ahead became faintly bright.' (Example from BCCWJ)

e. (Sense of touch, with *atatakai* 'warm')

Tabako-ni hi-o tsuke mada kasukani atatakai sake-o non-da.
cigarette-to fire-ACC light still faintly warm sake-ACC drink-PST

'I lighted a cigarette and drank a still faintly warm drink.' (Example from BCCWJ)

f. (Sense of sight (color), with *kiiroi* 'yellow')

Soshite kakemushiro-no sukima-kara kasukani kiiroi hikari-ga
and hanging.mat-GEN gap-from faintly yellow light-NOM
more-tei-ta!
leak-PROG-PST

'And, there was a faint yellowish light leaking from a gap in the hanging mat!' (Example from BCCWJ)

Noteworthy here is the following example in which *araku nat-ta* 'became ruffled' was used. At first glance, this example may seem to be a counterexample, since *arakuna-ru* 'become ruffled' itself has no inherent sensory meaning. However, as can be seen in the entire example, those degrees are weighed through the senses. In other words, in this sentence, the degree of "roughness'' is being measured through the sense-related expression *yoo-da* 'seem':

(32) (Sense of sight, measuring the degree of *araku* 'ruffled' through *yoo-da* 'look')

Kasukani Geering-no hanaiki-ga araku
faintly Goering-GEN nasal.breath-NOM ruffled
nat-ta-yoo-dat-ta.
become-PST-seem-PRED-PST

'Goering's nose seemed to have become faintly ruffled.' (Example from BCCWJ)

The same can be said for adjectives with a frequency of a frequency of 1 listed in Table 2.

In the following examples, *kasukani* co-occurs with an adjectival/adverbial expression, which is related to the senses:

(33) a. (Sense of taste, with *shiokarai* 'salty')

Kasukani shiokarakat-ta.
faintly salty-PST

Table 2 List of adjectives and adverbs co-occurring with *kasukani* (frequency 1)

Adjective/adverb	Frequency	Adjective/adverb	Frequency
shiokarai 'salty' (taste)	1	kimari-gawaru-soo 'look ashamed'	1
awai 'light'	1	kanashi-ge-na 'look sad'	1
kaguwashii 'aromatic'	1	maruikanji 'round-ish'	1
kuroi 'black'	1	hayaku 'fast' (adverb)	1
hosoi 'small (sound)'	1	omoshiro-ga-tteiru 'look amused'	1
itowashi-ge-na 'disapproving' (look)	1	kewashii 'grim' (expression)	1
kibishii 'strong (voice)'	1	ii 'good'	1

'It was faintly salty.' (Example from BCCWJ)

b. (Sense of smell, with *kaguwashii* 'aromatic')

Yaki-no nakani kasukani kaguwashii nioi-o kai-da.
night.air-GEN in faintly aromatic smell-ACC smell-PST

'I smelled faintly aromatic smells in the night air.' (Example from BCCWJ)

c. (Sense of sight (color), with *kuroku* 'black')

Barinton-Pabesu-wa mada katame-no mawari-o kasukani kuroku
Barrington-Parvis-TOP still one.eye-GEN around-ACC faintly black
shi-tei-ta.
do-STATE-PST

'Barrington-Parvis still had a faint darkening around one eye.' (Example from BCCWJ)

d. (Sense of sound, with *hosoi* 'whispering')

Kasukani hosoi koe-no aruji
faintly whispering voice-GEN owner

'The owner of the faintly whispering voice' (Example from BCCWJ)

e. (Sense of hearing, *kibishii* 'harsh' co-occurring with the noun *koe* 'voice')

Haruki-no koe-ga kasukani kibishiku nat-ta.
Haruki-GEN voice-NOM faintly harsh become-PST

'Haruki's voice became faintly harsh.' (Example from BCCWJ)

f. (Sense of smell, *awai* 'light' co-occurring with the noun *nioi* 'smell')

Kasukani awai ase-no nioi
faintly light sweat-GEN smell

'The smell of faintly light sweat' (Example from BCCWJ)

The following examples may appear to be counterexamples because gradable predicates are not related to sense, but the meaning of the modified noun phrase indicates that *kasukani* measures the degree based on sense.

(34) a. (Sense of sight, *marui* 'round' co-occurring with *kanji* 'feeling')

Dokoka kasukani marui-kanji-o uke-ru mono-janai-ka.
somehow faintly round-feeling-ACC receive-Non.PST thing-NEG-Q

'Isn't it something that receives a faintly rounded feeling somehow?' (Example from BCCWJ)

b. (Sense of smell, *ii* 'good' co-occurring with *kaori* 'perfume')

Kasukani ii kaori-ga shi-ta.
faintly good perfume-NOM do-PST

'It had a faintly nice smell.' (Example from BCCWJ)

c. (Sense of hearing, *omoshiroi* 'amused' co-occurring with *chooshi* 'tone')

Kasukani omoshiro-ga-ttei-ru-yoona hinikuna chooshi-ga
faintly amused-look-PROG-Non.PST-like ironic tone-NOM
kanji-rare-ru.
feel-PASS-Non.PST

'I sense a faintly amused, ironic tone.'(Example from BCCWJ)

For example, in (34a) *marui* 'round' itself is not related to a sense, but since there is a noun *kanji-o ukeru* 'lit. receive a feeling' in the sentence, we can assume that *kasukani* is measuring the degree of roundness based on the sense of sight (appearance). Similarly, in (34b), the adjective *ii* 'good' itself is not related to a sense, but the use of the sensory noun *kaori* 'perfume' and the verb *suru* 'to experience' indicates that 'faint' measures the degree of goodness based on the sense of smell.

In the following examples in which *kasukani* 'faintly' is embedded in the complement of the verbs *kanji-ru* 'feel' and *kizuk-u* 'notice' in the main clause, the presence of these verbs in the main clause guarantees that *kasukani* is sensory-based:

(35) (Sense of feeling/touch, measuring the degree of *hayaku* 'fast' through feeling)

Vanessa-wa mune-no kodoo-ga kasukani hayaku naru-no-o
Vanessa-TOP heart-GEN beat-NOM faintly fast become-NMLZ-ACC
kanji-ta.
feel-PST

'Vanessa felt her heartbeat faintly quicken in her chest.' (Example from BCCWJ)

(36) (Sense of sight, measuring the degree of *kewashiku* 'sharply' through sight)

Watashi-wa Belbo-no hyoojou-ga kasukani kewashiku
I-TOP Belbo-GEN expression-NOM faintly sharply
nat-ta-no-ni kizuki...
become-PST-NMLZ-to notice

'I noticed that Belbo's expression turned faintly grim and ...' (Example from BCCWJ)

The following are cases where it is guaranteed that the degree of the adjective in question is measured through vision by the sense-related suffixes *-ge* 'look' and *-soo* 'look':

(37) a. (Sense of sight, measuring the degree *kanashii* 'sad' through sight, with *-ge* 'look')

Yuyu-wa kasukani kanashi-ge-na emi-o ukabe-ru.
Yuyu-TOP faintly sad-look-ATTRI smile-ACC express-Non.PST

'Yuyu has a faintly sad smile on his face.' (Example from BCCWJ)

b. (Sense of sight, measuring the degree of frowning through sight, with *ge* 'look')

Sore-o miorosu shiroi kao-ni-wa kasukani itowashi-ge-na
it-ACC look.down white face-to-TOP faintly frowning-look-ATTRI
iro-ga ukan-dei-ta.
expression-NOM appear-STATE-PST

'The pale white face looking down at it had a faintly frowning look to it.' (Example from BCCWJ)

c. (Sense of sight, measuring the degree of embarrassment through sight, with *soo* 'look')

Chotto mutto shi-ta yoosu, soreni kasukani kimari.ga.waru-soo-dat-ta-ga
a.bit peeve do-PST look and faintly embarrassed-look-PRED-PST-but
yamashii tokoro-ya simatta-to iu yoona hyoujou-wa issai nai.
feel.guilty point-or Oh.no-as say like expression-TOP at.all NEG

'He looked a little peeved and faintly embarrassed, but there was no trace of guilt or shame on his face.' (Example from BCCWJ)

Thus, whether *kasukani* is measuring the degree based on sense must be determined by not only the nature of the adjective (gradable expression) co-occurring with it, but also the presence or absence of sensory nouns, verbs, or modalities used in the sentence. As in the examples in (37), *kasukani* can measure the degree of emotion through sight; in that case, *kasukani* is related to sense in an indirect fashion. In this paper, we call such a case of indirectly measuring the degree of a non-sensory adjective through a sense "indirect measurement." The semantic interpretation mechanism of indirect measurement will be discussed later in Sect. 8.

4 Non-at-issue (CI)/projective properties of *kasukani*

4.1 Status of the experiential/sensory meaning of *kasukani*

Let us now consider the status of the meaning of *kasukani*. I argue that *kasukani* induces a CI (Grice, 1975; Potts, 2005) that the judge (typically the speaker) measures the degree of which based on their own sense (sight, smell, taste, etc.). More specifically, I assume that *kasukani* 'faintly' is mixed content in that it has an at-issue scalar meaning and the CI (McCready, 2010; Gutzmann, 2011) inside the lexical items:

(38) **Descriptive definition of the meaning of *kasukani***: In the at-issue component of *kasukani*, *kasukani* combines with a gradable predicate *G* and denotes that the degree of a target *x* is slightly greater than zero (= a minimum standard) on the scale of *G* and the given degree is barely recognizable in the at-issue component (= truth-conditional component). At the same time, *kasukani* conventionally implicates that the judge (typically the speaker) has measured the

degree of *G* based on their own sense of sight, smell, taste, hearing, touch, and memory.

I consider that sense-based low-degree modifiers belong to a new kind of acquaintance inference-triggering expression in that it can turn a neutral gradable predicate into a predicate of personal taste.[13]

For example, *akarui* 'bright' is an adjective relating to light, but the expression does not obligatorily trigger the inference that the judge is actually measuring the degree of brightness based on the judge's own sense. This is supported by the fact that the following continuation is natural:

(39) Kinsei-wa akarui. Jissaini jibun-no me-de mi-ta-koto-wa nai-ga.
Venus-TOP bright actually self-GEN eyes-with see-PST-NMLZ-TOP NEG-although
'Venus is bright, though I've never actually seen it with my own eyes.'

However, if *kasukani* is combined with *akarui* 'bright', then the whole expression obligatorily triggers an acquaintance (immediate direct experiential) inference. Thus, the continuation in (40) sounds strange:

(40) Sora-ga kasukani akarui. # Ima jibun-no me-de mi-tei-nai-ga.
sky-NOM faintly bright now self-GEN eye-with see-PROG-NEG-but
'The sky is faintly bright, #though I am not looking it with my own eyes.'

The following examples with *ugok-u* 'move' also suggest that it is *kasukani* 'faintly' that triggers acquaintance inference:

(41) a. Jishin-de katsudansoo-ga ugoi-ta. Jibun-no me-de mi-ta-wakedewanai-ga.
earthquake-because.of active.fault-NOM move-PST. self-GEN eye-with see-PST-it.is.not.the.case-though
'The earthquake caused the active fault to move, though I did not see it with my own eyes.'

b. Kabutomushi-ga kasukani ugoi-ta. #Jibun-no me-de mi-ta-wakedewanai-ga.
beetle-NOM faintly move-PST self-GEN eye-with see-PST-it.is.not.the.case-though
'The beetle moved faintly, #though I did not see it with my own eyes.'

The motion verb *ugoku* 'move' does not require a speaker's sensory experience as in (41a). However, when *kasukani* is combined with the verb, it requires the immediate sensory experience of the judge as in (41b).

Let us now consider the CI-ness of the sensory experiential meaning in detail. In the Gricean pragmatics, CIs are considered a part of the meaning of words, but they are independent of "what is said" (at-issue meaning) (e.g., Grice, 1975; Potts, 2005;

[13] I thank a reviewer for the valuable comment regarding this point.

McCready, 2010; Gutzmann, 2011; Sawada, 2010, 2018). Furthermore, it is often assumed that CIs are speaker-oriented by default (Potts, 2007).

The experiential component is a CI because it is independent of "what is said'' (at-issue meaning). This is supported by a denial test. Let us consider this point in comparison with other semantic components of *kasukani*. First, as shown in the following example, it is safe to say that the low degree can be deniable:

(42) A: Fuji-san-ga kasukani mie-ru.
Fuji-mount-NOM faintly can.see-Non.PST
'Mt. Fuji is faintly visible.'
CI: I have measured the degree of visibility based on my sense of sight.
B: Iya sore-wa uso-da. Boku-ni-wa mattaku mie-nai-yo.
no that-TOP false-PRED I-to-TOP at.all can.see-NEG-Prt
'No, that is false. I can't see it at all.'

(43) A: Kono koohii-wa kasukani amai.
this coffee-TOP faintly sweet
At-issue: The degree of sweetness of this coffee is slightly greater than zero.
CI: I have measured the degree of sweetness based on my sense of taste.
B: Iya sore-wa uso-da. Boku-ni-wa mattaku amaku-nai-yo.
no that-TOP false-PRED I-to-TOP at.all sweet-NEG-Prt
'No, that is false. It is not at all sweet to me.'

Furthermore, the following examples suggest that the vague component is also deniable:

(44) A: Fuji-san-ga kasukani mie-ru.
Fuji-mount-NOM faintly can.see-Non.PST
'Mt. Fuji is faintly visible.'
CI: I have measured the degree of visibility based on my sense of sight.
B: Iya, boku-ni-wa hakkiri mie-ru-yo.
well I-to-TOP clearly can.see-Non.PST-Prt
'Well. I can see it clearly.'

(45) A: Oto-ga kasukani kikoe-ru.
sound-NOM faintly can.hear-Non.PST
'I can hear a sound faintly.'
CI: I have measured the degree of sound based on my sense of hearing.
B: Sou? Boku-ni-wa hakkiri kikoe-ru-yo.
really I-to-TOP clearly can.see-Non.PST-Prt
'Really? I can hear it clearly.'

However, as shown below, it is impossible to reject the experiential meaning by saying, "No, that's false'':

(46) A: Kono koohii-wa kasukani amai.
this coffee-TOP faintly sweet
At-issue: The degree of sweetness of this coffee is slightly greater than zero.
CI: I have measured the degree of sweetness based on my sense of taste.
B: Iya sore-wa uso-da. # Anata-wa mikaku-de kanji tei-nai.
no that-TOP false-PRED you-TOP taste-with feel be-NEG
'No, that is false. You are not feeling it with your own mouth. '

This supports that the experiential component is a CI (not at-issue).[14]

Another piece of evidence for the idea that *kasukani* has a CI and is logically independent of "what is said'' comes from the fact that the experiential meaning triggered by *kasukani* projects even if *kasukani* is embedded under the verb *omou* 'think' or the modal *kamoshirenai* 'may':

(47) (Context: The speaker is drinking coffee.)
a. Kono koohii-wa kasukani nigai-to omo-u.
this coffee-TOP faintly bitter-that think-Non.PST
'I think that this coffee is faintly bitter.'
(CI: I have measured the degree of bitterness based on my sense of taste.)
b. Kono koohii-wa kasukani amai-kamoshirenai.
this coffee-TOP faintly sweet-may
'This coffee may be faintly sweet.'
(CI: I have measured the degree of sweetness based on my sense of taste.)

The CI components of (47) are not within the semantic scope of *omou* 'think' or *kamoshirenai* 'may'.[15]

One important point to be mentioned is that, although the experiential meaning of *kasukani* has a projective property, in many cases, the resulting sentences become unnatural when *kasukani* is embedded under logical operators. Before considering this point, let us first observe the typical examples of projection based on the expressive *damm* (which is often analyzed as a CI triggering expression):

(48) Expressive
a. It's just not true that Sheila's damn dog is on the couch! (Potts, 2005: 159)
b. Sheila's damn dog must be on the couch.

[14] Note that the sensory experiential meaning derived from *kasukani* is not cancellable:

(i) Kono koohii-wa kasukani amai. # Shikashi watashi-wa jibun-no kankaku-de amasa-o
this coffee-TOP faintly sweet however I-TOP self-GEN sense-with sweetness-ACC
kanji-tei-masen.
feel-PROG-NEG.POLITE
'This coffee is faintly sweet. # However, I am not feeling the sweetness in my own sense.'

This suggests that the sensory experiential meaning is not a conversational implicature.

[15] *Kamoshirenai* 'may' in this example is not a typical modality expression in that it does not express the speaker's inference, but rather the speaker's confirmatory judgment of reality.

c. Is Sheila's damn dog on the couch?
d. If Sheila's damn dog is on the couch, I cannot use it.
(CI: The speaker has a negative attitude toward Sheila's dog.)

In the above examples, although *damn* is syntactically embedded under negation, a modal, a conditional, or a question operator, the negative motive meaning that the speaker has a negative attitude toward Sheila's dog is projected. (Note that there is a presupposition that Sheila has a dog, which is triggered by the possessive marker and it also projects.)

Now let us consider the case of *kasukani*. First, the negative sentence with *kasukani* is ill-formed:

(49) *Kono koohii-wa kasukani amaku-nai.
this coffee-TOP faintly sweet-NEG
'This coffee is not faintly sweet.'
CI: I have measured the degree of sweetness based on my sense of taste.

This suggests that *kasukani* is a positive polarity item (PPI), which cannot appear in a negative environment. The ill-formedness of (49) can be explained from the discrepancy between the experiential nature of *kasukani* and the at-issue meaning. In other words, while the at-issue meaning in (49) says that there is no slight, barely perceptible sweetness, it also says that the degree of sweetness is measured by the speaker's sense of taste, creating a discrepancy between the at-issue component and the CI component. Namely, the CI meaning is projected, but since it is not justified, the sentence sounds strange.

Compared with the case of negation the judgments becomes subtle, but usually it is also odd to use *kasukani* with the *must*-type of predicative modal *nichigainai* 'must' as shown in:[16]

(50) (Context: The speaker observes that several customers are adding sugar to their coffee. The speaker says:)

Kono mise-no koohii-wa {sukoshi / ??kasukani} nigai-nichigainai.
This store-GEN coffee-TOP a.bit / faintly bitter-must

'The coffee in this store must be {a little/faintly} bitter.'

[16] In order to check the interpretation of this sentence, I administered a questionnaire survey to 22 undergraduate and graduate students at Kobe University on May 19 and 25, 2023, via Google form. All of them are native speakers of Japanese. In the questionnaire I asked the informants how natural sentence (50) with *sukoshi* and sentence (50) with *kasukani* are based on a 7-point scale (where 1 = *completely odd* and 7 = *completely natural*). The results show that many native speakers consider the sentence with *kasukani* to sound unnatural:

(i) Native speakers' judgments (*must*-type modal)

	1	2	3	4	5	6	7	average
"must"-type (=50) (with *sukoshi*)	1 (4.5%)	1 (4.5%)	5 (22.7%)	1 (4.5 %)	5 (22.7%)	2 (9.1%)	7 (31.8%)	4.91
"must"-type (=50) (with *kasukani*)	5 (22.7%)	5 (22.7%)	4 (18.2%)	2 (9.1%)	5 (22.7%)	0 (0%)	1 (4.5%)	3.05

In this context the speaker is predicting the degree of bitterness based on indirect evidence. Since the speaker has not tasted the coffee, the CI meaning is not justified and the example is perceived as unnatural.

Similarly, in many cases it is odd to use *kasukani* in the antecedent of conditionals as shown in:[17]

(51) (Context: A word from the coffee shop staff)

Moshi koohii-ga {sukoshi / ??kasukani} niga-kereba, kochira-no satoo-o
by.any.chance coffee-NOM a.bit / faintly bitter-COND this-GEN sugar-ACC
o-tsukai-kudasai.
HON-use-HON

'If your coffee is {a little/faintly} bitter, please use this sugar.'
(CI from *kasukani*: The hearer has measured the degree of bitterness using their own sense of taste.)

The sentence with *kasukani* sounds odd because the speaker has not experienced the degree via their own sense. (From the perspective of the shopkeeper, she/he cannot experience the speaker's senses.)

This does not mean that *kasukani* cannot appear in any conditional clause; if the sensory experience is justified, it can appear in a conditional clause:[18]

(52) (Context: A doctor uses a machine to check the patient's hearing.)

[17] In the same questionnaire, I asked the informants the naturalness of sentence (51). Similar to (50), many informants found the sentence with *kasukani* unnatural:

(i) Native speakers' judgments (conditional)

	1	2	3	4	5	6	7	average
conditional (=51) (with *sukoshi*)	0 (%)	1 (4.5%)	1 (4.5%)	5 (22.7%)	3 (13.6%)	5 (22.7%)	7 (31.8%)	5.41
conditional (=51) (with *kasukani*)	5 (22.7%)	8 (36.4%)	5 (22.7%)	1 (4.5%)	3 (13.6%)	0 (0%)	0 (0%)	2.5

[18] As a reviewer pointed out, if we use the *(no)nara* conditional, which indicates that the speaker is taking into account what the hearer has said, then *kasukani* can be used more naturally in conditional sentences:

(i) (Context: The speaker does not like bitter coffee. A friend said, "This coffee is faintly sweet." The speaker replies:)

? Sou-desu-ka. Kasukani amai-(no)nara, watashi-mo nomi-tai-desu.
so-PRED.POLITE-Q faintly sweet-COND.CONF I-also drink-want-PRED.POLITE

'I see. If it is true that it is faintly sweet, I want to drink it too.' CI: You have measured the degree of sweetness based on your sense of taste.

In this case, the content of the conditional clause is assumed to be true and the experiential component is also assumed to be satisfied. As shown in the table below, naturalness has improved:

(ii) Native speakers' judgments ((*no*)-*nara* conditional)

	1	2	3	4	5	6	7	average
no-nara conditional (=(i))	2 (9.1%)	5 (22.7%)	1 (4.5%)	5 (22.7%)	4 (18.2%)	3 (13.6%)	2 (9.1%)	3.96

{Sukoshi / kasukani} oto-ga kikoe-tara te-o age-te oshie-te
a.bit / faintly sound-NOM hear-COND hand-ACC raise-TE tell-TE
kudasai.
HON

'If you hear {a little/faint} sound, raise your hand and tell me.'
(CI from *kasukani*: The addressee is measuring the volume of sound based on their own auditory perception.)

This sentence is natural because it is clear that the addressee (=the patient) is measuring the volume of sound based on their own auditory perception.[19]

Finally, in the environment of question, usually *kasukani* does not naturally occur in questions:[20]

(53) (Context: The speaker is asking the shopkeeper about the quality of the coffee.)

Kono koohii-wa {sukoshi / ??kasukani} nigai-desu-ka?
this coffee-TOP a.bit / faintly bitter-PRED.POLITE-Q

'Is this coffee {a bit/faintly} bitter?' (CI from *kasukani*: The addressee has measured the degree of bitterness based on the addressee's sense of taste.)

In this situation, the person who experiences the degree of bitterness is the hearer. Given that the speaker is asking about the quality of coffee, it does not make sense if the judge is the speaker. However, even if the judge is shifted to the addressee, the sentence still sounds strange if we use *kasukani* because the addressee-oriented CI is not justified.

However, similar to the case of conditional sentences, *kasukani* can be used in interrogative sentences if the context is such that sensory experience is guaranteed. In the following sentence, which assumes a context in which a doctor is examining a patient's hearing, it is natural to use *kasukani* in question:

(54) (Context: A doctor is using a machine to check the patient's hearing.)

Oto-ga {sukoshi / kasukani} kikoe-masu-ka?
sound-NOM a.bit / faintly hear-PRED.POLITE-Q

[19] The following figure shows the informants' judgments on (52):

(i) Native speakers' judgments (conditional, contextual information about hearing available)

	1	2	3	4	5	6	7	average
conditional, with hearing info (= 52) (with *sukoshi*)	0 (0%)	4 (18.2%)	3 (13.6%)	3 (13.6%)	3 (13.6%)	1 (4.5%)	8 (36.4%)	4.82
conditional, with hearing info (= 52) (with *kasukani*)	1 (4.5%)	4 (18.2%)	1 (4.5%)	0 (0%)	2 (9.1%)	5 (22.7%)	9 (40.9%)	5.23

[20] The following results show the same informants' judgments on (53):

(i) Native speakers' judgments (question)

	1	2	3	4	5	6	7	average
question (=53) (with *sukoshi*)	1 (4.5%)	1 (4.5%)	2 (9.1%)	5 (22.7%)	1 (4.5%)	7 (31.8%)	5 (22.7%)	5.05
question (=53) (with *kasukani*)	4 (18.2%)	5 (22.7%)	3 (13.6%)	7 (31.8%)	3 (13.6%)	0 (0%)	0 (0%)	3.0

'Can you hear the sound faintly?' (CI: The hearer is measuring the sound with their own sense of hearing.)

Since the experience is justified, the CI of *kasukani* projects naturally.[21]

We have so far considered the cases wherein the judge is a speaker or an addressee. However, if it is embedded under an attitude predicate and the subject of the sentence is a third person, the judge of *kasukani* is the subject (i.e., the attitude holder):

(55) Hanako-wa kono wain-wa kasukani amai-to omo-ttei-ru.
Hanako-TOP this wine-TOP faintly sweet-that think-STATE-Non.PST
'Hanako thinks that this wine is faintly sweet.' CI: Hanako has measured the degree of sweetness based on her sense of taste.

Similarly, if *kasukani* co-occurs with a hearsay evidential such as *rashii* 'I hear', then the judge of *kasukani* is someone who reported that the wine is faintly sweet, as shown below:

(56) (Reportative evidential)

Kono wain-wa kasukani amai-rashii.
this wine-TOP faintly sweet-EVID

'I heard that this wine is faintly sweet.'
CI: Someone has measured the degree of sweetness based on their own sense of taste.

Although Potts (2005) claims that CIs are always speaker-oriented, various scholars have claimed that CI expressions such as expressives can have a non-speaker orientation (e.g., Amaral et al., 2007; Potts, 2007; Harris & Potts, 2009). The above examples suggest that this also applies to *kasukani*.

One might consider that the non-at-issue (experiential) component is a presupposition. A presupposition is an inference or proposition whose truth is taken for granted in the utterance of a sentence. Furthermore, presupposition is seen as knowledge shared between the speaker and the hearer. The presupposition-based account of *kasukani* will be similar to the CI-based account in that both approaches assume that the experiential component of *kasukani* is non-at-issue and projective.[22]

[21] The following results show the same informants' judgments on (54):

(i) Native speakers' judgments (question with hearing info)

	1	2	3	4	5	6	7	average
question (=54) (with *sukoshi*)	2 (9.1%)	3 (13.6%)	6 (27.3%)	4 (18.2%)	2 (9.1%)	1 (4.5%)	4 (18.2%)	3.91
question (=54) (with *kasukani*)	2 (9.1%)	4 (18.2%)	1 (4.5%)	1 (4.5%)	5 (22.7%)	2 (9.1%)	7 (31.8)%)	4.68

[22] In the case of predicates of personal taste, the acquaintance inference is often analyzed as a presupposition (e.g., Pearson, 2013; Ninan, 2014, 2020), while Muñoz (2019) analyzes the evidentiality of predicates of personal taste based on the notion of CI. However, to the best of my knowledge, there is no substantial discussion on whether the acquaintance inference is a CI or presupposition. For example, Ninan (2014), when considering the direction of analyzing the acquaintance inference of predicates of personal taste using the concept of presupposition, argues that it is not a CI as Potts (2005) proposes. This is because,

Although this is a matter for careful consideration, I would like to take the position that the experiential element is a CI, not a presupposition. One piece of evidence is that this empirical meaning cannot be challenged by "Hey wait a minute!"

According to the "Hey, wait a minute" test, if *p* is a presupposition, it can be responded to by another discourse participant with "Hey wait a minute, {I didn't know that *p*" (von Fintel, 2004; Shanon, 1976). For example, we can naturally utter "Hey wait a minute! I didn't know that John has a dog!" in order to challenge the presupposition created by the possessive phrase *John's dog*:

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

In contrast, in the case of the sense-based low degree modifier *kasukani*, it is not natural to use *chotto matte!* 'Hey wait a minute' in order to challenge (react to) the sense-related experiential component:

(58) A: Oto-ga kasukani kikoe-ru.
sound-NOM faintly can.hear-Non.PST
'I can hear a sound faintly.'
CI: I have measured the degree of sound based on my sense of hearing.
B: Chotto mat-te! # Anata-ga jibun-no chookaku-de
a.bit wait-IMP you-NOM self-GEN sense.of.hearing-with
kii-teiru-towa shira-nakat-ta-yo.
listen-PROG-COMP.MIR know-NEG-PST-Prt
'Wait a minute!'#I didn't know that you were measuring the degree of sound based on your sense of hearing.'

The above discussion suggests that the sense-based experiential component is not a presupposition but rather a CI. Intuitively, sense-based low-degree modifiers signal how a judge measures the degree of the predicate in question at the non-at-issue level, and it is not the kind of information that is taken for granted by the speaker and the hearer. Since the theoretical distinction between presupposition and CI is a difficult issue, we will not discuss it further in depth here. One point in common, whether one takes the presupposition approach or the CI approach, is that the experiential meaning of *kasukani* is non-at-issue, and this point is of utmost importance.

4.2 Notes on the difference with predicates of personal taste

Before closing this section, I would like to briefly discuss the difference between sense-based low-degree modifiers and typical predicates of personal taste such as

Footnote 22 continued
compared with typical CIs (e.g., expressive, supplemental, etc.), acquaintance inference has a limited number of environments in which it can be projected. However, CI does not always project in any embedding environment (Amaral et al., 2007; Harris & Potts, 2009; Sawada, 2018), making it not a substantial criteria. Ninan (2014) notes that the "hey, wait a minute" test also suggests that the acquaintance inference is a presupposition, but there are various views/analyses for the semantic status of predicate of personal taste. See also Sect. 4.2.

tasty. Although both sense-based low-degree modifiers and predicates of personal taste have to do with the notion of experience, their properties are different.

First, there is a difference between sense-based low-degree modifiers and typical predicates of personal taste in terms of projectability/obviation. As already discussed in the literature of predicate of personal taste, the experiential meaning (acquaintance inference) triggered by the predicate of personal taste projects in the environment of negation:

(59) The lobster rolls at *Neptune Oyster* are not tasty.
(Inference: The speaker has tasted the lobster rolls.) (Ninan, 2014)

However, the experiential inference simply disappears in the environments of conditional, modality, and question (e.g., Ninan, 2014; Ninan, 2013; Anand & Korotkova, 2018; Willer & Kennedy, 2020):[23,24]

(60) a. If the lobster rolls are tasty, I'll have two.
b. The lobster rolls must be tasty.
c. The lobster rolls are probably tasty.
d. Are the lobster rolls tasty?
(Does not imply: The speaker has tasted the lobster rolls.)
(Ninan, 2014: 299)

Ninan (2020) submits the following generalization for the obviation of the acquaintance inference (see also Ninan (2014); Pearson (2013); Anand and Korotkova (2018); Willer & Kennedy (2020)) (*O* corresponds to epistemic modals, indicative conditionals and questions):

(61) An operator *O* obviates the acquaintance inference if *O* is an intensional operator.
(Ninan, 2020: 761)

This point is quite different from the sense-based low-degree modifiers. As I discussed in the previous section, the sensory experiential meaning triggered by the

[23] Note that, as Ninan (2014) observes, the question in (60d) does not imply that the speaker has tasted the lobster rolls, but it does suggest that the hearer has. (In the literature, the non-speaker-oriented reading is often called an exocentric reading, which contrasts with the more usual autocentric reading (see Lasersohn, 2005: 670ff; Ninan, 2014).

[24] As Ninan shows, the above special behavior of projective behavior strongly contrasts with the typical presupposition triggered by, for example, *stop*:

(i) a. If John stopped smoking, his doctor will be happy.
b. John might stop smoking.
c. John probably stopped smoking.
d. John must have stopped smoking.
e. Did John stop smoking?
(Presuppose: John used to smoke.)
(Ninan, 2014: 299)

sense-based low-degree modifiers is highly projective (and because of this, relevant sentences in modal, conditional and question environments are often odd).

Furthermore, the predicate of personal taste and the sense-based low-degree modifier are different in terms of changeability of experience. While the direct sensory experiential meaning triggered by the sense-based low-degree adverbs cannot be challenged by "Hey wait a minute!" (see the previous section), the acquaintance inference triggered by the predicate of personal taste can be challenged by "Hey wait a minute!" (see also Ninan, 2014):

(62) (Conversation between A and B)
A: Kyabia-tte oishii-ne.
caviar-QUOT delicious-right
'Caviar is delicious, isn't it?'
B: Chotto mat-te! Kyabia-o {tabe-ta-koto-ga aru-nante
a.bit wait-IMP caviar-ACC eat-PST-NMLZ-NOM have-COMP.MIR
shira-nakat-ta-zo} / {tabe-ta-koto aru-no?}.
know-NEG-PST-Prt / eat-NMLZ have-Q
'Hey wait a minute! {I didn't know you had ever eaten caviar./Have you ever had caviar?}'

Where do these differences come from? I would like to consider that these differences are due to differences in the nature of experience. For sense-based low-degree modifiers, the experience is direct and sensory. Since it is an immediate experience, it is impossible to challenge it with "hey wait a minute!", and it does not disappear. In contrast, the acquaintance inferences triggered by the predicate of personal taste is not necessarily an immediate direct sensory experience (see also Anand and Korotkova (2018)). Of course, in the case of the adjective *oishii* 'delicious', we can say "X is delicious" while actually eating X; in this case, the experience can be a direct sensory experience, but it can also be an episodic experience in the past. If the experience is an episodic experience in the past, it is possible to object to that experience with "Hey wait a minute! I didn't know that you have eaten X before". Although I do not have a clear explanation regarding the property of obviation of acquaintance inference triggered by a predicate of personal taste, it seems possible that the sense-based low-degree modifiers have an immediate direct sensory experience, which is strongly projective, while the predicates of personal taste are less immediate, and have a weaker projective property (see Ninan (2014, 2020); Anand and Korotkova (2018); Willer & Kennedy (2020) for the detailed discussions on the obviation of acquaintance inference).

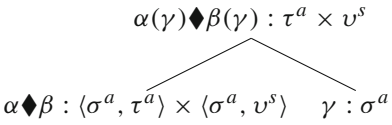
5 Formal analysis of *kasukani*

Let us now consider how the meaning of *kasukani* can be analyzed formally using the following example:

(63) Kono sake-wa kasukani amai.
this sake-TOP faintly sweet
'This sake is faintly sweet.'

I will analyze the meaning of sense-based low-degree modifiers based on multidimensional semantics (Potts, 2005) in which both an at-issue meaning, and a CI meaning are compositional but are interpreted along different dimensions (i.e., an at-issue dimension and a CI dimension). More specifically, it uses the logic of mixed content (McCready, 2010; Gutzmann, 2012) to analyze the meaning of *kasukani*. In this system, the meaning of mixed content is computed via a mixed application, as follows:

(64) Mixed application



(Based on McCready (2010)).

The at-issue component is to the left of ⧫, and the non-at-issue component/CI is to the right. Superscript *a* stands for an at-issue type, and superscript *s* stands for a shunting type, which is used for the semantic interpretation of a CI involving an operation of shunting.[25]

When the derivation of the CI component of mixed content completes, the following rule applies for the final interpretation of the CI part:

(65) Final interpretation rule: Interpret $\alpha\blacklozenge\beta$: $\sigma^a \times t^s$ as follows: $\alpha : \sigma^a \bullet \beta : t^s$
(Based on McCready (2010))

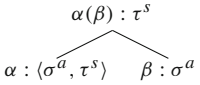
The bullet • is a metalogical device for separating independent lambda expressions.

Based on the above setup, I propose that *kasukani* has the following meaning (the variable G is an abbreviated variable for a gradable predicate (measure function) of type $\langle d^a, \langle e^a, t^a\rangle\rangle$ and j stands for a judge and "$\gtrapprox \text{STND}_{MIN.G}$" slightly greater than a minimum standard of G):

(66) $[\![\text{kasukani}]\!] : \langle\langle d^a, \langle e^a, t^a\rangle\rangle, \langle e^a, t^a\rangle\rangle \times \langle\langle d^a, \langle e^a, t^a\rangle\rangle, t^s\rangle =$

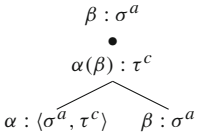
[25] The following figure shows the shunting application:

(i) The shunting application (Based on McCready (2010))



The shunting application is different from Potts' (2005) CI application, where it is resource sensitive. Potts's CI application is resource insensitive, as shown in (ii):

(ii) CI application (Potts, 2005)



The superscript *c* represents the CI type, which is used for CI application. Here, the α of $\langle\sigma^a, \tau^c\rangle$ takes a β of type σ^a and returns τ^c. Simultaneously, a β is passed on to the mother node.

$\lambda G \lambda x.\ \exists d[d \gtrapprox \text{STND}_{MIN.G} \wedge G(d)(x) \wedge \text{barely-recognizable}(d)]\blacklozenge\ \lambda G.$ have-measured(j, the degree of G) based on j's sense of {sight (color)/smell/taste/hearing/touch/memory}

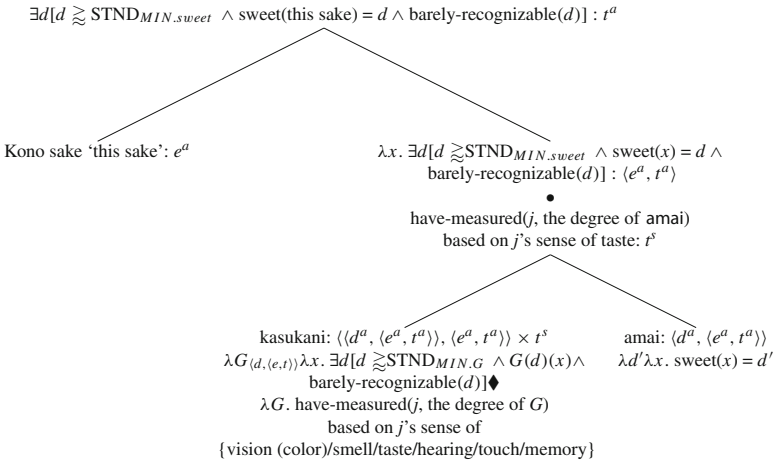
In the at-issue dimension, *kasukani* takes a gradable predicate G and an individual x and denotes that there is some degree d such that d is slightly greater than a minimum standard of G and barely recognizable. In the CI component, it takes G and conventionally implies that the judge j (typically the speaker) has measured the degree of G based on their senses of sight, smell, taste, hearing, touch, or memory.[26]

As for the meaning of gradable predicates such as *amai* 'sweet', I assume that they represent relations between individuals and degrees (e.g., Seuren, 1973; Cresswell, 1977; von Stechow, 1984; Klein, 1991; Kennedy & McNally, 2005):[27]

(67) $[\![\text{sweet/amai}]\!]$: $\langle d^a, \langle e^a, t^a\rangle\rangle$
$= \lambda d \lambda x.\ \text{sweet}(x) = d$

Kasukani and *amai* are subsequently combined via mixed application. Note that as the CI component of *kasukani* is complete (i.e., its denotation is of type t^s), *kasukani* takes the argument *amai* only at the at-issue component. Figure (68) shows the logical structure of sentence (63) (I have omitted the information of tense and world for the sake of simplicity):

(68) The logical structure of (63)



[26] Here, the CI of *kasukani* is taken as information related to the act of how the judge is weighing the degree in question. *Kasukani* is not evaluative in the sense that it does not express the speaker's attitude toward the degree of the at-issue. Rather, the act of measurement based on the sense and measurement at the at-issue level are taking place simultaneously. This point is different from the mixed content *Kraut*, which denotes German in the at-issue domain and additionally conveys that the speaker has a negative attitude toward German people (McCready, 2010; Gutzmann, 2011).

[27] Here, I consider that the unmodified adjective *sweet/amai* is of the same type as the usual gradable adjective, and no judge variable (j) is assumed. In positive adjective sentences, *sweet/amai* is evaluated in relation to the speaker's minimum standard, and I assume that the standard is introduced by a positive form (pos) or a degree modifier. This is where the judge variable is introduced. In comparative sentences, the unmodified adjective is attached to the comparative morpheme.

One seemingly puzzling point is the fact that *kasukani* cannot co-occur with a gradable predicate, such as *oishii* 'delicious', *samui* 'cold' and *urusai* 'noisy' despite the fact that they are sense-related (taste/touch/hearing)(see also Sect.3.1):

(69) a. ?? Kono keeki-wa kasukani oishii.
this cake-TOP faintly delicious
'This cake is faintly delicious.'

b. ?? Kyoo-wa kasukani samui.
today-TOP faintly cold
'It is faintly cold today.'

c. ?? Kono heya-wa kasukani urusai.
this room-TOP faintly noisy
'This room is faintly noisy.'
(cf., *Oto-gakasukanikiko-e-ru* 'The sound is faintly heard'.)

Kasukani cannot be combined with *oishii* 'delicious', *samui* 'cold', or *urusai* 'noisy' because these adjectives are relative gradable adjectives that posit a contextual standard (norm) and cannot measure degrees from a minimum point. Whether something is tasty, cold, or noisy is determined by a contextually determined norm. Contrariwise, *kasukani* is fine with the adjective *amai* 'sweet' because it is an absolute adjective that has a minimum degree (zero point) (Kagan & Alexeyenko, 2011).[28,29]

[28] In order to check the naturalness of the example in (69), a questionnaire was administered to 22 native speakers (undergraduate and graduate students at Kobe University) on May 25 and 26, 2023, through a Google form. The following are the results:

(i) Native speakers' judgments

	1	2	3	4	5	6	7	average
with *oishii* 'delicious' (=69a)	8 (36.4%)	5 (22.7%)	6 (27.3%)	3 (13.6%)	0 (0%)	0 (0%)	0 (0%)	2.18
with *samui* 'cold' (=69b)	5 (22.7%)	5 (22.7%)	3 (13.6%)	2 (9.1%)	4 (18.2%)	3 (13.6 %)	0 (0%)	3.18
with *urusai* 'noisy' (=69c)	9 (40.9%)	5 (22.7%)	0 (0%)	4 (18.2%)	4 (18.2%)	0 (0%)	0 (0%)	2.5

In the same questionnaire, I also asked about the naturalness of the following typical examples of sense-based low-degree modifiers:

(ii) a. Oto-ga kasukani kiko-e-ru.
sound-NOM faintly hear-can-Non.PST
'I can hear the sound faintly.'

b. (Context: The speaker is drinking wine now.)
Kono wain-wa kasukani amai.
this wine-TOP faintly sweet
'This coffee is faintly sweet.'

Unlike the examples in (69), these examples were judged as very natural:

(iii) Native speakers' judgments

	1	2	3	4	5	6	7	average
with *kikoeru* 'can hear' (=iia)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	22 (100%)	7
with *amai* 'sweet' (=iib)	0 (0%)	2 (9.1%)	0 (0%)	1 (4.5%)	3 (13.6%)	5 (22.7%)	11 (50%)	5.91

[29] Kagan & Alexeyenko (2011) argue that the Russian adjective *sladkij* 'sweet' posits a lower-bound closed scale based on the modification test by *slegka* 'slightly' and *soveršenno* 'absolutely':

One puzzling point is that it seems to be a bit difficult for *kasukani* to arise in comparatives in some environment (especially when a given adjective is a "negative adjective"):[30]

(70) (Context: The speaker is now drinking wine.)

Kono wain-wa sakki-no wain-yori-mo {(?)kasukani / sukoshi} amai.
this wine-TOP earlier-GEN wine-than-*mo* faintly / a.bit sweet

'This wine is {faintly/a bit} sweeter than the wine I just had.'

(71) (Context: The speaker is now drinking coffee.)

Kono koohii-wa sakki-no koohii-yori-mo {?kasukani / sukoshi} nigai.
this coffee-TOP earlier-GEN coffee-than-*mo* faintly / a.bit bitter

'This coffee is {faintly/a bit} bitter than the coffee I just had.'

In the case of the comparatives with *nigai* 'bitter', it may be difficult to set the standard of comparison at the derived zero point. The sentence does not seem to fit with the meaning of "barely recognizable in degree" because the coffee being compared is already bitter to some degree. I would like to leave this point for future study.

Footnote 29 continued

(i) a. Čaj slegka sladkij.
tea slightly sweet
'The tea is slightly sweet.'
b. # Čaj soveršenno sladkij.
tea absolutely sweet
'#The tea is absolutely sweet.' (Kagan and Alexeyenko, 2011)

The fact that the sentence with *soveršenno* 'absolutely' is odd suggests that *skadkij* 'sweet' does not posit an upper-closed scale (which has a maximum endpoint).

[30] The following are the result of the native speakers' judgment on (70) and (71) (the examples were all provided in the same questionnaire).

(i) Native speakers' judgments

	1	2	3	4	5	6	7	average
comparative with *sukoshi* (*amai* 'sweet')(=70)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (4.5%)	4 (18.2%)	17 (77.3%)	6.73
comparative with *kasukani* (*amai* 'sweet') (=70)	0 (0%)	1 (4.5%)	2 (9.1%)	2 (9.1%)	5 (22.7%)	1 (4.5%)	11 (50%)	5.67
comparative with *sukoshi* (*nigai* 'bitter')(=71)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (9.1%)	2 (9.1%)	18 (81.8%)	6.73
comparative with *kasukani* (*nigai* 'bitter')(=71)	1 (4.5%)	2 (9.1%)	4 (18.2%)	1 (4.5%)	4 (18.2%)	6 (27.3%)	4 (18.2%)	4.77

6 Japanese *honokani*

We have focused so far on Japanese *kasukani*. In this section, we consider another Japanese sense-based low-degree modifier, *honokani* (see also Oki (1983)). Although *honokani* is similar to *kasukani* in that it is sense-based, there are also some differences between them. First, the use of *honokani* is more restricted than *kasukani*. As the following examples show, *honokani* can measure degrees based on the senses of sight (color), taste, smell, and touch:

(72) a. (Sense of sight)
Akari-ga honokani mie-ru.
light-NOM *honokani* can.see-Non.PST
'The light is faintly visible.'

b. (Sense of taste)
Kono sake-wa honokani amai.
this sake-TOP *honokani* sweet
'This sake is faintly sweet.'

c. (Sense of smell)
Minto-ga honokani kao-ru.
mint-NOM *honokani* smell.good-Non.PST
'It smells faintly of mint.'

d. (Sense of touch)
Totte-ga mada honokani atatakai.
handle-NOM still *honokani* warm
'The handle is still faintly warm.'

However, *honokani* cannot measure sound; moreover, at least for some native speakers, measuring the degree of memory based on *honokani* is a bit odd:

(73) a. (Sense of hearing)
Oto-ga {kasukani /??honokani} kikoe-ru.
sound-NOM faintly /*honokani* can.hear-Non.PST
'The sound is faintly heard.'

b. (Sense of memory)
Kodomo-no toki-no koto-o {kasukani /?honokani}
child-GEN time-GEN thing-ACC faintly /*honokani*
oboe-tei-ru.
remember-STATE-Non.PST
'I faintly remember coming here when I was a child.'

Second, unlike *kasukani*, *honokani* has a positive evaluative meaning. As the following examples show, it is odd to use *honokani* if a predicate does not have a positive meaning:

(74) (Sense of taste)

a. Kono ocha-wa honokani amai.
this green tea-TOP *honokani* sweet
'This green tea is faintly sweet.'

b.?? Kono ocha-wa honokani nigai.
this green tea-TOP *honokani* bitter
'This green tea is faintly bitter.'

(75) (Sense of smell)

a. Minto-ga honokani kao-ru.
mint-NOM *honokani* smell.good-Non.PST
'It smells faintly of mint.'

b.?? Gomibako-ga honokani nio-u.
dust.box-NOM *honokani* smell-Non.PST
'The garbage box smells faintly.'

The above two differences suggest that *honokani* has a more restricted non-at-issue/CI meaning: *Honokani* conventionally implies that a judge j measures degree based on a sense of brightness, perfume, or sweetness, and evaluates the experience positively (cf. *kasukani*):[31]

(76) a. $[\![\text{honokani}]\!] : \langle\langle d^a, \langle e^a, t^a\rangle\rangle, \langle e^a, t^a\rangle\rangle \times \langle\langle d^a, \langle e^a, t^a\rangle\rangle, t^s\rangle =$
$\lambda G \lambda x.\ \exists d[d \gtrapprox \text{STND}_{MIN.G} \wedge G(d)(x) \wedge \text{barely-recognizable}(d)]$⧫
$\lambda G.$ have-measured(j, the degree of G) based on j's sense of {brightness/perfume/sweetness/warmth} $\wedge$ good(G) for j

b. $[\![\text{kasukani}]\!] : \langle\langle d^a, \langle e^a, t^a\rangle\rangle, \langle e^a, t^a\rangle\rangle \times \langle\langle d^a, \langle e^a, t^a\rangle\rangle, t^s\rangle =$
$\lambda G \lambda x.\ \exists d[d \gtrapprox \text{STND}_{MIN.G} \wedge G(d)(x) \wedge \text{barely-recognizable}(d)]$⧫ $\lambda G.$
have-measured(j, the degree of G) based on j's sense of {sight (color)/smell/taste/hearing/touch/memory}

The sense of brightness, perfume, or sweetness is more specific than the sense of sight, smell, or taste. The positive evaluative component seems to be connected to a specific sense.

7 English *faintly*

Let us now investigate the meaning and distribution of English *faintly*. It will be shown that the meaning and distribution patterns of *faintly* are similar to *kasukani* but it has a wider distribution pattern than *kasukani* in that it can directly combine with an emotive predicate.

[31] The Japanese adverb *honnori* has the same semantic characteristics as *honokani*.

7.1 Sense and emotion

English *faintly* is similar to the Japanese *kasukani* and *honokani* in that it has a sense-based meaning:

(77) a. This green tea is faintly sweet. (Sense of taste)
b. It smells faintly of mint. (Sense of smell)
c. The sound of the chapel bell is faintly heard. (Sense of hearing)
d. Mt. Fuji is faintly visible. (Sense of sight)
e. The barrel is still faintly warm. (Sense of touch)
f. This face is faintly familiar. (Sense of memory)

Similar to the other sense-based low-degree modifiers, *faintly* cannot combine with regular relative gradable predicates such as *expensive* and *tall*, as shown in (78):[32]

(78) a. ??This wine is faintly expensive.
b. ??This desk is faintly tall for a kid.

However, interestingly, *faintly* can also combine with an emotive predicate:

(79) a. I was faintly amused by this weird combination of road signs. (From the Internet)
b. There is, however, something faintly sad about these recent paintings. (LEXICO)
c. The whole thing was faintly ridiculous. (Oxford Learner's Dictionary)

This characteristic is not found in *kasukani* or *honokani*:

(80) a. Kono hanashi-wa {chotto / ??kasukani / ??honokani}
this story-TOP a.bit / faintly / *honokani*
bakage-tei-ru.
ridiculous-STATE-Non.PST
'This story is {a bit/faintly} ridiculous'

b. Kore-ni-wa (watashi-wa) {chotto / ??kasukani / ??honokani}
this-to-TOP I-TOP a.bit / faintly / *honokani*
odoroi-ta.
surprise-PST
'I was {a bit/faintly} surprised about it.'

[32] One of the anonymous reviewers and a participant of LSA 2021 suggested that examples such as "The violin sounds faintly expensive'' and "This wine is faintly expensive'' could be natural if the judge has some knowledge of how acoustic properties of a violin/qualities of a wine map to the expensiveness of the violin/wine.

Table 3 BNC, Top 20 adjective collocates with *faintly* (among 100) (February 12, 2020)

Adjective	Frequency	Adjective	Frequency
1. ridiculous (emotion)	10	11. disappointed (emotion)	4
2. surprised (emotion)	9	12. luminous (sense)	4
3. amused (emotion)	8	13. ludicrous (emotion)	4
4. mocking (emotion)	7	14. golden (sense)	4
5. familiar (sense, memory)	7	15. malicious (emotion)	4
6. visible (sense)	6	16. puzzled (emotion)	4
7. embarrassed (emotion)	5	17. sinister (emotion)	4
8. sick (emotion)	5	18. annoyed (emotion)	3
9. aware (sense, recognition)	4	19. hostile (emotion)	3
10. absurd (emotion)	4	20. green (sense)	3

7.2 Corpus data of *faintly*

To understand the distributional tendency of *faintly* and whether it is dialectal, I examined the collocations of "faintly + ADJECTIVE" in the BNC and COCA.[33]

As for the BNC, the results for the top 20 adjective collocates with *faintly* (among 100) are shown in Table 3. The following examples are part of the BNC examples:

(81) a. With a single look she had made him feel faintly ridiculous. (ridiculous, BNC)

b. Everyone looked faintly surprised, for I hadn't previously volunteered a remark. (surprised, BNC)

c. The blond man looked faintly amused. (amused, BNC)

d. He turned then to look at her, his expression faintly mocking. (mocking, BNC)

e. Thierry... Guizot... CDF... the names are all faintly familiar, and have a serious look about them. (familiar, BNC)

f. The light trained on his bed snaps off. He remains faintly visible. (visible, BNC)

g. As he looked at her, his face closed over with a faintly embarrassed incredulity. (embarrassed, BNC)

h. The mere idea made her feel faintly sick, as well as excited, but not sick enough to refuse the apple pie and cream when it came. (sick, BNC)

i. Grainne was only faintly aware of Raynor at her side now. (aware, BNC)

j. We all sat hunched and unspeaking. I guessed it was because everyone felt faintly absurd. (absurd, BNC)

[33] The BNC is designed to represent a wide cross-section of British English, both spoken and written, from the late 20th century. (http://www.natcorp.ox.ac.uk/). COCA is a large, genre-balanced corpus of American English (https://www.english-corpora.org/coca/).

Table 4 COCA, Top 20 adjective collocates of *faintly* (among 100) (December 10, 2020)

Adjective	Frequency	Adjective	Frequency
1. visible (sense)	42	11. green (sense)	10
2. ridiculous (emotion)	26	12. surprised (emotion)	10
3. glowing (sense)	18	13. familiar (sense, memory)	9
4. pink (sense)	17	14. luminous (sense)	9
5. sweet (sense)	17	15. bitter (sense)	7
6. aware (sense, recognition)	14	16. disapproving (emotion)	7
7. audible (sense)	12	17. discernible (sense)	7
8. embarrassed (emotion)	12	18. embarrassing (emotion)	6
9. amused (emotion)	11	19. mocking (emotion)	6
10. blue (sense)	11	20. red (sense)	6

In COCA, on the other hand, the results of the top 20 adjective collocates with *faintly* are shown in Table 4.

The following examples are part of the examples from COCA:

(82) a. Wildfires and perhaps some intentionally set agricultural fires burn on the continent of Australia, with smoke plumes faintly visible in the night sky. (visible, COCA)

b. From that viewpoint his early postings look, at the least, faintly ridiculous. (ridiculous, COCA)

c. He looks for a moment at the faintly glowing ticket, puts it back in his pocket. (glowing, COCA)

d. His ears turned faintly pink. (pink, COCA)

e. He chewed slowly on the piece of hay; it tasted earthy and faintly sweet. (sweet, COCA)

f. She was only faintly aware of the four armed men who galloped into camp and dismounted. (aware, COCA)

g. The voices were only faintly audible, the words indistinct, and what they mostly heard was Tiger Man's deep, throaty voice. (audible, COCA)

h. Emma found herself faintly embarrassed by the life-sized marble lions that flanked the entrance. (embarrassed, COCA)

i. He looks faintly amused, a little apologetic. (amused, COCA)

j. Her eyes were pale green, the lids faintly blue. (blue, COCA)

The above examples suggest the following observations. First, there is a difference between the BNC and the COCA in terms of the most frequent pattern. The most frequent pattern in the BNC is "faintly ridiculous,'' which is an emotive measurement. In contrast, the most frequent pattern in COCA is "faintly visible,'' which is a sense-based measurement, and the frequency of "faintly visible'' is much higher than the other patterns. Second, in terms of the proportion of emotive and sense-based

measurements, of the top 20 adjective collocates, 14 and 7 are based on an emotive adjective in the BNC and COCA, respectively. These results suggest that the use of *faintly* with an emotive predicate is more often used in British English than in American English. However, we should also acknowledge the fact that *faintly* can be used in both British and American English for both emotive and sensory measurements, and this does not hold for the Japanese *kasukani* and *honokani*.

The question is how we can analyze the meaning of *faintly*. Based on the philosophical view that emotions are a kind of perception (Roberts, 2003), I assume that *faintly* has a wider selectional restriction regarding the specification of sense:

(83) $[\![\text{faintly}]\!] : \langle\langle d^a, \langle e^a, t^a\rangle\rangle, \langle e^a, t^a\rangle\rangle \times \langle\langle d^a, \langle e^a, t^a\rangle\rangle, t^s\rangle =$
$\lambda G \lambda x. \exists d[d \gtrapprox \text{STND}_{MIN.G} \wedge G(d)(x) \wedge \text{barely-recognizable}(d)] \blacklozenge \lambda G.$ have-measured(j, the degree of G) based on j's sense of {sight (color)/smell/taste/hearing/touch/memory/emotion}

Both emotion and sense have to do with a speaker's experience, and it seems that it is not a coincidence that *faintly* can measure degrees of emotion and sense. One point we should notice is that the corpus data contain the following examples of indirect measurement:

(84) a. Everyone looked faintly surprised, for I hadn't previously volunteered a remark. (surprised, BNC)
b. He looks faintly amused, a little apologetic. (amused, COCA)

In these examples, the speaker is not directly measuring the degree of emotion but rather measuring it through sight. In the next section, we will consider the phenomenon of indirect measurement in detail.

8 Indirect measurement

So far, we have mainly discussed the examples of sense-based low-degree modifiers that directly combine with sense-related gradable predicates. However, as we observed in Sects. 1, 3.3 and 7, there are examples of sense-based low-degree modifiers where they combine with non-sense-related gradable predicates and measure their degrees indirectly through a sense that is linguistically expressed by expressions outside the domain of a gradable predicate. In this section, we will consider how we analyze the phenomenon of indirect measurement in a theoretical fashion with special reference to the mechanism of indirect measurement of emotion through perception based on the examples of *kasukani* and *faintly*.

8.1 Indirect measurement in the case of *kasukani*

As we observed in the Introduction, *kasukani* cannot directly combine with an emotive predicate, but if there is a sense-related expression in the main clause, it can co-occur with an emotive predicate:[34]

[34] Even if the subject is in the first person, *kasukani* 'faintly' cannot modify an emotive predicate:

(85) a. Hanako-wa {??kasukani / sukoshi} odoroi-ta.
Hanako-TOP faintly / a.bit surprise-PST
'Hanako was {faintly/a bit} surprised.'

b. Hanako-wa {kasukani / sukoshi} odoroi-ta hyoojoo-o ukabe-ta.
Hanako-TOP faintly / a.bit surprise-PST look-ACC express-PST
'Hanako looked {faintly/a bit} surprised.'

(86) a. Taro-wa {??kasukani / sukoshi} kanashin-dei-ru.
Taro-TOP faintly / a.bit sad-STATE-Non.PST
'Taro is {faintly/a bit} sad.'

b. Taro-wa {kasukani / sukoshi} kanashin-dei-ru-yooni
Taro-TOP faintly / a.bit sad-STATE-Non.PST-like
mie-ru.
look-Non.PST
'Taro looks {faintly/a bit} sad.'

In (85b) and (86b), *kasukani* syntactically and semantically modifies an emotive predicate, denoting that the degree of surprise/sadness is slightly greater than zero, but the measurement is made through the speaker's perception (sense of sight). Intuitively, examples (85a) and (86a) with *kasukani* are odd because of the lack of a perception-related expression, whereas (85b) and (86b) appear natural because *kasukani* interacts with *mie-ru* 'look' or *ukabe-ru* 'express', which are related to perception. In Sect. 3.3, we defined this kind of measurement of non-sensory degree through the senses as indirect measurement.

Some might consider *kasukani* to be semantically modifying the verb in the main clause (i.e., *ukabe-ta* 'express', *mie-ru* 'look'), rather than an emotive predicate. However, I do not see such a possibility for the following reasons. First, if we place *kasukani* before the main predicate, the sentences become a bit odd:

(87) a. ??Hanako-wa odoroi-ta hyoujou-o kasukani ukabe-ta.
Hanako-TOP surprise-PST look-ACC faintly express-PST
'Hanako faintly looked surprised.'

b. ??Taro-wa kanashin-dei-ru-yooni kasukani mie-ru.
Taro-TOP sad-STATE-Non.PST-like faintly look-Non.PST
'Taro faintly looked sad about that.'

Second, semantically, the indirect measurement sentence with *mie-ru* 'look' is equivalent to the sentence with perceptive *yooda* 'appear', but since *yooda* is a suffix (not a verb), *kasukani* cannot modify *yoo-da*:

(88) a. Taro-wa kasukani kanashin-dei-ru-yoo-da.
Taro-TOP faintly sad-STATE-Non.PST-appear-PRED

(i) Watashi-wa {??kasukani / chotto} {kanashii-desu / odorki-mashi-ta}.
I-TOP faintly / a.bit sad-POLITE / surprised-POLITE-PST
'I am {faintly/a bit} sad./I was {faintly/a bit} surprised.'

'Taro seems to be faintly sad.'

b. * Taro-wa kanashin-dei-ru kasukani yoo-da.
Taro-TOP sad-STATE-Non.PST faintly appear-PRED
'Taro seems to be faintly sad.'

These empirical facts support the idea that *kasukani* in (85b) and (86b) is measuring the degree of emotion through perception rather than measuring the degree of perception.

Note that *yoo-da* also has a hearsay evidential use but it does not license *kasukani* indirectly. If we replace the perception verb *mie-ru* 'look' with the hearsay evidential use of *yooda*, the sentence sounds less natural:

(89) (Context: The speaker reports what they heard from others.)

Taro-wa (sono koto-de) {??/? kasukani / sukoshi}
Taro-TOP that thing-with faintly / a.bit
kanashin-dei-ru-yooda.
sad-STATE-Non.PST-seem

'Taro is {faintly/a bit} sad about that, I hear.'

This makes sense given that hearsay evidence is not related to sense in a physical sense.

The question is how we can analyze these indirect measurements. I claim that the proposed multidimensional approach can successfully capture this. The key point is that, although *kasukani* directly modifies an emotive predicate, its CI is interpreted (satisfied) at a root level. In the Potts/McCready system, we can capture this using the parsetree interpretation.

(90) Parsetree interpretation (McCready, 2010; cf. Potts, 2005)
Let $\mathcal{T}$ be a semantic parsetree with the at-issue term $\alpha : \sigma^a$ on its root node, and distinct terms $\beta_1 : t^{\{c,s\}}$, ..., $\beta_n : t^{\{c,s\}}$ on nodes in it. Then, the interpretation of $\mathcal{T}$ is the $\langle [\![\alpha : \sigma^a]\!], [\![\beta_1 : t^{\{c,s\}}]\!], ..., [\![\beta_n : t^{\{c,s\}}]\!] \rangle$
(Based on McCready (2010: 32)).

For example, in (86b), the CI component of *kasukani* is embedded (situated below the bullet) as shown in (91). However, if we apply this rule, we can see both the at-issue and CI meanings on the root node, as shown in (92):

(91)

(92) **After the parsetree interpretation**
⟨look(∃d[$d \gtrapprox$STND$_{MIN.being.sad}$ ∧ being.sad(Taro) = d ∧ barely-recognizable(d)]) for j (=sp): t^a, have-measured(j, the degree of "kanashin-dei-ru'') based on j's sense of {sight/smell/taste/hearing/touch/memory}: t^s⟩

In this approach, (85b) and (86b) with *kasukani* are natural because the sense-related component of *kasukani* is true in these sentences. Contrariwise, *kasukani* in (85a) and (86a) sounds odd because the sentences do not ensure that the CI component of *kasukani* is true.

Indirect measurement can also be found in the nominal domain. In Sect. 3.3, we also observed the following examples of indirect measurements in the BCCWJ corpus.

(93) a. (Sense of sight, measuring the degree *kanashii* 'sad' through sight, with *-ge* 'look')

Yuyu-wa kasukani kanashi-ge-na emi-o ukabe-ru.
Yuyu-TOP faintly sad-look-ATTRI smile-ACC express-Non.PST

'Yuyu has a faintly sad smile on his face.' (Example from BCCWJ)

b. (Sense of sight, measuring the degree of frowning through sight, with *ge* 'look')

Sore-o miorosu shiroi kao-ni-wa kasukani itowashi-ge-na
it-ACC look.down white face-to-TOP faintly disgusting-look-ATTRI
iro-ga ukan-dei-ta.
expression-NOM appear-STATE-PST

'The pale white face looking down at it had a faintly frowning look to it.' (Example from BCCWJ)

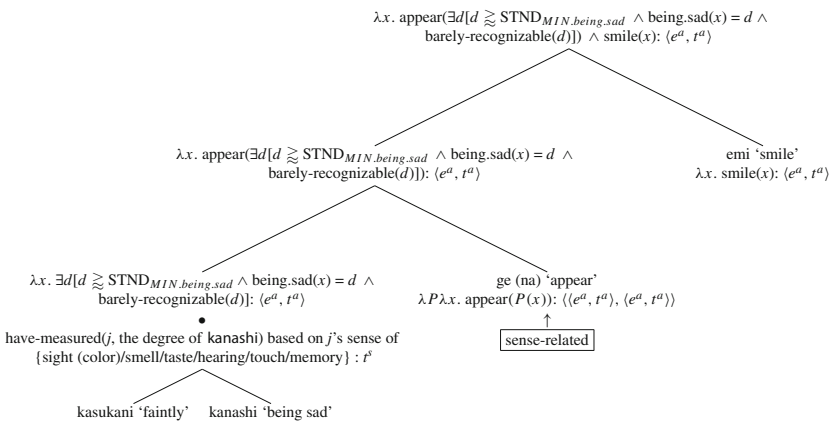
c. (Sense of sight, measuring the degree of embarrassment through sight, with *soo* 'look')

Chotto mutto shi-ta yoosu, soreni kasukani
a.bit peeve do-PST look and faintly
kimari.ga.waru-soo-dat-ta-ga yamashii tokoro-ya shimatta-to
embarrassed-look-PRED-PST-but feel.guilty point-or Oh.no-as
iu-yoona hyoujou-wa issai nai.
say-like expression-TOP at.all NEG

'He looked a little peeved and faintly embarrassed, but there was no trace of shame on his face.' (Example from BCCWJ)

In these examples, the degree of the emotion (i.e., shame, sadness, and disgust) is measured through a perception that is linguistically expressed by the sense-related suffixes *-soo* 'look' or *-ge* 'look'. The crucial point here is that, although *-soo* and *-ge* morphologically attach to the stem of emotive adjectives, they semantically take scope over "*kasukani* + the emotive adjective" (I assume that *na* is semantically null). Morphologically, *na* changes the adjectival noun (here *kanashi-ge*) into to an attributive adjective), as shown in the following figure:

(94)



The above examples in (93) are the examples of indirect measurement where *kasukani* measures the degree of emotion through perception, but there are various examples of indirect measurement concerning other senses. In Sect. 3.3, we observed the following corpus examples, and these can also be analyzed as examples of indirect measurement:

(95) a. (Sense of smell, *ii* 'good' co-occurring with *kaori* 'perfume')

Kasukani ii kaori-ga shi-ta.
faintly good perfume-NOM do-PST

'It had a faintly nice smell.' (Example from BCCWJ)

b. (Sense of sight, *marui* 'round' co-occurring with *kanji* 'feeling')

Dokoka kasukani marui-kanji-o uke-ru mono-janai-ka.
somehow faintly round-feeling-ACC receive-Non.PST thing-NEG-Q
'Isn't it something that receives a faintly rounded feeling somehow?' (Example from BCCWJ)

c. (Sense of hearing, *omoshiroi* 'amused' co-occurring with *chooshi* 'tone')
Kasukani omoshiro-ga-tteiru-yoona hinikuna chooshi-ga
faintly amused-look-PROG-like ironic tone-NOM
kanji-rare-ru.
feel-PASS-Non.PST
'I sense a faintly amused, ironic tone.'(Example from BCCWJ)

In (95a), *kasukani* is measuring the degree of goodness through a sense of smell. In (95b), it is measuring the degree of roundness based on a sense of sight or unspecified feeling. In (95c), *kasukani* is measuring the degree of amusement based on a sense of hearing. Although the syntactic structures of (95) are different from those of (85b) and (86b), these examples can be analyzed in the same way as the above examples of indirect measurements. In other words, the experiential component of *kasukani* is satisfied outside the domain of adjective.

The question is to what extent indirect measurement is general. For example, one might wonder whether *kasukani* can combine with a regular adjective, such as *furui* 'old' (not an emotive adjective), if we add a sense-related expression, such as *mie-ru* 'look'. While such a pattern seems to be theoretically possible, as shown by the following example, it is odd:

(96) Kono shashin-wa {??kasukani / sukoshi} furuku mie-ru.
this picture-TOP faintly / a.bit old look-Non.PST
'This picture looks {faintly/a bit} old.'

I consider that this combination is odd because of the scale structure of *furui* 'old'. Just like the example of *oishii* 'delicious' (see Sect. 5), *furui* is a relative adjective that posits a contextually determined standard, and this conflicts with the restriction of *kasukani* in that it measures degree from a minimum standard.[35]

8.2 Indirect measurement in the case of *faintly*

Let us consider the indirect measurement in *faintly*. As we observed in Sect. 7, *faintly* can not only modify sense-related adjectives (e.g., *faintly visible*) as in (97) but also directly modify emotive predicates as in (98):

[35] Some native speakers consider that the following example sounds natural, although there is no perception verb in the main clause:

(i) Kono koto-o omoidasu-to {?kasukani / sukoshi} kanashiku na-ru.
this thing-ACC remember-when faintly / a.bit feel.sad become-Non.PST
'When I remember this, I feel {faintly/a bit} sad.'

This sentence seems to be relatively natural because the verb *omoi-dasu* 'remember' is present in the when-clause, which is concerned with memory and experience. However, the sentence may still sound a bit unnatural because it is not clear how the speaker relates to the degree of sadness and memory.

(97) a. This wine is faintly sweet.
b. The bell is faintly heard.
c. The ocean is faintly visible.
d. It smells faintly of mint.

(98) a. There is, however, something faintly sad about these recent paintings. (Lexico)
b. The whole thing was faintly ridiculous. (Oxford Learner's Dictionary)

Examples in (98) are natural because *faintly* can directly measure the degree of emotion through *j*'s sense of emotion (without the aid of other sense-related expressions). I proposed the following lexical item for *faintly* and claimed that it has a wider selectional restriction regarding the kinds of sense than *kasukani*:

(99) $[\![\text{faintly}]\!] : \langle\langle d^a, \langle e^a, t^a\rangle\rangle, \langle e^a, t^a\rangle\rangle \times \langle\langle d^a, \langle e^a, t^a\rangle\rangle, t^s\rangle =$
$\lambda G \lambda x. \exists d[d \gtrapprox \text{STND}_{MIN.G} \wedge G(d)(x) \wedge \text{barely-recognizable}(d)] \blacklozenge \lambda G.$ have-measured(j, the degree of G) based on j's sense of {sight (color)/smell/taste/hearing/touch/memory/emotion}

A crucial point is that *faintly* can also be used as an indirect measurement. Observe the following examples:

(100) a. Bill found himself faintly embarrassed. (*faintly* = subject-oriented)
b. Bill looked faintly amused. (*faintly* = speaker-oriented) (= indirect measurement)

The proposed analysis can also naturally explain the interpretation of *faintly* in embedded context. In (100a), the judge (j) of *faintly* corresponds to the subject Bill (not the speaker), and he measures the degree of embarrassment through his emotion. In contrast, in (100b), the judge of *faintly* is the speaker, who cannot directly measure the degree of amusement. Thus, the only possible reading is where the judge measures the degree of emotion through their sense of sight. The interpretation in (100b) is similar to that of indirect measurement by *kasukani*:

(101) Taro-wa {kasukani / sukoshi} yorokon-dei-ru-yooni mie-ru.
Taro-TOP faintly / a.bit amuse-STATE-Non.PST-like look-Non.PST
'Taro looks {faintly/a bit} amused.'

The indirect measurement is possible because the sense-related experiential component is a CI and can be satisfied globally. The proposed multidimensional approach can successfully capture their interpretations and distributions and judge-dependent/projective behaviors.

9 Conclusion

In this study, I investigated the meaning and use of the Japanese and English sense-based low-degree modifiers *kasukani*, *honokani*, and *faintly*, and claimed that they

Table 5 Variations among sense-based low-degree modifiers

	kind of sense	evaluativity	direct combination with an emotive predicate
kasukani	sight, smell, taste, hearing, touch, memory	neutral	impossible
honokani	sight, taste, smell, touch	positive	impossible
faintly	sight, smell, taste, hearing, touch, memory, emotion	neutral	possible

have sense-related experiential requirements at the non-at-issue level, unlike typical low-degree modifiers. In other words, they not only semantically denote a small degree but also conventionally implicate that the judge (typically the speaker) measures the degree based on their own sense. This means that there are two types of low-degree modifiers in natural language: a "neutral degree modifier'' that does not lexically specify the source of measurement (such as the typical low-degree modifiers *a bit* in English and *sukoshi* 'a bit' in Japanese), and a "sense-based degree modifier'' that lexically specifies the source of measurement (i.e., specifies that the measurement is made based on a judge's own sense).

This study also clarified that there are variations among sense-based low-degree modifiers regarding (i) the kind of sense, (ii) the presence/absence of evaluativity, and (iii) the possibility of the combination with an emotive predicate, as shown in Table 5. I suggested that these variations can be analyzed based on the differences in CI (non-at-issue) components.

I have also discussed the phenomenon of indirect measurement via sense and shown that the experiential requirements of sense-based low-degree modifiers can be satisfied not only directly (locally) but also indirectly (globally). In the direct (local) case, a sense-based low-degree modifier combines with a gradable predicate *P*, and the experiential component is satisfied in relation to the gradable predicate, which is sense-based (e.g., *This sake is faintly sweet*). In the indirect (global) case, a sense-based low-degree modifier combines with a gradable predicate *P* and denotes that the degree of *P* is very small, but its experiential requirement is satisfied through the predicate that is placed higher (e.g., *He looks faintly amused*).

These points are theoretically significant because they suggest that there can be a mismatch between the at-issue and the CI levels in the modification structure. Thus, a multidimensional approach can successfully and uniformly capture the direct (local) and indirect (global) measurements.

This study has also clarified the similarities and differences between a sense-based degree adverb and a predicate of personal taste. The literature states that predicates of personal taste, such as *tasty*, require direct experience (e.g., Pearson 2013; Ninan 2014; Kennedy and Willer 2022). The sense-based low-degree modifiers are similar to predicates of personal taste such as *oishii* 'tasty'/*tasty* in that they have an experiential component, but unlike a predicate of personal taste, the experiential component is satisfied via their interaction with other experience-related elements in the sentence irrespective of whether the measurement is local or global. This suggests that they are a

kind of concord phenomenon, and we have analyzed this based on the non-at-issue/CI properties of sense-based low-degree modifiers.

This study will contribute to the expansion of research on experiential semantics and the understanding of evidentiality and experientiality in natural language.

In a future study, more empirical and theoretical investigations should be carried out for the semantics/functions of sense-based low-degree modifiers. In this paper we focused on cases where a sense-based low-degree modifier functions as an adverb and modifies a gradable predicate. However, the sense-based low-degree modifier also has a noun-modifying use as well. As the following examples show, it is possible to paraphrase the sentence with the adverbial *kasukani* into the sentence with the adjective-modifying *kasukana*:[36]

(102) a. (Watashi-ni-wa) kasukana oto-ga kikoe-ru.
I-to-TOP faint sound-NOM can.hear-Non.PST
'I can hear a faint sound.'

b. (Watashi-ni-wa) oto-ga kasukani kikoe-ru.
I-to-TOP sound-NOM faintly can.hear-Non.PST
'I can faintly hear a sound.'

The adjective *kasukana* can modify the sensory nouns such as *oto* 'sound', *kaori* 'perfume', *hikari* 'light'.[37]

(103) a. kasukana kaori
faint perfume
'faint perfume'

b. kasukana oto
faint sound
'faint sound'

c. kasukana hikari
faint light
'faint light'

d. kasukana nozomi
faint hope
'faint hope'

Note that the noun modifying *kasukana* 'faint' can co-occur with nouns that describe psychological states, such as *fuan* 'anxiety' and *fuman* 'dissatisfaction'.

(104) a. Kasukana fuan-o kanji-ru.
faint anxiety-ACC feel-Non.PST
'I feel a faint sense of anxiety.'

[36] Strictly speaking, *kasukana* consists of the adjectival noun *kasuka* plus *na* that makes the adjectival noun an attributive adjective.

[37] Note that the adjective *kasukana* 'faint' can also modify a modality-related noun *kanousei* 'possibility':

(i) Kasukana {kanousei / nozomi}-ga noko-ttei-ru.
faint possibility / hope-NOM leave-STATE-Non.PST
'There remains a faint {possibility/hope}.'

b. Masakichi-no mune-ni-wa kasukana fuman-ga
Masakichi-GEN chest-LOC-TOP faint dissatisfaction-NOM
wadakamat-tei-ta.
linger-PROG-PST
'A faint feeling of dissatisfaction lingered in Masayoshi's chest.'
(from 'Shimo-no asa', written by Shuhei Fujisawa)

This point is different from the adjective/predicate modifying *kasukani* 'faintly'. As we discussed in Sect. 8, *kasukani* cannot directly modify an emotive predicate:

(105) a. ?? Watashi-wa kasukani fuan-da.
I-TOP faintly anxious-PRED
'I am faintly anxious.'

b. ?? Kore-nitsuite-wa watashi-wa kasukani fuman-da.
this-about-TOP I-TOP faintly dissatisfied-PRED
'I am faintly dissatisfied about this.'

The noun modifying *kasukana* 'faint' seems to have a wider selectional restriction than the adjective/predicate modifying *kasukani* 'faintly'. I would like to leave the mechanism behind this asymmetry for a future study.

Furthermore, there is a question of whether the sense-based measurement can also be found in non-low degree modifiers including high-degree modifiers. As for high-degree modifiers, there are various expressions in natural languages such as *totemo* 'very' and *kiwamete* 'extremely' in Japanese and *very* and *extremely* in English, but there seem to be no sense-related high-degree modifiers.[38] It may be that sense-based degree modifiers are more likely to develop in a situation where the degree in question is so subtle that the senses must be sharpened. More extensive empirical and theoretical investigation is needed.

Abbreviations ATTRI: attributive form, ACC: accusative, COMP: complementizer, COND: conditional, CONF: confirmation, CONT: contrastive, DAT: dative, EVID: evidential, GEN: genitive, HON: honorific, IMP: imperative, LOC: locative, MIR: mirative, NEG: negation, negative, NMLZ: nominalizer, NOM: nominative, Non.PST: non-past tense, PASS: passive, PRF: perfective, POLITE: polite, PRED: predicative, PRES: present, PROG: progressive, Prt: particle, PST: past, Q: question, QUOT: quotative, STATE: state/stative, TE: Japanese *te*-form, TOP: topic.

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[38] The Japanese noun-modifying adjective *houjun-na* 'well-mellowed, mellow' represents a high degree of mellowness and is related to perfume and taste (e.g., *houjun-na wain* 'well-mellowed wine', *houjun-na kaori* 'mellow aroma'), but it cannot modify adjectives and thus does not seem to be a typical degree modifier.

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Declarations

Conflict of interest The author declares that there are no conflict of interest associated with this manuscript.

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