The scalar contrastive *wa* in Japanese

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Abstract In recent years, various proposals have been made concerning the relationship between scalar implicature and contrastive *wa*, and various opinions have been expressed as to whether the scalar meaning generated by contrastive *wa* is a conventional lexical meaning or a conversational one resulting from a general pragmatic principle (e.g., Hara 2006; Sawada 2007; Schwarz & Shimoyama 2011 for a lexicalist approach and Tomioka 2010; 2016 for a non-lexicalist approach). In this paper, based on the examples of A-*wa* A construction, embedded contrastive *wa* and other related phenomena, I will argue that in at least some uses of contrastive *wa*, the scalar meaning of the contrastive *wa* has been conventionalized and that it is difficult to analyze all types/meanings of contrastive *wa* based on a single lexical item or a pragmatic principle.

Keywords contrastive *wa* · Adjective-*wa* Adjective · scalarity · embedded interpretation

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1 Introduction

In recent years, the relationship between contrastiveness and scalar implicature has been a controversial issue in studies of the Japanese contrastive particle*wa*. Broadly, there are two main approaches to the relationship: a lexicalist view (e.g., Hara 2006; Sawada 2007; Schwarz & Shimoyama 2011) and a non-lexicalist view (e.g., Tomioka 2010; 2016). In the lexicalist view, the scalar meaning (the scalar implicature-like meaning) of *wa* is encoded in the lexical meaning of the contrastive *wa*, while in the non-lexicalist approach, it is triggered/drawn by Gricean reasoning, as in the Standard Recipe by Geurts (2010); see Tomioka (2016) for an overview of the two competing approaches.

In this paper, based on new data (i.e., the phenomenon of the adjective doubling construction A-*wa* A and the related contrastive expressions), I argue that in at least some uses of contrastive *wa*, the scalar meaning of contrastive *wa* has been conventionalized, making it difficult to analyze all

types of contrastive *wa* in a uniform fashion. Theoretically, it will be shown that Sawada's 2007 analysis of the scalar contrastive *wa*, which assumes it to be a mirror image of *even*, can apply to these new data as well.[1]

This paper is structured as follows. In Section 2, we begin the discussion by reviewing the scalar and non-scalar uses of contrastive *wa* based on Sawada (2007). Section 3 further investigates the low scalar property of contrastive *wa* based on the A-*wa* A construction. Section 4 discusses the interpretation of the scalar contrastive *wa* in the embedded context and further supports the idea that the scalar meaning of contrastive *wa* has been conventionalized. In Section 5, we provide some additional notes on the scalar-based analysis. Section 5.1 discusses the seemingly problematic examples of contrastive *wa* that involve a high proportional quantifier and show that it is not a counterexample. Section 5.2 analyzes the interpretation of contrastive *wa* in a negative environment that involves scale-reversal and Section 5.3 clarifies the relationship between scalar and non-scalar contrastive *wa*. Section 6 compares my analysis to existing approaches to contrastive *wa* and Section 7 discusses similar scalar phenomena in other particles such as the Japanese *mo*, *shika* 'only, except' and English *only*. Finally, Section 8 summarizes the paper and presents a tentative idea of how scalar *wa* developed.

2 The dual use of contrastive *wa*

To begin the discussion of contrastive *wa*, this section overviews Sawada's idea of contrastive *wa*, which explicitly assumes a low scalar meaning.

Sawada (2007) posits that when contrastive *wa* is attached to a non-scalar element, it has a polarity reversal function, as shown in (1). When it is attached to a scale-invoking element, however, it functions as a scalar particle whose meaning has a mirror image of *even*, as shown in (2), where the subscript *CT* stands for contrastive:[2]

[1]The scalar phenomenon is also found in Korean contrastive *nun*. In his research, Lee argues that the Korean contrastive *nun* triggers a conventional scalar implicature (e.g., Lee 1999; 2003; 2006; 2008). He argues for conventionality of scalar meaning in connection with its intonation. Lee claims that the scalar meaning in the sentence with the contrastive *nun* is conventional because it is evoked by the morpheme plus a high tone. Lee also addresses the conventionality of contrastive topic in English (see e.g., Lee (2008)).

[2]Prosodically, as many researchers have pointed out, contrastive *wa* displays focus

(1) *Taro-wa ki-ta.*
Taro-CONT come-PST
'[Taro]$_{CT}$ came.' (But the others didn't/but the others may or may not have come.)

(2) (Context: Both amateur and professional tennis players participating in a tournament.)
a. *Taro-wa shirooto-ni {-wa / ??-sae} kat-ta.*
Taro-TOP amateur-DAT CONT / even win-PST
'Taro beat [an amateur]$_{CT}$. /??Taro even beat [an amateur]$_{F}$.'
b. *Taro-wa puro-ni {??-wa / -sae} kat-ta.*
Taro-TOP professional-DAT CONT / even win-PST
'??Taro beat [a professional]$_{CT}$. / Taro even beat [a professional]$_{F}$.'

In this view, there are two types of contrastive *wa*: the scalar contrastive (CT) *wa* and the non-scalar contrastive *wa* (*C* in (3) denotes a contextually determined set of relevant alternatives):

(3) a. $[\![wa_{\text{CTnon.scalar}}]\!] = \lambda p.\exists q[C(q) \wedge q \neq p \wedge (\Diamond)\neg q]$
b. $[\![wa_{\text{CTscalar}}]\!] = \lambda p.\exists q[C(q) \wedge q \neq p \wedge (\Diamond)\neg q] \wedge \forall q[C(q) \wedge q \neq p \rightarrow q >_{\text{unlikely}} p]$

The non-scalar contrastive *wa* in (3a) conventionally implies that (it is possible that) the contextually determined alternative propositions are not true (e.g., Oshima 2005; To appear), while the scalar contrastive *wa* in (3b) conveys not only this conventional implicature (CI) but also a scalar CI that the at-issue proposition is the least unlikely among the alternatives (i.e., it has a low scalar value).[3]

prosody. The sentence with contrastive *wa* either has a pitch peak on the focused element or a pitch peak on *wa* itself (see Tomioka (2010; 2016) for the detailed explanation)(The capital letter stands for the location of the pitch accent):

(i) *{TARO-wa / Taro-WA} ki-ta.*
Taro-CONT / Taro-CONT come-PST
'Taro came.' (But the others didn't/but the others may or may not have come.)

[3]In this paper, I do not go into an "ignorance" (uncertainty) inference of the contrastive *wa* (e.g., Hara 2006; Tomioka 2010; Hirayama 2019); instead, I assume that the ignorance inference can be captured by assuming that a possibility operator $\Diamond$ can be inserted in the

Although Sawada's (2007) observation in (2) seems to be intuitively understandable, a problem occurs because it is possible to use the contrastive *wa* in (2b) in a polarity reversal context (i.e., Taro beat a professional, but he could not beat an amateur). Thus, the data examined so far on its own do not provide conclusive evidence of the existence of the scalar contrastive *wa*.[4]

3 The A-*wa* A construction

In this section, we focus on the first phenomenon, the adjective doubling expression. I argue that the adjective doubling expression A-*wa* A offers stronger evidence for the existence of a scalar contrastive *wa*.

3.1 The negative meaning of the A-*wa* A construction

As the examples in (4) show, although both the simple adjectival sentence and the adjective doubling sentence denote that "this bread is tasty," their meanings are not the same:[5]

(4) a. *Kono pan-wa oishii.*
This bread-TOP tasty
'This bread is tasty.'
b. *Kono pan-wa oishii-wa oishii.*
This bread-TOP tasty-CONT tasty

meaning of *wa*, as in (3).

[4]In fact, Sawada (2007) discusses the existence of a scalar contrastive *wa*, including interpretations such as contrastive *wa* attached to the standard of comparative sentences, contrastive *wa* attached to the predicate, and polar question sentences (negative-bias reading) accompanied by contrastive *wa*. This paper discusses the existence of a scalar use of *wa* based on new phenomena.

[5]A-*wa* A can also be paraphrased by A-*koto-wa* A (e.g., *oishii-koto-wa oishii* 'tasty-NMLZ-CONT tasty'), where *koto* functions as a nominalizer or A-*ni-wa* A (e.g., *oishii-ni-wa oishii* 'tasty-DAT-CONT tasty'), and *ni* is a dative marker. Furthermore, the conditional idiomatic expression A-*to ie-ba* A 'A-as say-COND A' induces a similar scalar implicature:

(i) *Kono pan-wa oishii-to ie-ba oishii.*
This bread-TOP tasty-as say-COND tasty
'This bread is tasty, but it is not very tasty.' (lit. This bread is tasty, if I say tasty.)

I thank one of the anonymous reviewers for bringing the conditional expression to my attention.

'This bread is [tasty]$_{CT}$.' CI: The bread meets only the standard of "tasty" minimally and it is not very tasty.

Unlike (4a), (4b) implies that the bread meets only the standard of "tasty" minimally ; thus, it is not very tasty.[6]

I assume that this inference is a conventional implicature (CI). In the Gricean theory of meaning, CIs are considered part of the meanings of words, but these meanings are independent of "what is said" (e.g., Grice 1975; Potts 2005; 2007; McCready 2010; Sawada 2010; 2018; Gutzmann 2011; 2012). Furthermore, it is often assumed that CIs are speaker-oriented by default (Potts 2005; 2007). The idea that the meaning triggered by A-*wa* A is a CI is supported by the fact that it is not part of "what is said." Indeed, the CI component cannot be challenged by saying "No, that's false." As the following data show, B can object to the at-issue meaning of A's utterance as shown in (5B), but B cannot object to the CI part of A's utterance as shown in (6B):

(5) A: *Kono hon-wa takai-koto-wa takai.*
This book-TOP expensive-NMNL-TOP expensive
'This book is [expensive]$_{CT}$.'
(CI: The bread meets only the standard of "expensive" minimally and it is not very expensive.)
B: *Iya sonna-koto-wa nai. Mattaku takaku-nai-yo.*
No such-thing-TOP NEG At.all expensive-NEG-PRT
'That's false. It is not expensive at all.'

[6]In terms of prosody, it seems natural to place pitch peak on the first adjective as in (i), but it also seems that placing pitch peak on *wa* itself as in (ii) is possible:

(i) *Kono pan-wa OISHII-wa oishii.*
This bread-TOP tasty-CONT tasty
'This bread is [tasty]$_{CT}$.' CI: The bread meets only the standard of "tasty" minimally. (= It is not very tasty.)

(ii) *Kono pan-wa oishii-WA oishii.*
This bread-TOP tasty-CONT tasty
'This bread is [tasty]$_{CT}$.' CI: The bread meets only the standard of "tasty" minimally. (= It is not very tasty.)

(6) A: *Kono hon-wa takai-koto-wa takai.*
This book-TOP expensive-NMNL-TOP expensive
'This book is [expensive]$_{CT}$.'
(CI: The bread meets only the standard of "expensive" minimally and it is not very expensive.)
B: *Iya sonna-koto-wa nai. # Totemo takai-yo.*
No such-thing-TOP NEG Very expensive-PRT
'That's false. It is very expensive.'

In (5) B is denying the at-issue part of the sentence, that is, the book is expensive. By contrast, B is not denying the CI component in (6), which sounds unnatural.

Further evidence that the meaning produced by using A-*wa* A instead of the simple adjective A is CI is that it does not fall within the scope of the logical operator. The following is an example where external negation is added, but this sentence is unnatural because of the projection of the CI of A-*wa* A:

(7) ??*[Kono pan-wa oishii-wa oishii]-to.iu.wake.dewa.nai.*
This bread-TOP tasty-CONT tasty-it.is.not.the.case.that
At-issue: It is not the case that this bread is tasty.
CI: The bread meets only the standard of "tasty" minimally and it is not very tasty.

By the use of A-*wa* A, there is an implication that the bread meets only the standard of "tasty" minimally and it is not very tasty. However, this meaning cannot be negated by the external negation. As a result, a mismatch (contradiction) arises between the at-issue component and the CI component. (The CI component conveys that the degree of "tasty" minimally satisfies the standard, but the at-issue component does not.)

Furthermore, it is difficult to accept A-*wa* A (but not simple adjective A) in pure questions, pure conditional clauses, and pure modal sentences:

(8) *Kono kuruma-wa {takai/ ?? takai-koto-wa*
This car-TOP expensive/ expensive-NMLZ-CONT
takai}-desu-ka?
expensive-PRED.POLITE-Q

'Is this car {expensive/??[expensive]$_{CT}$}? (CI: This car is expensive but not very expensive.)

(9) *Moshi sono kuruma-ga {taka-kereba*
By.any.chance that car-NOM expensive-COND
/??takai-koto-wa takai-naraba}, kai-masen.
/expensive-NMLZ-CONT expensive-COND buy-NEG.POLITE
'If the car is {expensive/??[expensive]$_{CT}$}, then I will not buy it.' (CI: The car is expensive but not very expensive.)

(10) *Moshikashitara kono kuruma-wa {takai*
Maybe this car-TOP expensive
/??takai-koto-wa takai}-kamoshirenai.
/expensive-NMLZ-CONT expensive-may
'Maybe this car is {expensive/??[expensive]$_{CT}$}. (CI: This car is expensive but not very expensive.)

In these examples, the implication that the given car is minimally expensive arises from A-*wa* A. Because of this projective meaning, it is unnatural to use it for genuinely questioning whether it is expensive, or to infer or assume that it is expensive.[7]

Finally, I would like to confirm that the meaning of A-*wa* A is not a conversational implicature, since it is not cancelable:

(11) *Kono pan-wa oishii-wa oishii-desu. #To.iu.ka totemo*
This bread-TOP tasty-CONT tasty In.fact very

[7]The interrogative sentence (8) with A-*wa* A may increase in naturalness if the interrogative sentence is interpreted as a confirmation-seeking question. Also, if *kamoshirenai* 'may' is interpreted as a speech act usage of "endorsement" (similar to the English *may...but* (Sweetser 1990; Kay 1990), A-*wa* A can co-occur with *kamoshirenai* 'may':

(i) *Tashikani kono sofaa-wa takai-(koto)-wa takai-kamoshirenai-ga totemo*
Certainly this sofa-TOP expensive-NMLZ-CONT expensive-may-but very
suwarigogochi-ga ii-desu.
sit.down.feeling-NOM good-PRED.POLITE
'Certainly, this sofa may be expensive, but it is very comfortable.'

See Sawada (2006) and references therein for the discussion of speech act-oriented *kamoshirenai* 'may'.

oishii-desu.
tasty-PRED.POLITE
'This bread is [tasty]$_{CT}$. #In fact, it is very tasty.'

If we use a simple adjectival sentence (with simple *oishii* 'tasty'), this kind of discourse move is perfectly natural, though.

3.2 Form and meaning of the A-*wa* A construction

Let us now consider the form and meaning of the A-*wa* A construction in more detail. First, it is important to verify that the two adjectives are identical and function as a single adjective. Semantically, A-*wa* A has the same meaning as the single de-adjectival expression "A$_{adverbial.form}$-*wa aru*":

(12) *Kono pan-wa {oishii-wa oishii / oishiku-wa aru}.*
This bread-TOP tasty-CONT tasty / tasty.adverbial be
'This bread is [tasty]$_{CT}$.'

Oishiku is the adverbial (conjunctive) form of the adjective *oishii* and modifies the verb *aru*.

If the first A and the later A do not match, the sentence becomes ungrammatical:

(13) **Kono keeki-wa oishii-wa amai.*
This cake-TOP tasty-CONT sweet

Note that the A-*wa* A construction is different from Japanese NP doubling expressions (which do not involve contrastive *wa*; see Oho & Yamada 2011; Akita 2012):

(14) *Kono resutoran-wa Nihon-Nihon shi-tei-ru.*
This restaurant-TOP Japan-Japan do-STATE-NON.PST
'This restaurant is a typical Japanese restaurant.' (Oho and Yamada 2011)

Intuitively, NP reduplication involves a prototype. Oho & Yamada (2011) claim that it is a gradable predicate that represents closeness to the norm. Although NP reduplication is related to degree, there is no contrastive scalar meaning in A-*wa* A. Note that the contrastive *wa* is obligatory in the A-*wa*

A construction. If there is no *wa*, the sentence becomes ungrammatical (**oishii-oishii*).

Let us consider how the CI meaning of A-*wa* A can be analyzed based on example (4b). I assume that A-*wa* A is a special contrastive expression that has the same at-issue meaning as A but also obligatorily introduces a set of stronger scalar alternatives, as in (15) (θ stands for a contextually determined standard).[8,9]

(15) $[\![$[A-<wa> A]$_{\mathrm{CT}}]\!]$ =
At-issue: $\lambda x \lambda w.\exists d[d > \theta_A \wedge A(x) = d]$ in w
Alternatives: $\{\lambda x \lambda w.\exists d_1[d_1 >!\theta_A \wedge A(x) = d_1]$ in w,
$\lambda x \lambda w.\exists d_2[d_2 >!!\theta_A \wedge A(x) = d_2]$ in w,
$\lambda x \lambda w.\exists d_3[d_3 >!!!\theta_A \wedge A(x) = d_3]$ in $w\}$

! indicates intensification and denotes that the distance between a degree and a standard is large. If ! is used multiple times, the distance becomes larger. In this approach, the at-issue and its alternatives of *oishii-wa oishii* 'delicious-CONT delicious' can be represented as follows:

(16) $[\![$[oishiii-<wa> oishiii]$_{\mathrm{CT}}]\!]$ =
At-issue: $\lambda x \lambda w.\exists d[d > \theta_{\mathrm{tasty}} \wedge \mathrm{tasty}(x) = d]$ in w
Alternatives: $\{\lambda x \lambda w.\exists d_1[d_1 >!\theta_{\mathrm{tasty}} \wedge \mathrm{tasty}(x) = d_1]$ in w,
$\lambda x \lambda w.\exists d_2[d_2 >!!\theta_{\mathrm{tasty}} \wedge \mathrm{tasty}(x) = d_2]$ in w, $\lambda x \lambda w.\exists d_3[d_3 >!!!\theta_{\mathrm{tasty}} \wedge \mathrm{tasty}(x) = d_3]$ in $w\}$

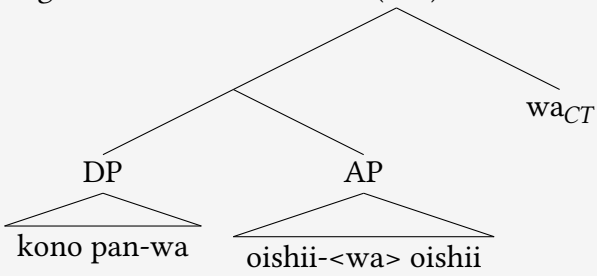
Linguistically speaking, the alternatives of *oishii-wa oishii* in (16) can be understood as *totemo oishii* 'very tasty', *mechakucha oishii* 'extremely tasty', etc. Note that although *wa* is morphologically attached to the adjective, it functions as a propositional operator, as in (17):

[8]Here I assume that a set of stronger scalar alternatives does not contain the adjective A. However, it is also possible to assume another approach where the set of alternatives includes A itself.

[9]Alternatively, it seems possible to define the set of stronger alternatives as follows:

(i) $[\![$[A-<wa> A]$_{\mathrm{CT}}]\!]$ =
At-issue: $\lambda x \lambda w.\exists d[d > \theta_A \wedge A(x) = d]$ in w
Alternatives: $\{\lambda x \lambda w.\exists d'[d' > \theta_A \wedge A(x) = d']$ in $w : d' > d\}$

(17) Logical structure of A-*wa* A (=4b)



Following the idea of alternative semantics (e.g., Rooth 1985), I assume that alternatives are interpreted in the same way as at-issue elements in a point-wise fashion, as in (18):

(18) At-issue proposition: $\lambda w.\exists d[d > \theta_{\text{tasty}} \wedge \text{tasty(this.bread)} = d]$ in w
Alternative propositions: $\{\lambda w.\exists d_1[d_1 >! \theta_{\text{tasty}} \wedge \text{tasty(this.bread)} = d_1]$ in $w, \lambda w.\exists d_2[d_2 >!! \theta_{\text{tasty}} \wedge \text{tasty(this.bread)} = d_2]$ in $w, \lambda w.\exists d_3[d_3 >!!! \theta_{\text{tasty}} \wedge \text{tasty(this.bread)} = d_3]$ in $w\}$

In the final part of the derivation, *wa* is combined with the at-issue proposition and induces a CI, as in (20):

(19) $[\![\text{wa}_{\text{CTscalar}}]\!] = \lambda p.\exists q[C(q) \wedge q \neq p \wedge (\Diamond)\neg q] \wedge \forall q[C(q) \wedge q \neq p \rightarrow q >_{\text{unlikely}} p]$

(20) $[\![\text{wa}]\!]([\![\text{oishiii-<wa> oishiii}]\!]([\![\text{kono pan}]\!])) =$
At-issue: $\lambda w.\exists d[d > \theta_{\text{tasty}} \wedge \text{tasty(this.bread)} = d]$ in w
CI: $\exists q[C(q) \wedge q \neq (\lambda w.\exists d[d > \theta_{\text{tasty}} \wedge \text{tasty(this.bread)} = d]$ in $w) \wedge \neg q] \wedge \forall q[C(q) \wedge q \neq (\lambda w.\exists d[d > \theta_{\text{tasty}} \wedge \text{tasty(this.bread)} = d]$ in $w) \rightarrow q >_{\text{unlikely}} (\lambda w.\exists d[d > \theta_{\text{tasty}} \wedge \text{tasty(this.bread)} = d]$ in $w)]$

The alternative propositions q in (20) correspond to those in (18). Note that based on Potts' (2005) logic of CI, I assume here that the at-issue proposition (i.e., the argument of *wa*) is passed on to the at-issue dimension via CI application.[10] In the at-issue dimension, the sentence denotes that "this bread is tasty", but in the CI dimension, the speaker conveys that the bread's

[10] In Potts' (2005) multidimensional compositional system, there are two types, at-issue type, and a CI type and each type is used in different dimensions. The CI meaning is then calculated based on the following CI application:

being tasty is the least unlikely (i.e., the most likely) among the alternatives. In other words, the bread only meets the standard minimally.

3.3 Pragmatic scale

In the examples above, the alternatives triggered by A-*wa* A are about the degree of A. However, the alternatives are not always related to the degree of A, as shown in the following example:

(21) *[Oishii-wa oishii]-no-desu-ga ranchi-to.shite-wa*
Tasty-CONT tasty-*noda*-PRED.POLITE-but lunch-as-TOP
shoujiki moo chotto nedan-o sage-ta.houga.ii-node-wa.
frankly more a.bit price-ACC lower-better-node-PRT
'It is [tasty]$_{CI}$, but frankly, it would be better to lower the price.'
(From the Internet)

In this context, the alternative of *oishii-wa oishii* is "tasty and cheap" (not "very tasty"):

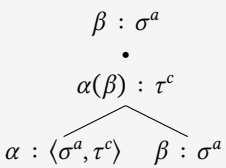
(22) At-issue: It is tasty
Alternative: It is tasty and cheap.

In this context, having the property of being tasty is construed as the minimum by the speaker.

3.4 Extension to the verb doubling construction

I show that the proposed analysis of the A-*wa* A construction can naturally be extended to the V-(*koto*)-*wa* V construction (cf. Nishiyama & Cho 1998; Lee 2003; Potts et al. 2009), as in (23):[11]

(i) CI application (Potts 2005: 65)



The superscript a stands for an at-issue type and the superscript c stands for a CI type. Here an α that is of $\langle \sigma^a, \tau^c \rangle$ takes a β of type σ^a and returns τ^c. At the same time, a β is passed on to the mother node. In this approach, the scalar contrastive *wa* has type $\langle \langle s^a, t^a \rangle, t^c \rangle$.

[11]Note that although the verb doubling is possible, the adverb doubling (ADV-*wa* ADV) is impossible.

(23) *Ame-wa {fut-ta / fut-ta-(koto)-wa fut-ta}.*
Rain-TOP fall-PST / fall-PST-NMLZ-CONT fall-PST
'It rained. / It [rained]$_{CT}$.'

If *fut-ta-(koto)-wa fut-ta* is used, the implication that the amount of rain was very low arises because of the scalar meaning of *wa*. Theoretically, it is possible to deal with the meaning of V-(*koto*)-*wa* V in the same way as A-*wa* A by assuming that the verb used in the construction is gradable.[12,13]

4 Embedded scalar contrastive *wa*

Let us now consider the issue of the conventionality of the scalar *wa* based on the phenomenon of embedded contrastive *wa*. I will show that the phenomenon of the embedded scalar meaning of contrastive *wa* also supports the idea of a conventionalized scalar meaning of contrastive *wa*.

The issue of the conventionality of the scalar *wa* is relevant to the recent discussion of the embedded scalar implicature. Geurts (2010: 163) observes

(i) **Watashi-wa sukoshi-wa sukoshi tabe-ta.*
I-TOP a.bit-CONT a.bit eat-PST
'Intended. I ate [a bit]$_{CT}$.'

This suggests that the contrastive doubling is not unconstrained, and it is only allowed in the predicative position.

[12]The verb doubling construction can be paraphrased by V-*wa suru* (Nishiyama & Cho 1998; Lee 2003):

(i) *Ame-wa furi-wa shi-ta.*
Rain-TOP fall.adverbial-CONT do-PST
'It [rained]$_{CT}$.'

[13]Korean also has contrastive scalar constructions similar to the Japanese V-*wa* V or V-*wa suru* (e.g. Lee 2003):

(i) a. *o-ki-nun hae-ss-e (Korean)*
come-NMLZ-CONT do-PST-DEC
'(She) [came]$_{CT}$.'
b. *o-ki-nun o-ass-e (Korean)*
come-NMLZ-CONT come-PST-DEC
'(She) [came]$_{CT}$.'
(Based on Lee (2003: 361))

that a contrastive focus on the scalar item is often (but not always) necessary (cf. Tomioka 2019) to produce a local scalar implicature, as shown in the contrast in (24):

(24) a. I hope that some of my relatives will remember my birthday.
Scalar implicature: ? I hope that not all of them will remember it. (Geurts 2010: 156)

b. I hope that SOME of my relatives will remember my birthday.
Scalar implicature: I hope that not all of them will remember it.
(Geurts 2010: 163)

Geurts (2010) notes that if the contrastive stress is employed as in (24b), this sentence can be used to convey that the speaker would not like all their relatives to remember their birthday.

The necessity of contrastivity is clear in Japanese. To have a local scalar implicature, the contrastive *wa* is necessary. For example, in (25) where a simple adjective sentence is embedded, there seems to be no salient scalar implicature. However, if we use the A-*wa* A construction or the A-*wa aru* construction, then the local scalar implicature obligatorily arises as in (26):

(25) *Taro-wa kono keeki-wa oishii-to omo-tteiru.*
Taro-TOP this cake-TOP tasty-that think-STATE
'Taro thinks that this cake is tasty.'

(26) *Taro-wa kono keeki-wa {oishii-wa oishii-to /*
Taro-TOP this cake-TOP tasty-CONT tasty-that /
oishiku-wa aru-to} omo-tteiru.
tasty.adverbial-CONT be-that think-STATE
'Taro thinks that this cake is $[\text{tasty}]_{CT}$.'
(Implicature: Taro thinks that the cake is not very tasty.)

In (26), there is a clear inference that Taro thinks the cake is not very tasty.[14]

[14]The implication that the cake is not very tasty is anchored to the subject Taro shows that the CI meaning triggered by A-*wa* A can be non-speaker-oriented. This suggests that the CI is speaker-oriented in main clauses, but it shifts to the embedded subject in the embedded contexts. This kind of judge-shifting phenomenon is also observed in expressives and appositives (Amaral & Roberts & Smith. 2007, Harris & Potts 2009, cf. Potts (2005)).

This tendency is observed in the normal contrastive *wa* as well. As example (27) shows, if the contrastive *wa* (with a stress) is added to *nan-nin-ka* 'some,' the local scalar implicature that "not all of the students failed the exam" becomes salient:

(27) *Taro-wa nan-nin-ka-no gakusei-{***wa***/ga} shiken-ni*
Taro-TOP what-CL$_{person}$-KA-GEN student-CONT/NOM exam-to
ochi-ta-to omo-tteiru.
fail-PST-that think-STATE
'Taro thinks that [some]$_{CT}$ of the students failed the exam.'
(Local scalar implicature: Taro thinks that not all the students failed the exam.)

If *ga* (rather than *wa*) is used, the implicature becomes less salient (although it is available as a Gricean quantity implicature). Crucially, if *nan-nin-ka* is replaced with a high scalar term, such as *takusan* 'many', the sentence with the contrastive *wa* (but not with *ga*) sounds odd, as shown in (28):

(28) *Taro-wa takusan-no gakusei-{??***wa***/ga} shiken-ni ochi-ta-to*
Taro-TOP many-GEN student-CONT/NOM exam-to fail-PST-that
omo-tteiru.
think-STATE
'Taro thinks that ??[many]$_{CT}$ of the students failed the exam.'
(Local scalar implicature: Taro thinks that not all the students failed the exam.)

In this case, using *ga* plus a general Q-implicature is the only (at least preferable) option to produce an embedded scalar implicature. This supports the existence of a scalar contrastive *wa*.

5 Some notes on scalar contrastive *wa*

Having discussed the basic idea of scalar contrastive *wa*, this section adds some notes on its degree property, the interpretation with negation, and the relationship with non-scalar contrastive *wa*.

5.1 Contrastive *wa* with a high degree proportional quantifier

As briefly discussed in the previous section, when a contrastive *wa* co-occurs with a quantifier or degree expression, the quantifiers/degree expressions tend to have a low degree and they usually cannot be expressions that have a high degree, as shown in the following examples with floating quantifiers:

(29) (Floating quantifiers)

a. *Taro-wa gohan-o sukoshi-wa tabe-ta.*
Taro-TOP rice-ACC a.bit-CONT eat-PST
'Taro ate a bit of rice'

b. ??*Taro-wa gohan-o ooku-wa tabe-ta.*
Taro-TOP rice-ACC much-CONT eat-PST
'Taro ate a lot of rice.'

c. ??*Taro-wa gohan-o takusan-wa tabe-ta.*
Taro-TOP rice-ACC many-CONT eat-PST
'Taro ate a lot of rice.'

d. ??*Taro-wa gohan-o hotondo-wa tabe-ta.*
Taro-TOP rice-ACC many-CONT eat-PST
'Taro ate most of the rice.'

Although the sentence with *sukoshi-wa* 'a bit-CONT' is natural, the sentences with *ooku-wa* 'many-CONT', *tankusan-wa* 'many-CONT' or *hotondo-wa* 'most-CONT' are quite unnatural. This contrast disappears if we delete the contrastive *wa*:

(30) (Floating quantifiers, without the contrastive *wa*)

a. *Taro-wa gohan-o sukoshi tabe-ta.*
Taro-TOP rice-ACC a.bit eat-PST
'Taro ate a bit of rice'

b. *Taro-wa gohan-o ooku tabe-ta.*
Taro-TOP rice-ACC much eat-PST
'Taro ate a lot of rice.'

c. *Taro-wa gohan-o takusan tabe-ta.*
Taro-TOP rice-ACC much eat-PST
'Taro ate a lot of rice.'

d. *Taro-wa gohan-o hotondo tabe-ta.*
Taro-TOP rice-ACC many eat-PST
'Taro ate most of the rice.'

This supports our idea that contrastive *wa* has a low scalar value. In the case of the determiner, however, the situation becomes more complicated. Namely, in some cases, the quantifiers that have a high scalar meaning can be attached to *wa*. Before considering this point, let us first consider the unproblematic case. As Hara (2003) observes, *takusan* 'many' cannot co-occur (in a positive environment) with *wa*:

(31) #*Takusan-no hito-wa ki-ta.*
Many-GEN people-CONT come-PST
'Many people came.' (Based on Hara (2003))

If *wa* is replaced by the nominative case marker *ga*, then the sentence becomes natural:

(32) *Takusan-no hito-ga ki-ta.*
Many-GEN people-NOM come-PST
'Many people came.'

This makes sense considering the assumption that the scalar contrastive *wa* has a low scalar meaning.[15]

However, the determiner *ooku* 'many/much' seems to be able to co-occur with *wa*, as is also observed in Hara (2003):

(33) a. *Ooku-no hito-wa ki-ta.*
Many-GEN people-CONT come-PST
'Many of the people came.' (Hara 2003)
b. *Ooku-no hito-ga ki-ta.*
Many-GEN people-NOM come-PST
'Many people came.'

[15]Unlike my approach, Hara (2003) considers this point based on the idea that *takusan* 'many' behaves in the same way as universal quantifiers. We will come back to this point in Section 6.1.

As Hara (2003) observes, the determiner *ooku* 'many' as in (33a) is a proportional quantifier.[16]

This kind of proportional reading seems to be less salient if we use *ga* although it may not be impossible.

Similarly, the determiner *hotondo* 'most' can also combine with *wa*:

(34) *Hotondo-no hito-{wa / ga} ki-ta.*
Most-GEN people-CONT / NOM come-PST
'Most of the people came.'

Are these examples counterexample to the scalar analysis of the contrastive *wa*? I consider that they are not because their interpretations are not the same as that of the typical scalar contrastive *wa*. For example, in the case of (33a), the quantifier *ookuno* 'many (proportional)' concerns the proportion in the background set and the sentence conveys that the number of people who came is proportionally many. By using contrastive *wa*, the sentence explicitly signals that there are some people who did not come. I assume that such instances can be analyzed by the non-scalar contrastive *wa* (the sentence with *wa* is partitioning the set of numbers into two parts and contrasting them.) Similarly, *hotondo* 'most' can co-occur with *wa* because it is proportional. In (34), the sentence is contrasting those who came (= majority) and those who did not (= minority).

Note that *ooku* does not always have a proportional reading, but also a cardinal reading. The following sentences have only cardinal readings because they just report the quantity of NP, and it is difficult to assume a proportion based on the background set:

(35) *Kinoo-wa ooku-no ame-{ga/*wa} fut-ta.*
Yesterday-TOP much-GEN rain-NOM/CONT fall-PST
'Much rain fell yesterday.'

[16]The proportional reading in (33a) is semantically similar to the sentence with *daibubun* 'lit. large part':

(i) *Daibubun-no hito-wa ki-ta.*
Large.portion-GEN people-CONT come-PST
'Most of the people came.'

(36) *Konsaato-ni-wa ooku-no hito-{ga/*wa} ki-ta.*
Concert-to-TOP many-GEN people-NOM/CONT came-PST
'Many people came to the concert.'

(37) *Kono sensoo-de ooku-no shimin-{ga/*wa} gisei-ni nat-ta.*
This war-by many-GEN civilian-NOM/CONT sacrifice-to become-PST
'Many civilians were sacrificed in this war.'

5.2 The scalar contrastive *wa* with negation

So far, we have considered examples in which the scalar contrastive *wa* is used in affirmative sentences. However, the contrastive *wa* can also be used in negative sentences where the scale is reversed. That is, when the contrastive *wa* appears in a negative sentence, scale inversion occurs, and it co-occurs with a scale expression with a high degree, but not with a scale expression with a low degree (see also Sawada (2007)):

(38) *Taro-wa {puro / ?? shirooto}-ni-wa kat-e-nakat-ta.*
Taro-TOP professional / amateur-DAT-CONT win-can-NEG-PST
'Taro couldn't beat [a professional]$_{CT}$/[an amateur]$_{CT}$.' (Based on Sawada 2007, slightly modified)

(39) *Taro-wa hon-o {takusan / ??sukoshi}-wa mot-tei-nai.*
Taro-TOP book-ACC many / a.bit-CONT have-PROG-NEG
'Taro does not have [many]$_{CT}$/[a few]$_{CT}$ books.'

How can we analyze this point? As with the analyses of *even*, there seem to be two approaches for the interpretation of scalar contrastive *wa* with negation. The first approach is basically the same as the lexical ambiguity approach used in the analysis of *even* (Rooth 1985; Rullmann 1997; Giannakidou 2007). The approach assumes that in addition to the contrastive *wa* used in affirmative sentences, there is a scalar contrastive *wa* (the NPI scalar contrastive *wa*) which is dedicated to the negative environment. In this approach, the NPI contrastive *wa* is situated below negation and it takes the proposition without negation as its argument and construes it as the most unlikely among alternatives.

(40) $[\![\text{wa}_{\text{scalar.NPI}}]\!] = \lambda p.\exists q[C(q) \wedge q \neq p \wedge (\diamond)q] \wedge \forall q[C(q) \wedge q \neq p \rightarrow p >_{\text{unlikely}} q]$

For example, under this approach, the negative sentence (39) with *takusan* 'many' has the following CIs:

(41) $[\![\text{wa}_{\text{scalar.NPI}}]\!](\lambda w.\text{Taro has many books in } w) =$
$\exists q[C(q) \wedge q \neq (\lambda w.\text{ Taro mas many books in } w) \wedge (\diamond)q] \wedge \forall q[C(q) \wedge q \neq (\lambda w.\text{ Taro has many books in } w) \rightarrow (\lambda w.\text{ Taro has many books in } w) >_{\text{unlikely}} q]$

Under this analysis, the proposition that "Taro has many books" is construed as the most unlikely among alternatives.

Another possible way to analyze the meaning of negative sentences with *wa* is the scope-based unitary approach which is the same approach used in the scope theory of the analysis of *even* (e.g., Karttunen & Peters 1979; Wilkinson 1996). In this approach, the contrastive *wa* takes a wide scope with respect to negation. That is, the contrastive *wa* takes a negative proposition as its argument and construes it as the least unlikely among alternatives:

(42) $[\![\text{wa}_{\text{CTscalar}}]\!] = \lambda p.\exists q[C(q) \wedge q \neq p \wedge (\diamond)\neg q] \wedge \forall q[C(q) \wedge q \neq p \rightarrow q >_{\text{unlikely}} p]$

Under this approach, the CI meaning of the sentence (39) with *takusan* 'many' will be analyzed as follows:

(43) $[\![wa_{\text{CTscalar}}]\!](\lambda w.\text{ Taro does not have many books in } w) =$
$\exists q[C(q) \wedge q \neq (\lambda w.\text{ Taro does not have many books in } w) \wedge (\diamond)\neg q] \wedge \forall q[C(q) \wedge q \neq (\lambda w.\text{ Taro does not have many books in } w) \rightarrow q >_{\text{unlikely}} (\lambda w.\text{ Taro does not have many books in } w)]$

In this paper, we will not discuss in depth which approach is more appropriate, but my impression is that the lexical ambiguity approach is more in line with the intuition of the scalar construal. The theory captures the intuition that the negation reverses the way the scale is perceived. However, the scope theory also works and is simpler in terms of the number of lexical entries. Further study, including the correspondence between formal meaning and scale perception, will be needed in the future.

5.3 The relationship between scalar and non-scalar uses

In this paper we have considered that there are two types of contrastive *wa*, scalar contrastive *wa* and non-scalar contrastive *wa*. This section considers how they are used and compartmentalized. Usually, when the contrastive *wa* combines with a quantitative/scalar expression, it is a scalar contrastive *wa*. When *wa* combine with a non-scalar expression, it is a non-scalar type:

(44) *Taro-wa ki-ta.*
Taro-CONT come-PST
'[Taro]$_{CT}$ came.' (But the others didn't/but the others may or may not have come.)

(45) (Context: Both amateur and professional tennis players participating in a tournament.)
Taro-wa shirooto-ni-wa kat-ta.
Taro-TOP amateur-DAT-CONT win-PST
'(lit.) Taro beat [an amateur]$_{CT}$.'

However, a scalar meaning can appear even if the focused element does not inherently have a scalar meaning. For example, (46), with the proper name *Hanako*, is ambiguous between scalar and non-scalar readings:

(46) *Hanako-wa ukat-ta.*
Hanako-CONT pass-PST
'Hanako passed.'
At-issue: Hanako passed.
Scalar reading: Hanako is the least unlikely (= the most likely) person to pass.
Non-scalar (existential reading): There is/can be someone other than Hanako who didn't pass.

The scale reading is possible because, in the context of an exam, it is easy to posit a scale of smartness/ability.

6 Comparison to the existing approaches

In this section, we will compare the proposed analysis of the contrastive *wa* with the existing approaches. Due to space limitations, we will limit our

discussion to a few representative approaches (although many other ideas have been proposed), that is, the conventional scalar implicature approach, the Gricean reasoning approach, and the existential approach.

6.1 Conventional scalar implicature approach

First, let us compare my approach to the conventional scalar implicature approach represented by Hara (2003; 2006). In Hara's lexical approach, a contrastive topic triggers stronger propositions than the at-issue proposition p and conventionally implicates that those alternatives may not hold as shown in:

(47) CONTRASTIVE(<B, T>)

a. assert: B(T)
b. presupposes: ∃T'[T'∈ ALT_C(T) & B(T') entails B(T) & B(T) doesn't entail B(T')]
c. implicates: ∀ T'[T'∈ ALT_C(T) & B(T') entails B(T) & B(T) doesn't entail B(T')]→ Poss (¬B(T'))]
(Hara 2006: 36)

As an illustration, let us consider how this mechanism works based on some examples. First, the following sentence with *nan-nin-ka* 'some people' is natural because the sentence can presuppose a stronger alternative proposition than the at-issue proposition, as shown in (49):

(48) *Nan-nin-ka-wa* *ki-ta.*
What-CL_{people}-KA-CONT come-PST
'Some people came.'
(Implicature: It is possible that not everyone came.)

(49) a. ∃x[[person(x)][came(x)]]
b. Stronger Scalar Alternative: ∀x[[person(x)][came(x)]]
c. B(T') entails B(T).
d. B(T) does not entail B(T').
e. Implicature: Poss(¬∀(x)[[person(x)][came(x)]]) (= ¬B(T')
(Based on Hara 2006)

Furthermore, Hara's theory correctly captures the fact that the sentence with *minna* 'everyone' is odd:

(50) #*Minna-wa ki-ta.*
Every.one-CONT come-PST
'[Everyone]$_{CT}$ came.' (Based on Hara (2003; 2006))

(50) is odd because it cannot presuppose a stronger alternative proposition.

Crucially, Hara's theory assumes that every sentence accompanied by a contrastive *wa* has a scalar conventional implicature. For example, in (51) the contrastive *wa* is attached to a proper name, which is not scalar, but the sentence still generates a scalar conventional implicature as in (52):

(51) *John-wa ki-ta.*
John-CONT come-PST
'[John]$_{CT}$ came. (Conventional implicature: It is possible that it is not the case that John and Mary came.) (Hara 2006)

(52) The contrastive *wa* in a sentence α conventionally implicates that the speaker/attitude holder of α believes that the stronger proposition is possibly false.

Although this theory can capture the similarity with a scalar implicature, it does not specify a scalar value (i.e., it does not posit that p is the least unlikely). Thus, this theory predicts that if a stronger alternative proposition can be postulated, then in principle the contrastive *wa* can co-occur with any scalar item. However, as we observed in Section 4 and Section 5.1, it is usually difficult for contrastive *wa* to co-occur with an expression that has a high scalar value:

(53) *Taro-wa gohan-o {sukoshi / ?? takusan}-wa tabe-ta.*
Taro-TOP rice-ACC a.bit / many-CONT eat-PST
'Taro ate [a bit]$_{CT}$ of rice/Taro ate [a lot]$_{CT}$ of rice.'

(54) *Okyaku-wa {sukoshi / ?? takusan}-wa ki-ta.*
Customer-TOP a.bit / many-CONT come-PST
'[A few]$_{CT}$ customers came. [Many]$_{CT}$ customers came.'

Hara (2003) considers that cardinal *takusan* 'many' behaves like the universal quantifiers (e.g., *zenbu* 'all', *minna* 'everyone'). They cannot co-occur with contrastive *wa* in a positive environment and both can co-occur with

contrastive *wa* in a negative environment. However, the cardinal MANY and the universal quantifier ALL are semantically not the same. We need to say something special about the similarity between them. My theory on the other hand can correctly capture the oddness of the sentences with *takusan* and the universal quantifiers. They are odd because they have a high scalar meaning, rather than low.[17]

However, as pointed out by Hara (2003) and discussed in Section 5, the proportional determiner *ooku* 'many' or *hotondo* 'most' can be used with *wa*:

(55) *Ooku-no hito-wa kaet-ta.*
Many-GEN people-CONT return-PST
'Many of the people left.'

(56) *Hotondo-no hito-wa kaet-ta.*
Most-GEN people-CONT return-PST
'Most$_{CT}$ people left.'

These sentences are not problematic for Hara's theory and they can be problematic for my theory, but as discussed in Section 5 I am assuming that *wa* in these sentences are not scalar contrastive *wa* in that they are partitioning the set of numbers into two parts and contrasting between them.

6.2 Gricean reasoning approach

Let us now look at Tomioka's non-lexicalist (Gricean reasoning) approach to the scalar meaning of the contrastive *wa* (Tomioka 2010, 2016). Tomioka claims that contrastive topics operate at the level of Speech Acts and the effect of incompleteness/non-finality in the utterance with contrastive *wa* is a result of a general principle of conversation in the Gricean sense.

As for the data, although most studies of contrastive *wa* focus on declara-

[17]Note that in the negative sentence a scale-reversal occurs, and the proposition (without negation) is construed as high on the unlikelihood scale.

(i) *Takusan-wa ko-nakat-ta.*
Many-CONT come-NEG-PST
'[Many]$_{CT}$ came.'

tive sentences, Tomioka shows that it can appear in a wide range of sentence types including interrogative, imperative, exhortative, and performative:

(57) a. Interrogative
Erika-WA/ERIKA-wa doko-e itta-no?
Erika-CONT/Erika-CONT where-LOC went-Q
'Where did ERIKA go?'

b. Imperative
Eego-WA/EEGO-wa chanto yatte-ok-e.
English-CONT/English-CONT without.fail do-prepare-IMP
'At least, prepare yourself for ENGLISH.'

c. Exhortative
Kyooto-NI-WA/KYOOto-ni-wa iko-o.
Kyoto-LOC-CONT/KYOTO-LOC-CONT go-EXH
'At least, let's go to KYOto.'

d. Performative
Sutoraiki-no tame, KYOO-wa/Kyo-WA
Labor strike-GEN-due TODAY-CONT/today-CONT
yasumi-to suru.
off.day-COMP do
'Doe to the labor strike, we make it that there be no work TODAY.'
(Based on Tomioka (2010), gloss is slightly modified)

Based on this assumption, Tomioka claims that the scalar meaning of the contrastive *wa* is a conversational implicature.

Tomioka (2016) discussed the relationship between the scalar meaning of contrastive *wa* and a general pragmatic scalar (scalar reasoning) in more detail. Tomioka claims that the scalar interpretation of contrastive *wa* is very similar to a 'weak scalar' implicature in the so-called standard recipe of scalar implicature (Geurts 2010).

The implicature is calculated based on the following standard recipe:

(58) a. The speaker *S* says ϕ.
b. *S* could have made a stronger and/or more informative claim by saying ψ

c. The reason for S's not saying ψ may well be that *S* fails to believe that ψ is true. (= weak scalar implicature)
d. Assuming *S* is knowledgeable or has a strong opinion about the truth/falsity of ψ, one can conclude that S believes that ψ is false. (= strong scalar implicature) (Based on Geurts (2010), Tomioka 2016)

The step (d) is often called 'Competence Assumption' in Van Rooij & Schulz (2004). This is an extra step needed to generate a strong implicature. Without this step, it remains weak. Tomioka (2016) considers that the scalar meaning of contrastive *wa* is similar to this weak implicature.

To make sure that the scalar meaning of contrastive *wa* is (often) weak, Tomioka (2016) assumes that contrastive *wa* conventionally signals the avoidance of the competence Assumption (the step from c to d) by positing the following constraint.

(59) Do not apply Competence Assumption to the stronger alternatives generated by the contrastive *wa*. (Tomioka 2016: 767)

According to Tomioka, avoiding the Competence Assumption does not mean that the application of the Incompetence Assumption and the stronger meaning is not automatically ruled out.

Strictly speaking, therefore, Tomioka's (2016) proposal is not purely conversational. It is mixed with both conventional and conversational meanings. However, this theory can still be said to be a conversational (non-lexical) approach in that its scalar meaning is derived by general pragmatic reasoning.

Although the non-lexicalist (general scalar implicature-based) approach successfully captures the similarity with scalar implicature and 'at least', since this approach does not lexically specify a scalar meaning, it does not directly capture the phenomenon of low-degree construal of contrastive *wa* (including the scalar meaning of A-*wa* A construction). Although it does capture the ignorance flavor similar to 'at least', a low-degree scalar construal is not directly relevant. However, as for the environment of contrastive *wa*, it can indeed arise in a variety of sentence types (speech acts). My current approach considers that in those cases *wa* takes a proposition (radical) and the scalar (low-likelihood) meaning will be interpreted below the speech act level. More detailed discussion will also be necessary for the lexicalist (scalar-based) account.

6.3 Existential approach

Finally, let us consider the existential approach to contrastive *wa* represented by Oshima (2005; To appear). Oshima (2005; To appear) considers that contrastive *wa* has an existential (non-scalar) CI (The superscript f stands for the *focus* semantic value and the superscript o stands for the *ordinary* semantic value):

(60) The interpretation of WA(S)
CI: There is some proposition p such that $p \in \text{ALT}([\![\text{S}]\!]^f)$, $p \neq [\![\text{S}]\!]^o$, and $\neg p$ is compatible with the speaker's current beliefs; Entailment: It is not the case that $[\![\text{S}]\!]^o$

Let us consider this analysis based on example (61):

(61) *John-wa gookaku-shita.*
John-CONT pass.exam-PST
'[John]$_{CT}$ passed.' (Oshima To appear)

As Oshima (To appear) claims, in Hara's approach, the relevant alternatives of (61) would be something like (62a), where the alternatives are semantically stronger than the prejacent proposition. By contrast, in Oshima's analysis the relevant alternatives may include those that are logically independent of the prejacent proposition as in (62b):

(62) a. {'John and Ken passed', 'John and Luke passed', 'John, Ken, and Luke passed'}
b. {'Ken passed', 'Luke passed'}

Although Oshima's approach successfully captures the meaning of the non-scalar contrastive *wa*, it seems that this theory cannot capture the meaning of the scalar contrastive *wa* explicitly. It seems that scalar meaning triggered by contrastive *wa* is purely pragmatic. By contrast, in my approach, there can be scalar and non-scalar contrastive *wa* and this approach captures the alternative set, like (62b), based on no-scalar contrastive *wa*, which is basically the same as Oshima's proposal.

7 Relevant phenomena

In this section, we discuss phenomena similar to scalar contrastive *wa*: *mo* in Japanese, *only* in English, and *shika* in Japanese.

7.1 Japanese *mo*

First let us consider the meanings of the Japanese particle *mo*. The particle *mo* is semantically ambiguous between a scalar additive meaning 'even' and a simple inclusive meaning 'also'. Sawada (2007) claims that the Japanese contrastive *wa* is a mirror image of *mo* 'even, also':

(63) a. *Taro-mo ki-ta.* *(Non-scalar)*
Taro-also come-PST
'Taro also came.'
b. *Tooku-ni 500-nin-mo ki-ta.* *(Scalar)*
Talk-to 500-CL-even come-PST
'{Even 500/as many as 500} people came to the talk.'

(64) a. *Taro-wa ki-ta.* *(Non-scalar)*
Taro-CONT come-PST
'$[\text{Taro}]_{CT}$ came. (But I don't know about others.)'
b. *Tooku-ni 500-nin-wa ki-ta.* *(Scalar)*
Tallk-to 500-CL_{person}-CONT come-PST
'At least 500 people came to the talk.'

In terms of polarity, while the non-scalar *wa* has a negative CI component, the scalar *mo* has a positive CI component. In terms of scale, while the scalar contrastive *wa* has a low scalar meaning, the scalar *mo* has a high scalar meaning:

(65) a. $[\![\text{mo}_{\text{additive}}]\!] = \lambda p.\exists q[C(q) \wedge q \neq p \wedge q]$
b. $[\![\text{mo}_{\text{CTscalar}}]\!] = \lambda p.\exists q[C(q) \wedge q \neq p \wedge q] \wedge \forall q[C(q) \wedge q \neq p \rightarrow p >_{\text{unlikely}} q]$

(66) a. $[\![\text{wa}_{\text{CTnon.scalar}}]\!] = \lambda p.\exists q[C(q) \wedge q \neq p \wedge (\Diamond)\neg q]$
b. $[\![\text{wa}_{\text{CTscalar}}]\!] = \lambda p.\exists q[C(q) \wedge q \neq p \wedge (\Diamond)\neg q] \wedge \forall q[C(q) \wedge q \neq p \rightarrow q >_{\text{unlikely}} p]$

7.2 Scalar and non-scalar uses of *only* and the exceptive particle *shika*

A similar phenomenon can be found in English *only* and the Japanese *shika*. It has been observed in the literature that *only* has both non-scalar and scalar uses (Horn 2000; Lee 2006; Coppock & Beaver 2014):

(67) a. I only invited [John]$_F$. (*Non-scalar*)
b. Only John came to the party. (*Non-scalar*)

(68) a. John is only a graduate student. (*Scalar*)
b. This is only a down payment. (*Scalar*)
(Coppock & Beaver 2014)

The interpretation of the sentence with scalar *only* is different from that with the non-scalar only. Coppock & Beaver (2014) observe that the sentence with the non-scalar *only* is paraphrased with *nothing other than*, while the sentence with the scalar only is paraphrased with *no more than*:

(69) a. This is for nothing other than fun. (paraphrase: This is only for fun.)
b. This is no more than a down payment. (paraphrase: This is only a down payment.)

A similar phenomenon can be observed in the Japanese *shika*.

(70) *Taro-shika ko-nakat-ta. (Non-scalar)*
Taro-SHIKA come-NEG-PST
'Only Taro came.'

(71) *100-en-shika nai. (Scalar)*
100-yen-SHIKA NEG
'I only have 100yen.'

Regarding the analysis of the meaning of *only*, Coppock & Beaver (2014) give a uniform analysis for complement-exclusion and rank-order readings according to which both readings are scalar. That is, the sentence with an exclusive has an 'at least' component as a presupposition and the 'at most' component as an 'at issue' meaning.

In this paper, I will not discuss in detail the meanings of the English *only* and the Japanese *shika*; however, they seem to have similar pragmatic func-

tion to the contrastive *wa*. That is, their functions are to negate alternatives; this kind of use seems to play an important role for the development of scalar use (see also the conclusion).

8 Conclusion

This paper discussed the scalar meaning of the contrastive *wa*. Based on the phenomenon of A-*wa* A construction and the contrastive *wa* in the embedded environment, I argued that in at least some uses of contrastive *wa*, the scalar meaning of the contrastive *wa* has been conventionalized and that it is difficult to explain all types/meanings of contrastive *wa* based on a single lexical item or a pragmatic principle. This paper suggested that there are multiple types of contrastive *wa* (i.e., a scalar type and a non-scalar type) and we need to consider the conventionality of the scalar meaning.

Finally, let us briefly consider the question of where the scalar contrastive *wa* comes from and how it developed. Although this is still speculation, I would like to consider that the scalar contrastive *wa* developed from the non-scalar contrastive *wa* through the conventionality of scalar inference, which arises from sentences with non-scalar contrastive *wa*. That is, when the non-scalar contrastive *wa* co-occurs with an expression that can invoke a degree or a rank, the inference that the degree/rank in question is the lowest among the alternatives arises conversationally. For example, by conveying that there are some universities other than X University that I was not accepted to, we can infer that X University is the lowest among the alternatives (i.e., it is construed as the most likely university to be accepted):

(72) *X daigaku-ni-wa ukat-ta.*
X university-to-CONT pass-PST
‘ I was accepted to [X University]$_{CT}$.’
Existential CI: There are some universities other than X University that I was not accepted to.
Conversational implicature: X University is the lowest among the alternatives (= X University is the easiest university to get into).

I contend that this kind of low scalar inference has been conventionalized in Modern Japanese (as “the least unlikely (most likely)” inference) similarly to *at least*. That is, when the contrastive *wa* co-occurs with an expression

related to degree, a low scalar meaning is interpreted at the lexical level. As a result, if we combine the contrastive *wa* with an expression that has a high scalar meaning in Modern Japanese, then the sentence becomes odd, as shown in the following examples:

(73) a. ??*Takusan-wa aru.*
Many-CONT exist
'There are [many]$_{CT}$.'
b. *Sukoshi-wa aru.*
A.bit-CONT exist
'There are [a few]$_{CT}$.'

(74) a. ??*Taro-wa gohan-o takusan-wa tabe-ta.*
Taro-TOP rice-ACC many-CONT eat-PST
'Taro ate [a lot]$_{CT}$ of rice.'
b. *Taro-wa gohan-o sukoshi-wa tabe-ta.*
Taro-TOP rice-ACC a.bit-CONT eat-PST
'Taro ate [a bit]$_{CT}$ of rice.'

This is still speculation, and more detailed research is necessary to clarify the historical development of the contrastive *wa*.

Abbreviations and glosses

ACC: accusative; CL: classifier; COMP: complementizer; COND: conditional; CONT: contrastive; DAT: dative; DEC: declarative; EXH: exhortative; GEN: genitive; IMP: imperative; KA: Japanese *ka*; LOC: locative; NEG: negation, negative; NMLZ: nominalizer; NOM: nominative; NON.PST: non-past tense; POLITE: polite; PRED: predicative; PROG: progressive; PRT: particle; PST: past; SHIKA: Japanese *shika*; STATE: state/stative; TOP: topic.

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References

Akita, Kimi. 2012. Register-specific morphophonological constructions in Japanese. In *Proceedings of the annual meeting of the Berkeley Linguistics Society 38*, 3–17.

Amaral, Patricia & Roberts, Craige & Smith., Allyn E. 2007. Review of the logic of conventional implicatures by Chris Potts. *Linguistics and Philosophy* 30(6). 707–749.

Coppock, Elizabeth & Beaver, David I. 2014. Principles of the exclusive muddle. *Journal of Semantics* 31. 371–432.

Geurts, Bart. 2010. *Quantity implicatures*. Cambridge: Cambridge University Press.

Giannakidou, Anastasia. 2007. The landscape of even. *Natural Language & Linguistic Theory* 25(1). 39–81.

Grice, Paul H. 1975. Logic and conversation. In Cole, P. & Morgan, J. (eds.), *Syntax and Semantics III: Speech Acts*, 43–58. New York: Academic Press.

Gutzmann, Daniel. 2011. Expressive modifiers & mixed expressives. In Bonami, Olivier & Hofherr, Patricia Cabredo (eds.), *Empirical issues in syntax and semantics 8*, 123–141.

Gutzmann, Daniel. 2012. *Use-conditional meaning*. University of Frankfurt dissertation.

Hara, Yurie. 2003. Scope inversion in Japanese: contrastive topics require scalar implicatures. In *Proceedings of Japanese/Korean linguistics 13*, 245–256.

Hara, Yurie. 2006. Implicature unsuspendable: Japanese contrastive *wa*. In *Proceedings of Texas Linguistics Society 8*, 35–45.

Harris, Jesee. A. & Potts, Christopher. 2009. Perspective-shifting with appositives and expressive. *Linguistics and Philosophy* 32 (6). 523–552.

Hirayama, Hitomi. 2019. *Asking and answering questions: Discourse strategies in Japanese*. UC Santa Cruz dissertation.

Horn, Laurence R. 2000. Pick a theory (not just any theory): indiscriminatives and the free-choice indefinite. In Horn, Laurence R. & Kato, Yasuhiko (eds.), *Negation and polarity*, 147–192. Oxford: Oxford University Press.

Karttunen, Lauri & Peters, Stanley. 1979. Conventional implicature. In Oh, C. K. & Dinneen, D. A. (eds.), *Syntax and semantics. vol. 11. presupposition*, 1–56. New York: Academic Press.

Kay, Paul. 1990. Even. *Linguistics and Philosophy* 13(1). 59–111.

Lee, Chungmin. 1999. Contrastive topic: a locus of the interface? evidence from korean and english. In Turner, Ken (ed.), *The semantics/pragmatics interface from different points of view*, 317–341. Amsterdam: Elsevier.

Lee, Chungmin. 2003. Contrastive topic and proposition structure. *Asymmetry in grammar* 1. 345–371.

Lee, Chungmin. 2006. Contrastive topic/focus and polarity in discourse. In *Where semantics meets pragmatics*, 381–420. Amsterdam: Elsevier.

Lee, Chungmin. 2008. Contrastive (predicate) topic, intonation, and scalar meanings. In *Topic and focus: cross-linguistic perspectives on meaning and intonation*, 151–175. Dordrecht: Springer.

McCready, Elin. 2010. Varieties of conventional implicature. *Semantics & Pragmatics* 3. 1–57.

Nishiyama, Kunio & Cho, Eun. 1998. Predicate cleft constructions in Japanese and Korean: the role of dummy verbs in TP/VP-preposing. In *Japanese/Korean linguistics 7*, 463–479.

Oho, Atsushi & Yamada, Masahiro. 2011. *A Japanese Salad-salad Paper*. Paper presented at GLOW in ASIA: Workshop for young scholars.

Oshima, David Y. 2005. Morphological vs. phonological contrastive topic marking. In *Proceedings from the annual meeting of the Chicago Linguistic Society*, vol. 41, 371–384.

Oshima, David Y. To appear. Focus particle stacking: how the Japanese contrastive particle *wa* interacts with ONLY and EVEN. In *Proceedings of Workshop on Altaic Formal Linguistics 11*.

Potts, Christopher & Asudeh, Ash & Cable, Seth & Hara, Yurie & McCready, Elin & Alonso-Ovalle, Luis & Bhatt, Rajesh & Davis, Christopher & Kratzer, Angelika & Roeper, Tom & Walkow, Martin. 2009. Expressives and identity conditions. *Linguistic Inquiry* 40(2). 356–366.

Potts, Christopher. 2005. *The logic of conventional implicatures*. Oxford: Oxford University Press.

Potts, Christopher. 2007. The expressive dimension. *Theoretical Linguistics* 33. 165–197.

Rooth, Mats. 1985. *Association with focus*. University of Massachusetts at Amherst dissertation.

Rullmann, Hotze. 1997. Even, polarity, and scope. *Papers in experimental and theoretical linguistics* 4(40-64).

Sawada, Harumi. 2006. *Modaritii [Modality]*. Tokyo: Kaitakusha.

Sawada, Osamu. 2007. The Japanese contrastive *wa*: a mirror image of even. In *Proceedings of the annual meeting of the Berkeley Linguistics Society 33*, 374–387.

Sawada, Osamu. 2010. *Pragmatic aspects of scalar modifiers*. Chicago: University of Chicago (Doctoral dissertation).

Sawada, Osamu. 2018. *Pragmatic aspects of scalar modifiers: The semantics-pragmatics interface*. Oxford: Oxford University Press.

Schwarz, Bernhard & Shimoyama, Junko. 2011. Negative islands and obviation by *wa* in Japanese degree questions. In *Proceedings of Semantics and Linguistic Theory 20*, 702–719.

Sweetser, Eve. 1990. *From etymology to pragmatics: metaphorical and cultural aspects of semantic structure*. Cambridge: Cambridge University Press.

Tomioka, Satoshi. 2010. Contrastive topics operate on speech acts. In Féry, Caroline & Zimmermann, Malte (eds.), *Information structure: theoretical, typological and experimental perspectives*, 115–138. Oxford: Oxford University Press.

Tomioka, Satoshi. 2016. Information structure in Japanese. In Fery, Caroline & Ishihara, Shinichiro (eds.), *The Oxford handbook of information structure*, 753–773. Oxford: Oxford University Press.

Tomioka, Satoshi. 2019. The scope of contrasted scalar items and intermediate implicatures. *English Linguistics* 36. 29–47.

Van Rooij, Robert & Schulz, Katrin. 2004. Exhaustive interpretation of complex sentences. *Journal of Logic, Language and Information* 13(4). 491–519.

Wilkinson, Karina. 1996. The scope of even. *Natural Language Semantics* 4(3). 193–215.