On Negative Island Effects and Exhaustification with Adjunct *Nani-o* in Japanese*

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1 Introduction

It has been cross-linguistically well attested that accusative-marked wh-questions may be interpreted as reason adjunct questions, with similar meaning to *why*-questions, and Japanese is not an exception. (1a) is an ordinary constituent question, where the focus of the question is the thing(s) that they are eating, while the question in (1b) seeks a reason why they are clamouring.

* We express our gratitude to all the audience at the 30th conference on Japanese/Korean linguistics. This work has been supported by the JSPS Core-to-Core Program, A. Advanced Research Networks "International Research Network for the Human Language Faculty" (#JPJSCCAJ221702004)(PI: Yoichi Miyamoto).

Japanese/Korean Linguistics 30.
Edited by Sara Williamson, Adeola Aminat Babayode-Lawal, Laurens Bosman, Nicole Chan, Sylvia Cho, Ivan Fong, and Kaye Holubowsky.

In this paper, we call the latter type of wh-questions wh_{accR}.[1]

(1) a. Karera-wa nani-o tabe-tei-ru no?
they-TOP what-ACC eat-ASP-PRES Q
'What are they eating?' **ordinary constituent question**

b. Karera-wa nani-o sawai-dei-ru no?
they-TOP what-ACC clamour-ASP-PRES Q
(lit.) 'What are they clamouring?'
'What are they clamouring for?/ Why are they clamouring?'
reason adjunct questions

It has been observed that wh_{accR} resists negation, while *naze* 'why' can co-occur with negation, per (2) (Kurafuji 1996:83). The example has been taken to be a case of negative island effects, on the assumption that wh_{accR} originates in a position below NegP, causing a violation of the Relativized Minimality (RM). *Naze* 'why', on the other hand, base-generates higher than NegP, and thus no violation of the RM results (e.g., Kurafuji 1996, Endo 2015).[2]

(2) Karera-wa { *nani-o/naze } sawai-dei-nai no?
they-TOP {what-ACC/why} clamour-ASP-NEG Q
'What aren't they clamouring for?/Why aren't they clamouring?'

Our goal in this paper is to show that the aversion to a negation of wh_{accR} is not due to a syntactic constraint but a semantic one, which in turn is closely related to a 'negative connotation' associated with wh_{accR}.

This paper is organized as follows: In the next section, after establishing that wh_{accR} originates in a V'-adjunct position, we present a new set of data that shows obviation from the negative island effects. We then show that neither a syntactic nor semantic account currently available explains the data. Section 3 offers our proposal, which crucially relies on the notion of the

[1] Wh_{accR} in Japanese has several peculiar features, as listed below. Some of them seem to apply crosslinguistically, while others do not.

1. The predicate may be transitive, unergative, unaccusative, or passive, but its subject obeys some form of animacy restriction. (see Kurafuji 1996, Nakao and Obata 2009)
2. The predicate is often marked by imperfective aspect marker (Ochi 2015).
3. The question is associated with the speaker's negative-attitude to what is happening. (Takami 2010, Nakao and Obata 2009, Yang and Mizuno 2020.)

[2] There is a cross-linguistic variation here. Korean, for example, also has wh_{accR}, but it generally allows negation (Kim 2021). We leave this cross-linguistic variation for future research.

speaker's negative attitude/the speaker's unexpectedness. The notion is formalized as a covert exhaustification operator, and we argue that it is this operator that governs the grammaticality of negated/non-negated wh_{accR}. Section 4 concludes the paper.

2 Apparent Negative Island Effects

2.1 Adjunctthood of Wh$_{accR}$

Kurafuji (1996) claims that wh_{accR} syntactically behaves as adjunct in the same way as *naze* 'why'. For example, (3a) and (3b) represent cases of extraction from complex NP, where wh_{accR} and *naze* 'why' are illicit.

(3) a. John-wa [asokode nani-o si-tei-ru] hito-tati-o
John-TOP [there what-ACC do-ASP-PRES] person-PL-ACC
keibetu-si-tei-ru no?
despise-do-ASP-PRES Q
'What is John despising people who are doing t?'
(Kurafuji 1996:86)

b. *John-wa [asoko-de { naze/nani-o } sawai-dei-ru]
John-TOP [there { why/what-ACC } clamour-ASP-PRES]
hito-tati-o keibetu-si-tei-ru no?
person-PL-ACC despise-do-ASP-PRES Q
'Why is John despising people [who are clamouring there t]?'
(Kurafuji 1996:86), slightly adapted

Ochi (2015) identifies wh_{accR} as a V'-adjunct, providing a set of data from VP-preposing. Although focus particle *sae* can be attached to V, as shown in (4a), V-*sae* cannot be moved leaving an accusative DP behind, as the contrast between (4b)-(4c) shows. Ochi (2015) attributes the ungrammaticality of (4c) to the violation of Proper Binding Condition (PBC), which bans the unbound trace, t_i, in $[[_{\text{VP}}\ t_i$ sell-even$]_j \ldots$ book$_i \ldots\ t_j]$.

(4) a. Taro-ga hon-o uri-sae si-ta
Taro-NOM book-ACC sell-even do-PAST
'Taro even sold a book.'

b. Hon-o uri-sae Taro-ga si-ta
book-ACC sell-even Taro-NOM do-PAST

c. *Taro-ga uri-sae hon-o si-ta
Taro-NOM sell-even book-ACC do-PAST

Ochi (2015) argues that the ungrammaticality of wh_{accR} in (5b) is also due to the PBC violation, which suggests that wh_{accR} is a V'-adjunct, as shown in (6).

(5) a. Taro-wa { naze/nani-o } kodomo-ni turaku-atari-sae
Taro-TOP { why/what-ACC } child-DAT badly-treat-even
si-tei-ru no?
do-ASP-PRES Q
'Why is Taro even treating his child badly?'

b. Kodomo-ni turaku-atari-sae Taro-wa { naze/*nani-o }
child-DAT badly-treat-even Taro-TOP { why/what-ACC }
si-tei-ru no?
do-ASP-PRES Q
'[Even treating his child badly]$_i$, why is Taro doing t_i?'
(Ochi 2015:420-421)

(6) [$_{vP}$ SUBJ [$_{v'}$ [$_{VP}$ IO [$_{V'}$ wh_{accR} [$_{V'}$ DO V]]] *v*]]
(Ochi 2015:421), slightly adapted

The claim that wh_{accR} is a VP-internal adjunct while *naze* 'why' is not conforms to the former's aversion to negation observed in (2); if the RM is operative, wh_{accR} cannot move across negation to a higher position.

This rationale, however, does not quite work since there are cases where wh_{accR} and negation can co-occur. We will offer such data in the next section.

2.2 Obviations from Negative Island Effects

This section shows that the 'negative island effects' observed in (2) is not as pervasive as claimed above. Takami (2010) offers a set of data where negated wh_{accR} sounds acceptable.

(7) a. *You've done enough studying for the exam already, but ...*
Nani-o son'nani otituka-nai no?
what-ACC so.much calm.down-NEG Q
'What's still unsettling you?'
(Takami 2010:10), the gloss and translation added

b. *You said you were sleepy, ...*
Nani-o mada nete-i-nai no?
what-ACC yet sleep-ASP-NEG Q
'Why haven't you slept yet?'
(Takami 2010:10), the gloss and translation added

c. *I told you everything, ...*
Nani-o mada nattoku/manzoku si-tei-nai no?
what-ACC still consent/satisfaction do-ASP-NEG Q
'Why aren't you convinced/satisfied yet?'
(Takami 2010:10), slightly adapted, the gloss and translation added

We, however, argue that these examples seem to include cases of lexical negation rather than sentential negation or cases where corresponding positive predicates are available (e.g. (be) not sleeping yet = be awake), and thus they do not constitute solid counterexamples of the alleged negative island effects. *Otituka-nai* 'calm.down-NEG' in (7a), for example, does not license an NPI:[3] X-*sika* 'only' is a typical NPI that is licensed by negation, as shown in (8a), while (8b) shows that *otituka-nai* does not license it.[4]

(8) a. Taro-sika paatii-ni { *ki-ta/ko-nakat-ta }
Taro-only party-DAT { come-PAST/come-NEG-PAST }
'Only Taro came to the party (although we expected that others would come."

b. *Taro-sika otituka-nai.
Taro-only calm-NEG
(Intended) 'Only Taro is feeling unsettled.'

Nonetheless, we offer a new data set that constitutes obviation from the alleged negative island effects, where sentential negation is working. The first

[3] It has been well documented that NPIs in the subject position are licensed by negation in Japanese, unlike English. This may be attributed to (i) Neg-head raising to higher than TP/IP (Kishimoto 2013) or (ii) the subject remaining in vP-internal position, e.g., (Watanabe 2004).

[4] The other examples in (7b)-(7c) behave rather differently from (7a) in that when they are not accompanied by *mada* 'still', the negated predicates license *sika*, but when they are with the temporal adverbial, the negated predicates sound degraded with *sika*-marked subjects.

data set includes cases of universal negation (e.g., ∀x. ¬ p...). The native speakers of Japanese we have consulted all judged that the grammaticality of these sentences is far better than (2).

(9) a. *I expected that they should definitely be clamouring and fighting, but*
Nani-o karera-wa sawa-ide-mo kenkas-ite-mo nai no?
what-ACC they-TOP clamour-ASP-also fight-ASP-also NEG Q
'Why aren't they either clamouring or fighting?'

b. *I told you to do all those homework, and*
Nani-o mada nani-mo yat-tei-nai no?
what-ACC yet what-mo do-ASP-NEG Q
'Why haven't you done anything?'

Another type of example is a case where *mo* 'even' is attached to a constituent, as shown in (10b).

(10) a. Context: There is a set of papers that a professor told students to read. There is an order to the papers to be read; Paper A is absolutely necessary and Paper B is strongly recommended to be read, but Paper C is optional. One lazy student didn't read any.

b. Nani-o kimi-wa A ronbun-mo yon-dei-nai no?
what-ACC you-TOP A paper-even read-ASP-NEG Q
'Why haven't you even read paper A?'

Although (9a)-(10b) cannot be explained in terms of syntactic constraints such as the RM, we could rely on semantic/pragmatic accounts already entertained in the literature. In the next section, we discuss a possible alternative semantic account and argue that it turns out to be inapplicable to the cases at hand when we consider the scope relation between negation and wh_{accR}.

2.3 A Possible Semantic Account

Negative islands are known to be weak islands, often explained in semantic terms (e.g., Szabolcsi and Zwarts 1993, Fox and Hackl 2007, Abrusán 2014). Abrusán (2014), for example, explains negative islands in terms of (the violation of) the Maximal Informativity Principle of questions, cf. Dayal (1996):

(11) Maximal Informativity Principle:
Any question presupposes that it has a maximally informative answer, i.e. a true answer which logically entails all the other true answers.
(Abrusán 2014:90)

Degree questions show a negative island effect, as shown in (12). Under this theory, the positive question sounds fine because if a true answer is 'I ran at 8 km/h', then it entails all the other true answers such as 'I ran at 7 km/h', 'I ran at 6 km/h.' The negative question, on the other hand, lacks a maximally informative answer: even if 'I didn't run at 8 km/h' is a true answer, you will never know that 'I didn't run at 7 km/h' or 'I didn't run at 9 km/h' is also true.

(12) How fast { did/*didn't } you run?

a. For what degree d, you ran at d-fast?
– I ran at 8 km/h. → I ran at 7 km/h. , I ran at 6 km/h., ...
⇒ A true answer entails all the other true answers.

b. For what degree d, you didn't run at d-fast?
– I didn't run at 8 km/h. → I might have run at 7 km/h, I might have run at 10 km/h, ...
⇒ There will be no true answer that entails all the other true answers.

In the case of questions that ask for reasons, the maximality of information manifests itself as incompatibility with *else*, as shown in (13).[5] The *why* question *Why did Maria see Anna?* presupposes that $\exists p_{\langle s,t\rangle}$. Maria saw Anna because p. (13) is not allowed as only one true answer is allowed. Suppose that *Maria saw Anna because she wanted to return a book* is a true answer to the question. Then *Maria saw Anna because she wanted to return a book and talk about their future plan* is not a true answer to the question, because talking about their future plan is not included in the reason why Maria saw Anna.[6]

(13) #Why else did Maria see Anna?

If negation is appended to *why*, we cannot have an interpretation where negation takes a wider scope than *why* as in (14b). Applying Abrusán (2014) to this case, we argue that the negated question never has a maximally informative answer.

(14) a. Why did Mary not see Anna?

b. What is not the reason why Mary saw Anna?

Note at this point that this semantic explanation targets the scopal relation where the wh takes scope below negation, cf. Szabolcsi and Zwarts (1993).

[5] We are grateful to Satoshi Tomioka (p.c.) for bringing this analysis to our attention.

[6] *Why else*-questions become felicitous as rhetorical questions.

In (15a), where negation takes scope below the wh, there is actually a legitimate interpretation, while the wide scope negation interpretation results in the violation of Maximal Informativity Principle.

(15) How many books didn't you buy?

a. For what number n, n is the cardinality of the set of books that you did not buy? wh $>$ ¬
⇒ A true answer entails all the other true answers.

b. #For what number n, you didn't buy n-many books?
¬ $>$ wh
⇒ There will be no true answer that entails all the other true answers.

Turning to our cases, wh_{accR} always has a narrow scope interpretation of negation, despite the fact that it is base-generated below negation (see Section 2). An answer to (16a) has to be a reason why they are not clamouring or fighting. This is accounted for if we take the Maximal Informativity Principle at work.

However, the ungrammaticality of our data in (2), repeated here as (16b), cannot be explained by the same principle, since (16b) sounds degraded even if we take it as a question asking for a reason why they are *not* clamouring.

(16) a. (=(9a)) *I expected that they should definitely be clamouring and fighting, but*
Nani-o karera-wa sawa-ide-mo kenkas-ite-mo nai
what-ACC they-TOP clamour-ASP-also fight-ASP-also NEG
no?
Q
'Why aren't they either clamouring or fighting?'

b. (=(2))
*Karera-wa nani-o sawai-dei-nai no?
they-TOP what-ACC clamour-ASP-NEG Q
'What aren't they clamouring for?/Why aren't they clamouring?'

To recap, a syntactic analysis based on the RM would not predict the grammaticality of some negated wh_{accR}, while a semantic analysis that resorts to the Maximal Informativity Principle is not applicable to the ungrammatical cases where negation takes a narrow scope.

These considerations lead us to propose another semantic analysis that can explain the contrast between (16a) and (16b) on the one hand and the contrast between (16b) and (1b).

3 Proposal

3.1 The Speaker's Negative Attitude

It has been observed that wh_{accR} is associated with the speaker's negative attitude to the described event (see footnote 2). This attitude may be realized as a surprisal or unexpectedness to what is happening. Yang and Mizuno (2020) observe that wh_{accR} in (1b) is not felicitously followed by *though I'm not surprised*.

This surprisal/unexpectedness is further related to the extremeness of the event described. Wh_{accR} is often accompanied by a degree adverb that refers to a great degree on the relevant scale. *Son'nani* 'so much/that much' is a typical degree adverb that co-occurs with wh_{accR}, which behaves as an NPI, as indicated in (17a)-(17b). In (17a), *son'nani* 'so much/that much' can alternate with another NPI degree adverbial *amari* 'very', which is only licensed in the scope of negation.

(17) a. Taro-wa { amari/son'nani } { *tabe-ta/tabe-nakat-ta }.
Taro-TOP { very/that.much } { eat-PAST/eat-NEG-PAST }
'Taro { ate/didn't eat } a lot/that much.'

b. Taro-wa { *amari/son'nani } tabe-ta no?
Taro-TOP { very/that.much } eat-PAST Q
'Did Taro eat a lot/that much?'

In (17a), the degree adverbs serve to describe understatements: being high-degree adverbs, they are interpreted to be understatements in the scope of negation. In (17b), where only *son'nani* is allowed, the degree adverb refers to a contextually given large amount of food and there is no understatement interpretation. The utterance in (18a) serves as a good antecedent for *son'nani* in (17b), but (18b) does not.

(18) a. Taro ate ten whole pizzas.

b. Taro ate a piece of pizza.

Wh_{accR} is only compatible with *son'nani* and even when with a negated wh_{accR}, *amari* 'very' is not allowed. *Naze* 'why' questions do not show this contrast:

(19) a. Nani-o { *amari/son'nani } manzoku-si-tei-nai no?
what-ACC { very/that.much } satisfaction-do-ASP-NEG Q
'Why aren't you satisfied so much?'

b. Naze { amari/son'nani } manzoku-si-tei-nai no?
why { very/that.much } satisfaction-do-ASP-NEG Q
'Why are you not satisfied that much?'

We take the contrast observed in (19) as indicating that wh_{accR} is only compatible with an event that is considered to be 'extreme'. We conjecture that this extremeness requirement comes from the speaker's unexpectedness: the described event exceeds some high degree in a relevant gradable property, to the extent that the speaker does not expect.

The notion of the speaker's (un)expectedness is not confined to what the speaker believes, as in (1b), which conveys that the speaker believes that they should not make noises in that situation. In (9b) and (10b), on the other hand, what is happening is not what the speaker wanted the addressee to do. We thus suggest that in wh_{accR}, what is relevant is the speaker's wish/hope, and this derives what the speaker believes.[7]

3.2 Wh_{accR} as Exhaustification

Based on the observations above, we propose that wh_{accR} is a construction that checks how unexpected the proposition is. This is formalized via a covert EVEN-Exhaustification operator, EVEN-EXH. As a covert version of *even*, the operator checks unlikeliness ordering among the alternative propositions (including the prejacent itself), and requires the prejacent to be the least likely one, as defined in (20).

(20) $[\![\text{EVEN-EXH}]\!]^{c,w} = \lambda p_{\langle s,t\rangle}.\ p(w)=1 \wedge \forall q.\ (q \in C \wedge q \neq p) \rightarrow$ (p is less likely than q)

We would like to make a modification to (20) when applied to wh_{accR} in such a way that EVEN-EXH is defined in a context where what the speaker wants (according to her norms) is supposed to be best, and propositions are ordered with respect to the speaker's wish. If this is defined, we predict that the prejacent to EVEN-EXH in wh_{accR} induces an implication in (21b): the speaker thinks that the proposition described should not be happening.

(21) a. $[\![\text{EVEN-EXH}]\!]^{c,w} = \lambda p_{\langle s,t\rangle}.\ p(w) = 1 \wedge$
$\forall q.\ (q \in C \wedge q \neq p) \rightarrow (p \leq_{\text{what.the.speaker.wants}} q)$

b. Wh_{accR} associated implication:
$\forall w' \in \cap f_{\text{circum} \leq g(w,\ sp)}(c)(w)$: $\neg p(w')(c)$
(sp denotes the speaker in c, and g is bouletic)

[7] We thank the audience in JK 30 and Satoshi Tomioka for bringing this issue to our attention.

We posit that the EVEN-EXH situates at a higher position than IP, and thus it checks whether the proposition in IP is the least likely one or not among its alternatives, which we assume are formed at VP.

(22) $[_{CP}$ Wh_1 [C [EVEN-EXH $[_{IP}$ they $[_{NegP}$ $[_{vP}$ $[_{VP}$ clamour for $t_1]_F]$ ing]]]]]

With these assumptions, the proposition in IP in (1b) provides the alternatives given in (23b):

(23) a. (1b):
$[_{CP}$ Wh_1 [C [EVEN-EXH $[_{IP}$ they are $[_{vP}$ $[_{VP}$ clamour for $t_1]_F$ ing]]]]]

b. Alternatives to *they are clamouring for x*
C = { They are clamouring for x, They are reading books for x, They are dancing for x }

The requirement put by EVEN-EXH is satisfied if the prejacent *They are clamouring for x* is ordered to be the 'worst' from the speaker's point of view. Thus, if the prejacent is not true in the speaker's best worlds, EVEN-EXH is defined. In other words, as far as we can set up a context where the propositions in the alternative set (=C) are ordered as in (24), (1b) should be grammatical.

(24) C = { They are clamouring for x $<$ They are reading books for x/They are dancing for x }

3.3 Negated Wh$_{accR}$

Let us turn to how this analysis explains the aversion to negation of wh$_{accR}$. If the prejacent is negated, as in (25a), a set of its alternatives would be like (25b):

(25) a. $[_{CP}$ Wh_1 [C [EVEN-EXH $[_{IP}$ they $[_{NegP}$ $[_{vP}$ $[_{VP}$ clamour for $t_1]_F$ ing] not]]] Q]

b. C = { They are not clamouring for x, They are not reading books for x, They are not dancing for x }

The negated propositions may denote the same circumstances, where nothing happens. If nothing happens, that circumstance entails no clamouring (for x) or no reading of books (for x), etc. In this situation, it is hard to tell which of the alternatives is worse than the others. With no ranking among the

alternatives, EVEN-EXH is not satisfied, and the ungrammaticality follows. The asymmetry between (1b) and (2) thus comes from whether the ordering among the alternatives is available or not.

Let us now turn to (9a)-(9b). (9a) (repeated as (26a)) differs from (2) in that two propositions are negated. The alternatives to the prejacent in (26a) are listed in (26c). Here if they are neither clamouring nor fighting for x, then it entails that they are not clamouring (or that they are not fighting). If the speaker expects that they are clamouring and fighting (for x), then the prejacent should be the least expected thing. In this way, the prejacent can be ordered with respect to its alternatives and it is the least likely one. EVEN-EXH is defined under this situation.

(26) a. *I expected that they should definitely be clamouring and fighting, but*
Nani-o karera-wa sawa-ide-mo kenkas-ite-mo nai
what-ACC they-TOP clamour-ASP-also fight-ASP-also NEG
no?
Q
'Why aren't they either clamouring or fighting?'

b. EVEN-EXH[they are not clamouring or fighting for x]

c. C = { they are not clamouring for x, they are not fighting for x, they are neither clamouring nor fighting for x }

(9b) is explained in the same way, because the prejacent proposition entails other propositions in the alternatives, as it is a universal negation.

Another case that allows negated wh_{acc}, (10b), repeated as (27b), includes an explicit marking of *mo* 'even'. To satisfy the meaning of *mo*, the prejacent proposition has to be the least likely one (from the speaker's point of view). This feeds the requirement of EVEN-EXH (rather trivially).

(27) a. Context: There is a set of papers that a professor told students to read. There is an order to the papers to be read; Paper A is absolutely necessary and Paper B is strongly recommended to be read, but Paper C is optional. One lazy student didn't read any.

b. Nani-o kimi-wa A ronbun-mo yon-dei-nai no?
what-ACC you-TOP A paper-even read-ASP-NEG Q
'Why haven't you even read paper A?'

c. ⟦ mo [You did not read [paper A]$_F$] ⟧ is defined, if *You did not read paper A* is the least likely one.

To summarize: We have discussed the (apparent) negative island effects observed with wh_{accR} have to be explained semantically, since there are cases where negation is allowed with wh_{accR} and the RM predicts the ungrammaticality of negated wh_{accR} across the board. Our semantic analysis is needed in addition to the semantic analysis based on the Maximal Informativity Principle, because the data set at hand includes cases where wh_{accR} takes a wider scope than the negation, which cannot be the target of such semantic analysis.

The current analysis crucially relies on the idea that the grammaticality of wh_{accR} is related to its 'connotation' that the speaker believes that the described event should not be happening, cf. Takami (2010). The negated wh_{accR} is acceptable when the prejacent denotes an 'extreme' case, which derives the speaker's surprisal. We formalize this as EVEN-EXH, which serves to check the 'extremeness' as well as to derive the speaker's unexpectedness connotation.

4 Conclusion

This paper has two contributions to the literature on wh_{accR}. First is that the alleged negative island effects observed with wh_{accR} constitute a different status than the 'typical' negative island effects, such as the one observed with degree questions. Another finding is a new set of data that obviates the effect of negation: negated wh_{accR} improves when it includes a universally negated proposition or a *mo* 'even'-marked constituent.

The present semantic proposal is consistent with a recent syntactic proposal about the nature of wh-indeterminates in Japanese by Saito (2017), which claims that Japanese wh-indeterminates are defective in that their quantificational value is not determined until they move to CP where the quantificational value is assigned by particles such as *ka* and *mo*. If wh-indeterminates including *nani* lack quantificational values when they move, they should not cause a violation of the RM: accordingly, the apparent negative island effects should come from other sources.

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