# Embedded negative polar questions in Japanese[*]
## Consequences for the speech act embedding view of the complementizer *to*

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**Abstract**

When embedded under *ka to*, Japanese negation *nai* does not have to contribute its usual truth reversing meaning, that is, it is *expletive*. We observe that this behavior is predicted if this embedded negation is part of a positively biased negative polar question. We argue in favor of this view. To produce an analysis, a better understanding of the complementizer *to* is needed. We catalogue several of its unique properties, and conclude that it is a quotative marker that embeds speech acts. We offer an analysis of the syntax and semantics of *to*-clause embedding that makes progress relative to prior work, unifying the analysis of *to*-clauses that are selected by the matrix predicate, and those that aren't. We show that our analysis explains puzzles that are raised by competing views in which embedded expletive negation in Japanese is unified with embedded expletive negation in French.

**Keywords**: expletive negation; biased questions; negative polar questions; speech act embedding; quotative marker; complementizer

## 1  Introduction

In certain embedding environments, Japanese negation *nai* does not have to contribute its usual truth reversing meaning. For example, *nai* appears in the embedded clause in (1), and yet the interpretation is such that the propositional argument of the attitude verb is not negated (cf. Yoon 2011, 2013 for a similar effect in Korean).[1]

(1)  Yoko-wa [Sota-ga uta-o     utawa-**nai-ka**-to] **kitaishi**-te i-ru.
     Yoko-TOP Sota-NOM song-ACC sing-**NEG-KA**-TO **hope**-TE    ASP-NPST
     (lit.) 'Yoko hopes, wouldn't Sota sing a song.'
     'Yoko hopes that Sota might sing a song.'

The complementizer *to* is obligatory in (1). Remove it, and the sentence is unacceptable. *Ka* on the other hand can be removed, but the meaning changes so that *nai* fulfills its usual negative role, reversing the truth value of the object of Yoko's attitude:

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[1]*Kitaisuru* in (1) is not exactly identical to English *hope*. We will discuss this further in sections 3 and 4.

(2) Yoko-wa [Sota-ga uta-o    utawa-**nai**-to] **kitaishi**-te i-ru.
    Yoko-TOP Sota-NOM song-ACC sing-**NEG**-to **hope**-TE  ASP-NPST
    'Yoko hopes that Sota won't sing a song.'

Furthermore, when *ka* is absent as in (2), the matrix subject's attitude about the embedded clause becomes stronger than it is in (1), as indicated by the use of *might* in the translation of (1) but not (2).

What are the roles of *nai, to* and *ka* in producing these effects? One view is that the expletive negation in (1) is related to embedded expletive negation in French, as in (3) (Yoon, 2011, 2013; Choi & Lee, 2017):

(3) Nous tenterons d' **éviter** qu' il (**n'**) apprenne    la  nouvelle avant  son départ.
    we   try.FUT   to avoid  that he NEG learn.SUBJ.PRES the news     before his  departure
    'We will try to prevent him from learning the news before he leaves.'[2]      *French*

However, there is a two-sided asymmetry between embedded expletive negation in Japanese and French that calls such a unified analysis into question. First, expletive *nai* appears under predicates that do not license expletive *ne* in French, such as *kitaisuru* 'hope' in (1) (cf. Yoon (2011) who also notes this asymmetry). Second, French expletive *ne* is licensed by predicates that do not allow expletive *nai* in Japanese, such as *prevent/avoid*. Compare (3) to (4):

(4) *Watashi-wa [sono shirase-ga Yoko-no   mimi-ni haira-**nai**-ka-to]    sake-ta.
    I-TOP      that news-NOM Yoko-GEN ear-DAT enter-**NEG**.NPST-Q-TO avoid-PST
    'I avoided that the news would not reach Yoko's ear.'

If the embedded expletive negations in the two languages are one and the same phenomenon, subject to a single analysis, then these asymmetries are puzzling. We believe that they are in fact distinct phenomena, and thus we will pursue a unique analysis for the Japanese data. Our analysis will explain embedded expletive negation in Japanese as a positively biased negative polar question (NPQ). Consider the matrix NPQs in (5):

(5) Context: A, B and Yoko have placed their orders at a café. While Yoko is away from the table, a waiter brings three cups of coffee. A thinks that she heard Yoko order tea earlier, and says to B:
    a. Yoko-wa  ocha-o  chuumonshi-te **nai**$_{tc}$?
       Yoko-TOP tea-ACC order-TE    **NEG**$_2$.NPST
       'Didn't Yoko order tea?'
    b. Yoko-wa  ocha-o  chuumonshi-ta n  ja    **nai**$_{tc}$?
       Yoko-TOP tea-ACC order-PST    NO DE.WA **NEG**$_2$.NPST
       'Isn't it the case that Yoko ordered tea?'

NPQs like these have been described as requiring the speaker's positive epistemic bias (*e.g.* Romero & Han, 2004; Sudo, 2013; Hara et al., 2014; Ito & Oshima, 2016; Rieser, 2017; Hirayama, 2018; Goodhue, 2019). Ito & Oshima (2016, 4) argue that the negation in positively biased NPQs like (5a) and (5b) must be 'tonally compressed', hence the subscript *tc*, which means the 'total disappearance,

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[2]`http://bdl.oqlf.gouv.qc.ca/bdl/gabarit_bdl.asp?t1=1&id=2467`

as well as mere subdual/weakening, of pitch movements.' In contrast, regular negation *na'i* is marked with an apostrophe to indicate a lexical accent, and its presence in a polar question does not entail positive bias. To separate the two, we will gloss *nai$_{tc}$* as NEG$_2$, and *na'i* as NEG$_1$.[3]

Pursuit of our analysis of embedded expletive negation in Japanese combined with other relevant data leads to a more general picture of embedding under the complementizer *to*: We demonstrate that *to*-clause embedding has many unique character traits, which we argue can be explained if we analyze it as a kind of speech act or mental utterance embedding. We provide an analysis of *to*-clause embedding that makes progress on the breadth of data captured relative to prior work, and we delineate required future work. Viewed in the light of this analysis, *ka* will be seen to play the same role as it does in matrix clauses, which we further suggest may be distinct from its role as an interrogative complementizer in other embedded contexts.

The paper is organized as follows: In section 2, we discuss background on positively biased NPQs, and make a first argument that embedded expletive negation can be reduced to the negation in an embedded NPQ. In section 3, we introduce several properties of *to*-clauses that influence our analysis. Then in section 4, we present our analysis. In section 5, we return to the puzzles about the distribution of embedded expletive negation raised above, and explain them in light of our analysis. Finally, we briefly compare our account to competing approaches (section 6) and then conclude (section 7).

## 2 Positively biased negative polar questions

### 2.1 Matrix negative polar questions

Positively biased negative polar questions (NPQs) in Japanese have been discussed by Sudo (2013); Hara, Kawahara & Feng (2014); Ito & Oshima (2016); Hirayama (2018); Oshima (2019), and Shimoyama, Goodhue & Hirotani (2019), among others. The NPQ in (7) can be felicitously uttered in context (6), adapted from Ito & Oshima (2016), in which B has a prior expectation that the orange that A is eating is sweet.[4]

(6)   Context: A is eating an orange. B has already eaten one from the same bag and it was exceptionally sweet. B says to A:

(7)   Amak-u   **nai$_{tc}$**?        ↑ ( *↓)
      sweet-INF **NEG$_2$.NPST**
      'Is**n't** it sweet?'
      ⇝ The speaker is biased toward the proposition that it's sweet. (positive epistemic bias)

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[3] This prosodic distinction can be affected by the choice of verb. With some verbs such as *ku'-ru* 'come-NPST', the pitch accent is placed immediately before negation (e.g. *ko'-nai*), and as a result, the distinction between NEG$_1$ and NEG$_2$ is blurred because there is no tone to compress to begin with. This issue can be avoided by using the aspectual form, as in *ki'-te na'i* 'NEG$_1$' vs. *ki'-te nai* 'NEG$_2$' (see Ito & Oshima, 2016). We leave it to future work to further probe the prosodic characterization of negation in both matrix and embedded clauses.

[4] In Ito and Oshima's (2016) original context, B has only heard that oranges this year are exceptionally sweet, and he has not eaten one yet. In this context, however, the English negative polar question 'Isn't it sweet?' sounds a bit odd, and a positive polar question 'Is it sweet?' would be preferred (a positive polar question would also work in Japanese in this context). We modified the context to (6) so that we would have acceptable NPQs in both Japanese and English. In fact, example (7) in Japanese may be more acceptable in the modified context than in the original context as well, but this requires more systematic study.

The negation $nai_{tc}$ in (7) is obligatorily tonally compressed. We should also note that example (7) must have the rising intonation at the end as indicated by '↑', forcing it to be a question. See Ito & Oshima (2016) for more discussion of the prosodic properties of $nai_{tc}$ 'NEG₂' compared to $na'i$ 'NEG₁'.

   We can show that (7) requires the speaker to be biased for the propositional prejacent of the question by demonstrating its infelicity in a context in which the speaker has no bias, such as (8) from Ito & Oshima (2016).

(8)   Context: A eats a piece of orange and grimaces. B has no prior expectation about the quality of the oranges. B says to A: #(7)

B's utterance of (7) in (8) is infelicitous, confirming that (7) requires positive speaker bias. Cf. (9), which features regular negation $na'i$ 'NEG₁' and is felicitous in context (8), where there is contextual evidence that the orange is not sweet.

(9)   Amak-u   **na'i**?        ↑ (↓)
      sweet-INF **NEG₁.NPST**
      'Is it **not** sweet?' ('It is not sweet.')

This shows that positive speaker bias is not a necessary component of all negative polar questions in Japanese, just those with tonally compressed negation.[5] This suggests that tonal compression of negation plays a similar role to preposing of negation in several other languages discussed by Romero & Han (2004), including English as seen in the translations of Japanese examples here. Note also that unlike (7), it is possible to utter (9) with falling intonation, in which case it is interpreted as the declarative statement 'It is not sweet.' On the other hand, if NEG₂ were followed by the Q-particle $ka$ in (7), then the sentence final intonation could either rise or fall. However, either way, it would still be interpreted as a question (a self-addressed one in the case of falling intonation).

   $Nai_{tc}$ behaves differently from $na'i$ in other ways that suggest that NPQs with $na'i$ are negative in a way that NPQs with $nai_{tc}$ are not. For example, $nai_{tc}$ does not license strong negative polarity items, as observed by Aihara (2009) and Ito & Oshima (2016). Compare (10) with (11):

(10)   Yoko-wa   **nani-mo** chuumonshi-te **na'i**?
       Yoko-TOP what-MO   order-TE       **NEG₁.NPST**
       'Has Yoko not ordered anything?'

(11)   *Yoko-wa   **nani-mo** chuumonshi-te **nai**$_{tc}$?
       Yoko-TOP what-MO   order-TE       **NEG₂.NPST**
       'Hasn't Yoko ordered anything?'

   $Nai_{tc}$ also behaves differently from $na'i$ with respect to tests introduced by Goodhue (2018, 2019, 2021) to show that preposed negation in English polar questions such as *Did**n't** Jane eat?* is not interpreted in the propositional prejacent of the question. These tests use not-at-issue

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[5]The intonational pattern of (9) on the other hand may be acceptable in positive bias contexts like (6). This is not unlike English low negation questions such as the translation in (9), which are compatible with positive bias but do not require it. See AnderBois 2019 for discussion of the possibility that such negative questions may in fact be ambiguous between a reading that is necessarily positively biased and one that is not, so-called 'Gladiator low negation questions'.

content contributed by presuppositions and conventional implicatures to examine the content that projects out of questions. For instance, *again* presupposes that the proposition denoted by its complement has happened before.

(12) Did Jane eat **again**?
*presupposes*: Jane ate before

If *again* can scope over negation, then negation should be part of the presupposition.

(13) Did Jane **not** eat **again**?
*can presuppose*: Jane did not eat before

However, the presupposition projecting from the preposed negation question cannot contain negation.

(14) Did**n't** Jane eat **again**?
*presupposes*: Jane ate before
*cannot presuppose*: Jane did not eat before

This leads to the conclusion that *again* cannot scope above negation in (14). The explanation pursued in Goodhue (2018) is that preposed negation scopes outside the propositional prejacent of the question.[6] Other tests supporting this conclusion deployed in Goodhue (2018) include projecting content (*also*, *as*-parentheticals), negation sensitivity (*until*- and *for*-adverbials), and polar particle responses to negative sentences.

Parallel observations hold in Japanese (reference redacted). By using *mata* 'again' and *mo* 'also', we can see that $nai_{tc}$ is also interpreted outside the propositional prejacent of the question.[7]

(15) Yoko, **mata** tabe-te **nai**$_{tc}$?
Yoko again eat-TE **NEG**$_2$.NPST
'Isn't Yoko eating again?'
*presupposes*: Yoko was eating before.
*cannot presuppose*: Yoko was not eating before.

(16) Yoko-**mo** tsukare-te **nai**$_{tc}$?
Yoko-also tired-TE **NEG**$_2$.NPST
'Isn't Yoko also tired?'
*presupposes*: Someone else is tired.
*cannot presuppose*: Someone else is not tired.

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[6]Following previous work (Hartung, 2006; Sailor, 2013; Goodhue, 2018; AnderBois, 2019), we assume that Ladd's (1981) ambiguity does not exist in American English, and in particular that there is no inner negation reading of questions with preposed negation.

[7]Support for positing a specialized negation morpheme in a syntactically high position also comes from the phenomenon of monophthongization, where $nai_{tc}$ is pronounced as *ne*, as in (i). This question only has the interpretation where the speaker is positively biased. See Hara, Kawahara & Feng (2014); Oshima (2019) and Sailor (2013).

(i) Tsuuka, sore ii-sugi ja **ne**?
rather it say-excess COP.WA NEG$_2$
'Well, isn't what you just said a bit too much?' (Rikudoo Sen'nin, *Naruto Shippuden*, episode 420)

What we have seen in this section is that NPQs with $nai_{tc}$ convey the speaker's positive bias toward the propositional prejacent of the question. Furthermore, $nai_{tc}$ is interpreted outside the propositional prejacent of the question. We will not review competing analyses of positively biased NPQs because our analysis of embedded expletive negation will not, for the most part, depend on the fine details. What matters below is what we have shown here: that it is an empirical fact that such NPQs convey a speaker bias, and that there is evidence that the negation may be interpreted high. In analyses such as Romero & Han (2004), Krifka (2017), and Goodhue (2018, 2019, 2021), this negation is still interpreted as negation in the sense that it either reverses truth values or acts as a set-theoretic complementation operator. What distinguishes it from typical negation is that it is high in the left periphery, above a common ground management operator or speech act operator. We think this kind of analysis is on the right track, as opposed to analyses in which the negation is a subjunctive mood marker, discourse particle, or is otherwise not interpreted as negating some constituent. Thus for us, $nai_{tc}$ is still negation, despite its apparent expletiveness.

## 2.2   Embedded expletive negation as part of an embedded NPQ

We have just seen that tonally compressed negation in NPQs results in a positively biased question, and that tests for negation reveal that such NPQs lack the semantic effects of negation. Thus, if the negation in examples like (1) are part of an embedded NPQ, then their expletiveness would fall out as a straightforward prediction. Two initial arguments can be given in support of this view, one from prosody, the other from interpretation.

For the argument from prosody, recall that (1), repeated in (17), demonstrates that in certain cases negation in an embedded clause does not contribute a truth reversing meaning. We can now see that whether the negation is expletive or not depends on whether the negation is tonally compressed or not:

(17)   Yoko-wa [Sota-ga uta-o     utawa-{(a) **na'i**/(b) **nai**$_{tc}$}-ka-to] kitaishi-te i-ru.
       Yoko-TOP Sota-NOM song-ACC sing-{**NEG**$_1$/**NEG**$_2$}-KA-TO     hope-TE   ASP-NPST

   a.   'Yoko hopes that Sota will not sing a song.'
   b.   'Yoko hopes that Sota might sing a song.'

*Na'i* leads to truth reversal in (17a), while $nai_{tc}$ does not, leading instead to (17b). Since this matches characteristics of unembedded NPQs, it lends support to the idea that what is embedded in examples like (1)/(17) are NPQs.

The argument from interpretation begins with (18), which demonstrates a declarative embedded under *to*, where the matrix predicate is *omou* 'think'.

(18)   Yoko-wa [[Ken-ga hannin **da**]    **to**] omot-te i-ru.
       Yoko-TOP Ken-NOM culprit COP.NPST TO  think-TE ASP-NPST
       'Yoko thinks that Ken is the culprit.'

Interpretationally, (18) seems like a standard attitude report, just like its English translation. Compare it to (19), which illustrates embedding of a positive polar question under *to* under *omou* 'think'.[8]

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[8]Note that others have argued that what is embedded here is not a polar interrogative. On these alternative views,

(19) Yoko-wa [[Ken-ga hannin **ka**] **to**] omot-te i-ru.
Yoko-TOP Ken-NOM culprit Q    TO think-TE ASP-NPST
'(Lit.) Yoko thinks, is Ken the culprit.'
'Yoko thinks Ken might be the culprit.'

Intuitively, interrogatives embedded under *to* convey a weaker meaning than declaratives embedded under *to*, as indicated by the use of the epistemic modal 'might' in the English translation of (19) but not (18). We will refer to this weakening effect as *hedging*.

Now consider in (20) an embedded expletive negation of the sort we began the paper with.

(20) Yoko-wa [[Ken-ga hannin ja    nai$_{tc}$ **ka**] **to**] omot-te i-ru.
Yoko-top Ken-nom culprit COP.WA NEG2 Q    TO think-TE ASP-NPST
'(Lit.) Yoko thinks, isn't Ken the culprit.'
'Yoko thinks that there is a good possibility that Ken is the culprit.'[9]

Intuitively, (20) also has a hedging effect when compared to the embedded declarative in (18). At the same time, (20) is not as hedged as the embedded positive interrogative in (19). The examples form a scale then, with the embedded declarative (18) the least hedged, the embedded positive interrogative (19) the most hedged, and the embedded expletive negation (20) in the middle. This is why we translate the declarative as unmodalized, the positive interrogative with 'might', and the negated version with 'good possibility' or 'probably'.

This interpretational scale can be explained by our view that embedded expletive negation like in (20) is part of a positively biased NPQ, in combination with our view of how the global interpretation of sentences with *to*-clauses embedded under attitudes is derived. Here is a first pass at our eventual analysis in section 4: *To* attributes the act of asking the embedded interrogative or asserting the embedded declarative to the embedding subject. In declarative cases, the matrix attitude predicate takes as complement the propositional content of the assertion. In interrogative cases, the matrix attitude takes as complement a proposition representing the bias expressed by the *to*-question.[10, 11] The NPQs discussed in subsection 2.1 convey a relatively strong bias in favor of the proposition embedded under negation. Positive polar questions on the other hand convey a weaker bias. Consider (21c), which can be used felicitously in neutral contexts like (21a) from Goodhue (2019), but can also be used in contexts in which the speaker is confronted with evidence in favor of the positive answer like (21b). The latter is an example of positive evidential bias as discussed by e.g. Büring & Gunlogson (2000); Sudo (2013); Krifka (2015).[12]

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*ka* would be a subjunctive marker (Yoon, 2011), or a modally functioning Q particle (Mizuno, 2022). We discuss these approaches further in section 6.

[9]Another natural translation is 'Yoko *suspects* that Ken is the culprit'.

[10]While we talk about the bias that simple positive polar questions could convey in certain contexts, the bias is less strongly felt than in positively biased negative polar questions. This may explain the observation in Mizuno (2021) that *shinjiru* 'believe' does not embed simple positive polar questions with *ka to* 'Q TO'. Compare that with the example with *omou* 'think' in (19), where a simple positive polar questions with *ka to* 'Q TO' is happily embedded.

[11]It is also noted in Kim & Tomioka (2014) and Kim (2018) that what they call Speaker-oriented embedded (polar) interrogatives give rise to speaker's bias toward a positive answer.

[12]Note that having '*no* (*ka*)' at the end of the question in (21c) makes it usable only in the biased context. We leave for future exploration properties of the particle *no* in questions in relation to the so-called extended copula or *no da*-construction.

(21)    a.    A has just walked in the front door, and she is looking for her roommate Yoko. She has no idea whether Yoko is home or not, but their mutual roommate B is, so A says to B: (21c)

        b.    A and B are in the basement. A thought that they were home alone because Yoko went out earlier, but then she hears a noise upstairs, and says to B: (21c)

        c.    Yoko kaet-te    ru        (ka)?
            Yoko return-TE ASP.NPST Q
            'Is Yoko home?/Has Yoko returned?'

Given the weaker bias of positive polar questions relative to NPQs, we understand the scale of hedging effects from (18) to (20) on our view: The positive question embedded under *to* in (19) has the weakest bias, and so is most hedged; the NPQ embedded under *to* in (20) has a stronger bias, and so is less hedged; and the *to* embedded assertion in (18) delivers an unmodalized proposition to the matrix predicate, so it is not hedged at all. This picture depends on our view of embedded expletive negation in Japanese as the negation in a positively biased NPQ.

But our informal story above raises questions about the details: How do we derive the interpretations just sketched? In particular, how are polar questions able to embed under declarative-selecting predicates like *omou* 'think' and *kitaisuru* 'hope'? And what is the role of the complementizer *to*? We turn in section 3 to a closer investigation of the properties of the complementizer *to*, before proposing our analysis in section 4. Then we will be in a position to return in section 5 to the puzzles about the distribution of expletive negation raised in section 1 and offer our explanation.

# 3    Properties of *to*-clause embedding

The complementizer *to* is sometimes described as a declarative complementizer, similar to English *that* (see most recently Mizuno 2022).

(22)    Yoko-wa [[yoru-no aida-ni    ame-ga    hut-ta] **to**] {it/omot/kii/kakushinshi}-ta.
        Yoko-TOP night-GEN period-DAT rain-NOM fall-PST TO say/think/hear/certain-PST
        'Yoko {said/thought/heard/was certain} that it rained during the night.'

However, in another strand of recent work, it is viewed as a 'quotative marker', an idea with roots in the traditional Japanese grammar view of *to* as forming a 'quotation phrase' (Saito, 2012, 2015; Kratzer, 2013; Maier, 2014; Sauerland & Yatsushiro, 2014; Tomioka & Kim, 2015, 2016; Kim, 2018; Shimamura, 2018; Saito, 2019; Yoshida, 2019; Sode & Sugawara, 2021). The quotative view is exhibited more transparently in some of the non-Tokyo dialects of Japanese. In Okayama Japanese in (23), the counterpart of *to* is the form *yuu-te* '(lit.) saying'. *Yuu-te* in the embedded clause is optional, similar to the form *te* in the Kansai dialect (see, for example, Saito 2018).[13]

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[13]See also *diye* which performs a similar function in Turkish, and is built from the root for 'say', *de-* (Özyıldız, 2018, 2019). This is a well-observed phenomenon cross-linguistically (*e.g.,* Chappell, 2008).

(23)  Sore-o kii-ta      sutaffu-san-tachi-mo [sugoi ee-yan    **yuu-te**] yuu-te kure-te, ...
      it-ACC hear-PAST staff-POL-PL-also      very  good-JAN say-TE  say-TE BEN-TE
      'Also the staff members who heard that (=my idea) told me that it was very good.'[14]

Returning to Tokyo dialects, *to* can embed direct quotations (direct reports of speech), as in (24).

(24)  Yoko-wa ["**watashi**-no jooshi-ga **yok-ka-go**    modoru"    to] getsuyoobi-ni
      Yoko-TOP I-GEN        boss-NOM four-day-later return.NPST TO Monday-on
      ii-mashi-ta.
      say-POL-PST
      'Yoko said on Monday, "**My** boss will return **four days from now**".'

However, *to* does not *necessarily* embed direct quotations. By changing the deictic and anaphoric expressions in the qutoation in (24) to those in (25)—*watashi* 'I' and *yok-ka-go* 'four days from now' become *kanojo* 'she' and *ashita* 'tomorrow'—we show that these expressions are not required to get their interpretation from the context of utterance of the quotation, as would be required if it were a direct quotation. Instead they can get their interpretation from the context of utterance for the matrix clause. Thus we show that *to* is also able to embed an indirect report of speech (assume (25) is uttered on Thursday):

(25)  Yoko-wa [**kanojo**-no jooshi-ga **ashita**      modoru      to] getsuyoobi-ni ii-mashi-ta.
      Yoko-TOP she-GEN        boss-NOM tomorrow return.NPST TO Monday-on    say-POL-PST
      'Yoko said on Monday that **her** boss would return on **tomorrow**.'

That *to* can embed indirect reports of speech can also be shown by the use of long-distance matrix *wh*-question formation. (26) attempts to form a matrix *wh*-question from within a direct quotation, and so is unacceptable. But matrix *wh*-question formation is perfectly acceptable from the indirect report of speech in (27) (Kuno, 1988; Oshima, 2006a).

(26)  *Yoko-wa ["**watashi**-no jooshi-ga **itsu** modoru"    to] getsuyoobi-ni ii-mashi-ta  ka?
      Yoko-TOP I-GEN        boss-NOM when return.NPST TO Monday-on    say-POL-PST Q
      (Intended) 'When did Yoko say on Monday, "*My* boss will return *t*".'

(27)  Yoko-wa [**kanojo**-no jooshi-ga **itsu** modoru      to] getsuyoobi-ni ii-mashi-ta  ka?
      Yoko-TOP she-GEN        boss-NOM when return.NPST TO Monday-on    say-POL-PST Q
      'When did Yoko say on Monday that *her* boss would return?'

This data shows that *to* can embed both direct and indirect reports of speech. Still, it does not settle which of the two competing views of *to* is correct, the declarative complementizer view or the quotative marker view. It may be that *to* is a declarative complementizer, comparable to English *that*, with the important exception that sometimes it embeds direct quotations. Or it could be a quotative marker compatible with both direct and indirect quotation. In the remainder of this section, we will demonstrate several striking empirical facts about *to*-clause embedding that would only be explainable on the declarative complementizer view *only if* they all involved direct

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[14]https://www.youtube.com/watch?v=HCkm1BVNzF8  (FUJII  Kaze,  ANNnewsCH,  5'50",
09/23/2020)

quotation. But we will show that they do not involve direct quotation, and therefore that *to* is not a declarative complementizer, but must be a kind of quotative marker. Ultimately, we will argue that what *to* embeds is a speech act phrase, often in the form of mental utterance attributable to the matrix subject, and that such a view enables explanations of the data.

First, as already seen in sections 1 and 2, *to* embeds interrogative clauses under predicates that do not select for interrogatives, *antirogative* predicates. We now demonstrate this more carefully. Consider two cases of genuine interrogative embedding without *to* in (28). In both (28a) and (28b), the sentences are acceptable when the embedding verb is interrogative-selecting like 'know', but they are unacceptable when the embedding verbs are the antirogative 'think' or 'hope'.[15] The translations show that the same pattern holds in English.

(28)　　a.　Yoko-wa [**dare**-ga hannin **ka**] {shit/*omot/*kitaishi}-te iru.
　　　　　Yoko-TOP who-NOM culprit Q　know/think/hope-TE　　ASP.NPST
　　　　　'Yoko {knows/*thinks/*hopes} who the culprit is.'
　　　　b.　Yoko-wa [kanojo-no jooshi-ga hannin {**ka/kadooka**}] {shit/*omot/*kitaishi}-te
　　　　　Yoko-TOP she-GEN　　boss-NOM culprit Q/whether　　　know/think/hope-TE
　　　　　iru.
　　　　　ASP.NPST
　　　　　'Yoko {knows/*thinks/*hopes} whether her boss is the culprit.'

When *to* is used however, an interrogative clause can be embedded under antirogative predicates, as shown in (29) (cf. Lahiri, 2002; Saito, 2015; Yoshida, 2019).[16] Note that the third person pronoun *kanojo* 'she' can co-refer with the matrix subject *Yoko*, thus showing that *to* is not embedding a direct quotation here.

(29)　　Yoko-wa [[kanojo-no jooshi-ga hannin **ka**] **to**] {omot/kitaishi}-te iru.
　　　　Yoko-TOP she-GEN　　boss-NOM culprit Q　TO think/hope-TE　　ASP.NPST
　　　　'(Lit.) Yoko {thinks/hopes}, is her boss the culprit.'
　　　　'Yoko {thinks/is hopeful} that her boss might be the culprit.'

(30b) demonstrates the ability to form a matrix *wh*-question from the polar interrogative embedded under antirogative *omou* 'think' in (30a), further showing that we are not observing direct quotation.[17]

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[15]Predicates that select for interrogatives can be further subdivided into two kinds: Predicates like 'ask' and 'wonder' that select only for interrogatives as complements are *rogatives*. Predicates like 'know' that select for either interrogatives or declaratives are *responsives*.

[16]A *wh*-interrogative cannot be embedded under antirogatives via *to*. We think this is because the antirogative predicate needs to combine with some kind of propositional argument, and the *wh*-interrogative fails to deliver one. This views will fall out of our analysis in section 4.

[17]A reviewer for *NLLT* notes that while *wh*-questions can be formed from clauses embedded under *kitaisuru* 'hope' as well, adding the particle *na* to the embedded clause makes this impossible:

(i)　　John-wa [dare-ga ko-nai　　ka (??na) to] kitaisiteiru no?
　　　　John-TOP who-NOM come-NEG Q (NA)　TO hope　　　Q
　　　　(lit.) 'Who does John hope that *t* might come?'

We agree with the judgments, *na* is clearly making a nontrivial contribution that needs to be investigated further in future work (this will be demonstrated again in fn. 26 via another example suggested by the reviewer). The

(30)  a.  Yoko-wa [[**natto**-ga kusat-te  ru      **ka**] **to**] omot-ta.
          Yoko-TOP natto-NOM rotten-TE ASP.NPST Q    TO think-PST
          '(Lit.) Yoko thought, has the natto gone bad.'
          'Yoko thought that the natto might have gone bad.'
      b.  Yoko-wa [[**nani**-ga kusat-te  ru      **ka**] **to**] omot-ta   no?
          Yoko-TOP what-NOM rotten-TE ASP.NPST Q    TO think-PST NO
          '(Lit.) What did Yoko think, has *t* gone bad?'
          'What did Yoko think might have gone bad?'

If *to* were a declarative complementizer like English *that*, then (29) and (30) would be unacceptable, contrary to fact. Moreover, these examples do not exhibit direct quotation. Instead, we think *to* is combining with a speech/thought act phrase, and attributing authorship of that act to the matrix subject. This raises further questions about the global interpretations of these sentences, in particular how embedded questions could compose with antirogative predicates. We will address this in section 4 below.

A second surprising fact is that imperatives can be embedded under *to*, but if *to* is removed, the same sentences become unacceptable (Kuno, 1988; Oshima, 2006b; Kim, 2018; Saito, 2017). Consider (31), which is perfectly acceptable, but which would not be if *to* were removed.

(31)  Jooshi-ga [[**kanojo-ni ashita**    made-ni shorui-o      das-**e**]    to] getsuyoo-ni
      boss-NOM she-DAT     tomorrow till-DAT document-ACC submit-**IMP** TO Monday-on
      ii-mashi-ta.
      say-POL-PST
      'My boss said (to me) on Monday to submit the document **to her** by **tomorrow**.'

Note also that the pronoun in (31) shows that the acceptability of the embedded imperative is not due to direct quotation. Moreover, matrix *wh*-question formation from imperatives embedded under *to* is possible:

(32)  Jooshi-wa [[kanojo-ni **itsu**   made-ni shorui-o      das-**e**]    to] getsuyoo-ni
      boss-NOM she-DAT     when till-DAT document-ACC submit-**IMP** TO Monday-on
      ii-mashi-ta   ka?
      say-POL-PST Q
      'By when did your boss say (to you) on Monday, to submit the document to her *t*?'

Again, analyzing *to* as a declarative complementizer incorrectly predicts unacceptability in (31) and (32). We believe analyzing *to* as embedding speech acts can begin to explain these facts.

reviewer uses this kind of contrast to argue that *to* may be ambiguous between a vanilla declarative complementizer that allows anaphoric coreference and *wh*-extraction in e.g. (29) and (30), and a special quotative complementizer brought out by *na* in (i) that does not allow such behavior. Then the unique properties of *to*-embedding demonstrated in this section would be blamed on the use of the second, special quotative *to* (and a further assumption would need to be made that *ka* embedded under antirogatives does not actually mark an interrogative clause). However, what we demonstrate at length in this section is that the many unique properties of *to*-clause embedding co-exist with *wh*-extraction and non-first person anaphora that corefer with third person subjects, so these tests cannot be indicative of a vanilla declarative complementizer reading for *to*. We conclude instead that anaphoric coreference and *wh*-extraction merely show that what is embedded is not a direct quotation. And since the unique properties of *to*-embedded clauses would be puzzling if *to* were a declarative complementizer, we propose it is something else.

A third interesting property of *to*, demonstrated schematically in (33), is that while *to*-led clauses are often 'selected' by matrix predicates in the foregoing examples (see (33a)), they can also be embedded in sentences in which the matrix predicate does *not* select for a clausal complement (see (33b)), as demonstrated by (34).

(33)  a.  Subject [[Speech Act] TO ] Clause-selecting-predicate                    (Selected)
       b.  Subject [[Speech Act] TO ] [Object-NP] NP-selecting-predicate           (Unselected)

(34)  Hanako-wa [zibun-no uta-ga     soto-ni       kikoeru      ka to] mado-o
      Hanako-TOP self-GEN    song-NOM outside-DAT can.be.heard Q   TO window-ACC
      shimeta.
      closed
      'Hanako closed the window, thinking that her singing might be heard from outside.'

Similar examples of unselected embedded clauses can be found in Korean (35) and Turkish (36) (Oshima, 2015; Tomioka & Kim, 2016; Kim, 2018; Özyıldız, 2018, 2019).

(35)  [Yongton-i        chwungpwunha-nya-ko] halmeni-ka     ton-ul       na-eykey
      allowance-NOM be.enough-Q-QUOT       grandma-NOM money-ACC 1sg-DAT
      cwu-ess-ta.
      give-PST-DECL
      'Grandma gave me money, saying/wondering if my allowance is enough.'  *Korean* (Kim, 2018)

(36)  Ali [anne-si         gel-di        mi    diye] kapı-yı    aç-tı.
      Ali mother-3s.POSS arrive-PST.3S POLQ DIYE  door-ACC open-PST.3S
      'Ali opened the door, wondering whether his mother had arrived.'       *Turkish* (Özyıldız, 2018)

As the English translations of these examples indicate, the unselected *to*/*ko*/*diye*-clauses are interpreted as speech or thought, attributed to the matrix subjects. These interpretations can be understood if these complementizers embed speech acts, but a declarative complementizer analysis leaves more to be said.

It is also possible, in colloquial speech or writing, for a *to*-led clause to occur on its own with no full matrix clause. In this 'insubordination'-type phenomenon (Evans, 2007; Mithun, 2008; Evans & Watanabe, 2016), we can see that the contribution of *to* is to mark its sister as speech or thought. The agent of speech or thought can be expressed as in (37), or can be determined by context as in (38), the speaker being one possibility (see, for example, Sharvit, 2008; Oshima, 2010; Saito, 2018, 2019).

(37)  Zibun-no musume-no   chiimu-ga kats-u      to, Yoko-san.
      self-GEN   daughter-GEN team-NOM win-NPST TO Yoko-HON
      'Her daughter's team will win, said Yoko.'

(38)  Yumi-no   chiimu-ga kats-u     daroo, to.
      Yumi-GEN team-NOM win-npst MOD    TO
      'Yumi's team is likely to win, x says/thinks.'

Again, the speech act analysis of *to* seems to have an advantage here.

A fourth relevant fact about *to* embedding is that it seems to be degraded in contexts where the attitude holder is unaware that they have the attitude described in the *to*-clause. Consider the two examples in (39), which contrast embedded *to*-clauses with embedded *koto-* and *no*-clauses:

(39) Even though Yoko in (39a) and the speaker in (39b) support the NHL hockey team the Montreal Canadiens, they do not like the noisy parties that happen in their neighbourhood after every game the team wins.

a. Yoko-wa zibun-de-wa mattaku kizui-te-nai     kedo, jitsuwa [[Canadiens-ga
   Yoko-WA self-by-WA   at.all  realize-TE-ASP.NEG though in.fact Canadiens-NOM
   makeru  {{koto/no}-o/??to}] kitaishi-te ru-n-da            to] omou
   lose.NPST KOTO/NO-ACC/TO    hope-TE   ASP.NPST-NO-COP.NPST TO think.NPST
   yo.
   PRT
   'Though she hasn't realized it at all herself, Yoko is in fact hoping that the Canadiens will lose, (I) think.'

b. Zibun-de-wa sono toki    mattaku kizuka-nakat-ta kedo, jitsu-wa
   self-by-WA   that moment at.all  realize-NEG-PST though in.fact
   [[Canadiens-ga makeru  {{koto/no}-o/??to}] kitaishi-te ta-n-da
   Canadiens-NOM lose.NPST KOTO/NO-ACC/TO    hope-TE   ASP.PST-NO–COP.NPST
   to] omou.
   TO think.NPST
   'Though (I) didn't realize it at all myself at the time, (I) think (I) was in fact hoping that the Canadiens would lose.'

An informal judgment survey with eight native speakers of Japanese suggests that while the *koto-* and *no*-clauses are perfectly acceptable in these sentences, the *to*-clauses are degraded.[18] The intuitions are somewhat delicate. But for the speakers who have a clear contrast, it can be explained by the analysis of *to* we will propose: *to* attributes the content of its sister constituent to the embedding subject (Yoko in (39a) and the speaker in (39b)) as a verbal or mental utterance, while the preceding part of the sentence claims the subject's ignorance of the attitude expressed. English *that* imposes no such restriction because it does not require the clause it embeds to be an utterance of the embedding subject, thus the translations in (39) are perfectly natural.

A fifth relevant fact is that *to*-clause embedding under *kitaisuru* 'hope' as in (40) exhibits some effects distinguishing Japanese from clausal embedding under *hope* in English.

(40) Yoko$_1$-wa [[kanojo$_1$-no jooshi-ga hannin da]     to] kitaishi-te ir-u.
     Yoko-top she-GEN     boss-NOM culprit COP.NPST TO hope-TE   ASP-NPST
     'Yoko$_1$ hopes that her$_1$ boss is the culprit.'

In the English translation, Yoko merely needs to believe that her boss being the culprit is a possibility, while with *to*-embedding in Japanese, the likelihood that her boss is the culprit must be much higher. This can be shown by evaluating the felicity of (40) in a context in which Yoko

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[18]Informants were asked to rate the acceptability of sentences (39a) and (39b) on the scale of 1 (not acceptable) to 4 (fully acceptable). The result was: (39a) with *koto*: 4.0; *no*: 3.9; *to*: 2.2, and (39b) with *koto*: 4.0; *no*: 4.0; *to*: 2.6. A more systematic laboratory study investigating various potential factors may shed further light on the nature of these contrasts.

has no idea whether her boss is the culprit or not, but she hopes he is. In such a context, the English translation in (40) is a perfectly normal way to report this. But the Japanese sentence is not because it implies that Yoko takes the prejacent to be a stronger likelihood than her evidence would support if she had no idea either way. This descriptive generalization is further supported by the contrast in the minimal pair in (41). The use of *to*, as opposed to *koto*, requires a higher degree of confidence on the part of Yoko that the rain will stop, and it makes the continuation 'she's now almost given up' inappropriate.

(41)  Yoko-wa [ame-ga yam-u  {**koto**-o/??**to**}] kitaishi-te-wa i-ru-kedo,   moo
      Yoko-WA rain-NOM stop-NPST KOTO-ACC/TO  hope-TE-WA  ASP-NPST-though already
      hotondo akirame-te i-ru.
      almost  give.up-TE ASP-NPST
      'Though Yoko does hope that the rain will stop, she's now almost given up.'

Despite that *to* under *kitaisuru* conveys that the subject is more certain about the prejacent than in the English translation or with *koto* under *kitaisuru*, at the same time, the subject cannot be fully certain about the prejacent or maximally believe it. That is, in (40) Yoko cannot fully believe, or believe that she knows, that her boss is the culprit (as is the case also for English translation). We will argue that these patterns follow from a standard semantics for *kitaisuru/hope* and the view that *to* embeds speech acts.[19]

A sixth fact emerges from the different behaviors of interrogative complementizers *ka* and *kadooka*. Consider genuine interrogative embedding in (42). *To* is not present; only *ka* or *kadooka* appears.

(42)  Yoko-wa [Ken-ga  hannin {**ka**/**kadooka**}] tazuneta.
      Yoko-TOP Ken-NOM culprit Q/whether      ask.PST
      'Yoko asked/knows whether Ken was the culprit.'

When we add *to* in (43), only *ka* is fully acceptable.

(43)  Yoko-wa [Ken-ga  hannin {**ka**/??**kadooka**} **to**] tazune-ta.
      Yoko-TOP Ken-NOM culprit Q/whether      TO ask-PST
      'Yoko asked whether Ken was the culprit.'

Furthermore only *ka* can appear in matrix questions; *kadooka* is unacceptable:

(44)  Ken-ga    hannin {**ka**/*__kadooka__}?
      Ken-NOM culprit Q/whether
      'Is Ken the culprit?'

We believe that part of the explanation for this pattern is that *kadooka* is a garden variety interrogative complementizer. As such, it needs to appear in the C position of an interrogative clause embedded under an interrogative-selecting predicate, and thus is acceptable in (42) but not (44). If our view of *to* as a speech act embedder is correct, then it can explain the pattern in (43): Since

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[19]As observed in Sode & Sugawara (2021), the verb *kiku* 'hear' with a *to*-clause is interpreted as a verb of communication, while it is interpreted as a perception verb when it combines with a nominalized clause with *no*. We thank a reviewer for raising this point as another argument for *to* as an utterance embedder.

*kadooka* cannot appear as a marker of questionhood in main clauses, it cannot appear in the main clause phenomena that *to* embeds either.[20]

We also believe that we learn something interesting about *ka* from this data. That *ka* is acceptable in genuine interrogative embedding environments like (42) as well as in matrix questions like (44) and in questions embedded under *to* like (43) suggests that *ka* lives a double life: one as an interrogative complementizer interchangeable with *kadooka* in C-position, and another that sits higher in the structure where it functions as a kind of discourse particle. In other words, *ka* is not always an overt realization of C[+Q] as assumed in Bhatt & Dayal (2020), but can also be an interrogative discourse particle, similar to Hindi-Urdu *kyaa* in Bhatt & Dayal's analysis. This view will be further supported by evidence that *ka* can embed NPQs as in (46) below. The pattern thus lends further support to the idea that *to* embeds speech act phrases, a syntactic projection larger than interrogative CPs.

The final set of facts relates to the behavior of NPQs embedded under *to*, and builds in part on the last set of facts about *ka* vs. *kadooka*. First note that unlike the embedded positive polar interrogatives in (42), positively biased NPQs cannot embed under rogative predicates with just *ka* or *kadooka*, as exhibited by (45).

(45)  *Yoko-wa [kanojo-no jooshi-ga hannin nan   ja    nai$_{tc}$ {ka/kadooka}] tazune-ta.
      Yoko-TOP she-GEN    boss-NOM culprit COP.NO COP.WA NEG$_2$ Q/whether      ask-PST
      '(Lit.) Yoko asked whether [isn't it that her boss is the culprit].'
      '(Intended) Yoko asked whether her boss {is/might be} the culprit.'

However, a positively biased NPQ can appear under *to*:

(46)  Yoko-wa [kanojo-no jooshi-ga hannin nan   ja    nai$_{tc}$ ka to] tazune-ta.
      Yoko-TOP she-GEN    boss-NOM culprit COP.NO COP.WA NEG$_2$ Q  TO ask-PST
      '(Lit.) Yoko asked [isn't her boss the culprit].'
      'Yoko asked whether her boss {is/might be} the culprit.'

Recall from section 2.1 that we take positively biased NPQs to involve negation scoping over a speech act or common ground management operator high in the structure. If *to* embeds speech acts, then this data can be explained: positively biased NPQs are large structures, main clause phenomena that include speech act structure. The embedded interrogative clause in (45) is too small to contain the structure necessary for an NPQ. But since *to* embeds larger structures, the NPQ fits just fine in (46). Embedded NPQs then are another empirical fact pointing toward our analysis in section 4.

We can provide further evidence that these embedded expletive negations are embedded positively biased NPQs by comparing them to another well known main clause phenomenon, namely verb second (V2) in German. German V2 is infelicitous under negated matrix predicates, as (47) demonstrates.[21]

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[20]The use of *kadooka* in (43) is not completely ungrammatical, as indicated by "??". How exactly the choice of a matrix predicate affects the acceptability of *kadooka*+*to* needs to be investigated. For example, *shinpaisuru* 'worry' seems to sound better with *kadooka*+*to* than *kitaisuru* 'hope'.

[21]Thanks to [redacted] (p.c.) for bringing this up to our attention. See also McCloskey (2006) for examples of embedded question acts with Subject-Aux inversion, and how their felicity depends on the properties of the matrix predicate and the presence of negation.

(47) Ken sagte (#nicht) zu Yoko, [er bewundert Kim].
    Ken said  not     to Yoko he admires    Kim
    'Ken {told/#didn't tell} Yoko, he admires Kim.'                    *German*

In Japanese, the genuine interrogative embedding in (48) is felicitous under a negated matrix predicate:

(48) Yoko-wa [ame-ga  hut-te ru      kadooka] {shinpaishi-te iru/shinpaishi-te
    Yoko-TOP rain-NOM fall-TE ASP.NPST whether   worried-TE    ASP.NPST/not.worried-TE
    i-na'i}.
    ASP-NEG$_1$
    'Yoko is {worried/not worried} about whether it's raining.'

By hypothesis, (49) contains an embedded main clause phenomenon, a positively biased NPQ. If so, negating the matrix predicate should sound infelicitous, and it does:

(49) Yoko-wa [ame-ga  hut-te-**nai**$_{tc}$      ka to] {shinpaishi-te iru/#shinpaishi-te
    Yoko-TOP rain-NOM fall-TE-**NEG**$_2$.NPST Q   TO worried-TE    ASP/worried-TE
    i-na'i}.
    ASP-NEG$_1$
    '(Lit.) Yoko is {worried/not worried} isn't it raining.'
    'Yoko is {worried/not worried} that it might be raining.'

Other embedding verbs such as *omoitsuita* 'realized/occurred to' vs. #*omoitsukanakatta* 'did not realize/occur to'; *kitaishita* 'hoped' vs. #*kitaishinakatta* 'did not hope' show the same pattern as (49), further lending support to our view.
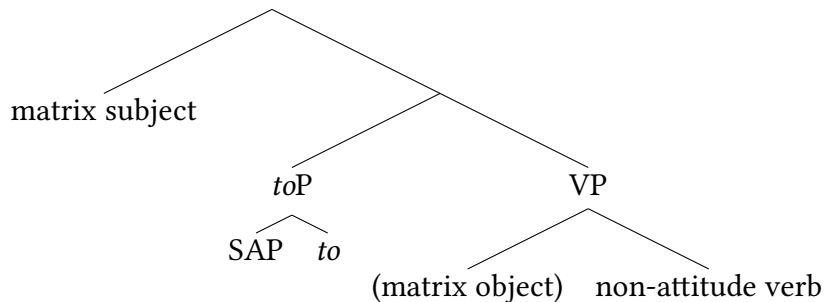
# 4   How to interpret *to* embedding

By now we have seen several properties of *to*-clause embedding. One is that in cases like (18), *to* embedding looks similar to familiar cases of clausal embedding under attitude predicates. Another is that interrogatives embed under antirogative predicates like in (19)-(20). Another is that embedding different kinds of clauses has a graded hedging effect on interpretation. Another is that embedded NPQs can appear under some predicates like *kitaisuru* 'hope', but not others like *sakeru* 'avoid'. Another is that *to*-clauses embedded under *kitaisuru* result in a stronger interpretation than *koto*-clauses under *kitaisuru* or clausal embedding under English *hope*. Another is that *to*-clauses appear to be degraded in contexts in which the attitude holder is unaware of their attitude. Another is that *ka* can embed under *to*, but *kadooka* cannot. Another is that positively biased NPQs can appear under *to*, but not under genuine interrogative embedders. Another is that *to*-clauses can appear in sentences in which the matrix predicate does not select for a clausal complement at all, such as in (34) which is repeated in (50) since it will be relevant just below.

(50) Hanako-wa [yuki-ga   hurikomu ka to] mado-o     shimeta.
    Hanako-TOP snow-NOM fall.enter  Q  TO window-ACC closed
    'Hanako closed the window, thinking that the snow might come in.'

The data we have discussed suggests that *to*-clauses are not combined with matrix predicates in a standard way. In unselected cases like (50), it seems that they must be adjuncts. If *to*-clauses are adjuncts, it might also explain how it is possible for an antirogative predicate to combine with a polar question, since the question wouldn't actually be the complement of the predicate. Yamada (2019) further notes that *to*-clauses cannot serve as clausal subjects, and uses this to argue that they are always adjuncts. We propose the schematic structure in (51) for 'unselected' *to*-clause embedding (cf. similar structures in Kim 2018; Yamada 2019).

(51)     Structure for 'unselected' *to*-clauses



            matrix subject

                    *to*P               VP

                SAP   *to*

                          (matrix object)   non-attitude verb

In (51), *to* combines with a speech act phrase (SAP) to produce a *to*-clause that adjoins to the matrix VP.

We will use an event semantics that synthesizes various ideas in the prior literature (building on Hacquard 2010 and others).[22] We take *to* to be a function that takes a SAP as input ('*S*'), and acts as a speech report verb, as in (52) (building on Kim's (2018, p. 65) proposal for unselected cases). We assume that utterance events can be verbal or mental, and that their content is the content of the speech act (cf. Maier (2017)).

(52)     $\llbracket\text{to}\rrbracket = \lambda S.\lambda x.\lambda e.\lambda w.\ \exists e'[\text{utterance}(e', w)\ \&\ \text{agent}(e', x)\ \&\ \text{content}(e', w) = \text{content}(S)$
       $\&\ e' \star e]$

(52) introduces an existentially bound event $e'$ that is the event of the embedded speech act. The '$\star$' in the final conjunct imposes a restriction on how $e'$ relates to the matrix event $e$. Kim (2018) argues that the two events need to overlap temporally.[23] However, the temporal overlap relation is too weak. Consider the following example (cf. ex. (22) from Kim & Tomioka 2014, p. 282):

(53)   ??Yoko-wa [[kyoo shokuba-de   yatta  koto-wa  tadashikatta (no) ka] to] saba-o
     Yoko-wa today  work.place-at do.PST thing-wa right.PST     NO  Q  TO mackerel-ACC
     oobun-ni ireta.
     oven-in   put.in.PST
     'Yoko put the mackerel in the oven, (while) wondering whether she did the right thing at work today.'

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[22]See ideas that are related both semantically and syntactically in Kratzer 2006, 2013; Hacquard 2006; Moulton 2009, 2015; Elliott 2020.

[23]Definition of temporal overlap '∘' (Kim, 2018, p. 64):

(i)      $\forall e, e' \in D_v[e \circ e' \Leftrightarrow \exists e''[\tau(e'') \subseteq \tau(e)\ \&\ \tau(e'') \subseteq \tau(e')]]$

In (53), the matrix event and the mental utterance event overlap temporally. And yet (53) is infelicitous. We tentatively suggest that ⋆ imposes a causal relationship between the embedded speech act event and the matrix event. See (54) for an informal specification.[24]

(54)     $e' \star e$ iff $e'$ is a cause of $e$

Given the structure in (51) and the semantics for *to* in (52) (along with other standard assumptions), the *to*P and VP nodes will be of the same type, $\langle e\langle v\langle st\rangle\rangle\rangle$ (where $v$ is the type of events). Thus, they can be combined via predicate modification. Once combined with the matrix subject, and with the event existentially closed, the predicted interpretation for the unselected case in (50) will be:

(55)     $[\![(50)]\!] = \lambda w.\, \exists e[\text{closing}(e, w)\ \&\ \text{agent}(e, yoko)\ \&\ \text{patient}(e, \textit{the window})\ \&$
          $\exists e'[\text{utterance}(e', w)\ \&\ \text{agent}(e', yoko)\ \&\ \text{content}(e', w) = \text{content}([\![_{SAP}\ \text{yuki-ga hurikomu}$
          $\text{ka?}]\!])\ \&\ e' \star e]]$

(55) provides an adequate interpretation: there is an event corresponding to the matrix clause, and a speech act event corresponding to the *to*-clause, and the speech act event is a cause of the matrix event. We have not given an interpretation for SAPs here, instead leaving them unanalyzed in denotation brackets in (55). Nor have we specified the semantic type of the speech act variable '*S*'. While these are important issues, we will not settle them here as they aren't directly relevant. All that matters is that speech acts are contentful events that can be attributed to an agent.[25]

Turning now to the interpretation of selected cases, consider the use of the propositional proform, *soo* 'so' in (56).[26]

(56)     [Yogen-no      ko-wa      ano ko-deat-te      hoshii to] **soo** negaw-azu-ni-wa
          prophecy-GEN child-WA that child-COP-TE want   TO so   wish-NEG-DAT-WA
          or-e-n          noo.
          remain-can-NEG PRT
          '(Lit.) (I) want the Child of Prophecy to be that kid, (I) can't help but hope so.'
          '(I) can't help but hope that the Child of Prophecy is that kid.'[27]

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[24]A formal treatment of the causal structure of events is beyond the scope of this paper. See also Kim & Tomioka 2014, Tomioka & Kim 2016, and Özyıldız 2018, 2019 for different approaches to the relation between the events. We revisit the ⋆ relation in footnote 31 below when discussing *to* under *kitaisuru* 'hope'.

[25]Beyond this, we think of speech acts as functions from contexts to contexts that impose commitments, or that restrict possible future developments of a commitment space, as in Krifka 2015, 2017 (see also Farkas & Bruce 2010 for a different commitment based model of speech acts).

[26]A reviewer notes that *soo* may be somewhat degraded with other predicates, however, with the particle *na* in the embedded clause, the acceptability improves:

(i)     John-wa [Mary-ga   ko-nai     ka (na)  to] soo $^{?(\checkmark\ \text{with}\ na)}$kitaisiteiru / $^{??(\checkmark\ \text{with}\ na)}$sinpaisiteiru.
        John-TOP Mary-NOM come-NEG Q  (NA) TO so   hope                    / is.worried
        'John hopes/fears that Mary might come.'

As noted in fn. 17, we agree *na* is having an interesting effect and should be investigated further in future work. But we add that if we replace *soo* in (i) with the more complex demonstrative *sono yoo ni* 'in such a way', the result is acceptable without *na*.

[27]Gama-no Fukasaku, *Naruto Shippuden*, episode 153

*Soo* is in the complement position of the matrix attitude verb *negau* 'wish', despite that, semantically-speaking, the *to*-clause appears to provide the propositional argument of *negau*. It seems that *soo* is getting its content from the directly preceding *to*-clause and delivering it to the matrix attitude. (57) sharply contrasts with (56): using the nominalizing 'complementizer' *koto* makes the use of *soo* impossible because the *koto*-clause fills the complement position of the matrix verb.[28]

(57)   [Yogen-no      ko-wa     ano ko-dearu        koto]-o   (*\*soo**) negaw-azu-ni-wa
       prophecy-GEN child-WA that child-COP.NPST KOTO-ACC so     wish-NEG-DAT-WA
       or-e-n          noo.
       remain-can-NEG PRT
       '(I) can't help but hope that the Child of Prophecy is that kid.'

We believe these facts reveal the general structure of sentences in which a matrix attitude seems to 'select' a *to*-clause like in (18), (19), (40), and (56), as well as cases in which it selects a *koto*-clause like (57) (see also (70) and (73) in section 5), which we schematize in (58):

(58)   Structure for 'selected' *to*-clauses
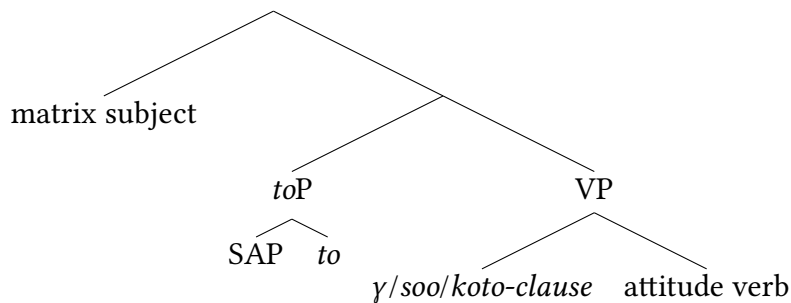


(58) is maximally similar to (51), with the exception that the matrix VP contains an attitude predicate that needs to take a propositional complement. While this propositional complement is sometimes delivered overtly by *soo* or a *koto*-clause, we propose that it can also be delivered by a silent propositional pronoun $\gamma$ that gets its content from the SAP embedded by the *to*-clause in the preceding part of the sentence (cf. the use of silent propositional anaphora in the focus literature, e.g. Rooth 1992, and the treatment of *yes/no* response particles as propositional anaphora in Krifka 2013; Roelofsen & Farkas 2015; Goodhue & Wagner 2018).[29]

   To see how this works for an example like (18), we need a semantics for *omou* 'think' as in (59).

(59)   ⟦omou⟧ = $\lambda p.\lambda x.\lambda e.\lambda w.$ believe$(e, w)$ & exp$(e, x)$ & $\forall w' \in$ content$(e, w)[p(w') = 1]$

(59) requires that every world provided by the attitude's content must be one in which the prejacent is true. For assertions embedded under *to* like in (18), we assume that the content picked up by $\gamma$ is the propositional content of the assertion. Similar to (50), the *to*P and VP nodes, having the

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[28] As pointed out by a reviewer, a contrast similar to the one between (56) and (57) is found in German 'adjoined' V2 clauses in reportative vs. indicative mood, in that the content of the latter cannot be picked up by a pronominal correlate (Schwabe, 2013; Sode & Truckenbrodt, 2018). This correlation should be investigated in future research.

[29] Yamada (2019) also proposes that V combines with a pronoun in such cases, but it is unclear what content the pronoun has on his view, if any.

same type $\langle e\langle v\langle st\rangle\rangle\rangle$, are combined via predicate modification. Once combined with the matrix subject, and with the event existentially closed, the resulting proposition derived for (18) is:

(60) $[\![(18)]\!] = \lambda w. \exists e[\text{believe}(e, w) \,\&\, \exp(e, yoko) \,\&\, \forall w' \in \text{content}(e, w)[\text{\textit{Ken is the culprit in }} w']$
$\&\, \exists e'[\text{utterance}(e', w) \,\&\, \text{agent}(e', yoko) \,\&\, \text{content}(e', w) = \text{content}([\![_{SAP} \text{ Ken-ga hannin}$
$\text{da}]\!]) \,\&\, e' \star e]]$

On its first line, (60) delivers a standard event semantics for a sentence with a matrix attitude predicate. The second line provides the semantics for the speech act event contributed by the *to-*clause, as well as the relation between the two events. In an example like (18), those two events are so closely related as to not produce any detectable difference from the English translation of it. But we will demonstrate below that this semantics explains many of the novel properties of *to*-embedding listed above, such as embedding interrogatives under antirogatives, the unique interpretation of *to* under *kitaisuru* 'hope', and the interpretation and distribution of embedded expletive negation (i.e., of embedded NPQs). We can already see how this semantics will explain other facts. For example, *kadooka* cannot embed under *to* because *to* embeds speech acts, main clause phenomena, and *kadooka* cannot mark main clause questions. Moreover, *to*-clauses are inappropriate for matrix subjects who are unaware of their attitudes, since *to* attributes a related speech act to them, and speakers can't make speech acts they are unaware of.

Next, we will calculate the interpretation of *to* under *kitaisuru* 'hope' as in (40), repeated here as (61):

(61) Yoko-wa [[Ken-ga hannin da] to] kitaishi-te ir-u.
Yoko-top Ken-nom culprit COP.NPST TO hope-TE ASP-NPST
'Yoko hopes that Ken is the culprit.'

First, we need a semantics for *kitaisuru*. The following is a simplified semantics for emotive doxastics based on Anand & Hacquard 2013 (see also Heim 1992; Villalta 2008; Portner & Rubinstein 2013; Portner 2018).

(62) $[\![\text{kitaisuru}]\!] = \lambda p.\lambda x.\lambda e.\lambda w.\ \text{hope}(e, w) \,\&\, \exp(e, x)$
$\&\, \neg\forall w' \in \text{content}(e, w)[p(w') = 1]$      uncertainty requirement
$\&\, \exists w' \in \text{content}(e, w)[p(w') = 1]$      doxastic requirement
$\&\, p >_{DES_{x,w}} \neg p$      preference requirement

The content of a hoping event, like a believing event, is a set of doxastically accessible worlds. Thus the uncertainty requirement in (62) is that the prejacent $p$ doesn't hold throughout the doxastically accessible worlds ($p$ is not maximally believed). The doxastic requirement in (62) is that the prejacent $p$ is doxastically possible (not believed to be false). The preference requirement in (62) is that $p$ is preferred to $\neg p$ by $x$ in $w$.[30] The predicted interpretation for (40) is as follows:[31]

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[30]Definition of $>_{DES_{x,w}}$ (Anand & Hacquard, 2013, p. 20):

(i)      $\forall w, w', w'' \in \text{content}(e, w)[w' >_{DES_{x,w}} w'' \Leftrightarrow w'$ is more desirable to $x$ in $w$ than $w'']$

(ii)      $\forall p, q \subseteq W[p >_{DES_{x,w}} q \Leftrightarrow \forall w'' \in q[\exists w' \in p[w' >_{DES_{x,w}} w'']] \,\&\, \exists w' \in p[\forall w'' \in q[w'' \not>_{DES_{x,w}} w']]]$

[31]To the extent that the relationship between the embedded clause event $e'$ and the matrix hoping event $e$ in (63) can be described as causal, it is indirect causation at most: In order to reflect hopefully on a thought, Yoko needs to

(63)    $[\![(40)]\!] = \lambda w. \exists e[\text{hope}(e, w) \,\&\, \exp(e, yoko)$
          $\&\, \neg\forall w' \in \text{content}(e, w)[\textit{Ken is the culprit in } w']$         uncertainty requirement
          $\&\, \exists w' \in \text{content}(e, w)[\textit{Ken is the culprit in } w']$          doxastic requirement
          $\&\, \textit{that Ken is the culprit} >_{DES_{x,w}} \neg \textit{ that Ken is the culprit}$     preference requirement
          $\&\, \exists e'[\text{utterance}(e', w) \,\&\, \text{agent}(e', yoko)$
          $\&\, \text{content}(e', w) = \text{content}([\![_{SAP} \text{Ken-ga hannin da}]\!]) \,\&\, e' \star e]]$

Recall the asymmetry between the Japanese (40) and the English translation of it, that the prejacent merely needs to be doxastically possible in English, but that Yoko must believe it to be a stronger likelihood than that in Japanese. Anand & Hacquard's semantics in (62) doesn't capture this fact about Japanese, since it merely requires the prejacent to be doxastically possible. However, it would be hasty to revise the semantics for *kitaisuru* 'hope' for two reasons. First, if we change the complementizer in (40) from *to* to *koto*, then the doxastic requirement for the prejacent weakens to something indistinguishable from English, a fact further confirmed by the minimal pair in (41). This suggests that the weak doxastic requirement in the semantics in (62) is on the right track for Japanese after all.[32] Second, the contribution of the *to*-clause in (63) can account for the asymmetry, since it attributes an assertion of "Ken is the culprit" to Yoko. We assume a commitment-based view of assertion (MacFarlane 2011, Krifka 2015), which bears an indirect relationship with the agent's beliefs: in many cases, an agent's choice to commit to vindicate the truth of a proposition $p$ will coincide with the agent's belief in/full certainty about $p$. But nothing requires this—the agent can commit to $p$, and so assert it, even if $p$ is merely very likely to hold according to their beliefs. We can model this as an entailment from an agent's commitment to their beliefs as follows:

(64)    If A commits to $p$, then $\exists O$ such that $O$ is an optimal subset of A's doxastically accessible worlds & $O \subseteq p$

This entailment swamps the doxastic requirement of (62), making the Japanese (40) doxastically stronger than its English translation, as desired. At the same time, whenever a *to*-assertion is embedded under *kitaisuru* 'hope', the uncertainty requirement of (62) will force $O$ to be a *proper* subset of A's doxastically accessible worlds. This would explain why Yoko's attitude about $p$ in (40) is doxastically stronger than the English translation, and stronger than if the complementizer were *koto*, while at the same time explaining why Yoko's doxastic attitude about $p$ in (40) is not

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actually have the thought. Since we have left the notion of 'cause' informal, this suggestion cannot be fully evaluated. It may be that upon closer examination of a wider range of data, it will be found that the relation needs to weakened to something like '$e'$ is a precondition for $e$'. Another idea proposed by Kim & Tomioka (2014, p.282ff.) is that the embedded clause 'explains' the matrix clause, though they too note that there is some uncertainty that all of the data they consider can be captured under this relation.

[32]One might wonder if the strengthened doxastic commitment seen in Japanese *hope* embedding can be explained by Portner & Rubinstein's (2013) observation that *hope* conveys an "intellectual" as opposed to "glandular" desire, requiring the subject to commit to defending the preference expressed. However this won't be sufficient. One reason is that Portner & Rubinstein demonstrate that this fact holds in languages like English and French, so it can't be what distinguishes Japanese from English in (40) (indeed, Portner & Rubinstein seem to predict, probably correctly, this implication for any use of a predicate meaning *hope* in any language). Another reason is that we have demonstrated, internally to Japanese, that *hope+to* conveys that the subject has a stronger doxastic commitment to the truth of the prejacent than *hope+koto*. So this strengthened commitment must be about the nature of *to* embedding rather than *hope*, and it seems to be about the strength of the doxastic commitment, rather than a commitment to defend the preference.

maximally strong.

Now consider again the paradigm in (18)-(20) demonstrating the scale of hedging effects, repeated here:

(18)  Yoko-wa [[Ken-ga hannin **da**]      **to**] omot-te i-ru.
Yoko-TOP Ken-NOM culprit COP.NPST TO think-TE ASP-NPST
'Yoko thinks that Ken is the culprit.'

(19)  Yoko-wa [[Ken-ga hannin **ka**] **to**] omot-te i-ru.
Yoko-TOP Ken-NOM culprit Q    TO think-TE ASP-NPST
'(Lit.) Yoko thinks, is Ken the culprit.'
'Yoko thinks Ken might be the culprit.'

(20)  Yoko-wa [[Ken-ga hannin ja      nai$_{tc}$ **ka**] **to**] omot-te i-ru.
Yoko-top Ken-nom culprit COP.WA NEG$_2$ Q    TO think-TE ASP-NPST
'(Lit.) Yoko thinks, isn't Ken the culprit.'
'Yoko thinks that there is a good possibility that Ken is the culprit.'[33]

(19), in which *to* embeds a polar question under the anti-rogative predicate *omou* 'think', and the result is a hedging effect, roughly translatable as "Yoko thinks that Ken might be the culprit." This hedging makes intuitive sense. If Yoko mentally utters "Is Ken the culprit?" instead of "Ken is the culprit", we would expect the former to express Yoko's weaker attitude toward the proposition *that Ken is the culprit.* Sentences like (18) and (19) might even be in direct competition with one another, so that adding *ka* becomes a standard means of introducing a hedge. Consider the naturally occurring example in (65).

(65)  ..., [aru  shu  sooshita shakaitekina sumai      to yuu gainen-o    dashite     iku
some kind that.way social      living.space TO YUU concept-ACC put.forward go
hitsuyoo-ga aru   **ka to**] omoimasu.
need-NOM   exist Q   TO think.POL
'(Lit.)  ..., (I) think [is there a need to put forward some such concept as social living space].'
'I think there's probably a need to put forward some such concept as social living space.'
(OM68_00001, The National Diet transcript, BCCWJ)

Building on the discussion in section 2.2, we propose that $\gamma$ picks up the speaker's bias. For an example like (19), the idea is that the matrix subject's mental utterance of the question is motivated by positive evidential bias of the sort discussed in the literature on biased questions, which takes this bias to be a pragmatic inference (Büring & Gunlogson, 2000; Romero & Han, 2004; Sudo, 2013; Krifka, 2015; Goodhue, 2018). We model the bias here as a modalized proposition, *that Ken might be the culprit.* We do not necessarily believe that the bias actually *is* a modalized proposition (though such an analysis could be given in principle); rather, bias is a pragmatic implicature, and a modalized proposition is a reasonably close approximation of that meaning that allows us to explore the compositional interpretation of the matrix clause. Following Yalcin (2007); Hacquard (2010); Anand & Hacquard (2013), when a modal is embedded under a representational attitude, the worlds made accessible by the attitude serve as the domain for the modal. *Might* then imposes

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[33]Another natural translation is 'Yoko *suspects* that Ken is the culprit'.

existential quantification on that domain, leading to the following interpretation for (19):

(66)  $[\![(19)]\!] = \lambda w.\, \exists e[\text{believe}(e, w)\, \&\, \exp(e, yoko)\, \&\, \exists w' \in \text{content}(e, w)[Ken\ is\ the\ culprit\ in\ w']$
$\&\, \exists e'[\text{utterance}(e', w)\, \&\, \text{agent}(e', yoko)$
$\&\, \text{content}(e', w) = \text{content}([\![_{SAP}\ \text{Ken-ga hannin ka?}]\!])\, \&\, e' \star e]]$

(60), the interpretation for a declarative embedded under *omou*, is repeated for comparison:

(60)  $[\![(18)]\!] = \lambda w.\, \exists e[\text{believe}(e, w)\, \&\, \exp(e, yoko)\, \&\, \forall w' \in \text{content}(e, w)[Ken\ is\ the\ culprit\ in\ w']$
$\&\, \exists e'[\text{utterance}(e', w)\, \&\, \text{agent}(e', yoko)$
$\&\, \text{content}(e', w) = \text{content}([\![_{SAP}\ \text{Ken-ga hannin da}]\!])\, \&\, e' \star e]]$

The only difference (besides the content of the embedded speech act) is in the force of quantification over of the doxastically accessible worlds made available by the matrix attitude *omou* (existential in (66), universal in (60)). This difference in strength captures the intuitive difference discussed above, and in section 2.2, thus providing the desired interpretation for (19).

Finally, we turn to embedded positively biased negative polar questions, as in (20). As we pointed out in section 2.2, (20) intuitively conveys that Yoko's commitment to the proposition *that Ken is the culprit* is weaker than in (18), but stronger than in (19), thus forming a scale of hedging effects. This is expected on our view, since a positively biased NPQ conveys a stronger bias than a positive polar question, but is nevertheless weaker than a full assertion. We will cash out these strength distinctions via the graded modality of Kratzer 1981, 1991 (the graded distinction could just as well be cast in terms of a probability semantics for modals, as in Lassiter 2017). Again, we do not mean to imply that the positive bias of NPQs actually is a modalized proposition. It's a pragmatic implicature that is conveniently modeled by a modalized proposition. The modal best placed to model the bias of the embedded NPQ in (20) is the English modal *good possibility*. The interpretation of (20) then requires that there is a world $w'$ among the doxastically accessible worlds such that the propositional prejacent of the question holds in all of the accessible worlds $w''$ more optimal than $w'$.[34]

(67)  $[\![(20)]\!] = \lambda w.\, \exists e[\text{believe}(e, w)\, \&\, \exp(e, yoko)$
$\&\, \exists w' \in \text{content}(e, w)[\forall w'' \in \text{content}(e, w)[w'' \leq_{g(w)} w' \rightarrow Ken\ is\ the\ culprit\ in\ w'']]$
$\&\, \exists e'[\text{utterance}(e', w)\, \&\, \text{agent}(e', yoko)$
$\&\, \text{content}(e', w) = \text{content}([\![_{SAP}\ \text{Ken-ga hannin ja nai}_{tc}\ \text{ka?}]\!])\, \&\, e' \star e]]$

The result is as desired: the interpretation for (20) in (67) is stronger than the interpretation for (19) in (66) since, if every accessible $w''$ that is at least as optimal as a specific $w'$ is one in which Ken is the culprit, then there is an accessible world in which Ken is the culprit, namely $w'$. And the interpretation for (18) in (60) is stronger than (67) since it says every accessible world is one which Ken is the culprit, thus there is one such that every world at least as optimal as it is one in

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[34]Following Kratzer (1991), the context $c$ provides the function $g$, which takes the world of evaluation $w$ as input, and produces the ordering source necessary to induce an ordering on the accessible worlds (being lower on the ordering means being more optimal):

(i)  $\forall w, w' \in \text{content}(e, w)[w \leq_{g(w)} w' \Leftrightarrow \{p \in g(w) \mid w \in p\} \supseteq \{p \in g(w) \mid w' \in p\}]$.

which Ken is the culprit. So we have derived the graded hedging effect described in section 2.2.[35]

# 5 The puzzling distribution of embedded expletive negation is no longer a puzzle

We can now go back to the puzzles we introduced in section 1. In the view where the negation in (68), repeated from (1), is related to better-studied embedded expletive negation in languages like French (e.g., Yoon 2011, 2013), it is puzzling why such negation can occur under predicates like *kitaisuru* 'hope', but not under negative or adversative predicates like *sakeru* 'avoid' as in (69), repeated from (4).

(68)     Yoko-wa [Sota-ga uta-o     utawa-**nai-ka**-to] **kitaishi**-te i-ru.
         Yoko-TOP Sota-NOM song-ACC sing-**NEG-KA**-TO **hope**-TE     ASP-NPST
         (lit.) 'Yoko hopes, wouldn't Sota sing a song.'
         'Yoko hopes that Sota might sing a song.'

(69)     *Watashi-wa [sono shirase-ga Yoko-no   mimi-ni haira-**nai**-ka-to]     **sake**-ta.
         I-TOP       that   news-NOM Yoko-GEN ear-DAT enter-**NEG**.NPST-Q-TO **avoid**-PST
         'I avoided that the news would not reach Yoko's ear.'

Such asymmetries are no longer puzzles on our analysis since the negation in question is part of a positively biased NPQ and therefore does not need to be licensed by an adversative predicate. As we saw in section 3, *to* marks its sister as a direct or indirect report of speech or mental utterance, and the *to*-clause is expected to combine with predicates that are compatible with such content, including non-adversative predicates such as *omou* 'think', *kitaisuru* 'hope', *teiansuru* 'suggest', *shinjiru* 'believe', and *kakushinsuru* 'be certain'. They are speech verbs (including manner of speech verbs) and propositional attitude predicates.

On the other hand, given the function of *to* to introduce a direct or indirect report of speech or mental utterance attributed to the matrix subject, predicates that are not compatible with such content are not 'selected' by *to*-led clauses and are therefore expected not to co-occur with them. This is exemplified in (70) with the matrix predicate *hiteisuru* 'deny'. If we used *to*, the speech or mental utterance that Sota is still asleep is attributed to the matrix subject *Yoko*. The matrix predicate *hiteisuru* 'deny', however, combines with that same subject to convey that Yoko denies

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[35]Our use of modals in the interpretation of these embedded polar questions raises the question of how examples like (19) and (20) compare intuitively to examples in which the *to*-clause contains overt modals. In section 6.2, we briefly discuss embedded modals, but we leave a full investigation to future work.

that Sota is still asleep. These two meanings are inconsistent.[36, 37]

(70)  Yoko-wa [[Sota-ga mada ne-te    iru]      {*to/koto-o/no-o}]  hiteishi-ta.
      Yoko-TOP Sota-NOM still  sleep-TE ASP.NPST TO/KOTO-ACC/NO-ACC deny-PST
      'Yoko denied that Sota was still asleep.'

Given this, it is not surprising that positively biased NPQs cannot be embedded under *hiteisuru* 'deny', as in (71). Similarly to (70), *to* attributes the speech/thought act 'Isn't Sota still asleep?' to the matrix subject, Yoko. This means that Yoko is biased toward the proposition that Sota is still asleep, and that is not compatible with the matrix predicate here, *hiteisuru* 'deny'.[38]

(71)  *Yoko-wa [[Sota-ga mada ne-te    iru-n      ja    nai$_{tc}$ ka] to] hiteishi-ta.
      Yoko-TOP Sota-NOM still  sleep-TE ASP.NPST-NO DE.WA NEG$_{tc}$ Q  TO deny-PST
      '(Lit.) Yoko denied, isn't Sota still asleep.'

This explains why embedded noncanonical negation cannot occur with negative or adversative predicates such as *hiteisuru* 'deny', *kyoshisuru* 'refuse', *sakeru* 'avoid, prevent' and *kinjiru* 'prohibit'. Though it is standard to talk about predicates selecting their complement types, one could also describe *to*-led embedded clauses as *selecting upward* those predicates that are compatible with the notion of reported speech or thought, such as *iu* 'say', *omou* 'think', *kitaisuru* 'hope', *shinpaisuru* 'worry/fear', *tazuneru* 'ask', *jimonsuru* 'ask oneself/wonder', and so on.

An interesting interpretive contrast emerges in sentences with another negative predicate *utagau* 'doubt'. Unlike *hiteisuru* 'deny' in (70), *utagau* 'doubt' can combine not only with *koto/no* as in (72a), but also with *to*, as in (72b). In the latter case, the verb *utagau* is interpreted as 'suspect'.[39]

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[36]The judgment pattern, *\*to/koto/no*, remains the same if we negate the matrix verb *hiteisuru* 'deny', even though one might expect that adding negation would save the *to*-embedding. We find the same pattern with embedded Verb Second in German, as in (i) ([redacted] (p.c.)).

(i)    #Yoko bezweifelt (nicht), Sota schläft noch.
       Yoko doubts    not    Sota sleeps still
       'Yoko {doubts/doesn't doubt}, Sota still sleeps.'                    *German*

This makes sense given the observation in section 4 that main clause phenomena cannot be embedded under negated predicates. That said, more work is needed, as *to*-clauses that embed imperatives can sometimes be embedded under negated predicates in Japanese.

[37]Thanks to [redacted] (p.c.) for drawing our attention to connections to embedded Verb Second and embedded epistemic modals (Gärtner, 2002; Truckenbrodt, 2006; Anand & Hacquard, 2013; Ippolito, 2018; Sode & Truckenbrodt, 2018).

[38]Example (71) differs from (70) in that the other 'complementizers' *koto, no* would also be bad here. This is caused independently by the interrogative shape of the embedded clause. See also (75) below.

[39]Yamada (2019) has also noted this type of meaning contrast with the verb *utagau* (and *ibukashimu* with a similar meaning) independently, as well as a data point similar to (73) below.

(72)  a.  Yoko-wa [[Sota-ga mada neteiru] {**koto/no**}-o] **utagat**-ta.
          Yoko-TOP Sota-NOM still  asleep  KOTO/NO-ACC **doubt**-PST
          'Yoko doubted that Sota was still asleep.'
      b.  Yoko-wa [[Sota-ga mada neteiru] **to**] **utagat**-ta.
          Yoko-TOP Sota-NOM still  asleep  TO **suspect**-PST
          'Yoko suspected that Sota was still asleep.'

How does this interpretive shift arise? We think that the key lies in the property of *to* that signals its complement to be a report of speech or mental utterance attributed to the matrix subject. One might view the core meaning of the predicate *utagau* to be characterized as uncertainty. When it combines with a *koto/no*-led clause as in (72a), this gives rise to the interpretation of *doubting* that Sota is still asleep. When *utagau* combines with a *to*-led clause as in (72b), on the other hand, *to* attributes the thought that Sota is still asleep to the matrix subject, Yoko. In this case, the core meaning of uncertainty of the predicate *utagau* leads to Yoko's distancing herself from the proposition that Sota is still asleep with a meaning best translated as 'suspect'.[40]

Two more notes should be added here about (70) and (71). First, while (70) with *to* cannot mean that Yoko denied that Sota was still asleep, it is possible to interpret *to*'s sister constituent as a report of Yoko's speech or mental utterance, in which case, the example as it stands sounds as if the thing that Yoko is denying is left unexpressed. We can fill in that information as in (73) and save the sentence by adding what Yoko is denying in the form of a *koto*-clause.

(73)  Yoko-wa [Sota-wa mada neteiru to] [kare-ga ookii oto-de      ongaku-o kake-te
      Yoko-TOP Sota-TOP still  asleep  TO he-NOM large volume-with music-ACC play-TE
      iru      koto]-o  hiteishi-ta.
      ASP.NPST KOTO-ACC deny-PST
      'Yoko denied that Sota is playing loud music, saying/thinking that Sota is still asleep.'

Second, the embedded *to*-clauses in examples such as (70) and (71) can be saved by using the grammaticalized verb of saying *yuu* (Shimamura, 2018; Saito, 2019) as in (74) and (75). The layer of *yuu koto/no* 'the thing that says' makes it possible for the embedded speech/thought act event to not get attributed to the matrix subject, hence no discourse inconsistency arises.

(74)  Yoko-wa [[[Sota-ga mada neteiru] **to**] **yuu** {**koto/no**}]-o hiteishi-ta.
      Yoko-TOP Sota-NOM still  asleep  TO SAY KOTO/NO-ACC deny-PST
      'Yoko denied (the thing/claim that says) that Sota was still asleep.'

(75)  Yoko-wa [[[Sota-ga mada neteiru-n-ja      nai$_{tc}$ ka] **to**] **yuu** {**koto/no**}]-o
      Yoko-TOP Sota-NOM still  asleep-NO-DE.WA NEG$_{tc}$ Q  TO SAY KOTO/NO-ACC
      hiteishi-ta.
      deny-PST
      'Yoko denied (the thing that says) that there's a good possibility that Sota was still asleep.'

We have shown in this subsection that the two puzzles that arise if the embedded noncanonical negation in question was analyzed as subordinate expletive negation are no longer puzzles in our analysis. The way in which the puzzles are resolved in turn provides further support for

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[40]This way of viewing the shift in the meaning of *utagau* 'doubt/suspect' was suggested by [redacted] (p.c.), to whom we are grateful, as well as to [redacted] for subsequent discussions.

our view that *to* embeds speech/thought act phrases.

# 6 Comparison to other accounts

## 6.1 Other challenges for the subordinate expletive negation view

Analyses that relate embedded expletive negation in Japanese to subordinate expletive negation in, for example, French, face another challenge, in addition to the difficulty posed by the puzzles we discussed in section 5.

Within the subordinate expletive negation view, Yoon (2011, 2013) proposes that the negation in question is a subjunctive mood marker, and the sequence *ka-to* 'Q-QUOT' is a non-factive complementizer and is also a type of subjunctive mood marker (Yoon, 2011, 190). Building on Yoon's analysis, Choi & Lee (2017) propose a type of hybrid analysis, which relies on the notion of nonveridicality in the licensing of the embedded noncanonical negation, while at the same time connecting such negation to the negation in positively biased NPQs.[41] This hybrid analysis is also subject to the puzzles in section 5. Beyond that, the attempt to unify subordinate expletive negation with biased NPQs while also including Romance expletive negation faces a challenge from embedded NPQs in French. Consider example (76), which features an embedded positively biased NPQ in French, slightly modified from a naturally occurring example.

(76)    J'ai    commandé la    taille S mais je **me**    **demande** si ce **n**'est **pas** plutôt XS.
        I.have ordered      the size   S but   I   to.me ask      if it   NE.is NEG rather XS
        'I ordered size S but I wonder if it isn't more like XS.'                     *French*

What is relevant here is the fact that *ne...pas* is used in (76), and not just *ne* as is standard in subordinate expletive negation in French, as in (3). This makes Choi & Lee's claim that French embedded noncanonical negation *ne* is related to the negation in positively biased negative polar question *(ne)...pas* unconvincing. The takeaway message here is that, while French has both the phenomenon of (i) positively biased NPQs and (ii) subordinate expletive negation, Japanese only has (i), but that NPQs can be embedded productively in Japanese gives rise to the false impression that Japanese also has (ii).

Another potential challenge for the subordinate expletive negation view has to do with interpretation: Yoon (2011, 27) argues that the interpretive contribution of expletive negation is 'undesirability or unlikelihood'. It is not completely clear just how unlikely the truth of the embedded clause needs to be to use expletive negation on Yoon's view. On p. 105ff., she suggests that 50% likelihood is okay, but 80% is too much. As we said in section 2.2, we agree that adding an embedded expletive negation produces a weakening or hedging effect. That is, on our view, adding the sequence *nai ka to* to an embedded clause will necessarily imply that the embedding subject is less than certain about the truth of the propositional complement of *nai*. That said, since a positively biased NPQ is still *positively* biased, we think the view that it imposes unlikelihood or undesirability is too strong, and our account differs from Yoon's account on this point. Consider the following examples, which we think test the predictions of the two accounts, teasing them apart:

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[41]In fact, Yoon (2011, §2.10) also briefly explores whether subordinate expletive negation may be related to the negation in biased NPQs, but ultimately says that more evidence is needed and leaves it to future work.

(77)  Yoko-wa [hikooki-o    hayame-ni yoyakushi-ta hoo-ga    yoku-**nai**$_{tc}$    ka to]
      Yoko-WA airplane-ACC early      book-PST      HOO-NOM good-NEG$_2$.NPST Q   TO
      omot-te  i-ru.
      think-TE ASP-NPST
      'Yoko thinks that it's probably better to book a flight early.'

In (77), the proposition that it is better to book a flight early is neither very unlikely nor undesirable for the attitude holder, Yoko.

(78)  Yoko-wa [Ken-no chiimu-ga konkai-wa  **zettai**    katsu-n-ja          **nai**$_{tc}$
      Yoko-WA Ken-gen team-NOM this.time-WA absolutely win.NPST-NO-COP.WA NEG$_2$.NPST
      ka to] {omotteiru/kitai-o    hukuramaseteiru}.
      KA TO think.NPST/hope-ACC increase.NPST
      'Yoko thinks/is getting high hopes that Ken's team will win **for sure** this time.'

In (78), the attitude holder Yoko's confidence that Ken's team will win is pretty high, and if Ken's team's wins, that is neither very unlikely nor undesirable according to Yoko.[42]

(79)  [Hontoo-wa tsuyoi      n ja      **nai**$_{tc}$ ka to] **shinji**-te  i-masu.
      reality-WA    strong.NPST NO COP.WA NEG$_2$ Q   TO believe-TE ASP-POL.NPST
      '(I) believe that (he) may be strong in fact.'

(79) from Choi & Lee (2017, 182) with *shinjiru* 'believe' can be uttered in contexts where the proposition *that he is strong is* neither undesirable nor very unlikely to the speaker.

(80)  Rettoo-kaizoo-to        dooji-shinkoo-de        shuto-kinoo-iten-o
      archipelago-reform-with same.time-carry.out-in capital-function-relocation-ACC
      jisshishi-te    ire-ba     tookyoo-ga ima-no   yoona jootai-de-wa
      implement-TE ASP-COND Tokyo-NOM now-GEN like   state-COP-WA
      nakat-ta-n-ja          **nai**$_{tc}$    ka to **shinji**-te  orimas-u.
      NEG$_1$-PAST-NO-COP-WA NEG$_2$.NPST Q   TO believe-TE ASP-NPST
      'I believe that if relocation of some functions of the capital had been implemented simul-
      taneously with the remodeling of the Japanese Archipelago, there is a good possibility
      that Tokyo wouldn't have been in its current state.' (OM66_00001, BCCWJ[43])

(81)  ..., [shutaisha-dearu chuukoosei-tachi-no            sanka-to,          shokuin-no
      ..., main.player-COP secondary.school.student-PL-GEN participation-and staff-GEN
      eichi-o       kesshuus-aseru koto-niyotte, ittei-no      kaiketsu-no hookoo-ga
      wisdom-ACC collect-CAUS   KOTO-by       certain-GEN solution-GEN direction-NOM
      umare-te kuru-no-de-wa    **nai**$_{tc}$    ka to] **kakushinshi**-te iru.
      arise-TE  come-NO-COP-WA NEG$_2$.NPST Q   TO be.certain-TE    ASP
      'I am certain that, by putting together the participation of the secondary school students,
      who are the main players in this, and the wisdom of the staff, there is a good possibility
      that a clear direction for solutions will emerge.' (LBo3_00028, BCCWJ)

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[42]A reviewer reports that they find the use of *zettai* in (78) odd, however we find the example perfectly natural.

[43]*The Balanced Corpus of Contemporary Written Japanese* (National Institute for Japanese Language and Linguistics)

(80) and (81) are naturally occurring data, where the matrix predicates are *shinjiru* 'believe' and *kakushinsuru* 'be certain', respectively. In both examples, the content of the relevant proposition is neither undesirable nor very unlikely to the attitude holder, that is, the first person speaker/writer.[44] We believe that these examples show that the matrix subject does not take the embedded clause to be as unlikely or undesirable as Yoon's analysis predicts. A reviewer argues that Yoon can explain these examples, since for Yoon, "the category of [the] 'unlikelihood' meaning of expletive negation is proposed as a broad concept to capture both low-likelihood and speaker's uncertainty/low certainty of the state of affairs." We don't think that this can explain the data. Even on this more expansive view, the likelihood of the truth of the embedded clauses in these examples is far above low-likelihood/low-certainty.

We believe these examples also demonstrate that the strength of the belief (bias) held by the attitude holder can vary depending on linguistic material in other parts of the sentence or the utterance context. This is expected since the bias conveyed in positively biased NPQs is pragmatically derived and so is subject to pragmatic factors.

## 6.2    Epistemic necessity under *kitaisuru* and Mizuno 2022

Recall that Anand & Hacquard's (2013) semantics for *kitaisuru*/*hope* in (62) imposes an uncertainty requirement on the doxastic domain. This is a general feature of Anand & Hacquard's semantics for emotive doxastics and dubitatives. Mizuno (2022) proposes that in Japanese, the particle *ka* embedded under *to* under such predicates is a modally-functioning Q particle that is the morphological exponent of the uncertainty requirement in (62). This account then predicts that doxastic uncertainty is only present when *ka* is present. However, this is not what we see in (61): while Yoko's belief in the prejacent needs to be stronger in (61) than in the English translation, it nevertheless cannot be maximally strong, equivalent to full belief/certainty (we thank a reviewer for pointing this out). Mizuno's (2022) account lacks an explanation for this fact, whereas our account explains it since we take the uncertainty requirement to be built into the semantics of *kitaisuru* along the lines suggested by Anand & Hacquard (2013).

Furthermore, Anand & Hacquard (2013) discuss the impossibility of embedding epistemic necessity modals under *hope* in Romance. They explain this via the uncertainty requirement: since the prejacent *p* does not hold throughout the doxastic state, when the epistemic necessity modal quantifies universally over that state, it finds non-*p* worlds, resulting in a clash. Mizuno (2022, 420) notes that, unlike Romance, epistemic necessity modals can embed under *kitaisuru*:

(82)    Jo-wa [Bo-ga    katsu **nitigainai** to] kitaisiteiru.
        Jo-TOP Bo-NOM win   **must**      TO hope
        (lit.) #'Jo hopes that Bo must win.'

Mizuno claims that this is possible in (82) because on his view *ka* contributes the uncertainty requirement and it is absent in (82). But as we noted above, uncertainty about the prejacent is

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[44]The same reviewer who disliked (78) also finds (79)-(81) unacceptable, writing "these sentences give an impression that the speaker contradicts herself by saying that she is certain and not certain at the same time". We agree that the embedded clause implies at least a small degree of uncertainty, or a hedging effect, as our account predicts. These examples may be a bit marked, but as we noted, they are naturally occurring data, suggesting that other speakers find them acceptable.

still present when embedding under *kitaisuru*, even when *ka* is absent. Thus the acceptability of (82) is still a mystery.

   We note that epistemic necessity modals cannot be embedded under *koto* under *kitaisuru*:

(83)   ??Jo-wa  [Bo-ga   katsu **nitigainai** koto]-o     kitaisiteiru.
       Jo-TOP Bo-NOM win   **must**      KOTO-ACC hope
       (lit.) #'Jo hopes that Bo must win.'

(83) provides yet more evidence that we should include the uncertainty requirement in the semantics of *kitaisuru*, *pace* Mizuno 2022, so that Anand & Hacquard's explanation for Romance can apply here as well.

   But then why is epistemic necessity acceptable under *to* in (82), even as the uncertainty requirement is still detectable? We believe this can be explained by the special nature of *to*-clause embedding: In (82), *to* embeds an assertion. Thus the matrix subject is committed to the proposition asserted, and by hypothesis in section 4, commitment bears an indirect relationship to assertion—the proposition $p$ committed to needs to hold throughout an optimal set of doxastically accessible worlds $O$ as in (64). We further hypothesize that in an example like (82), $O$ provides the domain of quantification for the modal. The necessity modal would then require $p$ to hold throughout $O$, but not throughout the doxastically accessible worlds, thus meeting the uncertainty requirement in (62) while also rendering the use of the modal acceptable. Thus our view can explain the strength of *to* embedded under *kitaisuru* and the acceptability of epistemic necessity under *to* + *kitaisuru*, while maintaining the uncertainty requirement. That said, more work is needed, both on the precise details of the compositional semantics, and on the empirical embedding behavior of modals under attitudes in Japanese.

# 7   Conclusion

We have argued that the distribution and interpretation of subordinate expletive negation in Japanese can be explained by analyzing it as the negation of a positively biased negative polar question, discussed in section 2. We saw in section 5 that our analysis resolved puzzles raised by prior attempts to unify subordinate expletive negation in Japanese with that in French. In order to develop our analysis, we had to examine the role of the complementizer *to*, cataloguing its unique properties in section 3. An appreciation of these properties pointed us toward a quotative analysis of *to* that we cashed out as speech act embedding. The analysis in section 4 builds on prior work to produce a new unified analysis of both 'selected' and 'unselected' *to*-clauses.

   The account we have developed has several limitations that point the way to future work. First, our causal analysis of the relation between the embedded *to*-clause and the matrix clause in section 4 is preliminary. More work is needed to tease apart the relations between matrix and embedded clauses that *to* accepts and those it does not. Second, our explanation for the interpretation of *to*-clauses under *kitaisuru* 'hope' is still not fully spelled out. In particular, we extended it to a preliminary explanation of the behavior of epistemic necessity modals embedded in *to*-clauses in section 6.2. However, it remains unclear how the interpretation we suggested is derived compositionally because the domain specified by $O$ is not produced in the compositional semantics, so it is unclear how the modal is able to quantify over it. Third, and related to the last point, a broader exploration of the empirical facts is needed, not just of *to* embedding, but

also of *koto* and *no* embedding, relative to many different classes of embedding predicates, as well as many different kinds of embedded clauses, both in terms of speech acts/clause types, and in terms of the modality contained within them (M.-J. Kim, 2009; S-S. Kim, 2010; Anand & Hacquard, 2013, 2014; Bogal-Allbritten & Moulton, 2017; Yeom, 2018; Lee, 2019; Bogal-Allbritten et al., 2021). This broader exploration needs to include an examination of the effect of various particles in the embedded clause, including *na*, as suggest by a reviewer for *NLLT*.

   All of this having been said, we also believe that our analysis makes some progress, not just in helping us to understand embedded expletive negation, but also in providing a syntax and semantics for sentences with *to* embedding that unifies cases of 'selected' and 'unselected' embedding.

## Abbreviations

ACC = accusative, ASP = aspect, COP = copula, DAT = dative, DECL = declarative, FUT = future, GEN = genitive, NEG = negation, NOM = nominative, NPST = nonpast, PST = past, PL = plural, SG = singular, SUBJ = subjunctive, TOP = topic

## References

Aihara, Masahiko. 2009. (un)biased negative yes-no questions in Japanese. In *Proceedings of the 38th annual north east linguistics society*, .

Anand, Pranav & Valentine Hacquard. 2013. Epistemics and attitudes. In *Semantics and pragmatics*, vol. 6, 1–59.

Anand, Pranav & Valentine Hacquard. 2014. Factivity, belief and discourse. *The art and craft of semantics: A festschrift for Irene Heim* 69–90.

AnderBois, Scott. 2019. Negation, alternatives, and negative polar questions in American English. In Klaus von Heusinger, Edgar Onea & Malte Zimmerman (eds.), *Questions in discourse - volume 1: Semantics*, 118–171. CRISPI.

Bhatt, Rajesh & Veneeta Dayal. 2020. Polar question particles: Hindi-Urdu *kya*. *Natural Language & Linguistic theory* 38. 1115–1144.

Bogal-Allbritten, Elizabeth & Keir Moulton. 2017. Nominalized clauses and reference to propositional content. In *Proceedings of sinn und bedeutung 21*, .

Bogal-Allbritten, Elizabeth, Keir Moulton & Junko Shimoyama. 2021. Nouny propositions and their individual correlates: the view from Japanese. Handout for the Workshop on the nouniness of propositional arguments, 43rd Annual Conference of the German Linguistic Society (DGfS), University of Freiburg, Germany.

Büring, Daniel & Christine A. Gunlogson. 2000. Aren't positive and negative polar questions the same? Ms. UCLA/UCSC.

Chappell, Hilary. 2008. Variation in the grammaticalization of complementizers from *verba dicendi* in Sinitic languages. *Linguistic Typology* 12. 45–98.

Choi, Yoonhee & Chungmin Lee. 2017. Expletive negation and polarity alternatives. In Chungmin Lee, Ferenc Kiefer & Manfred Krifka (eds.), *Contrastiveness in information structure, alternatives and scalar implicatures*, 175–201. Springer.

Elliott, Patrick. 2020. *Elements of clausal embedding*: University College London dissertation.

Evans, Nicholas. 2007. Insubordination and its uses. In Irina Nikolaeva (ed.), *Finiteness: Theoretical and empirical foundations*, 366–431. Oxford University Press.

Evans, Nicholas & Honoré Watanabe (eds.). 2016. *Insubordination*. John Benjamins.

Farkas, Donka F. & Kim B. Bruce. 2010. On reacting to assertions and polar questions. *Journal of Semantics* 27(1). 81–118. doi:10.1093/jos/ffp010. `http://dx.doi.org/10.1093/jos/ffp010`.

Gärtner, Hans-Martin. 2002. On the force of v2 declaratives. *Theoretical Linguistics* 28(1). 33–42.

Goodhue, Daniel. 2018. *On asking and answering biased polar questions*: McGill University dissertation.

Goodhue, Daniel. 2019. High negation questions and epistemic bias. In *Proceedings of Sinn und Bedeutung (SuB) 23*, 1–18.

Goodhue, Daniel. 2021. Aren't there multiple causes of bias in polar questions? Ms. University of Maryland.

Goodhue, Daniel & Michael Wagner. 2018. Intonation, *yes* and *no*. *Glossa* 3(1). 5. 1–45.

Hacquard, Valentine. 2006. *Aspects of modality*: Massachusetts Institute of Technology dissertation.

Hacquard, Valentine. 2010. On the event relativity of modal auxiliaries. *Natural Language Semantics* 18(1). 79–114.

Hara, Yurie, Shigeto Kawahara & Yuli Feng. 2014. The prosody of enhanced bias in Mandarin and Japanese negative questions. *Lingua* 150. 92–116.

Hartung, Simone. 2006. *Forms of negation in polar questions*. Tübingen Universität Tübingen MA thesis.

Heim, Irene. 1992. Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9. 183–221.

Hirayama, Hitomi. 2018. Discourse effects of biased questions in Japanese. In *Japanese/Korean linguistics 25*, CSLI Publications.

Ippolito, Michela. 2018. Constraints on the embeddability of epistemic modals. In Robert Truswell, Chris Cummins, Caroline Heycock, Brian Rabern & Hannah Rohde (eds.), *Proceedings of sinn und bedeutung 21*, 605–622.

Ito, Satoshi & David Y. Oshima. 2016. On two varieties of negative polar interrogatives in Japanese. In Michael Kenstowicz, Theodore Levin & Ryo Masuda (eds.), *Japanese/Korean linguistics*, vol. 23, CSLI Publications.

Kim, Jooyoung. 2018. *Embedding without a license?: typology of unselected embedded clauses*: University of Delaware dissertation.

Kim, Jooyoung & Satoshi Tomioka. 2014. Two types of unselected embedded questions. In *Proceedings of the 31st west coast conference on formal linguistics*, 276–284.

Kratzer, Angelika. 1981. Partition and revision: The semantics of counterfactuals. *Journal of Philosophical Logic* 2. 201–216.

Kratzer, Angelika. 1991. Modality. In Arnim von Stechow & Dieter Wunderlich. (eds.), *Semantics: An international handbook of contemporary research*, 639–650. Berlin: de Gruyter.

Kratzer, Angelika. 2006. Minimal pronouns. Unpublished Ms., UMass.

Kratzer, Angelika. 2013. Modality and the semantics of embedding. Slides from presentation at the Amsterdam Colloquium.

Krifka, Manfred. 2013. Response particles as propositional anaphors. In *The proceedings of salt*, vol. 23, 1–18.

Krifka, Manfred. 2015. Bias in commitment space semantics: Declarative questions, negated questions, and question tags. In *Proceedings of semantics and linguistic theory*, vol. 25, 328–345.

Krifka, Manfred. 2017. Negated polarity questions as denegations of assertions. In Chung-min Lee, Ferenc Kiefer & Manfred Krifka (eds.), *Contrastiveness in information structure, alternatives and scalar implicatures*, 359–398. Springer International Publishing. doi:10.1007/978-3-319-10106-4_18.

Kuno, Susumu. 1988. Blended quasi-direct discourse in Japanese. In *Papers from the second international workshop on Japanese syntax*, 75–102. CSLI.

Ladd, D Robert. 1981. A first look at the semantics and pragmatics of negative questions and tag questions. In *Papers from the seventeenth regional meeting of the chicago linguistics society* 17, 164–171. Chicago.

Lahiri, Utpal. 2002. *Questions and answers in embedded contexts*. Oxford: Oxford University Press.

Lassiter, Daniel. 2017. *Graded Modality: Qualitative and Quantitative Perspectives*. Oxford University Press.

Lee, Chungmin. 2019. Factivity alternation of attitude 'know' in korean, mongolian, uyghur, manchu, azeri, etc. and content clausal nominals., vol. 20 4, 449–508. Institute for Cognitive Science, Seoul National University.

M.-J. Kim, Min-Joo. 2009. E-type anaphora and three types of kes-construction in korean. *Natural Language & Linguistic Theory* 27(2). 345–377.

MacFarlane, John. 2011. What is assertion? In Jessica Brown & Herman Cappelen (eds.), *Assertion*, Oxford University Press.

Maier, Emar. 2014. Japanese reported speech: Towards an account of perspective shift as mixed quotation. In Yoshimoto K. McCready E., Yabushita K. (ed.), *Formal approaches to semantics and pragmatics*, vol. 95 Studies in Linguistics and Philosophy, 135–154. Springer.

Maier, Emar. 2017. The pragmatics of attraction. In Saka Paul & Michael Johnson (eds.), *The semantics and pragmatics of quotation*, vol. 15 Perspectives in Pragmatics, Philosophy & Psychology, Springer.

McCloskey, James. 2006. Questions and questioning in a local english. In Raffaella Zanuttini, Héctor Campos, Elena Herburger & Paul H. Portner (eds.), *Crosslinguistic research in syntax and semantics: negation, tense, and clausal architecture*, 87–126. Washington, DC: Georgetown University Press.

Mithun, Marianne. 2008. The extension of dependency beyond the sentence. *Language* 69–119.

Mizuno, Teruyuki. 2021. Q-particles in embedded declaratives, mood, and clausal complementation. Poster presented at Semantics and Linguistic Theory 31.

Mizuno, Teruyuki. 2022. Q-particles in embedded declaratives, mood, and clausal complementation. In Nicole Dreier, Chloe Kwon, Thomas Darnell & John Starr (eds.), *Proceedings of Semantics and Linguistic Theory (SALT)*, vol. 31, 405–425. doi:10.3765/salt.v31i0.5086.

Moulton, Keir. 2009. *Natural selection and the syntax of clausal complementation*: University of Massachusetts at Amherst dissertation.

Moulton, Keir. 2015. CPs: Copies and Compositionality. *Linguistic Inquiry* 46(2).

Oshima, David Y. 2006a. Adversity and Korean/Japanese passives: Constructional analogy. *Journal of East Asian Linguistics* 15(2). 137–166.

Oshima, David Y. 2006b. *Perspectives in reported discourse*: Stanford University dissertation.

Oshima, David Y. 2010. Nihongo inyo koubun ni okeru inyo jutsugo no shoryakugensyo [ellipsis of quotative predicates in Japanese]. In *Research bulletin of international student center*, vol. 8, 86–99. Ibaraki University.

Oshima, David Y. 2015. Ellipsis of SAY, THINK, and DO in Japanese subordinate clauses: A constructional analysis. In Stefan Müller (ed.), *Proceedings of the 22nd international conference on head-driven phrase structure grammar*, 157–176. CSLI Publications.

Oshima, David Y. 2019. The prosody of positively biased negative polar interrogatives in Japanese: Post-focal reduction or deaccenting? In *Proceedings of the annual meeting of the chicago linguistic society (cls)*, vol. 53, 275–289.

Özyıldız, Deniz. 2018. Unselected questions. Handout for Talk given at the 14th Workshop on Altaic Formal Linguistics (WAFL 14), MIT.

Özyıldız, Deniz. 2019. Embedded clauses in Turkish: Different paths to composition. Handout for Talk at Workshop on Relativization, Nominalization and Complementation, University of Toronto.

Portner, Paul. 2018. *Mood*. Oxford University Press.

Portner, Paul & Aynat Rubinstein. 2013. Mood and contextual commitment. In Anca Chereches (ed.), *The proceedings of salt 22*, 461–487. Ithaca, NY: CLC Publications.

Rieser, Lukas. 2017. *Belief states and evidence in speech acts: The Japanese sentence final particle no*: Kyoto University dissertation.

Roelofsen, Floris & Donka Farkas. 2015. Polarity particle responses as a window onto the interpretation of questions and assertions. *Language* 91(2). 359–414.

Romero, Maribel & Chung-Hye Han. 2004. On negative *Yes/No* questions. *Linguistics and Philosophy* 27(5). 609–658.

Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1(1). 117–121.

S-S. Kim, Shin-Sook. 2010. Noun complements and clause types in korean (and japanese). In William McClure & Marcel den Dikken (eds.), *Japanese/Korean linguistics, volume 18*, .

Sailor, Craig. 2013. Questionable negation. Handout, LSA Annual Meeting, 3 January 2013, Boston, MA.

Saito, Hiroaki. 2017. Toward the parameter hierarchy of embedded imperatives. In *University of pennsylvania working papers in linguistics*, vol. 23:1, Article 24.

Saito, Hiroaki. 2018. How to (not) say to *say*. In *Japanese korean linguistics 26*, CSLI Publications.

Saito, Hiroaki. 2019. On further similariteis between Japanese and Spanish complementizers. In *Proceedings of workshop on altaic formal linguistics (wafl) 14, mitwpl*, .

Saito, Mamoru. 2012. Sentence types and the japanese right periphery. In G͘unther Grewendorf & Thomas Ede Zimmermann (eds.), *Discourse and grammar: from sentence types to lexical categories*, vol. 112 Studies in Generative Grammar, 147–176. Berlin: Mouton de Gruyter.

Saito, Mamoru. 2015. Cartography and selection: Case studies in Japanese. In Ur Shlonsky (ed.), *Beyond functional sequence: The cartography of syntactic structures*, vol. 10, 255–274. Oxford University Press.

Sauerland, Uli & Kazuko Yatsushiro. 2014. Japanese reported speech within the emerging typology of speech reports. *Proceedings of FAJL* 7. 191–202.

Schwabe, Kerstin. 2013. Eine uniforme analyse sententialer proformen im Deutschen. *Deutsche Sprache 41* 142–164.

Sharvit, Yael. 2008. The puzzle of free indirect discourse. *Linguistics and Philosophy* 31(3). 353–395.

Shimamura, Koji. 2018. *The theory of quotative complementation in Japanese semanticosyntax*: University of Connecticut dissertation.

Shimoyama, Junko, Daniel Goodhue & Masako Hirotani. 2019. Positively biased negative polar questions in Japanese and their embeddability. In Tatiana Bondarenko, Colin Davis, Justin Colley & Dmitry Privoznov (eds.), *Proceedings of the 14th workshop on altaic formal linguistics (wafl 14)* MIT Working Papers in Linguistics 90, 289–304. Cambridge, Mass.: MITWPL.

Sode, Frank & Ayaka Sugawara. 2021. "tte" in complementizer use is a strong logophoric complementizer. In *Proceedings of the 28th Japanese/Korean linguistics conference*, .

Sode, Frank & Hubert Truckenbrodt. 2018. Verb position, verbal mood, and root phenomena in german. In Mailin Antomo & Sonja Müller (eds.), *Non-canonical verb positioning in main clauses*, 91–135. Helmut Buske Verlag.

Sudo, Yasutada. 2013. Biased polar questions in English and Japanese. In Daniel Gutzmann & Hans-Martin Gärtner (eds.), *Beyond expressives: Explorations in use-conditional meaning* Current Research in the Semantics/Pragmatics Interface (CRiSPI) 28, 275–295. Leiden: Brill.

Tomioka, Satoshi & Jooyoung Kim. 2015. Conventionally implicated questions. Ms. University of Delaware.

Tomioka, Satoshi & Jooyoung Kim. 2016. A new embedding strategy: Purposeful questions in japanese and korean. In *Proceedings of wafl 11*, .

Truckenbrodt, Hubert. 2006. On the semantic motivation of syntactic verb movement to c in german. *Theoretical Linguistics* 32(3). 257–306.

Villalta, Elisabeth. 2008. Mood and gradability: an investigation of the subjunctive mood in Spanish. *Linguistics and Philosophy* 31. 467–522.

Yalcin, Seth. 2007. Epistemic modals. *Mind* 116(464). 983–1026.

Yamada, Akitaka. 2019. Embedded moods in Japanese. In *Proceedings of the 158th meeting of the linguistic society of japan*, 267–273.

Yeom, Jae-il. 2018. Embedded declaratives in Korean. *Language and Information* 22(1). 1–27.

Yoon, Suwon. 2011. *'not' it in the mood: The syntax, semantics, and pragmatics of evaluative negation*: University of Chicago dissertation.

Yoon, Suwon. 2013. Parametric variation in subordinate evaluative negation: Korean/japanese versus others. *Journal of East Asian Linguistics* 22(2). 133–166.

Yoshida, Tomoyuki. 2019. Complement selection and *wh*-scope in japanese. *Journal of East Asian Linguistics* 28(1). 1–27.