# What does high negation do? Nothing, negation, or denegation?[1]

Shohei NAGATA — *Kochi University*
Masatoshi HONDA — *University of Miyazaki*

**Abstract.** This study discusses the semantics of the so-called *high negation*, which is probably a type of expletive negation in English realized in the guise of *n't* in subject–auxiliary inversion contexts. We compare and scrutinize two types of phenomena that carry this item—high negation questions and negative inversion exclamatives—to elucidate its semantic contributions. High negation is revealed to function as a denegation (Searle, 1969; Cohen and Krifka, 2014), that is, the speaker's refusal of someone's assertion. In addition, the one to be refused is determined in correlation with the speech act ranging over high negation, suggesting that the negations involved in both phenomena are a unique lexical entry.

**Keywords:** denegation, expletive negation, negative inversion exclamatives, negative questions.

## 1. Introduction

Negation is typically believed to function as the reversal of the truth value of a proposition (Horn, 1989), but some types do not seem to work as such. One is the negative concord phenomenon, in which multiple negative elements are lumped together to express a logically single negation; another is expletive negation, where an element that otherwise functions as a logical negation seemingly contributes to nothing specific in the semantics of a sentence. In English, the latter is manifested as a contracted negative *n't* attached to a sentence-initial auxiliary:

(1) a. Aren't you lucky? (⤴) (HNQ)
b. Aren't you lucky! (⤵) (NIE)

Some researchers call example (1a) a *high negation question* (HNQ) (e.g., Goodhue, 2022; 2023) because of the location of the negative. The semantics of an HNQ and its account have been long discussed (e.g., Ladd, 1981; Romero and Han, 2004; Sudo, 2013), particularly from comparative perspectives with its variation such as *are you not lucky?* Ladd (1981) considers the negative interpretation in HNQs as *outer negation* in that it does not contribute to reversing the truth value, a function that a normal negative operator carries, but this type of question is known to affect the speaker's epistemic attitude toward the proposition. This is called *bias*, and in (1a), the speaker utters it with his expectation that the sentence radical "you are lucky" is correct, thus roughly paraphrased as *I ask you whether you are lucky and I expect you will answer yes*.

[1] This research project started in 2023 for presenting at the symposium honoring the retirement of Nobuhiro Kaga, our teacher at the University of Tsukuba. We thank him for giving us this opportunity and the audience there for suggesting comments. We also thank the audience at Sinn und Bedeutung 29 in Sicily for their valuable insights. In this paper, data without citation originated from the authors' informant-based investigation. All remaining errors are our own. This research is supported by JSPS KAKENHI Grant Numbers 25K16262 and 24K16095.

To our knowledge, the term *high negation* has been primarily used in the literature of HNQ. However, the element, with its expletiveness retained, can be observed in a type of exclamative construction as shown in (1b), called the negative inversion exclamative (NIE), and relevant studies have often investigated its difference from a positive-polarity counterpart such as *are you lucky!* Indeed, these two expressions show a similar degree-intensifying effect in that the NIE in (1b) as well as the positive counterpart can be paraphrased as *you are so lucky!* However, they do differ (e.g., Quirk et al., 1972), and various proposals have been made (Taniguchi, 2016; 2017) to explain their semantic difference. Nevertheless, studies have yet to explain how high negation pertains to the construction; simply put, it remains to be clear how it derives the NIE semantics.

The interpretations of these two phenomena suggest the semantic expletiveness of high negation. In addition, the following examples with a positive-polarity item (PPI) make the same point:

(2) a.* The meal was not delicious. (Hoeksema, 2018: 385)
b. Isn't the meal delicious? (HNQ)
c. Isn't the meal delicious! (NIE)

The PPI *delicious* cannot be under the scope of a logical negation as in (2a); by contrast, the grammaticality of (2b, c) suggests that high negation fails to behave as such an operator.[2] Then, is this really an expletive *per se*, or does it have so shallow a negative effect that it might be difficult for us to perceive?

Studies have offered some explanations regarding this issue. Romero and Han (2004) proposed that high negation works similarly as logical negation but scopes over a *verum* operator realized as an auxiliary (Höhle, 1992; Wilder, 2013), creating an unbalanced partition into the denotation of the question. Based on this insight, some have analyzed high negation as affecting some non-at-issue meaning (e.g., Romero, 2015; Frana and Rawlins, 2019). Other proposals have also assumed that high negation is a manifestation of *denegation* (Searle, 1969; Hare, 1970), a meta-level operator militating a speech act (Cohen and Krifka, 2014; Krifka, 2015; 2017; Goodhue, 2022). Although its exact implementation varies depending on the theoretical framework, the notion of *denegation* is commonly referred to as involving the refusal of an assertion (see also Bill and Koev (2022), who derived this effect in terms of alternative semantics). We are consistent with the high-negation-as-denegation view, particularly with Goodhue (2022), who proposed to denote high negation semantics without Krifkian commitment-space semantics. However, we hold a different perspective, even from Goodhue (2022), in two respects: (i) an assertion to be *denegated* by the speaker of an HNQ is the speaker's own but not the addressee's, which is supported by our finding that HNQs require some experience by the speaker, and, crucially, (ii) the value of those who make an assertion is proposed to shift depending on a commitment-related operator over high negation, which paves the way for a unified treatment of the high negation evident in both HNQs and NIEs.

[2] The absence of logical negation in HNQs (*outer reading* according to Ladd's) has been observed in terms of other polarity-sensitive items such as *too* vs. *either* and the scope of *even* (see Ladd, 1981; Frana and Lawlins, 2019; Goodhue, 2022).

The remainder of this study is organized as follows. Section 2 discusses some treatments of HNQs and provides some new facts that would challenge previous analyses. Introducing fundamental notions for our analyses, section 3 proposes our semantic denotation of high negation and discusses its implementations, one being the derivation of a felicity condition on HNQs. Section 4 explains NIEs in terms of the new perspective, arguing that they are analyzed as being oriented toward some discourse-salient participant other than the speaker. Section 5 concludes this study.

## 2. HNQs and positive biases

### 2.1. Felicity conditions on HNQs

Question semantics (Hamblin, 1973) denotes polar questions as $\{p, \neg p\}$, and one would thus plausibly assume that in negative questions, this would be $\{\neg p, \neg\neg p\}$ because of the presence of a negative operator, consequently $\{p, \neg p\}$. Despite this, negative questions, more specifically HNQs, carry an extra semantic effect conveying the speaker's epistemic attitude toward the proposition, represented as the speaker's *bias for* p. In (3) below, the negative question not only functions to ask whether *p* (= there is a vegetarian restaurant around here) is true, as does a normal, positive polar question, but also to express the speaker's epistemic consideration that *p* is true.

(3) A: You guys must be starving. You want to go get something to eat?
B: Yeah, *isn't there a vegetarian restaurant around here*? Moosewood or something like that?

(Ladd, 1981: 165)

Recently, studies have considered the bias effect as not a resulting effect to come but a felicity condition on the questions (Sudo, 2013) called the *epistemic bias condition*. The relevance of this condition is confirmed by the dialogues in (4), where the speaker has no epistemic stance toward John's coming (i.e., ignorant of whether *p* or $\neg p$), and in (5), where the speaker believes *p* (= John is left-handed) to be false:

(4) *Context:* You told me that you went to the party yesterday. I have no idea who else did:
a: Did John go to the party too?
b: # Didn't John go to the party too?

(5) *Context:* We just learned that Mary is left-handed, and are wondering who else is. Given its rarity, I believe that Mary is the only one left-handed person among us, so I think it's very likely that John, who is not around, is right-handed:
# Isn't John left-handed too?

(Sudo, 2013: 281)

Then, the primary concern in the literature has shifted to why HNQs are constrained as such (Goodhue, 2022; 2023).[3]

[3] Sudo (2013) originally proposed negative questions (either HNQs or others) to be constrained by another condition besides the epistemic bias condition, called the *evidential bias condition*, which limits the trait of

2.2. Deriving biases: Goodhue (2022)

Goodhue (2022) proposed to derive the epistemic bias condition on HNQs using some sense of informativeness. Following Romero and Han (2004), he postulated that the presence of the high negation *n't* ensures that of a doxastic operator ASSERT below it. Accordingly, the simple sentence *didn't Jane eat?* is denoted as follows:

(6) a. Didn't Jane eat?
b. $[\![[Q\ [did_k\text{-}n't\ [\textsc{assert}\ [Jane\ t_k\ eat]]]]]\!] =$
$\lambda q_{<s,t>}.\ [q = \lambda w_s.\ \neg\forall w' \in Dox_A(w)[jane\ eat\ in\ w'] \vee q = \lambda w_s.\ \forall w' \in Dox_A(w)[jane\ eat\ in\ w']] =$
c. {Addressee does not believe *that Jane ate*, Addressee believes *that Jane ate*}
(cf. Goodhue, 2022: 400)

These denotations indicate that HNQs are nothing more than questions such that the speaker asks the addressee about her own belief on *p*, which we will argue is not the case. Comparing the denotation of (7a) (reproduced from (6c)) with some pragmatic level of the denotation of a corresponding positive-polarity question such as *did Jane eat?* as shown in (7b), the latter is found to be more informative.

(7) a. The denotation of HNQ (=(6c))
{Addressee believes *that Jane ate*, Addressee does not believe *that Jane ate*}
b. The denotation of positive-polarity question
{Addressee believes *that Jane ate*, Addressee believes ¬*that Jane ate*}

Note that the negative answer to (7b) asymmetrically entails the correspondent in (7a) because the addressee believing ¬*p* must mean her *not* believing *p*, but the reverse does not necessarily hold. In a sense, the positive-polarity question is stronger, that is, more informative, than the NPQ; hence, as long as one is ignorant of the truth of *p*, for information-seeking purposes, he would rather utter the positive-polarity question, which denotes (7b). Meanwhile, uttering the NPQ is not preferred in this situation because of Gricean Quality; the appearance of an implicature as an extra discourse effect may remedy the use of HNQs, and that is speaker's bias, as Goodhue proposed.

Note that one can indeed motivate speaker's biases in view of the above discussion; the next question pertains to its direction. Two are logically possible—bias for *p* or bias for ¬*p*—and HNQs are well-known to be designated to the former. Goodhue argued that the determination can also be explained by enjoying some sense of informativeness: if the speaker of an HNQ were biased for ¬*p*, the addressee's negative answer, such as *no*, is wrongly convergent both in the situation where she is ignorant of the truth of *p* (i.e., believing neither *p* nor ¬*p*) and that where the speaker and the addressee share an identical belief (i.e., believing ¬*p*), because the addressee's state in both situations amounts to the second part of (7a). The former is problematic because the negative answer would not work as an appropriate response to the

contextual information perceived by the speaker. However, Goodhue (2023) argued that this condition pertains to positive polar questions and low-negation polar questions such as *are you not lucky*? but not to HNQs. It must be clarified whether HNQs are operated on by the evidential bias condition; for the time being, we adopt Goodhue's (2023) claim and thus address only the epistemic bias condition in this study.

speaker who would believe ¬*p*. Specifically, in case one wants to double-check his belief that Jane did not eat, the addressee's negative answer (i.e., the second part of (7a)) might be much less informative—or, irrelevant to his purposes—when she is ignorant of Jane's eating.

By contrast, if the speaker is biased for *p*, a desirable result is obtained: both positive and negative answers by the addressee clearly serve as either an agreement or a disagreement; either way, the addressee's response harmonizes with the speaker's epistemic attitude.

### 2.3. New perspectives: Biases require the speaker's experience

As discussed previously, Goodhue (2022) successfully derived the epistemic bias condition, analyzing it as a conversational implicature. He also addressed it as a kind of question, which means that the unbalanced partition that emerges is oriented toward the addressee of the question, not the speaker (see (6c)). However, the following asymmetry would challenge his account of deriving the epistemic bias condition:

(8) *Context*: A and B like all the paintings John's ever drawn because of their gorgeousness. They are in the exhibition:
A: I'm looking for John's new work. Did you find it?
B: No, but there are many people seeing a work over there. I'll go there and see.
A: OK, I'll go to another area, then we'll meet in the entrance in 20 minutes.
[*20 minutes later*]
A: I haven't found John's yet. How about you?
B: Yeah, when we split up and I went around the crowd of people, it's John's that they were viewing.
A: What? Why didn't you tell me right away? How was his new work? …
*#Wasn't it gorgeous, too?*

(9) *Context*: A and B like all the paintings John's ever drawn because of their gorgeousness. They are in the exhibition:
A: I'm looking for John's new work. Did you find it?
B: No, but there are many people seeing a work over there. I'll go there and see.
A: OK, I'll go to another area, then we'll meet in the entrance in 20 minutes.
[*20 minutes later*]
A: I haven't found John's yet. How about you?
B: Yeah, when we split up and I went around the crowd of people, it's John's that they were viewing.
A: What? Why didn't you tell me right away? I'll go see it.
[*10 minutes later*]
A: Amazing! We need to discuss. How did you find it? Just like his past paintings, ...
*wasn't it gorgeous, too?*

In both contexts, A and B are fans of John and visit the exhibition to see his new work, expecting that this time, too, they would be pleased because they like his taste. In this sense, these would be appropriate situations for A to be biased for *p*—that John's new work is also gorgeous.

However, these contexts crucially differ in one respect: in (8), B was able to see the new picture whereas A was not, and uttering the HNQ for confirmation is unacceptable. By contrast, in (9), where A finally saw the work, the same negative question is allowed. More specifically, the contexts differ in whether the speaker *directly* perceives *p*; thus, the asymmetry suggests that in at least certain classes of predicates (to be discussed), the speaker being biased for *p* is insufficient and that the acceptability is somehow susceptible to his own experience.

If Goodhue's analysis is adopted, both questions have identical denotations:

(10) {Addressee believes *p*, Addressee does not believe *p*}

Because B, the addressee, has experienced the gorgeousness of John's new work in both contexts, it would be appropriate for the speaker to ask her about it; specifically, her positive or negative replies should be informative to the speaker, who is biased for *p*, and both contexts should thus exhibit the same judgment. More bluntly, if such bias were reportedly only an implicature induced from a combination of the denotation in (10) and some pragmatic computation, the further requirement that the HNQ speaker (i.e., the bias holder) have his direct perception would also be attributed to the implicature. Considering that the contextual parameter renders the results sharply distinct, it should be better ascribed to the semantics of HNQs per se. However, as long as the denotation of HNQs is (10), which sweeps the speaker under the carpet, this would be a challenging task.

## 3. Proposal

This section offers a novel analysis of HNQs with a focus on the semantics of high negation and thus derives not only the asymmetry in (8) and (9) but also the epistemic bias condition in a different way from previous analyses.

### 3.1. Composing HNQ semantics

The above discussion reminds us of the relevance of the speaker's information state on *p* beyond just describing him as biased, integrating such insight into the denotation of NPQs. Considering this, we propose that the semantics of NPQs hierarchically consists of some fundamental concepts: the sentence radical, a speech-act operator (ASSERT in Goodhue's (2022) sense), a meta speech-act operator realized as high negation, and a commitment-related operator realized as intonation.

#### 3.1.1. High negation as denegation

Romero and Han (2004) presented the crucial view that NPQs establish an unbalanced partition, attributing it to the belief-related operator VERUM, over which high negation takes scope. Goodhue (2022) was consistent with this perspective in that his doxastic operator ASSERT works similarly, and the individual's value of the assertion is determined in HNQs as the addressee. We adopt his ASSERT, but ours differs from his in that the individual's value is fixed as the speaker even in HNQs. To elucidate the importance of the carrier of the assertion, we

introduce Stephenson's (2007: 501) doxastic operator, which aggressively represents this value as a *judge* argument:

(11) $\text{Dox}_{w,t,x}$ = {<*w′*,*t′*,*y*>: it is compatible with what *x* believes in *w* at *t* that he/she/it is *y* in *w′* at *t′*}

Assuming the judge characterizes his proposal; accordingly, the doxastic alternatives of an individual *x* in world *w* at time *t* constitute the set of world–time–individual triples <*w′*, *t′*, *y*> such that it is compatible with *x*'s beliefs in *w* at *t* that *x* is *y* in *w′* at *t′*. For example, if John self-ascribes the property of being an individual named John, then all of his doxastic alternatives are <*w′*, *t′*, *y*> such that *y* is John in *w′* at *t′*. The following illustrates the doxastic predicate *think* in terms of this and its implementation in a simple sentence:

(12) $[\![\text{think}]\!]^{c;\,w,t,j} = [\lambda p <s,<i,et>>. [\lambda Z_e. \forall <w',t',x> \in \text{Dox}_{w,t,z} : p(w')(t')(x) = 1]]$

(13) a. John thinks it is raining.
b. (13a) is true at a world–time–judge triple <*w*,*t*,*j*> iff all of j's doxastic alternatives are such that it's raining, where *j* = John.

Following the denotation of *think*, we posit that there is a covert counterpart of *think*, which we willingly call *ASSERT*, the only difference being that ASSERT does not take a grammatical subject whose referent corresponds to its judge argument; instead, the value is contextually determined (technically PRO or *pro*):

(14) $[\![\text{ASSERT}]\!]^{c;\,w,t,} = [\![\text{think}]\!]^{c;\,w,t,j}$
$= [\lambda p <s,<i,et>>. [\lambda Z_e. \forall <w',t',x> \in \text{Dox}_{w,t,z} : p(w')(t')(x) = 1]]$

We then consider high negation, which Romero and Han (2004) and Goodhue (2022) analyze it as defined for propositions; in this sense, it works the same way as logical negation. We partially adopt this idea: given that ASSERT is a covert counterpart of *think*, ASSERT *p* amounts to the proposition "*x* thinks that *p*"; however, we dare to describe its semantics rather roughly for explanatory purposes:

(15) $[\![n't]\!]$ = There is an **ASSERT-***op* below it, and the resultant assertion is to be refused.

Through the presence of high negation, that of the covert operator ASSERT is guaranteed as well, and the view of high negation as denegation is not established by high negation itself but, more precisely, by the combination of negation and the ASSERT operator.[4]

### 3.1.2. Intonation and commitment

We will show that intonation in HNQs, that is, the rising intonation, is also a crucial component of their meanings. The interpretive effect of intonation has long been recognized in English

[4] We are not fully committed to the assumption that high negation is a logical negation operating on propositions, and what we want to elucidate is how high negation correlates with denegation *effects*. One could still explain similar effects even when analyzing it as a genuinely meta-level lexical entry (Krifka, 2015), and the presence of a covert operator (either VERUM or ASSERT) must be independently motivated.

(e.g., Ladd, 1980; Bolinger, 1989; Hirschberg and Ward, 1995) and has recently been considered to deal with discourse move. For example, Hirschberg and Ward (1995: 408, 411) investigated rising intonation as a carrier of an informing effect:

(16) *Context*: a radio conversation in Chicago
A: Good morning Susan. Where are you calling from?
$B_1$: I'm calling from Skokie. (↗)
$B_2$:# I'm calling from Chicago. (↗)

Hirschberg and Ward observed that if ($16B_1$) is uttered with a rising intonation, the speaker may allude to the addressee that he believes that she may not know his town of residence, intending to provide new information for her. By contrast, ($16B_2$), where he lives in Chicago, a city where the radio station operates, is unacceptable with the same intonation because it lacks informativity.

Davis (2009) developed these pragmatic effects of intonation from a phono-syntactic perspective, demonstrating that assertive particles in Japanese such as *yo* behave differently depending on the intonation (i.e., rising or falling) they are tied with:

(17) a. A: souridaijin-ga nakunat-ta.
prime.minister.NOM die-PAST
"The prime minister died."
B: sin-de-nai yo↘/#yo↗
die-INF-NEG PTCL
"(No), he did not die."
b. A: gohan mou tabe-ta?
rice already eat-PAST
"Did you eat already?"
B: tabe-ta yo↘/yo↗.
eat-PAST PTCL
"(yeah,) I ate."

(Davis, 2009: 336)

These facts led Davis to demarcate the semantic contributions of sentence-final particles—those traditionally believed to bear some discourse effect—and intonation, arguing that intonation is involved in expressing the speaker's way of updating discourse. More specifically, a falling intonation updates the relevant information to common ground while pretesting against the existing information: (17a) illustrates this well as B expresses his disbelief of A's assertion that the prime minister died. (17b) also becomes acceptable with a falling intonation if B intends to confront some belief on the part of A (which could be interpreted from the context). By contrast, the function of a rising intonation is just "notification, information-transmission, and attention-calling" (Davis, 2009: 336), which is why it resists the non-neutral context in (17a). Elaborating these updating functions into corresponding lexical entries represented as ↑/↓, Davis proposes to view them as phonological manifestations of the relevant syntactic features operating on Force (i.e., assertion) below them.

Bhadra (2017, 2020) adopted Davis's considerations to implement the so-called *non-interrogative flip* (NF) phenomenon in Bangla, where the evidentiality/modality perspective is interestingly unchanged in declaratives and questions.[5] Particularly, she reconciles these covert operators with some version of the dynamic discourse model (Farkas and Bruce, 2010) so that the items are reinterpreted as influencing some commitment on the speaker's part. The following examples depict the lexical entries Bhadra proposes for these operators:

(18) a. $[\![\uparrow]\!] = \lambda q \lambda C\ (DC_{SPKR*}\ (C) + \{q\} \wedge Table*(C) + \{q\})$
b. $[\![\downarrow]\!] = \lambda q \lambda C\ (DC_{SPKR}\ (C) + q \wedge Table(C) + \{q\})$

(Bhadra, 2020: 391)

Unfortunately, space reason prevents us from completely explaining the notations, and we refer the readers to Bhadra (2020) and the literature cited therein (e.g., Farkas and Bruce, 2010); however, its gist should be highlighted: the framework in question explains the strength of commitment in two ways: *actual* and *projected*. Actual commitment represents propositions that one publicly thinks should be into common ground, and the description $DC_{SPKR}$ in (18b) is intended to be a proposition that the speaker is actually committed to; meanwhile, projected commitment pertains to a proposition that someone holds so tentatively that he thinks that it might be into future common ground, exemplified by $DC_{SPKR*}$ in (18a). This way, Bhadra posited that a rising intonation is associated with a speaker's tentative commitment and a falling intonation with his actual commitment. These semantic contributions are roughly described as follows:

(19) a. ↑ signals a tentative (weak) commitment on the part of the speaker to the addressee, and the addressee deals with whether it may enter the common ground or not.
b. ↓ signals an actual (or full/strong) commitment on the part of the speaker to the addressee, functioning to directly update the common ground.

Example (19a) shows that the ↑ operator remits the relevant proposition to the interlocutors; thus, the addressee is forced to evaluate it, which is exactly what interrogative force does. Now, one may ask whether such an operator is equivalent to the better-known operator Q; however, Bhadra explicitly distinguishes between them based on a Bangla fact (see section 5.1). As for English, we may agree with her view given that a question meaning may arise without a Q-triggering syntactic transformation:

(20) *Context*: Laura just entered the room, where Max sees her for the first time that day. Max says:

[5] In ordinary expressions such as positive-polarity questions, the NF phenomenon cannot be observed: the perspective of evidentiality/modality expressions shifts from speaker to addressee:

(i) a. *Allegedly*, Ahmad is at the top of the list.
b. Is Ahmad *allegedly* at the top of the list?
c. Ella is *definitely* at the top of the list.
d. Is Ella *definitely* at the top of the list?

(Woods, 2014: 211)

In (i-c), it is the speaker of the sentence who thinks it to be *definitely* true; when it becomes a question as in (i-d), the assessment holder of the proposition flips to the addressee, and the speaker's concern goes toward the degree of her confidence as well as Ella's current state. Bangla productively attests epistemic/evidential morphemes whose perspectival values as the speaker are retained in interrogatives (see Bhadra, 2017, 2020).

a. Did you get a haircut? (nonbiased)
b. You got a haircut? (↗) (biased)
(Gunlogson, 2008: 809)

In addition, NPQs have been reported to be compatible with *after all*, a phrase only in accordance with declaratives (Sadock, 1971; 1974):

(21) A: Sue can't attend, so there'll be no syntacticians there.
B: What do you mean? After all, isn't Jane coming too?
(Asher and Reese, 2007: 17)

This indicates that the phenomena involved are not those genuinely Q-driven. Furthermore, Bhadra observed that the NF phenomenon in Bangla is endowed with bias readings. Hence, one would reasonably assume by analogy that NPQs are NFs in English triggered by the ↑ operator (see *fn*. 5), which further suggests that they are worth exploring in view of evidentiality/modality (see Nagata, 2024 for related observations). This may be explored by future studies.

### 3.2. Analysis

Through the above discussions, we proposed our new compositional analysis of NPQs. The configuration we posit is that: (i) for a proposition *p*, the one who asserts it is specified by the ASSERT operator, (ii) the high negation *n't* above it establishes a denegation of the assertion, and finally, (iii) the ↑ operator, instantiated as a rising intonation, functions to express the speaker's weak commitment to the new assertion. Note further that there is a crucial departure from previous analyses: in HNQs, the value of the assertion candidate is determined as the speaker himself, meaning that an HNQ is such that its speaker's existing assertion is refused by himself *privately* so that the addressee may be forced to approve the issue in some way.

This compositional explanation provides a desirable result: because some sort of speaker's refusal is encoded in the relevant semantics, the politeness usage of HNQs, where the speaker is assured that *p* is true, but pretends not to be, is straightforwardly captured:

(22) *Context*: Earlier, the boss, B, told Jane to work the grill and A to wait on the tables. B however can be forgetful at times, is embarrassed about it, and also has a bad temper:
B: A, what are you doing?
A: I'm getting ready to wait on the tables.
B: Who's working the grill then?
A: Isn't Jane working the grill?
B: Oh right, Jane is doing it.
(Goodhue, 2022: 407)

In fact, such consideration further implies that HNQs have no information-seeking purposes in nature as predicted by the ↑ operator postulated here.

From (8) and (9), we have found that HNQs require the speaker to have enough experience for himself to believe the sentence radical is correct. This constraint naturally falls under our framework. The following provides the proposed descriptions of the NPQ involved:

(23) a. wasn't it gorgeous?
b. ⟦[↑$_{SPKR}$ [was + *n't* [ASSERT$_{SPKR}$ [it <was> gorgeous]]]]⟧
c. "A salient assertion by the discourse participant *x* (**where *x* = the speaker**) that it was gorgeous is refused by the speaker; the way of this refusal is so weak that he might remit the relevance to the discourse."

The semantic description ensures the experience effect: predicates such as *gorgeous* may be subsumed under *predicates of personal taste* according to Stephenson (2007), who asserted that these predicates have, as an argument, a *judge* of the predicate, namely, one who perceives. For example, predicates including *taste good* may take a prepositional phrase as a judge argument (e.g., *it tastes good to John*); otherwise, the value is determined covertly (as PRO or *pro*).

Let us in turn assume that *gorgeous* takes a judge. In example (23), the personal impression of John's new work that the speaker can dismiss is arguably his own feeling by virtue of Gricean Quantity; otherwise, he could not strikingly express his refusal because he cannot be responsible for another's perception. Then, the potential assertion "it was gorgeous" should be precisely interpreted as *I thought it was gorgeous*, and this is read off from ASSERT$_{SPKR}$ *p*. At this point, one would reasonably believe that for someone to find something gorgeous, he must directly see it. Hence, it follows that the experiential requirement is also closely associated with the semantics of the HNQ (23b). Therefore, the effect being considered is naturally derived through our analysis.[6] More precisely, the oddity of (8) is attributed to the failure to establish the denotation specified by the relevant portion of composition because the speaker has insufficient experience to make the assertion.

When a predicate is nothing personal, the *experience* effect should become weaker because anyone can assess such an objective situation, and this prediction is borne out:

(24) *Context*: A is eating dinner with her family and they are talking with her grandmother B on FaceTime. B found smoke in the kitchen, but A's family hasn't realized it:
B: Hey A! Isn't something burning?

Of course, the HNQ utterance improves further when B directly *feels* or *smells* smoke, for example, but not so bad as example (8) without such contextual assistance. These series of facts fall into place and consequently lend credence to our analysis, which directly codes some sense of the speaker's perspective into the question's semantics.

---

[6] Interestingly, if a predicate of personal taste involves gustative sense, the mere sight of a dish online seems insufficient:

(i) *Context*: A is eating dinner with her family and they are talking with her grandmother B on FaceTime. B found Bob, her grandson, eating a steak very happily:
B: # Hey Bob!, isn't it delicious?

Our informant reported that the HNQ utterance may be ameliorated in a context where the steak is what B recommends and thus sent to A's family. This can be interpreted as follows: since B knows how delicious it is here, she becomes qualified to assert *p* through her sufficient experience (i.e., eating one).

### 3.3. Deriving biases again

Finally, we discuss the epistemic bias condition, which has been shown to be strongly tied to HNQs, motivating us to derive it from the semantics of the questions more directly than Goodhue (2022). We claim that this condition results from high negation although the lexical entry itself does not involve anything associated with biases.

We first consider Horn's (1989) classic observation on metalinguistic negation:

(25) A: I did**n't** manage to trap two *mongeese*—I managed to trap two mongooses.

With this example, Horn argued that negation in its standard position may contribute to some metalinguistic meaning: here, the speaker intends not to reverse the truth value of him trapping "mongeese" but to signal his unwillingness to assert the proposition. This is a metalinguistic use of negation, and Horn (1989: 363) stated that it is "a device for objecting to a previous utterance on any grounds whatever, including conventional or conversational implicata it potentially induces."

Horn's insight is extremely compatible with our view: plainly, denegation involves meta-negation, further suggesting that an assertion operated on by denegation must also be given in the discourse or at least accessible. Recall that the assertion consists of our ASSERT and a proposition it takes and that, much more crucially, we have independently argued that the speaker of an HNQ possesses the assertion. Combining these, we argue that the speaker is required to believe $p$ at some previous time. More specifically, high negation renders the composition $\text{ASSERT}_{SPKR}\ p$ necessarily salient in discourse. Put differently, our denotation of NPQs successfully derives the requirement that some previous assertion by the speaker be accessible/activated. We claim that such an effect is exactly what has been recognized in the name of the *epistemic bias condition*.[7]

## 4. Some speculations on negative inversion exclamatives

### 4.1. Denegation in negative inversion exclamatives

Having proposed an analysis of HNQs in the previous section, we turn to an analysis of NIEs. To mention our proposal in advance, in the case of NIEs, the denegation expressed by *n't* functions as the speaker's refusal to accept an assertion made by someone ($x$) other than the speaker; moreover, we concede to stipulate that, for unclear reasons, the proposition asserted by $x$ involves a negative proposition. Technically, $p$ below the doxastic operator contains a

[7] At this point, one may well ask whether the high-negation semantics has contributions other than producing the epistemic bias condition. In other words, the conceived denegation is hard to perceive, because the HNQ seems to lack some sense of negative meaning. We assume that high negation, in collaboration with the ↑ operator, functions as weakening the speaker's preexisting private belief (i.e., the epistemic bias condition) and suggest that this weakening effect arises as the evidential bias condition (Sudo, 2013), another felicity condition, according to which right before uttering an HNQ, the speaker necessarily obtains some pieces of contextual information that would help protest against or that do not have an influence on his preexisting belief (but see Goodhue, 2023, or *fn*. 3 in this paper).

covert negative operator, denoting in fact ¬*p*. Despite this stipulation, what we have gained in HNQs applies to the case in point: even though a proposition operated on by ASSERT is negative, asserting so by *x* requires experience by himself, and it is other than the speaker in NIEs. Thus, it follows that NIEs, in contrast to HNQs, require that non-speaker *x* have at least some access to experiential evidence on which he can base his assertion. Notably, Jamieson's (2018: 179–180) observation serves to motivate our proposal:

(26) *Context*: S is on the phone to A, and is telling A about their new cat. S just picked up the cat that day. S says:
S: # Isn't it cute!

(27) *Context*: S is on holiday. They are on the phone to A, and are telling A about the town they are staying in. S knows A stayed in the same town on holiday last year. S says:
S: Isn't it beautiful!

Jamieson argued that the use of an NIE is subject to a constraint where such an utterance requires the presence of contextual evidence allowing the addressee to assess the truth of the proposition. For instance, in (26), the speaker has the cat in front of them and can appreciate its cuteness, but the addressee, being on the phone, lacks access to the relevant (visual) information. As a result, the use of an NIE is inappropriate. In contrast, example (27) shows that the speaker and the addressee can access the experiential knowledge of having stayed (or currently staying) in the same town, thus permitting the use of the NIE.

Besides the abovementioned evidential property, NIEs are pronounced with a falling intonation contour (Quirk et al., 1972).[8] In light of (19), this fact leads us to reasonably propose that the ↓ operator is a semantic component of NIEs. Considering these observations, we define the semantics of NIEs as follows, where NEG indicates the presence of a null negative morpheme:[9]

(28) a. wasn't it gorgeous!
b. ⟦[↓$_{SPKR}$ [was + *n't* [ASSERT$_{NON\text{-}SPKR}$ [it <was> NEG gorgeous]]]]⟧
c. "A salient assertion by the discourse participant *x* (**where *x* ≠ the speaker**) that it wasn't gorgeous is refused by the speaker; the way of this refusal is so strong that it functions to update the (addressee's) common ground."

A comparison between the analyses of the abovementioned NIEs and of HNQs reveals that, in the case of NIEs, the speaker's act of denegation applies to an assertion of ¬*p* made by a discourse participant other than the speaker. A condition analogous to the epistemic bias condition is consequently obtained, which should be imposed on the non-speaker discourse participant in the case of NIEs. While a detailed examination of this point is beyond the scope of this study, the contrast between (26) and (27) can be interpreted as supporting our hypothesis.

[8] Studies seem to have reached a consensus that NIEs are pronounced with a falling intonation (Quirk et al., 1972; Taniguchi, 2017). Taniguchi (2016) also pointed out that the subject in NIEs tends to bear focal stress. However, such an observation does not seem to apply uniformly across all instances (Quirk et al., 1972). Therefore, we will not discuss the issue of focal stress on the subject in NIEs.

[9] Our proposal posits NEG as part of the propositional meaning in NIEs. Whether its presence is obligatory and whether this stipulation is empirically and theoretically well-motivated are questions we leave for future research. One possibility is that, in the case of NIEs, *n't* exists within the propositional domain and undergoes movement to the left periphery; that is, the covert NEG is a lower copy of high negation, with both occurrences contributing to the NIE meaning.

Specifically, in (26), non-speaker participant *x* (in this case, the addressee) lacks access to sufficient empirical evidence to assert the proposition "it is cute," rendering the NIE inappropriate. In the following sections, we provide empirical observations and linguistic facts much more consistent with our proposal.

## 4.2. The use of NIEs in soliloquy and establishment of shared understanding

Our analysis captures certain contextual constraints imposed on the use of NIEs. Our proposal posits that the discourse context in which an NIE is uttered must contain an assertion from a discourse participant other than the speaker. Consequently, soliloquy contexts such as (29), where no such participant (and thus no such assertion) is present, disallows the use of an NIE:

(29) *Context:* The speaker opened the door alone and said:
S: # Wow, isn't it windy!

Ours also states that, by employing an NIE, the speaker rejects an assertion (more specifically, ASSERT ¬*p*) from some discourse participant *x* (other than the speaker), therefore updating the (addressee's) common ground. Consequently, NIEs should not be available in contexts where the speaker merely expresses a personal opinion. This prediction is supported by Jamieson (2018: 180) in the following observation:

(30) a. # In my humble opinion, wasn't it delicious!
b. In my humble opinion, boy, was it delicious!

Additionally, NIEs cannot be used when the relevant discourse participant is ignorant of whether *p* or ¬*p*, as illustrated below:

(31) A: Did you go to the exhibition to see John's new painting?
B: Yes, I saw it.
A: I went there and saw the painting. …
# Wasn't it gorgeous!

Importantly, the above fact implies that it is insufficient for the addressee to only have access to empirical evidence related to the relevant proposition, contrary to Jamieson (2018); the addressee's attitude toward the sentence radical is also crucial, and this is what we have found to be the characteristic analogous to the epistemic bias condition.

Furthermore, NIEs can be used in contexts where the speaker aims to establish shared understanding with the addressee while simultaneously rejecting the opinion of a third party, which is also in line with our proposal if we assume that the relevant discourse participant *x* is the third party.

(32) A: Have you ever been to the exhibition to see John's new painting? I've been there and saw the painting.
B: Yes, me, too. All of my friends said it wasn't gorgeous, but I do think it was gorgeous. What do you think?
A: (Yeah,) Wasn't it gorgeous!

Finally, let us examine a case in which a relevant discourse participant *x* is specified as the addressee. Our proposal predicts that the use of an NIE in such a case is felicitous. Contrary to this prediction, the example below shows that despite both speaker and addressee's mutual access to evidence, the acceptability of the NIE is considered low.

(33) A: Did you go to the exhibition to see John's new painting?
B: Yes, I saw it.
A: How did you find it?
B: Nothing is impressive.
A: # Wasn't it gorgeous!

This fact can be attributed to the Gricean maxim of Quantity. Our analysis states that the addressee has judged ¬*p* (not gorgeous) based on their own empirical evidence; hence, the speaker cannot unilaterally override the addressee's judgment because he cannot be responsible for her personal feeling (see section 3.2 for a similar discussion on example (8)). The use of an NIE is also inappropriate when the addressee asserts ¬*p* through inference, as shown below, although the infelicity may also be ascribed to a violation of Gricean Quantity:

(34) A: Have you ever been to the exhibition to see John's new painting?
B: No, but I would not go because I never like his work. I like something gorgeous, but his taste is different from mine. Therefore, his new work cannot be gorgeous, either.
A: Actually, I've been there and saw the painting.
# Wasn't it gorgeous!

Under our proposal, this infelicity arises because the addressee lacks direct perceptual evidence sufficient to warrant an assertion of ¬*p*. Technically, epistemic rather than doxastic alternatives are involved here (Stephenson, 2007).

This section examined the (in)felicity of NIEs in soliloquy and contexts of mutual belief formation, proving them to conform to our proposal. In the following section, we discuss cases where NIEs involve nominal predicates and explore the extent to which their pragmatic effects can be derived from the present account.

### 4.3. NIEs with nominal predicates and their pragmatic effects

A series of studies by Taniguchi (2016, 2017, 2018) pointed out that when NIEs occur with non-gradable nominal predicates, they lead to special pragmatic effects such as praise or irony. For instance, as shown below, while the noun *teacher* cannot co-occur with scalar nominal modifiers (e.g., *big fan* vs. # *big teacher*), it can appear in an NIE.

(35) a. # (Boy), is she a teacher! (Taniguchi, 2016: 313)
b. Isn't she a teacher! (... she's always telling people facts and quizzing them afterwards!) (Taniguchi, 2016: 310)

The fact that the expressive function of NIEs does not rely on gradability—as opposed to positive inversion exclamatives—not only aligns with our proposal but also allows us to explain the emergence of pragmatic effects such as praise and irony.

Before delving into our analysis further, Croft's (1991: 70) observation regarding the meaning of the verb *be* is worth considering. He referred to the use of *be* in sentences such as *John is a thief!* as *Individualizing BE* and noted, "This can be translated as something like 'John acts/is acting like a thief'; that is, John has the characteristics and behavior of a thief but is not (necessarily) a thief in the professional sense."

Building on Croft's insight, we analyze (35b) under our proposal as follows: the person in question (referred to by *she*) is not actually a teacher, and the relevant discourse participant *x*, which we assume to be an indefinite plural entity, knows it. The resulting situation would be that they think that she is not a teacher by profession (because she *is* a student, for example). The speaker rejects this doxastic assertion not because he finds out that she is in fact a professional teacher but because her behavior and demeanor resemble those of one. Here comes a coercion into scale reading for being a teacher only to reconcile the speaker's belief with somebody's, resulting in an ironic interpretation. If this analysis is on the right track, then the pragmatic effects of NIEs involving non-gradable nominal predicates may also be associated with meta-linguistic negation as discussed in section 3.3.[10]

## 5. Conclusion

This study explored the semantic contribution of high negation, which has given rise to a controversy because it might seem vacuous. We developed an analysis of HNQs so that the new observations can fall within it and hence further dealt with NIEs, other high-negation-related phenomena. We have successfully provided a compositional analysis confirming that high negation does function as some sort of negation, specifically as denegation, a meta-level negation that refuses an existing doxastic assertion by some discourse-salient participant(s). Because high negation is located left-peripherally and takes scope from there, a theoretical implication of our analysis is that some meta-linguistic elements are syntactically encoded without recourse to multi-dimensional semantic computations. We have also observed that these high-negation-related phenomena involve not only one's experience (cf. Jamieson, 2018) but also a specification of his/her preexisting epistemic stance toward the proposition (e.g., the epistemic bias condition in NPQs/the negative assessment by a non-speaker in NIEs). Based on our proposal, these facts fall into place, and this also promises to make further predictions particularly on nominal predicates in NIEs and on evidential restrictions on both phenomena. This task is left for future research.

[10] One may also wonder why such coercion (i.e., scale reading) does not apply to a positive-polarity counterpart. Specifically, (35a) might be construed as *she is very much like a teacher*. We cannot offer an explanation for this, and it remains to be clear whether the coercion always takes place when a nominal predicate is involved (see Wood, 2014, for his interesting observations). At least we can safely say that an intensification function endowed with positive-polarity counterparts does not target the coerced scalarity in nominals.

**References**


Asher, N. and L. Reese (2007). Intonation and discourse: biased questions. In S. Ishihara, S. Jannedy and A. Schwarz (Eds.), *Interdisciplinary Studies on Information Structure*, pp. 1–38. Potsdam: University of Potsdam.

Bhadra, D. (2017). *Evidentiality and questions: Bangla at the interface*. Ph.D. thesis, Rutgers University, New Jersey.

Bhadra, D. (2020). The semantics of evidentials in questions. *Journal of Semantics 37*, 367–423.

Bill, C. and T. Koev (2022). Really: Ambiguity and question bias. *In Proceedings of Sinn und Bedeutung 26*, pp. 130–148.

Bolinger, D. (1989). *Intonation and Its Uses: Melody in Grammar and Discourse*. Stanford: Stanford University Press.

Cohen, A. and M. Krifka (2014). Superlative quantifiers and meta-speech acts. *Linguistics and Philosophy 37*, 41–90.

Croft, W. (1991). *Syntactic Categories and Grammatical Relations: The Cognitive Organization of Information*. Chicago: The University of Chicago Press.

Davis, C. (2009). Decisions, dynamics, and the Japanese *yo*. *Journal of Semantics 26*, 329–366.

Farkas, D. F. and K. B. Bruce (2010) On reacting to assertions and polar questions. *Journal of Semantics 27*, 81–118.

Frana, I. and K. Rawlins (2019). Attitudes in discourse: Italian polar questions and the particle *mica*. *Semantics and Pragmatics 12*, 1–55.

Goodhue, D. (2022). Isn't there more than one way to bias a polar question?. *Natural Language Semantics 30*(4), 379–413.

Goodhue, D. (2023). Simplifying the evidential condition on asking polar questions. *In Proceeding of SALT 33*, pp. 520–540.

Gunlogson, C. (2008). A question of commitment. *Belgian Journal of Linguistics 22*, 101–136.

Hamblin, C. (1973). Questions in Montague grammar. *Foundations of Language 10*, 41–53.

Hare, R. M. (1970). Meaning and speech acts. *The Philosophical Review 79*, 3–24.

Hirschberg, J. and G. Ward (1995). The interpretation of the high-rise question contour in English. *Journal of Pragmatics 24*, 407–412.

Hoeksema, J. (2018). Positive polarity predicates. *Linguistics 56*(2), 361–400.

Höhle, T. (1992). Über Verum-Fokus im Deutschen. In Jacobs, J. (Ed.), *Informationsstruktur und Grammatik*, pp. 112–141. Wiesbaden: Westdeutscher Verlag.

Horn. L. (1989). *A Natural History of Negation*. Chicago: Chicago University Press.

Jamieson, E. A. (2018). *Questions, biases, and 'negation': Evidence from Scots varieties*. Ph. D. thesis, University of Edinburgh.

Krifka, M. (2015). Bias in commitment space semantics: declarative questions, negated questions, and question Tags. *In Proceedings of SALT 25*, pp. 328–345.

Krifka, M. (2017). Negative polarity questions as denegations of assertions. In C. Lee, F. Kiefer, and M. Krifka (Eds.), *Contrastiveness in Information Structure, Alternatives and Scalar Implicatures*, pp. 359–398. Berlin: Springer.

Ladd, D. R. (1980). *The Structure of Intonational Meaning, Evidence from English*. Bloomington: Indiana University Press.

Ladd, D. R. (1981). A first look at the semantics and pragmatics of negative questions and tag questions. *In Proceedings of the CLS 17*, pp. 164–171.

Nagata. S. (2024). A note on negative questions from an evidentiality perspective. *Tsukuba English Studies 42*, 121–140.
Quirk, R., S. Greenbaum, G. Leech, and J. Svartvik (1972). *A Grammar of Contemporary English*. London: Longman.
Romero, M. (2015). High negation in subjunctive conditionals and polar questions. *In Proceedings of Sinn und Bedeutung 19*, pp. 499–516.
Romero, M. and C.-H. Han (2004). On negative questions. *Linguistics and Philosophy 27*, 609–658.
Sadock, J. M. (1971). Queclaratives. *In Papers from the 7th Regional Meeting of the Chicago Linguistics Society*, pp. 223–231.
Sadock, J. M. (1974). *Towards a Linguistic Theory of Speech Acts*. New York: New York Academic Press.
Searle, J. R. (1969). *Speech Acts: An Essay in the Philosophy of Language*. Cambridge: Cambridge University Press.
Stephenson, T. (2007). Judge dependence, epistemic modals, and predicates of personal taste. *Linguistics and Philosophy 30*, 487–525.
Sudo, Y. (2013). Biased polar questions in English and Japanese. In D. Gutzmann and H.-M. Gärtner (Eds.), *Beyond Expressives: Explorations in Use-Conditional Meaning*, pp. 275–295. Leiden: Brill.
Taniguchi, A. (2016). Negative inversion exclamatives and speaker commitment. *In Proceedings of ConSOLE XXIV*, pp. 309–323.
Tanuguchi, A. (2017). *The formal pragmatics of non-at-issue intensification in English and Japanese*, Ph. D. thesis, University of Edinburgh.
Tanuguchi, A. (2018). Positive vs. negative inversion exclamatives. *In Proceedings of Sinn und Bedeutung 21*, pp. 1225–1240.
Wilder, C. (2013). English 'emphatic *do*'. *Lingua 128*, 142–171.
Wood, J. (2014). Affirmative semantics with negative morphosyntax: Negative exclamatives and the New English so AUXn't NP/DP construction. In R. Zanuttini and L. Horn (Eds.), *Micro-Syntactic Variation in North American English*, pp. 71–114. Oxford: Oxford University Press.
Woods, R. (2014) The syntax of orientation shifting: Evidence from English high adverbs. *In Proceedings of ConSOLE XXII*, pp. 205–230.