

BIAS AND PROSODY IN JAPANESE NEGATIVE POLAR QUESTIONS

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# BIAS AND PROSODY IN JAPANESE NEGATIVE POLAR QUESTIONS

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This dissertation investigates the correlation between prosody and the speaker's bias in Japanese negative polar questions (henceforth, NPQs) without a sentence final particle. I argue that the prosodic contrast of the negative morpheme *-na'i* between accented and deaccented variants is correlated with the presence or polarity of the speaker's epistemic bias: while NPQs with deaccented *-nai* (P-type NPQs) often convey positive epistemic bias, NPQs with accented *-na'i* (NN-type NPQs) convey negative epistemic bias or represent that the speaker has no epistemic bias. In this respect, Japanese NPQs show a bifold difference with English NPQs, in the way they express the polarity of bias, and in the way they divide NPQs into subgroups. Some evidence is given to show that the prosodic patterns in Japanese NPQs are neither accidental nor in free variation, but rather intimately and robustly related to distinctions in the speaker's bias. Also, a case where the prosodic contrast disappears is discussed. I reject the analysis which claims that the prosodic contrast is due to post-focus pitch reduction, and argue that the contrast is due to deaccentuation, a phenomenon which should not be identified with is demonstrably distinct from post-focus reduction.

I also discuss the non-truth-conditional aspect of the meanings of Japanese NPQs (e.g. bias). I argue that NN-type NPQs (those with negative bias) and P-type NPQs also demonstrate epistemic bias (concerning belief or expectation) and desiderative bias (concerning desire). I clarify several conditions which are required for each type of Japanese NPQ to be asked felicitously to convey a specific kind of

epistemic bias (“epistemic” here is the general term independent of specific modal flavors). These findings point to directions for further work on other types of Japanese NPQs.

I also introduce the results of two types of experiment, a naturalness rating test and a comprehension test, which were conducted to support my claim concerning the correlation between prosody and bias in Japanese NPQs. I show that the results are consistent with those claims.

## BIOGRAPHICAL SKETCH

Satoshi Ito was born on January 15, 1981 in Nagoya, Aichi Prefecture, Japan. After graduating from Nagoya Gakuin High School (currently Nagoya High School), he attended International Christian University (Tokyo, Japan) from 1999 to 2003, where he received his degree of Bachelor of Arts in Liberal Arts. He then enrolled in the graduate program in Department of Language and Information Sciences at the University of Tokyo, where he completed his research project entitled “Single-pair Answers and Pair-list Answers in *wh*-questions with Singular *wh*” and received his degree of Master of Arts in Linguistics in 2006. After getting his M.A., he enrolled in the Ph.D. program in Department of Language and Information Sciences at the University of Tokyo in 2006, taking a Leave of Absence in July 2007, and withdrawing in 2010. Since August 2007, he has been enrolled in the graduate program in Linguistics at Cornell University.

For my parents,  
with gratitude and love

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## TABLE OF CONTENTS

BIOGRAPHICAL SKETCH .....	iii
DEDICATION .....	iv
ACKNOWLEDGMENTS .....	v
TABLE OF CONTENTS .....	vii
LIST OF FIGURES .....	xi
LIST OF TABLES .....	xii
LIST OF ABBREVIATIONS .....	xiii
CHAPTER ONE:	
INTRODUCTION	
1.1. Introduction .....	1
1.2. Overview of the dissertation .....	2
1.2.1. Chapter 2 .....	2
1.2.2. Chapter 3 .....	3
1.2.3. Chapter 4 .....	4
1.2.4. Chapters 5 and 6 .....	5
CHAPTER TWO:	
PREVIOUS WORK ON NEGATIVE POLAR QUESTIONS	
2.1. English Negative Polar Questions .....	6
2.1.1. Ladd (1981) .....	6
2.1.1.1. Tag Questions .....	8
2.1.1.2. Comments on Ladd (1981) .....	10
2.1.2. Büring and Gunlogson (2000) .....	13
2.1.2.1. Comments on Büring and Gunlogson (2000) .....	18

2.1.3. Romero and Han (2004) .....	19
2.1.3.1. Comments on Romero and Han (2004) .....	27
2.1.4. Reese (2006) .....	28
2.1.4.1. Comments on Reese (2006) .....	32
2.2. Japanese Negative Polar Questions .....	33
2.2.1. Aihara (2009) .....	33
2.2.1.1. Comments on Aihara (2009) .....	34
2.2.2. Sudo (2013) .....	36
2.2.2.1. Comments on Sudo (2013) .....	43
2.2.3. Hara and Kawahara (2012) .....	47
2.2.3.1. Comments on Hara and Kawahara (2012) .....	49
2.3. Summary of Previous Studies .....	49

CHAPTER THREE:  
NEGATIVE POLAR QUESTIONS IN JAPANESE

3.1. Introduction .....	58
3.2. Morphosyntactic characteristics of Japanese NPQs .....	58
3.3. Prosodic patterns of Japanese NPQs; P-type vs. NN-type .....	63
3.4. Evidence for two distinct prosodic types .....	72
3.4.1. <i>Yes/no</i> answers to Japanese NPQs .....	72
3.4.2. Polarity Items .....	77
3.4.3. Attachment of <i>no/noda</i> .....	81
3.5. Neutralization of the prosodic distinction .....	86
3.6. Is the prosodic contrast due to post-focus reduction? .....	103
3.6.1. Focus and the prosodic patterns in Japanese NPQs .....	104
3.6.2. Against the post-focus reduction approach .....	106

3.7. Summary .....	108
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**CHAPTER FOUR:  
MORE ON THE MEANING OF NN-TYPE AND P-TYPE**

4.1. Introduction .....	111
4.2. More on the meaning of NN-type NPQs .....	111
4.2.1. “Inference on the spot” condition .....	111
4.2.2. Desiderative bias in NN-type NPQs .....	121
4.3. More on the meaning of P-type NPQs .....	129
4.3.1. P-type NPQs and information gaps .....	129
4.3.2. P-type NPQs to express the speaker’s opinion/belief .....	135
4.3.3. P-type as a suggestion or polite request .....	141
4.4. Summary .....	143

**CHAPTER FIVE:  
EXPERIMENTAL INVESTIGATION OF JAPANESE NEGATIVE POLAR  
QUESTIONS**

5.1. Introduction .....	146
5.2. Methods .....	149
5.2.1. Materials .....	149
5.2.2. Recording .....	152
5.2.3. Stimuli .....	153
5.2.4. Participants and procedure .....	154
5.3. Results and Discussion .....	155
5.3.1. Comprehension test .....	155
5.3.2. Naturalness rating test .....	156
5.4. Summary .....	160

CHAPTER SIX:  
CONCLUSIONS

6.1. Summary ..... 163  
6.2. Directions for future research .....165

REFERENCES .....170

## LIST OF FIGURES

<b>Figure 3.1</b>	Deaccented negation in interrogative <i>taka'ku-nai?</i> ( $\langle ?\neg p, B_s p \rangle$ ) ..... 64	64
<b>Figure 3.2</b>	Accented negation in interrogative <i>taka'ku-na'i?</i> ( $\langle ?\neg p, B_s \neg p \rangle$ or $\langle ?\neg p, \emptyset \rangle$ ) ..... 69	69
<b>Figure 3.3</b>	Negation in declarative <i>taka'ku-na'i</i> ( $\langle \neg p, B_s \neg p \rangle$ ) ..... 70	70
<b>Figure 3.4</b>	Accented negation in interrogative <i>gakusee-zya-na'i?</i> ( $\langle ?\neg p, B_s \neg p \rangle$ or $\langle ?\neg p, \emptyset \rangle$ ) ..... 86	86
<b>Figure 3.5</b>	Deaccented negation in interrogative <i>gakusee-zya-nai?</i> ( $\langle ?\neg p, B_s p \rangle$ ) ..... 89	89
<b>Figure 3.6</b>	Negation in declarative <i>gakusee-zya-na'i</i> ( $\langle \neg p, B_s p \rangle$ ) ..... 90	90
<b>Figure 3.7</b>	F0 contour in interrogative <i>nom-a'nakat-ta?</i> ( $\langle ?\neg p, B_s p \rangle$ , $\langle ?\neg p, B_s \neg p \rangle$ , or $\langle ?\neg p, \emptyset \rangle$ ) ..... 93	93
<b>Figure 3.8</b>	F0 contour in declarative <i>nom-a'nakat-ta</i> ( $\langle \neg p, B_s \neg p \rangle$ ) ..... 96	96
<b>Figure 3.9</b>	The F0 contours of <i>tetudatte kure-nai</i> in (75a) (left) and (75b) (right) (Ito and Oshima to appear: Figure2) ..... 97	97
<b>Figure 3.10</b>	Deaccented negation in interrogative <i>no'nde-nai?</i> in (76a) ..... 98	98
<b>Figure 3.11</b>	Accented negation in interrogative <i>no'nde-na'i?</i> in (76b) ..... 98	98
<b>Figure 3.12</b>	F0 compression as post-focus reduction (Ishihara 2003: p. 53) ..... 107	107
<b>Figure 3.13</b>	Deaccented negation in interrogative <i>taka'ku-nai?</i> ( $\langle ?\neg p, B_s p \rangle$ ) (= Figure 1) ..... 108	108
<b>Figure 5.1</b>	AA (top left), AD (top right), and DD (bottom) patterns of <i>nagaku-nai?</i> (Hwang and Ito 2014: Figure 1 and Figure 2) ..... 147	147
<b>Figure 5.2</b>	Mean naturalness ratings depending on the bias and Public Evidence (P.E.) conditions (Hwang and Ito 2014: Figure 3) ..... 157	157

## LIST OF TABLES

<b>Table 2.1</b>	Negative questions vs. Tag questions .....	12
<b>Table 2.2</b>	Context types in English polar questions (B&G2000: (34)) .....	15
<b>Table 2.3</b>	Evidential Bias in English polar questions .....	37
<b>Table 2.4</b>	Evidential Bias and Epistemic Bias in English polar questions (Sudo 2013: (19)) .....	39
<b>Table 2.5</b>	Evidential Bias and Epistemic Bias in Japanese polar questions (Sudo 2013: (33)) .....	39
<b>Table 3.1</b>	Inflected forms of verbs with V-final root .....	99
<b>Table 3.2</b>	Inflected forms of verbs with C-final root .....	100
<b>Table 4.1</b>	Meaning of NN-type NPQ and P-type NPQ .....	143
<b>Table 5.1</b>	Expected correlation between epistemic bias and prosodic pattern (Hwang and Ito 2014: Table 1) .....	150
<b>Table 5.2</b>	Percentages of correct responses in the comprehension test (Hwang and Ito 2014: Table 2) .....	155
<b>Table 5.3</b>	Results of statistical analyses (Hwang and Ito 2014: Table 3) .....	159

## LIST OF ABBREVIATIONS

Acc	accusative
Aux	auxiliary
Cop	copula
Dat	dative
Evid	evidential
Gen	genitive
Ger	gerundive
KA	Japanese particle for existential quantifiers (used with an indeterminate)
Loc	locative
MO	Japanese particle for universal quantifiers (used with an indeterminate)
N	contracted form of NO
Neg	negation
NO	nominalizer in Japanese
NODA	NO + copula
Nom	nominative
NZYA	contracted form of “NO + ZYA”
Part	discourse particle
Past	past tense
Plt	polite form
Q	question particle
Top	topic
ZYA	contracted form of “copula + topic”

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

In this dissertation, I investigate the correlation between epistemic bias and prosody in Japanese negative polar questions (henceforth, NPQs) without a sentence-final particle. In formal semantics, it is often assumed that the meaning of a question is a set of propositions which are the (possible) answers to the question (Hamblin 1958, 1973; Karttunen 1977; Groenendijk and Stokhof 1984). According to this idea, a positive polar question and its corresponding negative polar question have the same meaning in their truth-conditional aspect (i.e., both of them denote  $\{p, \neg p\}$ ). This dissertation focuses on the non-truth conditional aspect of question meaning: the speaker's bias (toward a particular answer) conveyed by negative polar questions.

As we will see in the next chapter, it has been reported that the surface syntactic position of negation is correlated with the presence (or absence) of the speaker's epistemic bias in English NPQs (Romero and Han 2004). However in Japanese, the syntactic position of negation is fixed in NPQs (and also in negative declarative sentences). Therefore, the presence (or the polarity) of the speaker's bias cannot be marked syntactically in the same way as English NPQs. I argue that the prosodies of Japanese NPQs correlates with the presence (or polarity) of the speaker's epistemic bias. This is the main claim of the dissertation: the deletion of the lexical accent (i.e., deaccenting) of the negative morpheme *-na'i* in a NPQ often (but not always) conveys the speaker's positive epistemic bias; that is, deaccentuation signals that the speaker expects or believes the positive answer to be true. In contrast, retention of the lexical accent on the negative morpheme *-na'i* represents two possible non-truth-conditional meanings. It may represent the speaker's negative epistemic bias; that is, that the speaker

expects or believes the negative answer to be true. Alternatively, it may represent that the speaker has no epistemic bias; that is, that the speaker has no expectation or belief regarding whether the positive answer is true or the negative answer is true.

In addition, through a comparison with English NPQs, this dissertation clarifies some similarities and differences between Japanese NPQs (without a sentence-final particle) and English NPQs.

## **1.2 Overview of the dissertation**

### **1.2.1 Chapter 2**

The organization of this dissertation is as follows. In next chapter, we will overview previous work on English NPQs and Japanese NPQs which is relevant to this dissertation. Section 2.1 focuses on previous research on English NPQs. Ladd (1981) is the seminal work concerning the speaker's epistemic bias conveyed by English NPQs (and also by English tag questions). Büring and Gunlogson (2000) discuss the correlation between contextual evidence and polar questions: what kind of contextual evidence allows or prohibits polar questions (not only negative polar questions but also positive polar questions) to be asked. Romero and Han (2004) propose a compositional analysis to derive the contrast between INPQs and ONPQs (see next chapter for the definitions of INPQs and ONPQs) semantically, assuming the speaker's bias is provoked through what they define as a VERUM operator. Reese (2006) argues against Romero and Han's approach, pointing out some problems with their analysis. It will be shown also in this dissertation that Romero and Han's approach is not applicable to Japanese NPQs at least without modifications. Section 2.3 moves on to previous research on Japanese NPQs. Aihara (2009) applies Romero and Han's VERUM approach to Japanese NPQs and argues that Japanese NPQs with the particle *ka* require VERUM to be involved (and hence, conveyance of the speaker's bias) while NPQs with the

sentence-final particle *no* do not have this requirement. Sudo (2013) claims that it is necessary to consider two kinds of bias in order to characterize various kinds of NPQs (not only English NPQs but also several types of Japanese NPQs). Neither of these previous studies pays attention to the prosodic characteristics observed in Japanese NPQs. In this respect, Hara and Kawahara (2012) differs from other previous work. They focus on the prosodic contrast in adjectives preceding the negative morpheme –*na'i* and argue that the lexical accent of an adjective is deleted (i.e., deaccented) only when public evidence for the truth of the positive answer is shared among the interlocutors; adjectives are not deaccented when such evidence is not shared.

### 1.2.2 Chapter 3

In Chapter 3, after looking at the morphosyntactic characteristics of Japanese NPQs, we will focus on the prosodic properties of Japanese NPQs. I will argue that two kinds of prosodic patterns in Japanese NPQs mark differences with respect to the presence (or the polarity) of the speaker's epistemic bias. In Section 3.4, three kinds of data are given to show that those two prosodic patterns are neither accidental or in free variation but rather serve to express distinctions regarding the speaker's epistemic bias. First, the choice of a tag answer (comparable to *yes* or *no* in English) to a NPQ differs depending on the prosody of the NPQ (Section 3.4.1). Second, the use of polarity items (positive polarity items vs. negative polarity items) differs depending on the prosodic pattern of the NPQ; positive polarity items are compatible with NPQs with deaccented negation, while negative polarity items are compatible with NPQs with accent-retained negation (Section 3.4.2). Third, the position of *no/noda*, which is usually assumed to be a nominalizer (plus copula *da*), depends on the prosodic pattern of the NPQ: it precedes –*na'i* in NPQs with deaccented –*nai*, while it follows –*na'i* in NPQs with accent-retained (Section 3.4.3). In Section 3.5, we will consider the case where the prosodic

contrast disappears. The prosodic contrast is neutralized in the case where a NPQ contains a simple verb predicate. In Section 3.6, I will discuss if the “deaccentuation” of the negative morpheme is truly a case of deaccentuation. In my previous joint work with David Y. Oshima, Ito and Oshima (to appear), we argued that the “deaccentuation” is not “deaccenting” but a case of post-focus reduction. However, in this dissertation, I argue that the deletion of the lexical accent of the negative morpheme should not be regarded as an example of post-focus reduction, where the pitch is merely “compressed”, but rather analyzed as genuine “deaccentuation” (i.e., complete loss of the lexical accent).

### **1.2.3 Chapter 4**

In Chapter 4, we will explore in more detail the meaning of Japanese NPQs. In Section 4.2.1, I will discuss the issue of when the speaker’s negative epistemic bias is or has to be formed in order for a NPQ with accent-retained negation to be asked felicitously. The data given in this section suggests that it is not required that the polarity of the speaker’s epistemic bias shift from positive to negative, as has been assumed implicitly in previous work. Rather, what is required for the felicitous usage of a NPQ with accent-retained negation is that negative epistemic bias does not exist prior to the discourse situation (i.e., negative bias has to be newly formed during the discourse). In Section 4.2.2, I demonstrate that not only the speaker’s expectation or belief but also his desire (i.e., desiderative bias) can be conveyed by NPQs with accent-retained negation and that in such a case the polarity of the bias cannot be positive but has to be negative. The semantic/pragmatic aspects of the other type of NPQs, NPQs with deaccented negation, will be discussed in the rest of the chapter. Chapter 4 (especially, Section 4.3) explores the details of this type of NPQ. I show first that NPQs with deaccented negation can convey a type of positive bias which is not either epistemically positive or

desideratively positive. Second, this type of NPQ cannot convey desiderative bias regardless of whether the polarity of bias is positive or negative. Third, this type of NPQ is used to express the speaker's opinion or belief whose polarity is positive (not negative). Fourth, these NPQs can be used as suggestions or a polite requests.

#### **1.2.4 Chapters 5 and 6**

In Chapter 5, I will introduce my joint work with Hyun Kyung Hwang, Hwang and Ito (2014), which discusses the results of two types of experiment on Japanese NPQs, a comprehension test and a naturalness rating test. These were conducted to support my claim, based on intuitive judgments, that the prosodic contrast in Japanese NPQs is correlated with the speaker's epistemic bias. The results are consistent with the main claims of this dissertation and provide further support for them. I further discuss some problems with Hwang and Ito (2014) in Section 5.4. Chapter 6 concludes this dissertation.

## CHAPTER 2

### PREVIOUS WORK ON NEGATIVE POLAR QUESTIONS

#### 2.1 English Negative Polar Questions

##### 2.1.1. Ladd (1981)

Ladd (1981) observes a systematic ambiguity in English negative polar questions, between what he calls INSIDE NEGATION and OUTSIDE NEGATION. Consider the following examples taken from Ladd.<sup>1</sup>

- (1) (Situation: Kathleen and Jeff have just come from Chicago on the Greyhound bus to visit Bob in Ithaca.)

Bob: You guys must be starving. You want to go get something to eat?

Kathleen: Yeah, **isn't there a vegetarian restaurant around here** –  
Moosewood, or something like that?

Bob: Gee, you've heard of Moosewood all the way out in Chicago, huh?  
OK, let's go there.

(Ladd 1981: (3))

- (2) (Situation: Bob is visiting Kathleen and Jeff in Chicago while attending CLS.)

Bob: I'd like to take you guys out to dinner while I'm here – we'd have  
time to go somewhere around here before the evening session tonight,

---

<sup>1</sup> Some native speakers seem to feel that the negative polar question in (2) is almost impossible in the context provided, and that negation is better not preposed in the inside negation context of this question. For these speakers, it is more natural to ask *Is there no vegetarian restaurant around here?*. However even such speakers accept the following as an example of an ambiguous negative polar question in English:

(i) A: I'm taking the bus to Boston today.

B: a. Oh, really. Don't you like driving? (Inside Negation)

b. But, don't you like driving? (Outside Negation)

don't you think?

Kathleen: I guess, but there's not really any place to go in Hyde Park.

Bob: Oh, really, **isn't there a vegetarian restaurant around here?**

Kathleen: No, about all we can get is hamburgers and souvlaki.

(ibid.: (4))

(1) is an example of outside negation. Ladd says, "Kathleen uses the negative question (...) to ask for confirmation of something she believes to be true" (p. 164) and that "the negation is somehow outside the proposition under question – what is being questioned is the speaker's belief  $p$ " (p. 165). In contrast, (2) is an example of inside negation. Ladd states: "Bob had previously assumed the truth of the proposition *there is a vegetarian restaurant around here*, but has now inferred from what Kathleen says that this proposition is actually false, and is using the negative question to check this new inference" (pp. 164-165) and that "the negation is inside the proposition under question, so that what is being questioned is the inference  $\neg p$ " (p. 165).

The following is a summary of Ladd's observations about English negative polar questions from Büring and Gunlogson (2000).

(3) a. Outside Negation

The speaker believes a proposition  $p$  and wants confirmation of  $p$ .

b. Inside Negation

The speaker had previously assumed  $p$  and wants confirmation for the inference that  $\neg p$ .

(Büring and Gunlogson 2000: (6))

Ladd also mentions that the presence of polarity items disambiguates inside and outside

negation in English negative polar questions, as shown below.

- (4) a. Isn't Jane coming too? (Ladd 1981: (9a))  
b. Isn't Jane coming either? (ibid.: (9b))

The positive polarity item (PPI) *too* is used in (4a), and the polar question is interpreted as having an outside negation reading. The speaker believes that Jane is coming and wants confirmation in (4a). In contrast, the negative polarity item (NPI) *either* is used in (4b), and the polar question is interpreted with an inside negation reading. In (4b), the speaker had previously assumed that Jane is coming and wants confirmation for the inference that Jane is not coming. Ladd states, “the NEG (= negation) is not in the proposition under question, and the positive polarity item *too* is used” (p. 166) in (4a), whereas “the NEG is part of the proposition under question, and we find *either*” (p. 166) in (4b). Ladd does not mention the distinction between negative polar questions with preposed negation and those with non-preposed negation such as (5).

- (5) Is Jane not coming? (cf. Isn't Jane coming?)

Regarding the contrast between preposed and non-preposed negation in negative polar questions, Romero and Han (2004) claims that this contrast need not but may convey the speaker's epistemic bias. This issue is discussed in Section 2.1.3.

### 2.1.1.1 Tag Questions

Ladd also refers to a parallelism between negative questions (NQs) and tag questions (TQs) in English. According to Ladd, TQs have two distinct intonation

patterns, which reflect a difference of the scope of negation. He uses the following terminology for the anatomy of TQs.

(6) This is your book, isn't it?

MAIN SENTENCE TAG

One intonation pattern for TQs is those with a NUCLEAR TAG. Ladd says of these, “Nuclear tags have a separate nucleus or nuclear pitch accent, generally preceded in the rhythm of the sentence by a noticeable pause or intonational boundary” (p. 167) and that “TQs with nuclear tags seem to state or assert a speaker’s assumption, with the tag signaling something like a hedge” (p. 167). The other intonation pattern for TQs is those with POSTNUCLEAR TAG. Ladd states: “Postnuclear tags have no separate nucleus, the pitch contour on the tag merely continuing the nuclear contour begun at the preceding nucleus in the main sentence; generally, too, there is noticeably less of a pause or boundary before the tag” (p. 167) and “[i]n the postnuclear tags, (...) the speaker is checking or reconfirming an assumption; compared to the nuclear tags, real doubt or uncertainty is conveyed” (p. 168).

These two types of TQs behave differently in terms of their acceptability with polarity items. In nuclear TQs, the occurrence of PPIs and NPIs can be predicted from the polarity of the main sentence (7-9). In postnuclear TQs, on the other hand, PPIs can be used even when the main sentence is a negative sentence (10); the occurrence of NPIs unpredictably ranges from totally unacceptable as in (11) to totally acceptable as in (12).

### Nuclear TQs

(7) a. Jane is coming too/\*either, isn't she? (ibid.: (18))

b. Jane is not coming \*too/either, is she? (ibid.: (20))

- (8) a. \*You are going to lift a finger to help, aren't you? (ibid.: (22b))  
 b. You are not going to lift a finger to help, are you? (ibid.: (22a))
- (9) a. \*You didn't eat something, did you? (ibid.: (24b))  
 b. You didn't eat anything, did you? (ibid.: (24a))

### Postnuclear TQs

- (10)a. Jane is coming too/\*either, isn't she? (ibid.: (19))  
 b. Jane is not coming too/??either, is she? (ibid.: (21))
- (11)a. \*You are going to lift a finger to help, aren't you? (ibid.: (23b))  
 b. \*You are not going to lift a finger to help, are you? (ibid.: (23a))
- (12)a. You didn't eat something, did you? (ibid.: (25b))  
 b. You didn't eat anything, did you? (ibid.: (25a))

Ladd concludes: “(Nuclear TQs) appear to be, in effect, double-barreled speech acts, with a basic assertion conveyed by the main sentence and some sort of hedge or deference to the hearer conveyed by the tag. (...) As for scope of negation, it works within the main sentence exactly as in any assertion; the tag is formed by a simple polarity reversal” (pp. 168-169) whereas “(Postnuclear TQs) seem to be true questions rather than hedged assertions. (...) The scope of negation does not seem to follow the placement of the negative element in any obvious way, and it may be that postnuclear TQs are, in effect, a pragmatically specialized type of NQs with outside NEG”(p. 169). With this last observation, Ladd links TQs, in particular postnuclear TQs, to outside negation.

### **2.1.1.2 Comments on Ladd (1981)**

I set aside in this section the data involving TQs whose main sentence is affirmative like (7a) and (10a.) As Ladd observes, the distribution of polarity items indicates that nuclear TQs are similar to inside NQs (e.g., NPIs can occur in both of them, while PPIs cannot) and that postnuclear TQs are similar to outside NQs (e.g., PPI *too* can occur in postnuclear TQs as well as in outside NQs). That is, negation is inside the proposition in nuclear TQs and inside NQs (i.e., negation takes scope over the proposition), but not in postnuclear TQs and outside NQs. However, Ladd doesn't clearly describe the correlation between NQs and TQs in terms of their pragmatic/semantic properties (note that Ladd claims that postnuclear TQs are a pragmatically specialized type of NQ with outside NEG, based on the scope of negation). It seems, in fact, that the pragmatic/semantic properties of postnuclear TQs are more like those of inside NQs. Compare Ladd's pragmatic/semantic definitions of NQs and TQs;

(3') a. Outside Negation

The speaker believes a proposition  $p$  and wants confirmation of  $p$ .

b. Inside Negation

The speaker had previously assumed  $p$  and wants confirmation for the inference that  $\neg p$ .

c. Nuclear TQs

The speaker states or asserts his assumption, with the tag signaling some sort of hedge or deference to the hearer.

d. Postnuclear TQs

The speaker is checking or reconfirming an assumption; real doubt or uncertainty is conveyed.

The speaker’s “doubt or uncertainty” in postnuclear TQs (3’d) seems comparable to the speaker’s “wanting confirmation for the inference that  $\neg p$ ” in inside NQs (3’b). Actually, it is acceptable to utter *there is a vegetarian restaurant around here, isn’t there?* with postnuclear tag intonation in context (2) while the same sentence is infelicitous in this context with nuclear tag intonation (Whitman (p.c.)). This native judgment suggests that postnuclear TQs are similar to inside NQs pragmatically (recall that inside NQs can be asked legitimately in context (2) but outside NQs cannot). However, note that context (1) also allows only postnuclear tag intonation (Whitman (p.c.)). In other words, nuclear tag intonation is out both in context (1) and context (2). (Strictly speaking, a nuclear TQ is a little bit better in context (1) than in context (2). But, it is still odd (Whitman (p.c.)).)

Also, it appears that the pragmatic/semantic description of nuclear TQs in (3’c) is similar to that of outside NQs in (3’a). Ladd says, “(Nuclear TQs) appear to be, in effect, double-barreled speech acts, with a basic assertion conveyed by the main sentence and some sort of hedge or deference to the hearer conveyed by the tag.” (p. 168) This is quite close to the pragmatic role which outside NQs play.

Further pursuing the correlation between NQs and TQs, we find a mismatch between polarity sensitivity properties and pragmatic function, as shown in Table 2.1. That is, outside NQs show similarity to postnuclear TQs with respect to the distribution of polarity items, but they are similar to nuclear TQs in terms of their pragmatic function. Similarly, while inside NQs are similar to nuclear TQs with respect to the distribution of polarity items, they are similar to postnuclear TQs in terms of their pragmatic function.

	Polarity sensitivity/ scope of negation	Pragmatic/semantic properties
Outside NQs	≈ Postnuclear TQs	≈ Nuclear TQs
Inside NQs	≈ Nuclear TQs	≈ Post nuclear TQs

**Table 2.1: Negative questions vs. Tag questions**

The focus of this dissertation is on Japanese negative polar questions. It is not clear if Japanese has an interrogative form exactly corresponding to English TQs. Hence, I leave the issue of a possible comparison between NQs and TQs in Japanese for future research.

As for NQs, Ladd captures the intuitive distinction between outside negation and inside negation as a scope ambiguity between negation and question operator  $Q$  – a proposition under negation takes scope over negation in outside negation (i.e.,  $\neg > Q > p$ ) while question takes scope over the negated proposition (i.e.,  $Q > \neg > p$ ). However, as Ladd mentions, “it is not clear what it means to speak of the NEG as being outside the questioned proposition, nor is it clear, if the NEG is indeed outside, what it is doing in the sentence at all.” (p. 165) Romero and Han (2004) recapture Ladd’s intuition as a scope ambiguity between negation and the epistemic operator VERUM (see Section 2.1.3).

### 2.1.2 Büring and Gunlogson (2000)

Büring and Gunlogson (2000) show that some morphosyntactic diagnostics support the semantic intuitions described in Ladd (1981). Generally, English *some* shows the behavior of a PPI, and hence, it cannot be under the scope of a negative element, as shown below.

(13) There is no/ \*isn’t some vegetarian restaurant around here. (B&G 2000: (10a))

However, *not some* can appear in polar questions. The following examples are taken from Büring and Gunlogson (2000).

(14) a. Isn’t there some vegetarian restaurant around here? (ibid.: (11a))

- b. Is there no vegetarian restaurant around here? (ibid.: (11b))
- c. Isn't there any vegetarian restaurant around here?

The polar question with *no*, (14b), has to be interpreted as an INNER NEGATION POLAR QUESTION (INPQ), with what Ladd called the inside negation reading. We find the same interpretation with (14c), as indicated by the presence of NPI *any*. On the other hand, the interpretation of (14a), the polar question with *not some*, has to be that of an OUTER NEGATION POLAR QUESTION (ONPQ), which, as we have seen, Ladd called the outside negation reading. As we saw in (4), Ladd observes that polarity items disambiguate the inside and outside negation readings in English polar questions. The intuition is confirmed by these morphosyntactic diagnostics, as shown in the following conversations.

- (15) a. S: There is a Japanese restaurant on this street, right?  
 A: Yes, there is. Do you want to go there for dinner?  
 S: Oh, wait. **Isn't there some vegetarian restaurant around here too/  
 \*either?**
- b. S: I want to eat sushi. Is there any Japanese restaurant on this street?  
 A: No. Unfortunately, there is no Japanese restaurant in this town.  
 S: **Is there no vegetarian restaurant around here \*too/ either?**

Based on this contrast (i.e., *no* vs. *not some*), Büring and Gunlogson give a characterization of the context types where each kind of English polar question (positive polar question (PPQ), ONPQ, and INPQ) can be asked felicitously. The summary is given in table 2.2.

		PPQ	ONPQ	INPQ
Contextual evidence	For $p$	OK	*	*
	Neutral	OK	OK	*
	Against $p$	*	OK	OK

**Table 2.2: Context types in English polar questions (B&G2000: (34))**

In Table 2.2,  $p$  is described as the proposition expressed by a polar question. For example, the proposition expressed by the PPQ *Is it raining?* is the set of worlds in which it is raining. Note that this is a purely terminological convention. It is not the claim of Büring and Gunlogson that the question *Is it raining?* asserts this proposition. Similarly, for negative polar questions (both ONPQs and INPQs), they assume that  $p$  is the non-negated propositional content. Hence, for expository purposes, they assume that the three polar questions, *Is there a vegetarian restaurant around here?*, *Isn't there some vegetarian restaurant around here?*, and *Is there no vegetarian restaurant around here?*, all express the same  $p$  ('there is a vegetarian restaurant around here.'). However, this doesn't mean that they claim that those three polar questions have the same meaning.<sup>2</sup>

For example, for PPQs, Table 2.2 shows that an English PPQ is not "neutral" with respect to contextual evidence; thus it is incompatible with a contextual bias against  $p$  while compatible with a contextual bias for  $p$  (or with no contextual bias, 'Neutral' in Table 2.2)). Consider the following examples taken from Büring and Gunlogson.

(16) Context: S(speaker) and A(addressee) are talking long-distance on the phone.

(neutral context)

a. S: What's the weather like out there? Is it raining?

b. S: What's the weather like out there? Is it sunny? (ibid.: (17))

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<sup>2</sup> Büring and Gunlogson use  $p'$  instead of  $p$  in Table 2 originally. However,  $p'$  is confusing because it is sometimes used to indicate the complement. Hence, in this dissertation, I use  $p$  instead of  $p'$ .

(17) Context: A enters S's windowless computer room wearing a dripping wet raincoat.

(contextual evidence for  $p$  = 'it is raining')

a. S: What's the weather like out there? Is it raining?

b. #S: What's the weather like out there? Is it sunny? (ibid.: (18))

In a neutral context such as (16), where there is no particular evidence, English PPQs can be asked felicitously. However, a speaker can ask a PPQ not only in a neutral context but also in a biased context such as (17). In that case, the contextual bias cannot be against  $p$ , but it has to be for  $p$ .<sup>3</sup> In other words, PPQs can be asked felicitously when there is no compelling contextual evidence against  $p$ . Büring and Gunlogson define CONTEXTUAL EVIDENCE as below:

(18) Contextual Evidence:

Evidence that has just become mutually available to the participants in the current discourse situation. (ibid.: (21))

Similarly, Table 2.2 shows that (i) an ONPQ is incompatible with evidence for  $p$  but doesn't require evidential bias against  $p$  and (ii) an INPQ requires contextual evidence against  $p$ . Consider the examples below taken from Büring and Gunlogson.

(19) ONPQs

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<sup>3</sup> For example, suppose a PPQ *Is it sunny?*, where  $p$  = It is sunny. In (17), the contextual evidence is against  $p$  because the addressee is wearing a dripping wet raincoat (i.e., it is expected to be raining). Hence, the PPQ *Is it sunny?* cannot be asked felicitously. On the other hand, if the question is a PPQ *Is it raining?*, where  $p$  = It is raining, then *Is it raining?* can be asked felicitously since the contextual evidence is for  $p$ .

a. Context: A and S want to go out for dinner. S has been to Moosewood a couple years back.

A: Where do you want to go for dinner? (**neutral with respect to  $p$** )

S: Isn't there some vegetarian restaurant around here? (ibid.: (29))

b. Context: A and S want to go out for dinner. S has been to Moosewood a couple years back.

A: I bet we can find any type of restaurant you can think of in this city. Make your choice! (**contextual evidence for  $p$** )

#S: Isn't there some vegetarian restaurant around here? (ibid. (30))

c. Context: A and S want to go out for dinner. S has been to Moosewood a couple years back.

A: Since you guys are vegetarians, we can't go out in this town, where it's all meat and potatoes. (**contextual evidence against  $p$** )

S: Isn't there some vegetarian restaurant around here? (ibid.: (31))

(19) is an example of an ONPQ, where  $p$  is 'there is a vegetarian restaurant around here'. ONPQs can be asked felicitously when (i) contextual evidence is neutral as in (19a) or (ii) contextual evidence is against  $p$  as in (19c). That is, ONPQs can be asked felicitously when there is no compelling contextual evidence for  $p$ .

(20) INPQs

a. Context: A and S want to go out for dinner.

A: Where do you want to go for dinner? (**neutral with respect to  $p$** )

#S: Is there no vegetarian restaurant around here? (ibid.: (24))

b. Context: A and S want to go out for dinner.

A: I bet we can find any type of restaurant you can think of in this city. Make your choice! (**contextual evidence for  $p$** )

#S: Is there no vegetarian restaurant around here? (ibid.: (25))

c. Context: A and S want to go out dinner.

A: Since you guys are vegetarians, we can't go out in this town, where it's all meat and potatoes. (**contextual evidence against  $p$** )

S: Is there no vegetarian restaurant around here? (ibid. (26))

In the case of INPQs, they cannot be asked felicitously when (i) the contextual evidence is neutral as in (20a) or (ii) the contextual evidence is for  $p$  as in (20b). In order for an INPQ to be asked felicitously, the contextual evidence has to be against  $p$  as in (20c).

### 2.1.2.1 Comments on Büring and Gunlogson (2000)

Büring and Gunlogson pay careful attention to the contextual restrictions for asking each type of English polar question (i.e., PPQs, INPQs, and ONPQs), and they come up with a set of generalizations about the pragmatic restrictions on them (we will discuss contextual evidence to some extent in Chapter 4). However, it is not clear if the given situations are appropriate examples for describing the intended types of contextual evidence. For example, (19b) is given as an example of contextual evidence for  $p$ , where  $p$  is 'there is a vegetarian restaurant around here'. But, in (19b), the addressee A just "bet" that there is a vegetarian restaurant around there, and it is not sure if this is really the case. It would seem to be necessary, in order to make Büring and Gunlogson's point, to provide a situation which involves evidence which makes A think  $p$  (and the evidence

should have the effect of making S think  $p$  too). It might be misleading to regard A's utterance in (19b) as contextual "evidence" for 'there being a vegetarian restaurant around here'.

### 2.1.3 Romero and Han (2004)

Romero and Han (2004) give the following two generalizations about negative polar questions.<sup>4</sup>

#### (21) a. Generalization I

NPQs with preposed negation necessarily carry the epistemic implicature that the speaker believed or expected that the positive answer is true. NPQs with non-preposed negation do not necessarily carry this epistemic implicature.

(Romero and Han 2004: (4))

#### b. Generalization II

Preposed negation NPQs *Aux+n't p?* are ambiguous between a reading double-checking  $p$  and a reading double-checking  $\neg p$ . The use of a PI (Positive Item = PPI) versus an NI (Negative Item = NPI) disambiguates the question towards the  $P$ -QUESTION READING and the  $\neg P$ -QUESTION READING respectively. PI-QUESTIONS but not NI-QUESTIONS are licit in suggestion contexts without contradiction. (ibid.: (31))

The former part of Generalization I in (21a) is a restatement of Ladd's findings in (3); both ONPQs and INPQs indicate that the speaker believes (or used to believe)  $p$ . The latter part is not mentioned in Ladd. As we saw above, while Ladd only referred to NPQs

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<sup>4</sup> Romero and Han use the terminology *yes/no(yn)*-questions for PQs. I replace it with 'polar questions' or 'PQs' just for expository purposes.

with preposed negation, Romero and Han discuss NPQs with non-preposed negation such as (5) too. They argue that an NPQ with non-preposed negation does not have to carry the speaker's epistemic bias, but may carry that bias (thus, for example, it carries the speaker's positive epistemic bias (not  $\neg p$  but  $p$ ) when it occurs with a PPI, although such NPQs may have an archaic flavor). I explain Generalization II in (21b) as well as Romero and Han's terminology, comparing it with Ladd's definition of NPQs in (3), repeated below.

(3) a. Outside Negation

The speaker believes a proposition  $p$  and wants confirmation of  $p$ .

b. Inside Negation

The speaker had previously assumed  $p$  and wants confirmation for the inference that  $\neg p$ .

In both ONPQs and INPQs, the speaker wants confirmation; s/he wants confirmation for  $p$  in ONPQs and for the inference that  $\neg p$  in INPQs. In (21b), the confirmation for  $p$  is labeled by Romero and Han as "a reading double-checking  $p$ " or " $p$ -question reading", and the confirmation for (the inference that)  $\neg p$  is renamed as "a reading double-checking  $\neg p$ " or " $\neg p$ -question reading". With respect to the forms of NPQs, Romero and Han name NPQs with preposed negation and a PPI such as (4a) "PI-questions" and NPQs with preposed negation and an NPI such as (4b) "NI-questions". PI-questions and NI-questions have to be interpreted as  $p$ -questions and  $\neg p$ -questions respectively, as Ladd pointed out. As stated in (21b), PI-questions but not NI-questions are licit in suggestion contexts without contradiction, as shown below.

(22) Dialog between two editors of a journal in 1900:

- a. A: I'd like to send this paper out to a senior reviewer, but I'd prefer somebody who has experience with our regulations.
- b. S: Hasn't Frege already reviewed for us? He'd be a good one. (ibid.: (27))

(23) Dialog between two editors of a journal in 1900:

- a. A: I'd like to send this paper out to a senior reviewer, but I'd prefer somebody new.
- b. S: (i) #Hasn't Frege reviewed for us yet? He'd be a good one.  
(ii) Hasn't Frege not reviewed for us yet? He'd be a good one. (ibid.: (28))

(22b) is an example of a PI-question, where negation is preposed and the PPI *already* is used, and (23b-i) is an example of an NI-question, where negation is preposed and NPI *yet* is used. The PI-question in (22b) can be used to suggest  $p$  (= “that Frege has already reviewed for us”) whereas the NI-question in (23b-i) cannot be used to suggest  $\neg p$  (= “that Frege has not reviewed for us yet”). As shown in (23b-ii), the second negative element (i.e., *not* preceding *reviewed*) is necessary in order to get the right meaning.

Romero and Han raise four questions in (24) concerning the generalizations in (21), and they answer those questions by positing the assumption in (25).

- (24) a. Why does preposed negation force the *existence* of an epistemic implicature, whereas non-preposed negation does not?
- b. Why are preposed negation questions – more generally, negative polar questions with an epistemic implicature – ambiguous? In other words, what property of negation is it that, besides triggering an epistemic implicature, produces Ladd's  $p$ -question/ $\neg p$ -question ambiguity and its correlation with PIs vs. NIs?

- c. Why is the implicature raised by preposed negation a *positive* implicature, both in PI-questions and in NI-questions? That is, why is the polarity in the question as a whole opposite from that in the implicature?
- d. Why are PI-questions suitable in suggestion contexts for  $p$  whereas NI-questions cannot be used in suggestion contexts for  $\neg p$ ?

(ibid.: (i) – (iii), p. 624)

(25) Assumption:

Negation preposing in PQs necessarily contributes an epistemic operator VERUM.

(ibid.: (64))

Romero and Han define the epistemic operator VERUM as in (26), “where  $x$  is a free variable whose value is contextually identified with the addressee or the speaker (or with the individual sum of the addressee and the speaker)” (p. 626), “ $Epi_x(w)$  is the set of worlds that conform to  $x$ ’s knowledge in  $w$ ,  $Conv_x(w')$  is the set of worlds where all the conversational goals of  $x$  in  $w'$  are fulfilled (e.g., attain maximal information while preserving truth) and where  $CG_{w''}$  is the Common Ground or set of propositions that the speakers assume in  $w''$  to be true.” (p. 627)

(26)  $[[\text{VERUM}_i]]^{gxi} = [[\text{really}_i]]^{gxi} = \lambda p_{\langle s,t \rangle} \lambda w. \forall w' \in Epi_x(w) [\forall w'' \in Conv_x(w') [p \in CG_{w''}]]$   
 $= \text{FOR-SURE-CG}_x$  (for abbreviation) (ibid.: (43))

The definition in (26) describes the intuition that “*really* or VERUM is used not to assert that the speaker is entirely certain about the truth of  $p$ , but to assert that the speaker is

certain that *p* should be added to the Common Ground (CG)” (p. 627).<sup>5</sup> Thus, “rather than a purely epistemic, *really* or VERUM is a conversational epistemic operator” (p. 627).

In the framework of Romero and Han’s analysis, Ladd’s ambiguity between outside negation and inside negation can be re-captured as the scope ambiguity between negation and VERUM. Negation takes scope over VERUM in PI-questions ( $\approx$  ONPQs) while VERUM takes scope over negation in NI-questions ( $\approx$  INPQs). Polar questions with non-preposed negation do not license a VERUM operator. Hence, they denote a BALANCED PARTITION with two cells *p* and  $\neg p$ , and as a result, and they do not carry the speaker’s epistemic bias.<sup>6</sup> Consider the following semantic computation of each type of NPQ (ignoring the presupposition contributed by *either* and *too*).<sup>7</sup>

(27) NPQ with non-preposed negation

- a. Is Jane not coming?
- b. LF: [<sub>CP</sub>Q [not [Jane is coming]]]
- c. [[Jane is coming]] =  $\lambda w. \text{come}(j, w)$
- d. [[not [Jane is coming]]] =  $\lambda w. \neg \text{come}(j, w)$
- e. [[Q [not [Jane is coming]]]]( $w_0$ )  
=  $\lambda q [q = \lambda w. \neg \text{come}(j, w) \vee q = \lambda w. \neg \neg \text{come}(j, w)]$

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<sup>5</sup> Romero and Han argue that the epistemic adverb *really* also carries the speaker’s epistemic bias for the opposite polarity, as shown in (i). Epistemic *really* should be distinguished from the intensifier *really* in (ii) and from ‘in-actuality’ *really* in (iii), which roughly means ‘in the actual world rather than in some other relevant world’.

(i) Sandra really is clever. (ibid.: (i-a), footnote 11)  
(ii) Sandra is really clever. (ibid.: (i-b), footnote 11)  
(iii) Gore really won the election though Bush is president. (ibid.: (ii), footnote 11)

<sup>6</sup> Note that NPQs with non-preposed negation contain VERUM if they contain the conversational epistemic *really* or Verum Focus (e.g., *DID* in ‘She DID go to the Himalayas.’), where the truth value of a proposition is insisted or emphasized with phonological stress.

<sup>7</sup> Romero and Han assume the following denotation for the question morpheme *Q*, which yields Hamblin (1973)/Karttunen (1977) denotations for polar questions.

(i) [[*Q*]] =  $\lambda p_{\langle s,t \rangle} \lambda w_s \lambda q_{\langle s,t \rangle} [q = p \vee q = \neg p]$

= {“that Jane is not coming”, “that Jane is coming”} (ibid.: (65))

f. Partition:  $\{p, \neg p\}$  (ibid.: (66))

(28) INPO/NI-question

a. Isn't Jane coming either?

b. LF:  $[_{CP}Q \text{ VERUM } [_{\text{not}} [_{IP} \text{ Jane is coming}]] \text{ either}]]$

c.  $[[CP]](w_0)$

$= \lambda q [ q = \lambda w. \forall w' \in \text{Epi}_x(w) [ \forall w'' \in \text{Conv}_x(w') [ \lambda w''' . \neg \text{come}(j, w''') \in \text{CG}_{w''} ] ] \vee$   
 $q = \lambda w. \neg \forall w' \in \text{Epi}_x(w) [ \forall w'' \in \text{Conv}_x(w') [ \lambda w''' . \neg \text{come}(j, w''') \in \text{CG}_{w''} ] ] ]]$

= {“it is for sure that we should add to CG that Jane is not coming”,  
“it is not for sure that we should add to CG that Jane is not coming”}

(ibid.: (68))

d. Partition:  $\{\text{FOR-SURE-CG}_{x\neg p}, \neg \text{FOR-SURE-CG}_{x\neg p}\}$  (ibid.: (69))

(29) ONPQ/PI-question

a. Isn't Jane coming too?

b. LF:  $[_{CP}Q \text{ not } [_{\text{VERUM}} [_{IP} \text{ Jane is coming too}]]]$

c.  $[[CP]](w_0)$

$= \lambda q [ q = \lambda w. \neg \forall w' \in \text{Epi}_x(w) [ \forall w'' \in \text{Conv}_x(w') [ \lambda w''' . \text{come}(j, w''') \in \text{CG}_{w''} ] ] \vee$   
 $q = \lambda w. \neg \neg \forall w' \in \text{Epi}_x(w) [ \forall w'' \in \text{Conv}_x(w') [ \lambda w''' . \text{come}(j, w''') \in \text{CG}_{w''} ] ] ]]$

= {“it is not for sure that we should add to CG that Jane is coming”,  
“it is for sure that we should add to CG that Jane is coming”} (ibid.: (73))

d. Partition:  $\{\text{FOR-SURE-CG}_{xp}, \neg \text{FOR-SURE-CG}_{xp}\}$  (ibid.: (74))

NPQs with preposed negation (i.e., INPQs and ONPQs) have UNBALANCED PARTITIONS, with the FOR-SURE-CG option in one cell and all the other degrees of certainty about the conversational move in the other cell. This shape of the partition describes the intuition that INPQs and ONPQs are epistemically-biased questions. Furthermore,  $p$  and

$\neg p$  are the arguments of the epistemic operator in ONPQs and INPQs respectively, which captures the intuition that ONPQs have to be interpreted as the  $p$ -question reading (i.e., double-checking of  $p$ ) while INPQs have to be interpreted as the  $\neg p$ -question reading (i.e., double checking of  $\neg p$ ). Since the double-checked argument is a positive proposition in ONPQs, PIs are acceptable while NIs (= NPIS) are unacceptable. In contrast, a negative proposition is the double-checked argument in INPQs, and hence, NIs are acceptable while PIs (= PPIs) are unacceptable. Romero and Han give the following answers to the questions which they raised in (24).

(30) a. Answer to (24a)

Polar questions with preposed negation necessarily have VERUM, whereas polar questions with non-preposed negation may or may not have VERUM (depending on polarity focus stress and presence/absence of *really*). An unbalanced partition arising from a polar question with VERUM is a meta-conversational move asking for a fine degree of certainty and is, by the Principle of Economy, felicitous only if a previous epistemic bias exists.<sup>8</sup> Polar questions with normal intonation without VERUM result in simple, economical, balanced partitions and are elicited when the speaker has no previous significant belief about  $p$  or  $\neg p$ . (ibid.: (i'), p. 633)

b. Answer to (24b)

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<sup>8</sup> Romero and Han assume two conversational “moves”, *assertion* and *questioning a move*. Assertion of  $p$  is the instruction to add  $p$  to the Common Ground; it is governed by Grice’s (1975) Maxim of Quality (“Say  $p$  only if you have at least indirect evidence that  $p$  is true”). Questioning a move means that the speaker can question the instruction to add  $p$  to the Common Ground. Romero and Han propose that the Principle of Economy, as defined below, governs the second conversational move (i.e., questioning a move).

(i) Principle of Economy: Do not use a meta-conversational move unless necessary (to resolve epistemic conflict or to ensure Quality).

A necessary ingredient for the  $p/\neg p$  ambiguity is VERUM, which (...) triggers the existence of an epistemic implicature. Ladd's intuitive  $p/\neg p$  ambiguity is genuine scope ambiguity between negation and VERUM. The  $p$ -reading arises when negation scopes over VERUM; in this LF, PIs are licensed under VERUM while NIs are not, given that VERUM intervenes between them and negation. The  $\neg p$ -reading arises when VERUM scopes over negation; in this LF, PIs are deviant under the immediate scope of negation whereas NIs are licit.

(ibid.: (ii'), p. 638)

c. Answer to (24c)

When the intent of a question is to ask the addressee for conclusive evidence for a proposition  $p$ , that proposition  $p$  is the addressee's implied proposition and the complement proposition  $\neg p$  is the epistemic implicature of the speaker. When the intent of a question is to ask the addressee for any possible (weak or strong) doubts about a proposition  $p$ ,  $p$  is the original belief of the speaker and its complement  $\neg p$  is the addressee's proposition. This idea, combined with polarity of the "double-checked" proposition, yields the correct implicature pattern. PI-questions ask the addressee for any doubt about  $p$ , and hence,  $p$  is the speaker's original belief. NI-questions and *NOT*-questions ask the addressee for conclusive evidence for  $\neg p$ ; thus, the complement proposition  $p$  is the content of the speaker's epistemic implicature.<sup>9</sup> Finally, *really*-questions and positive polar questions with Verum Focus ask the addressee for conclusive evidence for  $p$ ; in consequence, the complement proposition  $\neg p$  is the original belief of the speaker. In sum, in all cases, the polarity in the question and the polarity in the implicature are opposite.

(ibid.: (iii'), p. 652)

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<sup>9</sup> "*NOT*-questions" are NPQs with polarity focus (i.e., VERUM focus) on negation.

d. Answer to (24d)

If the addressee posits a question R in search of a suggestion, the speaker infers that the addressee does not know any answer to R. A PI-question, whose intent is to ask the addressee for any doubt about the possible answer  $p$ , is compatible with this conversational assumption. An NI-question, whose intent is to ask the addressee for complete evidence for the possible answer  $\neg p$ , is inconsistent with this conversational assumption. More generally, polar questions that intend to ask the addressee for complete evidence are not suitable in suggestion contexts without contradiction. (ibid.: (ii-bis'), p. 653)

### **2.1.3.1 Comments on Romero and Han (2004)**

Romero and Han's analysis is attractive mainly because the distinction between NI-questions ( $\approx$  INPQs) and PI-questions ( $\approx$  ONPQs) can be captured semantically and calculated compositionally. Their semantic distinction is described as a consequence of the scope difference between negation and VERUM operator. However, as we see in the next section, Reese (2006) points out some major problems with Romero and Han's VERUM analysis. In addition to those major problems, the VERUM approach cannot be extended to Japanese NPQs due to the different way in which NPQs cluster, as we discuss in next chapter. Romero and Han observed that there exists a specific type of NPQs in English (i.e., NPQs with non-preposed negation), where the speaker's epistemic bias does not have to be conveyed. This observation is important for this dissertation, as I demonstrate in the next chapter that some NPQs in Japanese exhibit the same property.

Romero and Han observe that embedded NPQs in English are interpreted ambiguously between unbiased and biased questions. However, this ambiguity is not observed in Japanese NPQs, as we see below.

#### 2.1.4 Reese (2006)

As we saw in the previous section, Romero and Han analyzed the difference between INPQs and ONPQs as a semantic distinction: according to their approach, INPQs and ONPQs each have a different semantic denotation. As opposed to this, Reese (2006) argues that the ambiguity between INPQs and ONPQs is not semantic but pragmatic, and he gives an analysis in the framework of SEGMENTED DISCOURSE REPRESENTATION THEORY (SDRT). He points out three problems with Romero and Han's analysis.

First, though Romero and Han claim that NPQs with preposed negation always carry the speaker's epistemic bias, Reese points out that the bias doesn't have to be epistemic but can be deontic (for example, "the speaker feels that the addressees *ought* to be ashamed of themselves" (p. 335)) or desiderative (for example, "the speaker *wants* the positive answer to be true" (p. 335)), giving examples adopted from Huddleston and Pullum (2002).

(31)a. Aren't you ashamed of yourselves? (Deontic)

b. Don't you like it? (Desiderative)

(Reese 2006: (12), adopted from Huddleston and Pullum 2002: p. 880)

Because the VERUM operator in (26) is an epistemic operator, Reese argues that the fact that NPQs with preposed negation can carry the speaker's non-epistemic bias is problematic for Romero and Han.

Second, *yes/no*-answers to NPQs do not correspond to the propositions contained in the partitions which the NPQs are assumed to denote. For example, suppose that the addressee answered 'Yes' to the question 'Isn't Jane coming too/either?'. In this

case, though the answer expresses the proposition *Jane is coming* ( $\approx$  FOR-SURE-CG<sub>x</sub> Jane is coming), this is unpredictable from the partition denoted by the INPQ ‘Isn’t Jane coming either?’ (in contrast, it is predictable from the partition denoted by the ONPQ ‘Isn’t Jane coming too?’). I repeat each partition denoted by ‘Isn’t Jane coming either?’ (INPQ) and ‘Isn’t Jane coming too?’ (ONPQ) below. As shown in (28d), the partition denoted by ‘Isn’t Jane coming either?’ doesn’t have “FOR-SURE-CG<sub>x</sub> Jane is coming”, which the answer ‘Yes’ is assumed to express, as its set member.

(28) INPQ

- a. Isn’t Jane coming either?
- b. LF: [<sub>CP</sub>Q VERUM [not [<sub>IP</sub> Jane is coming] either]]
- d. Partition: {FOR-SURE-CG<sub>x</sub>¬Jane is coming,  
¬FOR-SURE-CG<sub>x</sub>¬Jane is coming}

(29) ONPQ

- a. Isn’t Jane coming too?
- b. LF: [<sub>CP</sub>Q not [VERUM [<sub>IP</sub> Jane is coming too]]]
- d. Partition: {FOR-SURE-CG<sub>x</sub>Jane is coming,  
¬FOR-SURE-CG<sub>x</sub>Jane is coming}

To make matters worse, simple negative answers are problematic for both INPQs and ONPQs. If the addressee answers ‘No’ in the above example, the answer expresses the proposition *Jane is not coming* ( $\approx$  FOR-SURE-CG<sub>x</sub> ¬Jane is coming). However, this answer is not predictable in either case of INPQ or ONPQ. According to the partitions in (28) and (29), the INPQ predicts that negative answer expresses ¬FOR-SURE-CG<sub>x</sub>¬Jane is coming, and the ONPQ predicts that negative answer expresses ¬FOR-SURE-CG<sub>x</sub> Jane is coming. Both are wrong predictions. To sum up;

(32) S: Isn't Jane coming either/too?

A: Yes.

a. = Jane is coming

b.  $\approx$  FOR-SURE-CG<sub>x</sub> Jane is coming (prediction of ONPQ (29d))

c.  $\neq$  FOR-SURE-CG<sub>x</sub> $\neg$ Jane is coming (prediction of INPQ (28d))

(Reese 2006: (14), p. 336)

(33) S: Isn't Jane coming either/too?

A: No.

a. =  $\neg$  Jane is coming

b.  $\neq$   $\neg$  FOR-SURE-CG<sub>x</sub> Jane is coming (prediction of ONPQ (29d))

c.  $\neq$   $\neg$  FOR-SURE-CG<sub>x</sub> $\neg$  Jane is coming (prediction of INPQ (28d))

(ibid.: (15), p. 336)

To address these problems, Romero (2005) suggests that VERUM is an expressive operator and that simple positive answers affirm the embedded proposition  $\varphi$  rather than the whole *FOR-SURE-CG<sub>x</sub> $\varphi$*  (similarly, simple negative answers do not negate the entire *FOR-SURE-CG<sub>x</sub> $\varphi$*  but rather the embedded  $\varphi$ ). However, Reese further argues against this revision, referring to the common assumption in existing accounts of expressive meaning (Kratzer 1999, Potts 2005), where the computation of expressive content is assumed to be independent of the computation of descriptive content. Hence, if this assumption is correct and VERUM is an expressive operator, then it should be impossible for VERUM to have scope relations with negation to distinguish the INPQ reading from the ONPQ reading and vice versa. Here Reese appears to point out a basic quandary posed by Romero's "VERUM as an expressive operator" solution.

Third, though Romero and Han argue that the distribution of PPIs and NPIs in NPQs can be explained by the constraint about the immediate scope of negation, this claim is not uncontroversial. As we saw in the previous section, Romero and Han assume two different LF structures in (34) to capture Ladd's ambiguity between INPQs and ONPQs.

(34) a. INPQ: [*Q* VERUM [Neg Jane is coming {either/\*too}]]

b. ONPQ: [*Q* Neg [VERUM Jane is coming {\*either/too}]]

Romero and Han adopt Linebarger's (1987) analysis to account for the distribution of polarity items in NPQs. The NPI *either* is licensed in an INPQ such as (34a) since it is in the immediate scope of negation and VERUM doesn't intervene between negation and the polarity item. On the other hand, the PPI *too* is not licensed because it is in the immediate scope of negation. In contrast, the NPI is not licensed in an ONPQ such as (34b) because it is not in the immediate scope of negation due to the intervention of VERUM. The PPI is licensed because it is not in the immediate scope of negation. Reese shows a counter-example against this immediate scope constraint and argues against Romero and Han.

(35) It is not certain [that there are *any* vegetarian restaurants around here].

(ibid.: (17), p. 337)

The NPI *any* is licensed in (35) though the epistemic operator *certain* intervenes between negation and the polarity item. Reese points out that the immediate scope constraint cannot account for the grammaticality of (36) either.

(36) a. \* It is not certain [that Jane is coming *either*].

b. It is not certain [that Jane is coming *too*]. (ibid.: (18), p. 337)

#### 2.1.4.1 Comments on Reese (2006)

The second problem which Reese points out is crucial to Romero and Han's VERUM analysis since expressive contents and descriptive contents are computed independently, according to the common assumption about expressive meaning. As Reese points out, if VERUM is an expressive operator as Romero stipulates, it cannot be in a scope relation with negation, which is assumed to operate on descriptive content, and hence, the main claim of Romero and Han – the ambiguity between the ONPQ reading ( $\approx p$ -reading) and INPQ reading ( $\approx \neg p$ -reading) stems from the scope ambiguity between VERUM and negation – collapses.

On the other hand, it is not clear that the third problem pointed by Reese is really fatal for Romero and Han's analysis since there is a possibility that the epistemic operator *certain* used by Reese in examples such as (35-36) is not sensitive to weak NPIs such as *any* but sensitive to strong NPIs such as *either*. Also, as for the first problem pointed out by Reese, it might be possible to assume other LF operators for non-epistemic biases such as deontic and desiderative.

As for non-epistemic biases (e.g., deontic bias and desiderative/bouletic bias), Reese cites example (31b), where the speaker's desire is assumed to be relevant (in other words, the speaker's desiderative/bouletic bias is assumed to be conveyed), from Huddleston and Pullum (2002) and says, "the speaker *wants* the **positive** answer to be true" (p. 335; emphasis added with boldface) in (31b). However, Huddleston and Pullum, in their original work, assume that the speaker's desiderative/bouletic bias conveyed in (31b) is not positive but negative, stating; "[a] plausible context for [(31b)], though not the only one, is that her behaviour or her remarks suggest that she doesn't

like it: I ask the question to confirm whether this is so. In such a context the question is biased towards the **negative** answer *She doesn't like it.*" (p. 879; emphasis added with boldface) Is the speaker's epistemic (and/or desiderative) bias conveyed by NPQs either positive or negative? We return to this question in Chapter 4, where we see that the data, not only about epistemic bias but also about desiderative/bouletic bias in Japanese NPQs, suggest that the polarity of the speaker's "epistemic" bias (in the broad sense) conveyed by an INPQ in Japanese should not be positive but has to be negative. See Section 4.2 for details.

## 2.2 Japanese Negative Polar Questions

### 2.2.1 Aihara (2009)

Aihara (2009) applies Romero and Han's VERUM approach to Japanese NPQs. He claims that Japanese NPQs are interpreted differently depending on whether the sentence final particle is *no* (37a) or *ka* (38a), as shown below.<sup>10</sup>

- (37)a. Kimi-wa kinoo gakkoo-e ik-anakat-ta NO?  
 You-Top yesterday school-to go-Neg-Past NO  
 'Did you not go to school yesterday?'
- b. Hai, ikimas-en desi-ta. / Iie, ikimasi-ta.  
 yes go(polite)-Neg Cop-Past / no go(polite)-Past  
 (lit.) 'Yes, I didn't.' / (lit.) 'No, I did.' (Aihara 2009: (2))

- (38)a. Kimi-wa kinoo gakkoo-e ik-anakat-ta KA?  
 You-Top yesterday school-to go-Neg-Past KA

<sup>10</sup> Aihara assumes that *ka* is the genuine sentence final particle for an interrogative sentence and that *no* is an instance of a sentential complementizer, not of a question particle, following Kuno (1973, 1980) and Kuwabara (2005). Hence, he analyzes that (37a) has the following construction with an unpronounced copula.

(i) Kimi-wa kinoo gakkoo-e ik-anakat-ta NO (desu KA)?  
 You-Top yesterday school-to go-Neg-Past C Cop Q

‘Did you not go to school yesterday?’

- b. Hai, ikimasi-ta. / #Iie, ikimas-en desi-ta.  
yes go(polite)-Past / no go(polite)-Neg Cop-Past  
‘Yes, I did.’ / # ‘No, I didn’t.’ (ibid.: (3))

The polarity of the answer tag (e.g., *hai* ‘yes’ and *iie* ‘no’) and that of its associate proposition do not match in (37), where *no* is involved, while they match in (38), where *ka* is involved. Aihara argues that *no*-NPQs such as (37a) are simple information seeking questions (without bias) while *ka*-NPQs such as (38a) necessarily carry the speaker’s epistemic bias. For example, in (38a), the speaker has the positive epistemic bias ‘the addressee went to school yesterday’. Aihara argues that it is odd to “simply pose a negative sentence by itself” (p. 14) in answering *iie* ‘no’ to the *ka*-NPQ in (38a) and that another sentence which can be evidence to negate the questioner’s bias needs to follow it (e.g., *Hiroshima-ni ryokoo-ni itte-ima’sita kara* ‘because I had been in Hiroshima for a trip’).<sup>11</sup> Adopting Romero and Han’s VERUM approach, he claims that Japanese *ka*-NPQs necessarily come with the conversational epistemic operator VERUM (just as NPQs with preposed negation do in English) while *no*-NPQs don’t.

### 2.2.1.1 Comments on Aihara (2009)

In this dissertation, I argue that the interpretational difference of an NPQ in Japanese (i.e., ONPQ reading vs. INPQ reading) depends on the distinction between retention and deletion of the lexical accent of the negative morpheme *-na’i*. Although we will take a closer look at the morphosyntactic and prosodic properties of Japanese NPQs in the next chapter, I introduce the topic of the lexical accent of *-na’i* here. As

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<sup>11</sup> Though Aihara judges the negative answer with *iie* ‘no’ in (38b) as bad, I disagree with his judgment. I find it totally acceptable as an answer to the NPQ in (38a), even without being followed by a sentence which provides evidence against the questioner’s positive epistemic bias.

Venditti (2005) states, “[i]n Japanese, pitch accent is a lexical property of a word, and thus the presence or absence of an accent on a particular syllable in a Japanese utterance can be predicted simply by knowing what word is being uttered.” (p. 173) However, the lexical accent of *-na’i* can be deleted in some NPQs. As I discuss in detail in this next section, this signals that the NPQ is interpreted as what Ladd calls ONPQ (see Section 3.6 for the discussion concerning whether the accent “deletion” of *-na’i* is the genuine deaccentuation or just a tonal compression.) In this dissertation, I follow the convention of putting an apostrophe after the accented mora to mark a lexical accent in the transcription of Japanese data. The mora before the apostrophe associates with the accentual fall in pitch, and is considered to be the location for the lexical accent. Hence, unaccented words and deaccented words do not have this marking.

Returning to Aihara (2009), it is not the case that *ka*-NPQs necessarily carry the speaker’s epistemic bias. Aihara does not take into account the possible prosodic patterns of Japanese NPQs. For example, the following *ka*-NPQ does not seem to carry the speaker’s epistemic bias when the negative morpheme *-na’i* retains its lexical accent.

(39) (Context: It’s raining today. A is looking at the weather forecast on his PC.)

A: Ashita’-wa a’me-zya na’i mitai desu yo.<sup>12</sup>  
 tomorrow-Top rain-ZYA Neg seem Cop Part

‘It seems that it doesn’t rain tomorrow.’

S: a. So’o desu ka. Asa’tte-wa doo desu ka?  
 so Cop KA day.after.tomorrow-Top how Cop KA

**A’me-zya na’i desu ka?**  
 rain-ZYA Neg Cop KA

‘Oh, is it so? How about the day after tomorrow? Is it not raining?’ (no bias)

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<sup>12</sup> Note that *-zya* in (39) is usually assumed to be the contracted form of *de wa*, where *de* is a conjugational form of the copula *da* and *wa* is topic marker. The grammaticality doesn’t change if we replace *-zya* with *de* in (39).

b. So'o desu ka. Asa'tte-wa doo desu ka?  
 so Cop KA day.after.tomorrow-Top how Cop KA

**A'me-zya nai desu ka?**  
 rain-ZYA Neg Cop KA

'Oh, is it so? How about the day after tomorrow? Isn't it raining?' (positive bias)

In (39a), where *-na'i* retains its lexical accent, S utters the NPQ just as an information seeking question. On the other hand, if S utters the NPQ with deaccented negation, as in (39b), then it signals that S has a positive epistemic bias 'it rains on the day after tomorrow' (e.g., S heard from another person that it might be raining on the day after tomorrow). Thus, we cannot say that Japanese *ka*-NPQs always involve the epistemic operator VERUM, as they do not always demonstrate epistemic bias. Whether they do or not depends on the prosody of the question, the topic of the next chapter. At this point the reader might wonder what prosody the NPQ in (38a) has. Since this NPQ involves the predicate of a simple verb, the prosodic distinction is unavailable (see Section 3.5 for the details).

### 2.2.2 Sudo (2013)

Sudo (2013) proposes that two kinds of biases (what he calls EVIDENTIAL BIAS and EPISTEMIC BIAS) are needed to characterize three kinds of polar questions (i.e., PPQ, ONPQ, and INPQ). As for evidential bias, he restates the generalization in Table 2.2, which was originally stated out by Büring and Gunlogson, with [+/- negative (positive)] features.<sup>13</sup> Hence, Büring and Gunlogson's generalization about contextual types for

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<sup>13</sup> Sudo gives the following definition for each type of Evidential Bias (-) and that of Evidential bias (+);

(i) Evidential Bias (-):

If a PQ is incompatible with contextual evidence for the positive (resp. negative) answer, the PQ is said to carry a [- positive] (resp. [- negative]) evidential bias. (Sudo 2013: (7))

English PQs, repeated below (the first table in Table 2.3), is represented as in the second table in Table 2.3.

		PPQ	ONPQ	INPQ
Contextual evidence	For $p$	OK	*	*
	Neutral	OK	OK	*
	Against $p$	*	OK	OK

	PPQ	ONPQ	INPQ
Evidential Bias	- negative	- positive	+ negative

**Table 2.3: Evidential Bias in English polar questions**

The second table in Table 2.3 describes the following facts: (i) the evidential bias cannot be negative in order for an English PPQ to be asked felicitously, (ii) the evidential cannot be positive in order for an English ONPQ to be asked felicitously, and (iii) the evidential bias has to be negative for an English INPQ to be asked felicitously.

In addition to evidential bias, Sudo claims that another kind of bias regarding the questioner's belief, desire, or rules/laws must be taken into consideration. He calls this kind of bias EPISTEMIC BIAS. Its definition is given below.

(40) Epistemic Bias:

If a PQ carries an implication compatible with the positive (resp. negative) answer based on what the speaker believes, the PQ is said to carry positive (resp. negative) epistemic bias.<sup>14</sup>

(ii) Evidential Bias (+):

If a PQ requires contextual evidence for the positive (resp. negative) answer, the PQ is said to carry a [+ positive] (resp. [+ negative]) evidential bias. (ibid.: (18))

<sup>14</sup> Sudo, considering examples of non-epistemic bias such as (31), says, "the 'modal flavor' of the epistemic bias is not always relative to the speaker's belief *per se*" (p. 283) and "what is essential about an epistemic bias is that it is based on the speaker's internal and private state, rather than something publicly shared by the conversational participants." (p. 282) Also, he assumes that "the

Consider the following examples to see how epistemic bias works.

(41)a. Context I: We just learned that Mary is left-handed, and are wondering who else is. I think John, who is not here, is probably left-handed too, but I am not sure.

S: Isn't John left-handed too? (ibid.: (10))

b. Context II: We just learned that Mary is left-handed, and are wondering who else is. Given its rarity, I believe that Mary is the only left-handed person among us, so I think it's very likely that John, who is not around, is right-handed.

S: #Isn't John left-handed too? (ibid.: (11))

(42)Context: You told me that you went to the party yesterday. I have absolutely no idea who else did.

S: a. Did John come to the party too?

b. #Didn't John come to the party too? (ibid.: (12))

(43)Context: Bill is right-handed and Mary is left-handed. We're searching for lefties, and wondering who else is lefty. John is using a pen with his right hand.

S: a. #Isn't John right-handed either?

b. Isn't John left-handed either? (ibid.: (16) modified)

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epistemic bias does not have to be based on the speaker's current belief state, but can be relative to what she believed before acquiring the contextual evidence." (pp. 282-283)

What (41) demonstrates is that ONPQs carry positive epistemic bias. In contrast, as shown in (42), epistemic bias is not present with PPQs. Example (43) shows that INPQs carry positive epistemic bias, and (43) necessarily implies that the speaker previously expected that John is left-handed.

Hence, according to Sudo, English polar questions are characterized as in Table 2.4.

	PPQ	ONPQ	INPQ
Evidential Bias	– negative	– positive	+ negative
Epistemic Bias	none	positive	positive

**Table 2.4: Evidential Bias and Epistemic Bias in English polar questions (Sudo 2013: (19))**

Assuming these two kinds of biases, Sudo gives a characterization for each of three kinds of Japanese PQs: PQs without a particle, PQs with *no*, and PQs with *desho*, as shown below.

	Evidential Bias	Epistemic Bias
PPQ-∅	– negative & – positive	none
ONPQ-∅		positive
INPQ-∅		none
PPQ- <i>no</i>	+ positive	none
ONPQ- <i>no</i>	none	positive
INPQ- <i>no</i>	+ negative	positive
PPQ- <i>desho</i>	none	positive
ONPQ- <i>desho</i>	– positive	negative
INPQ- <i>desho</i>	none	negative

**Table 2.5: Evidential Bias and Epistemic Bias in Japanese polar questions (Sudo 2013: (33))**

This dissertation focuses on Japanese PQs without a particle, and hence, I put aside the cases of PQs with a particle. Examples for Japanese PQs without a particle are provided below. Note that Sudo does not mention the prosodic distinction in Japanese NPQs; however I have added indication of lexical accents in the following examples.

(44) PPQs

a. Neutral Context

Context: S and A are looking for a left-handed person. S is wondering about John who is not around.

S:       **Jo'n-wa hidarikiki?**  
          John-Top lefty  
          'Is John a lefty?'

b. Negative Context

Context: Bill is right-handed and Mary is left-handed. S and A are searching for lefties, and wondering who else is lefty. John is using a pen with his right hand.

S:       **#Jo'n-wa hidarikiki?**

c. Positive Context

Context: Bill is right-handed and Mary is left-handed. S and A are searching for lefties, and wondering who else is lefty. John is using a pen with his left hand.

S:       **#Jo'n-wa hidarikiki?**<sup>15</sup>

Sudo claims that Japanese PPQs without a particle differ from English PPQs in terms of their evidential bias while they are similar to English PPQs with respect to not

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<sup>15</sup> I put “#” following Sudo’s generalizations. However, according to my intuition, it is not that unnatural to ask this PPQ in this context.

conveying any epistemic bias. According to Sudo, the evidential bias has to be [–negative] and [–positive] at the same time for Japanese PPQs without a particle to be asked felicitously. In other words, Japanese PPQs without a particle cannot be asked in any biased contexts.

(45) ONPQs

a. Neutral Context

Context: S and A are looking for a left-handed person among their common friends.

S:       **Da're-ka hidarikiki-zya-nai?**  
           who-KA lefty-ZYA-Neg  
           ‘Isn’t someone a lefty?’

b. Negative Context

Context: S and A are looking for a left-handed person. So, S asks all of his friends if they are left-handed. But, everyone answers that he is not left-handed.

S:       #(A-no tomodati,) **da're-ka hidarikiki-zya-nai?**  
           A-Gen friend       who-KA lefty-ZYA-Neg  
           ‘Isn’t someone a lefty (among your (= A’s) friends)?’

c. Positive Context

Context: S and A are looking for a left-handed person, and A finds a scissors for left-handed people in the kitchen of their dormitory.

A:       Ryo'o-no       ki'ttin-ni       hidarikiki-no   hasa'mi-ga  
           Dormitory-Gen kitchen-Loc lefty-Gen       scissors-Nom  
           a't-ta       yo!  
           exist-Past Part  
           ‘There was a scissors for lefty in the kitchen of the dormitory!’

S:       (Ryo'o-no)       **da're-ka hidarikiki-zya-nai?**

dormitory-Gen who-KA lefty-ZYA-Neg  
'Isn't someone (in our dormitory) a lefty?'

Sudo uses *dare-ka* 'somebody' and other *wh-KA* phrases as PPIs in order to eliminate the INPQ readings, as in (45). The examples in (45) suggest that Japanese ONPQs without a particle cannot be asked felicitously in negative contexts, and hence, they have to have a [– negative] evidential bias. Also, they carry epistemic bias, and (45a) and (45c) necessarily imply that the questioner expects that there is a left-handed person; that is, there is a positive epistemic bias.

(46) INPQs

a. Neutral Context

Context: S and A are looking for a left-handed person among their common friends.

S: #**Dare-mo hidarikiki-zya-na'i?**  
who-MO lefty-ZYA-Neg  
'Isn't anyone a lefty?'

b. Negative Context

Context: S and A are looking for a left-handed person. So, S asks all of his friends if they are left-handed. But, everyone answers that he is not left-handed.

S: (A-no tomodati(-mo),) **dare-mo hidarikiki-zya-na'i?**  
A-Gen friend-too who-MO lefty-ZYA-Neg  
'Isn't anyone a lefty (among your (= A's) friends (either))?'

c. Positive Context

Context: S and A are looking for a left-handed person, and S finds a scissors for left-handed people in the kitchen of their dormitory.

S:       #(Ryo'o-no)       **dare-mo hidarikiki-zya-na'i?**  
           dormitory-Gen who-MO lefty-ZYA-Neg  
           'Isn't anyone (in our dormitory) a lefty?'

In contrast with (45), Sudo uses *dare-mo* 'nobody' and other *wh-MO* phrases as NPIs to force the INPQ interpretations. The examples in (46) show that Japanese INPQs without a particle can be asked felicitously only in negative context. That is, they have [+ negative] evidential bias. Sudo mentions that Japanese INPQs without a particle do not carry any epistemic bias in contrast with English INPQs.

### 2.2.2.1 Comments on Sudo (2013)

Sudo (2013), like Aihara (2009), does not mention the prosodic differences between INPQs and ONPQs in Japanese. Also, Sudo uses the term "epistemic bias" to refer to not only the speaker's belief (epistemic) but also "[an] expectation stemming from the norm/rules (deontic) or what the speaker desires (bouletic)" (p. 283), and he argues that Japanese INPQs (without a particle) do not carry the speaker's epistemic bias, as shown in (46) (and in Table 2.5). However, as we will see later, Japanese INPQs can carry the speaker's negative bias in some contexts.

As previous studies point out, polarity items also make a clear distinction between INPQs and ONPQs. Sudo uses *wh-KA* phrases and *wh-MO* phrases as PPIs and NPIs respectively. However, some of these phrases (so-called indeterminate-*KA/-MO*) can be used both in affirmative declarative sentences and negative declarative sentences, as shown below.<sup>16</sup>

(47) a. Konga'kki-no       zyu'gyoo-wa **do're-mo** omosiro'i/omosi'roku-na'i

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<sup>16</sup> In (47b), the basic form for 'to come' is *kuru*. It changes to *ki* when past tense morpheme follows it and to *ko* when negation follows it.

this.semester-Gen class-Top which-MO interesting/interesting-Neg

(i) ‘Every class in this semester is interesting.’

(ii) ‘No class in this semester is interesting.’

b. Kinoo-no pa’atii-ni **da’re-ka** ki’-ta/ko’-nakat-ta.

Yesterday-Gen party-Dat who-KA come-Past/come-Neg-Past

(i) ‘Somebody came to yesterday’s party.’

(ii) ‘Somebody didn’t come to yesterday’s party. (But, I don’t remember who.)’

In (47), *dore-mo* and *dare-ka* can appear both in affirmative declarative sentences and in negative declarative sentences. In (47b), the negative declarative sentence prohibits the reading where  $\neg$  takes scope over  $\exists$  and only allows the reading where  $\exists$  takes scope over  $\neg$  as shown in (47b-ii). In this respect, it might be possible to say that *dare-ka* is a PPI (i.e., it cannot be under the scope of negation). But it can be confusing and misleading to use *wh-MO* phrases and *wh-KA* phrases as NPIs and PPIs respectively. In general, *wh-MO* phrases and *wh-KA* phrases in affirmative sentences are interpreted as universal quantifier and existential quantifier respectively. Previous literature has argued that *wh-MO* phrases in negative sentences are existential under negation, like English *any*. Therefore, it can be misleading to use *wh-MO* phrases as NPIs, whatever we might say about *wh-KA* phrases as PPIs.

However, note that it is not true that *wh-MO* phrases (so-called indeterminate-*MO*) are always ambiguous between PPIs and NPIs. First, for some of them (but not all of them), the deletion of their lexical accent can signal that they are used as NPIs. For example, in (47a), when *dore-mo* is pronounced without an accent on its first mora /do/, its following predicate cannot be affirmative (e.g., *omosiro’i* ‘interesting’) but has to be negative (e.g., *omosi’roku-na’i* ‘not interesting’), and *dore-mo* is interpreted as existential under negation (i.e., interpreted as an NPI) as in interpretation (47a-ii). In contrast, when *do’re-mo* is pronounced with an accent on /do/ as in (47a), either

affirmative predicate or negative predicate can appear. In other words, while the unaccented *dore-mo* always works as an NPI, the accented *do're-mo* is ambiguous between a PPI and an NPI. More generally, when an indeterminate with *MO* is deaccented, it is interpreted as an NPI. Note that, on the other hand, indeterminates with *KA* such as *da're-ka* in (47b) do not have this kind of prosodic variation. They cannot be deaccented. As in (47b), indeterminates with *KA* are always interpreted to be outside the scope of negation (when they appear in negative declarative sentences); because of the absence of scopal ambiguity, prosodic variation to mark them as NPIs might be unnecessary. However, concerning indeterminates with *MO* (especially, the accented ones), we can say that they are ambiguous between PPIs and NPIs.

Furthermore, the attachment of a case particle can also disambiguate some indeterminates with *MO* in some contexts, as shown below.

- (48) a. Da're-mo\*(-ga) sono pa'atii-ni it-ta.  
           who-MO-Nom the party-Dat go-Past  
           'Everybody went to the party.'
- b. Dare-mo(-ga) sono pa'atii-ni ik-ana'kat-ta.  
           who-MO-Nom the party-Dat go-Neg-Past  
           'Nobody went to the party.'

While the nominative case particle *-ga* is optional in a negative sentence such as (48b), it is required in an affirmative sentence such as (48a). On this basis it might be possible to say that *dare-mo* at least is a NPI among *wh-MO* phrases.<sup>17</sup> On the other hand, this disambiguation caused by the attachment of a case particle disappears in cases of

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<sup>17</sup> The accent pattern of *dare-mo* in (48a) can be different from that of *dare-mo* in (48b), which signals whether *dare-mo* is used as an NPI or a PPI. In (48a), *dare-mo* necessarily has its lexical accent on the first mora /da/. On the other hand, when the nominative case particle *-ga* is omitted in (48b), *dare-mo* is deaccented. Similarly, while *dore-mo* has its lexical accent on /do/ in (49a), it is not necessarily but can be deaccented in (49b).

indeterminate + *KA*. For example, when *dare-mo* is replaced with *dare-ka* ‘someone’ in (48), case particle *-ga* is optional in both (48a) and (48b). Thus, though there are some ways to disambiguate the interpretation of indeterminates with *KA/MO*, they are not consistently reliable. It would be fair to say that it is confusing and misleading to use *wh-KA* phrases and *wh-MO* phrases per se as PPIs and NPIs respectively (especially, treating *wh-MO* phrases as NPIs).

An additional issue is that, following previous research, Sudo uses *wh-MO* phrases as NPIs to disambiguate negative interrogative sentences (that is, INPQs from ONPQs) as in (45) and (46). However, this is not accurate, as the following counter-example demonstrates. The apostrophe in parentheses in (49b) indicates that the presence or absence of the lexical accent differs depending on the speakers and that it is optional (see footnote 17).

(49) a. Context: S and A came to a new restaurant in Ithaca for the first time. They had several dishes.

S:       Koko, do're-mo oisi'ku-nai?  
           here   which-MO tasty-Neg  
           ‘Isn’t everything tasty here?’

b. Context: S and A came to a new restaurant for dinner. S knows that A hasn’t eaten anything today and that she is really hungry. But, A doesn’t eat much.

S:       Koko, do<sup>(’)</sup>re-mo oisi'ku-na'i?  
           here   which-MO tasty-Neg  
           ‘Is everything not tasty here?’

In (49b), the question is uttered as an INPQ, in which the *wh-MO* phrase *do're-mo* can be used according to Sudo’s examples. However, the question can also be uttered as an

ONPQ as shown in (49a), where the speaker thinks that everything is tasty in the restaurant, and hence, the question carries a positive epistemic bias. Thus, it is possible to use *wh-MO* not only in INPQs but also in ONPQs. The most significant difference between (49a) and (49b) is in the prosodic patterns of the adjectival predicate *oisikunai*. While the lexical accent of *-nai* is deleted in (49a), it is retained in (49b) (see also footnote 17). In order to avoid the complexity of *wh-MO/-KA*, I use other polarity items in this dissertation (see Section 3.4.2).

### 2.2.3 Hara and Kawahara (2012)

Hara and Kawahara (2012) differ from the previous studies about Japanese NPQs reviewed above, in focusing on possible prosodic patterns of NPQs. They focus on the following two prosodic patterns of Japanese NPQs. An up-pointing arrow indicates rising intonation towards the end, which is the typical intonation pattern for Japanese interrogatives.

(50) Nihon-no yasai, takaku-nai?  
 Japan-Gen vegetables expensive-Neg  
 ‘Aren’t Japanese vegetables expensive?’

a. taka’ku nai↑  
 L%H\*+L L%H%

b. takaku nai↑  
 %LH- H%

(Hara and Kawahara 2012: (1))

The lexical accent of *taka’ku* is retained in (50a) while it is deleted in (50b), as the apostrophe indicates. Note that while Hara and Kawahara focus on the retention/deletion of the lexical accent of an adjective preceding the negative morpheme *-nai*, they do not mention the deaccentuation of the negative morpheme *-nai*. Hara and Kawahara

conducted an experiment (naturalness rating test) and, based on the result, claim that there is a correlation between the use of the deaccentuation of an adjective and the evidentiality associated with the proposition embedded in the utterance. That is, “the speaker uses deaccentuation when the speaker has public evidence stronger than hearsay or circumstantial evidence” (p. 355). According to the result of their experiment, “deaccentuation (of an adjective) marks the utterance as EVID, which requires a context where the interlocutors have evidence for the embedded proposition (i.e., the positive answer)” (p. 357) Look at the following example adopted from Hara and Kawahara.

(51) Public Evidence Context

A and B just went to a Japanese supermarket and realized that Japanese vegetables are twice as expensive as local ones. A asks B:

a. #taka'ku nai↑ (Accented)

b. takaku nai↑ (Deaccented) (ibid.: (7))

(52) No Public Evidence Context

A has just arrived HongKong and B told A that she can get Japanese vegetables from a Japanese supermarket. A asks B:

a. taka'ku nai↑ (Accented)

b. #takaku nai↑ (Deaccented) (ibid.: (8))

While the conversational participants share the public evidence that Japanese vegetables are expensive in context (51), no public evidence is available among the conversational participants in context (52). They argue that the deaccentuation is felicitous in (51) while the accented adjective is preferred in (52).

### 2.2.3.1 Comments on Hara and Kawahara (2012)

Regarding the prosody of Japanese NPQs, I focus mainly on the (de-)accentuation of the negative morpheme *-na'i*. As Hara and Kawahara point out regarding (50b), it is observed that an adjective preceding the negative morpheme can be deaccented in Japanese NPQs especially among younger speakers. My intuition is that the deaccentuation of an adjective does not correlate with evidentiality (e.g., public evidence), but is rather just one reflex of the phenomenon of an accented adjective with a deaccented negative morpheme. This phenomenon shares more general properties with the general pattern of accent deletion of the negative morpheme. Chapter 5 describes an experiment conducted to investigate if the deaccentuation of an adjective is really correlated with evidentiality. The result of the experiments fail to show any correlation between the deaccentuation of an adjective and the existence of public evidence. See Chapter 5 for details.

## 2.3 Summary of Previous Studies

In this chapter, we overviewed previous studies about NPQs in English and Japanese. The data look complicated, and the analyses and terminologies of individual researchers differ from each other in many ways. In this section, I will summarize the characteristics of NPQs in English and in Japanese discussed in previous studies and also review how Japanese NPQs are thought to be similar to and different from English NPQs, focusing on two aspects of NPQs: their forms and the matter of speaker bias.

First, we start with the NPQs in English. According to the previous studies summarized in the preceding sections of this chapter, English NPQs can be divided into two groups with respect to their form, those with preposed negation and those with non-preposed negation. While the former always convey the speaker's epistemic bias, the latter doesn't necessarily convey the speaker's epistemic bias (Romero and Han 2004).

Polarity items can be used to disambiguate the NPQs with respect to the speaker's epistemic bias. While PPIs can occur in ONPQs, NPIs cannot. Similarly, while NPIs can occur in INPQs, PPIs cannot (Ladd 1981, Büring and Gunlogson 2000, Romero and Han 2004, Reese 2006). NPQs with non-preposed negation are compatible with NPIs, without losing their "neutral" nature with respect to the speaker's epistemic bias. On the other hand, adding PPIs to NPQs with non-preposed negation forces them to convey the speaker's positive epistemic bias.

It has been considered that there are two types of bias involved in English NPQs, evidential bias and epistemic bias to use Sudo's (2013) term.<sup>18</sup> ONPQs in English are thought to convey the speaker's positive epistemic bias; this is a common claim in the previous studies on English NPQs (Ladd 1981, Büring and Gunlogson 2000, Romero and Han 2004, Reese 2006). On the other hand, the polarity of the speaker's epistemic bias conveyed in English INPQs is not completely clear. Recall Ladd's original example in (2), where Bob asks an INPQ, *Isn't there a vegetarian restaurant around here?*. Ladd explains his example as follows: "Bob had previously assumed the truth of the proposition *there is a vegetarian restaurant around here*, but has now inferred from what Kathleen says that this proposition is actually false, and is using the negative question to check this new inference." (pp. 164-165) It is true that Bob used to believe  $p$  (= there is a vegetarian restaurant around here) before hearing what Kathleen said, but does Bob still believe  $p$  in asking the INPQ, or does he change his belief from  $p$  to  $\neg p$ ? Romero and Han also provide a similar generalization about INPQs; in INPQs, "the speaker wants (...) to double-check  $\neg p$  and presuppose the truth of a (...) negative proposition" (p. 611) while "(NPQs) with preposed negation necessarily carry the

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<sup>18</sup> Here I use the term "epistemic bias" in the sense that it is based on the speaker's internal and private state, as Sudo says, "an epistemic bias is not strictly specified for the modal flavor, and can be epistemic, deontic or bouletic" (p. 283). Remember that NPQs can carry other kinds of speaker's bias than epistemic bias such as desiderative/bouletic bias (Huddleston and Pullum 2002, Reese 2006).

epistemic implicature that the speaker believed or expected that the positive answer is true” (p.610). The speaker believed or expected  $p$  before encountering a counter evidence against  $p$ , but does he believe  $\neg p$  when he asks an INPQ presupposing the truth of a negative answer?

If we focus on the speaker’s background attitude towards  $p$  held before the discourse begins, we can say that INPQs convey the speaker’s positive epistemic bias. For example, Sudo (2013) takes this position and argues that an English INPQ carries the speaker’s positive epistemic bias (see (43) and Table 2.4) since he assumes that “the epistemic bias does not have to be based on the speaker’s current belief state, but can be relative to what she believed before acquiring the contextual evidence.” (pp. 282-283) However, if we assume that the speaker only used to have positive epistemic bias and that negative epistemic bias is newly formed in the discourse situation based on new information which suggests  $\neg p$ , then it is a natural consequence to argue that the speaker has a negative epistemic bias in asking an INPQ. Huddleston and Pullum (2002) take this position and argue that the speaker’s epistemic bias is negative in INPQs. For example, Huddleston and Pullum give the English NPQ *Doesn’t she like it?* as an example and says, “[a] plausible context for [this NPQ], though not the only one, is that her behaviour or her remarks suggest that she doesn’t like it: I ask the question to confirm whether this is so. In such a context the question is biased towards the negative answer *She doesn’t like it.*” (p. 879) I adopt Huddleston and Pullum’s position in this dissertation. It should be noted that the previous studies commonly point out that there exists polarity shifting of epistemic bias from positive to negative in English INPQs. Also, note that, in comparing English NPQs with Japanese NPQs, Japanese data show that “epistemic” bias (which does not entail a specific modal flavor; see footnote 18) conveyed through an INPQ cannot be positive but has to be negative (see the next

chapter and Section 4.2.2). This is consistent with the idea that INPQs convey the speaker's negative "epistemic" bias (in a broad sense).

This thesis will not discuss evidential bias in detail, but to briefly summarize what previous researchers have written on this topic, Büring and Gunlogson (2000) and Sudo (2013) claim that English ONPQs have [– positive] evidential bias,. This means that they can be asked felicitously when the contextual evidence is either against *p* or neutral with respect to *p* (see Table 2.3). On the other hand, English INPQs have [+ negative] evidential bias, which means that they can be asked felicitously only when the contextual evidence is against *p*. In cases where the contextual evidence is either for *p* or neutral with respect to *p*, it is infelicitous to ask INPQs in English.

Next, returning to Japanese NPQs, let us summarize what we know about them in comparison to English NPQs. English NPQs employ a syntactic distinction, namely the surface syntactic position of negation, to mark the presence or absence of necessarily-conveyed epistemic bias. In contrast, the previous studies on Japanese NPQs only have paid attention to the sentence-final particles involved in Japanese NPQs (except for Hara and Kawahara (2012)). Aihara (2009) argues that *ka*-NPQs and *no*-NPQs have a different interpretation from each other concerning with the presence or absence of the speaker's epistemic bias and that the difference stems from the presence or absence of VERUM operator, following the basic idea of Romero and Han. Sudo (2013) argues that both evidential bias and epistemic bias of Japanese NPQs differ depending on which sentence-final particle is involved.

However, as we will see in the detail in the next chapter, the most remarkable characteristic of Japanese NPQs with respect to their form is that Japanese NPQs employ a prosodic distinction, the retention or deletion of the lexical accent of the negative morpheme *–na* 'i in order to mark if they are ONPQs or not (see Section 3.3). Thus, with respect to their form, Japanese NPQs differ from English in two ways. First, they employ

a prosodic distinction but not a syntactic distinction for disambiguation. In Japanese, ONPQs and INPQs (and also NPQs without epistemic bias, which is parallel to English NPQs with non-preposed negation) are the same in terms of their surface syntactic realization. Second, Japanese and English differ from each other with respect to how they subgroup NPQs. In English, the surface position of negation distinguishes ONPQs and INPQs from epistemically-unbiased NPQs. In Japanese, on the other hand, their prosodic realization distinguishes ONPQs from INPQs and epistemically-unbiased NPQs. In other words, while the presence or absence of epistemic bias is marked syntactically in English NPQs, the polarity of epistemic bias is marked prosodically in Japanese NPQs. I return to the matter of the interaction of Japanese NPQs with polarity items below.

It has been commonly assumed among previous studies (Aihara 2009, Sudo 2013 etc.) that Japanese ONPQs convey the speaker's positive epistemic bias as English ONPQs do. On the other hand, there doesn't exist a common assumption about the polarity of epistemic bias conveyed through Japanese INPQs. That is, the polarity of epistemic bias in INPQs is controversial not only in English but also in Japanese. Sudo (2013) assumes that Japanese INPQs without a particle do not convey the speaker's epistemic bias (see Table 2.5).<sup>19</sup> In contrast, Aihara (2009) assumes that epistemic bias is positive when a *ka*-NPQ is asked as an INPQ, stating; “[i]ntuitive interpretation of (a *ka*-NPQ with an NPI) is that the speaker double-checks addressee's belief ( $\neg p$ ), **believing (*p*)**” (p. 23; emphasis added with boldface). Since Aihara doesn't consider Japanese NPQs without a particle, it might not be appropriate to treat his argument in

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<sup>19</sup> Sudo states; “the epistemic bias does not have to be based on the speaker's current belief state, but can be relative to what she believed before acquiring the contextual evidence.” (pp. 282-283). Hence, Sudo's assumption that Japanese INPQs without a particle convey no epistemic bias does not mean that the speaker's previous belief *p* is cancelled in asking those questions. He assumes that Japanese INPQs without a particle require that the speaker holds no previous belief or current belief concerning either *p* or  $\neg p$ .

parallel with Sudo's (and this dissertation's) argument. (However, note that question particle *ka* is frequently dropped in actual speech.) If we focus on the speaker's previous belief, it might be possible to say Japanese INPQs convey the speaker's positive epistemic bias (just as English INPQs are assumed to do). In this sense, Aihara's assumption is reasonable. On the other hand, Sudo's generalization that Japanese INPQs do not convey epistemic bias, while initially plausible, ultimately turns out to be incomplete, or rather, incorrect. For, in Japanese, INPQs are in the same natural class as epistemically-unbiased NPQs with respect to their prosodic realization, namely the retention or deletion of the lexical accent of the negative morpheme *-na'i*. This is the view I adopt in this dissertation (see Chapter 3). If this position is correct, the appropriate description concerning Japanese INPQs should be: Japanese NPQ with lexically-accented negation *-na'i* can be interpreted as either an INPQ (which I assume is an NPQ which always conveys negative bias) or an epistemically-unbiased NPQ depending on the context. In other words, in Japanese, if an NPQ is interpreted as an INPQ, then the negative morpheme *-na'i* has to be deaccented, but not vice versa. Thus, Sudo overlooks one case of Japanese NPQs with lexically-accented negation (that is to say., he misses the negative bias interpretation of them), and generalizes wrongly that Japanese lexically-accented-negation-NPQs are identical to English "INPQs" in terms of the co-occurrence of NPIs and that Japanese INPQs differ from English INPQs in terms of the lack of the property of carrying the speaker's epistemic bias. As we see in Section 3.4.2, in Japanese, PPIs and NPIs can occur in NPQs with deaccented negation and ones with lexically-accented negation, respectively. However, it is not equivalent to saying NPIs can occur only in INPQs (which convey negative bias). NPIs can occur also in epistemically-unbiased NPQs in Japanese, which means that those items do not disambiguate the interpretation of lexically-accented-negation-NPQs between unbiased and negatively-biased.

As for evidential bias in Japanese NPQs, Sudo argues that ONPQs have [–negative] evidential bias while “INPQs” have [+negative] evidential bias. That is, Japanese ONPQs require contextual evidence to be either for *p* or neutral with respect to *p*, and Japanese “INPQs” require it to be against *p*.

My concluding summary of previous work on English and Japanese NPQs is given below.

(53) a. Similarities between English NPQs and Japanese NPQs

- (i) While PPIs can occur in ONPQs, NPIs cannot. While NPIs can occur in INPQs, PPIs cannot.
- (ii) There are three varieties of NPQs in terms of the polarity of epistemic bias; positive, negative, and unbiased (i.e., neutral) epistemic bias.
- (iii) An “epistemic” bias can be epistemic, deontic, or bouletic (i.e., not strictly specified for the modal flavor).

b. Differences between English NPQs and Japanese NPQs

(i) English NPQs

The presence or absence of epistemic bias (not the polarity of epistemic bias) is marked with the surface syntactic position of negation (i.e., preposed vs. non-preposed negation).

(ii) Japanese NPQs

Not only the presence or absence but also the polarity of epistemic bias depends on which sentence-final particle occurs (e.g.,  $-\emptyset$ ,  $-ka$ ,  $-no$ ,  $-desho$ ).

Regarding (53b-ii), as I mentioned above, I argue that the prosodic distinction with respect to the negative morpheme  $-na'i$  is the most noteworthy characteristic of

Japanese NPQs to differentiate ONPQs from other NPQs (i.e., INPQs and unbiased NPQs), regardless of the kind of the co-occurring sentence-final particle.

In the following, I basically follow Ito and Oshima's (to appear) simple definitions of the two kinds of epistemic biases (epistemic bias and desiderative bias) in (54). We will take a closer look at the meanings conveyed by NPQs in Chapter 4. In this dissertation, unless otherwise noted, the term "epistemic bias" should be understood in a broad sense (i.e., not strictly specified for the modal flavor such as epistemic, desiderative, and deontic).

(54)a. Positive Epistemic Bias: Speaker considers  $p$  to be likely, where  $p$  is the proposition denoted by the radical of the NPQ minus the negation.

(e.g., for the NPQ with a positive bias: *Isn't Ken home (already)?*, the NPQ minus negation is *Is Ken home (already)?*, and its radical is *Ken is home (already)*. Hence,  $p$  will roughly be:  $\lambda w[\text{home}(\text{ken}, w)]$ .)

(Ito and Oshima: (5a) modified)

b. Negative Epistemic Bias: Speaker considers  $p$  to be likely, where  $p$  is the proposition denoted by the radical of the NPQ.

(e.g., for the NPQ with a negative bias: *Isn't Ken home (yet)?*, the NPQ is *Isn't Ken home (yet)?*, and its radical is *Ken isn't home (yet)*. Hence,  $p$  will roughly be:  $\lambda w[\neg\text{home}(\text{ken}, w)]$ .)

(Ito and Oshima: (5b) modified)

c. Positive Desiderative Bias: Speaker wants  $p$  to be true, where  $p$  is the proposition denoted by the radical of the NPQ minus the negation.

d. Negative Desiderative Bias: Speaker wants  $p$  to be true, where  $p$  is the proposition denoted by the radical of the NPQ.

In this dissertation, I use the term CORE PROPOSITION in the sense of  $p$  in (54a, c) and the term PROPOSITION DENOTED BY THE RADICAL in the sense of  $p$  in (54b, d) for expository purposes.

## CHAPTER 3

### NEGATIVE POLAR QUESTIONS IN JAPANESE

#### **3.1 Introduction**

This chapter discusses the facts of Japanese NPQs. Based on these facts, I will argue that there are two distinct prosodic patterns for Japanese NPQs and that those two different prosodic patterns are correlated with a difference in the speaker's epistemic bias. In Section 3.2, we look at Japanese NPQs, focusing on their morphosyntactic differences with English NPQs. In Section 3.3, I show that Japanese has two different prosodic patterns for NPQs and that each of those patterns marks a different type of speaker's epistemic bias. This is the central claim of the dissertation. In Section 3.4, I will give three types of evidence which suggest that the existence of two kinds of prosodic patterns in Japanese NPQs is not random and that the two patterns are not interchangeable. In Section 3.5, I will mention exceptional cases where the prosodic distinction in Japanese NPQs disappears. This chapter is basically in line with Ito and Oshima (to appear) up to Section 3.5. However, in Section 3.6, I take a major departure from Ito and Oshima with respect to how the prosodic distinction should be characterized. First, I overview the hypothesis of Ito and Oshima (to appear) about what the prosodic contrast is attributed to, and then, I will point out the shortcomings in this paper, and propose a revision of the hypothesis. Section 3.7 summarizes this the chapter.

#### **3.2 Morphosyntactic characteristics of Japanese NPQs**

As Romero and Han pointed out (see Section 2.1.3), when negation is not preposed in English NPQs, a neutral unbiased interpretation is allowed. Such NPQs do not necessarily carry the speaker's epistemic bias. In contrast with English, Japanese does not allow negation to be moved overtly; its syntactic position is fixed. To be exact,

it follows the verb, adjective, or noun predicate, as shown in (55). As I mentioned in Section 2.2.1.1, an apostrophe marks a lexical accent in the transcription of Japanese data, where the mora before an apostrophe associates with the accentual fall and is considered to be the location for the lexical accent. Unaccented words and deaccented are unmarked. It is not uncommon in Japanese that the actual F0 peak (and fall) of the lexical accent occurs after the mora which is expected to be the location of the lexical accent. In these cases, there is a gap between the location of the actual F0 peak and that of the perceived (expected) F0 peak. In this dissertation, an apostrophe in a non-J\_ToBI transcription marks the actual F0 peak (and fall). See the next section for the J-ToBI scheme and the details of delayed F0 peak (and fall).

- (55) a. Yamada-kun-wa nom-a'nai/nom-a'nakat-ta.<sup>20</sup> (Verb predicate)  
 Yamada-Suffix-Top drink-Neg/drink-Neg-Past  
 'Mr. Yamada doesn't/didn't drink.'
- b. Sono ho'n-wa taka'ku-na'i/taka'ku-na'kat-ta. (Adjective predicate)  
 the book-Top expensive-Neg/expensive-Neg-Past  
 'The book isn't/wasn't expensive.'
- c. Ano hito-wa gakusee-zya-na'i/gakusee-zya-na'kat-ta. (Noun predicate)  
 that person-Top student-ZYA-Neg/student-ZYA-Neg-Past  
 'That person isn't/wasn't a student.'

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<sup>20</sup> In Japanese, negation has two variants *-nai* and *-anai*. The latter form, *-anai*, is used when the root of its preceding word ends with a consonant as in (55a). Also, *-nakat* is the conjugational form of *-nai* which appears before the past tense morpheme *-ta*. Note that *-nai* follows the conjugational pattern of adjectives (e.g., word-final *i* becomes *kat* when it precedes the past tense morpheme) and that it can be used as a predicate by itself as shown in the following example. See footnote 12 for *zya* in (55c).

(i) Sono mise'-ni-wa to'ire-ga na'i/na'kat-ta.  
 the store-Loc-Top bathroom-Nom not.exist/not.exist-Past  
 'A bathroom doesn't/didn't exist in the store.'

In (56), we see that the syntactic position of negation is fixed not only in declarative sentences such as (55a-c) but also in interrogative sentences.<sup>21</sup> The lexical accent of the negative morpheme *-na'i* in the adjective predicate (56b) and in the noun predicate (56c) can be retained or deleted, depending on the presence (or the polarity) of the speaker's epistemic bias in asking those NPQs (see the next section for the details). See Section 3.5 for negated verb predicates, where the distinction between retention and deletion of the lexical accent of *-na'i* is not observed, as in (56a).

- (56)a. Yamada-kun(-wa) nom-a'nakat-ta? (Verb predicate)  
 Yamada-Suffix-Top drink-Neg-Past  
 'Did Mr. Yamada not drink? / Didn't Mr. Yamada drink?'
- b. Sono ho'n(-wa) taka'ku-na'i/taka'ku-nai? (Adjective predicate)  
 the book-Top expensive-Neg  
 'Is the book not expensive? / Isn't the book expensive?'
- c. Ano hito(-wa) gakusee-zya-na'i/gakusee-zya-nai? (Noun predicate)  
 that person-Top student-ZYA-Neg/student-ZYA-Neg  
 'Is that person not a student? / Isn't that person a student?'

Each example in (56) embodies the ambiguity between the epistemically unbiased interpretation and the epistemically biased interpretation (further, either positive or negative). For example, consider the following three separate discourse situations. In each of them the NPQ in (56b) can be asked felicitously. I annotate the sentence types and biases with  $\langle x, y \rangle$ , where  $x$  and  $y$  describe the sentence type and the bias respectively. For example,  $x$  is described as " $p$ " in affirmative declarative sentences and as " $\neg p$ " in negative declarative sentences. In cases of interrogatives,  $x$  is described as " $?p$ " in

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<sup>21</sup> I used past tense in (56a) and present/future tense in the examples of (56b, c). We see then that regardless of the tense, there exists the ambiguity concerning the state of the speaker's epistemic bias. Also, note that the topic marker *-wa* is optional in (56). I put aside the issue about Japanese topic marker *-wa* as it goes beyond the purpose of this dissertation.

affirmative interrogative sentences and as “ $? \neg p$ ” in negative interrogative sentences. As for the bias, if a sentence conveys the speaker’s positive epistemic bias,  $y$  is described as  $B_s p$  (i.e., Speaker believes  $p$ ). In contrast,  $B_s \neg p$  for  $y$  indicates the speaker’s negative epistemic bias (i.e., Speaker believes  $\neg p$ ). In cases where a sentence does not convey any bias,  $\emptyset$  is used for  $y$  (i.e., Speaker has no bias with respect to  $p$ ).

(57)a. S and A are in a bookstore to buy a book for S’s younger sister as her birthday present. Since S doesn’t have much money, he cannot buy an expensive book. S sees A pick up a thick hardback book, and asks S:

A: Kore-wa do’o? Omosiro-so’o-da yo.  
 this-Top how interesting-Evid-Cop Part  
 ‘How about this one? This looks interesting.’

S: (Haadoka’baa-da kara,) **sono ho’n, taka’ku-nai?**  
 Hardback-Cop because the book expensive-Neg  
 ‘(Because it is a hardback book,) isn’t the book expensive?’  $\langle ? \neg p, B_s p \rangle$

b. A is going to sell some of his books at a garage sale. But, he doesn’t want to sell his expensive books. He only wants to sell his inexpensive books. Together with S, A is selecting the books which he should sell for the garage sale.

S: Kono ho’n-wa uru?  
 this book-Top sell  
 ‘Are you going to sell this book?’

A: Iya. Sore, mo’o zeppan-da’ kara, taka’kat-ta-n-da.  
 no it already out.of.print-Cop because expensive-Past-N-Cop  
 ‘No. Because it has already been out of print, it was expensive (when I bought it).’

S: Wakat-ta. Zya’a, sono ho’n-wa?  
 Understand-Past then the book-Top

**Sono ho'n(-wa), takaku-na'i?**  
 the book-Top expensive-Neg

‘OK. Then, how about that book? Is the book not expensive?’  $\langle ?\neg p, \emptyset \rangle$

- c. S and A are in a bookstore to buy a book for S’s younger brother. A knows that S cannot buy an expensive book since he doesn’t have much money. S sees A pick up a thick hardback book from a bookshelf and thinks that he cannot buy it because the hardback book doesn’t look inexpensive at all.

A: Tyo'tto! Kore-wa kimi-de'mo ootoo-san-ni  
 a.bit this-Top you-even younger.brother-Suffix-to  
 katte-age-rare'ru to omo'u yo  
 buy.Ger-Aux-can that think Part  
 ‘Hey! I think even you can buy this one for your brother.’

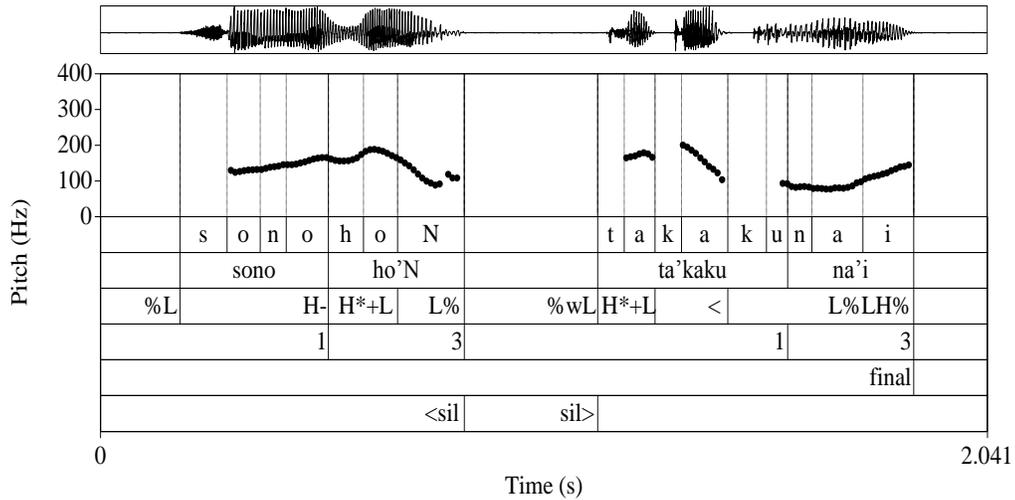
S: (E?) **Sono ho'n, taka'ku-na'i?**  
 what the book expensive-Neg  
 ‘(What?) Isn’t the book expensive?’  $\langle ?\neg p, B_s\neg p \rangle$

In (57a), the speaker believes that the book would be expensive based on the general knowledge that hardback books are usually expensive, and he wants confirmation for his belief. In other words, the NPQ in (56b) conveys the speaker’s positive epistemic bias in context (57a). In contrast, the speaker in context (57b) has no prediction regarding whether the book is expensive or not. The NPQ in (56b) is merely used as an information seeking question in context (57b), and hence, it does not convey any epistemic bias (that is, it is interpreted as “neutral/unbiased” concerning epistemic bias). Following Ito and Oshima (to appear), I assume that the epistemically neutral interpretation is possible only when the meaning of the negated predicate is contextually prominent. In discourse situation (57b), for example, S and A are selecting books which are “not expensive”. Hence, we can say that the epistemically neutral interpretation is

allowed since the negated predicate *taka'ku-na'i* 'not expensive' is contextually prominent in the discourse situation. The NPQ in (56b) conveys the speaker's epistemic bias also in context (57c), but the conveyed epistemic bias is negative in (57c) (compare positive in (57a)). The speaker's having the negative epistemic bias is a necessary condition for the NPQ to be asked felicitously in context (57c), but it is not a sufficient condition. The speaker's negative epistemic bias has to be newly formed during the discourse situation. If the speaker already has the negative epistemic bias prior to the discourse situation, it is not legitimate to ask the NPQ (see Section 4.2.1 for details). In (57c), S had previously thought 'the book is expensive.' However, A's utterance changes S's epistemic bias towards a negative bias since S knows that A knows that S cannot buy an expensive book. In this situation, S wants confirmation for his newly formed belief 'the book is not expensive' by asking the NPQ in (56b). Thus, when we observe Japanese NPQs such as (56a-c) ignoring their possible prosodic patterns (i.e., the prosodic/accent patterns of the negative morpheme *-na'i*), we see that the same syntactic form of the NPQs (i.e., the fixed surface position of the negative morpheme) shows ambiguity in terms of the type of speaker's epistemic bias (among positive epistemic bias, negative epistemic bias, and no epistemic bias).

### 3.3 Prosodic patterns of Japanese NPQs; P-type vs. NN-type

As we saw in the previous section, Japanese NPQs are ambiguous with respect to the speaker's epistemic bias in terms of their syntactic form. However, it turns out that Japanese NPQs have two distinct patterns of the prosodic realization which signal the existence (or the polarity) of the speaker's epistemic bias. For example, the NPQ in (56b) is uttered with the prosodic pattern shown in Figure 3.1 in context (57a).



**Figure 3.1: Deaccented negation in interrogative *taka'ku-nai?* ( $\langle ?-p, B_p \rangle$ )**

In this dissertation, I follow the Japanese ToBI labelling scheme (J\_ToBI) proposed by Venditti (1995, 2005) for prosodic transcriptions. Here I explain the labels used in J\_ToBI before proceeding to the analysis of Figure 3.1. The following explanation about J\_ToBI is largely cited from Venditti (1995, 2005).

A transcription of J\_ToBI consists of the speech waveform, F0 contour, and (at least) five separate label tiers: TONE TIER, WORD TIER, BREAK INDEX TIER (henceforth, BI Tier), FINALITY TIER, and MISCELLANEOUS TIER. “Other optional user-defined tiers can be added, as appropriate for the focus of research at each particular site.” (Venditti 1995, p. 1) Since the presence or absence of the lexical accent of the negative morpheme *-nai* (and also the location of it if any) is assumed to be the significant factor for the distinction of the speaker’s epistemic bias, I add a SEGMENT TIER (the 1<sup>st</sup> tier in Figure 3.1) to the J\_ToBI transcriptions in this dissertation, in order to make it easier to check the location of a lexical accent (if any).

In regard to the Word Tier (the 2<sup>nd</sup> tier in Figure 3.1), it is a complicated and controversial issue how a “word” should be defined. J\_ToBI does not provide a clear

criterion for determining wordhood, and just takes a minimal dictionary entry as the working definition of a “word”. Hence, bound morphemes such as postpositions and particles are also assumed to be separate words, since they have their own entries in dictionaries. In the Word Tier, the location of a lexical accent marked with an apostrophe is based on the dictionary entry for the word. Notice that the way of marking a lexical accent in J\_ToBI transcriptions differs from that of non-J\_ToBI transcriptions as in (57) in this dissertation. In non-J\_ToBI transcriptions in this dissertation, an apostrophe marks the actual F0 peak (and fall) in utterances. Hence, the location of a lexical accent in non-J\_ToBI transcriptions can be different from that in the dictionary entry. The reason is that if lexical accents are represented based on the dictionary entries in non-J\_ToBI transcriptions, then it is hard to represent the distinction between accent-deleted-negation and accent-retained-negation since both of them have to be described as *-na'i* based on the dictionary entry. Also, as noted above, late F0 peak (and fall) is often observed in Japanese, where the actual F0 peak (and fall) is delayed from the location where the F0 peak (and fall) is assumed and perceived (by the native speakers) to be. Actually, Figure 3.1 demonstrates late F0, and we will return to this issue in the next paragraph, the explanation for Tone Tier.

Japanese has two levels of groupings of words into prosodic phrases/intonational units, defined with respect to the tones and the degree of perceived disjuncture (represented in BI tier) among words within/between groups. The Tone Tier (the 3<sup>rd</sup> tier in Figure 3.1) contains the information concerning lexical accents and tones in those two prosodic phrases. The ACCENTUAL PHRASE (henceforth, AP) is the lower-level prosodic phrase consisting of a sequence of one or more words, and the INTONATION PHRASE (henceforth, IP) is the higher-level prosodic phrase which consists of one or more APs. An AP is “typically characterized by a rise to a high around the second mora, and subsequent gradual fall to a low at the right edge of the phrase.” (Venditti 2005,

p.175) It has been observed that “[i]n Tokyo Japanese it is most common for unaccented words to combine with adjacent words to form accentual phrases.” (Venditti 2005, p.175) On the other hand, an IP is “the prosodic domain within which pitch range is specified, and thus at the start of each new (intonation) phrase, the speaker chooses a new range which is independent of the former specification.” (Venditti 2005, p.175) In the Tone Tier, The H\*+L label represents a lexical accent, and hence, every accented word has H\*+L on its accented mora unless it is deaccented. When an accented word is deaccented, it does not contain the H\*+L label. The position of H\*+L usually corresponds to the location of the actual F0 peak in the accented word. However, in cases where the actual F0 peak (and fall) occurs after the location where the lexical accent is assumed to be and perceived to be, which is not uncommon in Japanese, the accented mora (based on the dictionary entry) is marked with H\*+L, and the actual late F0 peak (and fall) is marked with the additional label “<”.

This late F0 peak phenomenon is called *ososagari* ‘late fall’ in Japanese, and it has been reported that “the frequency of *ososagari* varies between speakers as well as between words uttered by the same speaker.” (Hasegawa and Hata 1995, p. 143) Sugito (1981) found that *ososagari* tends to occur in cases where the second mora of an initial-accented word contains an open vowel and has falling intonation. We will not examine the details of the *ososagari* phenomenon in this dissertation since it exceeds the scope dissertation; here I merely note the existence of the phenomenon.

The label H- marks the initial phrasal high tone of an AP. It is usually labelled on the second mora of the AP. “[T]he H- phrase tone is labelled on all unaccented phrases, and on accented phrases only where the H- is distinguishable from the high of the lexical accent.” (Venditti 2005, p.180) The AP final low boundary tone is marked with L% at the phrase edge. The AP initial low boundary tone is marked with %L at the phrase onset additionally when the AP follows a pause, and the %L is labelled at the

beginning of an utterance. The %wL label is used instead of %L at the beginning of a post-pausal AP, and the wL% is used instead of L% at the right edge of an AP in cases where its following AP begins with a heavy syllable or is initial-accented. As for the IP boundary tones, J\_ToBI employs three labels, H%, LH%, and HL%, to describe different types of BOUNDARY PITCH MOVEMENTS (henceforth, BPMs). The H% label marks the prominence-marking rise and the insisting rise, the LH% label marks the incredulity and information question rises, and the HL% label describes the explanatory rise-fall boundary movement (see Venditti et al. 1998 for details). These IP tone labels are marked at the right edge of an IP, which is the location for the L% boundary tone of the final AP to be labelled. Hence, the combined tone labels L%H%, L%LH%, and L%HL% are used.

The break indices in BI Tier (the 4<sup>th</sup> tier in Figure 3.1) describes the degree of prosodic association between adjacent words or phrases in an utterance, and J\_ToBI uses the 4-scaled values from 0 (a weak sense of disjuncture) to 3 (a strong sense of disjuncture) as BI values. Although “they are primarily subjective values – measures of *perceived* disjuncture between adjacent words” (Venditti 2005, pp. 184-185), the BI levels usually correspond with the tonally-defined phrases such as APs and IPs. APs and IPs differ from each other not only with respect to the tonal definition (as explained above) but also with respect to the level of perceived disjuncture. “The degree of perceived disjuncture between words within an [AP] is less than that between sequential words within an [AP] boundary intervening” (Venditti 2005, p. 175), and “the degree of perceived disjuncture between sequential words across [IP] boundaries is larger than that between words within or across [AP] boundaries.” (Venditti 2005, p. 176) In other words, the degree of perceived disjuncture is; IP boundaries > AP boundaries > AP-medial word boundaries (in order of decreasing sense of disjuncture). In J\_ToBI, break indices 3 (strong degree of disjuncture), 2 (medium degree of disjuncture), and 1 (no

higher-level juncture) correspond to tonally-defined IP boundaries, tonally-defined AP boundaries, and the majority of AP-medial word boundaries, respectively. BI 0 (strong cohesion) is used to mark a juncture which is typical in fast speech processes and indicates a very small sense of disjuncture between sequential words. For example, when two separate words are combined to make a contracted form, the boundary between those two words is marked with BI 0 (e.g., /no'Nde + iru/ → [no'Nderu] 'is drinking', /kore + wa/ → [korya] 'this-Top', etc.).

The Finality Tier (the 5<sup>th</sup> tier in Figure 3.1) marks the perceived finality of an IP. It is a simple binary choice between final and non-final (though there is no label for "non-final"). When an IP is judged as "final", the "final" label is put at the right edge of the IP. The Miscellaneous Tier (the 6<sup>th</sup> tier in Figure 3.1) contains information which cannot be properly described in other tiers, such as repairs, disfluencies, silences, laughing. For example, silences are marked with a pair of labels (e.g., "sil<" and "sil>") at their beginnings and ends.

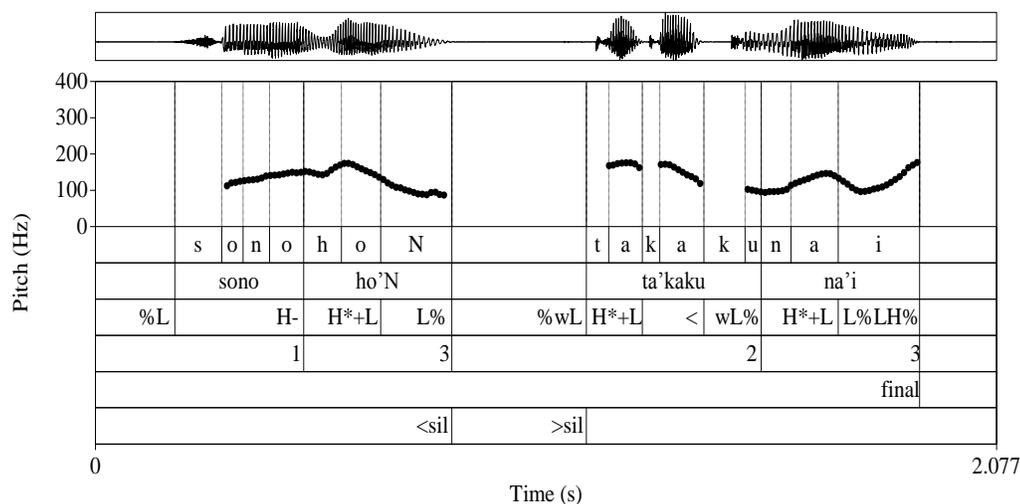
Returning to Figure 3.1, capitalized N in Segment Tier indicates a moraic nasal. Note that Figure 3.1 shows the late F0 peak regarding *taka'ku*, where the actual F0 peak (and fall) indicated with "<" occurs after the mora where the native speakers perceive that the lexical accent is located (i.e., the first mora /ta/ marked with the H\*+L label).<sup>22</sup> It is noticeable in Figure 3.1 that the negative morpheme *-nai*, which is an accented word originally, lacks an F0 fall as the absence of the H\*+L label in Tone Tier indicates

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<sup>22</sup> Note that there are two possible accent patterns for the negative verb predicate *takaku-nai* per se, either *ta'kaku-na'i* or *taka'ku-na'i*. The choice between these variants depends on the speaker. In both of these two patterns, the mora where native speakers perceive the accent to be located is usually coincident with the mora where the actual F0 peak and fall is located (i.e., native speakers can perceive where the actual F0 peak/fall (i.e., the lexical accent) is located, whether /ta/ or /ka/). What is specific to *ososagari* 'late F0 peak' is that there is a gap between these two morae (i.e., between the perception and the actual F0 peak/fall), as in the utterance in Figure 3.1. Also note that the affirmative form *takai* 'expensive' has only one possible accent pattern, *taka'i*, where the accent is located on the second mora /ka/, and it cannot be *ta'kai*, where the accent is located on the first mora /ta/. In this sense, it might be possible to consider that there exists an accent shift in *ta'kaku-na'i*.

while its preceding adjective *taka'ku* has a clear F0 fall on the second mora, which means that the negative morpheme is deaccented while the preceding adjective retains its lexical accent. It has been observed that the lexical accent of the leftmost word survives and other accents are deleted in an AP which consists of two or more accented words. In this sense, it can be assumed in Figure 3.1 that *-nai* is tonally dephrased with the preceding word *taka'ku* and that *taka'ku-nai* forms an AP (and hence, forms an IP).

In contrast, Figure 3.2 represents the F0 contour of the NPQ in (56b) uttered in context (57b, c).<sup>23</sup>

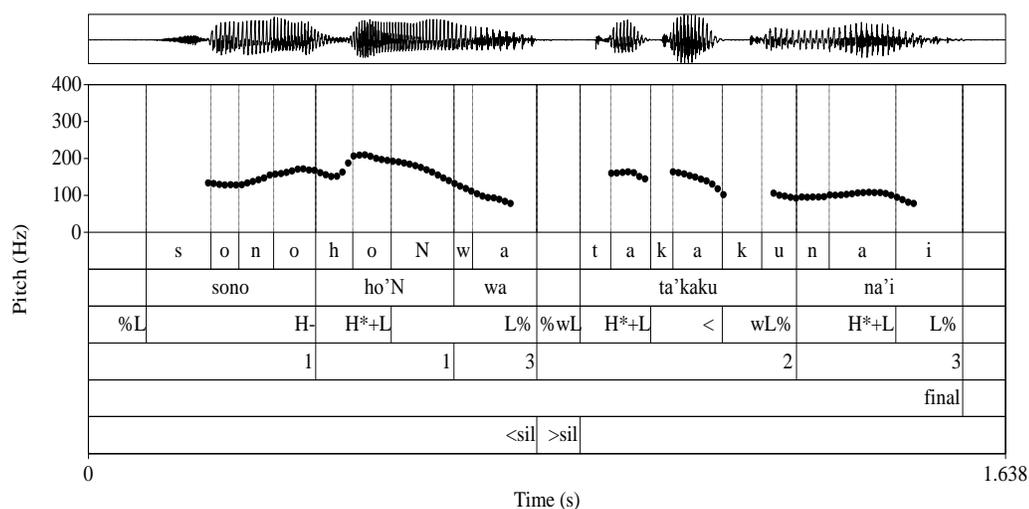


**Figure 3.2: Accented negation in interrogative *taka'ku-na'i*? ( $\langle ?-p, B_s-p \rangle$  or  $\langle ?-p, \emptyset \rangle$ )**

<sup>23</sup> It should be mentioned here that the NPQ in (56b) can have an F0 contour such as the one in Figure 3.1, where *-nai* is deaccented, in context (57c) too. However, when *-nai* is deaccented in context (57c), the NPQ does not convey the speaker's negative epistemic bias that the book is not expensive, but rather convey the positive epistemic bias that the book is expensive, which indicates that A's utterance didn't affect S's original expectation that the book must be expensive. In other words, when *-nai* can be deaccented in context (57c), S is still suspicious about A's utterance and has still believed that the book is expensive. S behaves as if he ignored the information which A gave. Thus, by asking the NPQ with deaccented *-nai*, which carries the speaker's positive epistemic bias, S wants confirmation for his original belief/expectation *p*.

The most striking difference between Figure 3.2 and Figure 3.1 is that the negative morpheme *-na'i* has a clear F0 peak (and fall) on the first mora /na/ as marked with the H\*+L label; in other words, *-na'i* retains its lexical accent, which in turn indicates that *taka'ku-na'i* consists of two separate APs in Figure 3.2. As for the preceding adjective *taka'ku*, we can see a clear F0 fall on the second mora of *taka'ku*, which indicates that it contains *ososagari* in the same way as *taka'ku* in Figure 3.1 does. The adjective retains its lexical accent in Figure 3.2 as well as in Figure 3.1.

Figure 3.3 below demonstrates that the prosodic pattern shown in Figure 3.2 is the same as the prosodic pattern of the declarative counterpart in (55b) except for the rising intonation towards the end, which signals that it is a question.



**Figure 3.3: Negation in declarative *taka'ku-na'i* ( $\langle -p, B_s -p \rangle$ )**

Venditti (1995) states; “[i]t is common in Tokyo Japanese for final predicates to be produced in a reduced pitch range, thus making it difficult to see or hear the accentual fall.” (p. 11) The uncertainty concerning the existence (or the speaker’s actual production) of the accentual fall is marked with “\*?” in J\_ToBI. Hence, “\*?” does not

appear in the case where the labeller is not uncertain about the accentuation (or deaccentuation). In this sense, “[t]he use of the \*? uncertainty label is highly subjective, and labeller opinions about whether a word has an accent or not may vary.” (Venditti 1995, p. 11) Actually, in Figure 3.3, it is slightly hard to see the accentual fall in the F0 contour, but the accentual fall can be perceived on the first mora /na/ of the negative morpheme *-na’i*. Therefore, I put H\*+L on it in Figure 3.3. This makes it clear that the lack of a F0 fall of *-nai* in Figure 3.1 is truly an example of deaccenting and suggests that the retention of the lexical accent of *-na’i* in Figure 3.2 should not be regarded as the addition of a F0 peak on negation.

The prosodic pattern such as shown in Figure 3.1 often (but not always; See Section 4.3.1) conveys the speaker’s positive epistemic bias as in (56b) uttered in context (57a), and I will refer to this prosodic type as P-type (positive type). The prosodic pattern shown in Figure 3.2 often conveys the speaker’s negative epistemic bias, as in (56b) uttered in context (57c), and also it is compatible with a neutral interpretation (i.e., epistemically unbiased), as in (56b) uttered in context (57b). I will refer to this prosodic type as NN-type (negative/neutral type). The terms P-type and NN-type, are adopted from Ito and Oshima (to appear). Note that P-type and NN-type are terms which categorize the prosodic types and that this prosodic distinction is relevant with but does not coincide with the semantic (or pragmatic; see Reese 2006) distinction between ONPQs and INPQs. In English, ONPQs and INPQs necessarily convey the speaker’s positive and negative epistemic bias respectively, and NPQs with non-preposed negation are used to represent the absence of the speaker’s epistemic bias. I use the terms ONPQ and INPQ not only in English but also in Japanese as in (58) in this dissertation, based on these working definitions for English NPQs;

(58) (Regardless whether English or Japanese)

- a. ONPQs are those NPQs which convey the speaker's positive epistemic bias.
- b. INPQs are those NPQs which convey the speaker's negative epistemic bias (in the narrow sense; belief or expectation), and it is required that the negative epistemic bias is newly formed in the discourse situation (i.e., it cannot be present beforehand).
- c. NPQs which are not either ONPQs or INPQs are epistemically neutral or unbiased.

Now consider the interaction of the P-/NN-type with ONPQs/INPQs. As we saw above, NPQs with NN-type prosody can be interpreted as either INPQs (e.g., (57c)) or epistemically-unbiased NPQs (e.g., (57b)). On the other hand, NPQs with P-type prosody is interpreted as ONPQs (e.g., (57a)) so far. Therefore, one might think that "P-type NPQs" are equivalent or identified with "ONPQs". However, as we will see in Section 4.3.1, there exist cases where the modal flavor conveyed by P-type NPQs is not epistemic (belief), desiderative (desire), or deontic (rule/law) though the polarity of the speaker's bias is positive. Thus, there is no one-to-one correspondence between P-/NN-type and ONPQs/INPQs.

### **3.4 Evidence for two distinct prosodic types**

As we saw in the previous section, I propose that a prosodic distinction in Japanese NPQs signals the existence (or polarity) of speaker's epistemic bias (i.e., ONPQs or not). In this section, I will give three pieces of evidence to support my proposal. We will see that two different prosodic patterns (i.e., P-type and NN-type) are not interchangeable and the distinction is quite clear in Japanese NPQs.

#### **3.4.1 *Yes/no* answer to Japanese NPQs**

When we answer a NPQ with *u'n/ha'i* 'yes' or *iya/ie* 'no' in Japanese, the choice between them changes depending on the prosodic pattern of the NPQ (i.e., either P-type or NN-type). For example, consider the three separate discourse situations in (57a-c), repeated below.

(57)a. S and A are in a bookstore to buy a book for S's younger sister as her birthday present. Since S doesn't have much money, he cannot buy an expensive book. S sees A pick up a thick hardback book, and asks S:

A: Kore-wa do'o? Omosiro-so'o-da yo.  
 this-Top how interesting-Evid-Cop Part  
 'How about this one? This looks interesting.'

S: (Haadoka'baa-da kara,) sono ho'n, **taka'ku-nai?**  
 Hardback-Cop because the book expensive-Neg  
 '(Because it is a hardback book,) isn't the book expensive?' (?-p, B<sub>s</sub>p)

b. A is going to sell some of his books at a garage sale. But, he doesn't want to sell his expensive books. He only wants to sell his inexpensive books. Together with S, A is selecting the books which he should sell for the garage sale.

S: Kono ho'n-wa uru?  
 this book-Top sell  
 'Are you going to sell this book?'

A: Iya. Sore, mo'o zeppan-da' kara, taka'kat-ta-n-da.  
 no it already out.of.print-Cop because expensive-Past-N-Cop  
 'No. Because it has already been out of print, it was expensive (when I bought it).'

S: Wakat-ta. Zya'a, sono ho'n-wa?  
 Understand-Past then the book-Top  
**Sono ho'n(-wa), takaku-na'i?**  
 the book-Top expensive-Neg

‘OK. Then, how about that book? Is the book not expensive?’  $\langle ?\neg p, \emptyset \rangle$

c. S and A are in a book store to buy a book for S’s younger brother. A knows that S cannot buy an expensive book since he doesn’t have much money. S sees A pick up a thick hardback book from a bookshelf and thinks that he cannot buy it because the hardback book doesn’t look inexpensive at all.

A: Tyo’tto! Kore-wa kimi-de’mo ootoo-san-ni  
a.bit this-Top you-even younger.brother-Suffix-to  
katte-age-rare’ru to omo’u yo.  
buy.Ger-Aux-can that think Part

‘Hey! I think even you can buy this one for your brother.’

S: (E?) Sono ho’n, **taka’ku-na’i?**  
what the book expensive-Neg

‘(What?) Isn’t the book expensive?’  $\langle ?\neg p, B_s\neg p \rangle$

The same NPQ is asked in each discourse situation in (57), and as mentioned above, the NPQ is uttered with P-type prosody in (57a) and NN-type in (57b, c). In these three situations, answering *u’n/ha’i* ‘yes’ indicates that the book is expensive in (57a) while it indicates that the book is not expensive in (57b, c). Similarly, the answer *iya/iie* ‘no’ represents ‘the book is not expensive’ in (57a) on the one hand and ‘the book is expensive’ in (57b, c) on the other. In other words, the polarity of the answer tag (e.g., *u’n/ha’i* ‘yes’ and *iya/iie* ‘no’) and that of its associate proposition do not match in the NN-type while they do match in the P-type, as demonstrated below.

(59)(in context (57a))

S: Sono ho’n, taka’ku-nai?

‘Isn’t the book expensive?’  $\langle ?\neg p, B_s p \rangle$

- A: a. U'n, <sup>OK</sup>taka'i/#taka'ku-na'i.  
 yes expensive/expensive-Neg  
 'Yes, it's {<sup>OK</sup>expensive/#not expensive}.'
- b. Iya, <sup>OK</sup>taka'ku-na'i/#taka'i  
 no expensive-Neg/expensive  
 'No, it's {<sup>OK</sup>not expensive/#expensive}.'

(60) (in context (57b, c))

S: Sono ho'n, taka'ku-na'i?

- a. (in context (57b)) 'Is the book not expensive?' ( $\langle ? \neg p, \emptyset \rangle$ )  
 b. (in context (57c)) 'Isn't the book expensive?' ( $\langle ? \neg p, B_s \neg p \rangle$ )

- A: a. U'n, #taka'i/<sup>OK</sup>taka'ku-na'i.  
 yes expensive/expensive-Neg  
 'Yes, it's {#expensive/<sup>OK</sup>not expensive}.'
- b. Iya, #taka'ku-na'i/<sup>OK</sup>taka'i<sup>24</sup>  
 no expensive-Neg/expensive  
 'No, it's {#not expensive/<sup>OK</sup>expensive}.'

<sup>24</sup> Note that Pope (1976) argues that the answer tag alone is ambiguous and not sufficient to represent positive disagreement. "[A]greement, whether positive or negative, is expressed by *hai*, disagreement by *iie*. However, PD (Positive Disagreement), as we would predict, is the most difficult category. (...) In (i) and (ii-a) below, one may use either the single words *hai* or *iie*, or a longer answer. But in (ii-b) *iie* alone seems rather insufficient, and the longer answer is much preferred." (Pope 1976, pp. 121-122) I put apostrophes to mark lexical accents in the following examples adopted from Pope (1976).

- (i) Kyo'o-wa atu'i desu ne.  
 today-Top hot Cop.Plt Part  
 'It's hot today, isn't it.'
- a. Ha'i (so'o desu ne).  
 yes so Cop.Plt Part  
 'Right (it's hot today).'
- b. Iie (atuku-wa arimasen).  
 no hot-Top Neg.Plt  
 'Wrong (it isn't hot today).'
- (Pope 1976: (41))
- (ii) Kyo'o-wa a'tuku-na'i desu ne.  
 today-Top hot-Neg Cop.Plt Part  
 'It isn't hot today, is it.'
- a. Ha'i (so'o desu ne).  
 yes so Cop.Plt Part  
 'Right (it isn't hot today).'
- b. Iie kyo'o-wa atu'i desu.  
 no today-Top hot Cop.Plt  
 'Wrong it is hot today.'
- (Pope 1976: (42))

In cases where an interrogative sentence conveys the speaker's epistemic bias (e.g., (59S), (60S-b)), the Japanese answer tags *u'n/ha'i* and *iya/ie* look similar to English 'that's right' and 'that's wrong' respectively in terms of the speaker's epistemic bias (Rooth (p.c.)). Rooth's comment seems correct. For, when an NPQ does not convey the speaker's epistemic bias (e.g., (60S-a)), it is somewhat odd to reply either 'that's right' or 'that's wrong' in English to the question. The difference between Japanese tag answers and English 'that's right/wrong' is that the former can be used to reply to interrogative questions which do not convey the speaker's epistemic bias (thus it is natural to answer the question in (60S-a) with (60A-a/b)) while the latter cannot. Japanese tag answers can be used to answer not only a non-biased NPQ but also a PPQ which does not convey the speaker's epistemic bias, as shown below.

(61) A is a collector of watches. S has no knowledge about watches at all, and he is just asking whether A's watches are expensive or inexpensive one by one.

S: *Mi'-temo taka'i ka wakar-a'nai na'a. Kono tokei-wa? taka'i?*  
 look-if expensive Q understand-NegPart this watch-Top expensive  
 'I cannot guess whether a watch is expensive from its appearance. What about this watch? Is it expensive?' ⟨?p, ∅⟩

A: a. *U'n, <sup>OK</sup>taka'i/#taka'ku-na'i.*  
 yes expensive/expensive-Neg  
 'Yes, it's {<sup>OK</sup>expensive/#not expensive}.'

b. *Iya, <sup>OK</sup>taka'ku-na'i/#taka'i*  
 no expensive-Neg/expensive  
 'No, it's {<sup>OK</sup>not expensive/#expensive}.'

The PPQ in (61) is an information seeking question. It does not convey the speaker's epistemic bias (i.e., unbiased). In (61), A would answer *u'n* 'yes' if the watch is an

expensive one and *iya* ‘no’ if it is not expensive, just as in English. Thus, Japanese tag answers show affirmation/negation based on the polarity of the uttered question itself when the question is unbiased, while the affirmation/negation is based on the polarity of the conveyed epistemic bias when the question is biased. Hence, it is possible to state the interpretation principle for Japanese tag answers as follows.

(62) Interpretation principle for Japanese tag answers

If there is an epistemically-biased proposition (e.g., an epistemically-biased interrogative), then a tag answer operates on it. Otherwise, a tag answer operates on the proposition which has the same polarity as the uttered interrogative sentence.

The appropriate choice between *u'n/ha'i* ‘yes’ and *iya/iie* ‘no’ in response to a Japanese NPQ depends on understanding which prosodic pattern (i.e., either P-type or NN-type) the NPQ is uttered with. Thus, the data shown in (59) and (60) support the idea that the prosodic distinction between P-type and NN-type is not accidental but is correlated with the distinction concerning the speaker’s epistemic bias.

### 3.4.2 Polarity Items

As described in Chapter 2, previous studies have already pointed out that polarity items disambiguate the polarity of the speaker’s epistemic bias in NPQs. PPIs are compatible with NPQs which convey the speaker’s positive epistemic bias (i.e., ONPQs) and incompatible with NPQs which convey the speaker’s negative epistemic bias (i.e., INPQs). On the other hand, NPIs are compatible with INPQs and incompatible with ONPQs. This disambiguation is observed also in Japanese NPQs. Take *zenzen* ‘at

all’ and *amari* ‘very much’ as examples of NPIs in Japanese (see also Section 2.2.2.1 for a discussion of Japanese polarity items).

- (63) a. Sono ho’n-wa zenzen/amari taka’ku-na’i/\*taka’i.  
the book-Top at.all/very.much expensive-Neg/expensive  
‘The book is not expensive at all/very much.’
- b. \*Sono ho’n, zenzen/amari taka’i?  
the book at.all/very.much expensive

Together with negation, *zenzen* and *amari* mean ‘(not) ... at all’ and ‘(not) ... very much’ respectively. Note that *zenzen* and *amari* have to be under the scope of negation in contrast to their English translational equivalents ‘at all’ and ‘very much’ (thus the latter in English can appear in affirmative declarative sentences, while ‘at all’ is licensed in downward entailing contexts generally). The data in (63) show that *zenzen* and *amari* cannot be licensed by a question alone, but have to be licensed by negation, which indicates that these items require a strong licenser and certifies that they are undoubtedly NPIs.<sup>25</sup> The point is that these NPIs are incompatible with P-type but compatible with NN-type, just as English NPIs are incompatible with ONPQs but compatible with INPQs. Therefore, for example, it is impossible to put *zenzen/amari* before the adjective predicate *taka’ku-nai* in context (57a), where the NPQ is P-type, but possible in contexts (57b) and (57c), where the negative morpheme in NPQs retains its lexical accent, which indicates that the NPQs are NN-type.

- (64) a. (in context (57a))

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<sup>25</sup> Note that some young native speakers use *zenzen* merely as an intensifier. In the sense, *sono ho’n-wa zenzen taka’i* in (63a) is acceptable, which means ‘the book is really/very expensive.’ It is common not only in Japanese but also in English for scalar adverbs such as ‘really’, ‘too’, ‘that’, and ‘exactly’ to have NPI uses. I put aside this newly-emerged usage of *zenzen* in this dissertation.

Sono ho'n, (\*zenzen/\*amari) taka'ku-nai?  
 the book at.all/very.much expensive-Neg

(Int.) 'Isn't the book expensive {at all/very much}?'  $\langle ?\neg p, B_s p \rangle$

b. (in context (57b, c))

Sono ho'n, (zenzen/amari) taka'ku-na'i?  
 the book at.all/very.much expensive-Neg

'Isn't the book expensive {at all/very much}?'

$\langle \langle ?\neg p, \emptyset \rangle$  in context (57b), and  $\langle ?\neg p, B_s \neg p \rangle$  in context (57c))

Also, the data in (64) suggest a parallelism between English NPQs and Japanese NPQs: NPIs are compatible with INPQs and epistemically-unbiased NPQs, both of which are pronounced with NN-type prosody in Japanese, but incompatible with ONPQs, which have P-type prosody in Japanese (see Romero and Han 2004, as discussed in Section 2.1.3 of this dissertation). In English, polarity items can disambiguate the polarity of the speaker's epistemic bias in NPQs with preposed negation. In this sense, Japanese slightly differs from English because polarity items in Japanese do not “disambiguate” the polarity of the speaker's epistemic bias. For, the polarity of the speaker's epistemic bias is always explicitly detectable from the prosodic pattern (i.e., P-type vs. NN-type) even without the help of polarity items (except for the case where the predicate is of a simple verb; see Section 3.5).

In contrast with NPIs, PPIs are compatible with ONPQs and incompatible with INPQs and epistemically-unbiased NPQs not only in English but also in Japanese. In previous studies, Sudo (2013) uses indeterminates with *KA* as Japanese PPIs, and Ito and Oshima (to appear) use *warito* ‘quite’ for the purpose. Other than those items, *ka'nari* ‘considerably’ also works as a PPI in Japanese, as shown below.

(65) Sono ho'n-wa ka'nari {?\*taka'ku-na'i/<sup>OK</sup>taka'i}.

- the book-Top considerably expensive-Neg/expensive
- a. ‘The book is considerably expensive.’
- b. ?# ‘The book is considerably inexpensive.’ (*considerable* >  $\neg$ )
- (# ‘It is not the case that the book is considerably expensive.’
- ( $\neg$  > *considerable*))

In (65), *ka'nari* can appear in the affirmative declarative sentence while it is unacceptable in the negative declarative sentence. Some native speakers might judge it acceptable (though slightly odd) for *ka'nari* to appear with the negative predicate in (65).<sup>26</sup> However, even in the case, the only possible interpretation is that *ka'nari* takes scope over negation (65a), and it cannot be under the scope of negation (65b). Thus, it would be appropriate to assume that *ka'nari* is a PPI (or has a strong tendency to appear in positive contexts, as *warito* ‘quite’ does; see Ito and Oshima (to appear)). Therefore, it is predicted that *ka'nari* can appear in P-type NPQs while cannot in NN-type NPQs, and this prediction is correct.

(66) a. (in context (57a))

Sono ho'n, (ka'nari) taka'ku-nai?  
 the book considerably expensive-Neg  
 ‘Isn’t the book considerably expensive?’  $\langle ?\neg p, B_{sp} \rangle$

b. (in context (57b, c))

Sono ho'n, (?\*ka'nari) taka'ku-na'i?  
 the book considerably expensive-Neg

(i) ?# ‘Isn’t the book considerably inexpensive?’

(ii) # ‘Isn’t it the case that the book is considerably expensive?’

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<sup>26</sup> Even these native speakers would agree in the point that it becomes more natural (or completely natural) to replace the negative predicate *taka'ku-na'i* ‘not expensive’ with the positive predicate *yasu'i* ‘inexpensive/cheap’ in (65) without changing its basic meaning. It would be true also in (66b).

$\langle \langle ?\neg p, \emptyset \rangle$  in context (57b), and  $\langle ?\neg p, B_s\neg p \rangle$  in context (57c))

The PPI *ka'nari* can appear in P-type NPQs without any problem as illustrated in (66a). The NPQ in (66a) conveys the speaker's positive epistemic bias that the book is considerably expensive. In contrast, it is unacceptable in NN-type NPQs as shown in (66b). Native speakers who judge the negative sentence in (65) as acceptable might judge that (66b) is acceptable with *ka'nari*. In this case, *ka'nari* cannot be under the scope of negation as in (66b-ii) but has to take scope over negation as in (66b-i). In interpretation (66b-i), the NN-type NPQ conveys the negative epistemic bias that the book is not expensive (or it can be epistemically unbiased depending on the context), and *ka'nari* modifies the degree of inexpensiveness.

Thus the data in (64) and (66) demonstrate that the prosodic patterns (i.e., P-type vs. NN-type) restricts the occurrence of NPIs and PPIs in Japanese NPQs, and hence, we can say that these data also confirm that the speaker's epistemic bias is marked with the prosody of a NPQ in Japanese.

### 3.4.3 Attachment of *no/noda*

As stated in Chapter 1, this dissertation focuses on Japanese NPQs without sentence-final elements, but we touch in this section on the behavior of NPQs with *no/noda* '(it is) that'. Japanese allows NPQs (as well as other types of sentences such as declaratives and PPQs) to be accompanied by *no* or *noda*. The former (the attachment of *no*) has been discussed in Sudo (2013) as we saw in Section 2.2.2. It might be possible to analyze *no* as a discourse particle, a nominalizer, or something else, and *noda* as *no* + *da*, where *da* is usually assumed to be the copula. As a general topic I put aside the issue about the status of *no/noda* in this dissertation. Also, the semantic effect of the

attachment of *no/noda* is a complicated matter, and hence, it will not be discussed in this dissertation.

Interestingly, the attached position of *no/noda* to a NPQ is correlated with the prosodic pattern of the NPQ (i.e., whether P-type or NN-type). If a NPQ is of NN-type, then *no/noda* is attached to the position following the negative morpheme *-na'i*, and vice versa, as shown below.<sup>27</sup>

- (67) a. Sono ho'n, {taka'ku-na'i **nodesu** ka/ taka'ku-na'i **no**}? (NN-type)  
 the book expensive-Neg NODA.Pl't Q/ expensive-Neg NO  
 'Isn't the book expensive?' ⟨?¬*p*, B<sub>s</sub>¬*p*⟩
- b. Sono ho'n, {\*taka'ku-nai **nodesu** ka/ \*taka'ku-nai **no**}? (P-type)  
 the book expensive-Neg NODA.Pl't Q/ expensive-Neg NO  
 (Int.) 'Isn't the book expensive?' ⟨?¬*p*, B<sub>s</sub>*p*⟩

In (67), it is observed that *no/noda* can follow the lexically-accented *-na'i* as in (67a) while it is unacceptable for them to follow the deaccented *-nai* as in (67b). What is remarkable in NN-type NPQs with *no* (e.g., (67a)) is that they necessarily convey the speaker's negative epistemic bias. In other words, they cannot be interpreted as epistemically-unbiased NPQs but have to be interpreted as INPQs (cf. NN-type NPQs without a particle, which can be interpreted as either INPQs or epistemically-unbiased NPQs). Therefore, for example, while it is felicitous to ask the NN-type NPQ with *no* in (67a) in context (57c), it is infelicitous and sounds awkward to ask the NPQ in context (57b).

In contrast, if a NPQ is of P-type, then *no/noda* is attached to the position preceding the deaccented negative morpheme *-nai*, and vice versa, as shown below.

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<sup>27</sup> The copula *desu* is the polite counterpart of *da*. Similarly, *nodesu* is the polite form of *noda*.

- (68) a. Sono ho'n, taka'i-**nzya**-nai? (P-type)  
 the book expensive-NZYA-Neg  
 'Isn't the book expensive?'  $\langle ?\neg p, B_s p \rangle$
- b. \*Sono ho'n, taka'i-**nzya**-na'i? (NN-type)  
 the book expensive-NZYA-Neg  
 (int.) 'Isn't the book expensive?'  $\langle ?\neg p, B_s \neg p \rangle$  (or  $\langle ?\neg p, \emptyset \rangle$ )

In (68), *-nzya* can be analyzed as the contracted form of *no + zya*. As I mentioned in footnote 12, *-zya* is usually assumed to be the contracted form of *de wa*, where *de* is a conjugational form of the copula *da* and *wa* is topic marker. Thus, *-nzya* is assumed to be a contracted form including *no/noda*. In (68), we see that *no/noda* (within *-nzya*) can precede the deaccented *-nai* as in (68a) while it is unacceptable and sounds awkward that they precede the lexically-accented *-na'i* as in (68b). The speaker's positive epistemic bias conveyed through the prosody of P-type is not affected by the attachment of *no/noda*, and the NPQ in (68a) is always interpreted as an ONPQ.

The examples in (67) and (68) involve attachment of a single *no/noda* to a NPQ. However, in Japanese, it is also possible that one NPQ has both types of *no/noda* demonstrated in (67a) and (68a) simultaneously (that is, two *no/noda* may appear in a NPQ, one preceding the negative morpheme and the other following the negative morpheme), as shown below. In such a case, there are two possible prosodic patterns concerning the negative morpheme, as in (69a) and (69b).

- (69) Sono ho'n, {taka'i-**nzya**-nai **nodesu** ka/ taka'i-**nzya**-nai **no**}?  
 the book expensive-NZYA-Neg NODA.PlT Q/ expensive-Neg NO
- a. ta'kai-nzya-**na'i** {no/nodesu ka}? (NN-type)  $\Rightarrow$  INPQ  $\langle \langle ?\neg p, B_s \neg p \rangle \rangle$
- b. ta'kai-nzya-**nai** {no/nodesu ka}? (P-type)  $\Rightarrow$  ONPQ  $\langle \langle ?\neg p, B_s p \rangle \rangle$

The interpretation of the NPQ in (69) depends on its prosodic pattern. When the negative morpheme *-na'i* retains its lexical accent as in (69a), only the INPQ interpretation is singled out (e.g., (69a) conveys the speaker's negative epistemic bias that the book is not expensive) and the epistemically-unbiased interpretation is blocked, which is consistent with the observation in (67a). On the other hand, when the lexical accent of *-na'i* is deleted as in (69b), only the ONPQ interpretation is singled out (i.e., the positive epistemic bias is conveyed). Thus, the attachment position of *no/noda* also correlates with the prosodic patterns of Japanese NPQs (that is, P-type vs. NN-type) and with the possible interpretations which those prosodic patterns allow.

In closing this section, I would like to mention NN-type NPQs with single *no/noda*. As we saw in (67a), these NPQs only allow INPQ interpretation and prohibit epistemically-unbiased interpretation. It might be possible to say that a property of *no/noda* is to disambiguate INPQ interpretation from epistemically-unbiased interpretation, and vice versa. In other words, biased interpretation is forced by attaching *no/noda* in NN-type NPQs. However, it is not true in the case of PPQs. Sudo (2013) argues that neither PPQs without a particle nor ones with *no/noda* convey epistemic bias (see Table 2.5). It is true that PPQs without a particle convey no epistemic bias. But, actually, PPQs with *no/noda* are ambiguous between conveying no epistemic bias and conveying positive epistemic bias which is the result of the epistemic shift (from negative epistemic bias) caused through the discourse situation (i.e., just like the opposite case of INPQ interpretation), as the following examples illustrate.

(70) a. There is a big party tonight. S has no idea regarding whether A is going to the party. S asks A;

S: Ko'nya-no pa'atii, iku (no)?  
 tonight-Gen party go NO

‘Are you going to the party tonight?’  $\langle ?p, \emptyset \rangle$

b. There is a big party tonight. S knows that A is not that social and doesn’t like going to parties. So, he thinks that A isn’t going to the party tonight.

A: Ko’nya-no pa’atii-ni na’ni(-o) kite ike’-ba i’i kana?  
tonight-Gen party-for what-Acc wear.Ger go-if good Q

‘What do you think I should wear for the party tonight?’

S: Ko’nya-no pa’atii, iku #(no)?  
tonight-Gen party go NO

‘Are you going to the party tonight?’  $\langle ?p, B_s \neg p \rangle$

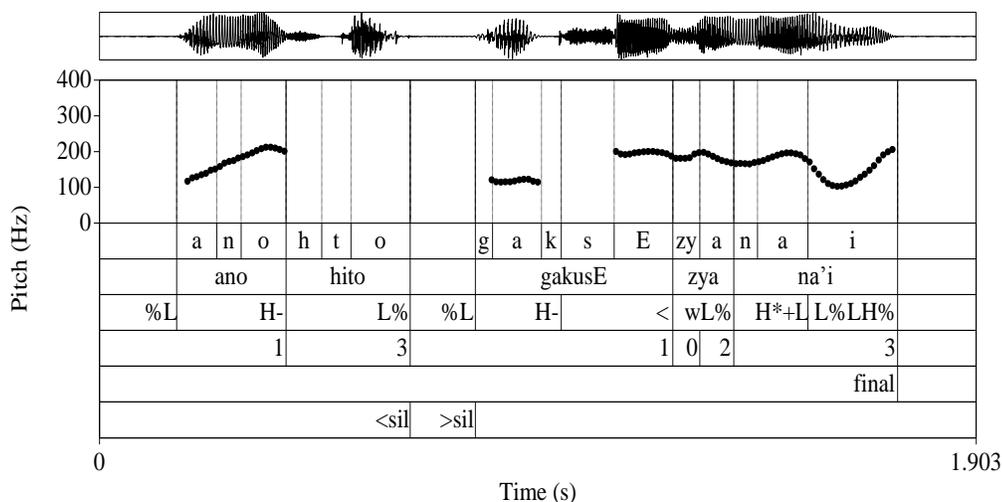
In (70a), the PPQ conveys no epistemic bias, regardless of the presence of *no/noda*. In (70b), on the other hand, S used to believe that A is not going to the party (i.e., S used to believe  $\neg p$ ), but A’s utterance makes him discard his previous belief  $\neg p$  and infer  $p$  to be true (thus, positive epistemic bias is newly formed through the discourse situation). In this situation, the PPQ in (70b) successfully conveys S’s positive epistemic bias with *no/noda*. It is infelicitous to ask the NPQ without *no/noda* in this situation. To sum up these data, the attachment of *no/noda* forces NPQs to be interpreted as biased questions (i.e., INPQ interpretation in NN-type NPQs, and ONPQ interpretation in P-type NPQs) as in (67-69). In contrast, the attachment does not force but enables PPQs to be interpreted as biased questions, not only as unbiased interpretation, as in (70a, b). When PPQs with *no/noda* convey positive epistemic bias, they show the completely opposite pattern of NN-type NPQs with *no/noda* with respect to the polarity of epistemic bias. That is, while the former requires positive epistemic bias to be newly emerged in the discourse situation, the latter requires negative epistemic bias to have newly emerged during the discourse situation. As noted above, I leave the precise semantic contribution of *no/noda* for future research.

### 3.5 Neutralization of the prosodic distinction

In (56), I demonstrated that the predicate of an NPQ can be an adjective, noun, or verb, and I presented phonetic data showing the F0 contour for the case of adjective such as (56b) in Figure 3.1-3.3. In this section, we check if NPQs with other predicate types (e.g., noun predicate such as (56c)) also has the prosodic distinction between P-type and NN-type.

First, we focus on the NPQs with a noun predicate. For example, the NPQ in (56c) has two possible accent patterns concerning the negative morpheme *-na'i*, repeated below. Figure 3.4 demonstrates the prosodic pattern where the lexical accent of *-na'i* is retained.

- (56)c. Ano hito(-wa) gakusee-zya-na'i/gakusee-zya-nai?  
 that person-Top student-ZYA-Neg/student-ZYA-Neg  
 'Is that person not a student? / Isn't that person a student?'  
 ( $\langle ?-p, B_s p \rangle$  with deaccented *-nai*,  $\langle ?-p, B_s -p \rangle$  or  $\langle ?-p, \emptyset \rangle$  with accented *-na'i*)



**Figure 3.4: Accented negation in interrogative *gakusee-zya-na'i*? ( $\langle ?-p, B_s -p \rangle$  or  $\langle ?-p, \emptyset \rangle$ )**

In Figure 3.4, capitalized vowels in the Segment Tier and Word Tier (e.g., E of *gakusE*) indicate a long vowel. As I mentioned, the phrasal tone of an AP (i.e., H-) should be placed on the second mora of the AP. But, since the high vowel /u/ becomes devoiced between voiceless consonants in the AP of *gakusee-zya*, we cannot see the F0 peak on the second mora, and the actual F0 peak look located on the third mora /sE/. This is indicated with H- and “<” in Tone Tier. We can see another instance of vowel devoicing in *hito*. Also, the BI “0” is marked within the morpheme *-zya*, which indicates that it is a contracted form of *de* (copula) + *wa* (topic marker), as I mentioned above. It is observed that the F0 fall starts on the first mora /na/ of the negative morpheme *-na’i*, which indicates that the lexical accent of *-na’i* is retained in Figure 3.4 (i.e., NN-type). Hence, it is predicted that the NPQ in (56c) with the prosodic pattern in Figure 3.4 should be uttered to convey the speaker’s negative epistemic bias (or convey no epistemic bias), and the prediction is correct. For example, the prosodic pattern in Figure 3.4 is used in the following discourse situations.

(71) S and A are looking for subjects for their language experiment. They want only college students to participate in their experiment.

S: Ha’nako-no ka’resi-wa do’o?  
Hanako-Gen boyfriend-Top how

‘How about Hanako’s boyfriend (as a subject)?’

A: Mo’o daigaku-o sotugyoo-si-ta kara, dame’-da yo  
already college-Acc graduate-do-Past because no.good-Cop Part

‘He already graduated from a college. So, he can’t participate in our experiment.’

S: Ka’nako mo ka’resi iru yo ne? Daiga’kusee ka do’o ka  
Kanao too boyfriend exist PartPart college.student Q how Q

sir-ana'i kedo, do'o? Ano hito, **gakusee-zya-na'i?**  
 know-Neg but how that person student-ZYA-Neg

'Kanao also has a boyfriend, right? I don't know if he is a college student or not. But, how about that guy? Is that person not a student?'  $\langle ?\neg p, \emptyset \rangle$

A: Iya, ano hito-wa {gakusee-da/#gakusee-zya-na'i} yo.  
 no that person-Top student-Cop/student-ZYA-Neg Part  
 'No, {<sup>OK</sup>he's a student/#he's not a student}.'

(72) (Same context as (71))

S: Mi'ki-no ka'resi-ni-mo tanomo'o yo.  
 Miki-Gen boyfriend-Dat-too let's.ask Part

'Let's ask Miki's boyfriend (to be a subject of our experiment) too.'

A: Ka're-wa dame'-da yo.  
 he-Top no.good-Cop Part

'He cannot be a subject of our experiment.'

S: Na'nde? Ano hito, **gakusee-zya-na'i?**  
 why that person student-ZYA-Neg

'Why not? Isn't that person a student?'  $\langle ?\neg p, B_s\neg p \rangle$

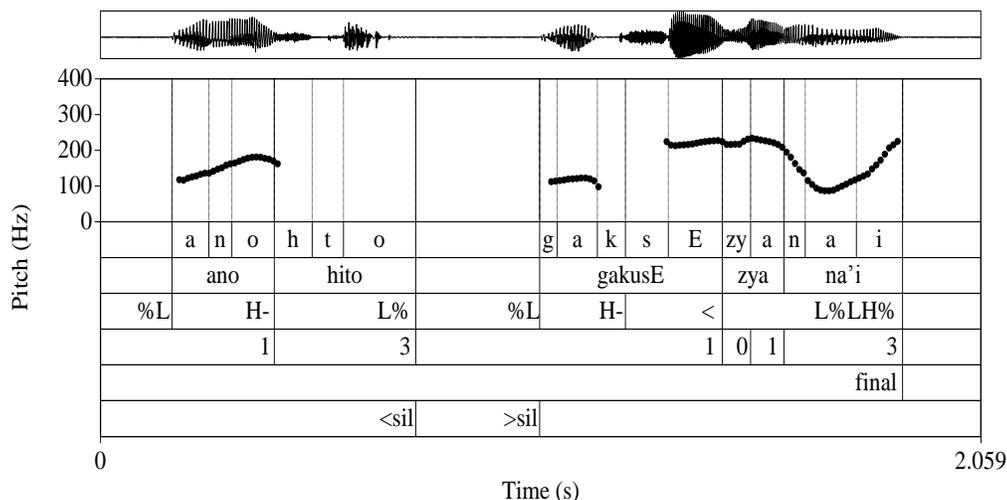
A: U'n, {gakusee-zya-na'i/#gakusee-da} yo. Kyo'nen sotugyoo-si-ta yo.  
 yes student-ZYA-Neg/student-Cop Part last.year graduate-do-Past Part

'Yes, {<sup>OK</sup>he's not a student/#he's a student}. He graduated last year.'

In context (71), S has no idea whether Kanao's boyfriend is a student or not. A's utterance immediately before S's asking the NPQ makes the negative predicate contextually prominent, and hence, an NN-type NPQ can be asked felicitously without conveying epistemic bias (i.e., epistemically neutral/unbiased) in this context. A's answer also suggests that the NPQ in (71) should be interpreted as an epistemicially-neutral question, which NN-type NPQs allow (see Section 3.4.1). On the other hand, the NPQ conveys the speaker's negative epistemic bias in context (72). S originally believes

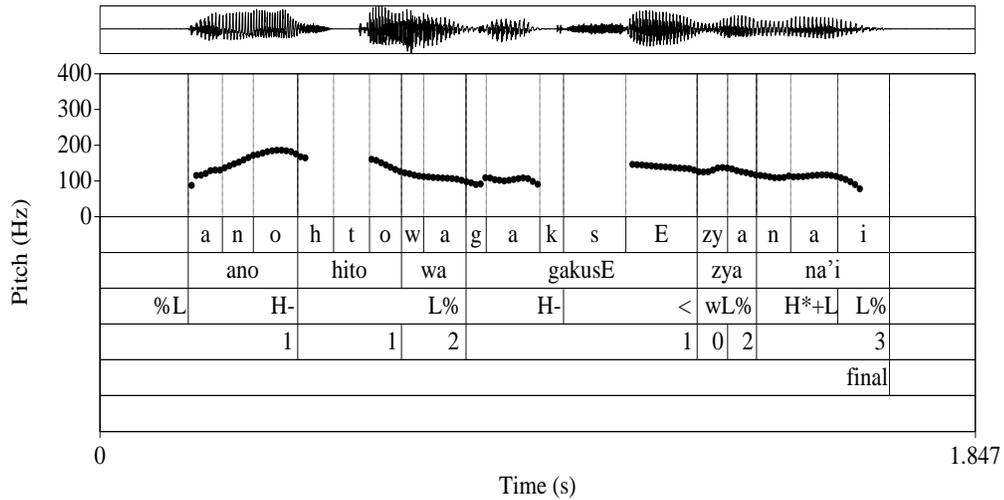
$p$  (= Miki's boyfriend is a student), but he wants confirmation for  $\neg p$ , his newly-formed belief though the discourse situation. Similarly to context (71), the INPQ interpretation indicated by A's answer in (72) is also allowed by NN-type NPQs. Thus, the retention of the lexical accent of  $\neg na'i$  is correlated with the interpretation of an NPQ (i.e., NN-type) not only in adjective predicates but also in noun predicates.

Figure 3.5 demonstrates that the NPQ in (56c) can be uttered with another prosodic pattern, where the negative morpheme is deaccented.



**Figure 3.5: Deaccented negation in interrogative *gakusee-zya-nai?* ( $\langle ?\neg p, B_{sp} \rangle$ )**

In contrast with Figure 3.4, the negative morpheme  $\neg nai$  is not accented in Figure 3.5, as the absence of  $H^*+L$  for it indicates. The negative morpheme forms an AP (and also an IP) with *gakusee* and  $\neg zya$ . The figure shows that the F0 fall begins before the first mora of  $\neg nai$ , which is assumed to be the lexically accented mora originally (see Figure 3.6 below). Therefore, we can say that the negative morpheme is deaccented in Figure 3.5.



**Figure 3.6: Negation in declarative *gakusee-zya-na'i* (<−*p*, *B<sub>s</sub>p*>)**

The deaccentuation of the negative morpheme leads us to predict that the NPQ in (56c) conveys the speaker's positive epistemic bias with the prosodic pattern shown in Figure 3.5 (i.e., P-type). This prediction is correct. For example, the NPQ in (56c) is uttered with the prosodic pattern as in Figure 3.5 (i.e., P-type) in the following discourse situation.

(73) S finds a person wearing a school uniform at a party, and S talks to A.

S: Nee, (seehuku-da-si waka-soo-da-kara,  
 hey school.uniform-Cop-and young-Evid-Cop-because  
 ano hito, **gakusee-zya-nai?**  
 that person student-ZYA-Neg

'Hey, (Because he is wearing a school uniform and looks young,) isn't that person a student' <?−*p*, *B<sub>s</sub>p*>

A: U'n, {gakusee-da/#gakusee-zya-nai} ne.  
 yes student-Cop/student-ZYA-Neg Part

'Yes, {<sup>OK</sup>he's a student/#he's not a student}.'

In context (73), S has the positive epistemic bias ‘that person must be a student’ based on the information about his appearance and what he’s wearing. Thus, the data in (71-73) indicate that the prosodic distinction between P-type and NN-type is found not only in adjective predicates but also in noun predicates.

On the other hand, the prosodic distinction disappears in NPQs where the predicate is a simple verb such as (56a), repeated below.

- (56)a. Yamada-kun(-wa) nom-a'nakat-ta?  
 Yamada-Suffix-Top drink-Neg-Past  
 ‘Didn’t Mr. Yamada drink? / Did Mr. Yamada not drink?’  
 ( $\langle ?\neg p, B_s \neg p \rangle$ ,  $\langle ?\neg p, \emptyset \rangle$ , or  $\langle ?\neg p, B_s p \rangle$ )

As the the annotation in (56a) shows, the disappearance of the prosodic distinction causes the ambiguity of its interpretation (i.e., positive, negative, or neutral). Consider the following three separate discourse situations in each of which the NPQ in (56a) can be asked felicitously.

- (74) a. A went to a party last night. A tells S that A was together with Yamada during the party. S knows that Yamada likes drinking. S asks A;

S: Yamada-kun, **nom-a'nakat-ta?**  
 Yamada-Suffix drink-Neg-Past  
 ‘Didn’t Yamada drink?’  $\langle ?\neg p, B_s p \rangle$

A: U’n, {no’nde-ta/#no’nde-na’kat-ta} yo  
 yes drink.Ger-Past/drink.Ger-Neg-Past Part  
 ‘Yes, {<sup>OK</sup>he was drinking (a lot)/#he was not drinking}.’

b. A and S, who are a couple, held a party at their home last night. On the next day, they are chatting about which guests were drinking. S doesn't know whether Yamada likes drinking or not.

S: Tanaka-san-wa no'nde-ta yo ne?  
Tanaka-Suffix-Top drink.Ger-Past Part Part

Kuno-san-wa do'o-dat-ta? No'n-da?  
Kuno-Suffix-Top how-Cop-Past Drink-Past

'Ms. Tanaka was drinking, right? How about Mr. Kuno? Did he drink?'

A: Iya, nom-a'nakat-ta.  
no drink-Neg-Past

'No, he didn't drink.'

S: Soo. Zya'a, Yamada-kun-wa do'o-dat-ta?  
so then Yamada-Suffix-Top how-Cop-Past

Yamada-kun, **nom-a'nakat-ta?**  
Yamada-Suffix drink-Neg-Past

'Oh, really. Then, how about Mr. Yamada? Did he not drink?'  $\langle ?\neg p, \emptyset \rangle$

A: U'n, {#no'nde-ta/<sup>OK</sup>no'nde-na'kat-ta}  
yes drink.Ger-Past/drink.Ger-Neg-Past

'Yes, {#he was drinking/<sup>OK</sup>he was not drinking}.'

c. (Same context as (74a))

S: Pa'atii-de na'ni no'n-da?  
party-at what drink-Past

'What did you drink at the party?'

A: Yamada-kun-to isshoni orenzizyu'usu-o no'nde-ta yo  
Yamada-Suffix-with together orange.juice-Acc drink.Ger-Past Part

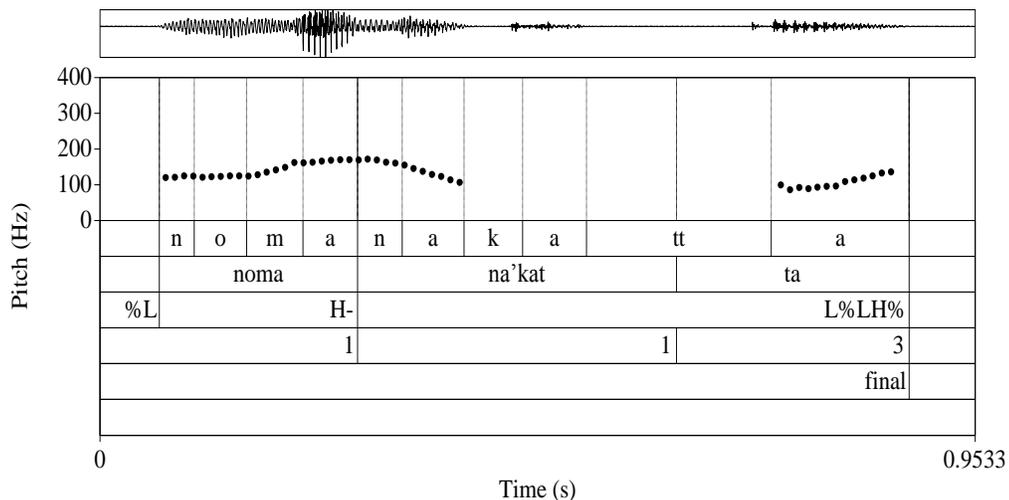
'I was drinking orange juice together with Yamada.'

S: Yamada-kun, **nom-a'nakat-ta?**  
Yamada-Suffix drink-Neg-Past

'Didn't Yamada drink?'  $\langle ?\neg p, B_s\neg p \rangle$

A: U'n, kino'o-wa {#no'nde-ta/<sup>OK</sup>no'nde-na'kat-ta} yo.  
 yes yesterday-Top drink.Ger-Past/drink.Ger-Neg-Past Part  
 'Yes, {#he was drinking/<sup>OK</sup>he wasn't drinking} yesterday.'

While the NPQ in (56a) does not convey epistemic bias in context (74b), where the negative predicate *nom-a'nakat-ta* 'didn't drink' is contextually prominent in S's asking the NPQ because of its immediately preceding utterance by A, it conveys the speaker's positive epistemic bias in context (74a) and his negative epistemic bias in context (74c). Hence, we predict that the P-type prosodic pattern is observed in (74a) while the NN-type is used in (74b, c). However, the NPQ in (56a) has the only one possible prosodic pattern, shown in Figure 3.7, in all discourse situations in (74).



**Figure 3.7: F0 contour in interrogative *nom-a'nakat-ta*?  $\langle ?-p, B_s p \rangle$ ,  $\langle ?-p, B_s -p \rangle$ , or  $\langle ?-p, \emptyset \rangle$**

The negative verb *noma'nakatta* is analyzed as consisting of three morphemes, *nom-* 'drink', *-anakat* 'not', and *-ta* (the morpheme for past tense). We focus on the "word"

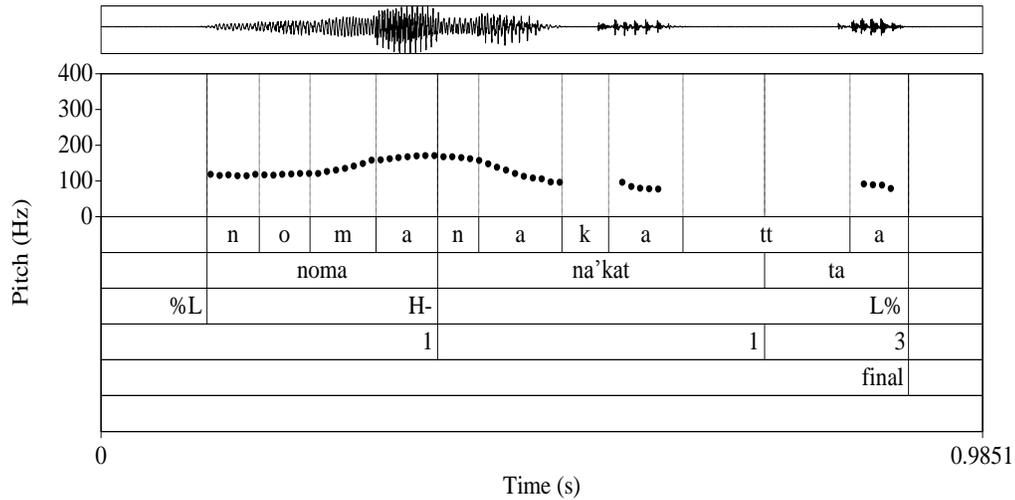
segmentation for the part of *nomanakat*, putting aside the morpheme *-ta*. As I mentioned in footnote 20, the morpheme *-anakat* is a conjugational form of *-anai*, which is one variant of the negative morpheme *-nai*; it appears when preceding the past tense morpheme *-ta*. Linguistically, it can be generalized that *-anai* appears only when the root of its preceding word ends with a consonant (cf. *-nai* is used elsewhere); only verbs may have the roots ending in a consonant in Japanese (thus the roots of all adjectives end with a vowel). However, in Figure 3.7, I do not segment *noma'nakat(-ta)* into *nom* and *-anakat(-ta)* but into *noma* and *-nakat(-ta)* on the Word Tier. This is because Japanese uses morae rather than syllables as the basis of the sound system and because the “**dictionary entry** (including any inflectional or derivational endings) is taken as the working definition of a “word” (in Word Tier of J\_ToBI)” (Venditti 1995, p. 13; emphasis added with boldface).

Japanese dictionaries do not list *nom* as a dictionary entry since it ends with a consonant, and *kana* spelling disallows entries with final consonants. Rather, following traditional Japanese grammar, Japanese dictionaries list *nomu* as a dictionary entry (i.e., what is called *shūsi-kei* ‘conclusive form’, representing non-past). In traditional Japanese grammar, the negated verb predicate, *nomanai* ‘not drink’, is assumed to consist of *noma* (a *mizen-kei* ‘imperfective form’ of *nomu*) and *-nai* (negative morpheme). This is how it is presented in Japanese dictionaries. As a natural consequence, the dictionary entry for the negative morpheme should not be *-anai* but rather *-nai*. As a dictionary entry, *-nai* has the lexical accent on its first mora /na/, as indicated with *na'kat* in the Word Tier in Figure 3.7. This is why *nomanakat(-ta)* is segmented into *noma* and *-na'kat(-ta)* in Word Tier.

The verb *no'mu* ‘drink’ has its lexical accent on its first mora /no/ (strictly, *no'mu* should be segmented into *nom*, its root, and *u*, the morpheme for non-past tense). However, when the negative morpheme *-na'i* (or its past tense form *-na'kat-ta*) is

attached to it, the accent shifts to the second mora /ma/ of *nomanai* or of *nomanakatta*, and *-na'i/-na'katta* is deaccented to *-nai/-nakatta*. Actually, the accent is perceived to be located on /ma/ also in the utterance in Figure 3.7, but the actual F0 fall looks located on the third mora /na/. Hence, it might be appropriate to say that there is a late F0 fall in Figure 3.7. Since the utterance in figure 3.7 seems to involve a late F0 fall, it might not be a good example. But, given that the accent is located on the second mora /ma/ of *noma'nakatta*, the lexical accent of the negative morpheme might be analyzed as retained, since *noma'nakatta* is segmented into *nom + a'nakat + ta*, where the negative morpheme has its accent. Were we to follow the traditional Japanese linguistic analysis, we would say that the lexical accent of the negative morpheme is deleted and that the lexical accent of *no'mu* is shifted to its second mora since *noma'nakatta* is segmented into *noma' + nakat + ta*. In this sense, it might be debated whether the negative morpheme is deaccented or not in the utterance in Figure 3.7.

However, regardless of whether the negative morpheme should be analyzed as deaccented or retained, the point is that the NPQ in (56a) has the same prosodic pattern in each context in (74). In other words, the prosodic distinction (i.e., P-type vs. NN-type) for marking the interpretational difference in NPQs (i.e., INPQ interpretation, ONPQ interpretation, and neutral interpretation) disappears in the case of simple verb predicate. I give the F0 contour of the declarative corresponding of (56a) for comparison below. Notice that the shape of the F0 contour in Figure 3.8 is the same as the one in Figure 3.7, except for the question rising intonation towards the end in Figure 3.7.



**Figure 3.8: F0 contour in declarative *nom-a'nakat-ta* ⟨ $-p, B_s-p$ ⟩**

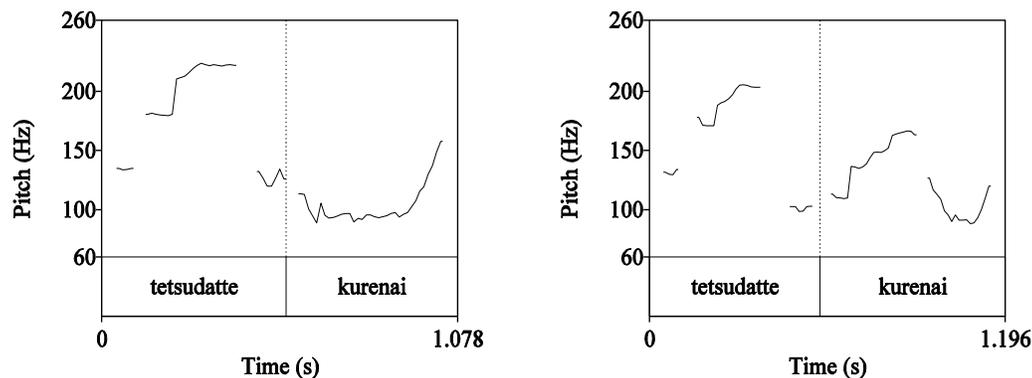
In contrast with NPQs with a simple verb predicate, NPQs with a complex verb predicate such as *tetuda'tte kure-na'i* in (75) have a prosodic distinction marking the interpretational difference, as Ito and Oshima (to appear) argue.<sup>28</sup>

- (75) a. Ano hito, warito **tetuda'tte kure-nai?**  
that person quite help.Ger Aux-Neg  
‘Isn’t he pretty helpful?’ ⟨ $?-p, B_s p$ ⟩
- b. Ano hito, amari **tetuda'tte kure-na'i?**  
that person particularly help.Ger Aux-Neg  
‘Isn’t he that helpful?’ ⟨ $?-p, B_s -p$ ⟩ or ⟨ $?-p, \emptyset$ ⟩

(Ito and Oshima: (10), (11))

<sup>28</sup> In (75), Ito and Oshima assume that *warito* ‘quite’ is a PPI (or at least has a strong tendency to occur in positive context though it might be still controversial). Also, note that *kure* is a conjugational form of *kureru*, which can be used either as a simple verb by itself meaning ‘give’ or as a benefactive auxiliary as in (75).

Each F0 contour of (75a) and (75b) is shown in the Figure 3.9, adopted from Ito & Oshima (to appear).



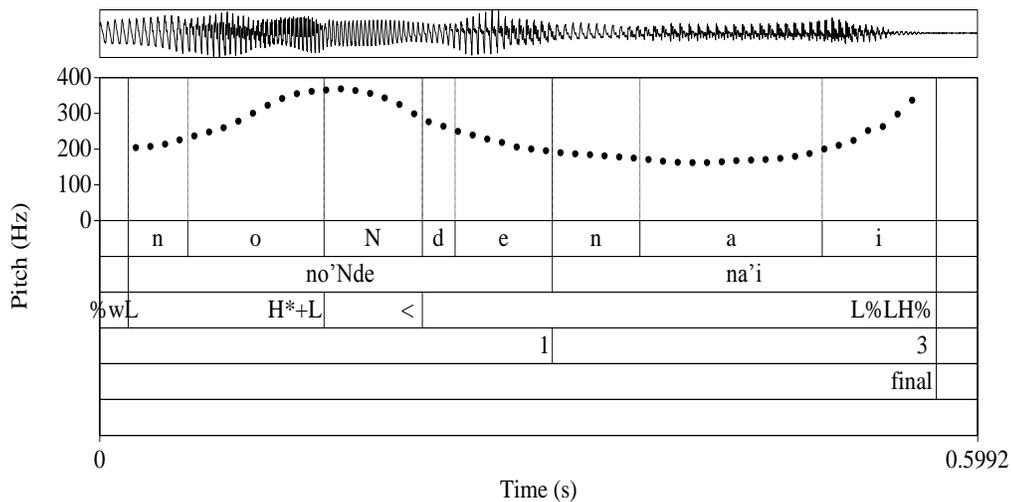
**Figure 3.9: The F0 contours of *tetsudatte kure-nai* in (75a) (left) and (75b) (right) (Ito and Oshima to appear: Figure2)**

It is noticeable that *kure-nai* doesn't have a clear F0 fall (that is, it is not accented) in (75a) but has a clear F0 fall (i.e., it is accented) in (75b), which indicates that there exists a prosodic distinction between P-type and NN-type when a NPQ has a complex verb predicate (cf. a NPQ with a simple verb predicate such as (56a)).

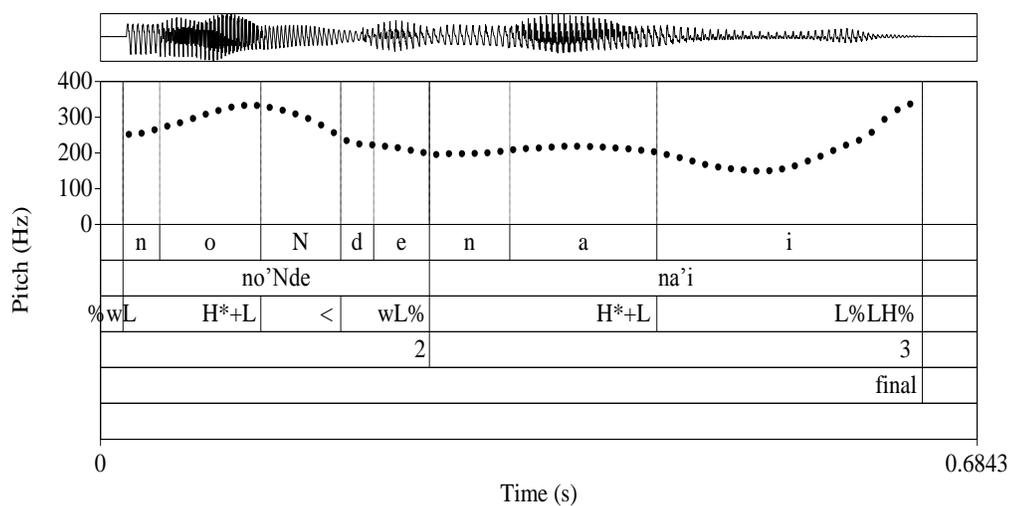
I give another example in (76), where the complex verb predicate *no'nde(-i)-na'i* 'is not drinking/have not drunk' shows the prosodic contrast between P-type as in (76a) and NN-type as in (76b), as shown in Figure 3.10 and 3.11. In (76), I use *ka'nari* as a PPI (see Section 3.4.2) and *amari* as a NPI.

- (76) a. Ka're, kyo'o-wa ka'nari no'nde(-i)-nai? (P-type)  
 he today-Top considerably drink.Ger-be-Neg  
 'Hasn't he drunk pretty much today?' ⟨?−*p*, B<sub>sp</sub>⟩
- b. Ka're, kyo'o-wa amari no'nde(-i)-na'i? (NN-type)  
 he today-Top very.much drink.Ger-be-Neg

- (i) ‘Hasn’t he drunk that much today?’  $\langle ?-p, B_s-p \rangle$
- (ii) ‘Has he not drunk that much today?’  $\langle ?-p, \emptyset \rangle$



**Figure 3.10: Deaccented negation in interrogative *no'nde-nai?* in (76a)**



**Figure 3.11: Accented negation in interrogative *no'nde-na'i?* in (76b)**

While there is no F0 fall observed in the negative morpheme *-nai* in Figure 3.10, an F0 fall exists on the first mora of the negative morpheme /na/ in Figure 3.11 (that is, *-na'i* retains its lexical accent in Figure 3.11).

Ito and Oshima (to appear) do not discuss why only simple verb predicates do not have the prosodic distinction (i.e., P-type vs. NN-type) in contrast with adjective predicates, noun predicates, and complex predicates. Observationally, the prosodic contrast exists only when a predicate is allowed to have the accented *-na'i* in its negative form in declarative sentences. When the negative morpheme is treated as one “word” with the preceding verb, the result is obligatory formation of an AP together with the verb. The accent pattern of inflected/conjugational forms of a verb is determinate depending on whether the verb root is V-final or C-final, and also on whether the verb root is accented or unaccented, as Table 3.1 and 3.2 show. The negative form of a verb simply conforms to this general pattern.

	Accented 'to eat'	Unaccented 'to stop/quit'
negative	/tabe'+nai/	/yame+nai/
suggesting/volitional	/tabe+yo'o/	/yame+yo'o/
polite	/tabe+ma'su/	/yame+ma'su/
past	/ta'be+ta/	/yame+ta/
gerundive	/ta'be+te/	/yame+te/
non-past (dictionary entry form)	/tabe'+ru/	/yame+ru/
conditional/hypothetical	/tabe'+reba/	/yame+re'ba/
imperative	/tabe'+ro/	/yame+ro/

**Table 3.1: Inflected forms of verbs with V-final root**

	Accented 'to run'	Unaccented 'to carry'
negative	/hasir+a'nai/	/hakob+anai/
suggesting/volitional	/hasir+o'o/	/hakob+o'o/
polite	/hasir+ima'su/	/hakob+ima'su/
past	/hasi't+ta/	/hakon+da/
gerundive	/hasi't+te/	/hakon+de/
non-past (dictionary entry form)	/hasi'r+u/	/hakob+u/
conditional/hypothetical	/hasi'r+eba/	/hakob+e'ba/
imperative	/hasi'r+e/	/hakob+e/

**Table 3.2: Inflected forms of verbs with C-final root**

Putting aside the case of accented C-final roots, Table 3.1 and 3.2 illustrate that the negative morpheme *-nai/anai* does not bear an accent distinct from the accent of the verb stem in declarative sentences with verb predicate. In this respect, the case of simple verb predicates differs from cases of noun predicates and adjective predicates, where the negative morpheme *-na'i* is accented in declarative sentences, as we saw in Figure 3.3 (for negated adjective predicate *taka'ku-na'i*) and Figure 3.6 (for negated noun predicate *gakusee-zya-na'i*). The fact that simple verbs deaccent the negative morpheme (except for the case of accented C-final roots) is a direct byproduct of the constraint against more than one locus of accent in a single accentual phrase, combined with general tendency to rank Stem Faithfulness over Affix Faithfulness. Note that the fact that verbs and their affixes form a single accentual phrase is consistent with other data indicating that the negative morpheme is “stuck more firmly” to verbs than to adjectives and nouns, such as the following.

- (77) a. Sono ho'n-wa taka'ku-wa-na'i. (Ga, ya'suku-mo na'i)  
the book-Top expensive-Top-Neg but cheap-either Neg  
'The book is not expensive. (But, it's not cheap either.)'  $\langle -p, B_s -p \rangle$

- b. Ano hito-wa gakusee-de-wa-na'i. (Sense'e-da.)<sup>29</sup>  
 that person-Top student-Cop-Top-Neg teacher-Cop  
 'That person is not a student. (He is a teacher.)'  $\langle -p, B_s -p \rangle$
- c. Yamada-kun-wa {no'mi/nomi'}-wa \*(si)-nai. (Ga, takusa'n tabe'ru.)  
 Yamada-Suffix-Top drink-Top do-Neg but much eat  
 'Yamada doesn't drink alcohol. (But, he eats a lot.)'  $\langle -p, B_s -p \rangle$

In each example of (77), topic marker *-wa* intervenes and separates the head of the predicate from the negative morpheme *-nai*. What distinguishes adjective/noun predicates such as (77a, b) and simple verb predicates such as (77c) is that the latter require the separated negative morpheme to be attached to the inserted verb *si*, which is a conjugational form (i.e., the negative form) of the irregular verb *suru* 'do', while the former does not. The data in (77) show that the negative morpheme is morphologically inseparable from a verb in negative predicate. Based on this observation, I simply assume that the negative predicate of a simple verb (i.e.,  $V + nai/anai$ ) is lexically encoded as one word  $V-nai$  and that this one "word" has at most a single lexical accent. In order for NPQs to have the prosodic distinction (i.e., P-type vs. NN-type), the possibility of accenting the negative morpheme independently has to or deaccenting it has to exist, as it does with adjective predicates and noun predicates. As we see in Table 3.1 and 3.2, simple verb predicate does not allow *-nai* to be independently accented. Therefore, as a natural consequence, it is impossible for *-nai* to be deaccented, and hence, the prosodic distinction between P-type and NN-type cannot be realized.

NPQs with the complex verb predicate *tetudatte kurenai* 'don't do the favor of helping (me)' in Figure 3.9 show that matters are slightly more complex, as this verbal complex has the prosodic distinction between P-type and NN-type. That is, the predicate

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<sup>29</sup> As I mentioned in footnote 12, *-zya* is usually assumed to be the contracted form of the copula *de* and topic marker *-wa*. Hence, it is acceptable to replace *-de-wa* with *-zya* in (77b).

can be pronounced as either *tetuda'tte kure-nai* (i.e., P-type) or *tetuda'tte kure-na'i* (i.e., NN-type). The benefactive auxiliary *kure-ru* can be used as a simple verb 'to give' per se, and it is a verb which has an unaccented V-final root. Therefore, according to Table 3.1, it may at first seem unpredictable that the NN-type prosodic pattern emerges since it is unaccented by default.

The existence of the prosodic contrast with complex predicates such as *tetudatte kurenai* can be attributed to the fact that some native speakers utter *kure-nai* with an accent on /na/ (i.e., *kure-na'i*) in declarative sentences, as shown below.

- (78) *Ano sense'e-wa amari a'dobaisu-o kure-{na'i/nai}*.  
 that teacher-Top very.much advice-Acc give-Neg  
 'That professor doesn't give much advice.'  $\langle \neg p, B_s \neg p \rangle$

More generally, two possible accent patterns are allowed in the case of negated predicates with an unaccented V-final root verb. Therefore, we might expect that the prosodic distinction between P-type and NN-type can be observed in the NPQ corresponding to (78) (depending on the speaker). This prediction is correct as shown in (79).

- (79) a. *Ano sense'e, amari a'dobaisu-o kure-na'i?* (NN-type)  
 that teacher very.much advice-Acc give-Neg  
 'Does that professor not give advice very much?'  $\langle ? \neg p, B_s \neg p \rangle$  or  $\langle ? \neg p, \emptyset \rangle$   
 b. *Ano sense'e, kanari a'dobaisu-o kure-nai?* (P-type)  
 that teacher considerably advice give-Neg  
 'Doesn't that professor give advice a lot?'  $\langle ? \neg p, B_s \neg p \rangle$

Speakers who utter *kure-nai* with unaccented *-nai* in (78) might use the same accent pattern (i.e., unaccented *-nai*) also in (79a). But, the point is that even those speakers recognize that (79), where accented *-na'i* is used, does not convey positive epistemic bias but conveys negative epistemic bias (or no epistemic bias). The exact same explanation can be applied to the case in (75), where *kure-nai* is used as a benefactive auxiliary. Example in (76) can be accounted in the same way. In (76), the verb *i*, which is the conjugational form (i.e., negative form) of *i-ru* ‘to be/exist’ is omitted in NPQs. I repeat the example below.

- (76) a. Ka're, kyo'o-wa ka'nari no'nde(-i)-nai? (P-type)  
 he today-Top considerably drink.Ger-be-Neg  
 ‘Hasn’t he drunk pretty much today?’ ⟨?¬*p*, B<sub>s</sub>*p*⟩
- b. Ka're, kyo'o-wa amari no'nde(-i)-na'i? (NN-type)  
 he today-Top very.much drink.Ger-be-Neg  
 (i) ‘Hasn’t he drunk that much today?’ ⟨?¬*p*, B<sub>s</sub>¬*p*⟩  
 (ii) ‘Has he not drunk that much today?’ ⟨?¬*p*, ∅⟩

Though the verb *i-ru* has an unaccented V-final root, as well as *kure-ru*, some speakers put an accent on /na/ in its negative form *i-na'i* in declarative sentences, which enables to employ the prosodic distinction between P-type and NN-type in its NPQ version, regardless if the verb stem *i* is omitted or not.

### 3.6 Is the prosodic contrast due to post-focus reduction?

In this section, I discuss whether the “deaccenting” of the negative morpheme, which I argue causes the prosodic distinction between P-type and NN-type, is really “deaccenting” or tonal “compression”, as suggested in Ito and Oshima (to appear). It has been proposed that the prosodic contrast has an information-structural basis in my

previous work with David Y. Oshima (Ito and Oshima to appear). In this section I re-examine this claim, and propose another explanation for the prosodic contrast. We begin this section with an overview of the analysis proposed in Ito and Oshima (to appear).

### 3.6.1 Focus and the prosodic patterns in Japanese NPQs

Ito and Oshima claim that the prosodic contrast between P-type and NN-type can be regarded as an example of what is called POST-FOCUS REDUCTION (Kori 1997, Sugahara 2003). Post-focus reduction is the phenomenon where F0 movement (e.g., phrase-tonal rises and lexical accent falls) of post-focus items (i.e., the phrases following the information-structural focus such as contrastive focus) is obligatorily compressed/reduced..

For an account of post-focus reduction, consider the declarative sentence in (80), adopted from Kori (1997). (Apostrophes are added to mark lexical accent.)

- (80) Kyo'nen-wa ha'ru Ro'oma-ni ikima'sita.  
last.year-Top spring Rome-Dat go.Past.Plr  
'Last year, I went to Rome in the spring.' (Kori 1997: p.173)

The sentence in (80) can be uttered as a reply to the following two separate questions. In (81), square brackets indicate phrase boundaries, boldface indicates focushood, which implies retention of pitch movements, and italicization indicates the post-focus reduction, which causes obligatory F0 compression and reduction.

- (81) a. Q: Where did you go in the spring last year?  
A: [Kyo'nen-wa] [ha'ru] [**ro'oma-ni**] [*ikima'sita*].  
b. Q: When did you go to Rome last year?

A: [Kyo'nen-wa] [**ha'ru**] [*ro'oma-ni*] [*ikima'sita*].

In (81a), the phrase *ro'oma-ni* is in focus, and the following phrase *ikima'shita* has to be tonally compressed. In (81b), the phrase *ha'ru* is the focus phrase, and two phrases following it have to be tonally compressed. That is, post-focus reduction is observed in *ikima'shita* in (81a) and *ro'oma-ni ikima'sita* in (81b).

Ito and Oshima propose that (i) the phrase containing the negation is tonally compressed in P-type since it is PART OF GROUND, and (ii) the phrase containing the negation is not tonally compressed in NN-type since it is PART OF THE FOCUS, as shown below.<sup>30</sup>

(82) P-type

a. (56b) in context (57a): {[**ta'kaku**]/[**taka'ku**]} [*na'i*]

b. (75b): ... [**tetuda'tte**] [*kurena'i*]

(83) NN-type

a. (56b) in context (57b, c): {[**ta'kaku**]/[**taka'ku**]} [**na'i**]

b. (75a): ... [**tetuda'tte**] [**kurena'i**]

Ito and Oshima claim that F0 movement of *na'i* and *kurena'i* is compressed and reduced due to post-focus reduction (i.e., they are parts of ground) in P-type NPQs such as (82)

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<sup>30</sup> Some predicate forms in Japanese such as *takaku* have multiple possible accentual patterns (Vance 2008: pp. 162-180). As we saw in Section 3.3, *ososagari* is the phenomenon where the actual F0 peak/fall delays from the locus where the native speakers perceive the F0 peak/fall to exist (e.g., the perceived accent is *ta'kaku* while the actual accent (i.e., F0 peak/fall) is *taka'ku*). In contrast, the “multiple accent patterns” indicates the presence of multiple different possible accent patterns whose distinction native speakers can perceive (e.g., one is perceived as *ta'kaku* and the other is perceived as *taka'ku*, in each of which the locus of the actual F0 peak/fall coincides with the perceived accent fall).

while not compressed or reduced in NN-type NPQs such as (83). Ito and Oshima leave as an open question how exactly groundhood and focushood of negation lead to the positive and negative epistemic bias respectively.

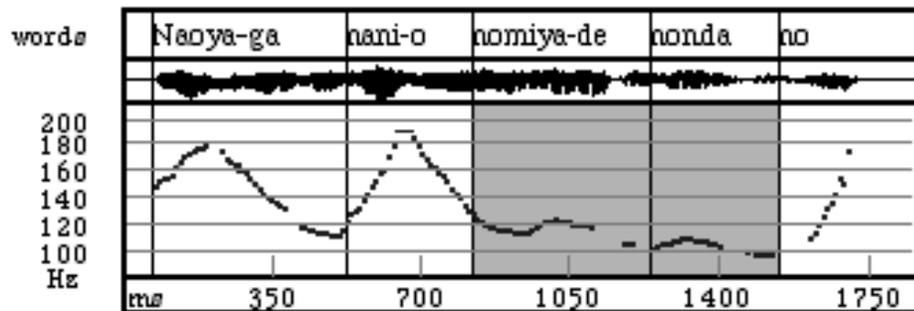
### **3.6.2 Against the post-focus reduction approach**

As we saw above, Ito and Oshima propose that the retention and deletion of the accent of negation can be explained by focushood and post-focus reduction (i.e., groundhood). However, there are grounds to contest the validity of this proposal.

Post-focus reduction is not a phenomenon specific to (Tokyo) Japanese, but it is realized in different ways cross-linguistically. Sugahara (2003) observes that the ways to represent post-focus reduction differ cross-linguistically, and she gives three types of examples of post-focus reduction: (i) absence of pitch accent (e.g., English, Bengali, Greek, and French), (ii) deletion of phonological phrase boundaries (e.g., Korean and Hungarian), and (iii) downstepping and compression of F0 (e.g., Danish, Swedish, and Chinese). Regarding the cross-linguistic distribution, Hwang (2010) documents cases where accent deletion takes place in focus-related contexts in Fukuoka Japanese and South Gyeongsang Korean, and she argues that Tokyo Japanese differs from these two languages with respect to not employing accent deletion in focus-related contexts. That is, post-focus reduction is not marked with accent deletion in Tokyo Japanese. Since I focus on Tokyo Japanese in this dissertation, Hwang's argument concerning Fukuoka Japanese and South Gyeongsang Korean, where post-focus reduction is marked with accent deletion, does not pose a problem. Rather, on the view that P-type prosody in Tokyo Japanese is tonal compression, it must be shown that this pattern has the same phonetic properties as uncontroversial postfocus tonal compression in this language.

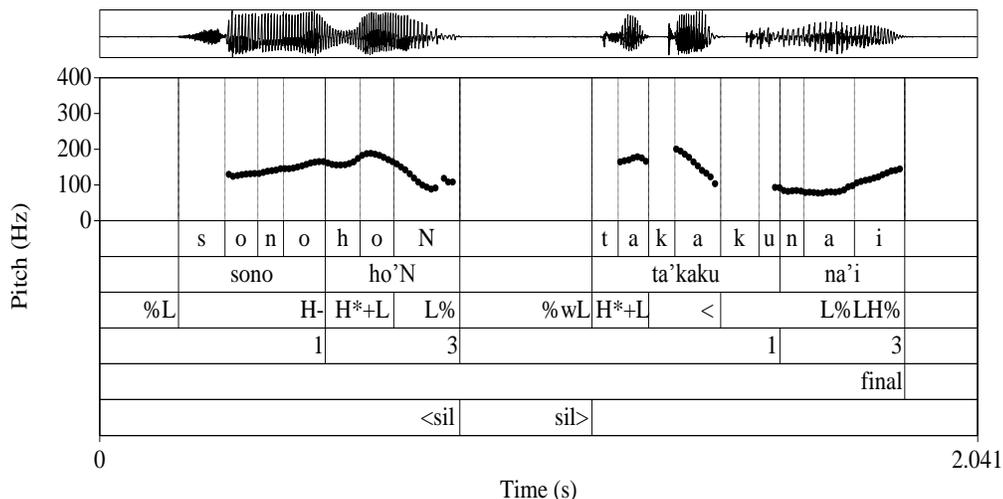
The crucial phonetic question is whether F0 peak of the negative morpheme is completely deleted or merely compressed/lowered. Ishihara (2003) distinguishes a "F0

lowering” from “deaccenting”, and he avoids using the term “deaccenting” to describe the phenomenon of post-focus reduction. He states: “(the use of the term “deaccenting” to refer to post-focus reduction) could misleadingly imply deletion of pitch accents, which actually never happens” (Ishihara 2003: p. 32). Figure 3.12 is adopted from Ishihara (2003), where the F0 peak is merely lowered in two phrases *nomi'ya-de* ‘at a bar’ and *no'nda* ‘drank’ following the focused phrase *na'ni-o* ‘what-Acc’ but they still demonstrate retention of pitch accent.



**Figure 3.12: F0 compression as post-focus reduction (Ishihara 2003: p. 53)**

It is noticeable that Figure 3.1, 3.5, and 3.10 (F0 contour of P-type) significantly differ from Figure 3.12 (F0 contour of post-focus reduction) with respect to the distinction between “deaccenting” and “F0 lowering”. I repeat Figure 3.1 as Figure 3.13 for comparison below.



**Figure 3.13: Deaccented negation in interrogative *taka'ku-nai?* ( $\langle ?-p, B_p \rangle$ ) (= Figure 1)**

In Figure 3.13, the accent of the negative morpheme *-na'i* is completely lost, and even a small F0 peak/fall (i.e., F0 lowering) cannot be observed in it. Thus, we can say that the negative morpheme in P-type does not show the characteristics of post-focus reduction, but rather, that it indicates another phenomenon “deaccentuation”. In this dissertation, I abandon the idea that the prosodic contrast between P-type and NN-type is attributed to post-focus reduction. I leave it as an open question why deaccenting affects the representation of the speaker’s epistemic bias.

### 3.7 Summary

In this chapter, I have shown that Japanese NPQs are ambiguous with respect to the speaker’s epistemic bias at the syntactic level while the syntactic position of negation disambiguates the presence or absence of the speaker’s epistemic bias in English NPQs. Specifically, they are ambiguous with respect to conveying the positive epistemic bias, the negative epistemic bias, or no epistemic bias (i.e., neutral/unbiased). Japanese NPQs

are not disambiguated syntactically but prosodically. Two distinct prosodic patterns, namely the P-type and NN-type, disambiguate the interpretation. The negative morpheme *-na'i* is deaccented in the P-type while the lexical accent is retained in NN-type. While the P-type often (but not always) conveys the speaker's positive epistemic bias (as we will see in greater detail in the next chapter), the NN-type often conveys the speaker's negative epistemic bias. Also, the NN-type is compatible with the neutral interpretation. Thus, Japanese NPQs differ from English NPQs with respect to the way NPQs cluster. In English, a syntactic difference (i.e., the syntactic position of negation) divides NPQs into two groups; epistemically-biased (ONPQs and INPQs) and unbiased (NPQs with non-preposed negation). In contrast, Japanese NPQs are divided into two groups with the help of the prosodic difference; ONPQs (via P-type prosodic pattern) and non-ONPQs (i.e., INPQs and unbiased NPQs, via NN-type prosodic pattern).

Significantly, the difference of the way to subgroup NPQs is not compatible with Romero and Han's (2004) VERUM approach for English NPQs; this approach does not extend naturally to Japanese NPQs. According to Romero and Han, in English NPQs, the preposed negation signals that the VERUM operator has to be involved (and hence, VERUM is not required to be involved in NPQs with non-preposed negation). Further, the scopal difference between VERUM and negation causes the distinction between INPQ interpretation and ONPQ interpretation; VERUM takes scope over negation in INPQ interpretation while negation takes scope over VERUM in ONPQ interpretation.

This analysis is possible only when INPQs and ONPQs are grouped into the same class (thus as we have seen, in English NPQs, both INPQs and ONPQs are marked syntactically in the same way, by preposed negation). However, in Japanese NPQs, if we assume that the retention of the lexical accent of *-na'i* signals that VERUM has to be involved, then the meaning of ONPQ (which is represented with P-type NPQs) cannot be derived. Further, the meaning of unbiased/neutral NPQs is wrongly calculated,

since unbiased/neutral NPQs are represented with NN-type NPQs. Similarly, if we assume that deaccenting of *-na'i* signals that VERUM has to be involved, it is impossible to derive the meaning of INPQs (which is one interpretation conveyed by NN-type NPQs) correctly since VERUM operator is assumed not to be involved. Thus, VERUM approach does not extend in a straightforward way to Japanese NPQs.

Further, I have showed that three pieces of evidence (i.e., *yes/no*-answers, polarity items, and the attachment of *no/noda*) suggest that the prosodic contrast between P-type and NN-type is systematic and not accidental. I also observed that the prosodic contrast between P-type and NN-type disappears in NPQs with a simple verb predicate (strictly speaking, the prosodic distinction can be observed in the case of unaccented V-final root verbs). Though Ito and Oshima (to appear) argue that the prosodic contrast is due to the phenomenon of post-focus reduction, I have argued against this proposal based on the observation that P-type prosody involves the deaccenting of the negative morpheme, which differs from the F0 lowering observed in post-focus reduction. Post-focus reduction invokes the F0 lowering of the negative morpheme, which indicates that its accent is still retained. On the other hand, the accent peak of the negative morpheme is completely deleted in P-type. Thus, in this dissertation, I adopt the view that the prosodic contrast in Japanese NPQs is distinct from focus phenomena such as post-focus reduction.

CHAPTER 4  
MORE ON THE MEANING OF NN-TYPE AND P-TYPE

### 4.1 Introduction

In the previous chapter, I explained the basic meaning of NN-type and P-type questions. We looked at the cases where NN-type and P-type NPQs carry the speaker's negative epistemic bias and positive epistemic bias respectively and also at the cases where NN-type is interpreted in a neutral way with respect to the speaker's epistemic bias. In this chapter, we will take a closer look at the meaning of P-type and NN-type NPQs. Also, I will give data on other usages of P-type and NN-type, some of which are unacceptable in the corresponding English NPQs. We will focus more on the meaning of NN-type and P-type in Section 4.2 and Section 4.3 respectively.

### 4.2 More on the meaning of NN-type NPQs

#### 4.2.1 "Inference on the spot" condition

First, we focus on the negative epistemic bias conveyed in NN-type NPQs. It has been claimed that the negative epistemic bias in an English INPQ has to be newly formed in the discourse situation and that it must not exist prior to the discourse (Ladd 1981, Romero and Han 2004, among others), as shown below.

(2) (Situation: Bob is visiting Kathleen and Jeff in Chicago while attending CLS.)

Bob: I'd like to take you guys out to dinner while I'm here – we'd have time to go somewhere around here before the evening session tonight, don't you think?

Kathleen: I guess, but there's not really any place to go in Hyde Park.

Bob: Oh, really, **isn't there a vegetarian restaurant around here?**

Kathleen: No, about all we can get is hamburgers and souvlaki.

(Ladd 1981: (4))

(84) Scenario: Pat and Jane are two phonologists who are supposed to be speaking in our workshop on optimality and acquisition.

A: Pat is not coming. So we don't have any phonologists in the program.

S: **Isn't Jane coming either?**

(Romero and Han 2004: (7))

In example (2), as Ladd says, “Bob had previously assumed the truth of the proposition *there is a vegetarian restaurant around here*, but has now inferred from what Kathleen says that this proposition is actually false, and is using the negative question to check this new inference” (pp. 164-165) In other words, Bob's negative epistemic bias is newly formed in the discourse situation (not prior to the discourse situation), based on the previous utterance made by Kathleen. Similarly, in example (84), S had previously believed the truth of the proposition *Jane is coming (to the workshop)*, but the utterance of A causes S to hold a negative epistemic bias. Thus, the information provided in the discourse situation changes the polarity of the speaker's (Bob in (2), S in (84)) epistemic bias from positive to negative. Negative epistemic bias conveyed through INPQs has to be newly formed in the discourse situation. I will call this condition the INFERENCE ON THE SPOT condition, following Ito and Oshima (to appear). The following examples support the validity of the assumption that the “inference on the spot” condition has to be satisfied in English INPQs.

(2') (Situation: Bob is visiting Kathleen and Jeff in Chicago while attending CLS. Bob has come to Chicago before, and he believes that the situation has not changed (i.e.,

there is no vegetarian restaurant around there.)

Bob: I'd like to take you guys out to dinner while I'm here – we'd have time to go somewhere around here before the evening session tonight, don't you think?

Kathleen: I guess, but there's not really any place to go in Hyde Park.

Bob: #Oh, really, **isn't there a vegetarian restaurant around here?**

Kathleen: No, about all we can get is hamburgers and souvlaki.

(84') Scenario: Pat and Jane are two phonologists who are supposed to be speaking in our workshop on optimality and acquisition. But, Jane already told S on the phone that she would not be able to go to the workshop due to urgent business. So, S expects Jane not to come to the workshop.

A: Pat is not coming. So we don't have any phonologists in the program.

S: **#Isn't Jane coming either?**

Examples (2') and (84') differ from (2) and (84) respectively in terms of the presence of negative epistemic bias prior to the discourse situation, as the underlined parts of the discourse indicate. Consequently, the violation of the “inference on the spot” condition makes it infelicitous to ask the INPQs in (2') and (84') in each situation.

This condition is observed also in Japanese NN-type NPQs when they convey the speaker's negative epistemic bias (i.e., when they are interpreted as INPQs, but not as unbiased/neutral NPQs). Recall the example in (57c), where the NPQ is uttered with the NN-type prosodic pattern and carries the speaker's negative epistemic bias. I repeat (57c) below.

(57)c. S and A are in a bookstore to buy a book for S's younger brother. A knows that S cannot buy an expensive book since he doesn't have much money. S sees A pick up a thick hardback book from a bookshelf and thinks that he cannot buy it because the hardback book doesn't look inexpensive at all.

A: Tyo'tto! Kore-wa kimi-de'mo ootoo-san-ni  
 a.bit this-Top you-even younger.brother-Suffix-to  
 katte-age-rare'ru to omo'u yo.  
 buy.Ger-Aux-can that think Part  
 'Hey! I think even you can buy this one for your brother.'

S: (E?) Sono ho'n, **taka'ku-na'i?**  
 what the book expensive-Neg  
 'What? Isn't the book expensive?' ⟨?¬p, B<sub>s</sub>¬p⟩

In (57c), S originally has the expectation that the book is expensive (i.e., positive epistemic bias) before the conversation starts, and hence, there doesn't exist the corresponding negative epistemic bias (e.g., 'the book is not expensive') prior to the discourse situation. But, his expectation changes to the negative one (e.g., 'the book is not expensive') because of A's immediately preceding utterance during the discourse. Thus, the "inference on the spot" condition is met in (57c), and the NPQ can be uttered felicitously with the appropriate prosodic pattern in the context of (57c). For comparison, suppose a different discourse situation as in (85).

(85) S and A are in a bookstore to buy a book for S's younger brother. A knows that S cannot buy an expensive book since he doesn't have much money. S sees A pick up a thin paperback book from a bookshelf, which makes S think that the book must be inexpensive enough for S to buy.

A: Tyo'tto! Kore-wa kimi-de'mo ootoo-san-ni  
 a.bit this-Top you-even younger.brother-Suffix-to

katte-age-rare'ru to omo'u yo.  
buy.Ger-Aux-can that think Part

'Hey! I think even you can buy this one for your brother.'

S: (#E?) #Sono ho'n, **taka'ku-na'i?**  
what the book expensive-Neg

'What? Isn't the book expensive?'  $\langle ?\neg p, B_s\neg p \rangle$

In (85), S starts with the expectation that the book is not expensive (i.e., negative epistemic bias  $\neg p$ ) already before the conversation starts, and hence, the “inference on the spot” condition is not met. Therefore, it is infelicitous to ask the NPQ with the NN-type prosodic pattern of in the context of (85) though S holds negative epistemic bias in asking the NN-type NPQ. The difference between (57c) and (85) depends solely on whether negative epistemic bias had been held by the speaker prior to the discourse situation. Interestingly, the P-type NPQ *Sono ho'n, ya'suku-nai?* ‘Isn't the book cheap/inexpensive?’ cannot be asked felicitously either in context (85) though the P-type NPQ is expected to be felicitous when conveying the same epistemic bias as the NN-type NPQ in (85); *the book is cheap/inexpensive* (= *the book is not expensive*). We will come back to this issue in Section 4.3.2.

It is important to note that the NN-type NPQ can be asked felicitously in the context of (85) if the speaker S behaves as if negative epistemic bias (e.g., the book is not expensive) had emerged due to A's previous utterance. For example, in context (85), it is not always true that a thin paperback book is inexpensive. Hence, hiding (or putting aside) his own belief  $\neg p$  prior to the discourse situation, the speaker S can ask the NN-type NPQ to confirm the inference that  $\neg p$  as if his negative epistemic bias (i.e.,  $\neg p$ ) was newly formed in the discourse (e.g., due to A's previous utterance). The following data demonstrate the point.

(86) S and A are in a bookstore to buy a book for S's younger brother. A knows that S cannot buy an expensive book since he doesn't have much money. S sees A pick up a book from a bookshelf. But, S cannot see the book well from his position and cannot guess if the book is expensive.

A: Tyo'tto! Kore-wa kimi-de'mo ootoo-san-ni  
 a.bit this-Top you-even younger.brother-Suffix-to  
 katte-age-rare'ru to omo'u yo.  
 buy.Ger-Aux-can that think Part

'Hey! I think even you can buy this one for your brother.'

S: Zyaa, Sono hon, **taka'ku-na'i?**  
 then the book expensive-Neg

'Isn't the book expensive?'  $\langle ?\neg p, B_s\neg p \rangle$

In (86), S has no prior expectation about the price of the book. However, A's previous utterance makes S hold the negative epistemic bias that the book is not expensive. In this situation, the NN-type NPQ can be asked felicitously to represent the speaker's (= S's) negative epistemic bias.

Furthermore, the data in (86) gives an answer to a significant issue concerning the "inference on the spot" condition; *Does the speaker have to have positive epistemic bias prior to the discourse situation in order to ask an INPQ?* In this respect, the data in (86) suggest that it is not necessarily required that the speaker has a positive epistemic bias prior to the discourse situation in order for a NN-type NPQ to be interpreted as an INPQ. In other words, in Japanese, the speaker's prior epistemic bias can be either positive as in (57c) or neutral as in (86) (but cannot be negative as in (85)) as far as the negative epistemic bias is newly formed in the discourse situation.

The question raised next should be whether the same condition holds also in English INPQs. The data for English INPQs which we saw above include the epistemic

shift from positive to negative in the discourse situation, as in (2) and (84). As we saw in Section 2.1, it seems to have been assumed that the presence of the speaker's prior positive epistemic bias is required/necessary for an INPQ to be asked felicitously. I repeat the summary of English ONPQs and INPQs which Büring and Gunlogson (2000) give based on the observation of Ladd (1981).

(3) a. Outside Negation

The speaker believes a proposition  $p$  and wants confirmation of  $p$ .

b. Inside Negation

**The speaker had previously assumed  $p$**  and wants confirmation for the inference that  $\neg p$ .

(Büring and Gunlogson 2000: (6))

In (3b), the presence of the speaker's prior positive belief is included as a part of the definition of English INPQs. But, actually this condition is not necessary for asking INPQs felicitously. Rather, the felicity conditions for asking English INPQs (and also Japanese NN-type NPQs to be interpreted as INPQs, not as unbiased NPQs) is that the speaker should not have negative epistemic bias  $\neg p$  prior to the discourse situation. Thus it does not matter that the speaker has either positive bias or no bias prior to the discourse, and that negative epistemic bias newly emerges in the discourse situation, perhaps triggered by another interlocutor's utterance. That is, the "inference on the spot" condition is necessary for both English INPQs and Japanese NN-type NPQs to be interpreted as INPQs. We already saw that an English INPQ cannot be asked felicitously in the case where the speaker has negative epistemic bias prior to the discourse situation in (2') and (84'). The following example illustrates that the speaker's prior epistemic bias can be neutral in English in order to ask an INPQ felicitously.

(87) S and A are in a bookstore to buy a book for S's younger brother. A knows that S cannot buy an expensive book since he doesn't have much money. They already found a good inexpensive book as a gift for S's brother. But, since they thought there might be a better one in the bookstore, they are still looking for. S sees A pick up another book from a bookshelf. But, S cannot see the book well from his position and cannot guess if the book is expensive.

A: Hey, this book also seems good for your brother!

S: (So,) Isn't it expensive either?

In context (87), S has no prior expectation about the price of the book which A found, which means that S has a neutral epistemic bias concerning  $p$  (= the book is expensive) prior to the discourse situation. In such a situation, S can ask the INPQ in (87) felicitously, where the presence of NPI *either* ensures that it is not an ONPQ but an INPQ (and also the preposed negation indicates that it cannot be an unbiased/neutral NPQ). Thus, the presence of the speaker's prior positive epistemic bias is not a necessary condition for asking INPQs in English. What is necessary for is that the speaker's negative epistemic bias is newly formed in the discourse – i.e., the “inference on the spot” condition.

This observation – that the “inference on the spot” condition does not require positive epistemic bias to exist prior to the discourse situation – has one more significant implication. As I mentioned in Chapter 2, it is not clear in previous studies whether we should say INPQs convey the speaker's positive or negative epistemic bias. In (87), for example, positive epistemic evidence is not involved at all either prior to or within the discourse situation. It is only (newly-formed) negative epistemic bias which consistently appears in all examples concerning INPQs in (2), (57c), (84), (86) and (87). Some

previous studies assume that INPQs convey positive epistemic bias because they only cited cases where an epistemic shift from positive to negative is involved in asking INPQs. As a result, these previous studies characterize INPQs too restrictively, mistakenly imposing a condition that the speaker has to have positive epistemic bias prior to the discourse situation. I argue that English INPQs and Japanese NN-type NPQ with INPQ interpretation do not convey the speaker's positive epistemic bias but negative epistemic bias, as I stipulated in (58), repeated below.

(58) (Regardless whether English or Japanese)

- a. ONPQs are the NPQs which convey the speaker's positive epistemic bias.
- b. INPQs are the NPQs which convey the speaker's negative epistemic bias, and it is required that the negative epistemic bias is newly formed in the discourse situation (i.e., it cannot be present beforehand).
- c. NPQs which are not either ONPQs or INPQs are epistemically neutral or unbiased.

In addition, the “inference on the spot” condition has an important implication regarding its relation to evidential bias requirement proposed by Büring and Gunlogson (2000) and Sudo (2013). In Büring and Gunlogson (2000) and Sudo (2013), it is claimed that contextual evidence cannot be either “for  $p$ ” or “neutral”, but has to be “against  $p$ ” (i.e., evidential bias is [+ negative] in Sudo's term) in order for an INPQ (i.e., a NN-type NPQ in Japanese) to be asked felicitously (see Table 2.3, 2.4, and 2.5). This restriction concerning contextual evidence (or evidential bias) can be thought as a consequence of the “inference on the spot” condition. The “inference on the spot” condition requires negative epistemic bias to be newly formed in the discourse situation to ask a NN-type NPQ felicitously, which means that some evidence or information

which makes the speaker hold negative epistemic bias has to be provided during the discourse situation. In other words, in the case where contextual evidence is either “for  $p$ ” or “neutral” (i.e., evidential bias is [– negative] in Sudo’s term), negative epistemic bias cannot emerge in the speaker’s mind, which results in the violation of the “inference on the spot” condition, and hence a NN-type NPQ (or an INPQ) cannot be asked felicitously. Thus, the “inference on the spot” condition accounts for why contextual evidence has to be “against  $p$ ” (that is, evidential bias has to be [+ negative]) in order for a NN-type NPQ (or an INPQ) to convey the speaker’s negative epistemic bias. In Section 4.3.2, we will discuss why contextual evidence cannot be “for  $p$ ” but has to be either “neutral” or “against  $p$ ” (i.e., evidential bias has to be [– positive]) in order for a P-type NPQ to convey the speaker’s positive epistemic bias.

In contrast with NN-type NPQs, the “inference on the spot” condition is not necessary for P-type NPQs (and also for English ONPQs), as we saw in (57a), repeated below.

(57)a. S and A are in a bookstore to buy a book for S’s younger sister as her birthday present. Since S doesn’t have much money, he cannot buy an expensive book. S sees A pick up a thick hardback book, and asks S:

A: Kore-wa do’o? Omosiro-so’o-da yo.  
 this-Top how interesting-Evid-Cop Part  
 ‘How about this one? This looks interesting.’

S: (Haadoka’baa-da kara,) **sono ho’n, taka’ku-nai?**  
 Hardback-Cop because the book expensive-Neg  
 ‘(Because it is a hardback book,) isn’t the book expensive?’  $\langle ?\neg p, B_s p \rangle$

In context (57a), S’s positive epistemic bias  $p$  (= the book is expensive) has already been formed prior to the discourse situation. Nevertheless, the P-type NPQ can be asked

feliculously, and it conveys S's positive epistemic bias successfully. Thus, the "inference on the spot" condition is not a necessary condition for P-type NPQs. It is true also in English ONPQs, as shown below.

(88) S goes hiking with A, Stephan, and Jane, and he know who is going to participate in the hiking (i.e., he know that four people, including himself, go hiking).

A: Ok, now that Stephan has come, we are all here. Let's go!

S: Isn't Jane coming too?

(Romero and Han 2004: (6), modified)

In (88), S expects Jane to go hiking together prior to the discourse situation (i.e., the speaker S has already have positive epistemic bias  $p$  (= Jane is coming too) prior to the discourse situation). In such a situation, the ONPQ can be asked felicitously. Hence, we can say that ONPQs are not subject to the "inference on the spot" condition as a necessary condition not only in Japanese but also in English.

#### **4.2.2 Desiderative bias in NN-type NPQs**

The "inference on the spot" condition is observed both in English INPQs and Japanese NN-type NPQs, as we saw in the previous section. However, there are two cases where Japanese NN-type NPQs can be used without satisfying the "inference on the spot" condition.

First, when a NN-type NPQ is used as a neutral/unbiased NPQ, the "inference on the spot" condition is not met. As we saw in Section 3, NN-type NPQs are ambiguous between INPQ interpretation and neutral interpretation. NN-type NPQs do not carry negative epistemic bias; they carry no epistemic bias in a neutral interpretation, and

hence, of course, it is impossible for NN-type NPQs to satisfy the “inference on the spot” condition in the usage.

The other case is worth particular attention. As I mentioned, “epistemic” bias can refer to several kinds of modal flavor: epistemic bias, desiderative bias, and deontic bias. We have focused on data involving NPQs which convey the speaker’s epistemic bias (“epistemic” in the sense of a specific modal flavor) so far. When NN-type NPQs convey desiderative bias, the “inference on the spot” condition can be violated, as example (89) demonstrates. In this section, we examine how the speaker’s desiderative bias is relevant in addition to the speaker’s epistemic bias (here, “epistemic” in the sense of a specific modal flavor). When an annotation has the form  $\langle x, \langle y, z \rangle \rangle$ ,  $x$ ,  $y$ , and  $z$  represent sentence type, the speaker’s epistemic bias, and the speaker’s desiderative bias, respectively.

(89) A and S have been working all day in a room without a window. They hope that it is not raining. They believe that it is unlikely to be raining on the basis of the morning weather forecast, but still are worried that it might. Around 2 p.m., A goes out to check the weather and comes back. S asks A:

S:     Doo?     **Fu'tte-na'kat-ta?**  
           how     fall.Ger-Neg-Past

‘How was it? Was it raining?’ (lit. Wasn’t it raining?)  $\langle ?\neg p, \langle B_s\neg p, D_s\neg p \rangle \rangle$

(Ito and Oshima to appear: (31))

In (89), S originally expects the proposition denoted by the radical (‘It is not raining’, here) to be true based on the information of the morning weather forecast (as the annotation  $B_s\neg p$  represents), and hence, it is not the case that his expectation has been formed during the discourse. That is, the “inference on the spot” condition is not met in

(89). Nevertheless, it is felicitous to ask a NN-type NPQ in this context. The NN-type NPQ in (89) differs from other examples of NN-type NPQs which we have seen so far in terms of conveying the speaker’s negative desiderative bias (e.g., S wants the negative proposition *it is not raining* to be true; this is annotated with  $D_s \neg p$ , where D stands for Desire). Also, notice that the desire of S has not been formed in the discourse situation, but he desires that it is not raining prior to the discourse in (89). Thus, the “inference on the spot” condition does not have to be met with respect not only to epistemic bias (as a specific modal flavor concerning *belief* or *expectation*) but also with respect to desiderative bias if and only if an NN-type NPQ conveys the speaker’s negative desiderative bias. Thus, we can say that NN-type NPQs can be used to convey the speaker’s negative desiderative bias even when the “inference on the spot” condition is not met.

Ito and Oshima (to appear) claim that desirability alone is not a sufficient condition for the NN-type NPQ in (89) to be asked felicitously, based on the judgment that S cannot ask the question if he had estimated the chance of rain to be, say, 80%, as shown in (89’).

(89’) A and S have been working all day in a room without a window. They believe that it is likely to be raining on the basis of the morning weather forecast, but still hope that it is not raining. Around 2 p.m., A goes out to check the weather and comes back. S asks A:

S:     Doo?    #Fu’tte-na’kat-ta?  
           how     fall.Ger-Neg-Past

‘How was it? Was it raining?’ (lit. Wasn’t it raining?)  $\langle ? \neg p, \langle B_{sp}, D_s \neg p \rangle \rangle$

Ito and Oshima argue, “the NN-type can also be used when (the “inference on the spot” condition is not met but) the speaker considers the proposition denoted by the radical both *likely* and *desirable*.” (Ito and Oshima to appear: Section 7) However, I think the generalization which Ito and Oshima give is not appropriate. In the following example, we cannot say that the proposition denoted by the radical has to be likely to be true.

(90) A and S have been working all day in an office without a window. They hope that it is not raining since they are planning to go out for drinking tonight. But, neither of them has not checked weather forecast today. So, they have no expectation at all concerning if it is raining or not. Around 2 p.m., A goes out to check the weather and comes back. S asks A:

S:     Doo?     **Fu'tte-na'kat-ta?**  
           how     fall.Ger-Neg-Past

‘How was it? Was it raining?’ (lit. Wasn’t it raining?)  $\langle ?\neg p, \langle \emptyset, D_s\neg p \rangle \rangle$

It is felicitous to ask the NN-type NPQ *Fu'tte-na'kat-ta?* in context (90). In (90), S does not expect the proposition denoted by the radical (= it is not raining) to be true prior to the discourse, and nothing in the discourse changes S to expect the proposition denoted by the radical to be true (that is, nothing causes S to have negative epistemic bias (“epistemic” in the sense of a specific modal flavor) during the discourse). Thus, the NN-type NPQ in (90) does not convey S’s negative epistemic bias but only conveys his negative desiderative bias (without the “inference on the spot” condition being met). What is important in example (90) is that S does not consider the proposition denoted by the radical (= it is not raining) to be likely, which is clearly a counter-example against the generalization given by Ito and Oshima. Together with the observation that in (89) S cannot ask the NN-type NPQ if he had estimated the chance of rain to be, say, 80%,

the observation in (90) suggests that NN-type NPQs can be used, without the “inference on the spot” condition being met, as long as the speaker considers the proposition denoted by the radical both *not unlikely* and *desirable*. In other words, even when the “inference on the spot” condition is not met, NN-type NPQs can be asked felicitously to convey the speaker’s negative desiderative bias  $\neg p$  unless the speaker has the expectation  $p$  (in other words, it is OK for the speaker to hold negative epistemic bias or no epistemic bias (“epistemic” in the sense of a specific modal flavor, here)).

The fact that only NN-type NPQs which convey the speaker’s negative desiderative bias such as (89) and (90) can be asked out of the blue also supports my claim that the “inference on the spot” condition does not have to be met when an NN-type NPQ conveys desiderative bias. For, in the case where an NN-type NPQ conveys only (negative) epistemic bias, another interlocutor’s previous utterance (which can be nonverbal) is necessary (before the questioner asks the NPQ) to induce the questioner to hold negative epistemic (in the sense of a specific modal flavor) bias in order to satisfy the “inference on the spot” condition. Consequently, in such a case, a NN-type NPQ cannot be asked felicitously out of the blue, as shown in (85).

Note that it is not the case that the “inference on the spot” condition must be ignored, but it just can be ignored when a NN-type NPQ is used to convey the speaker’s desiderative bias, as shown below.

(91) S and A are chatting about a restaurant that opened downtown last week. S has not been there, and he does not know if the stuffs served there are expensive or not.

S: Ano atarasi’i re’sutoran, mo’o it-ta?  
 that new restaurant already go-Past  
 ‘Did you already go to that new restaurant?’

A: A'a, asoko ne. It-ta, it-ta. do're-mo sugo'i oisi'kat-ta yo.  
 oh there Part go-Past go-Past which-MO great delicious-Past Part  
 'Oh, that restaurant. Yeah, I went. Everything was tasty there.'

S: **Taka'ku-na'kat-ta?**  
 expensive-Neg-Past  
 'Wasn't it expensive?'  $\langle ?\neg p, \langle \emptyset, D_s\neg p \rangle \rangle$

In (91), S has no expectation concerning whether the food is expensive or not, either prior to the discourse or during the discourse. S becomes interested in going to the restaurant due to A's utterance, and, in this situation the NN-type NPQ is used to convey S's desire that the stuffs are not expensive. Thus, S's negative desiderative bias emerges during the discourse. In this respect, the "inference on the spot" condition is met concerning negative desiderative bias in (91) (though the condition is not met concerning negative epistemic bias ("epistemic" in the sense of a specific modal flavor)).

I do not have a clear answer for why the "inference on the spot" condition can be ignored/violated when an NN-type NPQ conveys the speaker's negative desiderative bias. It might stem from the difference of the modal flavors. I leave it as an open question. In the examples above, the speaker's desiderative bias conveyed through NN-type NPQs is always negative, but not positive. We might wonder if the speaker's positive desiderative bias can be conveyed through NN-type NPQs. The answer is negative. When NN-type NPQs convey desiderative bias, the polarity of the bias is always negative and cannot be positive. The following example illustrates this point.

(92) Taro comes to S's office and invites S to go hiking the next day. S is an indoor person and actually he doesn't want to go hiking at all. But, he always hesitates to reject an offer from someone, and hence, he unwillingly accepts Taro's offer. After Taro leaves, S's officemate A comes back to their office from the outside.

S has been working all the day, and he doesn't know if it is raining. S hopes that it's raining because the hiking will be cancelled if it rains the next day.

S: Nee. Ame, **fu'tte-na'kat-ta?**

hey Rain fall.Ger-Neg-Past

'Hey, was it raining?' (lit. Wasn't it raining?)  $\langle ?\neg p, \langle \emptyset, D_s\neg p \rangle \rangle$

As the annotation  $D_s\neg p$  represents, the NN-type NPQ fails to convey S's positive desiderative bias (= it's raining), and it has to be interpreted as conveying the speaker's negative desiderative bias. From A's point of view, S's questioning makes A predict that S wants it not to be raining (or S wants to do something if it's not raining, e.g., taking a walk). Thus, NN-type NPQs do not have the ability to convey the speaker's positive desiderative bias. I give another example below to show that NN-type NPQs cannot convey the speaker's positive desiderative bias.

(93) S is going to buy an eggplant at a vegetable store. But, she cannot find a price tag on it. So, hoping that it is cheap/inexpensive, S asks a worker of the vegetable store:

S: #Kono na'su, **ya'suku-na'i?**

this eggplant cheap-Neg

(Intended) 'Isn't this eggplant cheap?'  $\langle ?\neg p, \langle \emptyset, D_s p \rangle \rangle$

It is infelicitous to ask the NN-type NPQ in context (93). Instead, in this context, it is appropriate to ask the NN-type NPQ *Kono na'su, taka'ku-na'i?* 'Isn't this eggplant expensive?' ( $\langle ?\neg p, \langle \emptyset, D_s\neg p \rangle \rangle$ , where  $p$  = 'the eggplant is expensive') for representing the speaker's desire. The only possible interpretation of the NN-type NPQ in (93) have to be that S hopes the eggplant is inexpensive for some reason (hence, the worker of the vegetable store would be confused by the customer's bizarre desire). Compare (92) and

(93) with (90), where the NN-type NPQ *Fu'tte-na'kat-ta?* ‘Wasn’t it raining outside?’  $\langle ?\neg p, \langle \emptyset, D_s\neg p \rangle \rangle$  can be asked felicitously to convey the speaker’s negative desiderative bias. The difference between (90) and (93, 94) is only the polarity of the speaker’s desiderative bias. As we see, while the NN-type in (90) conveys negative desiderative bias, those in (92) and (93) fail to convey positive desiderative bias. While negative desiderative bias can be conveyed through NN-type NPQs, positive desiderative bias cannot.

However, the following example looks like a counter-example in this respect.

(94) S buys a piece of cake for her boyfriend A. It is the first time for her to buy a piece of cake at the cake shop. So, she has no idea if it is tasty or not. But, she hopes that it’s tasty.

S: Kono omise, haji'mete-da kara, oisi'i ka wakar-a'nai kedo...  
 this shop first.time-Cop because delicious Q know-Neg but  
 ‘Because this is the first time to buy it at the cake shop, I don’t know if it’s  
 tasty, but (if you like it, I feel happy.)’

A: (making a grimace at first bite.)

S: **Oisi'ku-na'kat-ta?**  
 delicious-Neg-Past  
 ‘Wasn’t it tasty?’  $\langle ?\neg p, B_s\neg p \rangle$

In (94), S hopes that the piece of cake is tasty though she has no idea if actually it is. Since the NN-type NPQ can be asked felicitously in (94), it looks as if it succeeds in conveying the speaker’s positive desiderative bias  $p$  (= the piece of cake is tasty). However, in this example, the speaker’s (= S’s) negative epistemic bias (in the sense of a specific modal flavor) is newly formed in the discourse situation due to A’s grimace, which means that the “inference on the spot” condition is met. Therefore, we can

determine that the NN-type NPQ in (94) can be asked felicitously not to convey the speaker's positive desiderative bias but to convey the speaker's negative epistemic bias (in the sense of a specific modal flavor). Thus, the example in (94) cannot be a counter-example to my claim that NN-type NPQs cannot convey the speaker's positive desiderative bias. The observation that desiderative bias conveyed by NN-type NPQs cannot be positive but has to be negative is consistent with my claim that epistemic bias (in a broad sense, not in the sense of a specific modal flavor) conveyed by NN-type NPQs is always negative (see (58)).

To sum up this section, the characteristics of NN-type NPQs can be summarized as the following.

- (95) When an NN-type NPQ is not interpreted as a biased NPQ (i.e., as an INPQ, but not as a neutral/unbiased NPQ),
- a. it can convey the speaker's negative epistemic bias (in the sense of a specific modal flavor) iff the "inference on the spot" condition is met, i.e., iff the negative bias is newly formed in the discourse situation (cf. P-type NPQs do not have to satisfy this condition to convey the speaker's positive epistemic bias),
  - b. it can convey the speaker's negative desiderative bias iff the speaker does not expect the core proposition ( $\approx p$ ) to be true (i.e., iff the speaker considers the proposition denoted by the radical both *not unlikely* and *desirable*), and
  - c. it cannot convey the speaker's positive desiderative bias.

### **4.3 More on the meaning of P-type NPQs**

#### **4.3.1 P-type NPQs and information gaps**

In the previous sections, I stated several times that P-type NPQs *often* convey the speaker’s positive epistemic bias. This indicates that there are cases where those NPQs do not convey the speaker’s positive epistemic bias. We focus on these cases first in this section. It has been reported in Ito and Oshima (to appear) that a P-type NPQ can be used felicitously when “the speaker considers the core proposition possible based on some information that may not be available to the hearer” (Ito and Oshima (to appear): Section 8.1), as shown in the following example adopted from Ito and Oshima.

(96) The speaker is looking for her friend Yamada. She has been informed that Yamada is visiting one of the 10 residents on the second floor of the dormitory, but does not know in which room he actually is. She decides to check the rooms one by one. She first goes to room #201, and asks the resident:

S: Ne’e, Yamada-kun **ki’tē-nai?**  
 hey Yamada-Suffix come.Ger-Neg  
 ‘Hey, is Yamada here?’ (lit. ‘Hasn’t Yamada come?’)

(Ito and Oshima to appear: (32))

In (96), the chance that the core proposition ‘Yamada is here’ is true is only 10%, and hence, the speaker doesn’t *believe* or *expect* that Yamada is in room #201 but just considers it *possible*. In other words, the speaker S does not have positive epistemic bias *p* (= ‘Yamada is here’) in (96). While it is infelicitous to ask the equivalent English ONPQ (‘Isn’t Yamada here?’) in context (96), it is felicitous in Japanese to ask the P-type NPQ in (96). The following is the citation from Ito and Oshima (to appear).

(97) The effect of using the P-type in such a situation (as (96)) is similar to adding a phrase like: “you may be surprised by my asking this, but (is *p* the case?)” or “I

have a reason to suspect that  $p$  is the case. (Is it?)”. It preemptively justifies the speaker’s asking a question in a situation where the hearer might think it is unreasonable for her to even suspect that the core proposition holds. Indeed, in the context of (96), the corresponding positive polar interrogative would sound a little abrupt and less natural. (ibid.: Section 8.1)

Ito and Oshima argue that a P-type NPQ can be asked felicitously when it is used in the way as described in (97) (that is, when the “information gap” condition is met, in Ito and Oshima’s terms). Also, note that Japanese P-type NPQs can be asked felicitously by satisfying the “information gap” condition alone, as in (96). On the other hand, without the condition being met, P-type NPQs can be asked felicitously when the speaker believes the core proposition to be true (i.e., the speaker has positive epistemic bias; the basic usage of P-type NPQs which we saw in Chapter 3), as shown in (98), adopted from Ito and Oshima (to appear).

(98) The speaker comes into her office, which she shares with her colleagues Yamada and Suzuki. Suzuki is sitting at his desk. Yamada is supposed to take a day off today, but she notices that Yamada’s bag is on his chair. The bag is visible to Suzuki too. The speaker asks Suzuki:

S: Are, Yamada-kun **ki'te-nai?**  
 oh Yamada-Suffix come.Ger-Neg  
 ‘Oh, isn’t Yamada here?’  $\langle ?\neg p, B_{sp} \rangle$  (ibid.: footnote 11)

In (98), the “information gap” condition is not met since the bag (which is assumed to be possessed by Yamada) is visible to Suzuki too. By seeing Yamada’s bag on his chair, S comes to hold a positive epistemic bias  $p$  (= ‘Yamada is here’), which is conveyed

through the P-type NPQ in (98). (Note that this “inference on the spot” condition does not have to be met in the case of P-type NPQs, as we saw in Section 4.2.1.) Thus, the “information gap” condition does not have to be met when a P-type NPQ is asked merely to convey the speaker’s positive epistemic bias.

You might think that the usage of a P-type NPQ in (96) can be explained without supposing a condition such as the “information gap” condition, merely by supposing that P-type NPQs can convey the speaker’s positive desiderative bias just as NN-type NPQs can convey the speaker’s negative desiderative bias. Actually, in context (96), the speaker is looking for Yamada, and she might hope the core proposition (= ‘Yamada is here (i.e., in Room 201)’ ) to be true. For, if Yamada is in the room, then of course she doesn’t have to visit other rooms to find Yamada. In this sense, it seems that the P-type NPQ in (96) conveys S’s positive desiderative bias. However, P-type NPQs in general cannot convey the speaker’s positive desiderative bias. As we saw in Section 4.2.2, a NN-type NPQ can convey the speaker’s negative epistemic bias iff the speaker does not expect the core proposition ( $\approx p$ ) to be true (i.e., iff the speaker considers the proposition denoted by the radical both *not unlikely* and *desirable*). That is, there is a restriction concerning the speaker’s epistemic state (the speaker’s belief/expectation) in order for a NN-type NPQ to convey the speaker’s negative desiderative bias. It is natural to consider that the same kind of restriction might exist when a P-type NPQ conveys the speaker’s positive desiderative bias, and hence, I give three separate discourse situations concerning the speaker’s epistemic bias (i.e., the bias about his belief or expectation) below; the speaker expects the core proposition  $p$  to be true in (99) and the proposition denoted by the radical  $\neg p$  to be true in (100), and he has no expectation regarding the truth of the core proposition  $p$  in (101) and (102). Since we already saw in Section 4.2.1 that the “inference on the spot” condition does not have to be met (that is, positive epistemic bias can either exist prior to the discourse situation or be formed during the

discourse situation) in the case of P-type NPQs, we need not to consider when positive epistemic bias is formed in the following examples.

(99) A and S have been working all day in a room without a window. They hope that it is sunny. They believe that it is likely to be sunny on the basis of the morning weather forecast, but still are worried that it might be raining. Around 2 p.m., A goes out to check the weather and comes back. S asks A:

S:     Doo?    #**Ha'rete-nakat-ta?**  
           how     be.sunny.Ger-Neg-Past  
           ‘How was it? Was it being sunny?’ (lit. Wasn’t it being sunny?)  
           ⟨?¬*p*, ⟨B<sub>s</sub>*p*, D<sub>s</sub>*p*⟩⟩

In context (99), the speaker has both positive epistemic bias and positive desiderative bias concerning the core proposition *p* (= it is being sunny). However, the P-type NPQ in (99) fails to convey his positive desiderative bias. Rather, the only possible interpretation of the NPQ in (99) is that, based on the knowledge from the morning weather forecast, the speaker only expresses his positive belief or opinion. In other words, the P-type NPQ in (99) doesn’t convey S’s positive desiderative bias but conveys only his positive epistemic bias. If S wants to express his desire that it’s sunny (= it is not raining), he has to ask the NN-type NPQ *Fu'tte-na'kat-ta?* ‘Was it raining?’ (lit. ‘Was it raining?’), as in (89).

(100) A and S have been working all day in a room without a window. They believe that it is likely to be raining on the basis of the morning weather forecast, but still hope that it is being sunny. Around 2 p.m., A goes out to check the weather and comes back. S asks A:

S:     Doo?    #**Ha’rete-nakat-ta?**  
           how     be.sunny.Ger-Neg-Past  
           ‘How was it? Was it being sunny?’ (lit. Wasn’t it being sunny?)  
            $\langle ?\neg p, \langle B_s\neg p, D_sp \rangle \rangle$

A P-type NPQ fails to convey the speaker’s positive desiderative bias also in the case where the speaker has the negative epistemic bias, as in (100). It is totally awkward to ask the NPQ in context (100).

(101) A and S have been working all day in an office without a window. They hope that it is being sunny since they are planning to go out for drinking tonight. But, neither of them has not checked weather forecast today. So, they have no expectation at all concerning whether it is sunny or not. Around 2 p.m., A goes out to check the weather and comes back. S asks A:

S:     Doo?    #**Ha’rete-nakat-ta?**  
           how     be.sunny.Ger-Neg-Past  
           ‘How was it? Was it sunny?’ (lit. Wasn’t it sunny?)  
            $\langle ?\neg p, \langle \emptyset, D_sp \rangle \rangle$

In context (101), where the speaker has no expectation concerning the truth of core proposition  $p$  (= it’s being sunny), it is infelicitous to ask the P-type NPQ to convey the speaker’s positive desiderative bias. If S asks the NPQ in this situation, A would just predict that S should get some evidence to predict that it is sunny (e.g., by watching weather forecast) after A went out to check the weather.

(102) S is going to buy an eggplant at a vegetable store. But, she cannot find a price tag on it. So, hoping that it is cheap/inexpensive, S asks a worker of the vegetable store:

S: #Kono na'su, **ya'suku-nai?**  
 this eggplant cheap-Neg

(Intended) 'Isn't this eggplant cheap?'  $\langle ?\neg p, \langle \emptyset, D_s p \rangle \rangle$

Positive desiderative bias  $p$  (= this eggplant is cheap/inexpensive) cannot be conveyed through a P-type NPQ in context (102) just as in context (101), where the speaker has no expectation concerning the truth of the core proposition  $p$  (= this eggplant is cheap/inexpensive).

Thus, P-type NPQs cannot convey the speaker's desiderative bias regardless of the presence (or polarity) of the epistemic bias (not as a specific modal flavor). Also, remember that in (99), (101), and (102), it is felicitous to ask the corresponding NN-type NPQ whose conveying negative desiderative bias has the same content as the intended positive desiderative bias conveyed by each P-type NPQ. Based on the data in (99-102), I conclude that P-type NPQs cannot convey the speaker's desiderative bias unlike NN-type NPQs though it looks like as if the P-type NPQ in (96) conveyed the speaker's positive desiderative bias.

#### 4.3.2 P-type NPQs to express the speaker's opinion/belief

As we saw, when the truth of the proposition denoted by the radical  $\neg p$  is implied during the discourse situation, the speaker can ask a NN-type NPQ to confirm if  $\neg p$  is true or not. Also, we observed the fact that it is not necessary that the speaker had previously expected/believed the truth of the core proposition  $p$  in this case. These two observations together suggest that, in this usage (that is, when conveying the

speaker's negative epistemic bias ("epistemic" as the specific modal flavor)), the main effect of asking a NN-type NPQ is to question/check if  $\neg p$  is true or not, rather than to assert/insist that he used to expect/believe the truth of  $p$ . That is, NN-type NPQs have the illocutionary force of question.

In contrast, P-type NPQs seem to have a dual illocutionary force, assertion and question. That is, in asking a P-type NPQ, the speaker's positive belief/opinion (i.e., the content of the core proposition) is not only questioned/checked but also asserted/insisted. The following example illustrates the point that the illocutionary force of P-type NPQs is not only "questioning".

(103) S and A come to a new restaurant for lunch for the first time. Both S and A have a cake after lunch there. S finds it tastes bad.

- S: a. Kono ke'eki, **ma'zuku-nai?**  
 this cake taste.bad-Neg  
 'Doesn't this cake taste bad?' ( $\langle ?\neg p, B_s p \rangle$ , where  $p$  = this cake tastes bad)
- b. Kono ke'eki, **oisi'ku-na'ku-nai?**  
 this cake delicious-Neg-Neg  
 'Isn't this cake not tasty?' ( $\langle ?\neg p, B_s p \rangle$ , where  $p$  = this cake is not tasty)
- c. #Kono ke'eki, **oisi'ku-na'i?**  
 this cake delicious-Neg  
 'Isn't this cake tasty?' ( $\langle ?\neg p, B_s \neg p \rangle$ , where  $p$  = this is tasty)

In (103a, b), S considers the core proposition  $p$  (= this cake tastes bad/this cake is not tasty) to be true, and hence, the P-type NPQ can be asked felicitously to convey his positive epistemic bias. If P-type NPQs have only the illocutionary force of questions, then it is predicted that it should be felicitous to ask the NN-type NPQ in (103c), *Kono ke'eki, oisi'ku-na'i?* 'Isn't this cake tasty?' ( $\langle ?\neg p, B_s \neg p \rangle$ , where  $p$  = this cake is tasty)

instead, since the negative epistemic bias which the NN-type NPQ conveys has the almost same content as the positive epistemic bias which the P-type NPQ in (103a) conveys (i.e., *this cake is not tasty*  $\approx$  *this cake doesn't taste bad*). Note that the “inference on the spot” condition is met in asking the NN-type NPQ in (103c) since the belief ‘this cake is not tasty (i.e.,  $\approx$  the cake tastes bad)’ is formed in the discourse situation (i.e., after eating the cake actually). However, it is infelicitous to ask the NN-type NPQ in (103c) in this context. Thus, the data in (103) suggest that the “expressing the speaker’s positive opinion/belief” effect of P-type NPQs is not a pragmatic effect (conversational implicature) but a conventional effect.

The observation in (103) – P-type NPQs have two kinds of illocutionary force, assertion and question – is consistent with the generalization concerning contextual evidence proposed by Büring and Gunlogson (2000). As we saw in Table 2.3, contextual evidence has to be either “neutral” or “against *p*” (i.e., evidential bias is [– positive] in Sudo’s term) in order for an English ONPQ to be asked felicitously. It seems to be true also in Japanese P-type NPQs, as shown in (103-105).

(104) S and A come to a new restaurant for lunch for the first time. Both S and A have a cake after lunch there. S finds it tastes bad.

A: Kono ke'eki, oka'asan-ni katte ka'eru.  
 this cake mother-Dat buy.Ger go.back

‘I’m going to buy this cake for my Mom (before leaving).’

S: Kono ke'eki, **ma'zuku-nai?**  
 this cake taste.bad-Neg

‘Doesn’t this cake taste bad?’ ( $\langle ?\neg p, B_{sp} \rangle$ , where  $p$  = this cake tastes bad)

(105) S and A come to a new restaurant for lunch for the first time. Both S and A have a cake after lunch there. S finds it tastes bad.

A: Kono ke'eki, oisi'ku-na'i...  
this cake delicious-Neg

'This cake is not tasty...'

S: #Kono ke'eki, **ma'zuku-nai?**  
this cake taste.bad-Neg

'Doesn't this cake taste bad?' ( $\langle ?\neg p, B_s p \rangle$ , where  $p$  = this cake tastes bad)

In context (103), contextual evidence is “neutral” since A hasn't shown her position concerning whether the core proposition  $p$  (= this cake tastes bad) is true or not (that is, no evidence is mutually available to the participants). In this context, the P-type NPQ can be asked felicitously. In context (104), where contextual evidence is “against  $p$ ” since A's utterance indicates that the cake is tasty (for her) while S considers that the cake tastes bad (she considers the core proposition  $p$  (= this cake tastes bad) to be true). It is felicitous to ask the P-type NPQ also in this context. On the other hand, it is infelicitous to ask the NPQ in context (105), where contextual evidence is “for  $p$ ” (A's utterance matches with S's opinion  $p$  (= this cake tastes bad).) The difference in the acceptability of asking the P-type NPQ in (103-105) can be explained as the following. First, it is legitimate for the speaker S to assert/insist her own opinion/belief  $p$  and ask whether the addressee A also thinks  $p$  is true, in the case where A has not expressed her opinion/belief concerning  $p$ . Similarly, it is legitimate also in the case where A has expressed her opinion/belief  $\neg p$  which is against S's opinion/belief  $p$ . For, by asking the P-type NPQ, S asserts/insists  $p$  and asks whether A really thinks  $\neg p$ , the latter part of which results in prompting A to change her opinion/belief to  $\neg p$  (which I think is a pragmatic effect (i.e., conversational implicature)). In contrast, it is illegitimate for S to ask the P-type NPQ after A expresses her own opinion/belief  $p$  which is the same as S, as in (105). In this situation, it is OK that S expresses her own opinion/belief by asking the NPQ, but at the same time, S inevitably asks if A thinks  $p$  is true, which A has

already expressed. Unlike the case in (104), asking if A thinks if *p* is true has no pragmatic effect since A already has the same belief as S. Thus, if we suppose that P-type NPQs have two kinds of illocutionary force, assertion and question, then Büring and Gunlogson’s observation concerning contextual evidence in asking NPQs can be explained naturally.

However, Sudo (2013) argues that ONPQs without a particle (i.e., Japanese “P-type NPQs” in this dissertation) can be asked felicitously iff evidential bias is [–negative] (see Table 2.5) and that the required evidential bias differs from English ONPQs (cf. evidential bias is [–positive] in English ONPQs). In Section 2.2.2, I did not use Sudo’s original examples because his examples contain simple verb predicates (see Section 3.5 for prosodic neutralization specific to negated simple verb predicates). Hence, I repeat the example which I constructed to demonstrate Sudo’s claim in Section 2.2.2, below.

(45) ONPQs

a. Neutral Context

Context: S and A are looking for a left-handed person among their common friends.

S:       **Da’re-ka hidarikiki-zya-nai?**  
           who-KA lefty-ZYA-Neg  
           ‘Isn’t someone a lefty?’

b. Negative Context

Context: S and A are looking for a left-handed person. So, S asks all of his friends if they are left-handed. But, everyone answers that he is not left-handed.

S:       #(A-no tomodati,) **da’re-ka hidarikiki-zya-nai?**  
           A-Gen friend       who-KA lefty-ZYA-Neg

‘Isn’t someone a lefty (among your (= A’s) friends)?’

c. Positive Context

Context: S and A are looking for a left-handed person, and A finds a scissors for left-handed people in the kitchen of their dormitory.

A: Ryo’o-no ki’ttin-ni hidarikiki-no hasa’mi-ga  
Dormitory-Gen kitchen-Loc lefty-Gen scissors-Nom  
a’t-ta yo!  
exist-Past Part

‘There was a scissors for lefty in the kitchen of the dormitory!’

S: (Ryo’o-no) **da’re-ka hidarikiki-zya-nai?**  
dormitory-Gen who-KA lefty-ZYA-Neg  
‘Isn’t someone (in our dormitory) a lefty?’

As we see in (45), Sudo judges it to be infelicitous to ask a P-type NPQ in a negative context as in (45b). However, I disagree with his judgment. The P-type NPQ can be asked felicitously in (45b), where by asking the NPQ, S still insists that his opinion/belief ‘someone is a lefty among A’s friends’ and asks if A considers if it is really the case that  $\neg p$ , the latter part of which pragmatically results in expressing S’s suspicion that there still someone A forgot to ask if he is lefty or not. Also, it is awkward to ask the NPQ in context (45c) due to the same reason which I cited for (105). In (45c), it would be more natural for S to say (106).

(106) Context: S and A are looking for a left-handed person, and A finds a scissors for left-handed people in the kitchen of their dormitory.

A: Ryo’o-no ki’ttin-ni hidarikiki-no hasa’mi-ga  
Dormitory-Gen kitchen-Loc lefty-Gen scissors-Nom  
a’t-ta yo!  
exist-Past Part

‘There was a pair of scissors for a lefty in the kitchen of the dormitory!’

S:       Zya’a, (Ryo’o-no)       **da’re-ka hidarikiki-da ne!**  
then dormitory-Gen who-KA lefty-Cop       Part  
‘Then, someone in the dormitory is a lefty! Right?’

Thus, I conclude that P-type NPQs have two kinds of illocutionary force, assertion and question.

#### 4.3.3 P-type as a suggestion or polite request

Finally, I show that Japanese P-type NPQs can be used to suggest the core proposition *p* or make a polite request *p*. Compare (107a) with (107b) and (108a) with (108b).

(107) Kono mise-de ohi’ru ta’bete {a. iku/ b. ik-anai}?  
this store-Loc lunch eat.Ger go go-Neg

- a. ‘Are you going to eat lunch at this restaurant?’
- b. ‘How about eating lunch at this restaurant?’

(108) A’tode tetuda’tte {a. kureru/ b. kure-nai}?  
later help.Ger Aux Aux-Neg

- a. ‘Will you give me a hand later?’
- b. ‘Would you give me a hand later?’ (Ito and Oshima to appear: (37))

The P-type NPQ in (107b) is more natural than the PPQ in (107a) when it is uttered for the purpose of suggesting/inviting the addressee to go eat at the restaurant together. When the speaker asks (107a), the speaker merely seeks information about the

addressee's current plan, rather than suggesting/inviting. Hence, for example, it can happen that the speaker continues the conversation after asking (107a) like 'I don't like this restaurant, though'. The contrast in (108) indicates that P-type NPQs can be used as a polite request. The PPQ in (108a) sounds more authoritative and less polite as a request. In (107b) and (108b), the speaker does not expect the core proposition (e.g., 'we go to eat lunch at this restaurant' in (107b) and 'you give me a hand later' in (108b)) to be true. In this respect, we can say that the usage of P-type NPQs such as (107) and (108) illustrates another case where the speaker's positive epistemic bias is not conveyed by a P-type PPQ, in addition to the usage in (96), where the "information gap" condition is involved. Note that it is less common in English to use a NPQ as a means to make a suggestion/request. Also, note that Japanese share the same property as English regarding the point that only P-type NPQs can be used as making a suggestion/request  $p$ . In other words, neither English INPQs nor Japanese NN-type NPQs can be used to make a suggestion/request  $\neg p$ , as Romero and Han (2004) argue (see examples (22) and (23)). For example, the NN-type NPQ in (108') cannot be used to make the odd request  $\neg p$  (cf. (108b))

(108') (A son is talking to his Dad.)

Oto'osan, bo'ku, jibun-no tikara-de si-tai-n-da.  
 father I self-Gen power-by do-want-N-Cop

#A'tode **tetuda'tte kure-na'i?**  
 later help.Ger Aux-Neg

(Intended) 'Dad, I want to do it by myself. I request you not to give me a hand later. Would you do so?'

The only possible interpretation for the NN-type NPQ in (108') is to convey the speaker's negative epistemic bias. Therefore the NPQ can be asked felicitously in the following situation.

- (109) S: A'tode **tetuda'tte kure-nai?**  
 later help.Ger Aux-Neg  
 'Would you give me a hand later?' (Request)
- A: Gomen. kyo'o-wa tyo'tto isoga'sikute...  
 sorry today-Top a.little.bit busy.Ger  
 'I'm sorry, but I'm a bit busy today (so, I cannot give you a hand)'
- S: Tte koto-wa, a'tode **tetuda'tte kure-na'i?**  
 C fact-Top later help.Ger Aux-Neg  
 'You mean, you won't give me a hand later?'  $\langle ?\neg p, B_{sp} \rangle$

In S's second utterance in (109), the NN-type NPQ is used to convey the speaker's negative epistemic bias, which was newly formed due to the preceding utterance by A. Thus, it must satisfy the "inference on the spot" condition.

#### 4.4 Summary

In this chapter we have focused on the meaning of NN-type NPQs and P-type NPQs. What I discussed in this chapter can be summarized in the following Table.

	Biased NN-type	P-type
Epistemic bias	Negative	Positive
The "inference on the spot" condition	Applicable	NA
Desiderative bias	Negative	NA
The "information gap" condition	NA	Applicable
Illocutionary force	Question	Assertion & Question
Suggestion/request use	NA	Applicable

**Table 4.1: Meaning of NN-type NPQ and P-type NPQ**

We found that NN-type NPQs and P-type NPQs are not symmetric in several aspects. First, I will summarize the characteristics of NN-type NPQs which is interpreted as INPQs (i.e., not as unbiased/neutral NPQs). The epistemic bias (i.e., epistemic bias and desiderative bias) which NN-type NPQs convey cannot be positive but has to be negative. When a NN-type NPQ conveys the speaker's negative epistemic bias (in the sense of the specific modal flavor), the negative bias has to be formed during the discourse situation (that is, the "inference on the spot" condition has to be met) and cannot be present prior to the discourse. The "inference on the spot" condition on NN-type NPQs explains the restriction on contextual evidence for NN-type NPQs (i.e., contextual evidence has to be "against  $p$ " in order for a NN-type NPQ to be asked felicitously), proposed by Büring and Gunlogson (2000). On the other hand, when a NN-type NPQ conveys the speaker's negative desiderative bias, the negative bias does not have to be formed during the discourse situation (i.e., the "inference on the spot" condition does not have to be met). Instead, it is required that the speaker does not expect the core proposition to be true (i.e., the speaker considers the proposition denoted by the radical both *not unlikely* and *desirable*). NN-type NPQs have the illocutionary force of questions. Also, a NN-type NPQ cannot be used to make a suggestion  $\neg p$ .

As for P-type NPQs, they cannot convey the speaker's positive desiderative bias, and the epistemic bias conveyed by them is basically positive. However, P-type NPQs can be used felicitously without conveying positive epistemic bias only when the "information gap" condition is met. The "inference on the spot" condition is not applicable to P-type NPQs, and hence, positive epistemic bias can be formed during the discourse situation or can be present prior to the discourse situation. The illocutionary force of P-type NPQs is dual: assertion and question. This dual illocutionary force accounts for the the restriction on contextual evidence for P-type NPQs (that is,

contextual evidence cannot be “for  $p$ ” but has to be either “neutral” or “against  $p$ ” in order for a P-type NPQ to be asked felicitously), as proposed by Büring and Gunlogson (2000). Also, P-type NPQs share the same property as English ONPQs with respect to the point that they can be used to make a suggestion/request  $p$ .

As a closing remark in this chapter, note that the usage of “suggestion/request” of a P-type NPQ suggests the possibility that there might be some specific condition which enables a P-type NPQ to convey the speaker’s positive desiderative bias. However, I have no idea concerning what the condition is. I leave it as a question for future research.

CHAPTER 5  
EXPERIMENTAL INVESTIGATION  
OF JAPANESE NEGATIVE POLAR QUESTIONS

**5.1 Introduction**

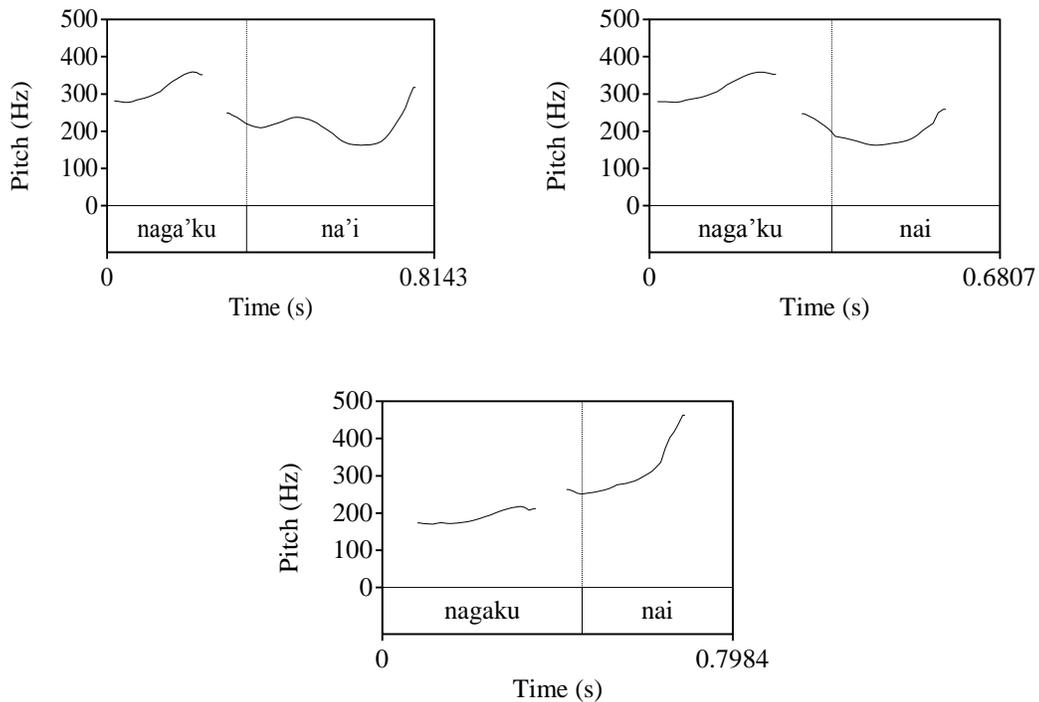
In this chapter, I introduce the results and implications of an experimental investigation of Japanese NPQs conducted with the help of Hyun Kyung Hwang with the objective of testing the intuitive claims proposed in the previous sections of the dissertation.

In chapter 3, I argued that the prosodic contrast observed in Japanese NPQs is correlated with the speaker's epistemic bias. I argued specifically that (i) P-type NPQs, where the negative morpheme *-na'i* is deaccented, often convey the speaker's positive epistemic bias, and (ii) NN-type NPQs, where the negative morpheme *-na'i* retains its accent, often convey the speaker's negative epistemic bias, but they are also compatible with the neutral interpretation. In Chapter 2 (Section 2.2.3), we overviewed Hara and Kawahara (2012), which also examines the prosodic contrast in Japanese NPQs. Hara and Kawahara focus on the deaccentuation of the element preceding the negative morpheme *-na'i* in NPQs (note that they focus in particular on the case of adjective predicates). On the basis of the result of a naturalness rating test, they argue that the deaccentuation is correlated with evidentiality; the deaccentuation is felicitous only when the participants in the conversation have public evidence stronger than hearsay or circumstantial evidence for the positive answer. Based on Hara and Kawahara's results, we can say that there are three possible prosodic patterns for Japanese NPQs, *X-nai?*, as summarized below.

- (110) a. Both X and the negative morpheme retain their lexical accents (AA).

- b. Only X retains its accent, and the negative morpheme is deaccented (AD).
- c. Both X and the negative morpheme are deaccented (DD).

In this chapter, I refer to the prosodic patterns (110a-c) as AA-pattern, AD-pattern, and DD-pattern, respectively. Thus, following the terminology used in this dissertation, we can say that AA-pattern has an NN-type prosodic pattern while AD-pattern and DD-pattern have P-type prosodic patterns. The following figure illustrates the possible F0 contours of the NPQ containing the adjective predicate *nagaku-nai* ‘not long’.



**Figure 5.1: AA (top left), AD (top right), and DD (bottom) patterns of *nagaku-nai*? (Hwang and Ito 2014: Figure 1 and Figure 2)**

While each *naga'ku* and the negative morpheme *-na'i* exhibits an F0 fall in the AA-pattern (the top left contour in Figure 5.1), the negative morpheme doesn't exhibit an

F0 fall in the AD-pattern (top right one in Figure 5.1). In the DD-pattern (the bottom contour in Figure 5.1), both *naga'ku* and *-na'i* lack an F0 fall. The salient differences between this dissertation and Hara and Kawahara (2012) can be summarized, with the terms AA/AD/DD-patterns, as below.

(111) This dissertation

- a. The prosodic contrast between AA-pattern and AD-pattern is significant with respect to the speaker's epistemic bias (since the AA-pattern and the AD-type are of NN-type and P-type respectively).
- b. The prosodic contrast between the AD-pattern and the DD-pattern is not significant. The DD-pattern should be regarded as one variant of AD-pattern in terms of the fact that both patterns involve the deaccentuation of the negative morpheme (that is., the AD-pattern and the DD-pattern do not differ from each other with respect to the point that they have P-type prosodic pattern, where the negative morpheme *-na'i* is deaccented).

(112) Hara and Kawahara (2012)

- a. The prosodic contrast between the AA-pattern and the AD-pattern is not mentioned.
- b. The prosodic contrast between AD-pattern and DD-pattern is significant. While the DD-pattern is felicitous only when the participants in the conversation have public evidence for the positive answer, the AA-pattern is infelicitous in such a case.

A naturalness rating test and a comprehension test were conducted to clarify the correlation between the speaker's epistemic bias and all three prosodic patterns in

Japanese NPQs (the AA/AD/DD-patterns). This experimental study had two goals as shown in (113). In (113), “epistemic bias” means the specific modal flavor such as belief or expectation, and thus, we put aside non-epistemic bias (e.g., desiderative bias) in the experiment.

- (113) a. To test perceptual and functional aspects of the correlation between the epistemic bias and all three prosodic patterns argued in Chapter 3 (i.e., to test whether the prosodic pattern of the P-type is used for the positive epistemic interpretation while the NN-type is used for the negative/neutral epistemic interpretation), and
- b. To reconsider the distinction between the AD-pattern and the DD-pattern argued for in Hara and Kawahara (that is, to test whether DD-pattern really requires the public evidence for the positive answer (cf. AD-pattern))

In Section 5.2, I refer to the methods used in the experimental study (including materials, recording, stimuli, participants and procedure). In Section 5.3, I present the results of two kinds of tests conducted and discuss them. Section 5.4 summarizes this chapter. Though the content of this chapter is published as Hwang and Ito (2014), I will point out some problems with Hwang and Ito’s (2014) in Section 5.4.

## 5.2 Methods

### 5.2.1 Materials

The tested phrase was *nagaku-nai* (‘isn’t it long?/is it not long?’ ( $\langle ?\neg p, B_{sp} \rangle$ ,  $\langle ?\neg p, B_{s\neg p} \rangle$ , or  $\langle ?\neg p, \emptyset \rangle$ )). Only the adjective predicate was tested mainly because all three prosodic patterns can be observed when the predicate is an adjective. It has been reported in Hara and Kawahara that the DD-pattern is usually realized in adjective

predicates and that it is unavailable (or highly unnatural) in non-adjective predicates. The tested phrase was embedded in three distinct discourse situations in order to check the polarity/existence of epistemic bias which the tested phrase conveys. Three types of discourse situation, each of which is thought to force the speaker to have a positive/negative/neutral epistemic bias, were employed. As for the contexts where the tested phrase is assumed to convey the speaker's positive epistemic bias, they can be divided further into two subgroups, one of which includes the public evidence for the positive answer while the other does not in order to check if the presence (or absence) of public evidence really affects the acceptability of the AD- and DD-pattern.

It is expected that the AA-pattern is acceptable/unmarked in the contexts where the speaker is assumed to have negative/neutral epistemic bias. In contrast, it is expected that either the AD-pattern or the DD-pattern is used in contexts where the positive epistemic bias is assumed. More precisely, the AD-pattern is expected to appear in the contexts where the public evidence is not available while the DD-pattern is expected to appear in the contexts with public evidence. The expected correlation between epistemic bias and prosodic pattern is summarized in Table 5.1.

Bias	<b>negative</b>	<b>Neutral</b>	<b>Positive</b>	
Public Evidence			No	Yes
Prosodic Pattern	AA		AD	DD

**Table 5.1: Expected correlation between epistemic bias and prosodic pattern  
(Hwang and Ito 2014: Table 1)**

I list four distinct discourse situations for each type of epistemic bias (e.g., neutral, negative bias, positive bias without public evidence given, positive bias with public evidence given) which were provided to the subjects, below. Note that I translated the contexts (and the conversations) into English below; the Japanese versions of them were

provided to the subjects in the experiments. Boldface indicates the English translation of the tested phrase.

(114) Neutral

(Situation) One morning, Taro, a high school student, was talking with another high school student named Hanako (H), who had just transferred from another school that day. Taro (T) and Hanako were speaking just before morning assembly. Hanako needed to go to the bathroom but since it was her first day, she did not know how long morning assembly would last. Therefore, she asked Taro:

H: **Morning assembly isn't that long**, is it?

T: No, it's not that long. Why do you ask?

H: If it's very long, I think I may need to go to the restroom first.

(Hwang and Ito 2014: (4))

(115) Negative bias

(Situation) Taro wanted to use his PC but his power cord was too short, so he asked Hanako if she had an extension cord. Hanako handed Taro her extension cord (but the cord was not long enough).

T: Hmm... Actually, I think this might not be long enough...

H: Oh really? **It isn't long** (enough)?

T: Yeah, it seems like it's not quite long enough... (ibid.: (5))

(116) Positive bias without public evidence given

(Situation) Taro and Hanako were in the school yard listening to the principal's speech. Hanako felt like the speech was a little long that day, but she didn't have a watch, so she asked Taro (who was standing in front of her).

H: **Isn't today's morning assembly (a little) long?**

T: Yeah, it's a bit longer (than usual) today. (ibid.: (6))

(117) Positive bias with public evidence given

(Situation) When Taro and Hanako were in the school yard listening to the principal's speech, they heard the bell for first period ring. When she heard the bell ring, Hanako asked to Taro (who was standing in front of her):

H: **Isn't today's morning assembly (a little) long?**

T: Yeah. That was the bell for first period, right? But that means first period will be shorter, so that's nice. (ibid.: (7))

It is intended in (114) that the speaker does not have a positive or negative epistemic bias. She uttered the target phrase merely for the purpose of information seeking, and hence, we can say that the target phrase is expected to have the neutral interpretation with respect to the epistemic bias. In (115), the speaker originally believes the core proposition (e.g., 'the extension cord is (enough) long', here). But, the addressee's utterance changes her original belief to a negative one, and the speaker wants confirmation for the newly formed negative epistemic bias (e.g., 'the extension cord is not (enough) long', here). Both in (116) and (117), the speaker wants confirmation for her original belief that today's morning assembly is long, by asking the target phrase. The difference between (116) and (117) is that the situation in (117) explicitly states that the bell for the first period ring, indicating the assembly has run overtime (cf. (116)). Thus, we can say that a public epistemic bias is given in (117) while it isn't in (116).

### 5.2.2 Recording

The subjects were two speakers of Standard Tokyo Japanese (one female and one male; both of them were their late twenties when the recording was made). The recording was made in a sound attenuated booth at National Institute for Japanese Language and Linguistics (NINJAL). First, the subjects were instructed to do a careful silent-reading of the situations, written in Japanese orthography. Some pictures which visualized the situations were provided to ascertain their understanding of each situation. After self-reporting that they fully understood the contexts, speakers were asked to exchange the conversations as naturally as possible. The recording was repeated five times for each discourse situation, where the female speaker always uttered the target phrase. Importantly, it should be noted that this particular speaker (i.e., the female speaker) exhibited free alternation between the AD-pattern and DD-pattern in contexts (94) and (95) regardless of the presence (or the absence) of the public evidence.

### **5.2.3 Stimuli**

Stimuli for two kinds of test, a comprehension test and a naturalness rating test, were created using the utterances obtained in the recording session. For the comprehension test, one rendition was chosen from the recorded five repetitions (made by the female speaker), which was judged the most appropriate in terms of pronunciation, speed, and intensity. As mentioned above, the female speaker showed random alternation between the two prosodic patterns (i.e., AD-pattern and DD-pattern) in the contexts where the target phrase is expected to convey the positive epistemic bias. Therefore, Hwang and I included both cases, which resulted in a total of six stimuli: Neutral-AA, Negative-AA, Positive with/without public evidence-AD/DD. For all the stimuli, the male speaker's reply to the target phrase was deleted, as it was to be identified by participants in the experimental task.

As for the naturalness rating test, the target phrase (the NPQ *nagaku-nai?*) was cross-spliced into the conversations of the four different types: Neutral interpretation (114), Negative epistemic bias (115), Positive epistemic bias without Public Evidence given (116), and Positive epistemic bias with Public Evidence given (117). Since there are three possible prosodic patterns (i.e., AA-pattern, AD-pattern, and DD-pattern) observed, we created twelve combinations (4 bias conditions X 3 prosodic patterns) in total.

#### **5.2.4 Participants and procedure**

A total of thirty native speakers of Japanese ranging from 18 to 35 years old participated in the tests. All of them were born and grew up in or around Tokyo area (the area called *Minami Kantoo* ‘Southern Kantō’, which includes 4 prefectures; Tokyo, Kanagawa, Saitama, and Chiba). Both types of test (the comprehension test and naturalness rating test) were conducted in a quiet office, and the stimuli were presented over a headphone with each situation and response choice on a computer screen. All conditions were random interspersed.

Regarding the procedure for the comprehension test, participants were asked to read the discourse situations given on a computer screen carefully. Then, they were informed that they would hear a short conversation between a male and a female speaker. For the cases where they misheard, a second chance to listen to each conversation was allowed. Subjects were instructed to click on the box containing the phrase *moo ichido kiku* ‘listen once again’ in order to hear the entire conversation again. A third chance (or more) was not allowed. The task was to choose the reply which was most appropriate for the female speaker’s question in the given situation. They were asked to click on one of four boxes containing the four choices below. Though English-translated version is given in (118), the choices written in Japanese orthography were provided to the

subjects. (See Section 3.4.1 for a discussion for the correlation between answer tags and prosodic patterns)

(118)

Yes, it is long.	Yes, it isn't long.
No, it is long.	No, it isn't long.

In the naturalness rating test, participants were instructed to read the situations carefully, and to rate the naturalness of the prosodic pattern of the female speaker's question on a 1-5 scale, taking the situation into account. Thus, each participant judged the naturalness for 12 combinations (4 bias conditions X 3 prosodic patterns) in total. For the judgments concerning naturalness, the numbers were labeled as follows: 1 "highly unnatural", 2 "somewhat unnatural", 3 "neither unnatural nor natural", 4 "somewhat natural", and 5 "highly natural".

## 5.3 Results and Discussion

### 5.3.1 Comprehension test

The results of the comprehension test suggest that the speaker's epistemic bias and the prosodic patterns are highly correlated with each other, as shown in Table 5.2. (In Table 5.2, P.E. stands for Public Evidence.)

Bias	Neutral	Negative	Positive			
P.E.			No		Yes	
Prosody	AA		AD	DD	AD	DD
%Correct	94	100	97	100	97	97

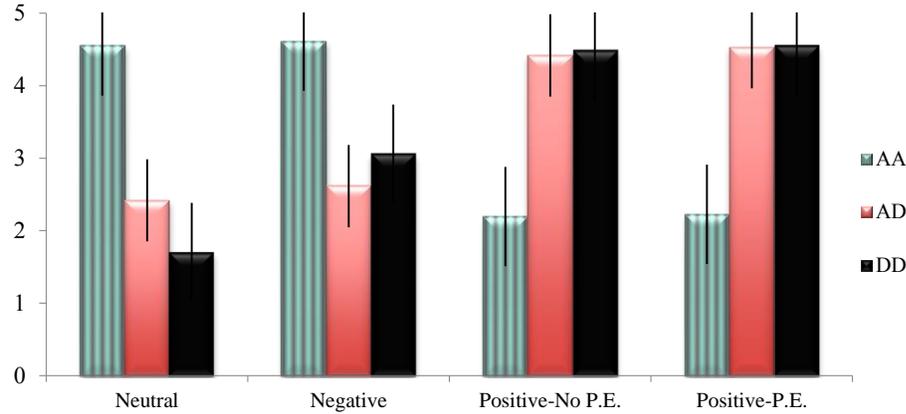
**Table 5.2: Percentages of correct responses in the comprehension test (Hwang and Ito 2014: Table 2)**

As the lowest row shows, participants yielded extremely high accuracy in interpreting the speaker's epistemic bias, confirming the intuitive claim in Chapter 3: positive epistemic bias and negative epistemic bias are conveyed by the P-type (including the AD-pattern and the DD-pattern) and the NN-type patterns, respectively. The comparatively low percentages of correct responses such as 97% and 94% indicate only one or two unexpected responses, which could be attributed to a mistake at the performance level.

What is surprising in Table 5.2 is that there was no substantial difference observed between the two Positive epistemic bias cases (i.e., the one with Public Evidence and one without Public Evidence). It should be noted again that, according to Hara and Kawahara, the "Public Evidence" condition with the DD-pattern and the "No Public Evidence" condition with the AD-pattern are expected to exhibit greater accuracy compared to the other two conditions (the "Public Evidence" condition with the AD-pattern and the "No Public Evidence" condition with the DD-pattern). Thus, not only the random prosodic alternation observed in the female speaker's production (see Section 5.2.2) but also the results in Table 5.2 suggest that evidentiality is not a determining factor for the correlation between the speaker's epistemic bias and the prosodic patterns in Japanese NPQs.

### **5.3.2 Naturalness rating test**

Appreciable differences were observed regarding the perceived naturalness among the prosodic patterns, as Figure 5.2 illustrates.



**Figure 5.2: Mean naturalness ratings depending on the bias and Public Evidence (P.E.) conditions (Hwang and Ito 2014: Figure 3)**

Overall, the AA-pattern (represented with striped bars) was judged as highly natural when it was uttered in the situations where the speaker’s epistemic bias is assumed to be Neutral as in (114) and where Negative epistemic bias is assumed to be conveyed as in (115). In the situations where the speaker’s Positive epistemic bias is considered to be conveyed (regardless of the presence or absence of Public Evidence), the AA-pattern was judged as rather unnatural. In contrast with the AA-pattern, high naturalness ratings were assigned to the AD-pattern (bright colored bars) and the DD-pattern (dark colored bars) in the situations where the target NPQ is assumed to convey Positive epistemic bias. This result again supports the intuitive correlation between epistemic bias and prosodic patterns in NPQs, as claimed in Chapter 3, and also corroborates the finding of the comprehension test.

As in the comprehension test, no correlation between evidentiality and prosodic pattern was not observed in the naturalness rating test. In Figure 5.2, in the situations where Positive epistemic bias is expected to be conveyed (the “Positive with NO Public Evidence” situation and the “Positive with Public Evidence” situation), it is evident that

both the AD-patterns and the DD-patterns received equally high ratings while the AA-pattern is judged as considerably less natural.

In order to test the statistical significance of the differences, one-way ANOVAs using a generalized linear model were performed using JMP 9. All reported effects were significant at the  $p < 0.05$  level. The dependent variable considered was the naturalness ratings. The independent factor was the prosodic patterns (the AA/AD/DD-patterns) in each bias situation (Neutral, Negative, Positive without Public Evidence, and Positive with Public Evidence). One-way ANOVAs show that there is a significant effect of the prosodic pattern on the rating across the bias situations, as summarized in Table 5.3. For the Neutral bias situation, post-hoc comparisons using Tukey-Kramer HSD reveal that the AA-pattern is perceived as significantly more natural than the other patterns and also that, interestingly, marginally significant differences are yielded between AD and DD ( $AD > DD$ ,  $p = 0.03$ ), which is a result that we had not expected.

Regarding this point, recall that I pointed out in Chapter 4 that the AD-pattern (which I assume is one variant of the P-type) can be used in some other ways besides its “positive epistemic bias” use. The differences between AD and DD might stem from one of these usages: specifically, the usage for “information gap” situations. I argued in Section 4.3.1 that P-type NPQs (which includes the AD-pattern) can be uttered without conveying the speaker’s positive epistemic bias in the “information gap” situation, where the speaker considers the core proposition  $p$  possible based on some information that may not be available to the hearer.

Now, returning to the context in (114), where it is assumed that the speaker does not have an epistemic bias (that is, the Neutral bias context) as to whether the morning assembly is long. In this context, it is predictable that the AA-pattern (the NN-type) was acceptable/natural for most participants because the prosodic pattern can be used as an information seeking question, without carrying the speaker’s epistemic bias (that is, an

NN-type NPQ can be used as a neutral/unbiased NPQ, as we saw in Chapter 3). The marginally significant differences between AD and DD shown by the Tukey-Kramer HSD might indicate the possibility that some participants noticed that it is also possible for the AD-pattern to be uttered as the “information gap” usage in context (114) and judged the pattern is also natural in the context. In other words, they perceived that it is also natural to ask “You may be surprised by my asking, but is that morning assembly is long here the case?” by using the AD-pattern in context (114). Interpreted this way, the results of the statistical analyses in Table 5.3 suggest an interesting consequence concerning P-type NPQs: the DD-pattern cannot be used in “information gap” situations while the AD-pattern can.

df (2, 92)	Ratings	Tukey-Kramer HSD
Neutral	F=27.76 P<.0001*	<b>AA</b> > AD > DD
Negative	F=57.65 P<.0001*	<b>AA</b> > DD, AD
Positive-No P.E.	F=44.71 P<.0001*	<b>DD, AD</b> > AA
Positive-P.E.	F=47.88 P<.0001*	<b>DD, AD</b> > AA

**Table 5.3: Results of statistical analyses (Hwang and Ito 2014: Table 3)**

Turning to the contexts where Negative epistemic bias is expected to be conveyed, such as (115), the AA-pattern is rated significantly more natural than the AD-pattern or the DD-pattern, confirming the correlation between the speaker’s epistemic bias and the prosodic patterns: the speaker’s negative epistemic bias can be conveyed by NN-type NPQs (= AA-pattern) but cannot by P-type NPQs (= AD-pattern/DD-pattern).

Finally, in the contexts where the target phrase is assumed to convey Positive epistemic bias, two subgroups (one without Public Evidence (116) and the other with Public Evidence (117)) show the same pattern with respect to the naturalness rating; significantly higher ratings are assigned to the AD- and DD-patterns, compared to the AA-pattern, which indicates that the speaker's positive epistemic bias can be conveyed by P-type NPQs (= AD-pattern/DD-pattern) but cannot by NN-type NPQs (= AA-pattern).

The results in the naturalness rating test are consistent with the finding in the comprehension test, but they are contrary to the results obtained in Hara and Kawahara (2012). It is not clear how to account for the discrepancies between the result in Hara and Kawahara and the current finding. It is conceivable that differences in the stimuli played a role. Unlike Hwang and Ito (2014), it may have been the case that only situations where a positive epistemic bias is assumed to be conveyed were tested in Hara and Kawahara. This might have lead participants to focus on the presence or absence of public evidence, and to try to differentiate the two cases.

#### **5.4 Summary**

Hwang and Ito (2014) conducted two types of experiment to explore two issues concerning Japanese NPQs: first, whether Japanese NPQs really employ the prosodic contrast between the NN-type (= the AA-pattern) and the P-type (= the AD-pattern/DD-pattern) to mark the presence (or the polarity) of the speaker's epistemic bias as this dissertation claims, and second, whether evidentiality (strictly, public evidence) is really correlated with the prosodic distinction between the AD-pattern and DD-pattern as Hara and Kawahara (2012) claim. The result of the comprehension test demonstrates that the prosodic contrast (the AA-pattern vs. the AD-/DD-patterns) enables the addressee to comprehend the speaker's epistemic bias and to reply

appropriately to the NPQ. The result of the naturalness rating test also suggests that Japanese native speakers are sensitive to the prosodic patterns observed in NPQs, and the prosodic contrast (the AA-pattern vs. the AD-/DD-patterns) plays a significant role in naturalness judgments. Taken together, the results reported in this chapter, the two types of experiment in Hwang and Ito 2014, confirm that the NN-type and P-type prosodic patterns are highly correlated with the speaker's epistemic bias in Japanese NPQs. Further, it was shown that the presence or absence of public evidence makes no difference with respect to the prosodic realization between the AD-pattern and the DD-pattern, contrary to the result of the comprehension test in Hara and Kawahara (2012).

Finally, I point out one problem concerning the materials used for the experiment in Hwang and Ito (2014). Hwang and Ito assume context (114) to be a situation where no epistemic bias is involved (i.e., an instance of a Neutral condition). However, though the speaker has no belief or expectation concerning the truth of the core proposition  $p$  (= the morning assembly is long) in (114), it can be considered that the speaker's negative desiderative bias can be conveyed by the NPQ with the AA-pattern in (114). In this respect, it might not be appropriate to use context (114) as a situation where no epistemic bias is involved. If it was intended to focus only on the speaker's epistemic bias (in the sense of the specific modal flavor) and to put aside the speaker's non-epistemic (e.g., desiderative) bias, it would have been more appropriate to set up a discourse situation where the negated predicate is assumed to be contextually prominent (e.g., (57b)) for this purpose. Although the possibility that only P-type NPQs with the AD-pattern (but not with DD-pattern) can be used in the "information gap" situation (see the "Neutral" row in Table 5.3), the context (114) itself contains some other noisy factors, such as a desiderative bias, and a possibility for the "information gap" usage. Therefore, in future research I hope to conduct another experiment to clarify this issue after revising the context set-up.

Nevertheless, concerning the situations where negative epistemic bias or positive epistemic bias (in the specific sense of belief/expectation) is involved, Hwang and Ito's (2014) observations seem to be valid and support the main intuitive claim of this dissertation: a negative epistemic bias is conveyed by NN-type NPQs while a positive epistemic bias is conveyed by P-type NPQs. In addition, the experiments appear to indicate that the prosodic distinction within P-type NPQs (i.e., AD-pattern and DD-pattern) is not correlated with evidentiality.

## CHAPTER 6

### CONCLUSIONS

#### 6.1 Summary

In this dissertation, I investigated the correlation between prosody and the speaker's bias in Japanese NPQs without a particle and argued that the presence (or the polarity) of the speaker's epistemic bias is marked by deletion or retention of the negative morpheme *-na'i*. While the speaker's positive epistemic bias is conveyed by NPQs with deaccented negation (i.e., P-type NPQs), negative epistemic bias is conveyed by NPQs with accent-retained negation (i.e., NN-type NPQs). Also, NN-type NPQs are compatible with a neutral/unbiased interpretation (cases where the speaker has no epistemic bias). This intuitive claim was supported by two kinds of experiment conducted by Hwang and Ito (2014), as presented in Chapter 5.

The results of this research indicate that Japanese NPQs exhibit a two-way difference from English NPQs. First, Japanese NPQs do not mark the speaker's epistemic bias syntactically but prosodically, in contrast to preposed vs. non-preposed negation in English NPQs. Second, while negation preposing represents the presence of the speaker's epistemic bias in English NPQs, deaccentuation of the negative morpheme *-na'i* represents the polarity of the speaker's epistemic bias in Japanese NPQs. These differences (especially the second difference) make it difficult to apply Romero and Han's VERUM approach to Japanese NPQs. In English NPQs, it is assumed that the VERUM operator, whose occurrence results in the presence of the epistemic bias, is involved when a NPQ is marked with preposed negation and that the polarity of the NPQ depends on the scope relation between VERUM and negation. In Japanese NPQs, the involvement of VERUM cannot be marked by the prosody (that is, deaccented *-nai* vs. accent-retained *-na'i*) since it is not the presence but the polarity of epistemic bias

that the prosody marks. If we assume that VERUM occurs in P-type NPQs, then it is predicted wrongly that NN-type NPQs never convey the speaker's epistemic bias. On the other hand, if we assume that VERUM occurs in NN-type NPQs, then it is predicted wrongly that P-type NPQs do not convey epistemic bias and that neutral interpretation is incompatible with NN-type NPQs but compatible only with P-type NPQs. Also, I pointed out the fact that the prosodic contrast between P-type and NN-type disappears when an NPQ has a simple verb predicate (especially in the case where the verb has an unaccented root). I argued that the prosodic contrast is not a case of post-focus reduction based on the complete loss of the F0 peak/fall on the negative morpheme *-na'i*.

Chapter 4 was devoted to more detailed exploration of the (non-truth-conditional) meaning of Japanese NPQs. We found P-type and NN-type NPQs to be non-symmetric in several aspects. First, the “inference on the spot” condition, which requires the epistemic bias conveyed by a NPQ to be newly formed during the discourse situation, has to be met when an NN-type NPQ is interpreted as a biased NPQ (i.e., as an INPQ, which conveys negative epistemic bias). On the other hand, this condition does not have to be satisfied in the case of P-type NPQs; that is to say, the positive epistemic bias conveyed by a P-type NPQ does not have to be newly formed during the discourse but can exist prior to the discourse. Second, while NN-type NPQs can convey either (negative) epistemic bias (bias concerning belief or expectation) or (negative) desiderative bias (bias concerning desire), P-type NPQs can convey only epistemic bias. Third, P-type NPQs are compatible with a neutral interpretation when the “information gap” condition is met; that is, when the speaker considers the core proposition  $p$  possible based on some information that may not be available to the addressee in asking a P-type NPQ. In contrast, NN-type NPQs are compatible with a neutral interpretation not when the “information gap” condition is met (that is, when the speaker considers the proposition denoted by the radical  $\neg p$  possible based on some information that may not

be available to the addressee in asking a NN-type NPQ) but rather when the negated predicate is contextually prominent. Fourth, while NN-type NPQs have the illocutionary force of questioning, P-type NPQs have the dual illocutionary force of asserting and questioning. Fifth, while a P-type NPQ can be used as a suggestion or polite request of the core proposition  $p$ , an NN-type NPQ cannot be used to suggest (or request politely) the proposition denoted by the radical  $\neg p$ . Also, we observed that the “inference on the spot” condition can be ignored when an NN-type NPQ conveys (negative) desiderative bias. This, together with the fact that P-type cannot convey desiderative bias but can convey only epistemic bias, suggests that non-symmetry exists not only between P-type NPQs and NN-type NPQs but also between epistemic bias (concerning belief or expectation) and desiderative bias (concerning desire). The latter, possible differences dependent on modal flavors, has not drawn much attention in previous work. However, these non-symmetric properties does not force a modification of my main claim in this dissertation. Rather, the findings are consistent with my claim regarding speaker’s bias: positive epistemic bias (positive belief or expectation) can be conveyed by P-type NPQs (but not vice versa), while negative epistemic bias (either negative belief/expectation or negative desire) can be conveyed by NN-type NPQs (not vice versa).

## 6.2 Directions for further research

In this last section, I touch on a few additional issues concerning NPQs and map out possible directions for further research.

In this dissertation, I focused only on matrix NPQs, but NPQs can be embedded in a matrix sentence, as shown below. Annotation represents the sentence form and bias of an embedded NPQ in (119)

(119) a. Susumu-wa [sono ho'n-ga taka'ku-na<sup>(?)</sup>i ka] siritaga'tte-iru.

Susumu-Top the book-Nom expensive-Neg Q want.to.know.Ger-be  
 ‘Susumu wonders if the book is not expensive.’ (i) *taka’ku-na’i* ⇒

⟨?¬*p*, B<sub>s</sub>¬*p*⟩, ⟨?¬*p*, D<sub>s</sub>¬*p*⟩, or ⟨?¬*p*, ∅⟩

(ii) *taka’ku-nai* ⇒ ⟨?¬*p*, B<sub>s</sub>*p*⟩

b. To’shiko-wa [A’yako-ga gakusee-zya-na<sup>(’)</sup>i ka] kiita.  
 Toshiko-Top Ayako-Nom student-ZYA-Neg Q asked

‘Toshiko asked if Ayako was not a student.’

(i) *gakusee-zya-na’i* ⇒ ⟨?¬*p*, B<sub>s</sub>¬*p*⟩, ⟨?¬*p*, D<sub>s</sub>¬*p*⟩, or ⟨?¬*p*, ∅⟩

(ii) *gakusee-zya-nai* ⇒ ⟨?¬*p*, B<sub>s</sub>*p*⟩

As shown by the parentheses, either deaccented *-nai* (i.e., P-type) or accent-retained *-na’i* (i.e., NN-type) is possible in both (119a) and (119b). According to my intuition, the prosodic contrast remains in (119); that is, there exists the correlation between prosody and bias even in this embedded NPQ. For example, suppose the following situation. Toshiko is looking for non-student participants for her language experiment, and her friend Hiroko recommended Ayako, whom Toshiko doesn’t know, as a participant. So, Toshiko checked with Hiroko to determine if Ayako is not a student. In order to describe this situation, it is natural to utter the sentence in (119b) with accented *-na’i* (119b-i), but it sounds somewhat awkward to utter it with deaccented *-nai* (119b-ii). When (119b-ii) is uttered, it is implied that Toshiko has an expectation or suspicion that Ayako is a student.

In this respect, embedded NPQs in Japanese show an interesting contrast with embedded NPQs in English, which are ambiguous with respect to their interpretation (Romero and Han 2004).

(120) Sue asked me/I wonder whether Jane isn’t coming.

(Romero and Han 2004: (123))

Romero and Han (2004) state regarding the embedded NPQ in (120); “[W]e think that the different behavior of negative elements in preposed vs. canonical (i.e., non-preposed) position is part of a much wider phenomenon having to do with how languages in general associate non-canonical syntactic forms with particular discourse functions. (...) [I]n the syntactic environments where the grammar does not allow for the non-canonical order, the canonical order should be ambiguous or, at least, vague. (...) The embedded question in (120) can be understood as reporting/pondering the unbiased question *Is Jane not coming?* or the biased question *Isn’t Jane coming?*” (p. 655) Their proposal accounts for the contrast between Japanese embedded NPQs such as (119) and English embedded NPQs such as (120). That is, we can say that in (119) the canonical prosody (with accented *-na’i*) is not ambiguous because the grammar allows for the non-canonical prosody (with deaccented *-nai*). But, it is necessary to collect more data on Japanese embedded NPQs to confirm if the prosodic contrast is really solid also in embedded NPQs in Japanese.

Lastly, I list the major issues which should be discussed and resolved in further work. First, although I have investigated how prosody is correlated with the speaker’s bias in Japanese NPQs, it is necessary to uncover why this correlation exists, from a typological and theoretical standpoint. Why does deaccenting of *-na’i* force a (P-type) NPQ to convey the speaker’s positive bias? Similarly, why does the retention of the lexical accent of *-na’i* enables a (NN-type) NPQ to convey the speaker’s negative bias (or to be compatible with the neutral interpretation)?

Second, further research is required to determine more why simple verb predicates (especially, those with an accented root) cause the neutralization of the prosodic contrast. I argued that P-type NPQs involve deaccenting of *-na’i*, which is different from tonal compression as post-focus reduction. My suspicion is that in NPQs

with accented simple verb predicates, post-focus reduction might be employed to represent the speaker's epistemic bias. Consider at the following example.

- (121) Yamada-kun-wa      tabe'-nakat-ta?  
 Yamada-Suffix-Top eat-Neg-Past  
 'Didn't yamada eat (it)?'  $\langle ?\neg p, B_s\neg p \rangle$ ,  $\langle ?\neg p, B_s p \rangle$ , or  $\langle ?\neg p, \emptyset \rangle$   
**[Yamada-kun-wa]** [*tabe'-nakat-ta*] ?  $\Rightarrow$  ONPQ ( $\langle ?\neg p, B_s p \rangle$ )

In (121), boldface indicates focushood, which implies retention of pitch movements, and italicization indicates the post-focus reduction. When the negated predicate (which contains an accented simple verb) in the NPQ in (121) is in post-focus position, it seems that only the ONPQ interpretation (i.e., the speaker believes/expects the truth of the core proposition  $p$  (= Yamada ate it)) is borne out. It is necessary to investigate further whether post-focus reduction is used alternatively for expressing the speaker's positive epistemic bias as a kind of last resort strategy iff deaccenting of *-na'i* is not possible, more precisely, iff an NPQ contains the predicate of an accented simple verb.

Third, though I have focused only on Japanese NPQs without a particle, Japanese has other types of NPQs, such as NPQs with a sentence-final particle, as studied by Sudo (2013). As we saw in Section 3.4.3, the prosodic contrast between the P-type and the NN-type is not affected by the attachment of *no/noda*. Hence, it is necessary to work on how those NPQs differ from NPQs without a particle and what kind of semantic (or pragmatic) effect the attachment of sentence-final material such as *no/noda*.

Fourth, it was suggested in Chapter 4 that there exist some differences among the modal flavors of epistemic bias. In this respect, it is very likely excessively coarse-

grained to treat those separate modal flavors as one “epistemic” bias; future research is required to check those modal flavors carefully to be sophisticated.

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