QUESTION BIAS AND BIASED QUESTION WORDS IN MANDARIN, GERMAN AND BANGLA

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ABSTRACT OF THE DISSERTATION

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Bias is a linguistic phenomenon that is primarily found in questions. Various kinds of biased questions have been studied extensively in the literature, e.g. Negative Polar Questions, Questions with Minimizers, Questions with Verum focus (Ladd 1981, Büring & Gunlogson 2000, Guerzoni 2003, Romero & Han 2004, a.o.). Aside from those biased questions, there are questions with dedicated words that can express bias (i.e. biased question words). Those words are *nandao* in Mandarin, *etwa* in German, and *naki* in Bangla. The current dissertation takes a modal approach to bias, distinct from earlier accounts of bias.

In order to find out the nature of bias, e.g. how it is introduced, at which level it is interpreted, and why it is primarily found in questions, I study the three biased question words at the interface of syntax, semantics and pragmatics. Based on the analyses of the three words, I claim that bias is a not-at-issue content that is revealed via the speaker's public belief domain (i.e. Discourse commitment). Considering the phenomenon in general, I isolate three conditions for introducing bias: a preference ranking of alternatives, selection of a particular alternative as privileged, and the requirement to update the Question Under Discussion with the alternatives. Biased question words lexically satisfy all three conditions and give rise to the obligatorily biased reading of questions containing them. With these three conditions, I provide a definition for bias and explain the opening statement that "bias is a linguistic phenomenon that is primarily found in questions".

Acknowledgments

I didn't do well enough during my Ph.D. years. I sort of strayed away from my duty as a Ph.D. student and wasted a lot of time, especially in year 5 and year 6. I regained myself in the 7th year as a student and a scholar when I felt the pressure of graduation. Now, I have finished my dissertation and had a job offer. I will keep this momentum after graduation as a teacher and a researcher. All these signs of progress could not have been achieved without the help and motivation from my advisor and chair, Veneeta Dayal, to whom I want to express my sincere gratitude. I appreciate her constant patience and everlasting support, regardless of how badly I may have performed and how bewildered and doubtful I may have been during my years at Rutgers. She has never said any harsh words and has always tried to encourage me. She has never abandoned me. Generous words and kind reminders light my way, like a lighthouse for lost ships. I cannot express enough my gratitude for her.

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Chapter 1

Introduction

1.1 What is bias?

Bias is a linguistic phenomenon that is primarily found in questions. Typical cases of bias can be found in Outer Negation Polar Questions (ONPQ) (1), Inner Negation Polar Questions (INPQ) (2), Positive Polar Questions (PPQ) (3), Questions with Minimizers (4-5), Questions with Verum focus (6), and Questions with mutually known answer(s) (7) (Ladd 1981, Büring & Gunlogson 2000, Guerzoni 2003, 2004, Romero & Han 2004, Rohde 2006, Caponigro & Sprouse 2007, a.o.).

(1)   Isn't there some vegetarian restaurant around here?

(2)   Is there no vegetarian restaurant around here?

(3)   (Context: My officemate enters the windowless computer room wearing a dripping wet raincoat.)
       What's the weather like out there?
       Is it raining?/#Is it sunny? (adapted from Sudo 2013: 278)

(4)   Did Sam lift a finger to help you?

(5)   Who lifted a finger to help you?

(6)   Does John really like Mary?

(7)   Is the Pope Catholic?

In all the above examples, one answer to each of those questions is preferred to the other answer or answers. In (1) and (2), either an outer negation or an inner negation in the questions signals the speaker's expectation or belief of a positive answer (Ladd 1981, Sudo 2013). In (3), there is a contextual bias for the answer *it is raining* which can be inferred from the evidence *a dripping wet raincoat*. In (4) and (5), the presence of the Minimizer

(i.e. strong NPI) *lift a finger* shows the speaker's expectation for a negative answer, i.e. *Sam didn't lift a finger to help* or *No one lifted a finger to help* (Guerzoni 2003, Guerzoni 2004).[1] (6) "necessarily conveys that the speaker originally believed the correct answer to that question to be in the negative" (Romero 2006: 9). In (7), only the positive answer *the Pope is Catholic* is felicitous, because the answer is mutually known to both the speaker and the addressee, i.e. it is pragmatically presupposed (Rohde 2006, Caponigro & Sprouse 2007).

As we can see from the above, different authors have different views on the definition of bias. On the one hand, Romero (2006) regards biased questions as "expressing an epistemic bias on the speaker's side" (9). Similarly, Asher & Reese (2007) defines biased questions as "convey[ing] an expectation, or bias, on the part of the speaker toward a specific answer to the question" (3). On the other hand, Büring & Gunlogson (2000) think that the bias in a biased question comes from compelling evidence available in the conversational context. Sudo (2013) takes a step further by assuming both views are correct yet incomplete to propose a feature-based system of bias. He calls the first view of bias "epistemic bias" and the second "evidential bias". He thinks that they are independent and can be combined.

However, there is still a consensus among all the views, i.e. in a biased question, a particular answer is expected while the others are not. We call such a phenomenon **question bias**.[2]

In the next section I will review the above-mentioned proposals on question bias.

1.2   Modeling Bias: Current Views

1.2.1   Question bias as pragmatic presupposition

Assuming rhetorical questions as strong biased questions, we may analyze biased questions from the angle of pragmatics following Stalnaker (1978) (Rohde 2006, Caponigro & Sprouse 2007). Rohde (2006) and Caponigro & Sprouse (2007) believe that biased questions and

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[1]Note that all the positive answers to the questions *Sam lifted a finger to help* in (4) or *Mary... lifted a finger to help* are not even grammatical in English.

[2]In this dissertation, rhetorical questions will be included under the label of *biased questions* for reasons that will become clear when we analyse *nandao*-Qs.

neutral questions are semantically the same, but differ only in their discourse conditions. This can be best captured by the comparison between (8) and (9).

(8)   Situation: Mina helped Luca when he was in trouble and both the Speaker and the Addressee are aware of that. Now Luca adores Mina for helping him.

SPEAKER: It's understandable that Luca adores Mina. *After all, who helped him when he was in trouble?*

ADDRESSEE or SPEAKER: Mina/#Sam/#Sue... (Adapted from Caponigro & Sprouse 2007: 4)

(9)   Situation: The Speaker thinks that somebody must have helped Luca when he was in trouble, though he does not know who. The Speaker knows that the Addressee is a good friend of Luca's and therefore he is likely to be aware of what happened to Luca.

SPEAKER: I'm really curious, *who helped Luca when he was in trouble?*

ADDRESSEE: Mina/Sam/Sue... (Adapted from ibid.: 7)

In (8), *Mina helped Luca when he was in trouble* is the information that is known to the speaker and the addressee. In this situation, *Mina* is the only felicitous answer to the biased question, while all the other answers like *Sam* or *Sue* are also possible answers but not felicitous ones. On the other hand, when no answers are known to the speaker and the addressee, the same question becomes a neutral one, i.e. no bias is attached to it, as in the case of (9).

The comparison suggests that the source of bias in rhetorical questions is not from the semantics of questions *per se*, but from what the discourse participants assumed or believed to be in Common Ground when the question is uttered. Rohde (2006) regards biased questions (in her case, rhetorical questions) as redundant questions for both the speaker and the addressee "share prior commitments to similar and obvious answer" (134) and the biased questions "serve only to reiterate information already in the Common Ground" (152). Similarly, Caponigro & Sprouse (2007) summarize the condition for rhetorical questions, a kind of biased questions, as follows:

> [A] question Q is a RQ [Rhetorical Question] if and only if the following conditions of use are satisfied: the Speaker and the Addressee already mutually believe

the true complete answer to Q, that is if the answer is part of the Speaker's and Addressee's CG... (11)

In these cases, the biased answer is a pragmatic presupposition in the sense of Stalnaker (1974).

1.2.2 Question bias as semantic presupposition

Guerzoni 2003 and Guerzoni 2004 discuss another kind of biased questions, i.e. questions with strong NPIs (cf. Borkin 1971). They derive the bias from the scopal ambiguity in questions and the interactions of the semantics of strong NPIs (or minimizers in her terms) and the corresponding scalar alternatives.

In her analysis, all strong NPIs are always accompanied by an *even*, either overtly or covertly, at LF, which is defined as follows:[3]

(10) $\llbracket even \rrbracket = \lambda C_{\langle st,t \rangle} \cdot \lambda p_{\langle st \rangle} : \forall q_{\langle st \rangle}[q \in C \ \& \ q \neq p \rightarrow q >_{likely} p] \cdot p$

(Guerzoni 2004: 326)

In (10), *even* semantically carries a scalar presupposition that the proposition it is associated with is less likely than any other alternatives. She calls such a presupposition a **hardP** presupposition.

(11)   **hardP** = p is the least likely proposition among the alternatives.

   easyP = p is the most likely proposition among the alternatives. (Ibid.)

Guerzoni's (2003) and Guerzoni's (2004) analysis of biased questions like (4) crucially relies on her assumption of one syntactic specification of Y/N-Qs: a covert *whether* moves over the Q morpheme and leaves a trace.

whether$_1$

1

Q

t$_1$ p

---
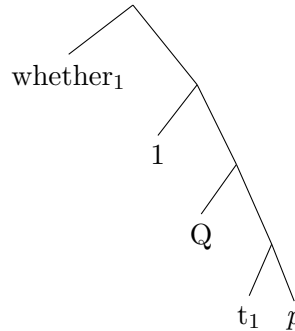
[3]In fact, this idea was first suggested by Heim (1984).

This leaves open the possibility of scope ambiguities when something moves from a lower position in between *whether* and its trace. Biased questions like (4) are such cases.

(12) $[[\text{whether}_1[\text{t}_1[\textit{even}[\text{Sam lifted a finger to help}]]]]]$

 $= \{[[\textit{even}]](p), \neg[[\textit{even}]](p)\}(p = \text{Sam lifted a finger to help})$

 $= \{[\textbf{hardP}]\text{Sam lifted a finger to help}, [\textbf{handP}]\text{Sam didn't lift a finger to help}\}$

In (12), *even* is within the scope of the trace of *whether*. Thus, *even* will first saturate the question nucleus *Sam lifted a finger to help* to create a new question nucleus and then be saturated with *whether* and its trace to make a set of two alternatives. Both alternatives have the same **hardP** presupposition, i.e. *to lift a finger to help is harder than all other ways of helping*. However, since in our common sense *to lift a finger* is considered an easy if not the easiest way to help, the **hardP** presuppositions of both answers in (12) are not met. Therefore, neither of the answers are felicitous.

(13) $[[\text{whether}_1[\textit{even}[\text{t}_1[\text{Sam lifted a finger to help}]]]]]$

 $= \{[[\textit{even}]](p), [[\textit{even}]](\neg p)\}(p = \text{Sam lifted a finger to help})$

 $= \{[\textbf{hardP}]\text{Sam lifted a finger to help}, [\textbf{easyP}]\text{Sam didn't lift a finger to help}\}$

On the other hand, when *even* moves to a position between *whether* and its trace, *even* takes either alternative answer as its argument. As the two alternative answers have opposing polarities, after saturation with *even*, the presuppositions associated with either alternative are also opposite in terms of direction of scales. Hence, we will have a positive answer with a **hardP** presupposition and a negative answer with an **easyP** presupposition, i.e. *to lift a finger* is the easiest way to help. In this structure, only the negative answer is felicitous. This explains why questions like (4) always have a negative bias.

 In her proposal, a Hamblin question denotation is reduced to a set of *live answers* whose presuppositions are met in a given context. Thus, in any normal context, the denotation of (4) contains the only answer *Sam didn't lift a finger to help*.

1.2.3 Question bias as compelling evidence

Ladd (1981) observes that negative polar questions (NPQs) are ambiguous in English and they show the questioner's expectation or belief towards some proposition. Ladd uses the

terms *inner negation polar questions* (INPQs) and *outer negation polar questions* (ONPQs) to disambiguate the two readings. With different licensing conditions for polarity items (PIs), we can distinguish INPQs from ONPQs. When an NPQ takes negative polarity item (NPI), it is an INPQ; when it takes positive polarity item (PPI), it is an ONPQ.

(14)   (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 to in Hyde Park.

Bob: Oh really, isn't there (*any*/*some*) vegetarian restaurant around here?

Kathleen: No, about all we can get is hamburgers and souvlaki. (adapted from Ladd 1981)

Based on Ladd's (1981) analysis, Büring & Gunlogson (2000) summarize his distinctions between INPQs and ONPQs as follows:

(15)   Summary of INPQ vs. ONPQ (p = 'there is a vegetarian restaurant around here')

	background	speaker wants
INPQ	p is expected (Ladd: speaker used to believe that p)	confirmation for the inference that not-p
ONPQ	speaker believes that p	confirmation for p

(Büring & Gunlogson 2000: 3)

Based on syntactic evidence from English and German, Büring & Gunlogson (2000) separate INPQs and ONPQs in terms of the relative positions of negation in the surface syntax: NPQs with the fronted negation and the PPI *some* are ONPQs and those with negation in-situ are INPQs.

(16)   a. Isn't there some vegetarian restaurant around here? (ONPQ)

b. Is there no vegetarian restaurant around here? (INPQ)

Further, they propose that both ONPQs and INPQs are licensed under some contextual evidence conditions.

(17)   Contextual Evidence:

Evidence that has just become mutually available to the participants in the current discourse situation.

(18)   Compelling:

a. Evidence *for* p is compelling if, considered in isolation, it would allow the participants to assume p (i.e. the evidence could reasonably be considered to justify the inference that p).

b. Evidence *against* p is compelling if it is compelling evidence for the opposite of p, W-p. (Büring & Gunlogson 2000: 7)

In the end, they summarize all the conditions of PPQ, ONPQ and INPQ.

(19)

contextual evidence	PPQ	ONPQ	INPQ
for p'	ok	*	*
neutral	ok	ok	*
against p'	*	ok	ok

(Büring & Gunlogson 2000: 11)

If we consider questions in neutral contexts as non-biased questions, questions in non-neutral contexts will be biased questions. In this case, PPQ, INPQ and ONPQ can all show bias given proper compelling evidence in the context.

1.2.4   Question bias as pragmatic implicature

Romero & Han (2002) presents a series of questions like (20) and (22) of which each has a Verum focus in it.

(20)   Does John really like Mary? (=(6))

Negative epistemic implicature: The speaker believes or expects that John does not like Mary.

(21)   Does John like Mary?

No epistemic implicature.

(22)   DOES John drink?

Negative epistemic implicature: The speaker believes or expects that John does not drink.

(23)   Does John drink?

No epistemic implicature. (Romero & Han 2002: 208)

As (20-23) show, (20) and (22) are biased questions expressing the speaker's belief or expectation of the negative polar answer. On the other hand, (21) and (23) are neutral questions without any preferences for either answer on the part of the speaker. Romero & Han (2002) and Romero & Han (2004) propose that the source of the biases is a pragmatic implicature induced by the adverb *really* and the stress on the auxiliary.

Both the adverb *really* and the stress on the auxiliary trigger Verum focus. The meaning of this Verum focus is to ensure that the proposition modified by the Verum focus is to be add into the CG.

(24) $[\![\text{VERUM}]\!]^{g[x/i]} = \lambda p_{\langle s,t \rangle} \lambda w \, . \, \forall w' \in \text{Epi}_x(w)[\forall w'' \in \text{Conv}_x(w')[p \in CG_{w''}]]$

$= \text{FOR-SURE-CG}_x$ (Romero & Han 2004: 627)

"[R]*eally* 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)" (ibid.).

In the LF of *really* Questions like (22), VERUM takes the whole IP in the scope of question formation.

(25)   a. Does John really drink?

b. LF: [$_{CP}$ Q VERUM [$_{IP}$ John drinks]]

= { "it is for sure that we should add to CG that John drinks", "it is not for sure that we should add to CG that John drinks}

={FOR-SURE-CG$_x$ p, ¬For-SURE-CG$_x$ p} (adapted from ibid.: 628)

As we can see from (25), the addition of VERUM in the LF of the question creates an unbalanced partition between the absolute degree of certainty to add the embedded proposition to CG and all other lesser degrees. This unbalanced partition leads to bias if we include the following Principle of Economy.

(26)   Principle of Economy: Do not use a meta-conversational move unless necessary (to resolve epistemic conflict or to ensure Quality). (ibid.: 629)

As the definition of VERUM suggests, VERUM is an epistemic modal that embeds a "meta-conversational" modal. Thus, *really* Questions are meta-conversational moves guided by (26). If the speaker has no prior belief or expectation of a particular answer, then when he asks a question, the answer from the addressee will be updated into CG. As the speaker has no prior belief or expectation, there will be no epistemic conflict between the speaker and the addressee. So, under the Principle of Economy, no meta-conversational move will be involved. On the other hand, for *really* questions with unbalanced epistemic partition, it follows either that the speaker has a prior belief that the embedded proposition is inconsistent with the addressee's beliefs or believes the proposition but lacks evidence for it, i.e the speaker is trying to avoid a violation of Quality. In short, the bias arises as a conversational implicature induced by the unbalanced partition of the question with VERUM under the Principle of Economy.

1.2.5   Question bias as assertion + question

Sadock (1971) and Sadock (1974) find that interrogative sentences can be used as an assertion with opposite polarity.

(27)   Did Sam lift a finger to help? (= (4))

     (= Sam didn't lift a finger to help)

(28)   Didn't I tell you to eat it?

     (= I told you to eat it.)

He names such questions *queclaratives*. As the morphology of the name suggests, these questions are a combination of questions and declaratives, i.e. they are questions in forms but declaratives in force. Although they have the surface form as questions, they behave like declaratives in many circumstances. Sadock designs several syntactic tests to distinguish declaratives and questions. The first one involves the use of *after all*. The parenthetical expression *after all* can appear at the beginning of declaratives, or sentences with assertive power. But, they cannot appear in a neutral question

(29)   After all, John is at home.

(30)   After all, isn't John at home?

(31)   * After all, is John at home?

The use of *yet* is another test for declaratives. The expression can follow only declaratives while beginning the next sentences (see Sadock 1971: 225-227 for examples).

On the other hand, there are also expressions solely used with questions.[4] *By any chance* is one of them.

(32)   Is it raining outside, by any chance?

(33)   * Isn't it raining outside, by any chance?

As the above diagnostics suggest that queclaratives are indeed questions in form but assertions in force, Sadock (1971) proposes that a queclarative contains in the remote structure (i.e. deep structure) an interrogative clause and a declarative with an opposing polarity of the preceding question nucleus (see Figure 1.1).

a.

S   S

I-"ask"-*p*   I-"declare"-Not *p*

b.

S   S

I-"ask"-Not *p*   I-"declare"-*p*

Figure 1.1: Remote structures of positive and negative queclaratives.

By an unstated transformational rule, Sadock regards all the assertive clauses as deleted from the surface form. So, in queclaratives only the interrogative clause can survive in the surface form.

Based on Sadock's findings and proposal, Asher & Reese (2007) and Reese (2007) make a further distinction between ONPQs and INPQs.

(34)   *After all* test:

    A: Sue can't attend, so there'll be no syntacticians there.

    B: What do you mean? After all, isn't Jane coming too? (ONPQ)

    B': What do you mean? # After all, isn't Jane coming either? (INPQ)

---

[4]Or "true questions" as Sadock 1971 puts it.

(35) *Yet* test:

A: Isn't Jane coming too? (ONPQ)

A': # Isn't Jane coming either? (INPQ)

A: Yet, Mary claims there will be no syntacticians there.

(adapted from Asher & Reese 2007)

In view of the above, Asher & Reese (2007) and Reese (2007) claim that ONPQs differ from INPQs in that INPQs are normal interrogatives of QUESTION type but ONPQs are assigned a complex speech act ASSERTION•QUESTION. They provide a formal analysis of such a complex speech act in the framework of Segmented Discourse Representation Theory (SDRT). The constituent speech act ASSERTION is linked to QUESTION by Gricean-style principles of rationality and cooperativity. Unlike what is suggested by Sadock (1971) in Figure 1.1, the flow of information in ONPQs is from ASSERTION to QUESTION.

1.2.6 Question bias as epistemic bias + contextual bias

Based on previous literature on biased questions, especially Büring & Gunlogson (2000), Sudo (2013) puts forward a more fine-grained descriptive system of biased questions on two distinct types of bias, viz. *evidential bias* and *epistemic bias*.

(36) *Evidential Bias (-)*
      If a PQ is incompatible with 'contextual evidence'[5] for the positive (resp. negative) answer, the PQ is said to carry a [-positive] (resp. [-negative]) evidential bias. (5)

(37) *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. (10)

(38) *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. (8)

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[5]His use of 'contextual evidence' is adopted from Büring & Gunlogson (2000) (cf. (17)).

The major differences between evidential bias and epistemic bias are two-fold, i.e. they differ in sources of information and discourse status. The evidential bias is about the contextual information, while the epistemic bias comes from the speaker's epistemic states. Furthermore, the evidential bias is publicly available to all discourse participants, while the epistemic bias is deeply rooted in the speaker's private beliefs that do not have to be made available to other discourse participants.

Within this feature-based system, any question can be characterized by the two features. For instance, INPQs (IN-NPQs in Sudo's (2013) terms) require negative contextual evidence.

(39) [Context: Bill is right-handed and Mary is left-handed. We're wondering who else is lefty. John is using a pen with his right hand in front of us.] (Context with positive evidence for John being right-handed)

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

  b. Isn't John left-handed either?

(40) [Context: In the same context as above, I think that I have seen Chris, who is not around right now, use a pen with his right hand] (Context with no evidence)
  # Isn't Chris left-handed either? (adapted from ibid.: 10)

Together with previous observations in the literature (Ladd 1981; Romero & Han 2002; Romero & Han 2004; Asher & Reese 2007), INPQs such as the one in (39b) carry an implication that the speaker expects the negative answer to be true.

Thus, within the descriptive system, INPQs have the following feature description.

(41)

	Evidential Bias	Epistemic Bias
INPQ	+negative	positive

1.3 Questions with biased question words: *nandao* in Mandarin, *etwa* in German, and *naki* in Bangla

Apart from those biased questions mentioned in the literature, there are some special questions in Mandarin, German and Bangla that resemble NPQs and NPI-Qs and which do

not allow for ordinary question meanings. While biased, they do not belong with any of the biased questions analyzed above. They are questions with *nandao* in Mandarin (henceforth *nandao*-Qs), with *etwa* in German (henceforth *etwa*-Qs), and with *naki* in Bangla (henceforth *naki*-Qs).

These biased question words (henceforth BQWs) necessarily trigger biases in questions containing them, i.e. questions with BQWs can never appear in neutral contexts.

(42) Mandarin:

a. Zhangsan chi-le   fan (ma)?
   Zhangsan eat-ASP rice Y/N-Q

   'Did Zhangsan have a meal?' (neutral question)

b. Nandao Zhangsan chi-le   fan (ma)?
   Nandao Zhangsan eat-ASP rice Y/N-Q

   'Zhangsan didn't have a meal, right?' (biased question)

(43) Bangla:

a. Tumi jaccho   (ki)?
   you   go.2P.PROG Y/N-Q

   'Are you going?' (neutral question)

b. Tumi jaccho   naki?
   you   go.2P.PROG naki.INF

   'You are going, right?' (biased question)

(44) German:

a. Hat der Junge den Kuchen gemocht?
   has the boy   the cake   liked

   'Did the boy like the cake?' (neutral question)

b. Hat der Junge etwa den Kuchen gemocht?
   has the boy   etwa the cake   liked

   'Did the boy like the cake by any chance?'

   (bias: I wouldn't have expected that he would like it.)

(adapted from Gieselman & Caponigro 2010: 3)

Apart from this, the distribution of BQWs is quite limited: they can only appear in Y/N-Q. We might compare them to strong NPIs, which lead to biased questions, but also appear in declaratives and imperatives.

The following shows the similarities of those BQWs in each language.

First, none of the BQWs can be used in declaratives.[6]

(45) Mandarin:

* Nandao Lisi hui lai.
  nandao Lisi will come

(Intended) 'Lisi will not come.'

---

[6]It should be noted here that except for *nandao* which is strict about the type of sentences it can appear in and has no other homophonous cognates, the other two BQWs both have homophonous cognates that have distinct syntactic and semantic properties. For instance, the BQW *etwa* has two homophonous cognate *etwa* ('approximately', 'for instance'). Both cognates are not Modal Particles. When *etwa* carries the meaning of 'apporximately', it is a degree adverb. When it means 'for instance', it is considered to be a variant of the degree adverb (cf. Franck 1980: 220; Kwon 2005: 120). Compared with their BQW counterpart, these two cognates have very different syntactic distributions. The degree adverb *etwa* ('approximately') can appear in declaratives sentence-internally (1) and sentence-initially (2).

  1. Er stoppte etwa   in der Mitte   des Sees.
     he stopped approximately in the middle of   lake

     'He stopped nearly in the middle of the lake.'

  2. Etwa   in der Mitte   des Sees stoppte er.
     approximately in the middle of   lake stopped he

     'Nearly in the middle of the lake he stopped.'
     (Glavinic, Thomas: Die Arbeit der Nacht, München Wien: Carl Hanser Verlag 2006, S. 151)

When *etwa* means 'for instance', it can appear in declaratives, WH-Qs, and Y/N-Qs as well as Alt-Qs (cf. Kwon 2005).

  1. Ein solches Beispiel wäre   etwa   der Satz   ,die arme Frau   wurde schwer   krank'.
     one such   example would.be for.instance the sentence the poor woman would seriously ill

     'Such an example would be the sentence, for instance, 'the poor woman was seriously ill'.'
                                                                  (FKO/YAK.00000; qtd. in Kwon 2005: 120)

  2. Wen   hat etwa   die ewige Fragerei   beim Friseur   nicht schon   mal den letzten
     whom has for.instance the endless questioning at.the hairdresser not   already once the last
     Nerv gekostet? (http://www.pnp.de/nachrichten/kultur/pnp_verstaerker/?em_cnt=403522)
     nerve cost

     'For example, who was never bothered by the endless questioning at the hairdresser.'

  3. Es stellen sich eine Reihe   von Fragen. Hat etwa   der Gärtner den Dieb bemerkt (oder
     it stand itself a   number of   questions has for.instance the gardener the thief notice   (or
     nicht)? (Krifka p.c.)
     not)

     'There are a number of questions. For example, did the gardener notice the thief (or not)?'

In the current dissertation, I will not consider the two non-Modal-Particle cognates *etwa*.

Similarly, in Bangla, there is another *naki* which can appear in declaratives. It is an indirect reportative evidential marker specifying that the source of information is from a third party, and the type of evidence is heard or quoted. Unlike the sentence-final *naki*, this one always appears in a sentence-medial position.

  3. brishti naki   por-che.
     rain   naki.REP fall-PROG

     '(I heard) It is raining.'

In the current dissertation, for reasons that will be become clear in Chapter 5, I will follow Mukherjee (2008) and Bhadra (2013) and treat the two *naki*s as two lexical items and only focus on the sentence-final one.

(46) Bangla:

* Raj et-ta   notun bat kin-te   chay   naki.
  Raj one.CL new   bat buy.INF want.3P naki

  (Intended) '(I inferred that) Raj wants a new bat.'

(47) German:

* Der Junge hat etwa den Kuchen gemocht.
  the boy   has etwa the cake   liked

  (Intended) 'The boy liked the cake.'

  (adapted from Gieselman & Caponigro 2010: 3)

Second, none of them can be used in WH-Qs.

(48) Mandarin:

* Nandao shui bang-guo ni   ne?
  nandao who help-EXP you WH-Q

  (Intended) 'Who helped you?'

(49) Bangla:

* Tui kar   sathe bari   jacchish naki?
  you who.GEN with home go.2P   naki

  (Intended) 'Who are you going home with?'

(50) German:

* Wer hat etwa den Kuchen gemocht?
  who has etwa the cake   liked

  (Intended) 'Who liked the cake?' (adapted from Gieselman & Caponigro 2010: 4)

Third, they are incompatible with Alt-Qs.

(51) Mandarin:

* Nandao Zhangsan bang-mei-bang-guo ni?
  nandao Zhangsan help-not-help-EXP   you

  (Intended) 'Did Zhangsan help you or not?'

(52) Bangla:

* brishti porche   kina   naki?
rain   fall.PROG.3P or.not naki

(Intended) 'It is raining or not?'

(53)   German:

* ist das etwa normal oder nicht?
is this etwa normal or   not

(Intended) 'Is this normal or not?'

Finally, they can all be used in Y/N-Qs, as exemplified by (42b), (44b), and (43b).

While the primary focus of this dissertation is to capture the contribution of these words to biased questions, they have several other properties that are interesting in their own right. For example, the BQWs differ in whether they can be embedded.

(54)   [+WH] verbs: *ask*

   a.   * Zhangsan wen Lisi nandao chi fan -le   ma.
   Zhangsan ask Lisi nandao eat rice ASP Y/N-Q

   (Intended) 'Zhangsan asked Lisi [whether *nandao* he had a meal].'   Mandarin

   b.   * Raj Ram-ke   jiggesh korlo   o kheyech   naki.
   Raj Ram-ACC ask   do.PRS.PERF.3P he eat.3P.PST naki

   (Intended) 'Raj asked Ram [(whether) he ate *naki*].'   Bangla

   c. Hans hat gefragt, ob   der Junge den Kuchen etwa gemocht hat.
   Hans has asked   whether the boy   the cake   etwa like   has

   'Hans asked whether the boy *etwa* liked the cake.'   German

(55)   [+/-WH] verbs: *know*

   a.   * Zhangsan zhidao Lisi nandao qu-le   Xianggang.
   Zhangsan know   Lisi nandao go-ASP Hongkong

   (Intended) 'Zhangsan knows [if Lisi *nandao* went to Hongkong].'   Mandarin

   b.   * Raj jaane   Ram America geche   naki.
   Raj know.3P.PRES Ram America go.3P.PST naki

   (Intended) 'Raj knows [(whether) Ram went to the USA *naki*].'   Bangla

   c. ?? Hans hat gewusst, ob   der Junge den Kuchen etwa gemocht hat.
   Hans has known   whether the boy   the cake   etwa liked   has

   (Intended) 'Hans knew [whether the boy *etwa* liked the cake].'   German

As we can see, although questions with *nandao* and the sentence-final *naki* are strictly polar questions, they cannot be embedded even under verbs that can take question complements. In contrast, questions with *etwa* show a different pattern: they can be embedded under rogative verbs like *ask* but not under factive verbs like *know*.

The thesis will address their uniform properties like selectional problems of sentence types, bias meaning, and contextual usages, but not disparate properties like embedded-ability.

In terms of selectional problems of sentence types, BQWs show us that there is something significantly different about polar questions from other question types, such that BQWs are only compatible with them. In the next chapter, I will explore this issue and propose a question semantics to deal with it.

Chapter 2

A Structural Question Semantics Based on *Highlighting*

2.1 Nucleus sensitivity and the meanings of questions with BQWs

In §1.3 of the previous chapter, we saw that a Question with a BQW (henceforth BQW-Q) necessarily carries two kinds of meanings: one is the normal question meaning, and the other is the meaning of bias. A BQW-Q can be answered in the same way as a question without the BQW.

(1)   Mandarin:

Q: Zhangsan qu-le   Meiguo   ma?
Zhangsan go-ASP America Y/N-Q

'Did Zhangan go to America?'

A: Shia,   ta qu-le./ Meiyou, ta mei qu.
yes.ah he go-ASP no   he not go

'Yes, he went to America./No, he didn't go to America.'

(2)   Q: Nandao Zhangsan qu-le   Meiguo   ma?
nandao Zhangsan go-ASP America Y/N-Q

'Zhangan didn't go to America, right?'

A: Shia,   ta qu-le./ Meiyou, ta mei qu.
yes.ah he go-ASP no   he not go

'Yes, he went to America./No, he didn't go to America.'

(3)   Bangla:

Q: Ei   lok-ta   tomar taka   churi koreche   ki?
this man.CL your   money steal do.3P.PERF Y/N-Q

'Did this man steal your money?'

A: Hann, koreche   toh./ Na, koreni   toh.
yes   do.3P.PERF EMP no   do.3P.NEG EMP

'Yes, he did./No, he didn't.'

(4)   Q: Ei   lok-ta   tomar taka   churi koreche   naki?
            this man.CL your   money steal do.3P.PERF naki

            'This man stole your money, right?'

            A: Hann, koreche   toh./ Na, koreni   toh.
            yes   do.3P.PERF EMP no do.3P.NEG EMP

            'Yes, he did./No, he didn't.' (adapted from Bhadra 2013: 6)

(5)   German:

            Q: Ist David gegangen?
               is   David gone

               'Has David left?'

            A: Ja, ist er./ Nein, ist er nicht.
               yes is he   no   is he not

               'Yes, he has./No, he hasn't.'

(6)   Q: Ist David etwa gegangen?
              is   David etwa gone

            'Has David left?'

            A: Ja, ist er./ Nein, ist er nicht.
               yes is he   no   is he not

               'Yes, he has./No, he hasn't.'

A BQW-Question also expresses a speaker-oriented bias about which answer is more likely to be true than the other(s).

One important fact regarding the meaning of the bias is that positive BQW-Qs and negative ones express opposing biases.

(7)   Mandarin:

            a. Nandao Zhangsan chi-le   fan ma?
               nandao Zhangsan eat-scasp rice Y/N-Q

               'Zhangsan didn't have a meal, right?'

            b. Nandao Zhangsan mei-chi fan ma?
               nandao Zhangsan not-eat rice Y/N-Q

               'Zhangsan had a meal, right?'

(8)   Bangla:

a. cabi-ta caretaker-er   kache rekh-e   esh-e-chish   naki?
   key.CL caretaker.LOC close keep-IMPV come-IMPV-PERF.2P naki

   'You left the key with the caretaker, right?'

b. cabi-ta probibeshi-er kache rekh-e   a-shish-ni   naki?
   key.CL neighbor.LOC close keep.IMPV come.PERF.2P-NEG naki

   'You didn't leave the key with the neighbor, right?'

(Bhadra p.c.)

(9)   German:

a. Hat der Junge etwa den Kuchen gemocht?
   has the boy   etwa the cake   liked

   'Did the boy like the cake by any chance?'

b. Hat der Junge etwa den Kuchen nicht gemocht?
   has the boy   etwa the cake   not   liked

   'Did the boy not like the cake by any chance?'

(Adapted from Gieselman & Caponigro 2010)

For *nandao*-Qs in Mandarin, the bias they express is always sensitive to the question nuclei, i.e. the biased answers are the ones that have opposing polarity to the question nuclei. For *naki*-Qs in Bangla, the bias they carry corresponds to the answers with the same polarity to the question nuclei. German *etwa* is like *nandao* in being cued to the question nuclei with opposing polarity.

There are two possible locations for BQWs: they are either a part of the question nuclei, or they scope out of the question.

Assuming BQWs are a part of the question nuclei, we will have *?BQW(p)* as the question. In terms of the at-issue and not-at-issue meaning distinction (Faller 2002, Potts 2003 and Murray 2010), the meaning of bias is not an at-issue content, i.e. "not the main point of the utterance" (Tonhauser 2012: 240). Because the main point of BQW-Qs is not whether one answer is more possible than other(s) but about the truth of p. If BQWs contribute to the at-issue content of the questions (i.e. the semantic denotation of the questions), we should expect them to be like *possibly* in English Y/N-Qs which contributes the epistemic modal meaning to the (typical) answers.

(10)   A: Is John possibly a doctor?

        B: Yes(, he is possibly a doctor.)/No(, he can't be).

However, the fact in Mandarin is that the answers to *nandao*-Qs address only the truth of the embedded proposition.

(11)   A: Nandao Zhangsan xihuan Xiaoli?
            nandao Zhangsan like   Xiaoli

            'Zhangsan doesn't like Xiaoli, right?'

        B: Shia,   Zhangsan (??keneng) xihuan Xiaoli. /Bua, Zhangsan (#keneng) bu
            yes.ah Zhangsan possible   like   Xiaoli no.ah Zhangsan possible   not
            (keneng) xihuan Xiaoli.
             possible like   Xiaoli

            'Yes, Zhangsan likes Xiaoli./No, Zhangsan doesn't like Xiaoli.'

Similar facts can be also found in *etwa*-Qs in German and *naki*-Qs in Bangla. In this case, we can only treat BQWs as contributing to not-at-issue content. The two meanings of a *BQW-p?* can be represented as follows:

(12)   at-issue content: $\{p, \neg p\}$

        not-at-issue content: (the speaker thinks that) $p/\neg p$ (depending on the BQW) is more likely to be true.

However, if we assume that BQWs are a part of the question nuclei, we may also expect the use of BQWs in declaratives.[1] Taking *naki* as an example, for an imaginary *p-naki.* declarative, we can have the following two-layered meanings:

(13)   at-issue content: p

        not-at-issue content: (the speaker thinks that) p is more likely to be true; the speaker has inferential evidence for p.

However, *naki* cannot be used in declaratives (cf. (46) in Chapter 1). Thus, the assumption that BQWs are a part of the question nuclei cannot hold.

---

[1]The denotation of a question nucleus p is a proposition. When a BQW is a part of the question nucleus *BQW-p* of a BQW-Q, the question nucleus is a proposition composed of the meaning of the BQW and the proposition p. Such a composition does not have anything to do with the question formation. Hence, nothing prevents a similar syntax-semantics composition of a *BQW-p.* declarative.

The above analysis suggests that BQWs are not a part of question nuclei. They are out of the scope of the question formation.[2] As BQWs scope over the embedded Y/N-Qs, how can they target a specific answer in the question denotation to judge which is more possible or which is less possible? This is what I have called the selectional problem of BQWs in BQW-Qs which will be addressed in the next section.

2.2 The selectional problem and Hamblin's (1973) question semantics

Similar selectional problems in question semantics can be found in other phenomena like answer particles (e.g. *yes/no* in English) as propositional anaphors (Farkas & Bruce 2010, Roelofsen & van Gool 2010, Haida 2011, Biezma & Rawlins 2012; cf. Kramer & Rawlins 2011, Holmberg 2013). In all these phenomena, the question nuclei enjoy a special status in questions in general.

(14)   A: Is Shoprite open?

      B: Yes, it is open./No, it is closed.

(15)   A: Is Shoprite closed?

      B: Yes, it is closed./No, it is open.

$[\![(14)]\!] = [\![(15)]\!] = \{$Shoprite is open, Shoprite is closed$\}$(cf. Hamblin 1973).

Like *naki* and contrary to *nandao* and *etwa*, the affirmative answer particle *yes* is only sensitive to the corresponding question nuclei. This kind of special status of question nuclei can also be found in Mandarin.

(16)   A: Zhangsan xinhuan Xiaoqing ma?
         Zhangsan like   Xiaoqing Q
      'Does Zhangsan like Xiaoqing?'

      B: Shia,   Zhangsan xihuan Xiaoqing. /Bu, Zhangsan bu xihuan Xiaoqing.
         Yes.ah Zhangsan like   Xiaoqing no   Zhangsan not like   Xiaoqing.
      'Yes, Zhangsan likes Xiaoqing./No, Zhangsan doesn't like Xiaoqing.'

(17)   A: Zhangsan bu xinhuan Xiaoqing ma?
         Zhangsan not like   Xiaoqing Q
      'Does Zhangsan not like Xiaoqing?'

---

[2]For syntactic evidence for this claim, cf. discussions in later chapters.

    B: Shia,   Zhangsan bu xihuan Xiaoqing. /Bu, Zhangsan xihuan Xiaoqing.
        Yes.ah Zhangsan not like   Xiaoqing no   Zhangsan like   Xiaoqing.

    'Yes, Zhangsan doesn't like Xiaoqing./No, Zhangsan likes Xiaoqing.'

The above examples show clearly that there are syntax-semantics discrepancies in questions denotations and syntactic answers.

However, Hamblin's (1973) semantics of questions cannot reflect the differences between (14), (15) and (16), (17), because it treats every proposition in the answerhood set equally after the composition of question operators with the nucleus. In Hamblin's (1973) semantics for Y/N-Qs, the adformula 'is it the case that' takes the question nucleus as a member of the question denotation by the identity function, and adds its alternative with opposing polarity also into the denotation. The question nucleus loses its special status after question composition. The problem lies in the way Hamblin (1973) treats the content proposition denoted by the question nucleus.

In this dissertation, I assume that the adverb 'is it the case that' in Hamblin (1973) is a Y/N-Q operator (Y/N-op) which carries [+wh] feature in the C-head (or Int head in Rizzi's (2001) cartography). The following shows the composition of a simple Y/N-Q.

(18)   Is it raining?

$$[\![\textbf{is it the case that [it is raining]}]\!] =$$
$$\{\lambda w[raining(w)], \lambda w[\neg raining(w)]\}$$

                     C$_0$ IP

                  [+wh]

$$\lambda q \lambda p(p = q \vee p = W \setminus q)$$

$$[\![\textbf{IP}]\!] = \lambda w[raining(w)]$$
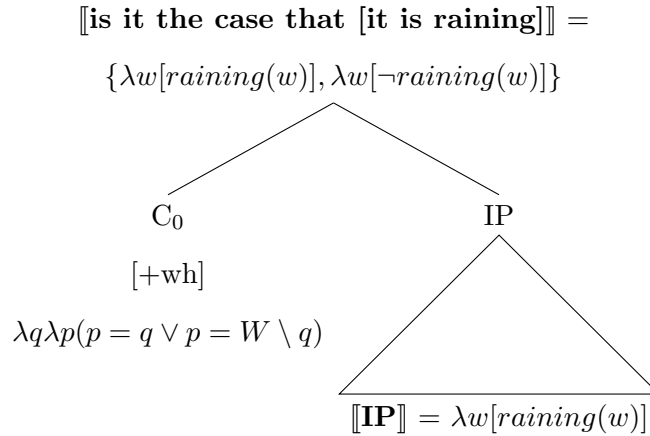
At the stage when the content proposition denoted by the question nuclues is combined with Y/N-op, one proposition turns into a set of two propositions. Therefore, the problem for the lost special status of the question nucleus is due to the meaning of Y/N-op. In

Y/N-*op*, the disjunction is commutative which indicates that the order between members in the denotation set does not matter.

Due to Double Negation Law, we cannot pin down a specific proposition by its truth value.

(19) $\{\lambda w \,.\, p(w) = 1, \lambda w \,.\, p(w) = 0\} = \{\lambda w \,.\, q(w) = 1, \lambda w \,.\, q(w) = 0\}$

    (where $q(w) = \neg p(w)$)

Now, we narrow down the problem to the equal status of all possible answers in the answer set, which is due to the nature of mathematical notion of set.

(20) $\{a, b\} = \{b, a\}$

If we break the equal status of all members in a set, we can find a way to solve the selection problem.

Beyond the selectional problem observed in answer particles, Hamblin's (1973) semantics cannot be extended to distinguish polar questions from the "or not" Alt-Qs.

In the literature on polar questions and Alt-Qs, scholars initially regard Y/N-Qs as a special type of "or not" Alt-Qs where "or not" part has been suppressed in the mind. Bolinger (1978) summarizes three main arguments for them: first, Y/N-Qs and their corresponding "or not" Alt-Qs syntactically differ only in the "tail" "or not"; second, they consider that in the case of embedded Y/N-Qs, the use of *whether* which is obviously a cognate of *either*, indicates the trace of "or not" alternative; Lastly, the two questions share similar rising intonations (before "or not"). However, as pointed by Bolinger (1978), these two types of questions in fact behave very different in discourse contexts such as invitations, conversation opening, and in contexts where the questions are biased toward certain answers. In all those cases, polar questions are felicitous while "or not" Alt-Qs are not. So, Bolinger (1978) finally concludes that polar questions are by no means variants of their corresponding "or not" Alt-Qs.

In the framework of Hamblin's (1973) question semantics, a polar question *p?* and its corresponding *p or not?* Alt-Q have the same question denotation $\{p, \neg p\}$. The Y/N-*op* just like the bobtailed "or not" creates a negative alternative to p. Thus, the two types of questions are not distinguishable in Hamblin's (1973) question semantics.

In view of all the above, several scholars propose different solutions to those problems, namely Krifka (2001a), Roelofsen & van Gool (2010), etc.

2.3 The selectional problem and structural semantics: selected reviews

2.3.1 Krifka's (2001a) structural question semantics

The core idea of Krifka's structural semantics for question is:

(21) Question meanings are functions that, when applied to the meaning of the answer, yield a proposition. (2)

A simple WH-Q like (22) can be represented as the following.

(22) Who did Mary see? $\langle \lambda x[SAW(x)(M)], Person \rangle$

Here, the function of the question is $\lambda x[SAW(x)(M)]$, the list of possible answers is the domain $Person$. According to the structural definition of question in (21), Krifka puts the function and its domain as a pair.

Similarly, a simple Y/N-Q like (23) has the following semantics.

(23) Did Mary read Syntactic Structures?
$\langle \lambda f[f(READ(SS)(M)], \{\lambda p[\neg p], \lambda p[p]\} \rangle$

For a Y/N-Q, the first part of the question meaning, i.e. the function of the question, applies to the domain of the question, i.e. a set of complementary polarities. Krifka calls the former the **background** and the latter the **restriction**.

Krifka (2011) provides an example of the application of a similar functional semantics to the answer particle *no* (see his example (69)).[3] The structural question framework can be extended to account for the same problem in a similar way according the definition (21).

(24) A: Did Bill read 'War and Peace'?
$QUEST(\langle \lambda f[f(READ(W\&P)(B))], \{\lambda p[p], \lambda p[\neg p]\} \rangle)$

---

[3]Krifka (2013) provides an alternative anaphoric approach to the meanings of answer particles.

B: No.

ANSW($\lambda p[\neg p]$)

Question radical (___ part) applied to answer radical (∼∼∼ part):

$\underline{\lambda f \in \{\lambda p[p], \lambda p[\neg p]\}[f(READ(W\&P)(B))]}(\underset{\sim\sim\sim}{\lambda p[\neg p]})$

$= \neg[READ(W\&P)(B)]$ (adapted from Krifka 2011: 1756)

This structural question semantics follows the same framework as Krifka's (1992) "structural meaning approach to focus", both of which account for structured meanings. The only difference is that the structured meaning of the former is a pair consisting of a background part and a restriction part while that of the latter is a pair of a background part and a focus part.

(25)   Mary saw [JOHN]_F. $\langle \lambda x[SAW(x)(M)], j \rangle$

From the perspective of Question-Answer Congruence, these two structured meanings are inherently related. The answer to a question always carries a focus feature on the Wh-corresponding expression (see (26).

(26)   Q: Who did Mary see?

        A: Mary saw [JOHN]_F.

Taking a question to denote a set of all possible answers (Hamblin 1973), the semantics of a question can be derived from the semantics of the focused answers.

The merit of Krifka's structured meaning proposal for questions and focused declaratives is that the unified structured meaning can account for the similarities and associations between questions and focused declaratives. The negative side is that it predicts that at least at the level of propositional semantics, focused declaratives and questions may be of the same semantic type and have the same background function.

(27)   John IS Mike's friend. $\langle \lambda f[f(F(m)(j))], \lambda p[p] \rangle$

(28)   Is John Mike's friend? $\langle \lambda f[f(F(m)(j))], \{\lambda p[p], \lambda p[\neg p]\} \rangle$

As (24) shows us, the key to solve the selectional problem is the background function. For sentences with the same background function, we may predict that they will have the same

behavior when facing the selectional problem. For example, since (27) and (28) have the same background function $\lambda f[f(F(m)(j))]$, we might predict that, like in Y/N-Qs, BQWs will also be compatible with focused declaratives.

(29)   * Nandao Yuehan SHI$_F$ Maike-de pengyou.
          Nandao John   BE$_F$ Mike's   friend

          (Intended) 'John ISN'T Mike's friend.'

However, the above example shows that at least in Mandarin, BQWs cannot be used with focused declaratives. Thus, we need question semantics that specifically targets this problem.

2.3.2   Biezma & Rawlins (2012): Question as a result of pragmatic coercion

Biezma & Rawlins (2012) approach the selectional problem from another angle, following Kratzer & Shimoyama's (2002) indeterminate pronoun approach. Against Hamblin's (1973) account of polar question, Biezma & Rawlins (2012) argues that the denotation of a polar question is a singleton set containing only the content proposition, i.e. the proposition denoted by the question nucleus. The usual negative proposition answer in Hamblin's set of all possible answers is introduced not from the specialized polar question operator but from pragmatic coercion.

(30)   **Question operator**

       $[\![{}_{[Q]}\alpha]\!]^c = [\![\alpha]\!]^c$

       defined only if

       i $[\![\alpha]\!]^c \subseteq \text{SalientAlt}(c)$ or if $\text{SalientAlt}(c) = \emptyset$, and

       ii $|[\![\alpha]\!]^c \cup \text{SalientAlt}(c)| > 1$ (Biezma & Rawlins 2012: 392)

(31)   **Anti-singleton coercion**

       If $|[\![\alpha]\!]| = 1$, where α is of type $\langle \text{st} \rangle$ and denotes $\{A\}$, then α can be coerced (as a last resort) into the denotation $\{\lambda w \, . \, A(w), \lambda w \, . \, \neg A(w)\}$ (ibid.: 393)

As (30-31) show, Biezma & Rawlins's (2012) semantics for questions focuses on the question

nucleus. The question meaning is defined only if the question nucleus is one of the alternatives that is salient in the context or if in discourse-initial position there are no salient alternatives.

The anti-singleton coercion criterion is, in fact, a device to solve the type-mismatch problem in polar questions when we consider Alt-Qs. Following the idea of Kratzer & Shimoyama (2002) that the question nucleus of an Alt-Q denotes a multi-member set of salient alternatives (see (32) as an example), Biezma & Rawlins (2012) unifies the accounts for polar questions and Alt-Qs by assuming a pragmatic coercion rule for polar questions that the denotation of polar question nucleus is coerced into a multi-member set of alternatives.

(32) whether[Q] Alfonso danced or sang   (adapted from ibid.: 386)

$[\![\mathbf{Q}\ [\mathbf{Alfonso\ danced\ or\ sang}]]\!] =$

$\{\lambda w\ .\ a$ danced in $w, \lambda w\ .\ a$ sang in $w\}$

Whether[Q] $[\![\mathbf{Alfonso\ danced\ or\ sang}]\!] =$

$\{\lambda w\ .\ a$ danced in $w, \lambda w\ .\ a$ sang in $w\}$

$[\![\mathbf{Alfonso}]\!] =$ $[\![\mathbf{danced\ or\ sang}]\!] =$

$\{a\}$ $\{\lambda x\ .\ \lambda w\ .\ x$ danced in $w, \lambda x\ .\ \lambda w\ .\ x$ sang in $w\}$

$[\![\mathbf{danced}]\!] =$ Or'

$\{\lambda x\ .\ \lambda w\ .\ x$ danced in $w\}$

or $[\![\mathbf{sang}]\!] =$

$\{\lambda x\ .\ \lambda w\ .\ x$ sang in $w\}$
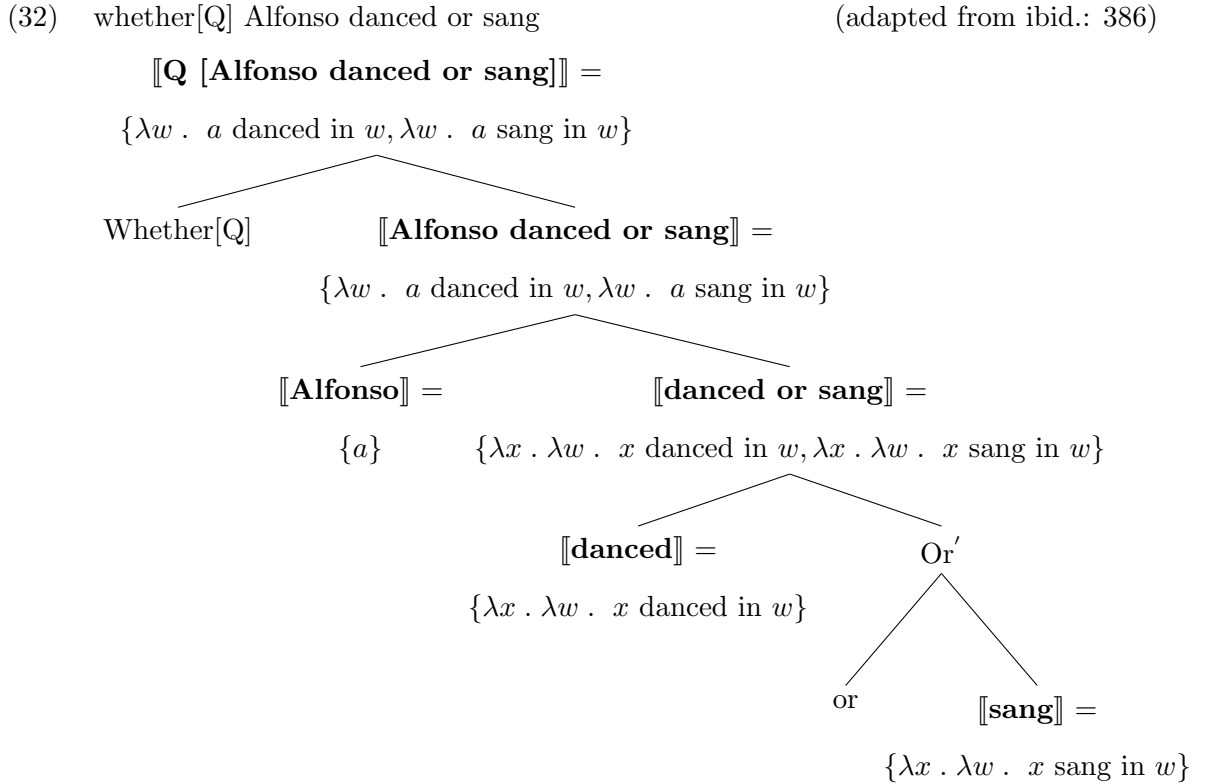
There is a problem for Biezma & Rawlins's (2012) account: they put too much emphasis on the pragmatics for providing salient alternative answers and coercion. Within their framework, anti-singleton coercion criterion only applies to polar questions but not Alt-Qs, as Alt-Qs do not denote singletons. In this respect, Alt-Qs will not be able to include negative answers in the denotations, as illustrated by (32). Such a claim is supported by observations from Biezma & Rawlins (2012) themselves and Krifka (2013). However, Roelofsen & van Gool (2010) finds that Alt-Qs like (33) can have a negative answer with

open intonation. As noted in their footnote 2, this open intonation pattern of Alt-Qs has long been neglected in the literature.

(33)   A: Does <u>Ann</u>↑ or <u>Bill</u>↑ play?

      B: No, neither of them does. (adapted from Roelofsen & van Gool 2010: 385)

(33) suggests that we need to include negative answers in the denotations of Alt-Qs, or at least in the denotations of Alt-Qs with open intonation. Biezma & Rawlins (2012) very well captures the differences between polar questions and Alt-Qs, but neglects their similarity, e.g. they can be answered (in some cases) by negative answers. In view of the selectional problem and the correlation between Alt-Qs (disjunctive questions in their term) and intonations, Roelofsen & van Gool (2010) propose a new theory for questions within the framework of Inquisitive Semantics.

2.3.3   Inquisitive Semantics and *Highlighting*

In Inquisitive Semantics, the meaning of a sentence is, as shown on the blackboard by "Albert Einstein" in a parody photo on the homepage of "Inquisitive Semantics", its "information exchange potential". There are two ways that a sentence can change the discourse context. The proposition expressed by it may provide all the possibilities in a set that can non-trivially update the Common Ground if accepted. For example, an atomic proposition p provides a set of only one possibility to update the Common Ground if p is true is accepted. On the other hand, the proposition $p \vee q$ expressed by a disjunctive sentence raise an issue to the Common Ground by providing two possibilities to it: the possibility that p is true, and the possibility that q is true. This issue is unresolved until later discourse participant provides new or more information to determine the truth value of p or q or even both. The first kind of information exchange potential of a sentence is called **informative** (because it provides determined information to the context), while the second kind is called **inquisitive** (because it raises an inquiry to the context that needs to be resolved).

A possibility is identified with an information state which is a set of possible worlds. And, a proposition is composed by a set of possibilities. Thus, in this framework, a proposition is a non-empty set of sets of possible worlds of type $\langle\langle s, t\rangle, t\rangle$. This treatment deviates from the normal definition of a proposition in possible world semantics which consists of a set of

possible worlds of type $\langle s, t \rangle$. The advantage of this treatment is, as we will soon see, that it unifies the semantic types of atomic propositions, disjunctive propositions, and questions.[4]

In order to fully grasp the ideas of *informativeness* and *inquisitiveness*, their formal definitions are presented as follows.

(34) Definition of Informative content of a proposition:

For any proposition P: $\text{info}(P) := \bigcup P$ (Ciardelli et al. 2015: 31)

(35) Definition of Informative and inquisitive propositions:

A proposition P is informative iff $\text{info}(P) \neq W$.

A proposition P is inquisitive iff $\text{info}(P)] \notin P$. (ibid.: 32)

From the above we can see that, the semantic value of a proposition is the set of all the possibilities it proposes to update the Common Ground informatively or inquisitively.

For the meaning of questions, Ciardelli et al. (2012) follow the traditional question semantics of Groenendijk & Stokhof (1982, 1984) and regard a question meaning to be the union of the set of worlds where the content proposition is true and the set of the rest of the worlds. They design a projection operator ? which can turn any proposition into a question.

(36) $?P = P \cup W \setminus P$ (adapted from ibid.: FACT 3.4 and DEFINITION 3.12)

(36) suggests that questions are non-informative and inquisitive, as $\text{info}(?P) = W \notin ?P$.

So far, the semantics of a question is very similar to Hamblin's (1973) and Groenendijk & Stokhof's (1982) questions semantics which cannot help us solve the selectional problem (e.g. why BQWs only occur with polar questions and the problem of answer particles). In order to solve the problem, Roelofsen & van Gool (2010) redefine the semantic values of a sentence. They regard the normal informative, inquisitive meaning of a sentence as a P-set of possibilities which is proposed to update the Common Ground.

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[4]Similar treatment can be found in Murray's (2010, 2011) adaption of Hamblin's (1973) semantics to sentence meanings. In order to maintain a unified type correspondence across sentence types, Murray (2010, 2011) assimilate declaratives to the same type of semantic object as questions and analyses declaratives to denote a singleton set containing the proposition originally denoted by the declaratives.

1. (a) Who won?
   (b) $\lambda p \left[\exists x \left(person(x) \wedge (p = \lambda w \, . \, won(w, x)) \right) \right]$
2. (a) Floyd won.
   (b) $\lambda p \left[p = \lambda w \left[won(w, floyd) \right] \right]$ (Murray 2011: 333)

(37)　$[\![Q\alpha]\!]_P := [\![\alpha]\!]_P \cup [\downarrow \alpha \downarrow]^5$ (Roelofsen & van Gool 2010: 389)

They further propose that along with the set of possibilities that are proposed, there are also certain possibilities (within the P-set) being *highlighted* by the surface syntax. They call the set of such possibilities H-set.

(38)　$[\![Q\alpha]\!]_H := [\![\alpha]\!]_H$ (ibid.)

As $Q\alpha$ is syntactically derived from α, which means they share the same sentence radical, Roelofsen & van Gool (2010) assume that $Q\alpha$ and α highlight the same possibilities. With this, we can explain the propositional anaphoric answer particle *yes/no* in English (assuming "closed" = "not open").

(39)　Is Shoprite open?

P-set: $\left\{ \begin{array}{l} \lambda w[open(S)(w)], \\ \lambda w[closed(S)(w)] \end{array} \right\}$

H-set: $\left\{ \lambda w[open(S)(w)] \right\}$

yes$\Longrightarrow \lambda w[open(S)(w)]$

no$\Longrightarrow \lambda w[closed(S)(w)]$

(40)　Is Shoprite closed?

P-sets: $\left\{ \begin{array}{l} \lambda w[open(S)(w)], \\ \lambda w[closed(S)(w)] \end{array} \right\}$

H-sets: $\left\{ \lambda w[closed(S)(w)] \right\}$

yes$\Longrightarrow \lambda w[closed(S)(w)]$

no$\Longrightarrow \lambda w[open(S)(w)]$

As expected, the two questions have the same P-set values but with complementary H-set values which are identified with the H-set values of the corresponding question nuclei. The answer particle *yes* is anaphoric to the **unique** possibility (or proposition) in the H-set of the question. Thus, the two *yes* in (39) and (40) have completely different meanings.

In order to investigate how focus may affect the computation of H-sets, Roelofsen & van Gool (2010) look into the Alt-Qs with different focus patterns.

(41)　A: Does [Ann]$_F$ or [Bill]$_F$ play?

B: #Yes.

(42)　A: Does [Ann or Bill]$_F$ play?

B: Yes(, at least one of them plays). (adapted from Roelofsen & van Gool 2010: 385)

---

[5]The notations used by Roelofsen & van Gool (2010) are a bit different from the aforementioned ones in Inquisitive Logic. But they share very similar functions. We can simply regard the denotation of the interrogative complementizer Q as the ? projection operator. α is an expression, either a sentence or subsentential components. $[\downarrow \alpha \downarrow]$ denotes the set of possibilities that are excluded by α which is equivalent to the complement set of $[\![\alpha]\!]_P$.

The core idea is that disjunction introduces alternatives. In (41), the two entities *Ann* and *Bill* are connected via the disjunctive *or*. By Pointwise Function Application (Kratzer & Shimoyama 2002), we will get a set of two alternative possibilities as the H-set of the question, i.e. $\{\lambda w[play(Ann)(w), \lambda w[play(Bill)(w)]\}$. Thus, we expect that *yes* will not be an acceptable answer to (41), as is the case. On the other hand, (42) creates a puzzling case, since the disjunctive *or* seems to lose the power of creating alternatives under focus. To solve the problem, Roelofsen & van Gool (2010) defines the H-set meaning of focused expressions.

(43)   a. If α is of type (st), then:

$$[\![\alpha_F]\!]_H := \left\{ \bigcup\nolimits_{\pi \in [\![\alpha]\!]_H} \pi \right\}$$

   b. If α is of some type σ, different from (st), then:

$$[\![\alpha_F]\!]_H := \left\{ \lambda z \cdot \bigcup\nolimits_{y \in [\![\alpha]\!]_H} z(y) \right\} \quad \text{where } z \text{ is a variable of type } (\sigma(st)) \text{ (ibid.: 390)}$$

The intuitive idea behind (43) is "focus makes H-sets collapse" (ibid.). When the focus is over disjunctive *or*, the alternatives created by the disjunctive will collapse to form a single disjoined unit. By Pointwise Function Application, the highlighted meaning of such a sentence will be a set containing a single disjoined proposition, e.g. $\{\lambda w[play(Ann)(w)] \cup \lambda w[play(Bill)(w)]\}$ in (42). Hence, *yes* is licensed to answer this question.

Roelofsen & van Gool (2010) do not give a formal definition of the P-set value of focused expressions, because it is out of the scope of the phenomena they are interested in. But, from the original definition of P-set, which is the set of ordinary denotation of any expressions, we suppose that the P-set value of a focused expression α corresponds to its ordinary value.

(44) $[\![\alpha_F]\!]_P := [\![\alpha]\!]_O$

But, what about the focused value of α? What about the alternative sets created by the focus? Will they not create any inquisitive meanings that will affect the P-set value? Here, I follow Anderbois's (2012) analysis and deem that the focus semantics will only provide existential presupposition. The alternative meanings are introduced by indefiniteness.[6] Thus, focused sentences like (27) will have the same semantic values as their non-focused

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[6]For a more detailed explanation, see §2.4.3 of this chapter

declaratives. The only difference is that the former carries an existential presupposition. As BQWs are incompatible with declaratives, it is no wonder that BQWs are also incompatible with focused declaratives (cf. (29).

The problem for *highlighting* in Inquisitive Semantics lies in the fact that it hasn't been extended to WH-Qs. In order to fully account for the selectional problem of BQWs, we need to extend the current idea of highlighting to cover WH-Qs. Hence, I propose a structural questions semantics based on the idea of highlighting.

2.4 A structural semantics of questions based on highlighting

2.4.1 Basic ideas and the simplest case

In §2.2 of this chapter, we narrow down the selectional problem to the use of the concept of set in Hamblin's (1973) question semantics. In order to solve this problem, we can use the concept of tuple where all the coordinates in it can be picked up individually.

(45) $\langle a, b \rangle \neq \langle b, a \rangle$

An *n*-tuple is an ordered list of *n* elements. For purposes of our current investigation, we will only use 2-tuple (or *ordered pair*) and 1-tuple (or *singleton*). Below is the definition of an order pair:

(46) $\langle a, b \rangle = \{\{a\}, \{a, b\}\}$ (Kuratowski & Mostowski 1976: 56)

We call a the first coordinate of $\langle a, b \rangle$ and b the second coordinate.

Under the Definition (46), we will have the following facts:

(47)   Given H and $\overline{\text{H}}$ are two sets, let T be the ordered pair $\langle \text{H}, \overline{\text{H}} \rangle$, then

    a. $\text{H} = \bigcup \bigcap \text{T}$

    b. $\text{H} \cup \overline{\text{H}} = \bigcup \bigcup \text{T}$

    c. $\overline{\text{H}} = \bigcup \bigcup \text{T} \setminus \bigcup \bigcap \text{T}$

Given the facts in (47), we can easily retrieve any coordinate from an ordered pair T.

Meanwhile, for a 1-tuple, i.e. a singleton, the following fact holds.

(48) $\langle H \rangle = H$

Thus, a singleton can be defined by its only coordinate.

With the above math tools, we can now define our structural semantics for questions.

(49) Definition of Questions:

A question denotes an ordered pair T consisting of two coordinates H and $\overline{H}$. H is a set of highlighted answers denoted by the question nucleus, while the second coordinate $\overline{H}$ is a set of the rest of the possible answers, i.e. non-highlighted answers.

a. $T_{\langle\langle\langle\langle s,t\rangle,t\rangle,t\rangle,t\rangle}{}^{7} = \langle H, \overline{H}\rangle$

b. $\overline{H} = A \setminus H$, where $A = H \cup \overline{H}$, i.e. the set of all possible answers.

Basically, a question T consists of two parts: the first part is the set of all highlighted answers; the second part is the set of remaining answers. The union of the two is the Hamblin's (1973) denotation of questions. In the structural semantics for questions, we follow the Hamblin's (1973) way of composing questions, by applying a WH-*op* to the question nucleus. Thus, compositionally speaking, the meaning of a question is built upon the meaning of its question nucleus which is a proposition (in polar questions) or disjunction of propositions (in Alt-Qs) or even a propositional function (in WH-Qs). Here, we will adopt Roelofsen & van Gool's (2010) concept of *highlighting* for compositional purpose.

(50) Definition of highlighted meaning: (cf. Haida 2011)

$$[\![\alpha]\!]_H := \begin{cases} [\![*]\!]([\![\beta]\!]_H)([\![\gamma]\!]_H) & \text{if } \alpha = [_{XP} \ \beta \ * \ \gamma \ ]^{8}, \\ [\![\alpha]\!] & \text{otherwise .} \end{cases}$$

As a proposition, disjunction of propositions, and a propositional function are all IP-related concepts, I will define the meaning of IP as follows.

(51) $[\![IP]\!] := \langle [\![IP]\!]_H \rangle$

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[7]The semantic type of an ordered pair is based on Definition (46).

[8]Here, * represents *if. . . then/and/or/. . .* in natural languages. I define their respective meanings as,

1. $[\![if \ A \ then \ B]\!] := \neg[\![A]\!] \cup [\![B]\!]$
2. $[\![A \ and \ B]\!] := [\![A]\!] \cap [\![B]\!]$
3. $[\![A \ or \ B]\!] := [\![A]\!] \cup [\![B]\!]$

Similar to the definition of a question, an IP is defined as a 1-tuple of a set of highlighted meanings. In this regard, an IP does not have non-highlighted meanings. Given the representation of a 1-tuple (48), we will have,

(52) $[\![\text{IP}]\!] = \langle [\![\text{IP}]\!]_{\text{H}} \rangle = [\![\text{IP}]\!]_{\text{H}}$

(49) and (52) tell us that in my question semantics, declaratives and questions are of different types and have very different meanings, which is a very welcome result for the resolution of the selection problem of BQWs.

Based on the new definition of questions (49), the definition of Y/N-*op* is redefined as follows.[9]

(53) $[\![\text{Y/N-}op]\!] := \lambda Q_{\langle\langle s,t\rangle,t\rangle}[\{Q\}, \{Q, \{W \setminus \bigcup Q\}\}]$

Given the definition of ordered pair (46), we will have

(54) $[\![\text{Y/N-}op]\!] = \lambda Q[\langle Q, \{W \setminus \bigcup Q\}\rangle]$

(54) simply tells us that Y/N-*op* is a function which maps a set of proposition(s) to an ordered pair (i.e. the denotation of a question). In effect, it outputs a question type.

With the tool of ordered pair, in Y/N-Qs, we can always highlight the singleton set Q consisting of the content proposition(s) denoted by the question nucleus in the first coordinate, and the complement answers in the second coordinate. With all the positions being fixed, we can always retrieve the content proposition by (47) even after the composition of the question denotation as a whole.

Thus, for a simple polar question like (55), its denotation is no longer a set of all possible answers but an ordered pair with sets of possible answers.

(55) Is it raining?

---

[9]We follow the traditional Hamblin's (1973) style of question composition by assuming different WH-operators for different questions, which is different from how Roelofsen & van Gool (2010) handle the composition.

$$\llbracket \mathbf{Y/N\text{-}op} \ [\text{it is raining}]\rrbracket =$$

$$\left\langle \left\{ \lambda w[raining(w)] \right\}, \left\{ \lambda w[\neg raining(w)] \right\} \right\rangle$$

Y/N-*op*

[+wh]

$\lambda Q_{\langle\langle s,t\rangle,t\rangle}[\{\{Q\},\{Q,\{W\setminus\bigcup Q\}\}\}]$

IP

$$\llbracket \mathbf{IP} \rrbracket = \left\langle \left\{ \lambda w[raining(w)] \right\} \right\rangle$$
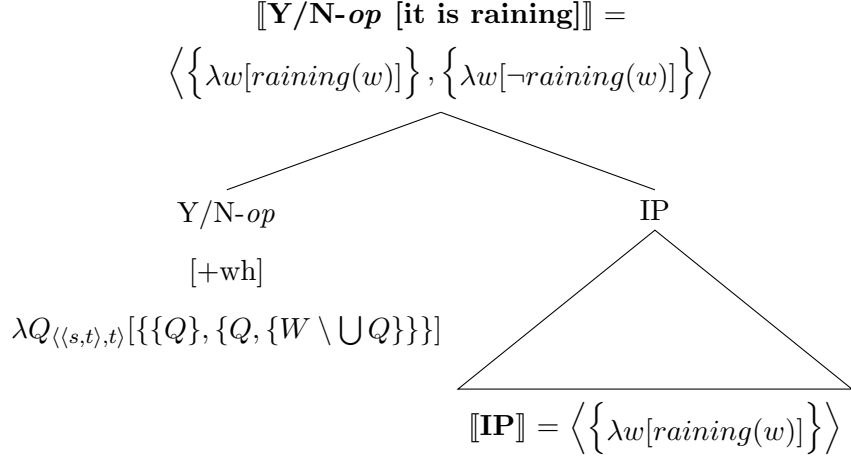
2.4.2 Application to Alternative questions

For Alt-Qs with open intonation like (56), as discussed in §2.3.3, the question nucleus highlights two possibilities, i.e. the possibility that *Ann plays* and the possibility that *Bill plays*.[10]

(56) Does [Ann]$_F$ or [Bill]$_F$ play?

$$\llbracket \mathbf{Y/N\text{-}op} \ [[\mathbf{Ann}]_\mathbf{F} \ \text{or} \ [\mathbf{Bill}]_\mathbf{F} \ \mathbf{play}]\rrbracket =$$

$$\left\langle \left\{ \begin{array}{l} \lambda w[play(Ann)(w)], \\ \lambda w[play(Bill)(w)] \end{array} \right\}, \left\{ \lambda w[\neg play(Ann)(w) \wedge \neg play(Bill)(w)] \right\} \right\rangle$$

Y/N-*op*

[+wh]

$\lambda Q_{\langle\langle s,t\rangle,t\rangle}[\{\{Q\},\{Q,\{W\setminus\bigcup Q\}\}\}]$

IP

$$\llbracket \mathbf{IP} \rrbracket = \left\{ \begin{array}{l} \lambda w[play(Ann)(w)], \\ \lambda w[play(Bill)(w)] \end{array} \right\}$$
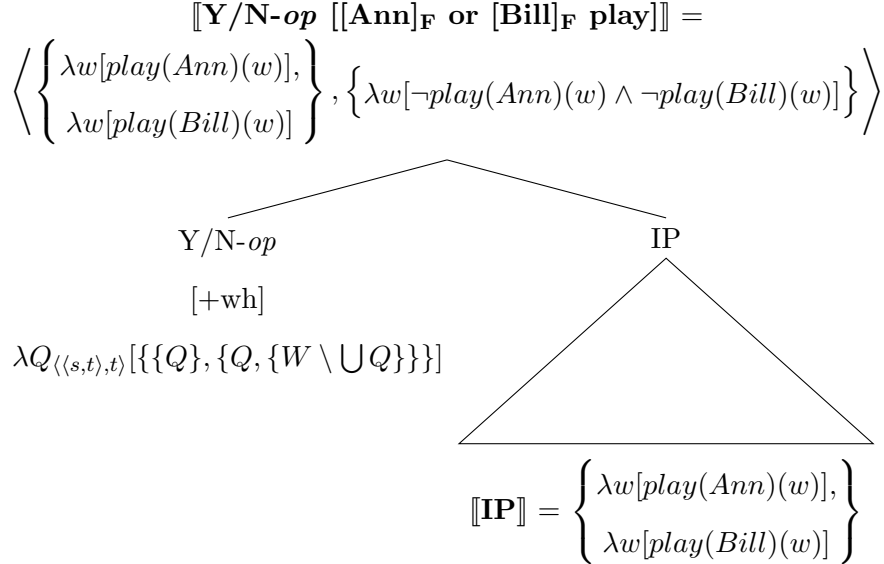
For Alt-Qs with closed intonation (e.g. the ones discussed in Biezma & Rawlins (2012) and Krifka (2013); see discussions in §2.3.2) like below, as noted by Roelofsen & van Gool

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[10]This is similar to Kratzer & Shimoyama's (2002) and Biezma & Rawlins's (2012) alternative set proposal which assume that the disjunctive question nucleus no longer denotes a single proposition but a set of propositions.

(2010), they carry an exclusive reading.

(57)   Does <u>Ann</u>↑ or <u>Bill</u>↓ play? (Roelofsen & van Gool 2010: 385)

In (57), the answer can be *Ann played* or *Bill played* but not both. Here I disagree with Roelofsen & van Gool (2010) that such an exclusive reading is a result of a pragmatic effect brought by closed intonation. But, I agree with Biezma & Rawlins (2012) that the exclusive reading is a contextual effect.[11] For example, in flight scenarios like (58), stewards usually do not offer more than one dish to a passenger. Hence in such contexts the passenger is invited to answer either chicken or fish but not both.

(58)   Scenario: A is an airplane steward, B a passenger.

A: Would you like chicken or fish$_{\text{H*L-L\%}}$?

B: Neither.

B': #Both. (Biezma & Rawlins 2012: 373)

In view of this, I propose that in a context that invites an exclusive reading, such an exclusive-inviting context will introduce an exclusive *or* to the Alt-Q: only one of the disjuncts can be true. In order to precisely capture this exclusive interpretation, we can define the pragmatically strengthened exclusive disjunctive operator:

(59)   In natural languages, a disjunctive *or* can be strengthened as an exclusive disjunctive

or$_e$ which is defined as follows:

a. $\cup_e := \lambda A_\sigma \lambda B_\sigma \{x | x \in A \text{ } xor \text{ } x \in B\}$;

b. If $\alpha, \beta \subseteq D_\sigma$, then $[\![\alpha \text{ } or_e \text{ } \beta]\!] = [\![\alpha]\!] \cup_e [\![\beta]\!]$

c. A set A which is composed from $\cup_e$ will be written as A$_e$.

With the exclusive disjunctive operator, we can interpret the exclusive reading of (58) as (60).[12]

---

[11]I should make myself a bit more clear here. I am not denying that there are differences in intonation in Alt-Qs, but want to state that these intonational differences are reflections of varied contextual usages.

[12]Here, for the sake of convenience, I neglect the modal meaning of *would* and referential meaning of *you*, and treat *would like* as one predicate *wlike*.

(60)   Would you like [chicken]$_F$ or$_e$ [fish]$_F$?

$$[\![\textbf{Y/N-}\textit{\textbf{op}} \textbf{ [you'd like [chicken]}_\textbf{F} \textbf{ or}_e \textbf{ [fish]}_\textbf{F}]\!] =$$

$$\left\langle \left\{ \begin{array}{l} \lambda w[wlike(chicken)(you)(w)], \\ \lambda w[wlike(fish)(you)(w)] \end{array} \right\}_e , \left\{ \begin{array}{l} \lambda w[\neg wlike(chicken)(you)(w) \wedge \\ \neg wlike(fish)(you)(w)] \end{array} \right\} \right\rangle$$

Y/N-op　　　　　　　　　IP

[+wh]

$\lambda Q_{\langle\langle s,t\rangle,t\rangle}[\{\{Q\},\{Q,\{W\setminus \bigcup Q\}\}\}]$

$$[\![\textbf{IP}]\!] = \left\{ \begin{array}{l} \lambda w[wlike(chicken)(you)(w)], \\ \lambda w[wlike(fish)(you)(w)] \end{array} \right\}_e$$

The above analysis works even better in a more stringent exclusive-inviting context where the addressee must take one and only one alternative as an answer (61). In such a context, neither *neither* nor *both* can be a felicitous answer.

(61)   Scenario: A is a professor, B a student in A's class.

　　A: Are you going to do the final exam or a term paper$_{\text{H*L-L\%}}$?

　　B: #Neither.

　　B': #Both. (adapted from Biezma & Rawlins 2012: 374)

In this case, the context restricts the domain of choices to the exclusive {*do the final exam, do the term paper*}$_e$. Accordingly, the domain of universe is restricted to,

(62) $W = \bigcup \left\{ \begin{array}{l} \lambda w[bgd(fe)(you)(w)], \\ \lambda w[bgd(tp)(you)(w)] \end{array} \right\}_e$ [13]

---

[13]For convenience, I abbreviate *are going to do* to *bgd*, *the final exam* to *fe*, and *a term paper* to *tp*.

$$[\![\mathbf{Y/N}\text{-}\boldsymbol{op}\ [\mathbf{you\ be.gt.do\ [fe]_F\ or}_e\ [\mathbf{tp}]_\mathbf{F}]]\!] =$$

$$\left\langle \left\{ \begin{array}{l} \lambda w[bgd(fe)(you)(w)], \\ \lambda w[bgd(tp)(you)(w)] \end{array} \right\}_e, \emptyset \right\rangle$$

Y/N-*op*   IP

[+wh]

$$\lambda Q_{\langle\langle s,t\rangle,t\rangle}[\{\{Q\},\{Q,\{W\setminus\bigcup Q\}\}\}]$$

$$[\![\mathbf{IP}]\!] = \left\{ \begin{array}{l} \lambda w[bgd(fe)(you)(w)], \\ \lambda w[bgd(tp)(you)(w)] \end{array} \right\}_e$$

As the question nucleus proposition denotes the exclusive set of the two alternatives. Thus, when the question nucleus proposition is applied to Y/N-*op*, the set of non-highlighted answers turns out to an empty set. From the above compositional tree, we can see that there is no negative answer in the denotation of the Alt-Q in the context which invites exclusive and exhaustive reading. This explains why *neither* cannot be used in such contexts.

There is a special kind of question which resembles Alt-Qs in form (have a disjunctive *or*) but actually is a polar question. Usually, there is only one focus over the whole disjunction or no focus at all (cf. (42)).

(63)   Does [Ann or Bill]$_F$ play?

According to Roelofsen & van Gool (2010), although there is a disjunction in question nucleus which will make the nucleus denote a set of two propositions, the focus on the whole disjunction collapses the two possibilities into one. That is to say, in (63), the question nucleus only highlights a single disjoined proposition, i.e. $\lambda w[\text{play}(\text{Ann})(w)\vee\text{play}(\text{Bill})(w)]$. So does the whole question, because a question highlights the same thing as the nucleus does. The difference in the highlighted meanings between (56) and (63) results in the distinct patterns of answers. For (63), the question highlights the possibility that between Ann and Bill at least one of them plays. Hence, an affirmative answer like *yes* confirms such a possibility.[14] On the other hand, for (56), the question itself highlights two possibilities,

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[14]There is an alternative explanation to the distinction between (56) and (63). Biezma & Rawlins (2012)

i.e. the possibility that Ann plays and the possibility that Bill plays. So, a simple *yes* answer loses its affirmation power: people will not know if the answer confirms that Ann plays or Bill plays or both play, which leads to infelicity.

$$\llbracket \textbf{Y/N-}\textit{op} \ [[\textbf{Ann or Bill}]_{\textbf{F}} \ \textbf{play}]\rrbracket =$$

$$\Big\langle \Big\{\lambda w[play(Ann)(w) \vee play(Bill)(w)]\Big\}, \Big\{\lambda w[\neg play(Ann)(w) \wedge \neg play(Bill)(w)]\Big\} \Big\rangle$$

Y/N-*op*

[+wh]

$\lambda Q_{\langle\langle s,t\rangle,t\rangle}[\{\{Q\}, \{Q, \{W \setminus \bigcup Q\}\}\}]$

IP

$\llbracket \textbf{IP}\rrbracket = \Big\{\lambda w[play(Ann)(w) \vee play(Bill)(w)]\Big\}$
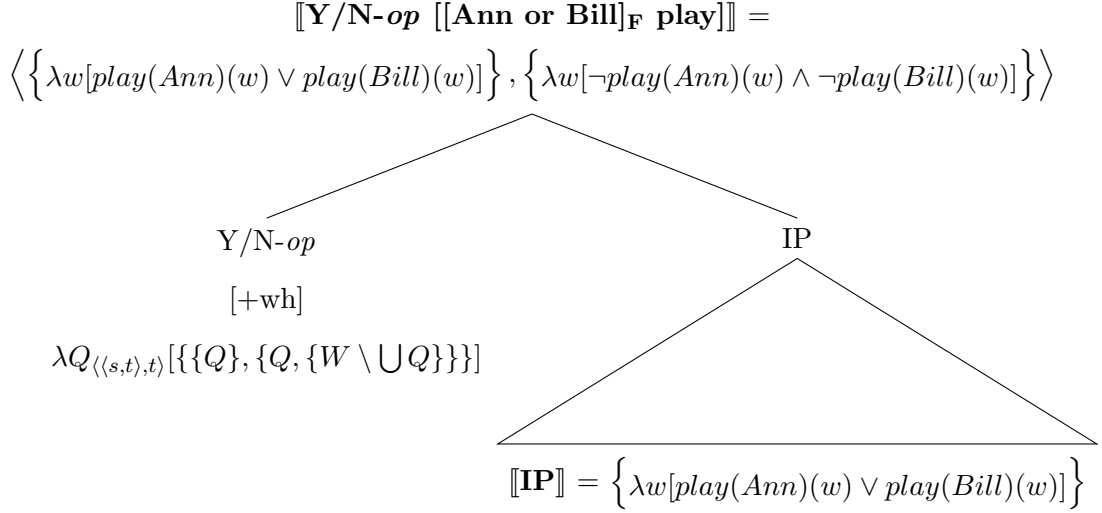
provides some clues in fn. 22. They suggest that there might be a Hamblin existential operator (1) between the question operator and the question nucleus, which again turns the denotation of the question nucleus, i.e. a set of alternative propositions, into a singleton set containing the disjunction of the alternative propositions.

1. $\llbracket \exists\alpha\rrbracket^{w,g} = \{\lambda w' . \exists p[p \in \llbracket\alpha\rrbracket^{w,g} \ \& \ p(w') = 1]\}$ (Kratzer & Shimoyama 2002)

In this way, the questions can be simply answered by *yes* or *no*.

$$\llbracket \textbf{Y/N-}\textit{op} \ [\textbf{Ann or Bill play}]\rrbracket =$$

$$\Big\langle \Big\{\lambda w\Big[\exists p\Big[p \in \Big\{\begin{smallmatrix}\lambda w[play(Ann)(w)],\\ \lambda w[play(Bill)(w)]\end{smallmatrix}\Big\} \& p(w)=1\Big]\Big]\Big\}, \Big\{\lambda w\Big[\neg\exists p\Big[p \in \Big\{\begin{smallmatrix}\lambda w[play(Ann)(w)],\\ \lambda w[play(Bill)(w)]\end{smallmatrix}\Big\} \& p(w)=1\Big]\Big]\Big\} \Big\rangle$$

Y/N-*op*
[+wh]
$\lambda Q_{\langle\langle s,t\rangle,t\rangle}[\{\{Q\}, \{Q, \{W \setminus \bigcup Q\}\}\}]$

$\llbracket \exists[\textbf{Ann or Bill play}]\rrbracket =$
$\Big\{\lambda w\Big[\exists p\Big[p \in \Big\{\begin{smallmatrix}\lambda w[play(Ann)(w)],\\ \lambda w[play(Bill)(w)]\end{smallmatrix}\Big\} \& p(w)=1\Big]\Big]\Big\}$

∃

IP

$\llbracket \textbf{IP}\rrbracket = \Big\{\begin{smallmatrix}\lambda w[play(Ann)(w)],\\ \lambda w[play(Bill)(w)]\end{smallmatrix}\Big\}$
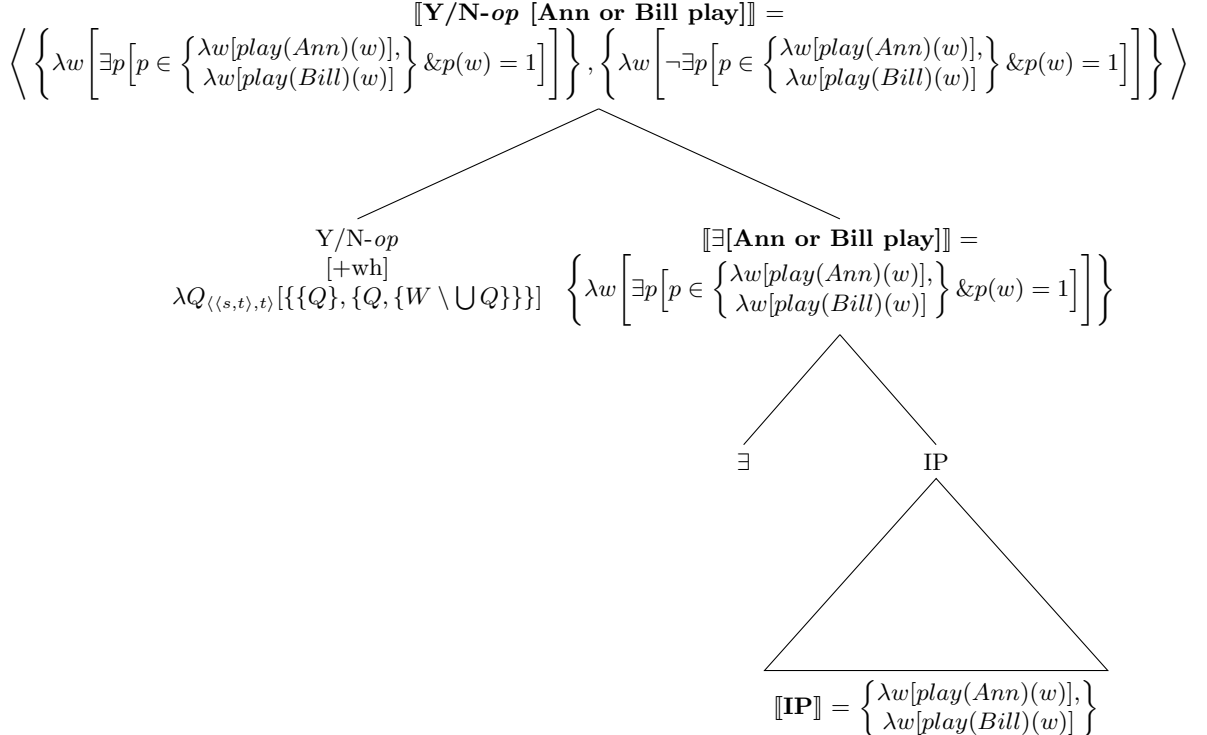
2.4.3 Extension to WH-Qs

Can the new structural question semantics be extended to WH-Qs? Roelofsen & van Gool (2010) and Biezma & Rawlins (2012) do not address the issues of WH-Qs. In the following paragraphs, I will extend our current structural question semantics to WH-Qs.

Given the controversial meanings of WH-words like *who*, there could be two possible solutions. One solution is to follow the idea of Beck (2006) who treats WH-words as inherent focus expressions. That is to say there are two layers of meanings of WH-Qs: one is the ordinary meaning, the other is the focus alternative meaning.

(64)   a. $[\![\text{who}_1]\!]^g$ is undefined

        b. $[\![\text{who}_1]\!]^{g,h} = h(1)$

        c. $[\![\text{who}_1 \text{ left}]\!]^g$ is undefined

        d. $[\![\text{who}_1 \text{ left}]\!]^{g,h} = \lambda w \,.\, h(1)$ left in w (Beck 2006: 15)

According to (45), the interrogative meaning of WH-Qs is defined by focus meaning. Under Beck's (2006) proposal, question nucleus does not have ordinary meaning or, to be more technical, its ordinary semantic value is undefined.

However, several scholars point out the drawbacks of assuming a focus alternative-based Roothian semantics for WH-words. First of all, as observed by Anderbois (2012), there is a cross-linguistic connection between WH-words and indefinites. For instance, in Mandarin, most WH-words can have indefinite pronoun interpretations (cf. Li & Thompson 1981: 527-531), e.g. *shui* 'who' can mean 'anyone' in the following sentence,

(65)   Shui   dou you mimi.[15]
        Anyone all have secret
        'Everyone has (his own) secret.' (Xu 2012: 511)

Unlike WH-words under Beck's (2006) definition which have no ordinary meanings, "[i]ndefinites clearly do possess an ordinary semantic value" (Anderbois 2012: 377), which is a set of all possible entities (Kratzer & Shimoyama 2002). So, "it is hard to see how the two can be compositionally related in a principled way" (Anderbois 2012: 377).

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[15]For an analysis of WH-words with *dou* in Mandarin, cf. Liao 2011.

Second, assuming that the ordinary semantics of WH-words is undefined will lead to compositional problems (Li & Law 2014, Li & Law 2016). For example, in Mandarin, the focus sensitive operator *zhi* 'only' will trigger a tripartite structure like (66).

(66)

operator	domain	scope
only/also	a set of sets of α	α
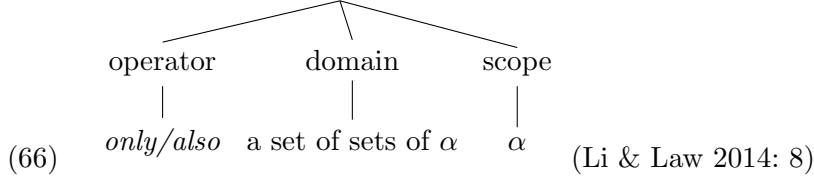
(Li & Law 2014: 8)

(67) Zhangsan zhi   chi shenme?
      Zhangsan only eat what

      'What is the only thing that Zhangsan eats?'

(68)

```
                    CP
                    |
                    C'
                  /    \
                C⁰      IP
                |      /   \
              [wh] Zhangsan  VP₂
                           /    \
                         zhi    VP₁
                               /    \
                          xihuan   shui
```
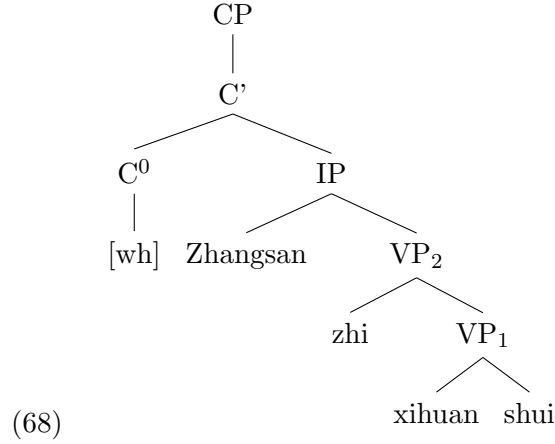
According to Li & Law (2014), "*Only* takes as its quantificational domain the focus semantic value of VP$_1$ $\Rightarrow$ Association with focus" (10).

(69) $[\![only\ VP_1]\!]^g$

$= [\![only]\!]^g([\![VP_1]\!]^f)([\![VP_1]\!]^g)$

$= \lambda y\ .\ \forall P \in [\![VP_1]\!]^f[P(y) = 1 \to P(y) = [\![VP_1]\!]^g]$ (Ibid.)

In (68), under Beck's (2006) semantics for WH-words, i.e. (64), VP$_1$ will be undefined. Hence, VP$_2$ will also be undefined, because there is no ordinary semantic value for VP$_1$. Thus, we should expect that (67) is ungrammatical, because the LF is uninterpretable. But (67) is actually grammatical, rendering Beck's (2006) semantic denotations for WH-words implausible.

The other solution lies in close affinity between interrogatives and indefinites (Kratzer & Shimoyama 2002, Haida 2011, Anderbois 2012, Li & Law 2014, and Li & Law 2016).

The proposal is to treat interrogatives and indefinites alike. Following the semantics of indeterminate pronouns in Japanese by Kratzer & Shimoyama (2002), we can define a WH-word to denote a set of alternatives as its ordinary semantic value. And there is no focus semantic value for non-focus-associated WH-words.

(70)　a. $[\![who]\!]_O := \{x|person(x)\}$

　　b. $[\![who]\!]_F :=$ undefined

Comparing this to Beck's (2006) treatment of WH-words, we can see that the two layers of meanings are flipped over. The primary difference between the two proposals relies on which factor is the source of alternatives: Beck (2006) attributes it to the focus semantics as she deems that WH-words are inherently focused, while Kratzer & Shimoyama (2002), Haida (2011), Anderbois (2012), and Li & Law (2014) argue that the indefinite semantics of WH-words is the source.[16] Thus, for a simple WH-Q like (71), we will have the question denoting a set of alternative answers. as shown in the following derivations.

(71)　Zhangsan xihuan shui?
　　Zhangsan like　　who
　　'Who does Zhangsan like?'

---

[16]For detailed discussions between the two kinds of proposals, cf. Haida 2011 and Anderbois 2012.

$$\left\{\begin{array}{l}\lambda w[like(a)(zhangsan)(w)],\\\lambda w[like(b)(zhangsan)(w)],\\\quad\cdots\end{array}\right\}$$

Q $\left\{\begin{array}{l}\lambda w[like(a)(zhangsan)(w)],\\\lambda w[like(b)(zhangsan)(w)],\\\quad\cdots\end{array}\right\}$

[+wh]

$\lambda p[p]$ $\left\{\begin{array}{l}\lambda w[like(a)(zhangsan)(w)],\\\lambda w[like(b)(zhangsan)(w)],\\\quad\cdots\end{array}\right\}$

Zhangsan

$\{zhangsan\}$ $\left\{\begin{array}{l}\lambda x\lambda w[like(a)(y)(w)],\\\lambda x\lambda w[like(b)(y)(w)],\\\quad\cdots\end{array}\right\}$

xihuan   shui

like   who

$\lambda y\lambda x\lambda w[like(y)(x)(w)]$

$\left\{\begin{array}{l}a,\\b,\\\cdots\end{array}\right\}$
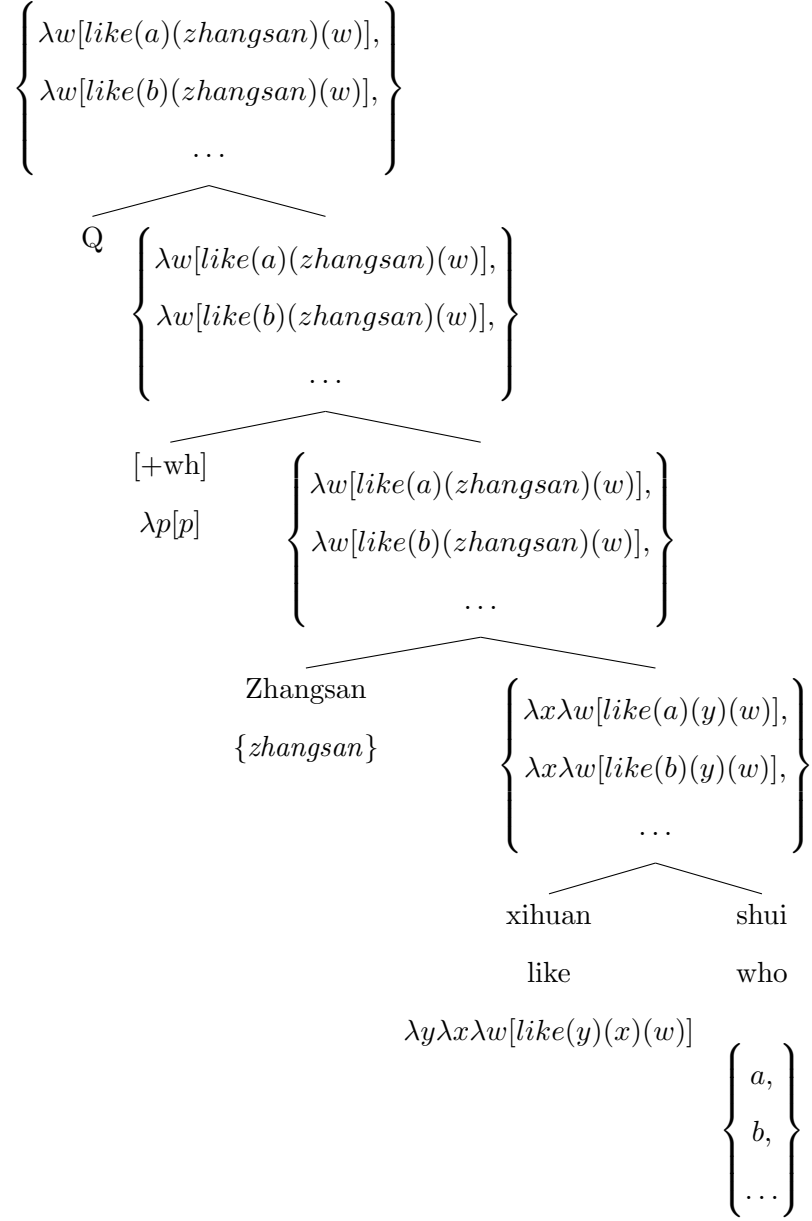
As we can see, the WH-Q (71) denotes a set of unbounded number of indefinite answers. Under our definition of highlighted meanings in (50), the set of highlighted answers H would be

(72)   H $= \left\{\begin{array}{l}\lambda w[like(a)(zhangsan)(w)],\\\lambda w[like(b)(zhangsan)(w)],\\\quad\cdots\end{array}\right\}.$

In this sense, WH-Qs like (71) have highlighted answers.

However, we claim that this is not the case.

Intuitively, the possibilities that are highlighted are the ones that are *explicitly mentioned*. The idea is that, in virtue of being mentioned explicitly, these possibilities are made more salient than other possibilities, and therefore more readily accessible for subsequent anaphoric elements. (Ciardelli et al. 2012: 69)

In (71), nothing was told about some specific entities for us to differentiate them from others. In this sense, (71) does not have highlighted answers. In their work on polarity particles, Farkas & Roelofsen (2014) specifically treat WH-Qs from this perspective:

. . . we note that given the basic intuition that highlighted possibilities are the ones that are explicitly mentioned, it is natural to assume that a *wh*-interrogative like *Who closed the door?* does not highlight any of the possibilities that make up the proposition that it expresses. This assumption plays a crucial role in accounting for the fact that *yes* and *no* are not licensed in response to *wh*-questions.

(Farkas & Roelofsen 2014: 17)

However, there are WH-Qs that show clearly highlighted answers. This is especially evident, when we compare (73) with (71).

(73)   Xiaojing he   Zhaojiang limian,   Zhangsan xihuan shui?
        Xiaojing and Zhaojiang in.aspect Zhangsan like   who

        'Between Xiaojing and Zhaojiang, who does Zhangsan like?'

(73) gives us a strong sense of highlighting some possibilities, because it explicitly mentioned some entities as choices, i.e. *Xiaojing* and *Zhaojiang*. The problem for (71) is that there are no entities that are salient to serve as antecedents for later anaphors. The set of alternatives denoted by *who* in (71) is contextually accommodated or pragmatically constrained which is not explicitly available in terms of syntax and semantics. Kratzer & Shimoyama (2002) regard cases like (71) is existentially closed by the context.

From the above discussion, we know that there are cases where WH-Qs can have highlighted meanings and there are also cases where WH-Qs do not have highlighted meanings. Here I will define the highlighted answers of WH-Qs as follows.

(74)   The set of highlighted answers H encompasses all the answers that are structurally salient, i.e. every constituents of the answers should be available in the conversational records (Lewis 1979, Thomason 1992),[17] otherwise, denotes an empty set.

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[17]A good way to distinguish *structurally salient entities* from other kinds of entities can be that the former serve as the antecedents of later anaphors, while the latter don't.

I will assume the traditional LF-movement analysis of WH-in-situ languages like Mandarin. The WH-trace denotes an indeterminate set of entities $R_{\langle e,t \rangle}$. The moved WH-word will bind the trace and set up the initial quantificational domain that is from the lexical semantics of that WH-word, e.g. *who* has a quantificational domain of $\lambda x \, . \, person(x)$. If there is no domain restriction like *Xiaojing he Zhaojiang limian* in (73) to further restrict the quantificational domain, the WH-word is existentially closed by the context.

(75) $\quad [\![shui]\!] := \begin{cases} \lambda S_{\langle et, \langle st,t \rangle \rangle} \{\{S \bullet (\lambda x \, . \, person(x) \wedge R')\}, \{S \bullet (\lambda x \, . \, person(x) \wedge R'), \emptyset\}\} \\ \qquad\qquad\qquad \text{(if R' is a set of structurally salient entities);} \\ \lambda S_{\langle et, \langle st,t \rangle \rangle} \{\{\emptyset\}, \{\emptyset, S \bullet (\lambda x \, . \, person(x) \wedge R')\}\} \\ \qquad\qquad\qquad \text{(otherwise) .} \end{cases}$ [18]

In (75), $\lambda x \, . \, person(x)$ is the lexical domain of the WH-word, R' is the context domain. When R' is existentially closed, it is identified with the universe of all entities, i.e. $\exists R'_{\langle e,t \rangle} [R' = \lambda x_e (x = x)]$. When there is a structural domain expression like *among a, b, and c*, R' is bound by this expression, e.g. $\exists R' [R' = [\![{}^*a, b, \text{ and } c]\!] = \{a, b, c, a \oplus b, a \oplus c, b \oplus c, a \oplus b \oplus c\}]$. It denotes the set of atoms and i-sums of the plural *a, b, and c* (Link 1983).

Thus, the calculation for (76) is

(76) Zhangsan xihuan shui? (= (71))
      Zhangsan like   who
      'Who does Zhangsan like?'

(77) $[\![(76)]\!] = \lambda S\{\{\emptyset\}, \{\emptyset, S \bullet (\lambda x \, . \, person(x) \wedge \lambda x \, . \, [x = x])\}\}(\lambda x \lambda w[like(x)(\mathbf{zs})(w)])$
      $= \{\{\emptyset\}, \{\emptyset, (\lambda x \lambda w[like(x)(\mathbf{zs})(w)]) \bullet (\lambda x \, . \, person(x))\}\}$
      $= \langle \emptyset, \lambda p[\exists y \in \lambda x \, . \, person(x) \wedge p = \lambda w[like(y)(\mathbf{zs})(w)]]\rangle$ [19]

As in (76), there are no specific entities in the contextual domain of R', the set of highlighted answers is an empty set, while the set of non-highlighted answers is the normal denotation of (76) under Hamblin (1973).

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[18] $\bullet$ represents point-wise functional application.

[19] $\mathbf{zs}$ = *Zhangsan*, $\mathbf{xj}$ = *Xiaojing*, $\mathbf{zj}$ = *Zhaojiang*.

On the other hand, when there are specific entities in the structure serving as the members in R', the set of highlighted answers is non-empty, as in (78).

(78)   Xiaojing he   Zhaojiang limian,   Zhangsan xihuan shui?
         Xiaojing and Zhaojiang in.aspect Zhangsan like   who

         'Between Xiaojing and Zhaojiang, who does Zhangsan like?'

(79) $[\![(78)]\!] = \lambda S\{\{S\bullet(\lambda x \;.\; person(x)\wedge\begin{Bmatrix} \mathbf{xj}, \mathbf{zj}, \\ \mathbf{xj}\oplus\mathbf{zj} \end{Bmatrix})\}, \{S\bullet(\lambda x \;.\; person(x)\wedge\begin{Bmatrix} \mathbf{xj}, \mathbf{zj}, \\ \mathbf{xj}\oplus\mathbf{zj} \end{Bmatrix}), \emptyset\}\}$

$(\lambda x\lambda w[like(x)(\mathbf{zs})(w)])$

$= \{\{(\lambda x\lambda w[like(x)(\mathbf{zs})(w)]) \bullet \begin{Bmatrix} \mathbf{xj}, \mathbf{zj}, \\ \mathbf{xj}\oplus\mathbf{zj} \end{Bmatrix}\},$

$\{(\lambda x\lambda w[like(x)(\mathbf{zs})(w)]) \bullet \begin{Bmatrix} \mathbf{xj}, \mathbf{zj}, \\ \mathbf{xj}\oplus\mathbf{zj} \end{Bmatrix}, \emptyset\}\}$

$= \left\langle \begin{Bmatrix} \lambda w[like(\mathbf{xj})(\mathbf{zs})(w)], \\ \lambda w[like(\mathbf{zj})(\mathbf{zs})(w)], \\ \lambda w[like(\mathbf{xj}\oplus\mathbf{zj})(\mathbf{zs})(w)] \end{Bmatrix}, \emptyset \right\rangle$

(79) shows that WH-Qs can have highlighted answers if there are structurally salient quantificational domains.

In this chapter, I have addressed the issue of how the structural semantics of questions can make distinctions among different question types. The essence of my proposal is to give polar questions a semantically privileged status (i.e. their question nuclei being uniquely *highlighted*) which other questions types do not have. I will provide a full compositional analysis to deal with the sentence-type selectional problem of the biased question words under investigation in Chapter 3 after we have discussed the syntactic status of *nandao*.

In the next chapter, I will focus on *nandao*-Qs in Mandarin and discuss how the bias meaning arises.

Chapter 3

Nandao-Qs as biased questions in Mandarin

3.1 Introduction

As discussed in §1.3, *nandao*-Qs are a special kind of biased question. They have many interesting syntactic and semantic properties which I explore in this chapter. Mandarin *nandao*-Qs are ambiguous between rhetorical questions and information-seeking biased questions expressing an epistemic bias on the part of speaker, as shown in (1).

(1) Nandao zhe jiushi shichang jingji   (ma)?
     nandao this be   market economy Y/N-Q

     (Rhetorical) 'This isn't a market economy.'

     (Biased) 'This isn't a market economy, right?'

Although (1) has the form of a question, it can express a meaning similar to a negative statement which the speaker fully believed or assumed to be true, or it can convey the speaker's bias, i.e. lesser degree of belief, toward the negative polar answer.[1] The first interpretation is a typical rhetorical question reading which is not information seeking (rhetorical questions in the sense of Rohde 2006; Caponigro & Sprouse 2007). The second interpretation is a typical information-seeking biased question reading which favors a particular answer. Both interpretations concern the speaker's subjective evaluation of the answers. In this chapter, I will treat *nandao* as an epistemic modal adverb that occurs as an adjunct to ForceP. The following sections will provide syntactic-semantic evidence for such a claim and explain the syntactic distribution of *nandao* from the angle of its semantics.

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[1] A negative polar answer for Y/N-Qs with the form *p?* or *nandao*-Qs with the form *nandao-p?* is defined as $\neg p$; for Y/N-Qs with the form *not-p?* or *nandao*-Qs with the form *nandao-not-p?* it is *p*. The positive polar answer is the other way round.

3.2   Previous treatments of *nandao*

The function of *nandao* in questions has been highly debated among Chinese scholars. On the one hand, in most Chinese dictionaries, *nandao* is defined as a rhetorical question adverb. For example, in both *Xiandai Hanyu Cidian* ('Contemporary Chinese Dictionary') and *Xiandai Hanyu Baibai Ci* ('Modern Chinese eight hundred words'), the function of *nandao* is to "enhance the force of rhetorical questions".[2] *Yingyong Hanyu Cidian* ('Applied Chinese Dictionary') even distinguishes *nandao* from other rhetorical question adverbs like *mofei* (literally 'not-no') by saying that *nandao* is infelicitous in the contexts of conjecture or speculation. Many Chinese linguists have adopted the idea that *nandao* is only a rhetorical question adverb (Yu 1984, Qi & Ding 2006, Yu 2006, Xu 2012).

On the other hand, there are some scholars who claim that *nandao* is not solely a rhetorical question adverb but an adverb that can be used in ordinary questions (Gong 1995, Su 2000, Sun 2007). In discussions of several *nandao*-question sentences in Chinese novels, Gong (1995) argues that "not all *nandao*-sentences are rhetorical questions...When *nandao* is used in a conjectural question,[3] it expresses a complex meaning" (126-127).

(2)   "Zhe shi zenme yihuishi   ne?"   huangdi xinli   xiang,
          this be how   one.CL.thing WH-Q emperor in.heart think

          "What's this?" thought the Emperor,

          "Wo shenme ye meiyou kanjian! Zhe ke   hairentingwen le.
           I   any   too no   see   this very shocking   LE

          I can't see anything! This is terrible.

          Nandao wo shi yige   yuchuande ren   ma? Nandao wo bu gou
          nandao I   be one.CL foolish   person Y/N-Q nandao I   not reach
          zige   dang   yige   huangdi ma?..."
          requirement work.as one.CL emperor Y/N-Q

          Am I a fool? Am I unfit to the the Emperor?..."

Gong (1995) uses a line from Anderson's *The Emperor's New Clothes* as an example to

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[2]The quotation is the translation of the original Chinese version. In the rest of this dissertation, all non-English quotes will be translated.

[3]Gong (1995) defines a conjectural question as a question raised by the speaker who half believes and half doubts about his/her idea towards certain answer. The conjectural question is to seek confirmation. We can regard conjectural questions as biased questions because the former expresses the speaker's biased towards certain answer though the speaker is not completely sure of the truth of this biased answer.

show *nandao*'s complex meaning. In (2), although the Emperor doesn't think he's foolish and incapable of being the Emperor, the contextual evidence that he can't see anything leads to the very likely possibility that he's been fooled. There is a contradiction between his belief and what is suggested by the context. So, the Emperor uses the *nandao*-Qs to express such a complex feeling (e.g. surprise).

Based on what has been argued in the literature, Su (2000) summarizes three pragmatic functions of *nandao*-Qs in different contexts: (a) to express negation; (b) to express puzzlement; (c) to express conjecture.

(3)   Nandao ni   feng-le?
       nandao you crazy-ASP

       'You are not crazy!' (Su 2000: 58)

(3) expresses the speaker's anger when the addressee has performed some eccentric or dangerous action. Usually the speaker negates the least likely reason to express such discontentment, e.g. the negation of *you are crazy* (the least likely reason for those actions) in (3).

(4)   (The speaker cannot understand why student A didn't go back home in the summer vacation)

       Nandao ni   bu xiang jia   ma?
       nandao you not miss   home Y/N-Q

       'You miss your home.' (ibid.)

Here, the student's choosing to stay at school puzzles the speaker. So he expresses his bewilderment by presenting a proposition that goes against common belief that *everyone misses home* which he fully commits to in the *nandao*-Q.

(5)   Qing Boren: Yuzhai, zanmen haidei   likai Beijing!
       Qing Boren   Yuzhai we   again.must leave Beijing

       'Qing Boren: Yuzhai, we still need to get out of Beijing!

       Lu Yuzhai: Nandao Yuan Shikai guyi   zhizao bingbian?
       Lu Yuzhai   nandao Yuan Shikai deliberately make   mutiny

       'Lu Yuzhai: Yuan Shikai didn't lead the mutiny deliberately, right?

> Yaoshi zheyang, zanmen xiuxiang   taochu Beijing qu!
> If   so   we   stop.think escape Beijing go
>
> If so, we cannot leave Beijing!' (ibid.)

Su's (2000) analysis of (5) is very similar to Gong's (1995) discussion of (2). In (5), *Lu Yuzhai* didn't believe that Yuan Shikai would dare to lead the mutiny deliberately. But, from what he guesses from *Qing Boren*'s previous suggestion of *leaving Beijing*, the possibility of *Yuan Shikai deliberately led the mutiny* becomes evident. Thus, he asks the *nandao*-Q to seek confirmation from *Qing Boren* and makes some further prediction based on the potential affirmative confirmation, i.e. *they cannot get out of Beijing now.*

The above three examples correspond to the three pragmatic functions of *nandao*-Qs. According to the author, in context (a) and (b), *nandao*-Qs are rhetorical questions, while in context (c), they are biased questions which sometimes do not intend to solicit answers. Su regards non-rhetorical use of *nandao*-Qs as a special kind of questions in between neutral questions (i.e. questions without any bias) and rhetorical questions (questions with strong bias). In this sense, the difference among the various pragmatic functions of *nandao*-Qs lies in the varying degrees of the speaker's belief.

In terms of semantics, Su (2000) distinguishes two kinds of meanings in *nandao*-Qs, a presupposition and a surface meaning. She argues that every *nandao*-Q presupposes a proposition that is believed by the speaker, the negation of the propositional content of the question nucleus. For example, *nandao-p?* presupposes $\neg p$. On the other hand, Su (2000) is equivocal about the nature of the surface meaning. At first, she defines the surface meaning as the negation of the presupposition, which is the case for *nandao*-Qs in context (a) and (b). But when it comes to *nandao*-Qs in context (c), she makes an exception and regards it as a (conjectural) question like "It can't be..., right?".[4]

Sun (2007) analyzes nandao-Qs from a historical point of view. The formation of current *nandao* starts from the form of *nan* ('hard') + *dao* ('speak') which originally meant *it is hard to say.* In the course of grammaticalization, the form developed the semantic features of [+Neg] out of *nan* and [+Proposition] out of *dao* which are common features of rhetorical questions in general. From then on, *nandao* became a rhetorical question adverb.

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[4]It seems to me that the surface meaning intended by Su (2000) is the at-issue meaning.

He further claims that the conjectural meaning of *nandao*-Q is derived from its original rhetorical question meaning. Because the subjective nature of *dao* indicates the embedded proposition is evaluated by the speaker, and *nandao* develops a new meaning *it is hard for the speaker to say*. This new meaning helps express the bias of the speaker to the embedded proposition.

So far, as we can see, there is no agreement on the function of *nandao* in questions concerning whether it is solely a rhetorical question adverb or can be extended to express bias in ordinary questions. But there is agreement among those who deem *nandao* as solely a rhetorical question adverb that a *nandao-p?* question asserts ¬*p*. There is also agreement among those who believe *nandao-p?* is ambiguous that when *nandao-p?* does not have a rhetorical question reading, it expresses that the speaker is at least weakly biased towards the negative polar answer ¬*p*. The only difference between the claims of the two groups of scholars lies in the degree to which the speaker is committed to the negative polar answer, belief vs. bias. In the rhetorical question reading of *nandao-p?* question, the speaker is **fully committed to**, i.e. (near) 100% sure of, ¬*p*. In the biased question reading of *nandao-p?*, the speaker is **less committed to**, more than 50% but less than 100% sure of, ¬*p*. In both readings, *nandao*-Qs essentially express the speaker's bias, whether strong (belief) or weak (bias). They cannot appear as neutral "epistemically unbiased questions" (Romero & Han 2004: 610).

(6)   (In a situation where the speaker does not have the slightest idea of whether Zhangsan will go to America or not.)

      # Nandao Zhangsan yao qu Meiguo?
        nandao Zhangsan will go America
      (Intended) 'Will Zhangsan go to America?'

Meanwhile, if the speaker thinks that the answer is more likely to be *p* than ¬*p*, then under any circumstances (s)he cannot use the form *nadao-p?* to express such a bias.

(7)   (The speaker thinks that there is someone in the room.)

      # Nandao wuli   you ren?
        nandao room.in exist person
      (Intended) 'There is someone in the room, right?'

Before moving on the the next section, let's recap the relevant aspects of *nandao*-Qs discussed in this section:

1. *Nandao*-Qs express the speaker's bias, either strong (rhetorical question reading) or weak (biased information-seeking question reading);

2. The speaker is always biased toward ¬*p* in *nandao-p?*

3.3   The semantics of *Nandao*

In Xu (2012), I treat *nandao*-Qs as a special kind of Rhetorical Question. But based on experiments I conducted, I found that they can also be information-seeking questions (Xu 2013). In order to better understand the meaning of *nandao*, in the following subsection, I will summarize the uses of *nandao*-Qs.

3.3.1   The uses of *nandao*-Qs: A summary

In this subsection, various aspects of *nandao*-Qs are discussed, including its contextual usages and semantic features.

As discussed in §3.2, *nandao*-Qs **necessarily** express bias. Hence, in conversation-opening situations where neutral questions are required, it is not possible to use *nandao*-Qs.

(8)   (When two Chinese friends meet on the street, they usually greet each other by asking the following)

    Chi-le   ma?
    eat-ASP Y/N-Q
    'Did (you) eat?'

  # Nandao chi-le   ma?
    nandao eat-ASP Y/N-Q
    (Intended) '(You) haven't eaten, right?'

  # Nandao mei chi ma?
    nandao not eat Y/N-Q
    '(You) have eaten, right?'

Similarly, in a situation where the speaker has no idea of the answer and there is no contextual evidence for any possible answers, when the speaker seeks information from others, *nandao*-Qs are still not felicitous.

(9)   (A sits in a windowless room working. A doesn't know anything about the weather outside and does not have any expectation about the weather. At 10, B enters the room. Then A asks B:)

        Waimian xiayu-le ma?
        outside   rain-ASP Y/N-Q

        'Is it raining outside?'

    # Nandao waimian xiayu-le ma?
        nandao outside   rain-ASP Y/N-Q

        'It is not raining outside, right?'

    # Nandao waimian mei xiayu ma?
        nandao outside   not rain   Y/N-Q

        'It is raining outside, right?'

The above examples also show that the necessary bias carried by *nandao*-Qs is contributed by the use of *nandao*, in that the only difference between *nandao*-Qs and normal Y/N-Qs lies in the occurrence of *nandao*.

    The biases expressed via *nandao*-Qs can be strong or weak. They can be as strong as rhetorical questions which can serve as a rebuttal and act like an assertion.

(10)   (A's house is messy. One day, A's friend B visits him and suggests he clean it.)

    A: Nandao ni   shi wo ma   ma?   (Rhetorical Question)
       nandao you be I   mom Y/N-Q

    'What are you, my mom or something?' = 'You are not my mom!'

(11)   (Policeman A strongly believes criminal B has not escaped. During a search, A finds a receipt of yesterday's flight in B's name. So, A asks his colleagues,)

    A: Nandao ta feizou-le   ma?   (Information-seeking Question)
       nandao he fly.away-ASP Y/N-Q

    'He hasn't escaped, right?' ≠ 'He hasn't escaped.'

In (10), A holds a strong belief that *B is not A's mom* and does not even consider the alternative possibility (i.e. *B is A's mom*), since both A and B know perfectly well that B is not A's mom. Here, A uses the *nandao*-Q as a strong assertion to reject B's suggestion. This type of use can be classified as rhetorical according to Rohde (2006) and Caponigro & Sprouse (2007). In (11), A has a strong prior belief that B has not escaped. But, the discovery of the receipt shakes this belief. He's now not so sure of his belief and uses the *nandao*-Q to seek confirmation from his colleagues. Across this range of situations, the point about *nandao*-Qs still holds that the speaker (still) believes that the negative polar answer to a *nandao*-Q is more likely to be true than its positive counterpart. The only difference among these *nandao*-Qs is whether the contexts provide anything to support or shake the bias.

As has been proposed in the literature, there are two kinds of bias in questions, an epistemic bias and an evidential/contextual bias (see Romero & Han 2002, Romero & Han 2004, Romero 2006, Asher & Reese 2007, Reese 2007 for epistemic bias; see Büring & Gunlogson 2000 for contextual bias; see Sudo 2013 for both). In the cases of *nandao*-Qs, the bias conveyed is an **epistemic** one. The bias is not from context or evidence, but is based on the speaker's belief. This can be supported by the following examples.

(12) (A sits in a windowless room working. A doesn't know anything about the weather outside and does not have any expectation of the weather too. At 10, B enters the room with a dripping wet raincoat. Then A asks B:)

Waimian xiayu-le ma?
Outside   rain-ASP Y/N-Q
'Is it raining outside?'

\# Nandao waimian xiayu-le ma?
Nandao outside   rain-ASP Y/N-Q
'It isn't raining outside, right?'

\# Nandao waimian mei xiayu ma?
Nandao outside   not rain   Y/N-Q
'It is raining outside, right?'

In (12), there is a piece of contextual evidence for *it is raining* from B's *dripping wet raincoat*. But, there is no speaker's epistemic preference between the possible answers. According to

Büring & Gunlogson (2000) and Sudo (2013), a positive polar question (the first sentence in the example) can be used, since the evidence condition in (12) is in accordance with the Evidence Condition on PPQ.

(13)   Evidence Condition on PPQ:

There is no compelling contextual evidence against p (i.e. there is either no evidence or evidence *for p*). (Büring & Gunlogson 2000: 7)

In the terminology of Sudo (2013), PPQs carry [-negative] evidential bias.

On the other hand, neither a positive *nandao*-Q nor a negative one can be used in the context in (12). The infelicity of *nandao*-Qs indicates that when there is only evidential bias available in the context, the speaker is not entitled to ask a *nandao*-Q. Moreover, in a context with contrasting epistemic bias and evidential bias (e.g. where there is speaker's epistemic bias for $\neg p$ and evidential bias for p), the bias conveyed by *nandao*-Qs is still in accordance with the speaker's epistemic state (although the degree of belief may decrease). This can be verified via the illustration in (11).

Knowing that the bias conveyed in *nandao*-Qs is an epistemic one is the first step. The second step is to find out toward which answer those questions are biased. I have stated the answer in §3.2 that the speaker is always **biased toward the negative polar answer** in *nandao*-Qs, as can be illustrated in the following example.

(14)   (The speaker believes that there is no one in a house.)

a. # Nandao wuli   mei ren?
   nandao room.in no   person

   (Intended) 'There is no one in the room, right?'

b. Nandao wuli   you ren?
   nandao room.in exist person

   'There is no one in the room, right?'

Supposing we only know that a *nandao*-Q expresses the speaker's epistemic bias and we don't know which answer the question is biased toward. In (14a), if the *nandao*-Q expresses a bias towards a negative polar answer (i.e. *there is no one in the room*), then we would expect it to be felicitous in the context where the speaker holds a negative bias (i.e. *the*

speaker believes that there is no one in the room). However, the *nandao*-Q is infelicitous in this context. On the other hand, its polar counterpart is felicitous here. This phenomenon can be better captured in the rhetorical use of *nandao*-Q.

(15)   # Nandao taiyang da   dongbian chulai-le ma?
          nandao sun   from east   exit-ASP Y/N-Q

          (Intended) 'The sun didn't rise from the east, right?'

To the ear of native Mandarin speakers, (15) always sounds weird and no one would ever utter it.[5] The absurdity of (15) comes from the speaker's epistemic stance. If (15) conveys a positive epistemic bias that the speaker believes the sun rises from the east, then there should not be any problem at all. However, the unacceptable status of (15) establishes that the bias conveyed is a negative one, i.e. the speaker believes that the sun doesn't rise from the east. Here, the speaker's epistemic stance clearly contradicts the commonsense knowledge that the sun rises from the east, which gives rise to the absurdity of (15).

The infelicity of (14a) and (15) and the felicity of (14b) in a context with a negative epistemic bias suggests that a *nandao*-Q expresses a negative epistemic bias. To be more specific, a *nandao-p?* with the positive question nucleus p conveys an epistemic bias toward $\neg p$ on the part of the speaker. Similarly, a *nandao-$\neg p$?* with the negative question nucleus $\neg p$ conveys a bias toward p. This is what Han (2002) and Xu (2012) called "polarity reversal" effects.

3.3.2   The discourse and semantic properties of *nandao*-Qs

In the previous section, the basic use and meaning of *nandao*-Qs have been discussed. Apart from bias, *nandao*-Qs also exhibit discourse and semantic properties that are distinct from normal Y/N-Qs.

Unlike epistemic adverbs like *possibly* in English which contribute to the set-theoretic

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[5]The normal usage of *nandao* in rhetorical questions concerning the direction of sunrise is (1).

  1. Nandao taiyang da   xibian chulai-le ma?
      nandao sun   from west   exit-ASP Y/N-Q

     'The sun didn't rise form the west, right?'

meanings of questions (16), the epistemic bias contributed by *nandao* cannot follow positive/negative answer particles either positively or negatively (17).

(16) A: Is John possibly a doctor?

B: Yes, quite possibly./No, he can't be.

(17) A: Nandao Yuehan shi ge yisheng?
   nandao John   be CL doctor

'John is not a doctor, right?'

B$_1$: # Shia,   ni   juede ta bushi   yige   yisheng.
     Yes.ah you think he not.be one-CL doctor

(Intended) 'Yes, you think John is not a doctor.'

B$_2$: # Shia,   ni   juede ta shi ge yisheng.
     Yes.ah you think he be CL doctor

(Intended) 'Yes, you think John is a doctor.'

B$_3$: # Bu, ni   juede ta bushi   ge yisheng.
     no   you think he not.be CL doctor

(Intended) 'No, you think that he is not a doctor.'

B$_4$: # Bu, ni   juede ta shi ge yisheng.
     no   you think he be CL doctor

(Intended) 'No, you think that he is a doctor.'

Secondly, the bias of *nandao*-Qs can convey new information.

(18) (A is a poor guy who never thinks about investing in stocks to earn money. On the other hand, C has been investing in the stock market for many years. A and C are not familiar with each other, but B is a friend of both A's and C's. B knows A and C quite well. One day, A approaches B and asks B,)

A: Can you help me ask C how to open an account in the stock market?

B: Why are you asking this question?

A: Nandao wo buneng ye   chaogu   ma?
   nandao I   not.can too invest.stock Y/N-Q

'I can make investment in stocks too, right?'

B: A... Yuanlai ni   ye xiang chaogu   a!
   ah   so   you too think invest.stock ah

'Ah...So you want to make investment in stocks too!'

In (18), although B didn't reply to the *nandao*-Q, B immediately becomes aware of A's biased attitude towards the answers (i.e. *A thinks he can invest in stocks too*) when he hears the *nandao*-Q. From the exclamatory expression *Ah* in B's response, we get to know that the speaker's attitude toward stock investment is unexpected and new to him.

Moreover, although the bias of *nandao*-Qs can convey new information, it is also felicitous to use them in a context where the information of the speaker's bias has already been established (19).

(19)   (A and B are talking about the war in Afghanistan. A thinks the US should retreat, while B disagrees. They know each other's stance quite well.)

    A: The US government cannot spend more money to keep the troops in Afghanistan.

    B: But Al-Qaeda is still in power. We need the US troops to eliminate them once and for all.

    A: More than two thousand soldiers have died!

    Nandao meijun   yinggai jixu   zai Afuhan   zhujun?
    Nandao US.troop should continue at Afghanistan station.troop
    'The US troops shouldn't continue to stay in Afghanistan, right?'

The last thing to mention is that the bias conveyed via *nandao* is speaker-oriented.

(20)   A: Nandao Zhangsan bu xihuan shuiguo ma?
      nandao Zhangsan not like   fruit   Y/N-Q

    Bias = 'A believes that it is more likely that Zhangsan likes fruits'.

    Bias ≠ '(Generally/In fact), It is more likely that Zhangsan likes fruits.'

    Bias ≠ 'From what you (addressee) believe it is more likely that Zhangsan likes fruits.'

The core part of the meaning of the bias conveyed in (20) is an epistemic evaluation of the possible answer(s), i.e. the negative polar answer is more likely than the positive one. Such a bias is on the part of the speaker. It is not about a general fact or objective epistemic evaluation of the answers, nor can it be an epistemic evaluation on the part of the addressee.

Apart from the above discourse properties, *nandao* has a special semantic property, viz. it scopes over negation and all other quantifiers.

(21) *Nandao* > negation

A: Zhangsan bu xihuan shuiguo ma,   nandao? (= (20))
　　Zhangsan not like   fruit   Y/N-Q nandao

Bias = 'A believes that it is more likely that Zhangsan likes fruits'.

nandao > ¬

(Intended) Bias = 'A doesn't believes that it is more likely that Zhangsan likes

fruits.'   * ¬ > *nandao*

(22) *Nandao* > ∀

A: Nandao meige   ren   dou yao qu?
　　nandoa each.CL person DOU need go

'It is not the case that everyone needs to go, right?'   *nandao* > ∀

(Intended) 'For every person *x*, *nandao* does *x* need to go?'   * ∀ > *nandao*

(23) *Nandao* > ◊

A: Nandao Zhangsan keneng qu Meiguo ma?
　　nandao Zhangsan possibly go America Y/N-Q

Bias = 'A believes that *it is impossible that Zhangsan goes to America* is more

likely.'   *nandao* > ◊

(Intended) Bias = 'It is possible that A believes that it is more likely that *Zhangsan*

goes to America.'   * ◊ > *nandao*

3.3.3 What *nandao* is

The bias meaning contributed by *nandao* in many ways resembles presupposition, conventional implicature (henceforth CI), and illocutionary modifier (hereafter IM).

For example, all of them can pass "*Hey, wait a minute*" test (Shanon 1976, von Fintel 2004, Amaral et al. 2007, Koev 2013, Faller 2014).[6]

(24) A: The mathematician **who proved Goldbach's Conjecture** is a woman.

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[6]The test is originally designed by Shanon (1976) for the distinction between asserted content and pragmatic presupposition. The phrases used by Shanon are *One moment, I did not know that...*, *One moment, do you mean to say that...*, and *Just a minute, do you mean to say that....* The current version is a variant of the original test which is extended by von Fintel (2004) to cover both semantic and pragmatic presuppositions. Amaral et al. (2007) and Koev (2013) further extend the test to cover CIs and appositives. Faller (2014) uses the test for illocutionary modifiers too.

B: Hey, wait a minute. I had no idea that someone proved Goldbach's Conjecture.

B': # Hey, wait a minute. I had no idea that that was a woman.

<div align="right">(von Fintel 2004: 271)</div>

(25) A: The **damn** Republicans deserve public support.

B: Hey, wait a minute. You are not really thinking that the Republicans are bad, right?

B': # Hey, wait a minute. They don't deserve public support.

<div align="right">(adapted from Potts 2003: 74)</div>

(26) A: **Alas**, Ames is now behind bars.

B: Hey, wait a minute. You are not really sad about him being in prison.

B': # Hey, wait a minute. He's not in prison. (adapted from Faller 2014: 67)

(27) A: Nandao Zhangsan bu xihuan shuiguo ma?
   nandao Zhangsan not like   fruit   Y/N-Q

   'Zhangsan likes fruits, right?'

B: Wei, dengdeng. Ni   renwei Zhangsan bu xihuan chi shuiguo de ba!
   hey wait.wait You believe Zhangsan no like   eat fruit   DE BA

   'Hey, wait a minute. You think Zhangsan doesn't like fruits at first.'

B': # Wei, dengdeng. Zhangsan bu xihuan chi shuiguo.
   hey wait.wait Zhangsan not like   eat fruit

   (Intended) 'Hey, wait a minute. Zhangsan doesn't like fruits.'

The "*Hey, wait a minute*" test is a well-established diagnostic for not-at-issue content (Shanon 1976, von Fintel 2004, Amaral et al. 2007, Koev 2013, Faller 2014). The logic behind the test concerns conversational flow. Unlike at-issue content which can be directly accepted or denied, not-at-issue content which are "not the main point of the utterance" (Tonhauser 2012: 240) cannot be directly addressed in the discourse. Thus, when the not-at-issue content are falsified or rejected by other discourse participant(s), a pause to stop the conversation like *Hey, wait a minute* will be used to prevent the false not-at-issue content from slipping by (Roberts 2006).

The fact that the bias meaning of *nandao*-Qs passes the "*Hey, wait a minute*" test suggests that *nandao*, like presuppositions, CIs, and IMs, expresses not-at-issue content. More evidence supporting this conclusion is provided below.

In the previous section, I mentioned that in a *nandao*-Q conversation, the epistemic bias contributed by *nandao* cannot follow answer particles (17). This behavior can also be found in CIs (28) and presuppositions (29).

(28)   A: Did John, Sam's uncle, like apples?

B: # Yes, John is Sam's uncle./# No, John is not Sam's uncle.

(29)   A: Did John stop smoking?

B: # Yes, John smoked./# No, John never smoked.

This is the test used by Amaral et al. (2007), Tonhauser (2012) and Koev (2013) for not-at-issue content. Koev (2013) calls it the Question Formation Test. The test can be used as a diagnostic for at-issue content, because "[i]n questions, only at-issue content determines the set of alternative answers" (Koev 2013: 22).

In terms of scope relations with other operators, *nandao* is also quite similar to other not-at-issue content triggers. We know that *nandao* takes global scope (21-23). Or, we may interpret the conclusion as *nandao* cannot be interpreted within the scope of operators in at-issue content. This is a typical phenomenon widely found in presupposition triggers (Keenan 1971, Karttunen 1971, Karttunen 1973, Beaver 2001), CI encoders (Potts 2003), appositives (Koev 2013), and IMs (e.g. evidential) (Faller (2014)).

(30)   It is not the case that John's brother is bald.

Presupposition: John has a brother.   possessive DP $> \neg$

(N/A) Presupposition: John doesn't have a brother.   * $\neg >$ possessive DP

(31)   It is possible that the present king of France is bald. (Karttunen 1971: fn 8)

Presupposition: Presently, France is ruled by a king.

definite description $> \Diamond$

(N/A) Presupposition: Presently, it is possible France is ruled by a king.

* $\Diamond >$ definite description

(32)   It's false that Alonzo, a big-shot executive, is now behind bars. (Potts 2003: 153)

CI: Alonzo is a big-shot executive.   nominal appositive $> \neg$

(N/A) CI: Alonzo isn't a big-shot executive.   * $\neg >$ nominal appositive

(33)   It is possible that Edward, who is from Minnesota, enjoys cold winters.

(adapted from Koev 2013: 101)

Not-at-issue content: Edward is from Minnesota.   appositive $> \Diamond$

(N/A) Not-at-issue content: Edward is possibly from Minnesota. $* \Diamond >$ appositive

(34)   mana=s phalay-ta ati-n=chu   (Cuzco Quechua) (Faller 2014: 74)
       not=REP fly-ACC   can-3=NEG

       'It can not fly.'

       EV: speaker has reportative evidence that it cannot fly   IM $> \neg$

       (N/A) EV: speaker hasn't reportative evidence that it can fly. $* \neg >$ IM

With all the above evidence, we can state with confidence that ***nandao* is a not-at-issue content encoder**. The not-at-issue meaning it encodes is the bias meaning on the part of the speaker which I have discussed in §3.3.1 of this Chapter.

3.3.4   What *nandao* is not

Although *nandao*, the newly-joined not-at-issue content encoder, much resembles presupposition triggers, CI encoders, and IMs, it is still not clear what type of not-at-issue content encoder it exactly is. In this subsection, I will explore all the possibilities and try to find the answer.

   1. ***Nandao* is not a presupposition trigger**.

Although the not-at-issue content contributed by *nandao* shares many properties with presuppositions, there are two key differences.

   Presupposition, as discussed in great detail in Stalnaker (1974), conveys old, backgrounded information that both discourse participants know or assume to be true and is in the common ground (CG). In this case, as argued by Potts (2003), presupposition shows a *backgrounding effect* (see also Faller 2014).

(35)   John has children and *his children* are bald. (van der Sandt 1992: 334)

(36)   Lance Armstrong survived cancer. And most riders know that Lance Armstrong is
       a cancer survivor. (adapted from Potts 2003: 42)

Given that presuppositions convey old, backgrounded information, van der Sandt (1992) argues that they may refer to prior discourse expressions, e.g. *John has children* in (35) and *Lance Armstrong survived cancer* in (36). If they could not find appropriate antecedents in the discourse (or even in the context), accommodation comes into play (Karttunen 1973, Lewis 1979).

On the other hand, as discussed in §3.3.2 of the current Chapter, the not-at-issue content conveyed by *nandao*-Qs can be new information (see (18) as an example). It does not show a similar "backgrounding effect".

The other difference between the content conveyed by *nandao* and presupposition lies in it being speaker oriented. Potts (2003) regards all presuppositions to be lexical and not speaker-oriented. They can find references in the current discourse or context whose identities are independent of the discourse participants. Hence, a speaker may reject subsequently the presupposition set up in the prior discourse.

(37)   Sue wrongly believes that Conner stopped smoking. However, he never smoked in the first place. (Faller 2014: 69)

However, the not-at-issue content in *nandao*-Qs is necessarily speaker-oriented (see (20) as an example).

Given these two key differences, we can conclude that the not-at-issue content encoded in *nandao*-Qs is not presupposition.

2. ***Nandao* is not a CI encoder**

Unlike presuppositions, CIs do not exhibit the *backgrounding effect* and are (mostly) speaker-oriented.[7] The two key differences that separate the not-at-issue content in *nandao*-Qs from presupposition are not in the way to consider *nandao* meaning as a species of CI.

But, there are some other differences between CIs and *nandao* meaning. First of all, Potts (2003) and Potts (2007) claim that the truth value of a CI is strictly independent from the truth value of the at-issue content in the host sentence.

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[7]In his dissertation, Potts claims that all CIs are necessarily speaker-oriented. But in his later work, he revises this somewhat by saying, "[i]n general, the perspective is the speaker's, but there can be deviations if conditions are right." (Potts 2007: 166)

(38)   Lance Armstrong, an Arkansan, has won the 2002 Tour de France! (Potts 2003: (1.37))

Potts (2003) notes even though Lance Armstrong is actually from Texas which renders the CI proposition (i.e. *Lance Armstrong is an Arkansan*) false, the truth value of (38) can still be true if he indeed won the 2002 Tour de France.[8] He suggests that CIs and at-issue content operate at two separate dimensions where their respective truth values will not infringe on each other.

On the other hand, the not-at-issue content of *nandao*-Qs is not separate from the regular at-issue content. The *nandao* meaning is in a way like presupposition which needs to be true in order for the remaining at-issue content in the host sentence to have a truth value (Strawson 1950, Strawson 1952; see also Russell 1905 for a different view). In order for *nandao*-Qs to be felicitously uttered, the not-at-issue content that the speaker believes that the negative polar answer is more likely to be true, must be true. Otherwise, the question is infelicitous (6)-(7).

One more difference can be found in the *anti-backgrounding effect* (Potts 2003). Although the *nandao* meaning and CIs pattern alike in *backgrounding effect*, CIs show a stricter requirement on *anti-backgrounding*: "in cases where the content of a supplement is part of the initial context, the result is infelicity due to redundancy" (Potts 2003: 41).

(39)   # Lance Armstrong survived cancer. When reporters interview Lance, a cancer survivor, he often talks about the disease. (adapted from Potts 2003: 42)

Nandao doesn't pattern with CIs in this respect. As already shown in §3.3.2, though *nandao* conveys new not-at-issue information, it is still felicitous to use it in a context where such at-issue content has already been established (see (19) for an example). In this sense, *nandao* shows neither the *backgrounding effect* nor the *anti-backgrounding effect*.

3. *Nandao* is not High Negation

There are two kinds of High Negations in Negative Polar Questions (NPQs), i.e. the Inner

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[8]Syrett & Koev (2014) argue on the basis of experimental results that appositives in sentence-medial position do affect the truth value of at-issue content: whenever an appositive is false, the whole sentence is false.

High-Negation (henceforth IHN) and Outer High-Negation (henceforth OHN).[9] Both of them appear as clitics to the inverted auxiliary in English (or as preposed negations in Romero & Han's (2004) terms). They can be distinguished by allowing Positive Polarity Items (PPIs, e.g. *too*) or Negative Polarity Items (NPIs, e.g. *either*). (Ladd 1981, Büring & Gunlogson 2000, Romero & Han 2002, Romero & Han 2004, Sudo 2013, Domaneschi et al. 2017, a.o.)

(40)   a. Isn't Jane coming too?   (OHNPQ with PPI)

     b. Isn't Jane coming either?   (IHNPQ with NPI)

                                                                   (Ladd 1981: (9))

Along with their syntactic differences, OHNPQs and IHNPQs exhibit different epistemic states of the speaker and different contextual evidence requirements. For OHNPQs and IHNPQs with the same positive question nucleus core p,[10] according to Ladd (1981), the OHNPQ expresses that the speaker believes p and wants to confirm p, while the IHNPQ conveys the speaker's prior belief of p and his intention to confirm "the inference that not-p" (Büring & Gunlogson 2000: 3). Based on Ladd's (1981) analysis, Büring & Gunlogson (2000) change the confirmation part to contextual evidence conditions and propose that IHNPQ (in their terms INPQ) requires a context with contextual evidence against p while OHNPQ (in their terms ONPQ) is more flexible in terms of the contextual evidence condition: in addition to a context with contextual evidence against p, it is also felicitous in a neutral context with no evidence for p or against p. Romero & Han (2002, 2004), on the other hand, focus on the speaker's bias (epistemic bias). They assume that High Negation necessarily triggers a VERUM focus in their respective questions. The syntactic differences between OHNPQ and IHNPQ can be well explained by the interplay of the scope between negation and VERUM, an epistemic CG management operator, at LF.

(41)   a. Isn't Jane coming **either**?

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[9]Accordingly, polar questions with IHN will be called IHNPQs, and the ones with OHN OHNPQs. IHNPQs correspond to IN-NPQs in Sudo (2013) and Inner-HiNQs in Domaneschi et al. (2017), and similarly OHNPQs to ON-NPQs in Sudo (2013) and Outer-HiNQs in Domaneschi et al. (2017).

[10]For the same question nucleus core p, OHNPQ can be represented by *not-p too?* and IHNPQ by *not-p either?*.

b. LF: [$_{\text{CP}}$ Q VERUM [not [$_{\text{IP}}$ Jane is coming] either]] (Romero & Han 2004: (69))

(42) a. Isn't Jane coming **too**?

b. LF: [$_{\text{CP}}$ Q not [VERUM [$_{\text{IP}}$ Jane is coming too]]] (Romero & Han 2004: (73))

The epistemic conversational operator VERUM creates an unbalanced partition of the denotations of the NPQs. Because of Gricean Conversational Principles and Principle of Economy ((26) in §1.2.4), this unbalanced partition induces the speaker's epistemic bias (see §1.2.4 for a brief discussion).

Sudo (2013) further synthesizes the analyses from Büring & Gunlogson (2000) and Romero & Han (2002, 2004) and proposes that NPQs have both epistemic bias and evidential bias. IHNPQs like *not-p (either)?* require contextual evidence against p while having a speaker's prior bias for *p*. OHNPQs like *not-p (too)?* require the context not to provide any contextual evidence for *p* while having a speaker's bias for *p*. The contextual requirements and the epistemic biases of NPQs listed by Sudo are supported by a recent experimental study on bias in polar questions in English and German (Domaneschi et al. 2017). The results of the work show that polar questions in English and German pattern very similarly with respect to original bias (epistemic bias) and evidence bias (evidential bias), as illustrated below.

		ORIGINAL BIAS		
		p	**Neutral**	**¬p**
CONTEXTUAL	**p**		PosQ/*Really*-PosQ	*Really*-PosQ
EVIDENCE	**Neutral**	HiNQ(outer)[11]	PosQ	
	¬p	HiNQ(outer/inner)	LowNQ	

Table 3.1: Overview of the primary choices in English and German.
(Domaneschi et al. 2017: Table 20)

The results presented in the table confirm Sudo's (2013) summary that IHNPQ and OHNPQ always carry a (prior) epistemic bias on the side of the speaker. For IHNPQ and OHNPQ with the same question nucleus core *p*, the epistemic bias is that the speaker believes *p*. Furthermore, neither of them can be used in a context with contextual evidence for *p*.

Consider again in this light *nandao*-Qs. As discussed in Sun (2007), the adverb *nandao*

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[11]PosQ=PPQ, HINQ(outer)=OHNPQ, HINQ(inner)=IHNPQ, LowNQ=NPQ with non-preposed negation.

originates historically from the combination of the character *nan* ('hard') and *dao* ('speak') which means *it is hard to say.* The original meaning has a negative connotation (*it is hard to say p* implicates *it is not p*), so Sun attributes the feature [+Neg] to *nandao.* In view of this, since both *nandao* and the two High Negations necessarily produce epistemic bias readings, could it be that *nandao* is also a kind of High Negation which obligatorily triggers VERUM focus? The answer is negative and the reasons are two-fold.

First of all, if *nandao* was a kind of High Negation, the epistemic bias conveyed in *nandao-p?* would be that the speaker believes *p*, like those conveyed by the other two High Negations with the same question nucleus core *p* (e.g. *not-p (too)?* and *not-p (either)?*). But, (14) in this chapter clearly shows that the fact is opposite to the assumption, in that *nandao-p?* actually expresses a negative epistemic bias in which the speaker believes *not-p* (is more likely).

The other reason to reject the assumption of *nandao* being a High Negation comes from a gap in evidence conditions. As observed by Büring & Gunlogson (2000), Sudo (2013), and Domaneschi et al. (2017) (see (19) on page 7 and Table 3.1), there is a gap for NPQs in the context with evidence for *p*. In fact *nandao-p?* can felicitously be used in a context of evidence either for *p* (43) or against *p* (44).

(43) (A and B are in a sound-proof office. There is only one window, and there is a curtain over the window. A and B cannot see or hear anything outside. They are arguing about what the weather is like outside. A insists it is sunny outside, while B believes that it is raining. In order to convince B, A draws aside the curtain. Sunshine comes inside through the window.)

A: Ni   kan! Nandao waimian zai   xiayu ma?
    You look nandao outside PROG rain   Y/N-Q

'Look! It is not raining outside!'   *nandao-p?* with evidence for *p*

(44) (Policeman A strongly believes criminal B has not escaped. During a search, A finds a receipt of yesterday's flight in B's name. So, A asks his colleagues,) (=(11))

A: Nandao ta feizou-le   ma?
    nandao he fly.go-ASP Y/N-Q

'He hasn't escaped, right?'   *nandao-p?* with evidence against *p*

4. *Nandao* is not VERUM

In (20) in §1.2.4 and Table 3.1, another type of biased question is given, one that can express epistemic bias, i.e. *Really*-PosQ. Given the question nucleus core p, it can also be represented as *Really-p?*. According to Romero & Han (2002, 2004), Romero (2006), and Domaneschi et al. (2017), the adverb *really* denotes VERUM which introduces the negative epistemic bias of the speaker, e.g. ¬p in *Really-p?* under Gricean Principles and Economy Principle. In terms of the form and the epistemic bias conveyed, *nandao-p?* is very similar to *Really-p?*. In this regard, we may wonder if *nandao* could also denote the epistemic conversational operator VERUM.

There are at least three reasons to reject such an assumption. First and foremost, VERUM is not restricted to polar questions like *nandao*. It can appear across a wide variety of sentence types. According to Höhle (1992),[12] at least in German, VERUM focus is found in declaratives, polar questions, WH-Qs, and even in imperatives.

(45) VERUM focus in declaratives (___ part):

   A: Karl hat bestimmt nicht gelogen
       Karl has definitely not   lied
       'Karl definitely has not lied.'

   B: (nein) Karl **hat** nicht gelogen
        no   Karl has not   lied
       '(No,) Karl HAS not lied.'

       ≈ 'It is true that Karl has not lied.'   (adapted from Höhle 1992: 113)

(46) VERUM focus in Y/N-Qs:

   (It is said that Karl has kicked the dog.)

   A: **hat** er den Hund denn getrenten?
       has he the dog   DENN kicked
       'HAS he kicked the dog?'

       ≈ 'Is it true that he has kicked the dog?'   (adapted from Höhle 1992: 113)

(47) VERUM focus in WH-Qs:

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[12]The VERUM focus analysis is first proposed by Höhle (1992). His idea inspires Romero & Han's (2002, 2004) VERUM-analysis of biased polar questions.

A: ich habe den Hund nicht getreten, und Karl hat es auch nicht getan
I   have the dog   not   kicked   and Karl has it too   not   kicked

'I haven't kicked the dog, and so hasn't Karl.'

B: wer **hat** den Hund denn getreten?
who has the dog   DENN kicked

'Who HAS kicked the dog?'

$\approx$ 'For which x, is it true that the person x has kicked the dog?'

(adapted from Höhle 1992: 113)

(48)   VERUM focus in imperatives:

A: nun **hör** doch damit auf
now listen DOCH so   to

'Now stop it!'

nimm dir endlich einen Stuhl.
take   you finally the   chair

'DO take the chair!'   (adapted from Höhle 1992: 119)

However, *nandao* in Mandarin has a much narrower distribution. As shown by examples in §1.3, *nandao* is only compatible with polar questions. If we try to analyze *nandao* as denoting a VERUM focus, we then have to assume that at the level of syntax *nandao* has a [+wh] feature which prevents it from occurring in declaratives and other [-wh] sentence types. But, again, in order to account for its incompatibility in WH-Qs, we have to stipulate a sub-type of [+wh] feature which solely checks Y/N-Qs. This kind of solution seems undesirable and *ad-hoc*, lacking explanatory power and theoretical grounding.

Next, as we can see from the experimental results in Table 3.1, *Really*-PosQ doesn't necessarily carry an epistemic bias. This is quite different from *nandao*-Qs which necessarily convey the speaker's bias.

Last but not least, the contextual evidence requirements for *Really*-PosQs like *Really-p?* are too stringent to allow the questions to appear in neutral contexts or contexts with evidence against p. As we have shown, *nandao-p?* questions are felicitous in contexts for and against p (cf. (43-44)).

The above three points sufficiently denies the possibility of treating *nandao* as denoting VERUM operator or treating *nandao*-Qs as *Really*-PosQs.

5. ***Nandao* is not Strong NPI**

Like VERUM focus, strong NPIs like *lift a finger* and *give a damn* can be used in different sentence types. They are not restricted to Y/N-Qs.

(49)   John doesn't give a damn about politics. (declarative)

(50)   Does John give a damn about politics? (Y/N-Q)

(51)   Who gives a damn about politics? (WH-Q)

Therefore, as discussed previously, it is not ideal to take *nandao* as a strong NPI.

Furthermore, questions with strong NPIs are necessarily rhetorical, since according to Guerzoni (2003, 2004)'s analysis the denotations of such questions contain only the "live answer(s)", to put it simply, answers that allow the use of those strong NPIs.[13] This doesn't pattern with *nandao*-Qs, as the latter allow both rhetorical and information-seeking readings.

All these reasons leave us with the option of analyzing *nandao* as a type of illocutionary modifier. This assumption will be further corroborated with more evidence from the syntax of *nandao* as well as a syntactic analysis of *nandao* proposed in §3.4.

3.3.5   The basic meaning of *nandao* and its formal preliminary

In previous subsections, especially §3.2 and §3.3.1, we got to know the basic meanings of *nandao* and *nandao*-Qs, which, for convenience, I have listed below.

1. *Nandao*-Q necessarily conveys the speaker's epistemic bias towards possible answers.

2. This bias can be strong or weak depending on the context.

3. No matter how strong or weak the bias is, it is always a negative one. The speaker is biased toward the negative polar answer.

4. The bias is not part of the Q meaning in *nandao*-Qs, but introduced by the adverb *nandao.* What Q does is to provide *nandao* with the set of possible answers.

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[13]For details of her analysis, see §1.2.2 of Chapter 1.

To summarize, the meaning of *nandao* in *nandao-p?* can be paraphrased as (52).

(52)   *nandao* takes the question denotation of $\langle p, \neg p \rangle$ as argument and creates an epistemic preorder of the two on the part of the speaker by conveying that $\neg p$ is more likely to be the true answer than p.

Given (52), we need to sort out three things in order to fully decode the meaning of *nandao*: how to select a specific answer out of the question denotation; how to model the epistemic preorder of the answers; and how to hook the epistemic preorder to the speaker. The first problem is what I called the selectional problem in Chapter 2. I have already presented a structural semantics based on the idea of *highlighting* (Roelofsen & van Gool 2010) and shown how it solves the selectional problem. For the remaining parts of this chapter, I address the last two problems. In this subsection, I deal with the problem of modeling the epistemic preoder of all the answers, leaving the last problem to §3.4 and §3.5.

In this thesis, I use the standard semantics for modality (Kratzer 1981, 1991, 2012) to model the epistemic preorder aspect of *nandao*'s meaning. Before doing so, let me briefly discuss the relevant aspects of the framework.

Within the Kratzerian theory of modality, the meaning of modalized sentences is relative to two conversational backgrounds, the modal base f and the ordering source g. Both of these are functions from worlds to sets of propositions. We can treat modals as quantifiers over the modal base. Modals expressing possibilities are defined as existential quantifiers over f. Modals expressing necessities are regarded as universal quantifiers over the modal base. The modal base f is relative to the types of modals in the modalized sentences. *Epistemic modals* introduce an *epistemic* modal base which is the intersection of the set of all propositions that represent the relevant background facts, knowledge, and evidence. *Deontic modals* introduce a *deontic* modal base which is the intersection of the set of all propositions that constitute relevant rules and social norms. Note that, according to Kratzer, the modal base f is not part of the lexical meaning provided by modals. The modal base is determined by the context and conversational background. Separation of the modal base from the lexical meanings of modals can account for the widely observed ambiguities in modals. This is what is called a "unifying account" of modals (cf. Hacquard 2011: §4).

The ordering source g ranks all the worlds of the modal base f according to a set of ideals or rules. The ranking order is determined by how close those accessible worlds in the modal base f are to the ideal, i.e. how many propositions in the ideal world are satisfied by the accessible worlds in f. The function of the ordering source g is to pick out a subset of the accessible worlds in f for the modal to quantify over, for the modal cannot ideally operate on all the accessible worlds. Below is the definition of the ordering $\leq_A$ induced by the set of ideal propositions A (A = $g(w)$):

(53)   *The Ordering $\leq_A$:*

For all w and z ∈ W:

w $\leq_A$ z if and only if {p : p ∈ A and z ∈ p} ⊆ {p : p ∈ A and w ∈ p}

(Kratzer 1981: 47)

Before the introduction of the ordering source g, the Kraterian theory of modality could only talk about possibility modal (e.g. *can*) and necessity modal (e.g. *must*) (Kratzer 1977). The system lacked the explanatory power to discuss grades of possibility (e.g. *slightly possible*, *probable*) and comparative possibility (ϕ has better possibility than ψ) (cf. Portner 2009, Lassiter 2010, 2011, Hacquard 2011). By introducing the notion of ordering in (53), Kratzer (1981, 1991) defines a number of finer modal relations, including *human possibility*, *human necessity*, *slight possibility*, and *comparative possibility*. The problem of how to model the epistemic preorder of the answers is concerned with the modal relation between two propositions, i.e. *comparative possibility* which is defined by Kratzer (1981) as follows.

(54)   *Comparative Possibility:*

A proposition p is more possible than a proposition q in a world w in view of a modal base f and an ordering source g if, and only if, the following conditions are satisfied:

a. For all $u \in \bigcap f(w)$:

If $u \in q$, then there is a world $v \in \bigcap f(w)$ such that $v \leq_{g(w)} u$ and $v \in p$.

b. There is a world $u \in \bigcap f(w)$ such that:

$u \in p$ and there is no world $v \in \bigcap f(w)$ such that $v \in q$ and $v \leq_{g(w)} u$.

(Kratzer 1981: 48)

Following Lassiter's (2011) notation, the notion of comparative possibility can be represented as follows,

(55) ϕ is more possible than ψ (written as $\phi \succ^s_{g(w)} \psi$) iff $\phi \succeq^s_{g(w)} \psi$ and $\psi \not\succeq^s_{g(w)} \phi$, given

$\succeq^s_{g(w)} := \{(\phi, \psi) \mid \forall u \in \psi \exists v : v \preceq_{g(w)} u \wedge v \in \phi\}$, where $u, v \in \bigcap f(w)$.

(adapted from Lassiter 2011: 21-22)

Thus, in a *nandao-p?*, the core meaning of bias can be represented as the speaker believes that $\neg p \succ^s_{g(w)} p$.

So far, we have seen from examples that *nandao* introduces a negative bias. But why a negative bias? Is it a random attribute universal to BQWs? We know that it is not a universal attribute of BQWs, since one of the BQWs, *naki* in Bangla, always expresses a positive bias.

(56)   Tumi jaccho   naki?   (= (43b) of Chapter 1)
       You   go.2P.PROG naki.INF

       'You are going, right?'

This suggests that the negative bias comes from the lexical properties of *nandao* itself. It is not surprising though, considering the morphology of *nandao*. As I have mentioned in §3.2, *nandao* consists of two characters, namely *nan* ('hard') and *dao* ('speak'). Literally, *nandao* means *it is hard to say....* When the literal meaning meets with the salient highlighted answer *p* in *nandao-p?*, what we get is *it is hard to say p* which implies that *it is easy to say not-p*. On the part of the speaker, it then has the meaning of *not-p is more likely than p*. This analysis is in accordance with the diachronic morphological development of *nandao* as observed in Sun (2007).

3.4   The syntax of *nandao*

With the core meaning of *nandao* at hand, now we are left with giving the syntax of *nandao* a comprehensive compositional analysis. In §1.3 of Chapter 1, I have briefly summarized some distributional restrictions of BQWs in respective languages. Basically, all BQWs are fixed to a certain type of sentences in which they can occur. Taking *nandao* as an example,

nandao cannot appear in declaratives (57), Alt-Qs (58-59), or WH-Qs (60), but in Y/N-Qs only (61).

(57)   *   Nandao Lisi hui lai.   (declarative = (45))
          nandao Lisi will come

          (Intended) 'Lisi will not come.'

(58)   *   Nandao Lisi xihuan he   cha haishi kafei? (Alt-Q)
          nandao Lisi like   drink tea or   coffee

          (Intended) 'Does Lisi like to drink tea or coffee?'

(59)   *   Nandao Lisi xi-bu-xihuan he   cha? (A-not-A-Q)
          nandao Lisi like-not-like drink tea

          (Intended) 'Does Lisi like to drink tea or not?'

(60)   *   Nandao shui bang-guo ni   ne?   (WH-Q = (48))
          Nandao who help-EXP you WH-Q

          (Intended) 'Who helped you?'

(61)   Nandao Zhangsan chi-le   fan (ma)? (Y/N-Q = (42b))
          Nandao Zhangsan eat-ASP rice Y/N-Q

          'Zhangsan didn't have a meal, right?'

The above distributional restriction of *nandao* can be referred to as its *intersentential distribution*. As I have discussed in Chapter 2, this intersentential distribution is closely related to the selectional problem. The selectional problem has a lot to do with the semantics of declaratives and questions (in particular Y/N-Qs). Thus, I will discuss this in detail in §3.5.3 after we have the compositional semantics of *nandao*-Qs.

In the current section, I will focus on a more micro aspect of the syntax of *nandao*, i.e. the syntactic distribution of *nandao* within *nandao*-Qs (*intrasentential distribution*).

3.4.1   Declarative questions or Y/N-Qs?

In Mandarin, the Y/N-Q particle *ma* is optional when forming a Y/N-Q (Li & Thompson 1981, Liu 1988). Without the particle *ma*, the only indication that a sentence is a Y/N-Q is a rising intonation.

(62)   Zhangsan da-le   Lisi   ma? (Y/N-Q with *ma*)
          Zhangsan hit-ASP Y/N-Q

          'Did Zhangsan hit Lisi?'

(63) Zhangsan da-le   Lisi? (Y/N-Q without *ma*)
      Zhangsan hit-ASP

      'Did Zhangsan hit Lisi?'

(64) Zhangsan da-le   Lisi. (Declarative)
      Zhangsan hit-ASP

      'Zhangsan hit Lisi.'

However, this creates a problem for us to distinguish declarative questions (Gunlogson 2001, Gunlogson 2008; see (66) in English) from normal Y/N-Qs (see (65) in English) in Mandarin.

(65) Is it raining? (Rising polar interrogative)

(66) It's raining? (Rising declarative)

(67) It's raining. (Falling declarative) (Gunlogson 2001)

In English, declaratives and polar questions have clearly different surface syntax. Polar questions undergo "Subject-Auxiliary Inversion" (cf. Quirk et al. 1985). Thus, a declarative question can be easily distinguished from a polar question, because the former (e.g. (66)) has the same surface syntax as the corresponding declarative sentence (e.g. (67)). But, in Mandarin, as we can see from (62)-(64), no difference in surface syntax order can be found between questions and declaratives.

As for *nandao*-Qs, the problem remains: the particle *ma* is also optional.

(68) Nandao zhe jiushi   shichang jingji   (ma)?
      nandao this just.be market   economy Y/N-Q

      'This isn't Market Economy, right?'

This leaves two possibilities to the kind of questions that *nandao* can take to form *nandao*-Qs. *Nandao* can take either declarative questions or Y/N-Qs to form *nandao*-Qs. Or, it takes only Y/N-Qs.

Gunlogson (2008) provides a helpful diagnostic to differentiate Y/N-Qs from declarative questions. As declarative questions and declaratives have the same surface syntax, they behave similarly when they meet polarity sensitive items. A positive declarative cannot license a negative polarity item (NPI) such as *ever* or *any* in it (Baker 1970).

(69)   *John has ever hated his father.

(70)   *Mary has any questions.

Similarly NPIs are not allowed in declarative questions.

(71)   *John has ever hated his father?

(72)   *Mary has any questions?

On the other hand, NPIs are very common in questions, including positive polar questions (Klima 1964).

(73)   Has John ever hated his father?

(74)   Does Mary have any questions?

Thus, by using NPIs, we can easily identify declarative questions and polar questions.

In Mandarin, *renhe* ('*any*') is a typical NPI (Wang 1993).[14] Like NPIs in English, it can appear within the scope of negation or in a polar question.

(75)   Meiyou   renhe ren   xihuan Lisi.
       No.have   any   person like   Lisi
       'There isn't anyone who likes Lisi.'

(76)   You   renhe ren   xihuan Lisi ma?
       Have any   person like   Lisi Y/N-Q
       'Is there anyone who likes Lisi?'

But, it is not licensed in positive declaratives.

(77)   *You   renhe ren   xihuan Lisi.
         Have any   person like   Lisi
       (Intended) 'There is someone who likes Lisi.'

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[14]It should be noted that *renhe* can also function as a Free-choice Item (FCI) which does not need NPI-licensing contexts such as negations or questions. But, the FCI *renhe* is restricted to the scope of modals or generic operators (Wang 1993).

  1. Ni   keyi zuo renhe ni   xihuan de   shi.
     you can do any   you like   DEthing
     'You can do anything you like.'

  2. Wo xihuan renhe youqu   de   shu.
     I   like   any   interesting DEbook
     'I like any book which is interesting.' (267)

By using the NPI *renhe* as a diagnostic, we see that the questions *nandao* takes to form *nandao*-Qs cannot be declarative questions.

(78) Nandao you renhe ren   xihuan-guo ni   ma?
      nandao have any   person like-EXP   you Y/N-Q
      'There isn't anyone who liked you, right?'

Since *renhe* can be used in positive *nandao*-Qs, we can see that they are regular Y/N-Qs.[15] Thus, in *nandao*-Qs, what is under the scope of *nandao* are Y/N-Qs.

3.4.2   Intrasentential distribution

Generally, *nandao* can surface freely in sentences before the predicate, as in (79-81).

(79) Nandao Zhangsan bu renshi Lisi (ma)?
      nandao Zhangsan not know Lisi Y/N-Q
      'Zhangsan knows Lisi, right?'

(80) Zhangsan nandao bu renshi Lisi (ma)?
      Zhangsan nandao not know Lisi Y/N-Q
      'Zhangsan knows Lisi, right?'

(81) Zhangsan bu (*nandao) renshi Lisi (*nandao) ma?
      Zhangsan not nandao   know Lisi nandao   Y/N-Q
      (Intended) 'Zhangsan knows Lisi, right?'

But, this free pattern cannot be found when *nandao* meets a focus DP (cf. Huang et al. (2009)).

(82) Nandao zhiyou/jiu [Zhangsan]$_F$ bu renshi Lisi ma?
      nandao only/just Zhangsan   not know Lisi Y/N-Q
      'It is not the case that only/just [Zhangsan]$_F$ doesn't know Lisi, right?'

(83)   * Zhiyou/jiu [Zhangsan]$_F$ nandao bu renshi Lisi ma?
         Only/just Zhangsan   nandao not know Lisi Y/N-Q
         (Intended) 'It is not the case that only/just [Zhangsan]$_F$ doesn't know Lisi, right?'

There could be two possible analyses of (79-83). One analysis assumes adverbial fronting. In this approach, *nandao* is base-generated at a lower position as in (80) and then moves to

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[15]There is a possibility for *renhe* to be licensed in a declarative question under the scope of *nandao*, if we treat *nandao* as a negation within the question nucleus. I have already ruled out this possibility in §3.3.4.

a higher position in (79). The higher position that *nandao* moves to might be the Mod(ifier) position whose specifier is the place for preposed adverbs (Rizzi 2002).

If *nandao* is base-generated as an IP adjunct, it can move to the Spec-ModP by preposing. Or, if *nandao* is base-generated at the specifier of IP-internal ModP, it still can move to the higher Spec-ModP for preposing. Meanwhile, as a focused element, the subject DP *Zhangsan* moves into the focus position and joins the focus sensitive operator (cf. Wagner 2005, 2006). Either focus movement or adverb movement may be blocked if the focused DP and the adverb *nandao* are of the same structural type, according to Rizzi's (2002) Relativized Minimality effect (84-86).
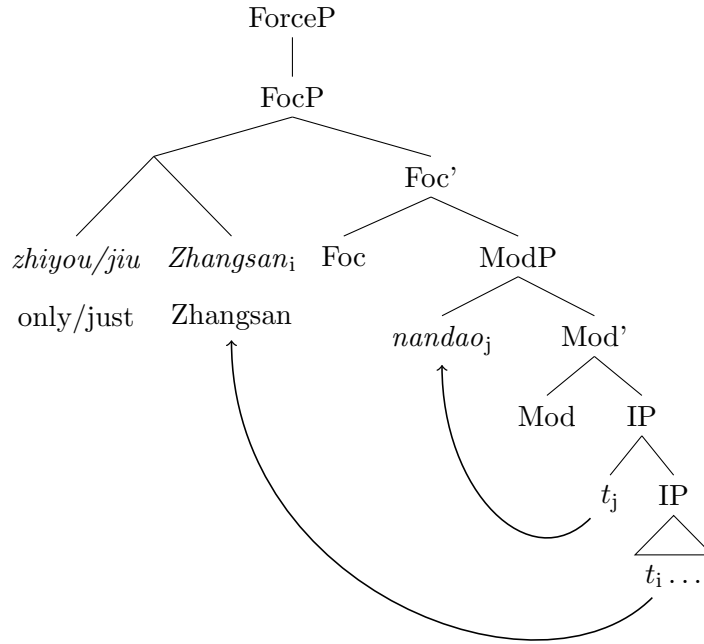
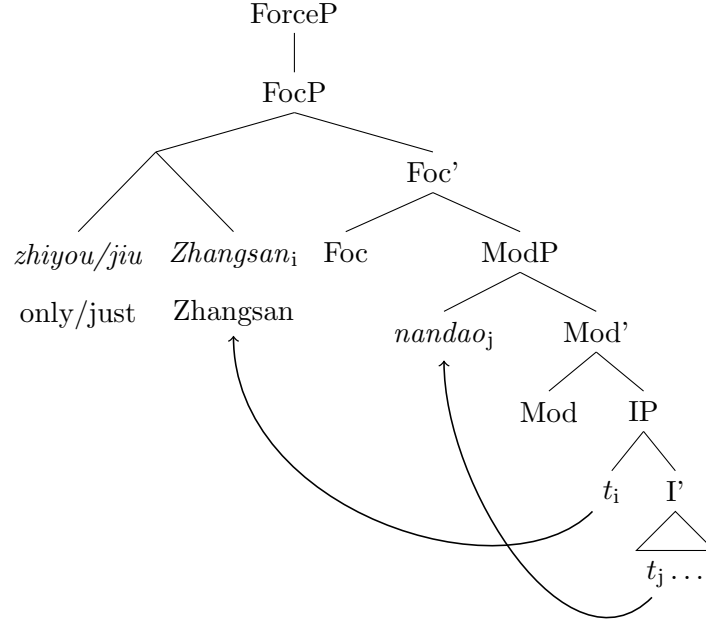(84)   Y is a Minimal Configuration (MC) with X iff there is no Z such that

(i) Z is of the same structural type as X, and

(ii) Z intervenes between X and Y

(85)   "Same structural type" = (i) head or Spec and, in the latter class, (ii) A or A'

(86)   Z intervenes between X and Y iff Z c-commands Y and Z does not c-command X.

(225)

```
                        ForceP
                          |
                        FocP
                       /      \
                            Foc'
                           /      \
   zhiyou/jiu   Zhangsan_i  Foc     ModP
                                   /     \
   only/just    Zhangsan        nandao_j   Mod'
                                          /    \
                                        Mod     IP
                                               /   \
                                             t_i     I'
                                                    /\
                                                  t_j ...
```

As both FocP and ModP are C-domain projections, the focus movement and the adverb-preposing movement are both considered A'-movements. Thus, the target specifier positions for the focused subject DP and the adverb *nandao* are both A'-positions. Thus, we should expect relativized minimality effects which will make both (82) and (83) ungrammatical.

However, according to a condition that further specifies same structural types of specifiers (88), the two A'-movements may not block each other if *nandao* and focused DP do not belong to the same structure type under the typology of the licensing substantive features (87).

(87) a. Argumental: person, number, gender, case

   b. Quantificational: Wh, Neg, measure, focus...

   c. Modifier: evaluative, epistemic, Neg, frequentative, celerative, measure, manner,...

   d. Topic

(88) "Same structure type" = Spec licensed by features of the same class in [(87)].

(Rizzi 2002: 243)

As we can see from (87), *nandao* belongs to the group of Modifier (adverb) while focus belongs to the Quantificational group. According to (88), they do not belong to the "same

structure type[s]". We don't expect to see any intervention effects or relativzied minimality effects if *nandao* moves over the focused subject DP or if the focused subject DP moves across *nandao* (Rizzi 1997, 2002). Under this analysis, there is no principled way to exclude the possible syntactic configuration in (83), which is contrary to our judgment of (83).

The implausibility of adverbial movement analysis raises the question of why *nandao* is restricted in the way we see in (79-83). I propose that what moves to the sentence-initial position are DPs not *nandao*. In Mandarin, DP movementis common, of which Topic Movement (Topicalization) is one.

(89)   Zhangsan_i nandao t_i bu renshi Lisi ma?

Yin (2006) finds that the sentence-initial DP in *nandao*-Qs are topics. Huang et al. (2009) also argue the subject preceding *nandao* in a *nandao*-Q is presupposed material. Usually, we can add a pause (in oral form) or a comma (in written form) between the sentence-initial DP and *nandao* (90). And, we can even have a resumptive pronoun to fill the gaps of the moved sentence-initial DP and refer to it (see also (90))). All these are typical characteristics of Topicalization (Tsao 1977, Shi 2000).

(90)   Lisi, nandao Zhangsan bu renshi (ta) ma?
       Lisi nandao Zhangsan not know him Y/N-Q
       'Zhangsan knows Lisi, right?'

There is another way to show the topical status of the DP that precedes *nandao*: we can add the contrastive topic marker *-ne* (Constant (2014)) to the DP in colloqial Mandarin, given a proper context.

(91)   (A knows that Xiaoli doesn't know Lisi.)

       A: Zhangsan-ne, nandao ye   bu renshi Lisi?
          Zhangsan-CT nandao also not know Lisi
          'Zhangsan knows Lisi, right?' (Compare (80))

But, we cannot further move *nandao* over the contrastive topic to the sentence-initial position.

(92)   (A knows that Xiaoli doesn't know Lisi.)

> A: * nandao$_i$ Zhangsan-ne, t$_i$ ye   bu renshi Lisi?
>   nandao Zhangsan-CT   also not know Lisi
>
>   (Intended) 'Zhangsan knows Lisi, right?'

More evidence that the sentence-initial DP is a topic in *nandao*-Qs is shown below (see also Huang et al. 2009: 239):

(93) zheren   nandao shi Xiaoming ma?   (Definite DP > *nandao*)
      This.person nandao be Xiaoming Y/N-Q

      'This man is not Xiaoming, right?'

(94)   * you ren   nandao xihuan Xiaoming ma?   (* Indef DP > *nandao*)
        exist person nandao like   Xiaoming Y/N-Q

         (Intended) 'No one likes Xiaoming, right?'

(95) nandao you ren   xihuan Xiaoming ma?   (*nandao* > Indef DP)
      nandao exist person call   Xiaoming Y/N-Q

      'No one likes Xiaoming, right?'

(93-95) tell us that the DP that precedes *nandao* must be definite, which is in accordance with Tsao's (1977) "Referential Requirement on Topic" and Li & Thompson's (1981) characterization of topics in Mandarin.

All the above patterns suggest that *nandao* is syntactically lower than TopP, the host position of topics (Rizzi 2002, Constant 2014), i.e. Top > *nandao*.

On the other hand, in (82) and (83), a focus DP cannot move beyond *nandao*. This phenomenon tells us two things. One is that a DP that moves to the focus position cannot further move to the topic position, which is predicted by Freezing effect:

(96)   Criterial Freezing

       A phrase meeting a criterion is frozen in place. (Rizzi 2006: 112)

When a DP moves to a criterial position (e.g. FocP), it is frozen in that position and cannot further move to other criterial positions, such as TopP.

The other conclusion is that *nandao* is syntactically higher than FocP. If *nandao* was syntactically lower than FocP where the Subject moves to in (83), we would predict that (83) should be grammatical. Because there is no intervention effect between *nandao* and

focus. The ungrammaticality of (83) and crucially the grammaticality of (82) suggest that *nandao* > Foc.

To summarize,

(97) Top > *nandao* > Foc

Other than the sentence-initial position and positions between sentence-initial DP and the predicate, *nandao* can occasionally appear sentence finally in colloquial Mandarin.

(98) Zhangsan bu renshi Lisi ma(,) nandao?
      Zhangsan not know Lisi Y/N-Q nandao
      'Zhangsan knows Lisi, right?'

Comparing (98) with (81), we can see that *nandao* must be placed after the Y/N-Q particle *ma*. Following the analysis of Japanese question particle *-ka* which marks the scope of the question containing it (Nishigauchi 1990), we may conclude that *nandao* is outside of the scope of Y/N-Qs, or we can also say that *nandao* is syntactically higher than the embedded question. In the framework of Rizzi (2001, 2002), IntP is the full projection for Y/N-Qs.[16] Hence, we may claim that *nandao* > IntP.

A further piece of evidence for *nandao* > IntP comes from the Y/N-Q scope test (Zimmermann 2008). In the standard analysis of Y/N-Qs (Hamblin 1973), Y/N-*op* takes all the propositional content in its scope as its question nucleus and turns it into a set of all possible answers. Thus, if a lexical item within the scope of a Y/N-Q contributes to the propositional content of the question nucleus, the lexical item should be part of the input for the whole question formation. (99) exemplifies such a case.

(99) A: Is John possibly a doctor?

      B: Yes/No.

When B replies *Yes*, he doesn't mean *John is a doctor*, but rather he acknowledges the possibility of *John being a doctor*. When he says *No*, he intends to deny the possibility that *John is a doctor*.

---

[16]Note that it is also the projection whose Specifier position can host adverbial WH-words like *perché* ('why') and *come mai* ('how') Italian.

Following this logic, Zimmermann (2008) tests the German discourse particle *wohl* in a Y/N-Q. His idea is as follows:

> If *wohl* made up part of the propositional meaning of an utterance, a proposition containing *wohl* should behave just like other propositions under question formation. (Zimmermann 2008: 207)

In his analysis, the particle *wohl* expresses an epistemic attitude ASSUME.

(100)   Hein ist *wohl* auf See.
        Hein is wohl at   sea

      = Speaker assumes that Hein is at sea. (adapted from ibid.:200)

Thus, if *wohl* takes scope under question formation, we would expect the following meaning for questions containing *wohl*.

(101)   a. Ist Hein *wohl* auf See?
          Is Hein wohl at   see
      b. ?{assume(addressee, Hein at sea), ¬assume(addressee, Hein at sea)}
          $\approx^{17}$ 'Tell me whether you assume that H. is at sea, or whether you don't assume that H. is at sea' (ibid.)

According to the semantic representation of (101), the question is supposed to ask about whether the addressee assumes Hein is at sea or not. It is not supposed to be a question about the whereabouts of Hein (i.e. at sea or not). Thus, we should expect (102) to be a felicitous answer to the question. Yet, in reality, the answer turns out to be infelicitous.

(102) # No, I don't assume that Hein is at sea.

In fact, the question (101) is indeed asking for Hein's whereabouts rather than the addressee's epistemic states about Hein's location. Thus, a negative answer like (103) is a felicitous answer.

(103) No, Hein is not at sea.

---

[17] ≈ indicates the sentence after it is an approximate translation.

From these we can see that *wohl* is not under the scope of the question formation, but rather scopes over it. This conclusion is best captured in the following semantic representation for (101), as proposed by Zimmermann.

(104) ? **ASSUME** {Hein is at sea, ¬ Hein is sea}

  ≈ 'Tell me (granted a degree of uncertainty) whether Hein is at sea or not.'

<div align="right">(Zimmermann 2008: 207)</div>

A similar analysis of *perhaps* in English is given by Nuyts (2000).[18]

(105) Is John perhaps a gambler? (Nuyts 2000: 109)

His argument is in the same logical vein as Zimmermann's (2008).

> . . . the adverb is not the questioned constituent here. . . — the question is whether John is a gambler, not whether this is the case with some (small) degree of certainty. In fact, the adverb does not even express epistemic modality here, but is much rather a speech act modifier, suggesting that the questioner expects a positive answer (cf. van der Auwera 1983). (ibid.: 110)

Following the same line of reasoning, in a *nandao*-Q, if *nandao* contributes to the propositional content within the scope of Y/N-*op*, we would expect that the epistemic bias meaning of *nandao* (i.e. a discourse participant, such as the speaker, believes that the negative polar answer is more likely than the positive one) should appear in the answers. Thus, the answers to (106a) would be (106b).

(106) a. Nandao Zhangsan qu-le Meiguo?
   nandao Zhangsan go-ASP America
   'Zhangsan didn't go to America, right?'

  b. ≈ 'Tell me whether you believe that Zhangsan went to America, or whether you don't believe so.'

However, answers like (106b) are not felicitous, and no epistemic bias meaning of *nandao* can be found in typical answers to (106a) (see (107)).

(107) Q: Nandao Zhangsan qu-le Meiguo?
   nandao Zhangsan go-ASP America
   'Zhangsan didn't go to America, right?'

---

[18]See the contrast between *possibly* and *perhaps* in (99) and (105).

A: # Shia,   wo shi zheme renwei de.
    Yes.ah I   be so   think DE

(Intended) 'Yes, I believe so.'

A': Shia,   ta qu-le/ Meiyou, ta mei qu.
    Yes.ah he go-ASP No   he not go

'Yes, he went to America/No, he didn't go to America.'

There is another possibility that *nandao* is within the question nucleus but scopes out of it: *nandao* was a propositional not-at-issue content encoder which doesn't contribute to the at-issue question semantics. But I have already ruled out this possibility in §2.1 in Chapter 2. If *nandao* is a propositional not-at-issue content encoder, nothing would prevent it from appearing in declaratives and in WH-Qs like *Why/When/How* questions. The fact that *nandao* is incompatible with declaratives and WH-Qs suggests that *nandao* is not a propositional not-at-issue encoder. Hence, we can conclude that *nandao* is not located within the scope of Y/N-op but above it.

Now, we have (108) as the structure of the left periphery of the clause.

(108) Top > *nandao* > IntP, Foc.

Since *nandao* contributes to *nandao*-Qs an epistemic bias, expressing that the negative polar answer is more likely than its alternative, I assume *nandao* to be an epistemic modal adverb. According to Lyons (1977), there are two kinds of epistemic modalities in natural languages (see also Kratzer (1981) for a semantic discussion).

> In principle, two kinds of epistemic modality can be distinguished: objective*
> and subjective*... [O]bjective modalization differs from subjective modalization, the
> very essence of which is to express the speaker's reservation about giving an un-
> qualified, or categorical, "I-say-so" to the factuality of the proposition embedded in
> his utterance. Subjectively modalized statements... are statements of opinion, or
> hearsay, or tentative inference, rather than statements of fact; and they are reported
> as such... Subjective epistemic modality can be accounted for... in terms of the
> speaker's qualification of the I-say-so component of his utterance. Objectively modal-
> ized utterances... can be described as having an unqualified I-say-so component, but
> an it-is-so component that is qualified with respect to a certain degree of probability,
> which, if quantifiable, ranges between 1 and 0. (Lyons 1977: 797-800)

In his framework, Lyons (1977) assumes a tripartite structure of utterances:

(109) .. *p*

The first full stop stands for the *I-say-so* part, the second one for the *it-is-so* part. *p* is the propositional content. According to the schema, the *I-say-so* part scopes over the *it-is-so* part. Combining the schema with the information in the quote, we reach an important conclusion: subjective modals which qualify the *I-say-so* part of an utterance have wider scope than objective modals that qualify the *it-is-so* part of the utterance. In Lyons's proposal, the *I-say-so* part provides illocutionary force, including interrogation, and the *it-is-so* part is propositional content.

This structure much resembles the syntactic CP-IP distinction. I have assumed Rizzi's (2001) and Rizzi's (2002) Split-CP hypothesis and his cartography of syntax.

(110) Force   Top*   Int   Top*   Focus   Mod*   Top*   Fin   IP

The *I-say-so* part corresponds to Force, which is a head hosting illocutionary forces, such as interrogation, assertion and imperative, while the *it-is-so* component includes all the projections that are in the complement of ForceP.

Since *nandao* does not contribute to the propositional meaning of Y/N-Qs and has wide scope with respect to it, it must be a subjective epistemic modal rather than an objective one. A further piece of support for *nandao* being a subjective epistemic modal comes from (111).

(111) Zhangsan is a Chinese policeman. He strongly believes that a criminal he has been chasing is still lingering around. One day, when he searches the criminal's house, he finds a flight booking confirmation email in the criminal's computer. It is a ticket to the U.S. with the criminal's name on it. But the date shown on it is the day before that day. He asks his colleague:

Z: Nandao ta pao dao   Meiguo qu-le?
   nandao he run arrive America go-ASP
   'He didn't escape to America, right?'

In this situation, even if there is strong evidence (i.e. *the booking record of a flight to America*) against the speaker's prior belief that *the criminal still lingered around*, the speaker can still utter the *nandao*-Q to imply his continuing belief against the objective evidence. In that case, the question still conveys that *the criminal didn't escape to America* is more likely

to be true than *he did*.[19] If *nandao*-Qs expressed an objective epistemic modal meaning, it should have been biased towards the positive answer *the criminal escaped to America*, which is not the case as shown in (111). The bias towards the negative answer, namely the speaker's belief, in (111) suggests *nandao*-Qs express subjective epistemic modal meaning.

Thus, it can be concluded that *nandao* is a subjective epistemic modal adverb and hence qualifies the illocutionary force of interrogation. Syntactically speaking, I assume that **nandao is an illocutionary modifier** which is an adjunct to ForceP.

The idea of modal particles as modifiers of illocutionary force is not novel. Hengeveld (1987), Hengeveld (1988), Jacobs (1991), Waltereit (2001), von Fintel (2003), and Zimmermann (2008) all analyze modal particles from a speech-act-theoretic perspective. Speech acts are especially good hosts for subjective epistemic modification, as noted by Krifka (2014): "in speech acts the speaker expresses some attitude, like a belief or desire." (5)

In our case, *nandao*, as a subjective epistemic modal adverb, qualifies the degree of speaker's belief towards the possible answers of *nandao*-Qs.

Now, this may appear to conflict with the syntactic conclusion that we reached earlier in this section, i.e. Top > *nandao* > IntP, Foc. In (110), even the highest Topic is lower than Force. Then, how could *nandao* be an adjunct to ForceP and modify the interrogative act?

Krifka (2001b) and Tomioka (2010) provide a solution to this problem. In their proposals, (contrastive) topics scope over illocutionary forces and operate on the speech act level. They provide direct evidence for such a claim in English and Japanese.

(112) English: (Krifka 2001b: 25)

    a. As for Al, which dishes did he make? (Interrogation)

    b. The hamburger, please hand it to me. (Imperative)

    c. This guy, he should go to hell! (Curse)

(113) Japanese: (Tomioka 2010: 121)

---

[19]In a *nandao-p?*, the contextual evidence against the speaker's belief (i.e. against $\neg p$) will increase the possibility of p. The presence of the counter-evidence shifts the "focus" (in a non-technical sense) of the *nandao-p?* from the speaker's belief to the increased possibility of p. That's why, the question is asked to seek the confirmation of either $\neg p$ is true (his belief is more reliable) or p is true (the contextual evidence is more reliable), although the speaker's bias still holds.

 a. ...Zyaa Erika-WA/ERIka-wa doko-e itta-no?
   ...then Erika-TOP/ERIKA-top where went-Q

  '..., well then, where did ERIka go?'   (Interrogation)

 b. Eego-WA/EEGO-wa   tyanto   yatte-ok-e.
   English-TOP/ENGLISH-top without-fail do-prepare-imp

  'At least, prepare yourself for ENGLISH.'   (Imperative)

These cases establish movement out of various kinds of speech acts, including interrogation and imperative, in which the moved DPs are topics. In view of the above language data, Krifka (2001b) comments as follows

> I take this as support of the assumption that topics can be interpreted outside
> of speech acts. Going one step further, one could argue that topics even *have to*
> scope out of speech acts. (Krifka 2001b: 25)

Similarly, topic movement out of speech acts is common in Mandarin:

(114) a. Zhewan fan, shui dong-guo   ne?
    This.CL rice who touch-EXPWH-Q

   'As for this bowl of rice, who touched it?'   (Interrogation)

  b. (Ba) mianbao, gei wo na guolai.
    BA bread give I bring come

   'This bread, give it to me.'   (Imperative)

With the evidence above, we may assume an extended cartography of the left periphery of CP as:

(115) Top*   Force   Int   Top*   Focus   Mod*   Top*   Fin   IP

With the new cartography of CP, there is no problem for *nandao* to be generated as an adjunct to ForceP. Following the common practice of Chomsky-adjunction in X-bar theory (Chomsky 1986) and Krifka's (2014) syntax for speech-act-modifying adverbials, I propose the following syntactic configuration for *nandao-p?* questions.

```
                              TopP
                               |
                             ForceP
                        ┌──────┴──────┐
                     nandao        ForceP
                               ┌──────┴──────┐
                             Force          IntP
                               |             |
                            QUEST           Int'
                                        ┌────┴────┐
                                       Int       FocP
                                        |          |
                                     [+wh]         IP
                                                   △
                                                   p
```
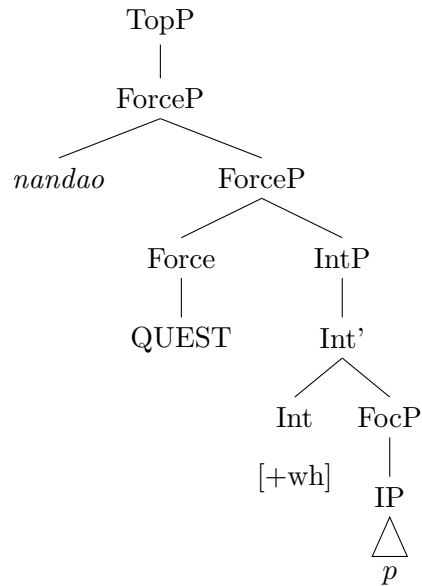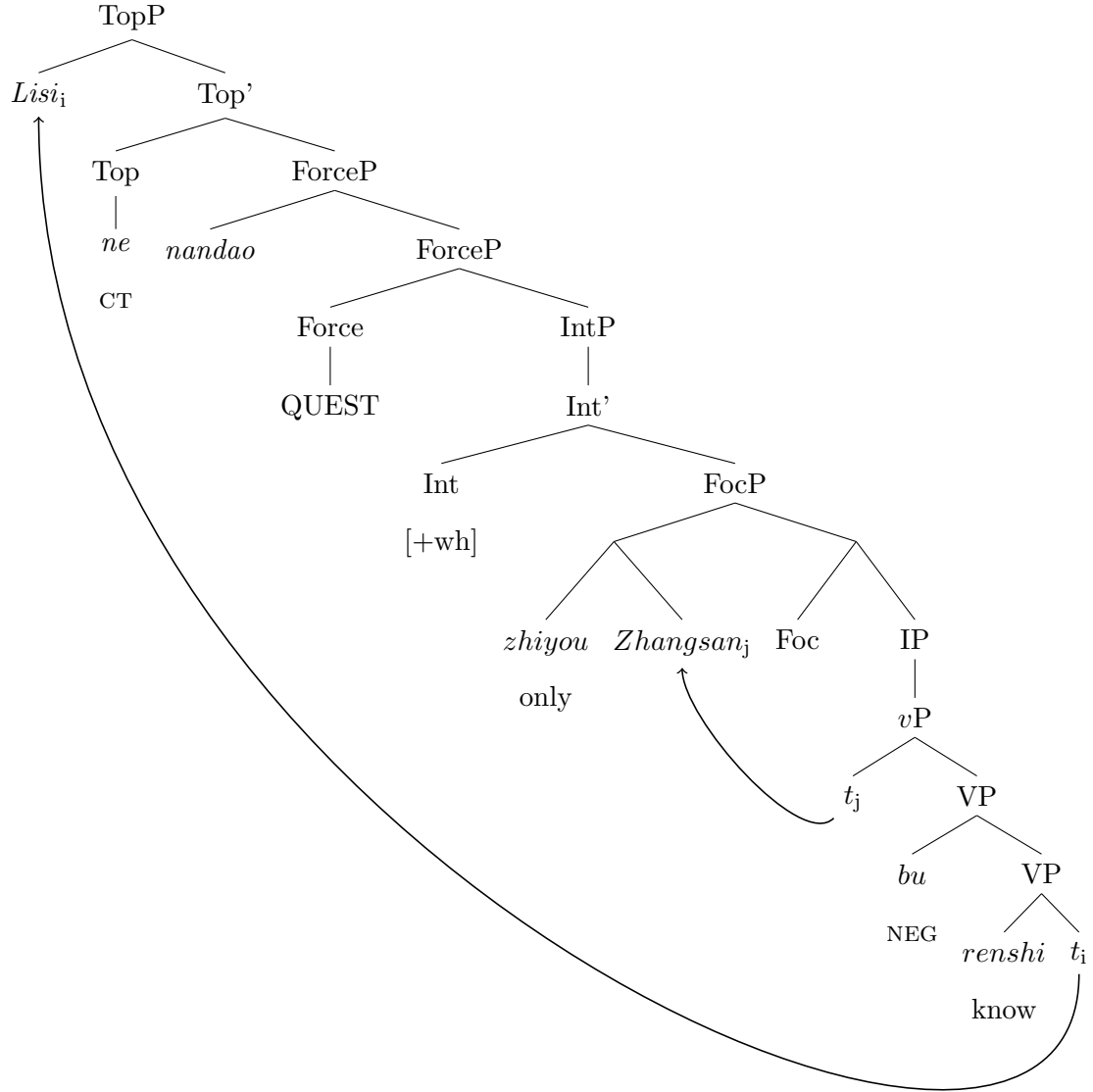
The syntax of (116) is given below (assuming Wagner's (2006) focus movement).[20]

(116) . . . Lisi ne, nandao zhiyou [Zhangsan]$_F$ bu renshi?
       . . . Lisi CT nandao only   Zhangsan   not know

       '. . . As for Lisi, it is not the case that only [Zhangsan]$_F$ knows him, right?'

---

[20]In (116), I omit the optional Y/N-Q *ma* for simplicity. For the syntax and semantics of *ma*, please refer to fn. 34 in §3.5.2 or an alternative analysis in Lin (2015).

TopP

*Lisi*ᵢ   Top'

Top   ForceP

ne   *nandao*   ForceP

CT   Force   IntP

QUEST   Int'

Int   FocP

[+wh]

zhiyou *Zhangsan*ⱼ Foc   IP

only   *v*P

*t*ⱼ   VP

bu   VP

NEG   *renshi* *t*ᵢ

know

3.5 A compositional analysis of *nandao*-Qs

3.5.1 *Nandao*-Q as Discourse Commitment update

As I have shown in §3.3.2, the bias expressed via *nandao*-Qs can be new information (see (18) as an example). Whenever the addressee hears *nandao-p?*, he becomes aware of the

speaker's **private**[21] attitude toward possible answers, i.e. the speaker's bias. In effect, by uttering *nandao-p?*, the speaker makes **public** this biased belief (i.e. that the speaker believes that $\neg p$ is more likely than p). In other words, the biased belief becomes a public belief of the speaker's when the *nandao-p?* is uttered.

Gunlogson (2001) defines the notion of "public belief" formally based on Stalnaker's (1978) idea of Common Ground, and proposes a way to manage all the public beliefs of each discourse participant in the context. In Stalnaker (1978), the CG can be viewed as all the mutual beliefs of all discourse participants. For example, $p \in$ CG means p is a mutual belief of all participants. To be more precise, it indicates that p is believed by every participant and every participant knows that all the other participants believe p. From this we can see that CG consists of (at least) two kinds of propositions: propositions independent of participants (e.g. p) and propositions related to each participant (e.g. *participant A believes p*).[22] However, a *public belief* (e.g. q), as proposed in Gunlogson (2001), is not a mutual belief, because it doesn't have to be a member of the CG. On the other hand, it is still related to the CG in that its recursive form (e.g. *participant A believes q*) belongs to CG. Contrasting with CG proposition, a public belief q of participant A does not have to be believed by every participant but every participant knows that participant A believes q. Thus, for a proposition p to become a member of the CG, it must be a public belief of A, a public belief of B, and so on. When it becomes the public belief of all the participants, then it becomes a part of CG. In this way, the CG can be viewed as the intersection of the sets of public beliefs of each participant. Along this line, Gunlogson (2001) defines public beliefs or *discourse commitments* (DC) as follows.

(117) Let $CG_{\{A,B\}}$ be the Common Ground of a discourse in which A and B are the individual discourse participants.

  a. DC_A of $CG_{\{A,B\}} = \{$ p: 'A believes p' $\in CG_{\{A,B\}}\}$

  b. DC_B of $CG_{\{A,B\}} = \{$ p: 'B believes p' $\in CG_{\{A,B\}}\}$ (41)

---

[21]Thanks are due to Sarah Murray (p.c.) for pointing out the notion of "private" to me. For more information on the notion of private beliefs, cf. Gunlogson (2008).

[22]As *participant A believes p* belongs to CG, we may also have its recursive form *participant B believes that participant A believes p*, and so on and so forth. As such the recursive nature of CG propositions is out of the scope of the current thesis, I will only focus on the two kinds I mentioned here.

When *nandao-p?* is uttered, the speaker's bias, $\neg p \succ^s_{g(w)} p$, becomes a public belief of the speaker's. In Gunlogson's (2001) terms, $[\neg p \succ^s_{g(w)} p] \in DC_s$[23]. Dynamically speaking, as the bias is new information contributed by *nandao*, we may regard the meaning of *nandao* as its Context Change Potential (CCP). In a dynamic update semantics such as Farkas & Bruce (2010), this CCP[24] can be represented as below.

(118) $[\![nandao - p?]\!](DC_{s,i}) = DC_{s,o} = DC_{s,i} \cup \{\neg p \succ^s_{g(w)} p\}$[25]

From (118), we know (one of) the functions of *nandao*-Q is to update the speaker's DC. To put it another way, *nandao*-Q commits the speaker to its epistemic bias toward the negative polar answer. Nevertheless, such a context update by *nandao*-Q deviates from what is claimed in Gunlogson (2002) about polar questions. Gunlogson (2002) argues that "polar interrogatives do not commit any participants to their descriptive content" (135). But she also puts a side note on presupposition by claiming that the presupposition of a question is the same as that of its declarative counterpart. She separates descriptive content from presupposition and only focuses on the former. If we expand her system a bit further by assuming descriptive content as at-issue content and presupposition as not-at-issue content, we may find that the CCP of polar questions in her theory only deals with at-issue content. In this way, the CCP of *nandao*-Qs is consistent with Gunlogson's (2002) CCP of polar questions, because in *nandao*-Qs, what has been updated to DC is not the at-issue content of Qs, but the not-at-issue content contributed by *nandao*.

Recall that in (19) of §3.3.2, although the bias of *nandao*-Q conveys new information, it is still felicitous to use it in a context where the information of the speaker's bias has already been established in the context. So, unlike CIs, *nandao*-Q does not show *antibackgrounding effects*. This discourse property of *nandao*-Qs can be captured by our current DC update analysis of *nandao*. (19) is repeated as (119) below.

(119) (A and B are talking about the war in Afghanistan. A thinks the US should retreat, while B disagrees. They know each other's stance quite well.) (= (19))

---

[23]s = speaker.

[24]Here, I focus only on DC update. A fuller picture of the CCP of *nandao* will be presented later in this section.

[25]i = input, o = output.

A: The US government cannot spend more money to keep the troops in Afghanistan.

B: But Al-Qaeda is still in power. We need the US troops to eliminate them once and for all.

A: More than two thousand soldiers have died!

Nandao meijun yinggai jixu zai Afuhan zhujun?
Nandao US.troop should continue at Afghanistan station.troop
'The US troops shouldn't continue to stay in Afghanistan, right?'

In (119), according to the given context, A's belief that *the US troops shouldn't continue to stay in Afghanistan* is public to all the participants. That is to say, before A even utters the *nandao*-Q, A's belief is already a member of $DC_{s,i}$.

(120) $\neg p^{26} \in DC_{a,i}$

Meanwhile, whenever A believes p, it is also true that A believes $p \succ^s_{g(w)} \neg p$.

(121) A belives $\neg p \models$ A belives $\neg p \succ^s_{g(w)} p$

With the above understanding, *nandao*'s non-antibackgrounding effect can be explained as follows.

(122) $[\![\textit{nandao-not-p?}]\!](DC_{s,i}) = DC_{s,o} = DC_{s,i} \cup \{\neg p \succ^s_{g(w)} p\}$

$\qquad = \{\ldots \neg p, \ \ldots\} \cup \{\neg p \succ^s_{g(w)} p\}$ $\hfill$ (120)

$\qquad = \{\ldots \neg p, \ \ldots, \neg p \succ^s_{g(w)} p\}$

$\qquad = \{\ldots \neg p, \ \ldots\}$ $\hfill$ (121)

$\qquad = DC_{s,i}$

$\therefore DC_{a,o}$'s update by *nandao* is trivialized.

(122) tells us that a *nandao*-Q is compatible with a context where the bias meaning conveyed by the *nandao*-Q is already backgrounded as a public belief of the speaker. In this case, the bias meaning will trivially update the speaker's DC set. This results in an unstressed prosody over *nandao* which marks Givenness in the sense of Schwarzschild (1999). When

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[26]For convenience, I use p to represent the proposition *the US troops should continue to stay in Afghanistan*. Its negative alternative $\neg p$ can be rephrased as *the US troops should not continue to stay in Afghanistan*.

the bias meaning is not backgrounded, *nandao* conveys new information. It is stressed and bears information focus. For a detailed experimental study of the prosodic differences on *nandao* and their implications, see Xu (2013).

3.5.2   *Nandao* as an Illocutionary Modifier

Recall that *nandao* encodes the bias meaning as not-at-issue content, as shown by its various semantic and discourse properties. For the sake of clarity and convenience, a comparison among presuppositions, Conventional Implicatures (CIs), and Illocutionary Modifiers (IMs) and the not-at-issue content conveyed by *nandao*-Qs is shown in Table 3.2.[27]

	P	CI	IM (*alas*)	IM (evidential)	*nandao*
Convey new information	×	✓	✓	✓	✓
Scope over operators	✓	✓	✓	✓	✓
Participant-oriented	×	✓	✓	✓	✓
***Hey, wait a minute* test**	✓	✓	✓	✓	✓
Backgrounding effect	✓	×	×	×	×
Antibackgrounding effect	×	✓	×	×	×
Question Formation Test	×	×	×	×	×

Table 3.2: Comparison among different kinds of not-at-issue content

According to the table, *nandao* patterns with IMs in all the tests, which confirms my earlier claim that *nandao* is a type of IM. The problem now moves from what *nandao* is to how *nandao* modifies illocutionary force.

In the logic of speech acts (Searle 1969, and especially Searle & Vanderveken 1985), an illocutionary force consists of seven components: *illocutionary point*, *degree of strength of the illocutionary point*, *mode of achievement*, *propositional content conditions*, *preparatory conditions*, *sincerity conditions*, and *degree of strength of the sincerity conditions*. Only the last four are relevant to our discussion of the felicitous uses of *nandao* and *nandao*-Qs, because they are the felicity conditions[28] of illocutionary forces.

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[27]Data are drawn from Beaver (2001), Faller (2002), Potts (2003), Amaral et al. (2007), Tonhauser (2012), Faller (2014).

[28]By "felicity", Searle (1969) means successfulness and non-defectiveness. A felicitous illocutionary act is an act that "ha[s] been successfully and non-defectively performed in the utterance of a given sentence" (54). He defines a set of felicitous conditions for an illocutionary act whose conjunction is mutually entailed by the successful and non-defective implementation of such an act. If any performance of such an act violates one or more (but not all) of those felicitous conditions, the illocutionary act would be regarded as being defective which might be performed or not. If performed, such an act would be redeemed as inappropriate

1. **Propositional content conditions**. Most illocutionary acts are associated with some propositional content, for example the propositional content for assertion is a proposition, the one for question is either a proposition or a propositional function. Specific acts may impose specific requirements on those propositional contents due to the nature of those illocutionary acts. For instance, we cannot make a promise of something that has already been done, nor can we promise for others to commit to the promise. These requirements are propositional content conditions.

2. **Preparatory conditions**. Preparatory conditions are a set of presuppositions that need to be satisfied for a successful and non-defective illocutionary act. "[I]n the performance of any illocutionary act, the speaker implies that the preparatory conditions of the act are satisfied" (Searle 1969: 65). For example, when a speaker expresses gratitude to someone, he implies that an action by the hearer benefits him. If the preparatory condition is not satisfied, e.g. the hearer did not do anything good to the speaker, what is the point of *thanking him*? Thus, we may regard preparatory conditions as the prerequisites for performing the corresponding illocutionary acts. In this vein, preparatory conditions are not what the speaker intended to express via the acts but are backgrounded information which the speaker **implies** the satisfaction of when performing the acts (ibid.).

3. **Sincerity conditions**. Sincerity conditions are about the kinds of psychological states the speaker has related to the propositional content when he performs an illocutionary act. These conditions are what the speaker tries to **convey** to the hearer via the illocutionary acts. For example, when a speaker asks a question the speaker wants the hearer to answer the question. When a speaker advises someone, the speaker expresses his doxastic state to the hearer that the action indicated in the advice will benefit the hearer.

---

or defective in the given situation.

4. **Degree of the strength of the sincerity conditions**.[29] Consider the two illocutionary acts *request* and *beg*. They share the same propositional content if the intended future action of the hearer is the same. They also share the same preparatory conditions: the hearer is able to do the action and the speaker believes so. Even their sincerity conditions are the same: the speakers wants the hearer to do the future action. But they are still considered as two similar but different illocutionary acts. People feel that they have different levels of strength. *Request* is a normal act of asking someone to do something, but *beg* will only be used in situations where the speaker has a stronger desire to ask people to do things. These different levels of the speaker's psychological states in performing the acts are what has been encoded by *Degree of the strength of the sincerity conditions*.

Searle (1969) provides a list of the above conditions for various illocutionary acts. For the current research, I excerpt his summary for the act of questioning below.

(123) **Conditions for questioning**

    a. *propositional content conditions*: any proposition or propositional function.

    b. *preparatory conditions*:

        i) S does not know the answer.

        ii) It is not obvious to both S and H that H will provide the information at that time without being asked.

    c. *sincerity conditions*: S wants this information.

    d. *essential conditions*: counts as an attempt to elicit this information from H.

<div align="right">(adapted from Searle 1969: 66)</div>

We know that the not-at-issue meaning of *nandao-p?*, that the speaker believes that $\neg p$ is more likely than p, expresses a psychological state of the speaker when he performs the act of questioning with *nandao-p?*. The question conveys this meaning as new information.

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[29]In Searle (1969), the original condition is called "Essential rule" which is to ensure that when all the other felicity conditions of an illocutionary act have been satisfied, that act counts as achieving the illocutionary point and hence the act is performed. Later in Searle & Vanderveken (1985), they drop this rule and replace it with "Degree of the strength of the sincerity conditions".

In this vein, the not-at-issue meaning is not expressed via preparatory conditions which presuppose backgrounded requirements of an illocutionary acts, but via sincerity conditions which express the speaker's psychological state at the time of the act. The difference in psychological states between the preparatory and sincerity conditions can be best captured by the following quote from Searle & Vanderveken (1985).

> . . . this does not imply that preparatory conditions are psychological states of the speaker, rather they are certain sorts of states of affairs that have to obtain in order that the act be successful and non-defective. Speakers and hearers internalize the rules that determine preparatory conditions and thus the rules are reflected in the psychology of speakers/hearers. But the state of affairs specified by the rules need not themselves be psychological. (Searle & Vanderveken 1985: 17)

A further piece of evidence for the *nandao* meaning being a part of sincerity condition comes from Searle & Vanderveken's (1985) test of "perform and deny".[30]

> The fact that the expression of the psychological state is internal to the performance of the illocution is shown by the fact that it is paradoxical to perform an illocution and to deny simultaneously that one has the corresponding psychological state. . . The reason for this is that when one performs that speech act one necessarily expresses the sincerity condition, and thus to conjoin the performance of the speech act with the denial of the sincerity condition would be to express and to deny the presence of one and the same psychological state. (Searle & Vanderveken 1985: 18-19)

Thus, it will always be quite absurd to do the following:

(124) # It is raining, but I don't believe it is. (Assertion)

(adapted from de Almeida 2001: 35)

(125) # I promise to come but I do not intend to come. (Promise)

(Searle & Vanderveken 1985: 19)

(126) # I order you to leave but I don't want you to leave. (Order)   (ibid.)

(127) # I apologize but I am not sorry. (Apologize)   (ibid.)

(128) # When will you go to America? I don't want to know. (Question)

On the other hand, the psychology of the speaker/hearer in preparatory conditions, at least sometimes, is not sensitive to this test.

---

[30]Rett (2016) inspired by Murray (2010) regards such a test as an example of "Moore's Paradox". However, Moore's Paradox deals only with assertions and their corresponding beliefs (de Almeida 2001). The "perform and deny" test is not restricted in this way; it can be extended to cover all types of illocutionary acts and their corresponding internalized psychological states.

(129) What is the highest mountain in the world? Although I know the answer, I am asking to see if you know it or not.

Let's see what happens with *nandao*-Qs in this test.

(130) (Policeman A's idea about criminal B's whereabouts is unknown. During a search, A finds a receipt of yesterday's flight in B's name. So A asks his colleagues.)

> A:# Nandao ta feizou-le   ma?   Suiran   wo renwei ta taozou-le...
>   nandao he fly.away-ASP Y/N-Q although I   think   he escape-ASP
> (Intended) 'He didn't fly away, right? Although I think he's escaped already...'

As (130) shows, the *nandao*-question does not pass the "perform and deny" test. Hence, *nandao*-Q expresses the not-at-issue bias meaning via sincerity conditions.

Given the above arguments, we may conclude that *nandao-p?* modifies the illocutionary force by adding an additional piece to the sincerity conditions of the act of questioning which is the not-at-issue bias meaning. In fact, such an addition into the sincerity conditions has been foreseen by Searle & Vanderveken (1985):

> When the psychological states expressed by a speaker in a context of utterance strongly commit him to other psychological states, that speaker also expresses these states in that context. (Searle & Vanderveken 1985: 45)

Now, we have all the conditions for *nandao*-questions.

(131) **Conditions for the question act of *nandao-p?***

> a. *propositional content conditions*: any proposition p.
>
> b. *preparatory conditions*:
>> i) S does not know the answer.
>>
>> ii) It is not obvious to both S and H that H will provide the information at that time without being asked.
>
> c. *sincerity conditions*:
>> i) S wants this information.
>>
>> ii) S believes $\neg p$ is more likely than p

d. *essential conditions*: counts as an attempt to elicit this information from H.

In order to give a compositional analysis, I adopt Farkas & Bruce's (2010) update semantics of speech acts (cf. Krifka 2001b) and modify it to cover the case of *nandao*-Qs (compare the similar account of *alas* in Rett (2016)).

Farkas & Bruce's (2010) semantics defines two speech act operators, **A** for assertions and **PQ** for polar questions. They assume that the operators take multiple arguments, including the embedded sentence $S[D]$ for declaratives and $S[I]$ for an interrogative sentence radical, the speaker index a, and the input context K_i. Following Krifka (2001b), the function of those operators is to see the context states change between the input context states and the output context states. The context K between the speaker A and the hearer B is structurally constructed by several components shown in the following diagram.

(132) Sample context structure (Farkas & Bruce 2010: 89)

A	**Table**	**B**
DC_A	S	DC_B
Common Ground cg		**Projected Set** ps

Here, DC_A is the Discourse Commitment set of A and DC_B is that of B. Table in (132) is similar to the Questions Under Discussion (QUD) in Roberts (1996). The difference is that Table is represented as a stack of ordered pairs which consist of the syntactic objects of at-issue content (e.g. $S[D], S[I]$) and their corresponding denotations that have not been resolved. When there is a context change, the Table may change accordingly. To model such changes, operations on the stack are needed. These are given in (133).

(133) Stack operations on a Table T:

a. $push(e, T)$ represents the new stack obtained by adding item e to the top of the stack T

b. $pop(T)$ represents the stack obtained by popping off the top item of T.

c. $top(T)$ represents the top item of the stack T.

d. $remove(e, T)$ represents the stack obtained by removing the topmost occurrence of e from stack T. If e does not occur in T, then T is returned. (ibid.: 90)

As for the Projected Set ps, it represents the speaker's proposal to add the items on the Table to the CG. For example, when uttering a declarative p, the speaker proposes to add p into the CG. When uttering a question of $\{p, \neg p\}$, the speaker proposes two possible ways to add an answer to CG.

Farkas & Bruce (2010) define the assertion operator A and the polar question operator PQ using the above terminology.

(134) $\mathbf{A}(S[D], a, K_i) = K_o$ such that

    (i) $DC_{a,o} = DC_{a,i} \cup \{p\}$

    (ii) $T_o = push(\langle S[D]; \{p\}\rangle, T_i)$

    (iii) $ps_o = ps_i \cup \{p\}$ (92)

(135) $\mathbf{PQ}(S[I], K_i) = K_o$ such that

    (i) $T_o = push(\langle S[I]; \{p, \neg p\}\rangle, T_i)$

    (ii) $ps_o = ps_i \cup \{p, \neg p\}$

(Farkas & Bruce 2010: 95)

From (134-135), we can see that the differences between a default assertion and a default polar question are whether there is a DC update and what will be added to Table and the Projected Set. For assertions, there will be a DC update with propositional content as well as a Projected Set update. The ordered pair of the syntactic object of the propositional content and the propositional content itself will top the Table. On the other hand, Farkas & Bruce (2010) agree with Gunlogson (2001, 2002) that questions will not update the speaker's DC set.

I propose a change in their semantics of operators, the syntactic objects S. In order to solve anaphoric issues in discourse, they weave the semantics with syntactic forms. This solution is problematic, especially when we want to extend the current analysis to include WH-Q operators (i.e. the speech act operator for WH-Qs). In WH-Qs, we do not have any full sentences as the antecedents for anaphors. Moreover, we have discussed in detail different semantic approaches to solve such anaphoric issues in Chapter 2, so it is really not necessarily to have the syntax weaved with semantics here. In view of this, I propose that reference to syntactic objects be dropped and replaced by the structural semantic notions discussed in Chapter 2.

(136) **QUEST**$(Q, s, K_i) = K_o$ such that[31] *(revised)*

(i) $DC_{s,o} = DC_{s,i}$

(ii) $T_o = push(Q, T_i)$

(iii) $ps_o = ps_i \cup \bigcup\bigcup Q$

Before discussing its application to the compositional analysis of *nandao*-Qs, recall that *nandao* is an IM that is adjoined to ForceP. We thus need to calculate the meaning of ForceP before adding *nandao* onto it. (136) represents the compositional meaning of ForceP.

(137) $\llbracket$**ForceP**$\rrbracket = $ **QUEST**$(Q, s, K_i) = K_o$

When (137) is ready, *nandao* comes into play. As an Illocutionary Modifier, *nandao* takes the denotation of ForceP, i.e. the whole output context K_o, and updates it and outputs a new context K_o'. The effect of this operation is only to add the not-at-issue bias meaning into $DC_{a,o}$. This solution looks nice and clear, but there is a problem, namely the selectional problem. Since *nandao* is only compatible with Y/N-Qs and the representation of (137) has been extended to include WH-Qs, how can we ensure that *nandao* selects the right proposition out of the structural question denotation Q? As we can recall from Chapter 2, the core problem lies in the number of highlighted answers. Y/N-Qs have one and only one highlighted answer while WH-Qs may have more than one highlighted answers or none depending on its structural domain. So, in order for *nandao* to successfully select the right proposition, we need to make sure that the question has one and only one highlighted answer. This can be done by adding the underlined presupposition.

(138) $\lambda Q : \underline{\exists_1{}^{32} p[p \in \bigcup\bigcap Q \wedge (W \setminus p) \in \bigcup\bigcup Q]} \cdot W \setminus \iota q \in \bigcup\bigcap Q \succ^s_{g(w)} \iota q \in \bigcup\bigcap Q$

(138) tells us that given a structural question denotation Q which has a unique answer p that is the highlighted answer and whose complement is also a part of the question denotation,

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[31]There are some notational changes in (136). I extend the theory to WH-Qs, so the operator is changed to a more general term **QUEST**. The speaker has an index of s. The question is represented as an ordered pair Q composed of highlighted answers and the rest of answers. The union of the union of Q results in the normal Hamblin set of answers.

[32]$\exists_1$ is an existential quantifier with cardinality specified as 1 and only 1.

we get the meaning that the complement answer has a better possibility than this unique answer with respect to $g(w)$.

As *nandao* is only compatible with Y/N-Qs, we may regard it as presupposing the embedded argument as a Y/N-Q, which is represented in the underlined part in (138). To ensure that there is one and only one highlighted proposition in the highlighted answer set of Q, $\exists_1$ comes into play. Within the scope of this unique existential quantifier, the first conjunct in the underlined part addresses the highlighted answer(s) while the second one makes sure that the complement answer is also in the set of non-highlighted answers (to ensure that Q is not of a declarative type). After the embedded Y/N-Q is secured via presupposition check, we may refer to the unique highlighted answer by ι operator which is also highlighted in (138) (for detailed examples of how this works, please see §3.5.3).

With all the above in hand, the semantics of *nandao* is easy to obtain.

(139) $[\![\textbf{Nandao}]\!]([\![\text{ForceP}]\!]) = K_o$ such that

$$\text{(i) } DC_{a,o} = DC_{a,i} \cup \left\{ (\lambda T : \exists_1 p[p \in \bigcup\bigcap top(T)^{33} \wedge W \setminus p \in \bigcup\bigcup top(T)] \right.$$
$$\left. W \setminus \iota q \in \bigcup\bigcap top(T) \succ^s_{g(w)} \iota q \in \bigcup\bigcap top(T))(T_i) \right\}$$

What (139) tells us is that *nandao* picks out the **unique** *highlighted proposition* in the set of highlighted answers of Q, and updates into the speaker's DC that the complement proposition is more possible than the unique highlighted proposition.

(140) shows how compositionality of a *nandao*-Q works in a simple example with the semantics at hand (assuming the initial context is a default empty one).

(140) Nandao waimian xiayu-le ma?
      nandao outside   rain-ASP Y/N-Q

      'It isn't raining outside, right?'

---

[33]After the composition of ForceP, the structural question Q has been put onto the top of the Table T. So, in (139), Q is retrieved as $top(T_i)$ from $[\![\text{ForceP}]\!]$.

$\llbracket \textbf{Nandao} \rrbracket (\llbracket \textbf{ForceP} \rrbracket)$

$= ②$

Nandao $\llbracket \textbf{ForceP} \rrbracket$

$= ①$

QUEST $\llbracket \textbf{IntP} \rrbracket =$
$\left\langle \left\{ \lambda w[raining(w)] \right\}, \left\{ \lambda w[\neg raining(w)] \right\} \right\rangle$

$\llbracket \textbf{IntP} \rrbracket =$ ma[34]
$\left\langle \left\{ \lambda w[raining(w)] \right\}, \left\{ \lambda w[\neg raining(w)] \right\} \right\rangle$

[+wh]   IP

$\lambda R[\{\{R\}, \{R,$
$\{W \setminus \bigcup R\}\}\}]$

$\llbracket \textbf{IP} \rrbracket = \left\langle \left\{ \lambda w[raining(w)] \right\} \right\rangle$

(141) $① = K_o = \textbf{QUEST}(\llbracket \textbf{IntP} \rrbracket, s, K_i)$ s.t.

(i) $DC_{s,o} = DC_{s,i} = \emptyset$

(ii) $T_o = push(\llbracket \textbf{IntP} \rrbracket, T_i) = push(\left\langle \left\{ \lambda w[raining(w)] \right\}, \left\{ \lambda w[\neg raining(w)] \right\} \right\rangle, T_i)$

(iii) $top(T_o) = Q = \left\langle \left\{ \lambda w[raining(w)] \right\}, \left\{ \lambda w[\neg raining(w)] \right\} \right\rangle$

(iv) $ps_o = ps_i \cup \bigcup\bigcup Q = \left\{ \lambda w[raining(w)], \lambda w[\neg raining(w)] \right\}$

---

[34]I regard the optional *ma* as an identity function and a presupposition check function which is adjunct to the question, i.e. IntP or FocP. As it is only compatible with Y/N-Qs, I assume like *nandao* it presupposes the existence of Y/N-Q.

1. $\llbracket ma \rrbracket := \lambda Q_{\langle\langle\langle\langle s,t\rangle,t\rangle,t\rangle,t\rangle} : \exists_1 p_{\langle s,t\rangle}[p \in \bigcup\bigcap Q \wedge W \setminus p \in \bigcup\bigcup Q] \,.\, Q$

The identity function part of the semantics of *ma* ensures that it will not alter the meaning of the question generated below (i.e. the input and the output are the same) so that the function can be optional. The uniqueness presupposition part makes sure that the question it takes is indeed a Y/N-Q (if not, the LF will crash due to presuppositional failure). For an alternative analysis of *ma*, I refer readers to Lin (2015).

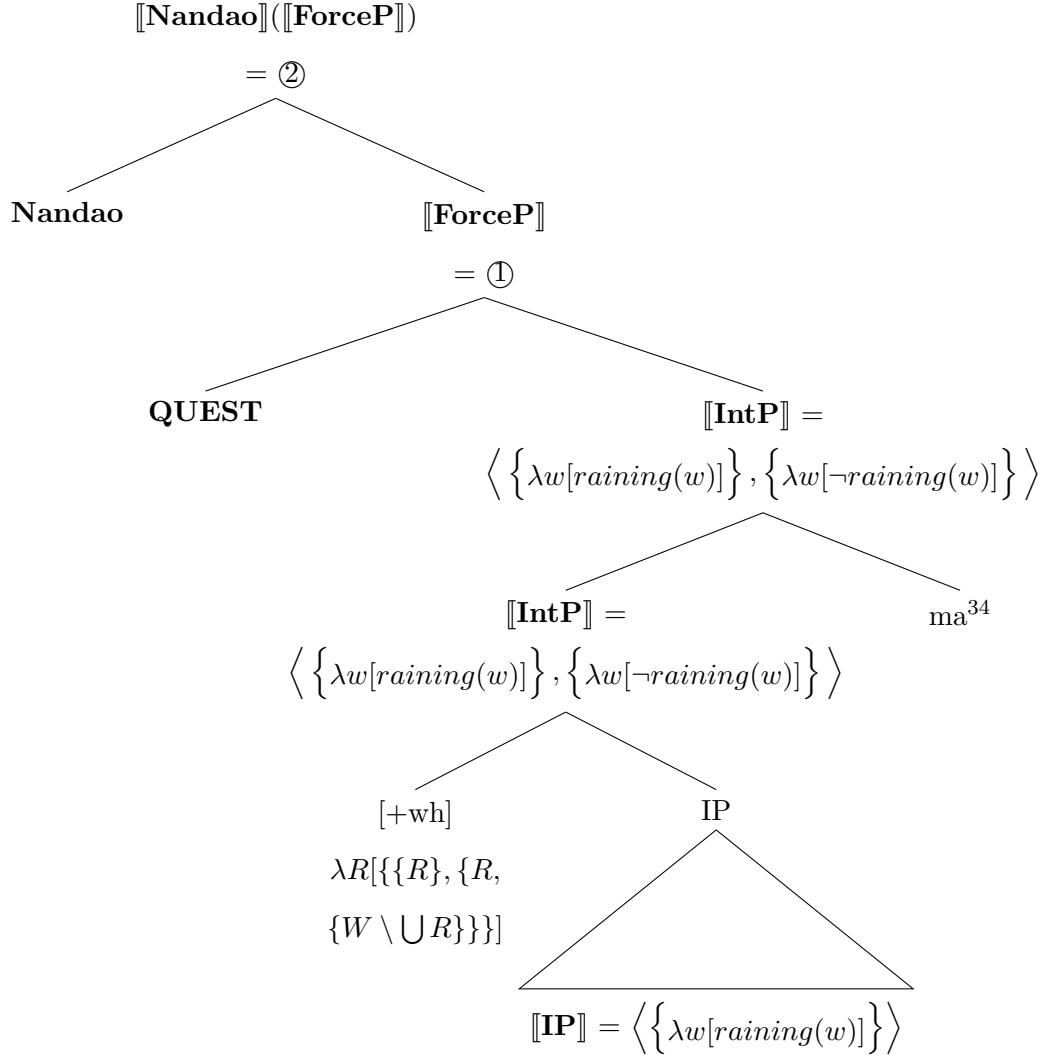(142) ② $= K_o = [\![\mathbf{Nandao}]\!]([\![\mathbf{ForceP}]\!])$ s.t.

$$\text{(i) } DC_{s,o} = DC_{s,i} \cup \Big\{ (\lambda T : \exists_1 p[p \in \bigcup\bigcap top(T) \wedge W \setminus p \in \bigcup\bigcup top(T)] \;.$$
$$W \setminus \iota q \in \bigcup\bigcap top(T) \succ^s_{g(w)} \iota q \in \bigcup\bigcap top(T))(T_i) \Big\}$$
$$= \emptyset \cup \Big\{ \exists_1 p[p \in \bigcup\bigcap top(T_i) \wedge W \setminus p \in \bigcup\bigcup top(T_i)] \;.$$
$$W \setminus \iota q \in \bigcup\bigcap top(T_i) \succ^s_{g(w)} \iota q \in \bigcup\bigcap top(T_i) \Big\}$$
$$= \Big\{ \exists_1 p[p \in \bigcup\bigcap Q \wedge W \setminus p \in \bigcup\bigcup Q] \;.\; W \setminus \iota q \in \bigcup\bigcap Q \succ^s_{g(w)} \iota q \in \bigcup\bigcap Q \Big\}$$
$$= \Big\{ \lambda w[\neg raining(w)] \succ^s_{g(w)} \lambda w[raining(w)] \Big\}$$

(ii) $T_o = T_i$

(iii) $top(T_o) = top(T_i) = Q$

(iv) $ps_o = ps_i = \Big\{ \lambda w[raining(w)], \lambda w[\neg raining(w)] \Big\}$

3.5.3 A semantic explanation of the syntactic distribution of *nandao*

Given the semantics of *nandao* and the structural semantics of questions, we can now give a full explanation of the syntactic distribution of *nandao* in Mandarin. The basic idea still lies in the resolution of selectional problem.

First of all, when *nandao* takes the $top(T_i)$ which is identified with the structural question denotation Q as its argument, the answer sets of Q must satisfy the presuppositional requirement of *nandao* (boldface in (138)).

Supposing the embedded sentence is a declarative with the denotation of $\langle H \rangle$, it has the unique highlighted presupposition in the first (and only) coordinate of it denotation. This satisfies the first conjunct of the uniqueness presupposition requirement of *nandao*. But, unlike polar questions, the declarative does not have its complement proposition in its denotation. In this respect, $\exists_1 p[\ldots \wedge (W \setminus p) \in \bigcup\bigcup Q]$ cannot be satisfied at the same time, which results in presupposition failure. Hence, *nandao* and declaratives cannot co-occur.

If the embedded question is an Alt-Q (e.g. $[p]_F$ or $[q]_F?$), there are two or more alternatives (p and q) as the highlighted propositions in the first coordinate of the question denotation ($\langle \{p, q\}, \{\neg p \wedge \neg q\} \rangle$). This immediately rules out the possibility of its compatibility with *nandao* (143), since the first conjunct of the uniqueness presupposition of *nandao* cannot be met (the curly underline part).

(143) * Nandao [Zhangsan]$_F$ huozhe [Lisi]$_F$ qu-guo Meiguo?
      Nandao Zhangsan   or   Lisi   go-EXP America

      (Intended) 'Zhangsan or Lisi hasn't been to America, right?'

(144) $(\lambda T : \exists_1 p[p \in \bigcup\bigcap top(T) \land W \setminus p \in \bigcup\bigcup top(T)] . W \setminus \iota q \in \bigcup\bigcap top(T) \succ^s_{g(w)} \iota q \in$
$\bigcup\bigcap top(T))(T_i)$

$= \exists_1 p[p \in \bigcup\bigcap top(T_i) \land W \setminus p \in \bigcup\bigcup top(T_i)] . W \setminus \iota q \in \bigcup\bigcap top(T_i) \succ^s_{g(w)} \iota q \in$
$\bigcup\bigcap top(T_i)$

$= \exists_1 p[p \in \bigcup\bigcap \langle\{p,q\}, \{\neg p \land \neg q\}\rangle \ldots$

$= \underaccent{\sim}{\exists_1 p[p \in \{p,q\}} \ldots$

There is a special kind of question (mentioned in Chapter 2) which has the same surface form as Alt-Qs but with an intonation over the whole disjunction or default intonation (see (63) of Chapter 2 in English and (145) in Mandarin).

(145) [Zhangsan huozhe Lisi]$_F$ qu-guo Meiguo ma?
      Zhangsan or   Lisi go-EXP America Y/N-Q

      'Has either of Zhangsan or Lisi been to America?'

As mentioned earlier in §2.4.2 of Chapter 2, this type of question is in fact a kind of Y/N-Q. The two alternatives in (145) will collapse into one. This might be due to the focus over the two disjuncts (Roelofsen & van Gool 2010), or due to an Hamblin existential operator between Y/N-*op* and IP (Biezma & Rawlins 2012). The result is that questions like (145) have a singleton proposition set as the first coordinate of their denotation and its complement set as the second coordinate. In this way, the presupposition can be satisfied when it combines with *nandao*. Thus, the following example is predicted.

(146) Nandao Zhangsan huozhe Lisi qu-guo Meiguo ma?
      Nandao Zhangsan or   Lisi go-EXP America Y/N-Q

      'Neither Zhangsan nor Lisi has been to America, right?'

    Like Alt-Qs, WH-Qs are not compatible with *nandao* either. There are two kinds of WH-Q, one with structurally salient answers and the other without. The domain of the WH-word in the first kind will be restricted by the set of structural salient entities, while the WH-word in the second type will be existentially closed. For the second type of WH-Qs,

there are no highlighted answers at all. For structurally bound WH-Qs, there are at least two answers in the first coordinate of the question denotations (147).[35]

(147) Zhangsan he   Lisi limian, shui bang-guo ni   ne?
      Zhangsan and Lisi inside   who help-EXP you WH-Q

'Which of Zhangsan or Lisi helped you before?'

$$[\![(147)]\!] = \left\langle \left\{ \begin{array}{c} \lambda w[helped(Zhangsan)(you)(w)], \\ \lambda w[helped(Lisi)(you)(w)] \end{array} \right\}, \emptyset \right\rangle$$

In either case, WH-Qs cannot satisfy the uniqueness presupposition requirement of *nandao*. Hence, *nandao* and WH-Qs are semantically incompatible.

(148) * Nandao shui bang-guo ni   ne?
        nandao who help-EXP you WH-Q

      (Intended) 'Who helped you?'

(149) * Nandao Zhangsan he   Lisi limian, shui bang-guo ni   ne?
        nandao Zhangsan and Lisi inside   who help-EXP you WH-Q

      (Intended) 'Which of Zhangsan or Lisi helped you before?'

There are cases where *nandao* seems to be able to co-occur with "WH-words" (150).

(150) Nandao shui   bang-guo ni   ma?
      Nandao anyone help-EXP you Y/N-Q

      'There aren't anyone who helped you, right?'

However, as the Y/N-Q mark *ma* shows, (150) is no longer a WH-Q, but a Y/N-Q. *Shui* which is glossed as 'anyone' in this sentence is an indefinite pronoun (Li & Thompson 1981; for a detailed discussion, see Liao 2011, Xu 2012).

In this chapter, the syntax and semantics of *nandao*-Qs have been addressed. Basically, *nandao* carries a not-at-issue content indicating the speaker's biased attitude towards possible answers. This is achieved by modifying the sincerity condition of the question act, the

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[35]If a WH-Q highlights only one possible answer, then it is infelicitous to ask the question, because the only highlighted answer is the only possible answer to the WH-Q.

1. # As for John, who helped you?

If the speaker knows that there is only one answer to the question and he also knows the answer, there would be no need for him/her to inquire about it. For a more detailed discussion, I refer readers to Xu (2012).

effect of which is to update the speaker's DC set with the bias meaning. Due to the uniqueness presupposition encoded in *nandao*, only Y/N-Qs can satisfy such a presupposition. Hence, *nandao* is only compatible with Y/N-Qs.

Having presented my account of *nandao*, I discuss the syntax and semantics of the other two BQWs, i.e. *etwa* in German and *naki* in Bangla, in the following two chapters.

Chapter 4

An analysis of *etwa* in German

4.1 Introduction

In this Chapter, the German question adverb *etwa* will be examined. Very much like the BQW *nandao* in Mandarin, *etwa* appears in Y/N-Qs where it automatically triggers a bias reading.[1]

(1)   Regnet es etwa?
      raining it etwa

      'It isn't raining, right?'

In (1), along with the intention of inquiring about the weather, the speaker conveys an expectation that the correct answer is the negative one.

   Like *nandao*, *etwa* in German exhibits "polarity reversal" (cf. Han 2002, Xu 2012): when the question nucleus denotes a negative proposition (e.g. $\neg p$), the bias expressed in *etwa-$\neg p$?* is that the speaker expects the correct answer to be p (see (2) as an illustration).

(2)   Hat der Junge etwa den Kuchen nicht gemocht?
      has the boy   etwa the cake   not   liked

      'Did the boy not like the cake by any chance?' (Gieselman & Caponigro 2010: 8)

---

[1]In German, a normal Y/N-Q can have either a rising or falling intonation.

   1. Fährst du nach Paris? H%/L%
      leaving you to   Paris

      'Are you going to Paris?'

However, when *etwa* is used in a Y/N-Q to express bias, the question must carry the contour H% (Manfred Krifka p.c.) which is normally found in incredulity questions.

   2. Regnet es etwa? H%
      raining it etwa

      'It isn't raining, right?'

For details regarding incredulity questions, see Cohen (2007), Crespo-Sendra et al. (2010).

The polarity reversal effect can also be revealed by the unacceptability of the following *etwa*-Q.

(3)   Ist der Papst katholisch?
        is   the Pope Catholic

        'Is the Pope Catholic?'

(4)   # Ist der Papst etwa katholisch?
          is   the Pope etwa Catholic

        (Intended) 'Is the Pope Catholic?'

Without *etwa* in it, the question (3) is a perfect rhetorical question with the proposition denoted by the question nucleus (i.e. *the Pope is Catholic*) being common knowledge (Rohde 2006, Caponigro & Sprouse 2007). When *etwa* is added to the question, the sentences becomes unacceptable (4). Comparing (3) and (4), the only difference between them lies in the use of *etwa* and the bias meaning introduced by *etwa*. The unacceptability of (4) establishes that the bias meaning introduced by *etwa* contradicts the common knowledge that the Pope is Catholic. Hence, *etwa* introduces a negative bias in (4), i.e. the speaker believes that (it is more possible that) the Pope is not Catholic.

Given the above examples and the discussion of the examples, we see that the propositional content of the bias conveyed in *etwa*-Q is always identical with the one denoted by the negative polar answer.

Apart from its ability to express the speaker's bias towards the negative polar answer, *etwa* shows the familiar selectional restriction on sentence types, that is, it can only be used in polar questions.

(5)   *Etwa* + declaratives: ×

        * Der Junge hat etwa den Kuchen gemocht. (= (47) in Chapter 1)
           the boy   has etwa the cake   liked

           'The boy liked the cake.'

(6)   *Etwa* + WH-Qs: ×

        * Wer hat etwa den Kuchen gemocht? (= (50) in Chapter 1)
           who has etwa the cake   liked

           (Intended) 'Who liked the cake?'

(7)   *Etwa* + Alt-Qs: ×

     * Haben Sie etwa Bier oder Wein gewollt?
        has   you etwa beer or   wine drink

     (Intended) 'Do you drink beer or wine?'[2]

(8)   *Etwa* + imperatives: ×

     * Gib mir etwa mein Buch zurück!
        give me etwa my   book back

     (Intended) 'Give back my book to me!'

The ability to express the attitude of discourse participants (e.g. the speaker or the addressee) towards the embedded propositional content and the sensitivity to sentence types are the two main features of a more general category in German which are called Modal Particles (*Moddalpartikeln* in German; henceforth MPs).[3]

Thurmair (1989) identifies 17 MPs in German: *aber*, *auch*, *bloβ*, *denn*, *doch*, *eben*, *eigentlich*, *einfach*, *etwa*, *halt*, *ja*, *mal*, *nur*, *ruhig*, *schon*, *vielleicht*, and *wohl*. Almost all of them have non-MP counterparts (i.e. homophonous cognates that are not discourse-participant-oriented nor sensitive to sentence types).[4] Considering the syntactic categories of their cognates, we can see that MPs consist of a variety of different categories.

(9)   a. adverbs: *etwa*, *doch*, *vielleicht*, *einfach*, *ruhig*, *mal*, *eben*, *schon*, *eigentlich*

     b. focus particles:*auch*, *schon*, *nur*, *bloβ*

     c. conjunctions: *aber*, *denn*

     d. other discourse markers: *ja*, *doch* (adapted from Gutzmann 2015: 215)

---

[2](7) is ungrammatical under an Alt-Q reading, but is possible under a Y/N-Q reading, i.e. *Do you drink something like beer or wine or do you drink neither of them?*. This type of existential reading is similar to open intonation disjunctive question in English.

     1. Do you drink [beer or wine]$_F$?

For more details regarding this type of questions, see page 39 of Chapter 2.

[3]In the literature, they are also called discourse particles ('Diskurspartikeln' in German) as they show discourse functions that we will talk about in the later sections.

[4]*Halt* is the only one that does not have a cognate in current German (Kwon 2005, Cardinaletti 2011, Diewald 2013, Grosz 2015). In spite of this, as pointed out by Abraham (1991), Cardinaletti (2011) *halt* diachronically stems from the comparative form of *halto* 'very, prior to' in Old High German. Although the original comparative form has disappeared in Modern High German, we can still find its trace in Gothic *haldis* 'potius; much rather'.

Despite the different categories, MPs in general exhibit very similar phonological, syntactic, semantic, and pragmatic properties. Based on the literature on German MPs, Gutzmann (2015) summarizes the following common properties of MPs:[5]

(10)   a. MPs are not inflectable.

     b. MPs cannot receive main stress.

     c. MPs occur only in the so-called middle field (Germ. *Mittelfeld*).

     d. MPs commonly coccur before the rheme.

     e. MPs can be combined with each other.

     f. MPs cannot be coordinated.

     g. MPS cannot be expanded.

     h. MPs are optional.

     i. MPs cannot be negated.

     j. MPs cannot be questioned.

     k. MPs have sentential scope.

     l. MPs are sentence-mood-dependent.

     m. MPs modify the illocutionary types. (217)

As one of MPs, *etwa* shows all the above properties. It has two homophonous cognates *etwa* of adverbial type meaning 'approximately', 'for instance'.

(11)   Hat Max die Prüfung mit   etwa   50% der   Punkte bestanden?
       has Max the exam   with approximately 50% the-gen points   passed
       'Did Max pass the exam with approximately 50 percent of the points?'

(Gieselman & Caponigro 2010: 5)

(12)   Es stellen sich eine Reihe   von Fragen.   Hat etwa   der Gärtner den Dieb
       it stand itself a   number of   questions has for.instance the gardener the thief
       bemerkt? (Manfred Krifka p.c.)
       notice

       'There are a number of questions. For example, did the gardener notice the thief?'

---

[5]Many of these syntactic properties will be addressed in §4.4

Unlike the MP *etwa*, as mentioned in fn.6 of §1.3, the non-MP *etwa*s are not sensitive to sentence types.

(13) In declaratives: ✓

a. Max die Prüfung mit etwa   50% der   Punkte bestanden hat.
   Max the exam   with approximately 50% the-gen points   passed   has

   'Max passed the exam with approximately 50 percent of the points.'

b. Ein solches Beispiel wäre   etwa   der Satz   ,die arme Frau   wurde
   one such   example would.be for.instance the sentence the poor woman would
   schwer   krank'.
   seriously ill

   'Such an example would be the sentence, for instance, 'the poor woman was

   seriously ill'.'   (FKO/YAK.00000; qtd. in Kwon 2005: 120)

(14) In WH-Qs: ✓

a. Wer hat die Prüfung mit etwa   50% der   Punkte bestanden?
   who has the exam   with approximately 50% the-gen points   passed

   'Who passed the exam with approximately 50 percent of the points.'

b. Wen   hat etwa   die ewige Fragerei   beim Friseur   nicht schon
   whom has for.instance the endless questioning at.the hairdresser not   already
   mal den letzten Nerv gekostet?
   once the last   nerve cost

   'For example, who was never bothered by the endless questioning at the hair-

   dresser.'

         (http://www.pnp.de/nachrichten/kultur/pnp_verstaerker/?em_cnt=403522)

Considering the disparity between the MP *etwa* and the non-MP ones, Franck (1980) argues that there is no evident relationship between them to show their "family resemblance" (*Familienähnlichkeit*), i.e. there is no reason to pursue a unified analysis.

   In the following sections, I focus on the syntactic, semantic and pragmatic properties of MP *etwa* in particular and try to provide a compositional analysis of it.

4.2 *Etwa* in previous literature

In the literature, the most studied MPs are *denn*, *doch*, *ja*, and *wohl*, while *etwa* attracts much less attention. Although *etwa* is less studied, there are some scholars who offer brief

explanations of its meaning and use from the perspectives of language teaching, translation, and linguistics.

As we have mentioned in §4.1, *etwa*-Q expresses a speaker's expectation of the negative polar answer. Bayer (1991) regards such an expectation as "giving a certain flavoring" to the sentences containing *etwa*.

(15) Bist du   etwa krank?
      are   you ?   ill

      'Are you ill?'

      Flavor = 'I hope you are not ill.' (adapted from ibid.: 259)

Bayer finds "a word-by-word translation" (ibid.) hard, so he glosses *etwa* as "?". Following my practice of glossing *nandao*, I gloss the MP as itself.

Apart from the negative expectation, several authors have identified another property of *etwa*: the question with *etwa* relates to a previous discourse or context. For example, Bross (2012) observes the following:

> *Etwa* is used in polar questions when a negative answer is expected. These questions relate to a previous utterance or action. (Bross 2012: 192)

Franck (1980) regards such a property as a presupposition of *etwa*.

> ETWA presupposes a context in which the speaker can refer to an observation which makes the ETWA-Question appear timely and necessary. The speaker sees a current cause for concern, what he asked could be true, even though it seems unlikely to be the case and definitely it does not appear desirable without this immediate cause.[6] (Franck 1980: 220)

Thurmair (1989) uses the following examples to illustrate this property.

(16) Uwe: Gestern   war 'Dallas' vielleicht wieder spannend!
           yesterday was Dallas   possible   again   exciting

      "Yesterday 'Dallas' might be exciting again!"

      Mona: Was?! Schaust du dir   den Quatsch etwa an?
            What looking you yourself the Nonsense etwa at

      'What?! You aren't watching the Nonsense, right?'

---

[6]This and all other direct quotations in German hereafter are translated into English.

(17)   An obviously drunk man is trying to get into the car with the car key shaking in his hand.

A passerby: Wollen Sie etwa in diesem Zustand noch Auto fahren??
              want   you etwa in this   state   yet   car   drive
   'You don't want to drive in this state, right?'

(18)   Du, die Whisky-Flasche ist schon   wieder leer.   Trinkst du etwa heimlich?
       you the whiskey-bottle is   already again empty drinking you etwa secretly
       'Hey, the whiskey bottle is already empty. You are not drinking secretly, right?'

(adapted from Thurmair 1989: 170)

Thurmair (1989) gives *etwa* the attribute of <Connection> (<KONNEX> in German) which indicates that the discourse function of *etwa* is to refer to something in the previous discourse or context. For example, the speaker may refer to a previous remark in the discourse as an inference for *Uwe is watching the Nonsense* in (16). In (17), the speaker can also infer from his own observation in the current context that *the drunk man wants to drive.* If nothing is readily accessible to the addressee, the speaker usually describes it in his own utterance before asking the *etwa*-Q, which can be seen in (18).

As we can see from (16-18), what *etwa* presupposes in the discourse or in the context is the evidence supporting the positive polar answer to the *etwa*-Q (cf. Rieser 2013).

Interestingly, what *etwa* presupposes is the opposite of what the speaker expects. For instance, in *etwa-p?*, the question presupposes there is discourse/contextual evidence for p while the speaker expects $\neg p$. In *etwa-not-p?*, the question presupposes discourse/contextual evidence for $\neg p$ while the speaker expects p to be true.

In light of this, Kőnig & Requardt (1991), Gast (2008) regard *etwa* as an indicator of inconsistency or contradiction. Both of them believe that this function is the core meaning of *etwa*. Gast (2008) in particular proposes that *etwa* is a context update functor in *etwa-p?* which takes the input context C_i with a contradiction $*(p \wedge \neg p)$[7] and outputs a context C_o with a hypothesis $^T(p \vee \neg p)$[8] corresponding to the question type of *etwa-p?*.

Gast gives the following example as an illustration of his point.

---

[7]Gast (2008) "represent[s] contradictions as starred conjunctions of the form $*(P \wedge \neg P)$" (13).

[8]The superscript ^{T} is a truth operator: $^T p$ means the proposition p is true.

(19)   Willst du etwa den Karl einladen?
           want   you etwa the Karl invite

           'You don't want to invite Karl, right?'

           $p_1 \in C_i$: 'Karl is stupid' (background knowledge)

           $p_2 \in C_i$: 'Stupid people are not invited' (background knowledge)

           $p_3 \in C_i$: 'You don't want to invite Karl' (follows from p_1 and p_2)

           $p_4 \in C_i$: 'There are signs that you want to invite Karl' (adapted from Gast 2008: 19)

(19) can be felicitously uttered when p_4 exists in the current context or discourse. On the other hand, the speaker from his own epistemic reasoning believes that Karl should not be invited. From this reasoning ($p_1 + p_2$), the speaker arrives at the conclusion of p_3. Considering p_3 and p_4 in the same context is what Gast deems as a contradiction in C_i.[9] This contradiction is brought on by *etwa*. The use of *etwa* is simply to show such an inconsistency in the context; it does not resolve the inconsistency. Thus, a question is utilized to prod the addressee to resolve the problem.

According to Gast (2008), the negative expectation is not a part of the meaning of *etwa*. Rather it is a pragmatic result from the inconsistency we just talked about on the basis of "Conversational strategy".

Apart from indicating the negative expectation, the presupposition of the evidence for the positive polar answer, and the inconsistency between the two in the context, *etwa* also shows other effects, such as indicating the speaker's attitude, such as *surprise* (Stede & Schmitz 2000, Jung 2002), indignation (Nehls 1989, Gutknecht & Rölle 1996), or even irony (Nehls 1989, Gutknecht & Rölle 1996). I take these pragmatic flavors of attitudes as being derived from the semantics of *etwa* rather than an intrinsic part of its semantics, so I will not delve into them in the current thesis.

Summarizing the use and meaning of *etwa* in the literature, we have:

1. *Etwa*-Qs express the speaker's expectation of a negative polar answer.

2. *Etwa*-Qs presuppose discourse/contextual evidence for a positive polar answer.

---

[9]In fact, p_3 and p_4 do not logically form a contradiction, since p_4 is not a full commitment of *you want to invite Karl*. But, acknowledgedly, p_3 and p_4 are contradictory in a loose sense, or we can put it in a better word 'inconsistent'.

3. *Etwa* is an indicator of contextual inconsistency.

4.3 The semantics of *etwa*

Given these basic uses and meaning of *etwa*, I would like to provide a semantics of *etwa*.

4.3.1 Semantic and pragmatic property of *etwa*

First of all, like other MPs, *etwa* exhibits global scope; it cannot scope under negation or quantifiers.[10]

(20) *Etwa* > negation

 A: Hat der Junge etwa den Kuchen nicht gemocht? (= (2))
    has the boy   etwa the cake   not   liked

 Bias = 'A believes/hopes that it is more likely that the boy like the cake.'

 $etwa > \neg$

 Bias $\neq$ 'A doesn't believe/hope that it is more likely that the boy doesn't like the

 cake.'   * $\neg > etwa$

(21) *Etwa* > $\forall$

 Sollten alle Linguisten etwa Grice lesen?
 should all   linguists   etwa Grice read

 Bias = $[etwa[\forall_x(\text{linguist}(x) \rightarrow \text{should.read}(\text{Grice})(x))]]$ $etwa > \forall$

 Bias $\neq$ $[\forall_x[etwa(\text{linguist}(x) \rightarrow \text{should.read}(\text{Grice})(x))]]$ * $\forall > etwa$

In terms of Question Formation Test (Koev 2013; see also Amaral et al. 2007, Tonhauser 2012), the result (22) shows that *etwa*-Q expresses not-at-issue content.

---

[10]In terms of the combination between *etwa* and modals like *vielleicht* ('possibly'), my consultants have varying degrees of judgment: some accept the combination, while others don't. Thurmair (1989) observes the same problem.

 1. Mutter zur   Tochter, die mit grünen Haaren heimkommt: (Thurmair 1989: 268)
    mother to.the daughter who with green   hair   come.home

  ? Findest du das <u>vielleicht etwa</u> schön?
    find   you that perhaps etwa beautiful

  'Mother to daughter who comes home with green hair: Do you think that maybe beautiful?'

Thurmair regards the combination in Y/N-Qs to be marginal. The problem lies in the fact that when modals are used in Y/N-Qs, the questions express a slight negative bias meaning similar to *etwa*-Qs which convey a stronger bias. 'The fact that the two modal particles are so similar in their meaning is probably the reason why they are hardly combined...Probably the negative [bias] was too strong in a combination' (ibid.).

(22) A: Regnet es etwa? (= (1))
      raining it etwa

      'It isn't raining, right?'

    B: Yes, it is/No, it isn't.

    B':# Yes, you think so/# No, you don't think so.

(22) also tells us that *etwa* scopes over the question operator (cf. Zimmermann 2008).

    In terms of discourse, the bias is on the part of the speaker, not the addressee.

(23) Regnet es etwa?
    raining it etwa

    Bias = 'the speaker believes/hopes that it is more likely that it isn't raining.'

    Bias ≠ 'From what you (addressee) believes/hopes, it is more likely it isn't raining.'

    Bias ≠ 'As a matter of fact, it is more likely that it isn't raining.'

Based on this language data, I claim that *etwa* is a not-at-issue content encoder.

4.3.2   Expectation? Or Belief? Or even both?

In the literature, almost all the scholars agree that *etwa* expresses a speaker's expectation of the negative polar answer. The differences lie in whether the expectation is a semantic one (Franck 1980, Thurmair 1989, Kwon 2005) or a pragmatic one (Helbig 1994, Jung 2002, Gast 2008, Gieselman & Caponigro 2010). Those scholars who support a semantic account argue that:

> The particle *etwa* suggests that the speaker expects the opposite of what is expressed in the question. The speaker characterizes the requested situation as undesirable and suggests to the listener that he should answer with *no*. . . the particle is needed in such cases when the questioner hopes for a refusal. Such hopes and evaluations of the questions are closely related. (Laskowski 2011: 192)

They believe that the expectation of a negative polar answer is best captured as bouletic *hope* or *wish* but not epistemic *probability*.

> The tendency of *etwa* refers only to the dimension of preference or rating, not
>
> on the probability. (Franck 1980: 221)

> [T]he speaker expresses with *etwa* that he expects a negative answer or more precisely: hopes. This response is not based on a probability judgment..., but on the wishes and evaluations of the speaker...(Thurmair 1989: 171)

On the other hand, the scholars who approach the expectation interpretation from a pragmatic stance believe that the expectation is a result of the speaker's epistemic states regarding the negative polar answer.

(24) Schmeckt der Kaffee etwa gut?
      taste   the coffee etwa well
      'Does the coffee taste good?' (Jung 2002: 151)

Jung (2002) interprets (24) as "[t]he speaker believes that the coffee is not good enough and hopes that the addressee shares his opinion... *Etwa* appears in questions...when the addressee does not share the speaker's opinion. Therefore, the use of *etwa* means the expectation of a negative answer." (151).

Gast (2008), as I have mentioned earlier, derives the expectation from the epistemic reasoning based on background assumptions. According to Gieselman & Caponigro (2010), however, the expectation stems from the fact that the speaker has some prior evidence that the negative polar answer is true.

As we can see, there is no consensus among the scholars. Based on the discussion so far, it seems that *etwa*-Q is ambiguous between a negative expectation reading and a negative (subjective) epistemic reading. I show in the following how *etwa* can be ambiguous between the two readings.

(25) Hab ich dir damals, als   dú in Schwiergkeiten warst, etwa nicht geholfen?
      have I   you then   when you in trouble   be   etwa not   help
      = 'I helped you nevertheless at that time.'
      ≠ 'I hope/wish I helped you at that time.' (adapted from Franck 1980: 221)

(25) is an example showing us that only the epistemic reading is possible here while the bouletic one is not attainable.

There are also cases where the bouletic reading is more prominent.

(26) Willst du etwa dieses Kleid kaufen? (Ich hoffe, nicht!)
      want   you etwa this   dress buy   I   hope not

'Do you want to buy this dress? (I hope not!) (Gast 2008: 18)

(27)   Bist du etwa krank? (I hope you are not ill.)[11] (= (15))
        are   you etwa ill

        'Are you ill? (I hope you are not ill.) (adapted from Bayer 1991: 259)

The epistemic readings of the above questions can be obtained if there is specific evidence or background assumptions for the speaker to believe the negative polar answer.

Based on these observations, I claim that *etwa* is ambiguous between epistemic and bouletic readings, and the two readings are contextually dependent. This is in accordance with Kratzer, Kratzer's (1977, 1981) unifying account of modal readings in different contexts.

In terms of the modal force of *etwa*, Gieselman & Caponigro (2010) suggest that it cannot be strong. According to them, the prior evidence which supports the speaker's belief of $\neg p$ for the negative polar answer cannot be "strong evidence" (i.e. direct evidence) but rather "some evidence" (weak evidence, or indirect evidence). Accordingly, the belief of the speaker which is due to the evidence cannot be a strong one as the indirect evidence makes the speaker "weakly sure" that the negative polar answer is true. Thus, the negative epistemic reading of *etwa-p?* is that the speaker believes that $\neg p$ is more likely (than its complement answer p).

In the case of bouletic reading, I take it to also create an ordering between the negative polar answer and the positive one on the scale of desirability. Because *I hope not-p* conveys the speaker's epistemic stance that both p and $\neg p$ are compatible with the speaker's doxastic state but in terms of desirability $\neg p$ is preferred (Anand & Hacquard 2013).

Based on the above discussion, I propose that the core meaning of both the negative epistemic reading and the negative bouletic meaning can be represented as,

(28) $\neg p \succ^{s}_{g(w)} p$, where $g(w)$ is a contextually provided ordering source based on plausibility (epistemic reading) or desirability (bouletic meaning).

---

[11]Compared with *etwa*, *nandao* in Mandarin only carries an epistemic reading.

 1. nandao ni   shengbing-le ma?   # wo xiwang ni   mei bing.
    nandao you get.sick-ASP Y/N-Q   I   hope   you not sick

    (Intended) 'You are not ill, right? I hope you are not ill.'

(28) is the **source of negative bias** on the part of the speaker in *etwa*-Qs.

4.3.3   Presupposition?

In the literature on *etwa*, several scholars point out that along with the negative bias, the particle also presupposes that there is evidence supporting the positive polar answer (Franck 1980, Thurmair 1989, Gast 2008, Rieser 2013). At the same time, there are scholars who do not consider this presupposition to be a part of the meaning of *etwa* (Gieselman & Caponigro 2010). In this section, I support the second view with evidence from rhetorical question reading of *etwa*-Q.

Suppose that *etwa*-Qs not only convey negative bias but also necessarily presuppose the existence of the evidence against such a bias. In this case, when the negative bias is part of commonsense knowledge, the presupposition with the existence of evidence against it challenges the commonsense knowledge. In view of this, the speaker may use *etwa*-Q as an information-seeking question to seek confirmation.

(29)   (A hears from news that there is scientific evidence that the sun may rise from the
        west. He then asks his mother:)

   A: Geht die Sonne etwa im   Westen auf?
      go   the sun   etwa in.the west   toward
      'The sun doesn't rise from the west, right?'

Meanwhile, according to Caponigro & Sprouse (2007), if there is no evidence against the commonsense knowledge, the *etwa*-Q is supposed to have a rhetorical meaning, since the negative bias is a part of commonsense knowledge.

(30)   Geht die Sonne etwa im   Westen auf?
       go   the sun   etwa in.the west   toward
       = 'The sun doesn't rise from the west!'

If (30) necessarily presupposes that there is evidence for *the sun rising from the west* that challenges the knowledge that the sun does not rise from the west, we will never get the rhetorical reading of (30).

In fact, both readings are observed by native German speakers. As reported by those native speakers, when *etwa*-Qs are used rhetorically, they don't feel that there is presupposed

evidence against the rhetorical question meaning. This observation shows that the evidence against the bias meaning is not presupposed by the BQW *etwa* but is context-provided information.

Another piece of evidence comes from negative polarity item (NPI) licensing.

Fitzpatrick (2005), Homer (2008) find that presuppositions can disrupt NPI licensing.

(31) John doesn't think that anyone cares about him.

(32) * John didn't find out that anyone left. (Fitzpatrick 2005: 141)

As we can see from (31), the complement clause of *think* is within the scope of negation which licenses the use of an NPI. In contrast, even though the complement clause of *find out* is also within the scope of negation, the NPI *anyone* in the complement fails to be licensed. The major relevant difference between the two sentences is that *find out* is a factive verb while *think* not. As argued by Fitzpatrick (2005), the factivity of certain verbs like *find out* resists NPI licensing from outside of the complements of those verbs. According to him, a factive verb, which introduces a presupposition that its complement is true, creates an island that blocks the local relation between the NPI in its complement and the outside NPI licenser.

Homer (2008) also observes this kind of intervention effect on NPI licensing.

(33) *Context:* Mary read some interesting book.

    a. * I do<u>n't</u> think [John]$_F$ read **anything** interesting *too*.

    b. I don't think [John]$_F$ read something interesting too.

    c. *Presupposition of (33b):* Somebody other than John read something interesting.

                                    (430)

Compared with (33b), the ungrammaticality of (33a) is due to the existence of the disruptor *too* which introduces a presupposition like (33c). By drawing more evidence from the interactions between NPI licensing and other presupposition triggers in English and Romance, Homer (2008) comes to the conclusion that "the licensing of NPIs can be disrupted by presuppositions" (429).

Jemals ('ever') in German is a negative polarity item. It can be used under the scope of negation (34) and in Y/N-Qs (35), but not in a positive declarative (36).

(34)   Sie   waren kaum   jemals   allein mit   ihr.
         they were   hardly ever$_{NPI}$ alone with her

         'They were hardly ever alone with her.'

(35)   Waren Sie jemals   allein mit   ihr?
         were   you ever$_{NPI}$ alone with her

         'Were you ever alone with her?'

(36)   *   Sie   waren jemals   allein mit   ihr.
           they were   ever$_{NPI}$ alone with her

           (Intended) 'They were ever alone with her.'

If *etwa* is a presupposition trigger like *too* in English, it will interrupt the NPI licensing in Y/N-Qs.

(37)   Waren Sie etwa jemals   allein mit   ihr?
         were   you etwa ever$_{NPI}$ alone with her

         'You were not ever alone with her, right?'

However, (37) shows that the NPI *jemals* is licensed. This proves that there is no presupposition in (37) that disrupts the licensing of the NPI *jemals*.

Given the above two pieces of evidence, I propose that there is no presupposition of evidence for the positive polar question in an *etwa*-Q.

To summarize the core meanings of *etwa* in *etwa-p?*, I would like to tentatively propose the following representation for it.

(38) $[\![etwa]\!] = \lambda p(\neg p \succ^{s}_{g(w)} p)$ (tentative)

Looking back at the epistemic vs. bouletic readings in the literature, Franck (1980), Thurmair (1989) argue that *etwa* cannot express an epistemic probability reading. But, in view of the above evidence and discussion, I take what they mean by *epistemic probability* as the objective epistemic modality meaning discussed in §3.4.2 of Chapter 3, which objectively deals with the factuality of the embedded proposition.

> Objectively modalized utterances... can be described as having an unqualified I-say-so component, but an it-is-so component that is qualified with respect to

a certain degree of probability, which, if quantifiable, ranges between 1 and 0.

(Lyons 1977: 800)

The ability to necessarily express an epistemic reading on the part of the speaker suggests that *etwa*, similar to *nandao* in Mandarin, has a subjective epistemic modal meaning. According to Lyons (1977), *etwa* is then supposed to qualify the *I-say-so* part, i.e. the illocutionary force.

With all the above evidence, following the traditional analysis of MPs being illocutionary modifiers (Jacobs 1991, Zimmermann 2008, Bayer 2012) and the analysis of *nandao*, I treat *etwa* as an illocutionary modifier.

In the next section, I will focus on how *etwa* is able to modify the illocutionary act of QUEST(ion) from the perspective of syntax.

4.4   Modal particles and the syntax of *etwa*

Unlike the BQW *nandao* in Mandarin (cf. (79-80) on Page 78), *etwa* cannot appear in the sentence-initial position.

(39)   (*Etwa) Hat (etwa) Max (etwa) die Prüfung mit   50% der   Punkte
      etwa   has etwa   Max etwa   the exam   with 50% the-GEN points
      bestanden?
      passed

      'Did Max pass the exam with 50% of the points by any chance?'

(adapted from Gieselman & Caponigro (2010: 5))

Although *etwa* is an adverb in terms of part of speech, it is quite different from other non-MP adverbials, e.g. *wahrscheinlich* ('probably'), *leider* ('unfortunately), which can appear sentence-internally and sentence-initially.

(40)   Wahrscheinlich hat er es nicht ernst   gemeint. (Fronted) (Scheffler 2008: 13)
      probably   has he it not   seriously meant

      'He probably didn't mean it seriously.'

(41)   Er hat wahrscheinlich es nicht ernst   gemeint. (Unfronted)
      he has probably   it not   seriously meant

      'He probably didn't mean it seriously.'

(42) Leider   hat er es nicht ernst   gemeint.(Fronted) (ibid.)
      unfortunately has he it not   seriously meant

      'Unfortunately he didn't mean it.'

(43) Er hat leider   es nicht ernst   gemeint. (Unfronted)
      he has unfortunately it not   seriously meant

      'He, unfortunately, didn't mean it.'

As we can see from the above examples, non-MP adverbs can appear in sentence-initial
positions as well as in sentence-internal positions.[12] However, one thing worth noting is
that the fronted adverbs in German in many ways do not pattern with the fronted adverbs
in English.

(44) (Clearly) John (clearly) doesn't like to eat apples. **vs.**

(45) John doesn't like to eat apples.

(46) Most importantly, we need to contact John at once. **vs.**

(47) We need to contact John at once.

Comparing (44)/(46) with (45)/(47), we find that the sentential adverbs in English join
sentences as adjuncts without changing the original syntax. This is because the intrasen-
tential distributions of English sentential adverbs are regulated by Chomsky-adjunction in
X-bar theory (Chomsky 1986). They adjoin to different full projections (e.g. vP, TP) after
the composition of those projections.

   On the other hand, non-MP adverbs in German do not follow the English pattern. No
matter where the adverbs are in the sentences, the finite verbs always occupy the second
position in the respective sentences. This is the typical V2 phenomenon in German.[13] When

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[12]In German, there are sentential adverbs like *mal ehrlich* 'frankly, honestly' that always appear in
sentence-initial positions.

   1. Mal ehrlich, er ist wirklich nicht so schlau.
      honestly   he is really   not so smart

      'Honestly, he really isn't that smart.' (adapted from Scheffler 2008: 15)

However, those adverbs cannot participate in the V2 phenomenon.

   2. * Mal ehrlich, ist er wirklich nicht so schlau.
        honestly   is he really   not so smart

      (Intended) 'Honestly, he really isn't that smart.' (adapted from Scheffler 2008: 15)

Their syntactic distribution suggests that those adverbs are base-generated at high positions: higher than
V2 clauses in syntax. For discussion of this type of adverb, see §2.3.3 of Scheffler (2008).

[13]In fact, there are also vestiges of V2 phenomenon in English, including negative words.

the sentential adverbs appear sentence-internally, the subjects are immediately followed by the finite verbs of those sentences. When the adverbs appear at the first position of the sentences, the finite verbs of those sentences immediately follow them rather than the subjects.

(48)   Wahrscheinlich hat er es nicht ernst   gemeint. (Scheffler 2008: 13)
        probably   has he it not   seriously meant
        'He probably didn't mean it seriously.'

(49)   Leider   hat er es nicht ernst   gemeint. (ibid.)
        unfortunately has he it not   seriously meant
        'Unfortunately he didn't mean it.'

(48-49) show that sentential adverbs at the sentence-initial positions participate in the V2 phenomenon. And such participation is **obligatory**.

(50)   * Wahrscheinlich er hat es nicht ernst   gemeint. (ibid.)
           probably   he has it not   seriously meant
           (Intended) 'He probably didn't mean it seriously.'

(51)   * Leider   er hat es nicht ernst   gemeint. (ibid.: 14)
           unfortunately he has it not   seriously meant
           (Intended) 'Unfortunately he didn't mean it.'

(50-51) further suggest that the reason why the non-MP sentential adverbs in German can appear at sentence-initial positions is not due to Chomsky-adjunction. Frey (2004), following earlier sources, attributes the reason for their positions to the EPP feature of the C head in German. He argues that in German V2 clauses the head C has an EPP feature that needs to be checked before Spell-Out. Unlike the common EPP feature which requires a complete set of ϕ-features to be checked with the obligatorily moved DP (Chomsky 2001), the EPP requirement in German V2 clauses is loose, in that the constituent that can check the EPP feature in the V2 clause can be any full projection XP that appears as the highest element in the IP domain. Comparing the adverb-fronting sentences (e.g. (40) and (42))

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1. John has never lied. **vs.**
2. Never has John lied.
3. John saw nothing. **vs.**
4. Nothing did John see.

and the adverb-non-fronting counterparts (e.g. (41) and (43)), Frey (2004) claims that there are no semantic and pragmatic differences between the two.

> $[_{CP}$ XP $[_C V_{fin}][_{IP}\dots]$ can be derived from $[_{IP}$ XP $\dots V_{fin}]]$ (by moving the finite verb to C and) by moving XP as the highest element of IP to SpecCP (Minimal Link) just in order to fulfill the EPP requirement associated with C, i.e. without any additional intonational, semantic or pragmatic effects. (Frey 2004: 9-10)

The XP can be any full projection, such as a scrambled DP (52), IP-adjunct PP (53), or even sentence-initial AdvP (54).

(52) Mit dem   Hammer$_1$ hat t'_1 Otto t_1 das Fenster eingeschlagen.
      with the$_{dat}$ hammer   has   Otto   the window hit

      'Otto hit the window with a hammer.'   (adapted from ibid.: 10)

(53) In Europa$_1$ spielen t_1 Jungen gerne Fußball.
      in Europe   play   boys   gladly football

      'In Europe, boys like to play football.' (adapted from ibid.)

(54) Leider$_1$ hat t_1 keiner dem   alten Mann geholfen.
      unfortunately has   nobody the-DAT old   man   helped

      'Unfortunately, nobody helped the old man.' (adapted from ibid.: 6)

However, Frey does not consider the case of MPs. As mentioned in §4.1, MPs in German generally cannot take sentence-initial positions regardless of whether they serve as IP adjuncts (56) or participate in V2 formation (57).

(55) David ist ja   ein Zombie.
      David is MP a   zombie

      'David is a zombie (as you know).' (Gutzmann 2015: 218)

(56) * Ja David ist ein Zombie.
         ja David is a   zombie

      (Intended) 'David is a zombie (as you know).'

(57) * Ja ist David ein Zombie.
         ja is David a   zombie

      (Intended) 'David is a zombie (as you know).' (adapted from ibid.)

But why can't MPs, especially those of adverbial type (including *etwa*) in German, take the sentence-initial position? Assuming the EPP requirement of the C head in German, as suggested by Frey (2004), there might be various possibilities. The moved XP must be the

highest element of IP (regardless of whether it is an argument or not). If MPs in general cannot appear as the potential highest element, then of course, they cannot be the goal of the EPP feature. However, (58) suggests that the assumption may not be valid.

(58) Die Waschmaschine$_1$ hast$_2$ t'_1 ja DU gestern t_1 repariert t_2.
      the washing.machine have   MP YOU yesterday   repaired

      'YOU repaired the washing machine yesterday.' (adapted from Coniglio 2006: 60)

In the base form of (58), the MP *ja* is the highest element of the IP before object scrambling. Moreover, some MPs (e.g. *ja*) have higher positions than sentential adverbs like *leider* and *glücklicherweise* ('luckily').

(59) Du kannst ja glücklicherweise ruhig mal zu ihr rübergehen.
      you can   MP luckily   MP   MP to her go.over

      'Luckily you can [ja ruhig mal] go over to her place.' (Grosz 2006: 82)

(60) Das ist es ja leider.
      that is it MP sadly

      'Sadly this is [ja] the point.'

(61) ?* Das ist es leider ja.
         that is it sadly MP

         (Intended) 'Sadly this is [ja] the point.' (ibid.: 83)

In all the above cases, *ja* could very well be the target of the EPP feature of C. Nevertheless, it actually cannot be fronted, as illustrated in (62) (see also (57)).

(62) * Ja hast t_1 DU   gestern   die Waschmaschine   repariert.
        ja have   YOU yesterday the washing.machine repaired

        (Intended) 'YOU repaired the washing machine yesterday.'

The other possibility concerns the identity of the highest element. In Frey's (2004) EPP requirement, the highest element is supposed to be a full projection XP. In this case, the non-XP types of syntactic elements cannot be the goal of the EPP feature. If MPs in German in general do not constitute a full XP, then they cannot be the moved XP in V2 clauses. In fact, this is the proposal advanced by Grosz (2006) and Cardinaletti (2011). Both Grosz and Cardinaletti regard MPs in German as deficient syntactic categories (or **weak sentence adverbs** as they call them). By comparing MPs with other non-MP adverbs, they find that MPs lack many of the properties that normal adverbs usually have.

First of all, MPs cannot be modified by degree adverbs like *ganz* ('quite') or *sehr* ('very').

(63) Diese Behauptung ist ganz offensichtlich falsch.
      this   statement   is   quite obviously   wrong

      'This statement is quite obviously wrong.' (Grosz 2006: 85)

(64) * Diese Behauptung ist ganz ja   falsch.
         this   statement   is   quite MP wrong

         (Intended) 'This statement is quite **ja** wrong.' (adapted from ibid.)

The second property of MPs is that we cannot coordinate an MP with another MP or

an MP with a non-MP adverb.

(65) Diese Behauptung ist ganz offensichtlich und eindeutig falsch.
      this   statement   is   quite obviously   and definitely wrong

      'This statement is obviously and definitely wrong.' (Grosz 2006: 85)

(66) * Diese Behauptung ist ja   und wohl falsch.
         this   statement   is   MP and MP   wrong

         (Intended) 'This statement is **ja** and **wohl** wrong.' (adapted from ibid.)

(67) * Diese Behauptung ist ja   und eindeutig falsch.
         this   statement   is   quite MP and   definitely wrong

         (Intended) 'This statement is quite **ja** and definitely wrong.'

                                                            (adapted from ibid.)

Phonologically speaking, MPs can bear stress[14] but not contrastive stress.

(68) Du kannst das SCHON schon   machen. (Aber. . .)
      you can   that MP   already make   (but. . .)

      'You could actually do that now. (But. . .)' (Struckmeier 2014: 22)

(69) Er: Sie ist doch gekommen.
      he   she is MP   come

      'She has **doch** come.'

      Sie: (Nein.) *Sie ist HALT gekommen.
      she   no   she is MP   come

      (Intended) '(No.) She has **HALT** come.' (adapted from Cardinaletti 2011: 498)

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[14]There are also scholars who claim that MPs cannot carry any stresses, see Abraham (1991) and Zimmermann (2011).

Cardinaletti (2011) argues that "[t]he impossibility of bearing contrastive stress is typical of weak elements".

In terms of the semantics, MPs have lost the content meaning of adverbs (properties of actions, times, and even propositions), and are thus in a sense "non-referential" (Cardinaletti 2011). Instead, they have more discourse-related functions which especially relate the speaker (or the hearer) with the context concerning the embedded proposition.

(70)   **Ja** a is appropriate in a context c if the proposition expressed by a in c is a fact of w_c which - for all the speaker knows - might already be known to the addressee.

(Kratzer 1999: 1)

(71)   ⟦wohl p⟧ = ASSUME (x, p)   (with x = speaker, hearer, or both)

(Zimmermann 2008: 219)

Based on this evidence, Grosz (2006) and Cardinaletti (2011) claim that MPs are weak syntactic categories. They distinguish three types of adverbs: Full Adverbs (e.g. *offensichtlich* and *leider*), Weak Adverbs (most MPs), and Clitic Adverbs (some MPs like *-dn* for *denn*).

(72)   a. full adverbs: $[C_{Adv}P [\Sigma_{Adv}P [I_{Adv}P [AdvP]]]]$

b. weak adverbs: $[\Sigma_{Adv}P [I_{Adv}P [AdvP]]]$

c. clitic adverbs: $[I_{Adv}P [AdvP]]$ (Grosz 2006: 11)

Here, $C_{Adv}P$ contains referential features of adverbs which provide referential content to adverbs to be modified, coordinated, or topicalized. $\Sigma_{Adv}P$ contains prosody-related information of adverbs so that they can stand alone as individual words and get stress. $I_{Adv}P$ contains ɸ-features or other lexical features of adverbs. Lacking the $C_{Adv}P$ level of projection, MPs in German cannot constitute a full XP projection anymore,[15] which explains why they cannot satisfy the EPP requirement of C head in German V2 clauses. $C_{Adv}P$, $\Sigma_{Adv}P$ and $I_{Adv}P$ also indicate the different levels of syntax that adverbs can move to.

Apart from the weak-adverb solution to the inability of MPs to participate in V2-clause formation, Gutzmann (2015) approaches the fronting problem in V2 clauses by further

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[15]Mark Baker (p.c.) suggests an alternative analysis that MPs may form a full phrase (XP), but not a full extended projection.

restricting the identities of XP in the EPP requirement of Frey (2004), following Steinbach's (2002) restriction for sentence-initial position in German (73).

(73)   the first argument of the unmarked word order (in the middle field[16]) can occupy [SpecCP]   (Steinbach 2002: 162)

Comparing Frey's (2004) EPP requirement and (73), we can see that the XP must be an argument in (73). We can regard (73) as a strengthened version of the EPP requirement. As MPs are adjuncts which do not carry any ɸ-features, they cannot be argument XPs for fronting.

Leaving aside the specific solutions to V2-fronting (which is out of the scope of the current thesis), we have enough evidence to claim that MPs including *etwa* are base-generated at IP level and cannot appear at CP level on the surface form. On the other hand, as they generally exhibit discourse functions by expressing the relations between discourse participants and contexts, we should expect them to be interpreted at the syntax-pragmatic interface, i.e. the CP level. Then, how can we solve this syntax-pragmatic discrepancy? Zimmermann (2008) provides a solution in terms of LF movement.[17]

In terms of the semantics and syntax of the modal particle *wohl*, Zimmermann (2008) takes *wohl* to be an adverb as I have been doing here. In his analysis of *wohl*, the modal particle conveys a weak commitment, namely a discourse participant x's assumption of the embedded proposition. ForceP is the syntactic locus that "determine[s] the epistemic reference point against which the utterance is evaluated" (e.g. the speaker in declaratives) and "encode[s] the strength of the propositional commitment" (216). As *wohl* expresses a

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[16]In German, traditional grammarians distinguish three fields in terms of the sentence structures, namely *Vorfeld* ('Prefield'), *Mittelfeld* ('Middle field), and *Nachfeld* (Postfield). The three fields are demarcated by finite verbs (between prefield and middle field) and infinite verbs (between middle field and postfield) which are illustrated in the following example.
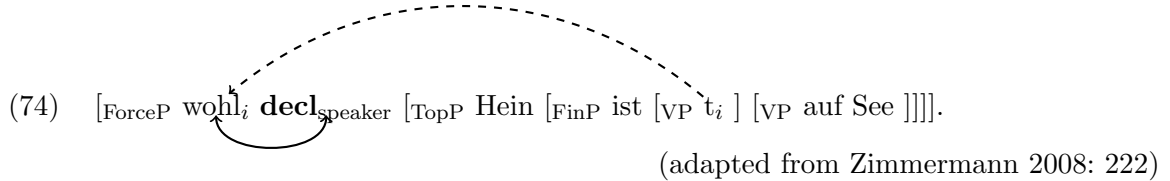
	Peter	ist	gestern	gerannt	wie der Teufel.
1.	Peter	is	yesterday	run	like the devil
	prefield	**finite verb**	**middle field**	**infinite verb**	**postfield**

'Peter ran like the devil yesterday.' (adapted from Bross 2012: 187)

Generally speaking, the prefield corresponds to SpecCP, the middle field entire IP (excluding V), and the postfield extraposed place.

[17]Bayer & Obenauer (2011), Bayer (2012) offer another solution where they deem the case of MPs as a Probe/Goal agreement with Force head in the framework of Minimalist Syntax. Since their basic arguments are very similar to Zimmermann (2008) with the only difference in the choices of syntactic framework, for convenience of semantic calculation, I will follow Zimmermann's (2008) proposal and will not go into details of Bayer & Obenauer (2011). Interested readers are referred to Bayer & Obenauer (2011) for further details.
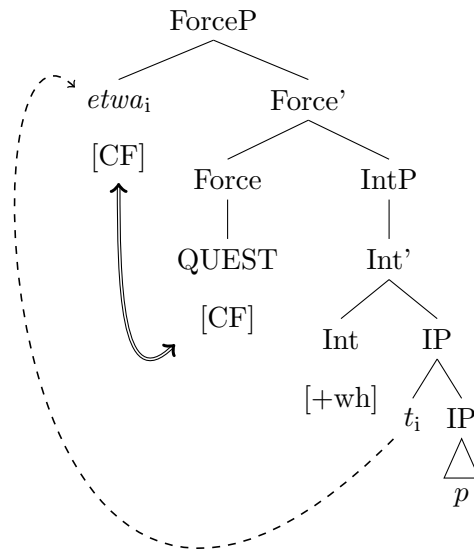
weak commitment of a discourse participant, it modifies the default commitment encoded in Force. For such a modification, he proposes that it is achieved by Spec-Head relation: *wohl* needs to move to the specifier position of ForceP. However, as the surface syntax and the nature of MPs as weak elements prohibit *wohl* to move overtly, such a movement to the SpecCP is then accomplished covertly at LF (see (74) as an example).

(74) [$_{\text{ForceP}}$ wohl$_i$ **decl**$_{\text{speaker}}$ [$_{\text{TopP}}$ Hein [$_{\text{FinP}}$ ist [$_{\text{VP}}$ t$_i$] [$_{\text{VP}}$ auf See]]]].

<div align="right">(adapted from Zimmermann 2008: 222)</div>

In (74) the dashed line indicates the covert movement of *wohl* from the VP edge to SpecForceP, while the solid line indicates the Spec-Head agreement between *wohl* and Force. The Spec-Head agreement between *wohl* and Force ensures that *wohl* can take its reference point (e.g. the speaker) from the Force head and modifies the default strength of commitment to weak one.

In a similar vein, I propose that MPs in German (including *etwa*) carry a weak feature of [CF] (Commitment Force) which can be checked at SpecForceP with the Force head which has the same feature resulting in Spec-Head agreement. Since [CF] is a weak feature, the movement of MPs from their base-generated positions within IP to SpecForceP is procrastinated at Spell-Out to LF. So, on the surface syntax, MPs appear low[18] but are interpreted high. The following illustrates the syntax after Spell-Out for *etwa-p?* questions.
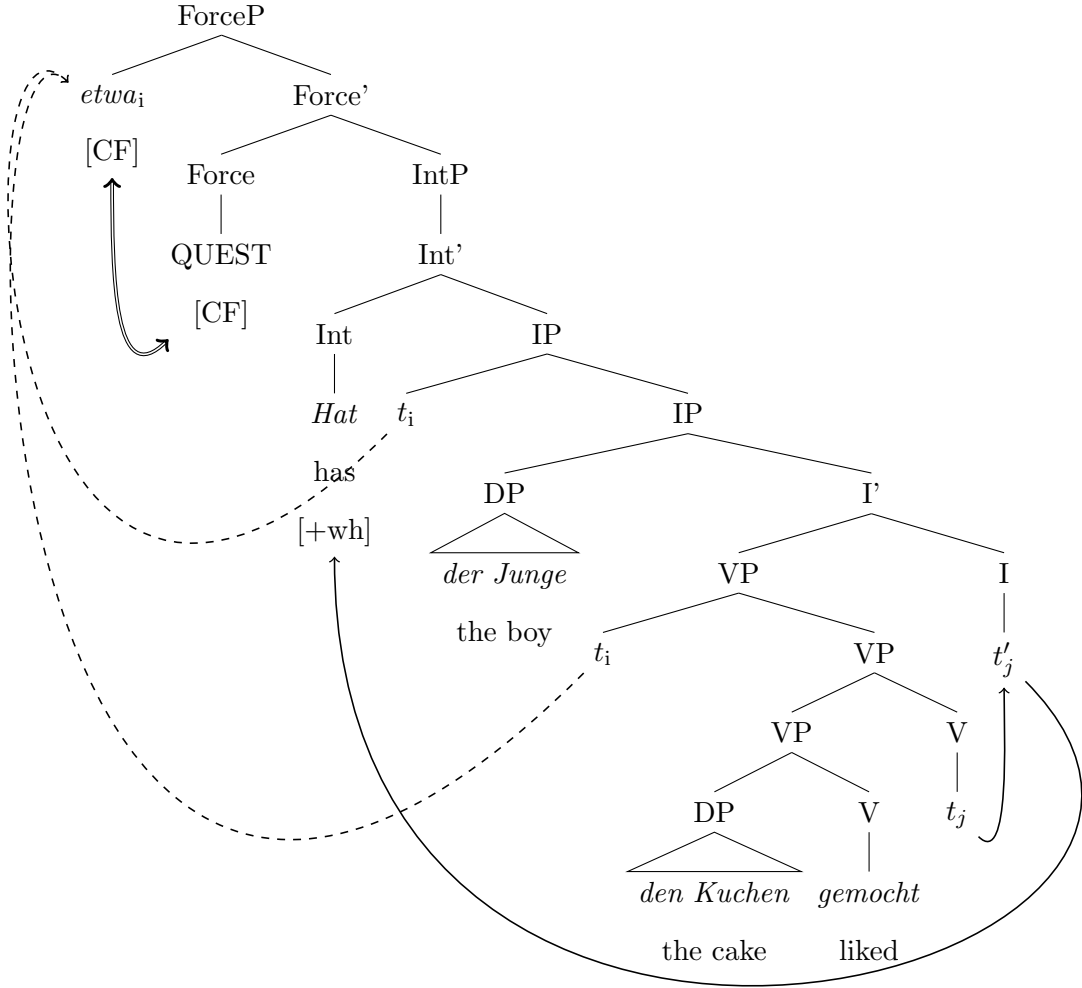
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[18]Considering the distribution of MPs in syntax, they always appear below the V2 position (i.e. the C-head position). This suggests that MPs are based-generated at IP-adjunct positions or IP-internal positions.

ForceP
- *etwa*_i [CF]
- Force'
  - Force
    - QUEST [CF]
  - IntP
    - Int'
      - Int [+wh]
      - IP
        - *t*_i
        - IP
          - *p*

(75) shows the syntax for multiple potential positions of *etwa* in German.

(75) Hat (etwa) der Junge (etwa) den Kuchen gemocht?
      has etwa   the boy   etwa   the cake   liked

      'Did the boy like the cake by any chance?'

                            (adapted from Gieselman & Caponigro 2010: 3)

ForceP

etwa_i — Force'

[CF]

Force — IntP

QUEST — Int'

[CF]

Int — IP

Hat   t_i — IP

has

[+wh]

DP — I'

der Junge — VP — I

the boy

t_i — VP — t'_j

VP — V

DP — V — t_j

den Kuchen   gemocht

the cake   liked

4.5   A compositional analysis

According to the previous sections, *etwa-p?* conveys two pieces of information: the presupposition that there is evidence for p and the negative bias that $\neg p$ is more likely/desirable than p from the perspective of the speaker. The question for this section is how *etwa*, as an illocutionary modifier, modifies the illocutionary force of interrogation.

First of all, like *nandao* in Mandarin, *etwa* in German conveys the negative bias as a

piece of new information. That is to say, before the speaker utters the *etwa*-Q, the addressee doesn't have to know about the speaker's stance towards the possible answers (although he can). But, immediately after hearing the question, the addressee comes to know what the speaker believes or expects regarding the possible answers. Like *nandao* in Mandarin, *etwa* is an indicator of speaker's private attitude becoming public. To put it in another way, by using *etwa* in *etwa-p?* the speaker publicly commits to ¬*p* being more likely/desirable than *p*. We can model this process by updating the speaker's DC with the negative bias. Thus, dynamically speaking, the CCP of *etwa-p?* can be represented as:

(76) $[\![etwa\text{-}p?]\!](DC_{s,i}) = DC_{s,o} = DC_{s,i} \cup \{\neg p \succ^s_{g(w)} p\}$

In fact, the above point has been captured descriptively by Helbig (1994) as discussed in Möllering (2004).

> The use of ETWA...indicates preference for a negative answer. Speak A is not simply asking for information but is at the same time expressing an opinion.
>
> (Möllering 2004: 38)

Recall that in the components of illocutionary force, sincerity conditions contain information that the speaker tries to convey to the addressee. In the case of *etwa*-Q, the speaker conveys to the addressee his biased attitude towards the possible answers via the use of *etwa*, an not-at-issue content encoder. Following the analysis of *nandao*, I propose that *etwa* modifies the Sincerity condition of the QUEST force by adding a piece of information, the speaker's bias, into it.

(77) **Conditions for the question act of *etwa-p?***

   a. *propositional content conditions*: any proposition *p*.

   b. *preparatory conditions*:

      i) S does not know the answer.

      ii) It is not obvious to both S and H that H will provide the information at that time without being asked.

   c. *sincerity conditions*:

  i) S wants this information.

  ii) S publicly commits to $\neg p$ being more likely/desirable than p.

 d. *essential conditions*: counts as an attempt to elicit this information from H.

One last problem we need to solve concerns the property of *etwa* being sensitive to only polar questions. Following the analysis of a similar problem with *nandao* in Chapter 3, I use the idea of *highlighting* and the structural question semantics to solve the sentence-type selectional problem of *etwa-p?*.[19]

(78) $\lambda Q : \underline{\exists_1 p[p \in \bigcup\bigcap Q \wedge (W \setminus p) \in \bigcup\bigcup Q]} . W \setminus \iota q \in \bigcup\bigcap Q \succ^s_{g(w)} \iota q \in \bigcup\bigcap Q$

The selectional problem is then solved by the underlined part of (78).

 Now, we can show the full picture of how *etwa* modifies the embedded question *p?* following the illocutionary update semantics of Farkas & Bruce (2010).

(79) $[\![\mathbf{etwa}]\!]([\![\mathrm{ForceP}]\!]) = K_o$ such that
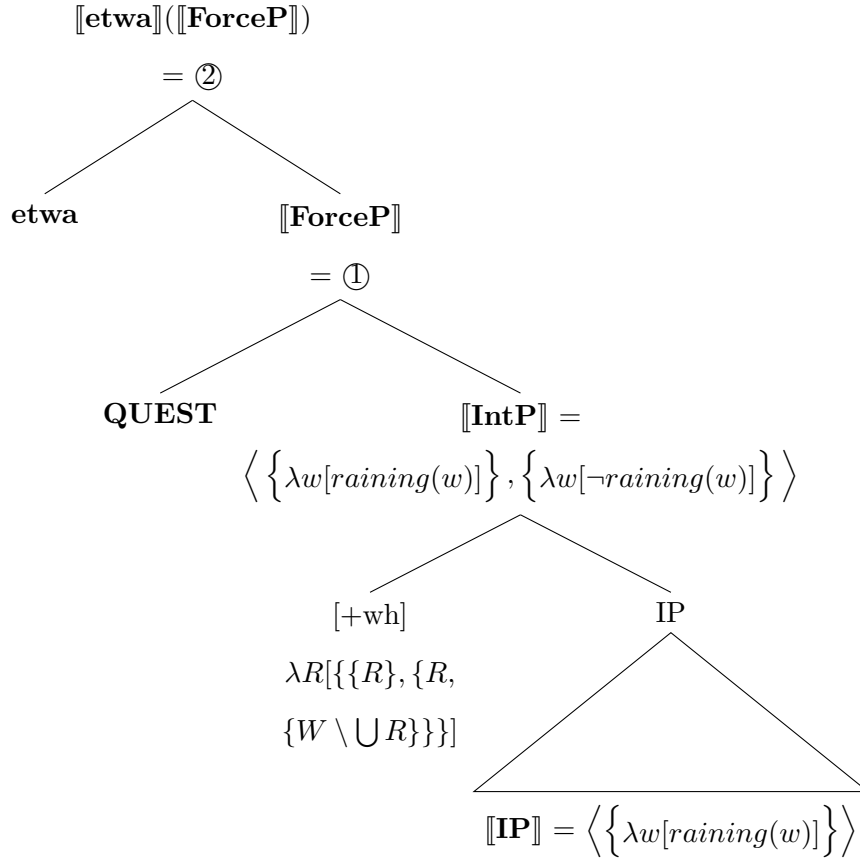
 (i) $DC_{a,o} = DC_{a,i} \cup \Big\{ (\lambda T : \exists_1 p[p \in \bigcup\bigcap top(T) \wedge W \setminus p \in \bigcup\bigcup top(T)] .$
$$W \setminus \iota q \in \bigcup\bigcap top(T) \succ^s_{g(w)} \iota q \in \bigcup\bigcap top(T))(T_i) \Big\},$$

  where $g(w)$ is a contextually provided ordering source based on plausibility or desirability.

(80) is an example of how the derivation of a simple *etwa*-Q goes through.

(80) Regnet es etwa?
  raining it etwa

  'It isn't raining, right?'

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[19]Note that I treat the sentence-type sensitivity as a lexical property encoded in *etwa*. This seems to be especially true if we consider the sentence-type selectional property of MPs in general. Most MPs have different sentence-type restrictions, e.g. *ja* can only appear in declaratives, *denn* only questions, *wohl* in non-imperatives. If the sentence-type selection is not an individual lexical property, we then cannot account for the diverse patterns of MPs in German. For more discussion of sentence-type selection of MPs in German, see Kwon (2005).

$$\llbracket \textbf{etwa} \rrbracket (\llbracket \textbf{ForceP} \rrbracket)$$

$$= ②$$

etwa $\llbracket \textbf{ForceP} \rrbracket$

$$= ①$$

QUEST $\llbracket \textbf{IntP} \rrbracket =$
$$\left\langle \left\{ \lambda w[raining(w)] \right\}, \left\{ \lambda w[\neg raining(w)] \right\} \right\rangle$$

[+wh]   IP
$$\lambda R[\{\{R\}, \{R,$$
$$\{W \setminus \bigcup R\}\}\}]$$

$$\llbracket \textbf{IP} \rrbracket = \left\langle \left\{ \lambda w[raining(w)] \right\} \right\rangle$$

(81) $① = K_o = \textbf{QUEST}(\llbracket \textbf{IntP} \rrbracket, s, K_i)$ s.t.

(i) $DC_{s,o} = DC_{s,i} = \emptyset$

(ii) $T_o = push(\llbracket \textbf{IntP} \rrbracket, T_i) = push(\left\langle \left\{ \lambda w[raining(w)] \right\}, \left\{ \lambda w[\neg raining(w)] \right\} \right\rangle, T_i)$

(iii) $top(T_o) = Q = \left\langle \left\{ \lambda w[raining(w)] \right\}, \left\{ \lambda w[\neg raining(w)] \right\} \right\rangle$

(iv) $ps_o = ps_i \cup \bigcup\bigcup Q = \left\{ \lambda w[raining(w)], \lambda w[\neg raining(w)] \right\}$

(82) $② = K_o = \llbracket \textbf{etwa} \rrbracket (\llbracket \textbf{ForceP} \rrbracket)$ s.t.

(i) $DC_{s,o} = DC_{s,i} \cup \left\{ (\lambda T : \exists_1 p[p \in \bigcup\bigcap top(T) \wedge W \setminus p \in \bigcup\bigcup top(T)] \right.$
$$\left. W \setminus \iota q \in \bigcup\bigcap top(T) \succ^s_{g(w)} \iota q \in \bigcup\bigcap top(T))(T_i) \right\}$$
$$= \left\{ \lambda w[\neg raining(w)] \succ^s_{g(w)} \lambda w[raining(w)] \right\}$$

(ii) $T_o = T_i$

(iii) $top(T_o) = top(T_i) = Q$

(iv) $ps_o = ps_i = \left\{ \lambda w[raining(w)], \lambda w[\neg raining(w)] \right\}$

In this chapter, I have analyzed the syntax and semantics of the BQW *etwa* in German. I clarified the uses of *etwa* in questions. On one hand, like *nandao*, *etwa* is a not-at-issue content encoder which indicates that the speaker has a biased attitude towards the negative polar answer. On the other hand, unlike *nandao*, the bias conveyed by *etwa* can have either a subjective epistemic reading or a bouletic reading. Both these readings are obtained by *etwa* being a weak adverb moving to the Specifier position of ForceP to check the weak [CF] feature. In this position, *etwa* can modify the illocutionary force. This position allows *etwa* to convey the bias meaning by modifying the sincerity condition of the question act, whose effect is to update the speaker's DC set with the bias meaning. In addition, the selectional problem is addressed, since *etwa* and *nandao* have the same uniqueness presupposition encoded in them which only Y/N-Qs can satisfy.

Having seen how *etwa* behaves like a BQW, I will turn to the syntax and semantics of the last BQW, i.e. *naki* in Bangla, in the next chapter.

Chapter 5

An analysis of *naki* in Bangla

5.1 Introduction

The last BQW I will explore in this dissertation is *naki* in Bangla. Morphologically speaking, *naki* like *nandao* literally consists of two parts (though the specific parts are not the same): *na* ('not') and *-ki* (Y/N-Q particle, disjunction, or WH-word). It can occur in two positions, sentence medially or sentence finally (1-2).

(1) Mina naki amerika chole   jacche.↓[1]
     Mina naki America go.IMPV go.3P.PRES.PROG

     'Mina is going away to America(, I heard).'

(2) Mina naki amerika chole   jacche?↑
     Mina naki America go.IMPV go.3P.PRES.PROG

     'Mina is going away to America(, I heard), right?'

(3) Mina amerika chole   jacche   naki?↑
     Mina America go.IMPV go.3P.PRES.PROG naki

     'Mina is going away to America(, I infer), right?' (Bhadra p.c.)

Bhadra (2013) argues that *naki* in different positions express different meanings. When *naki* appears in the sentence-medial position, it conveys the message that the speaker has reported evidence for the prejacent of the sentence with *naki*.

(4) (Reema gets to know from her friend Nidhi that India won the ICC World Twenty20
     yesterday. Reema can say,)

     bharot naki oalD   kap jit-e   giy-ech-e.
     India   naki World Cup win-CP go-PERF-3P

     '(I heard that) India has won the world cup.'

(adapted from Mukherjee 2008: 14)

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[1]↓ indicates falling intonation and ↑ means rising intonation.

(5)   (The neighbor heard a rumor and comes to confirm it with Raj's mother by asking the following.)

Raj naki America-y   songshar pat-te   chay?
Raj naki American.LOC family   spread.INF want.3P

'(I heard that) Raj wants to start a family in America, right?'

(adapted from Bhadra 2013: 2)

Sentence-medial *naki* expresses that the speaker has reportative evidence (e.g. hearsay) about the embedded clause. Following Bhadra's (2013) idea, I regard it as a reportative evidential marker and gloss it *naki*_{REP} henceforth.

(6)   (Shumi is a new comer to a hostel. She sees that her friend has stored water in two buckets. She may immediately ask,)

hotTel-e   jOl-er   Obostha kharap naki?
hostel-LOC water-GEN condition bad   naki?

'(I infer that) The condition of water in the hostel is bad, right?'

(adapted from Mukherjee 2008: 14)

In contrast, as we can see from (6) when *naki* appears at the end of the sentence, it expresses a meaning that the speaker makes an inference about the embedded clause from the current context with observable evidence or based on his own intuition, logic, or other psychological states of the speaker. Such a meaning aligns with what Aikhenvald (2004) classifies as inferential evidential. Hence, I regard it as an inferential evidential marker and gloss it as *naki*_{IFR} hereafter.

The distinction between the two shown here is a bit different from what Mukherjee (2008) has summarized.

(7)   shila *naki* gan shikh-ch-e
Shila H/U song learn-Prog-3

Shila is learning music, as I have heard. (Mukherjee 2008: 2)

(8)   shita baRi giy-ech-e *naki*
sita   home go-Prf-3 Confirm

Sita has gone home. Has she? (ibid.)

Mukherjee glosses the sentence-medial *naki* as an indirect reportative evidential of hearsay (H/U) and the sentence-final one as a confirmation question operator (Confirm). She argues that the sentence-final *naki* "shows that the speaker has some prior knowledge regarding the proposition that is being questioned" (14). Although she labels it as a question operator, Mukherjee acknowledges that sentence-final *naki* also marks indirect evidentiality, i.e. "its inference from some other event or from prior knowledge" (15), which is basically a meaning of inferential evidentiality. The reason why she glosses it as a confirmation question operator is simply because sentence-final *naki* can only be used in questions. We can thus see that the descriptive distinctions between the two *naki*s as summarized by Bhadra (2013) and Mukherjee (2008) are basically the same in terms of indirect evidentiality.

In terms of the analyses of the two *naki*s, Mukherjee (2008) and Bhadra (2013) share the view that the two *naki*s are two separate lexical items. I will focus on the sentence-final *naki* in this chapter, as it patterns similarly with *nandao* in Mandarin and *etwa* in German in terms of sentence-type selection.

Bhadra (2013) also observes that *naki*$_{IFR}$-Qs **necessarily** express bias. They cannot be felicitously uttered in a neutral context without any evidence for the speaker to assume either of the answers.

(9) (Ram has been sitting in a windowless room for several hours, Sita enters, Ram asks her:)

Baire   brishti por-che   naki?
  outside rain   fall-PROG naki$_{IFR}$

'(I infer) it's raining outside, right?' (Bhadra p.c.)

(10) (Shumi is a new comer to a hostel. She sees that her friend has stored water in two buckets. She may immediately ask,)

a. hotTel-e   jOl-er   Obostha kharap naki?
   hostel-LOC water-GEN condition bad   naki$_{IFR}$?

'(I infer that) The condition of water in the hostel is bad, right?'

b. hosTel-e   jOl-e   Obostha bhalo nOye naki?
   hostel-LOC water-GEN condition good NEG naki$_{IFR}$

'(I infer that) The condition of water in the hostel is not good, right?'

(adapted from Mukherjee 2008: 14)

(10) shows that the bias is a **positive** one. In *p-naki?*, the speaker always expresses a bias towards p over $\neg p$; while in *not-p-naki?*, the speaker always conveys a bias towards $\neg p$.

The use of *nOye*,[2] a 3rd-person ordinary negation marker for copula sentences, in (10b) indicates that the embedded clause is a negative one. Unlike *nandao* and *etwa* which convey negative biases, *naki*$_{\text{IFR}}$ in Bangla does not show "polarity reversal" effect (Han 2002, Xu 2012): the polarity of the bias expressed by *naki*$_{\text{IFR}}$ in *p-naki*$_{\text{IFR}}$? is on a par with that of the embedded clause even when the clause is a negative one as in case of (10b).
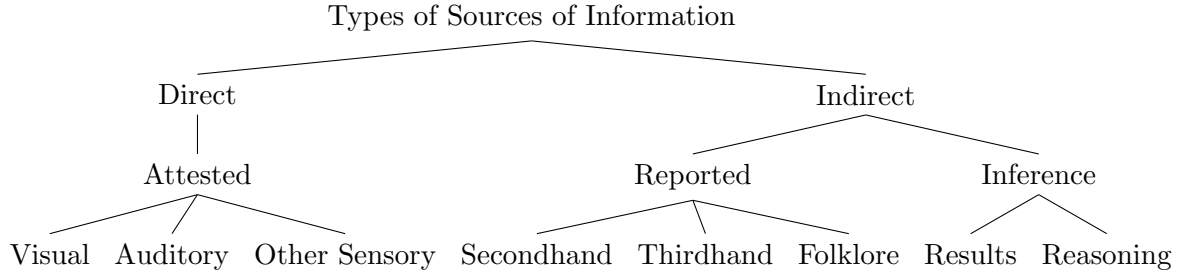
5.2   Evidentials and inferential evidentials

Before we actually analyze the indirect inferential evidential marker *naki* in Bangla, I would like to discuss the linguistic behavior of inferential evidentials in other languages.

Evidentials in general are morphological "markers that indicate something about the *source* of the information in the proposition" (Bybee 1985: 184). They consist of a set of grammaticalized morphemes that deal with the source of knowledge. Languages provide other "lexical means for optional specification of the source of knowledge" (Aikhenvald 2003: 1), e.g. predicate of reporting or inference like *hear* or *guess*. But, evidentials are different from these. First, other lexical means focus on the events (e.g. events of *hearing*, *reporting* or *guessing*) while the main point of a sentence with an evidential is still the propositional content embedded under the evidential, not the source of the propositional content nor the event of getting the information. Secondly, the agents of those predicates are the subjects, but the agents of evidentials are usually the discourse participants of the utterances (i.e. the speaker or the hear).

In terms of the sources of information, Willett (1988) makes the following summary based on typological facts.

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[2]Depending on the transliterations of Bangla texts, it may also be written as *noy* (cf. Thompson 2006) or *nɔŷ* (cf. Thompson 2012).

Types of Sources of Information

```
            Types of Sources of Information
            ┌──────────────────┴──────────────────┐
          Direct                               Indirect
            │                           ┌──────────┴──────────┐
         Attested                    Reported            Inference
    ┌───────┼───────┐          ┌────────┼────────┐      ┌─────┴─────┐
  Visual Auditory Other    Secondhand Thirdhand Folklore Results Reasoning
               Sensory
```

Similarly, Aikhenvald (2004) distinguishes six semantic parameters to cover the typological system of evidentials:

(11)   a. VISUAL: covers information acquired through seeing.

   b. NON-VISUAL SENSORY: covers information acquired through hearing, and is typically extended to smell and taste, and sometimes also to touch.

   c. INFERENCE: based on visible or tangible evidence, or result.

   d. ASSUMPTION: based on evidence other than visible results: this may include logical reasoning, assumption, or simply general knowledge.

   e. HEARSAY: for reported information with no reference to those it was reported by.

   f. QUOTATIVE: for reported information with an overt reference to the quoted source.

(Aikhenvald 2004: 63-64)

Based on Willett's (1988) and Aikhenvald's (2004) taxonomy of evidential systems, an inferential evidential indicates that the body of information comes from reasoning from visible or tangible evidence or results instead of direct sensory observations or various kinds of reports. Such reasoning or deduction is usually done by the speaker of the sentence (in declaratives or interrogatives) (12-14), the addressee (in interrogatives), or even the speech act holder of embedded clauses (in embedded clauses). We will try to explore some of the cases here and compare them with $naki_{IFR}$ in Bangla.

(12)   ó áˣtʲʰùmɨ-ˀ tsʰà-há-ˀh̠ǎ-ǎ   [hà: ᴺǎɨ-:ŋ-:β̥ʲɛ̀]-hà   (Bora)
        I see-⟨t⟩   that-⟨shelter⟩-nwit-rem shelter burn-sIn-⟨shelter⟩
        'I saw a house that had burned (but I did not see it happen).'

(Thiesen & Weber 2012: 307)

Although Thiesen & Weber (2012) gloss the evidential *-ʔha* (-hja) 'nonwitnessed', Aikhenvald (2004) regards it as an inferential evidential indicating that the speaker infers the process from the result although he did not witness the process in person. In view of this, *-ʔha* is actually an evidential marker of inference from results.

An example of the other inferential evidentials, an evidential marker of inference from reasoning, is shown in (13).

(13) chay lika-a-nii   juk-ta-**chra**-a   lika-la   (Wanka Quechua)
      that see-NOMN-1P other-ACC-INFR-TOP see-PAST
      'The witness (lit. my see-er) must have seen someone else' (I infer)

                                        (Floyd 1999; qtd. in Aikhenvald 2004: 165)

A context for which (13) can be felicitously uttered is described by Aikhenvald (2004) as follows:

> A woman's house was robbed. She has been told that her neighbour was seen working near her house earlier that same day. She accuses her neighbour of being the thief. He denies the accusation, and then adds [(13)]. The reasoning is as follows: if the witness saw someone and it was not this man, it must have been someone other than him. (164)

When evidentials are used in interrogative sentences, the source of information could be either the speaker or the hearer depending on the language. The first type is considered by Aikhenvald (2004) as "somewhat rarer" than the other possibility (224). Inferential evidentials in Eastern Pomo and Yukaghir belong to the first type.

(14) k'e·héy=**t'a** mí·   ka·dá-k-k'-**ine**   (Eastern Pomo)
      sef=INTER   2SG.AGENT drill.beads-INFR
      'Did you cut yourself?' (When seeing bandages, or a bloody knife, etc.)

                                                    (McLendon 2003: 116)

In (14), the question is asked to seek information from the addressee while the use of the inferential evidential *-(i)ne* is used to convey that there is enough evidence for the speaker to make an inference about the information denoted by the question nucleus.

(15) qodo ti:-t   kebej-nu-l'el-ŋi?   (Yukaghir)
      how here-ABL go-IPFV-INFR-3PL:INTR
      'How do people go away from here' (N35:513) (Maslova 2003: 228)

(15) could be asked when the speaker infers from non-witness evidence that people go away from him. As noted by Maslova, "[i]n questions, the Inferential marking is possible, but extremely infrequent" (228).

Since the speech act of interrogation involves soliciting an answer from the addressee, the source of information may be shifted to indicate that the addressee is the source of information. This phenomenon is usually called "interrogative flip" (Speas & Tenny 2003, Tenny & Speas 2004, Tenny 2006; see also Faller 2003, Murray 2010, Rett & Murray 2013, a.o.).

(16)   May-pi-**s**   kunan ka-sha-n-ku.   (Cuzco Quechua)
      where-REP now   be-PROG-3-PL
      'Where are they now?'

      EV: (i) speaker asks on behalf of someone else (*-si* anchored to speaker)

      (ii) speaker expects answer to be based on reportative evidence (*-si* anchored to addressee)   (Faller 2003: 22)

-si in Cuzco Quechua is ambiguous in anchoring. It can be anchored to the addressee, asking the addressee to provide reportative evidence when answering the question. In contrast, Cheyenne has a reportative evidential solely anchored to the addressee when used in interrogatives.

(17)   Mó=é-némene-**sèstse**? (Cheyenne)
      y/n=3-sing-RPT.3SG
      'Given what you heard, did he sing?' (Murray 2011: 325)

There are also cases where inferential evidentials are anchored to the addressee in questions.

(18)   kus-kat   kitab a-laN   mu-le-**sa**?   (Magar)
      which-one book R.DEM-LOC sit-IMPF-INF
      'Which book (do you think) is left there?' (The speaker believes the respondent must infer)   (Grunow-Harsta 2007: 163; qtd. in Roque et al. 2017: 129)

There are even cases where the anchor of an inferential evidential may be shifted between the speaker and the addressee in a question depending on the subject of the question.

(19)   the: ha-qə-k   ŋua? (Qiang)
      3sg   DIR-go-INF Q

'Did he go?' (LaPolla & Huang 2003: 208)

In Qiang, a Tibeto-Burman language, when the inferential evidential *-k* is used in a question with non-2nd-person subject, it conveys a meaning that the speaker assumes the addressee "does not have visual evidence of information about the situation being asked about" (ibid.: 207). In this case, *-k* is anchored to the addressee.

On the other hand, when the subject of a question is 2nd person, the inferential evidential *-k* in the question is anchored to the speaker representing the speaker's guess "about some aspect of the question" (ibid.: 208)

(20) ʔũ ʐdʑta: ɦa-qə-k-ən   dʑa?
      2sg Chengdu:LOC DIR-go-INF-2sg Q
      'Did you go down to Chengdu?' (ibid.)

In (20), the speaker makes a guess that Chengdu is the place that the addressee went to.

Compared with other inferential evidentials in questions, $naki_{\text{IFR}}$ in Bangla is an example of the first type of evidential, which is always anchored to **the speaker**.

5.3 Inferential evidentials in questions: an analysis of Conjectural Questions

Littell et al. (2010) find an interesting phenomenon regarding inferential evidentials in questions. They notice that in some Amerindian languages, including St'at'imcets, Nɬeʔkepmxcín and Gitksan, when inferential evidentials are added to questions, the questions loses the power of interrogation. Those questions can be either Y/N-Qs or WH-Qs.

St'at'imcets

(21) lán=**k'a**   kwán-ens-as   ni=n-s-mets-cál=a
      already=**INFER** take-DIR-3.ERG DET.ABS=1sg.POSS-NOM=write-ACT=EXIS
      'She must have already got my letter.'

(22) lán=**ha**   kwan-ens-as   ni=n-s-mets-cal=a
      already=**YNQ** take-DIR-3.ERG DET.ABS=1sg.POSS-NOM=write-ACT=EXIS
      'Has she already got my letter?'

(23) lan=**as**=**há**=**k'a**   kwan-ens-as
      already=**3.SBJN**=**YNQ**=**INFER** take-DIR-3.ERG
      ni=n-s-mets-cal=a
      DET.ABS=1sg.POSS-NOM=write-ACT=EXIS

      'I wonder if she's already got my letter./I don't know if she got my letter or not.'

(24) **swat** ku=lhwál-ci-ts-as   ti=ts'úqwaz'=a
      who DET=leave-APPL-1sg.OBJ-3ERG DET=fish=EXIS

      'Who left me this fish?'

(25) **swát**=as=**k'a**   ku=lhwál-ci-ts-as   ti=ts'úqwaz'=a
      who=SBJN=**infer** DET=leave-APPL-1sg.OBJ-3ERG DET=fish=EXIS

      'I wonder who left me this fish.' (Littell et al. 2010: 1-2)

Nɬeʔkepmxcín

(26) y'e-mín-s=**nke**   e=Meagan   e=ti
      good-REL-3.sub=INFER DET=Meagan DET=tea

      'Meagan must like the tea./Apparently, Meagan likes tea.'

(27) **kéʔ**   k=s-y'e-mín-s   e=Meagan   e=ti
      whether IRL=NOM-good-REL-3.poss DET=Meagan DET=tea

      'Does Meagan like the tea?'

(28) **kéʔ**=ws=**nke**   k=s-y'e-mín-s   e=Meagan   e=ti
      whether=SBJN=INFER IRL=NOM-good-REL-3.poss DET=Meagan DET=tea

      'I wonder whether Meagan likes the tea.'

(29) s-xén'x=**nke**   xeʔ
      NOM-ROCK=**INFER** DEM

      'That must be a rock.'

(30) **kéʔ**   xeʔ k=s-xén'x=s
      whether DEM IRL=NOM-ROCK=3.POSS

      'Is that a rock?'

(31) **kéʔ**=ws=**nke**   xeʔ k=s-xén'x=s
      whether=SBJN=**infer** DEM IRL=NOM-ROCK=3.POSS

      'Maybe it's a rock.'

(32) **stéʔ** xeʔ
      what DEM

      "What is that?'

(33) **stéʔ**=ws=**nke**   xeʔ
      what=SBJN=**INFER** DEM

      'I don't know what that is.' (ibid.: 2-3)

Gitksan

(34) sdin**=ima**=hl   x̱biist
      be.heavy**=INFER**=CND box

      'The box might be heavy.'

(35) **nee=**hl   sdin=hl   x̱biist-a
      YNQ=CND be.heavy=CND box=INTRROG

      'Is the box heavy?'

(36) **nee=ima**=hl   sdin=hl   x̱biist-a
      YNQ=INFER=CND be.heavy=CND box=INTRROG

      'I wonder if the box is heavy.'

(37) **naa** 'an-t   gi'nam-(t)=hl xhlaẃsxw 'as   John
      who S.REL-3 give-3=CND   shirt   PREP John

      'Who gave this shirt to John?'

(38) **naa=ima**   'an-t   gi'nam-(t)=hl xhlaẃsxw 'as   John
      who=INFER S.REL-3 give-3=CND   shirt   PREP John

      'I wonder who gave this shirt to John.' (ibid.: 3)

From this language data, we can see that the inferential evidential markers in St'at'imcets, Nɬeʔkepmxcín and Gitksan are not restricted to a particular sentence type. They can be used in declaratives (e.g. (21, 26, 34)), in Y/N-Qs (e.g. (23, 28, 36)), and in WH-Qs (e.g. (25, 33, 38)). In contrast, $naki_{\text{IFR}}$ can only be used in Y/N-Qs, as already mentioned in Chapter 1.

(39) Y/N-Qs + $naki_{\text{IFR}}$: ✓

      a. tumi jaccho   naki?↑[3]
         You go.2P.PROG naki.IFR

         '(I infer that) You are going, right?'

      b. Tumi -ki   jaccho   naki?
         You   Y/N-Q go.2P.PROG naki.IFR

         '(I infer that) You are going, right?'

(40) declaratives + $naki_{\text{IFR}}$: ×

      * tumi jaccho   naki.↓
         You go.2P.PROG naki.IFR

         (Intended) 'You are going(, I infer).'

(41)   WH-Qs + naki_IFR: ×

    * tader   -ki   labh naki?↑
      they.GEN what profit naki.IFR

    (Intended) 'What's in it for them(, I infer)?'

(42)   Alt-Qs + $naki_{IFR}$: ×

    * brishti porche   kina   naki?↑
      rain   fall.3P.PROG or.not naki

    (Intended) 'It is raining or not(, I infer)?'

Comparing the syntactic distribution of $naki_{IFR}$ with those of inferential evidentials in St'at'imcets, Nɬeʔkepmxcín and Gitksan, we can conclude that the sentence-type sensitivity of $naki_{IFR}$ is **particular** to *naki* itself but **not a general syntactic property of inferential evidential**.

Littell et al. (2010) regard questions with inferential evidentials in the three Amerindian languages as conjectural questions. The answers to conjectural questions are "not known to the Speaker or the Addressee, and they both also think that the other does not know the answer" (96). In this sense, no particular interrogative alternative is favored by the speaker or the addressee. Intuitively conjectural questions do not carry any biases.

Based on the assumption that evidentials presuppose the existence of evidence and types of evidence (Matthewson et al. 2007), Littell et al. (2010) argue that evidentials in

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[3]In Bangla, there are two ways to form Y/N-Qs (Thompson 2012). The first way is to use the so-called Y/N-Q particle *-ki*. *-ki* can be placed right after the subject or at the sentence final position, as shown in the following examples (with special attention to intonation).

  1. ram -ki   sita-ke dekhlo?↑ ✓ ↓ ✓
     Ram Y/N-Q Sita-DAT see.PST

    'Did Ram see Sita?'

  2. ram sita-ke   dekhlo -ki?↑ ✓ ↓ ×
     Ram Sita-DAT see.PST Y/N-Q

    'Did Ram see Sita?'

The Y/N-Qs can also be formed without the use of *-ki*. In this case, a rising intonation must be used to distinguish it from a declarative.

  4. ram sita-ke   dekhlo?↑
     Ram Sita-DAT see.PST

    'Did Ram see Sita?'

  5. ram sita-ke   dekhlo.↓
     Ram Sita-DAT see.PST

    'Ram saw Sita.'

conjectural questions saturate each possible answer on the presuppositional level, and the conjunction of those presuppositions is the presupposition of the conjectural questions. As a result, for a polar question, there will be two pieces of contradictory evidence serving as presuppositions. The conjunction of the contradictory evidence voids the conjectural question presupposition, indicating that the speaker believes that the hearer is not in a position to answer the question.

From Littell et al.'s (2010) analysis of conjectural questions, we can see why conjectural questions do not carry any bias. First of all, the inferential evidential ranges over every possible alternative in the denotation of the embedded clause **unselectively**. For example, (23) has the following meanings.

(43) $[\![(23)]\!]$ = {that she's already got my letter [presupposing there is inferential evidence that she's already got my letter], that she hasn't already got my letter [presupposing there is inferential evidence that she hasn't already got my letter]}

The basic meaning pattern for conjectural questions can be formulated as follows.

(44) $[\![\mathrm{INFER}(p?)]\!] = [\![\mathrm{INFER}]\!]([\![p?]\!]) = [\![\mathrm{INFER}]\!](\{p, \neg p\})$
$= \{\mathrm{INFER}(p) \cdot p, \mathrm{INFER}(\neg p) \cdot \neg p\}$

From (44) we can see that the interrogative alternatives do not show any preference order among them with respect to the inferential evidence. In this case, we could not know which interrogative alternative the question can be biased for and under what criteria.

5.4   The inferential evidential *naki* in Bangla

As we have mentioned in §5.1, $naki_{\mathrm{IFR}}$-Qs necessarily express a positive bias which equals to the polarity to the prejacent. In the cases of *nandao* in Mandarin and *etwa* in German, the biases are epistemic ones based on the speaker's prior epistemic states pertaining to the possible answers. Is the inferential evidential *naki* similar? Let's consider some examples of the uses of $naki_{\mathrm{IFR}}$-Qs in Bangla.

(45) (Zhangsan and Lisi have escaped from prison. Lisi leads them into a dark, abandoned house which Zhangsan has no previous idea of. Zhangsan asks Lisi about the house,)

> Bari.te   keu   nei   naki?
> home.LOC someone is.NEG naki
>
> '(I infer that) There is no one in the house, right?'
>
> EV: The speaker infers from evidence that there is no one in the house.
>
> BIAS: The speaker expects a negative answer that there is no one in the house.

In (45), although Zhangsan holds no prior belief regarding whether there are people in the house or not, $naki_{\text{IFR}}$-Q can still be felicitously uttered. This suggests that the bias conveyed by the $naki_{\text{IFR}}$-Q is not based on the prior beliefs of the speaker. Because of this, $naki_{\text{IFR}}$-Qs can be used even when the bias and the speaker's prior beliefs are inconsistent.

(46)   (Zhangsan and Lisi have escaped from prison. Lisi leads them into a dark house. The house appeared to be abandoned and deserted. Zhangsan knows the house quite well because his relatives were living there. He thinks they might be still living there. When he sees the present look of the house, he is quite surprised.)

> Bari.te   keu   nei   naki?
> home.LOC someone is.NEG naki
>
> '(I infer that) There is no one in the house, right?'
>
> EV: The speaker infers from evidence that there is no one in the house.
>
> BIAS: The speaker expects a negative answer that there is no one in the house.

Both (45) and (46) suggest that the bias on the part of the speaker is inherited from the inference based on evidence, i.e. the interrogative alternative that is biased for is on a par with what the inferential evidence suggests.

As evidentials express the sources of information, could the bias conveyed in $naki_{\text{IFR}}$-Qs be the evidential bias as described in Büring & Gunlogson (2000) and Sudo (2013)? The answer is negative.

First, inferential evidentials in questions do not necessarily express bias meanings. See, for example, (15) in Yukaghir and conjectural questions in St'at'imcets, Nɬeʔkepmxcín and Gitksan.

Second, the following examples shows that the bias is essentially an epistemic one.

(47)   # Brishti porche naki?   Amar mone   hoy   na   brishti porche
           rain   falling naki.IFR I.GEN mind.LOC happen.3P NEG rain   falling

(Intended) '(I infer that) It is raining, right? # I do not believe it is raining.'

(47) tells us that what the $naki_{\text{IFR}}$-Q expresses includes an epistemic state of the speaker, which is indicated by the paradoxical status of adding the contrary epistemic state of the speaker. Encoding the speaker's epistemic state toward one end of all the possible answers is in addition to the evidential meaning of the $naki_{\text{IFR}}$-Q. This epistemic state composes the body of the bias. (47) also shows that p-$naki_{\text{IFR}}$? is biased towards the proposition denoted by the question nucleus.

In terms of the relationship between the evidential meaning and the bias meaning, the bias of $naki_{\text{IFR}}$-Q comes from the fact that the inference from the inferential evidence goes into the speaker's epistemic states by giving a preference ordering to all the interrogative alternatives with respect to the inference in the epistemic modal domain. In other words, *naki* carries two types of meaning, an evidential meaning and an epistemic modal meaning.[4]

In cases where the inferential evidential carries only the evidential meaning but does not interact with the speaker's epistemic domain (i.e. the speaker infers some information from contextual evidence but he does not hold any belief about the information or its alternatives), the bias reading is never available. conjectural questions are a good example of such a case.

The use of $naki_{\text{IFR}}$-Qs confirms our definition of bias in Chapter 1, that it concerns the epistemic state about a certain interrogative alternative on the part of the speaker. This biased epistemic state can be a current persistent belief (*nandao* and *etwa*) or a belief updated by inferential evidence ($naki_{\text{IFR}}$).

Another thing that we can learn from Mukherjee (2008) is that the bias is not identical to a full commitment to the positive interrogative alternative. In her description of the use of sentence-final *naki*, she regards it as a marker of a confirmation question which is used to "[seek] confirmation of the belief state or the presupposition of the speaker" (15). If the speaker fully believes the information provided by the evidential, there is no point of asking a confirmation question. In this sense, I regard $naki_{\text{IFR}}$ (similar to *nandao* and *etwa*) as

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[4]I will not delve into the debate about whether such an epistemic modal meaning is inherent in the evidential meaning or the other way around. For more details regarding this topic, see Chung's (2012) discussion of the built-in epistemic modal meanings of the two indirect evidential *-ess* and *-keyss* in Korean, von Fintel & Gillies's (2010) analysis of the indirect evidential meaning of the epistemic modal *must* in English, and Drubig (2001) and Nuyts (2001) for general discussions.

expressing an epistemic bias on the part of the speaker that the positive polar answer is more likely than the negative one.

To summarize, a $naki_{\text{IFR}}$-Q expresses the evidential meaning identifying the source of information and the type of the source as well as a bias towards the positive polar answer. The bias reading is the result of the epistemic modal meaning stemming from the inferential evidential meaning. The propositional content of the bias as well as the prejacent of the evidential are both identified with the propositional content denoted by the question nucleus.

5.4.1 Semantic and discourse properties of the inferential evidential *naki*

Like many other evidentials in natural languages, the inferential evidential *naki* exhibits global scope .

(48) $Naki_{\text{IFR}} > $ negation

    A: Cabi-ta protibeshi-r   kache rekhe ashish   ni   naki?
        key.CL   neighbor.GEN close keep com.2P.PRES NEG naki$_{\text{IFR}}$

    'You haven't left the key with the neighbor, right?'

    EV = 'A infers that the addressee haven't left the key with the neighbor.'

$$naki_{\text{IFR}} > \neg$$

    BIAS = 'A believes that it is more likely that the addressee hasn't left the key with the neighbor.' $naki_{\text{IFR}} > \neg$

    EV $\neq$ 'A doesn't infer that the addressee has left the key with the neighbor.'

$$* \neg > naki_{\text{IFR}}$$

    BIAS $\neq$ 'A doesn't believe that it is more likely that the addressee has left the key with the neighbor.' $* \neg > naki_{\text{IFR}}$

    (adapted from Bhadra 2013: 4)

(49) $Naki > $ modal

    A: Tor jawa   uchit   naki?
        you go.GEN should naki.IFR

    EV = 'A infers that the addressee should go.' $naki > should$

    Bias = 'A believes that it is more likely that the addressee should go.'$naki > should$

EV ≠ 'A should infer that the addressee goes.'   * *should > naki*

Bias ≠ 'A should believe that the addressee goes.'   * *should > naki*

Murray (2011) observes that "in all languages the evidential contribution is typically new information" (338) (see also Faller 2014). This is true not only of the evidential meaning of $naki_{\text{IFR}}$, but also is applicable to the bias meaning of it. Before hearing the $naki_{\text{IFR}}$-Q, the addressee does not have to know the speaker's position with respect to all the possible answers to the question asked. As soon as the speaker utters the $naki_{\text{IFR}}$-Q, the addressee understands that the speaker is inclined to get the positive polar answer. It is in this sense that I regard $naki_{ifr}$-Qs convey the bias meaning as **new** information.

Faller (2002, 2014) and Murray (2011) argue that evidentials are not-at-issue encoders, because the evidential meaning cannot be directly challenged.

(50)   Reportative evidential in Cuzco Quechua:

A: mana=**s** phalay-ta ati-n=chu
not=REP fly-ACC   can-3=NEG

$p =$ 'it cannot fly. . . '

EV: s was told that p

B:# mana=n chiqa=chu ni pi=pas   chay-ta   willa-ra-sunki=chu
not=BPG true=NEG no who=ADD this-ACC tell-PST-3S2O=NEG

(Intended) 'That's not true. Nobody told you this.' (adapted from Faller 2014: 67)

Similarly, the bias meaning of $naki_{\text{IFR}}$-Q cannot be directly denied either.

(51)   A: se ta   jane   naki?
he that know.3P.PRES naki.IFR

'He knows that, right?'

B: na, se jane   na.
no he know.3P.PRES not

'No, he doesn't know that.'

B':# na, tomar   mone   hoy   na se jane.
no you.GEN mind.LOC happen.3P NEG he know.3P.PRES

(Intended) 'No, you don't think he knows that.'

Furthermore, (51) tells us that the bias meaning (and the evidential meaning) of $naki_{\text{IFR}}$ does not belong to any part of the propositions under question formation. According to

Zimmermann's (2008) "Scope-over-question-formation Test" (cf. §3.3.2 for a brief discussion), $naki_{\text{IFR}}$ is not under the scope of the embedded question, but rather scopes over the question formation.

But, what kind of question does $naki_{ifr}$ embed? Could it be a declarative question? Or should it be a Y/N-Q? I will answer these questions based on evidence from NPI licensing.

Like Y/N-Qs in Mandarin, the Y/N-Q particle *-ki* is optional (cf. fn.3). When *-ki* is not present, a Y/N-Q must have a rising intonation. In this case, we cannot distinguish a declarative question from Y/N-Q simply by the intonation or word order, because the intonation is identical in both. As mentioned in §3.3.1, Gunlogson (2008) provides a very helpful diagnostic for this situation. She notices that declarative questions and declaratives have the same surface syntax, thus they have the same NPI licensing conditions. That is to say, like in positive declaratives, NPIs cannot be licensed in positive declarative questions (52-53).

(52)   * You've ever tried complaining to the supervisor?

(53)   * They've reported any problems? (Gunlogson 2008: 107)

(54)   Have you ever tried complaining to the supervisor?

(55)   Have they reported any problems?

Now we apply the diagnostic to Bangla data. In Bangla, *kono* is an NPI meaning 'some',[5] because it can appear in negative declaratives but not in positive ones.

(56)   * ram kono   chele-ke dekhlo.↓
          Ram some.NPI boy-ACC   see.3P.PST

          (Intended) 'Ram saw some boy.'

(57)   ram kono   chele-ke dekhe-ni.↓
        Ram some.NPI boy-ACC   see.3P-NEG.PST

        'Ram didn't see any boy.'

Kono can also be licensed in Y/N-Qs, with or without *-ki*. This is because polar questions also create an NPI licensing environment (Klima 1964).

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[5]Many thanks to Ambalika Guha (p.c.) for bring this NPI to my attention.

(58)   ram   kono   chele-ke dekhlo?↑
       Ram some.NPI boy-ACC see.3P.PST

       'Did Ram see any boy?'

(59)   ram (ki)   kono   chele-ke dekhlo   (ki)?
       Ram (Y/N-Q) some.NPI boy-ACC see.3P.PST (Y/N-Q)

       'Did Ram see any boy?'

The deciding evidence comes from (60).

(60)   ram   kono   chele-ke dekhlo   naki?↑
       Ram some.NPI boy-ACC see.3P.PST naki.IFR

       '(I infer) Ram saw some boy, right?'

Since the NPI can be used in *naki.*(IFR)-Qs, we can conclude that what $naki_{\text{IFR}}$ embeds is a true Y/N-Q.

5.4.2   *Naki* is not a High Negation

As *naki* literally contains the negative marker *na*, people may wonder if *naki* could be a High Negation which triggers VERUM focus. My answer is **no**.

According to Romero & Han, Romero's (2004, 2006) analysis of biased questions with VERUM focus, the bias is triggered by the Principle of Economy. VERUM is a "meta-conversational" modal that can only be used if there is a reason to violate the Principle of Economy, for instance, if there is inconsistency in the speaker's epistemic states or between the speaker's beliefs and the addressee's beliefs, or the speaker has a certain prior belief but lacks evidence for it. However, none of the situations can be applied to *naki*-Q, because a p-$naki_{\text{ifr}}$? can be felicitously uttered when the speaker has no prior beliefs pertaining to whether p or *not-p* (45).

5.5   Syntax

As we have mentioned in §5.1, *naki* literally consists of the negation *na* and *-ki* (Q-particle, WH-word, or disjunction). This suggests that there might be a close association between *naki* and *-ki*. One possible analysis is that *-ki* and *naki* occupy the same C-head.[6] Because

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[6]This analysis owes much to discussions with Diti Bhadra (p.c.). See Bhadra (forthcoming) for alternative lines of explanation.

naki morphologically consists of the negation *na* and the Q-particle *-ki*, and *naki* and *-ki* have very similar syntactic distribution. In this sense, *-ki* and *naki* are functionally identical as C-head Q-particles, which can explain why, in most cases, *-ki* and *naki* cannot co-occur.

(61)   sentence-medial *naki* + *-ki*:

    a. * Tumi *-ki*   *naki*   amerika chole   jaccho?
        you   Y/N-Q naki.REP america go.IMPV go.2P.PRES.PROG

        (Intended) '(I heard) you are going away to America, right?'

    b. * Tumi *naki*   *-ki*   amerika chole   jaccho?
        you   naki.REP Y/N-Q america go.IMPV go.2P.PRES.PROG

        (Intended) '(I heard) you are going away to America, right?'

    c. * Tumi *naki*   amerika chole   jaccho   *-ki*?
        you   naki.REP america go.IMPV go.2P.PRES.PROG Y/N-Q

        (Intended) '(I heard) you are going away to America, right?'

                                                    (Bhadra p.c.)

(62)   Sentence-final *naki* + *-ki*:

    a. Tumi *-ki*   amerika chole   jaccho   *naki*?
       you   Y/N-Q america go.IMPV go.2P.PRES.PROG naki.IFR

       (Intended) '(I infer) you are going away to America, right?'

    b. * Tumi amerika chole   jaccho   *naki* *-ki*?
        you   america go.IMPV go.2P.PRES.PROG naki.IFR Y/N-Q

        (Intended) '(I infer) you are going away to America, right?'

    c. * Tumi amerika chole   jaccho   *-ki*   *naki*?
        you   america go.IMPV go.2P.PRES.PROG Y/N-Q naki.IFR

        (Intended) '(I infer) you are going away to America, right?' (ibid.)

Since both *-ki* and *naki* are competing for the same C-head, only one can appear. But, as we can see from (62a), this proposal cannot explain why a sentence-medial *-ki* and sentence-final *naki* can co-occur. This phenomenon is also observed by Mukherjee (2008).

(63)   ram -ki   baRi ja-b-e   *naki*
       ram Yes/No home go-Fut-3 Confirm

       'Ram will go home. Will he?' (Mukherjee 2008: 61)

Given this co-occurrence, a comprehensive syntactic solution should cover this possibility.

Before analyzing the syntactic structure of $naki_{\text{IFR}}$-Qs, I want to first review current hypotheses regarding sentence-medial/final -*ki* and sentence-medial/final *naki*.

Bayer (1996) regards sentence-medial -*ki* as a WH-scope marking particle which occupies an IP-internal head. It is an enclitic (or 'anchor' as suggested in Dasgupta (1984)), hence it requires an overt element on its left, which can explain why it usually occupies the second position in the sentence. But Bayer's (1996) account fails to capture the focus reading of the questions with sentence-medial -*ki*, which is observed in Dasgupta (2007), Bayer et al. (2014).

(64)   a. ajke   briSTi poRbe(-)ki
               today rain   will-fall(-)Q

        b. ajke   briSTi(-)ki poRbe?
               today rain(-)Q   will-fall

        c. ajke(-)ki   briSTi poRbe?
               today(-)Q rain   will-fall

(Dasgupta 2007: 165)

Dasgupta (2007) describes the distinctions among these three different positions of (-)-*ki* in (64) as follows,

> The most natural variants of [(64)] are [(64a)] and [(64c)]. [(64c)] is straight '*Will it rain today*?' question; [(64a)] sounds more like '*Is it the case that it will rain today*?'. Variant [(64b)] seems to put specifically the rain in question.(165)

Bayer et al. (2014) observe the same phenomenon and attribute a focalized effect to the sentence-medial -*ki*, i.e. the constituent to which -*ki* is clitized carries a focus reading (in the sense of Rooth 1985). According to their judgments, (64b) is a narrow focus question: As for x, x=rain, is it true or false that x will fall today? Similarly, (64c) can be interpreted as: As for y, y=today, is it true or false that it will rain at time y?

In view of the enclitic nature of -*ki* and the word order between -*ki* and the focused phrase (e.g. *briSTi* 'rain' in (64b)), I follow Bayer et al.'s (2014) analysis of a similar particle *to* in Bangla and propose that the sentence-medial -*ki* is in the head of a full projection XP.

But I depart from them by assuming *-ki* is in the head of IntP, because *-to* can be used in declaratives and imperatives, but *-ki* is found in Y/N-Qs.[7] The Y/N-Q particle *-ki* carries a strong [+foc] feature, thus it attracts a full projection XP in its c-commanding domain to its Specifier to check the [+foc] feature.

(65)   ram -ki   sita-ke   dekhlo?
           Ram Y/N-Q Sita-DAT see.3P.PST

           'Did Ram see Sita?'
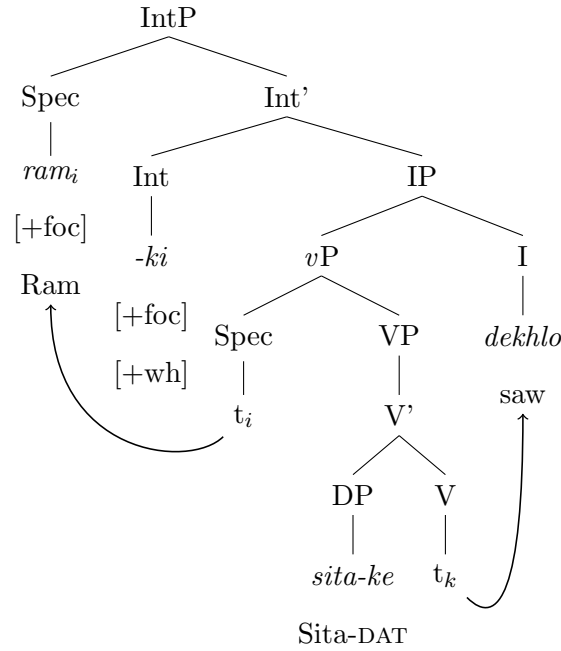
As for the sentence-final *-ki*, I follow Bayer (1996) and Bayer et al. (2014) and assume that the whole IP carries a [+foc] feature and moves to Spec-IntP to check the feature.

(66)   ram sita-ke   dekhlo   -ki?
           Ram Sita-DAT see.3P.PST Y/N-Q

           'Did Ram see Sita?'

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[7]There is a homophonous WH-word *ki* in Bangla, but this cognate is not a clitic. So, in this dissertation, I use *-ki* to refer to the clitic Q-particle *ki*.

```
                              IntP
                    ┌──────────┴──────────┐
                    IP                    Int'
            ┌───────┴───────┐         ┌────┴────┐
           vP               I        Int        IP
       ┌────┴────┐          │         │          △
      ram        VP       dekhlo     -ki        t_IP
      Ram        │         saw     [+foc]
                 V'                 [+wh]
            ┌────┴────┐
           DP         V
            │         │
         sita-ke     t_k
         Sita-DAT
```
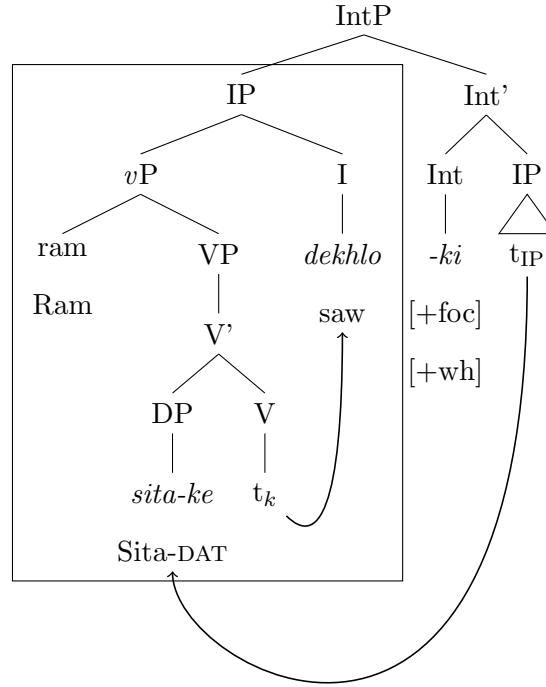
In terms of the analysis of $naki_{\mathrm{IFR}}$, there are two possibilities. One possible analysis which arose from discussion with Bhadra (p.c.) is that the two *naki*s are the same lexical item and based-generated in the same C-head as the Q-particle *-ki*.[8] Thus, like *-ki*, *naki* is also a clitic in this analysis. The enclitic nature of *naki* requires a phonologically overt constituent to move to the Spec-CP position. This movement must be unselective: DP, AdvP, PP or even IP can move to the left of *naki*, creating the sentence-medial use of *naki* (if DP, AdvP or PP moves) as well as sentence-final *naki* (if IP moves). The semantic differences between the two can be due to whether the speech act Speaker head (cf. Speas & Tenny 2003, Tenny 2006) can see through the IP or not. If the IP moves to an edge position (e.g. Spec-CP), the Speaker head can see through IP by c-commanding it and assign it an inferential evidential meaning. Because the Speaker has direct association with the IP. If only DP, AdvP, or PP moves to the Spec-CP, the CP, as a phase, will be impenetrable, which means that the Speaker head cannot have a direct association with the IP content. Thus, an indirect

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[8]See Bhadra (forthcoming) for related discussion.

reportative evidential meaning arises, since the speaker cannot have direct access to the IP content, he resorts to other sources for the information.

This analysis presents a promising picture of a unifying account of *naki* in a plausible way. But, there remain several problems with this proposal.

First of all, the configuration of speech act phrase (sa*P) for sentence-final *naki* cases must be identified with declaratives so that $naki_{\text{IFR}}$-Qs will not be c-commanded by the Addressee head, which in turn results in no "interrogative flip" reading.

(67) A possible derivation of clause-final *naki* based on Tenny (2006):
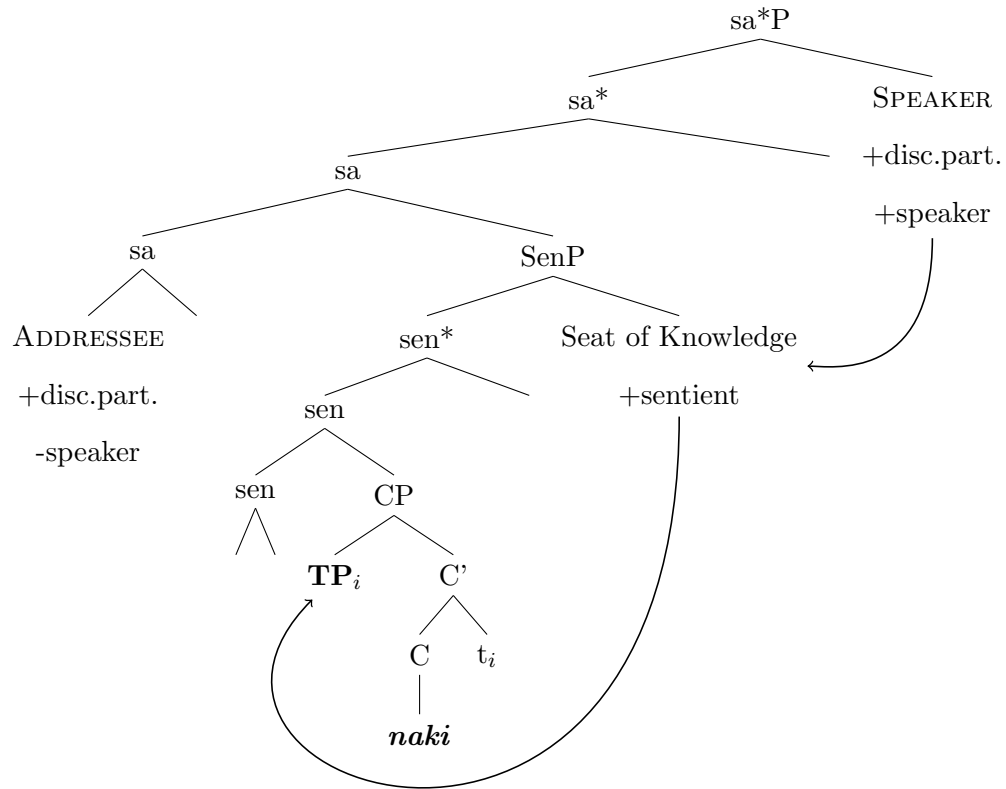
However, as was pointed out in §5.4.1, the clause that is embedded under $naki_{\text{IFR}}$ is a true Y/N-Q, which means the configuration of speech act phrase for this case should be identified with interrogatives. In this case, the Addressee phrase is able to locally c-command the moved IntP on the edge of CP (see (68) below). According to Tenny's (2006) claim, this

should lead to "interrogative flip" reading of evidentials, since the Addressee head is more local than the Speaker head (see also Speas & Tenny 2003).

(68)   A possible derivation of clause-final *naki* with IntP in an Interrogative act:
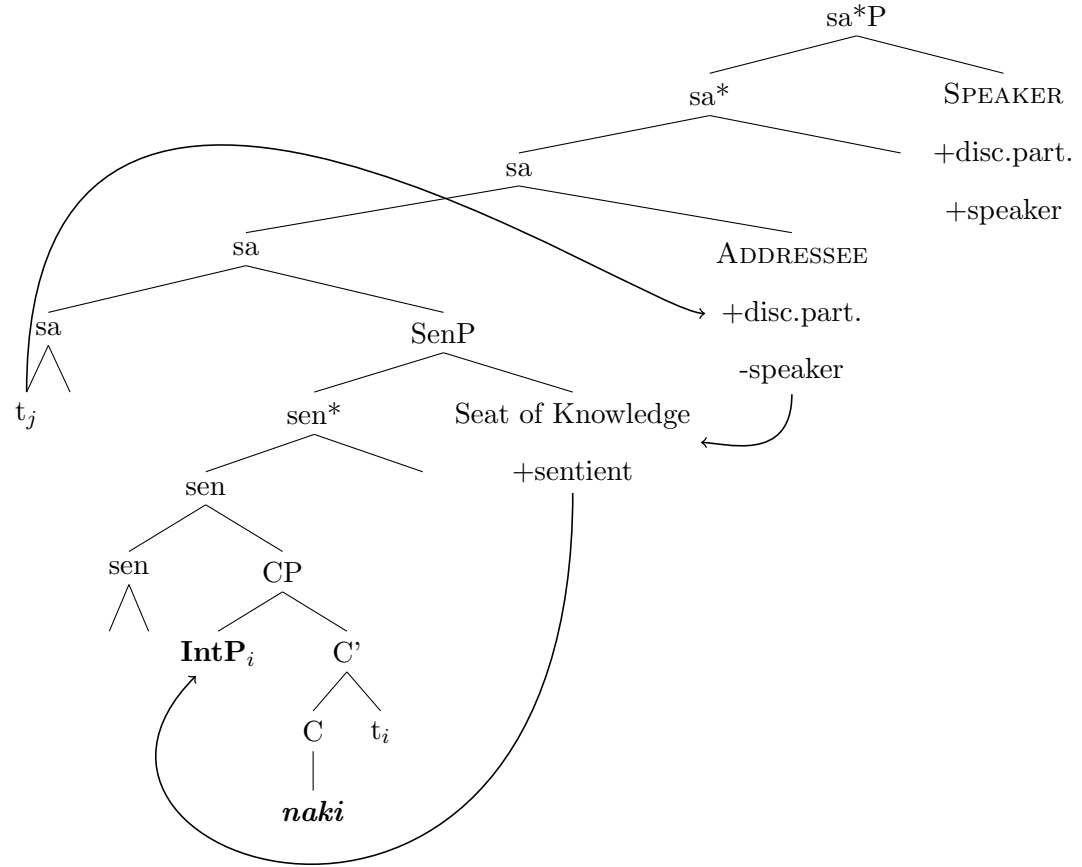
Second, *naki* as an evidential and epistemic modal shows the behavior of an illocutionary modifier (cf. Faller 2002, 2003, 2014), while *-ki* does not. Moreover, the sentence-medial *naki* is compatible with declaratives while Q-particle *-ki* is not. Given this, the problem is how can *naki* and *-ki* function the same and occupy the same C-head?

In the cartography of Rizzi's (2001) split-CP hypothesis, a Q-particle like *-ki* should

occupy the head of IntP (which is the place for Y/N-Q formation) and *naki* should naturally occupy the head of ForceP (which is the interface between syntax and speech act). Within this more fine-grained structure of split CP, we should not expect complementary distribution between *-ki* and *naki* on purely syntactic grounds.

In view of these considerations, I propose a slightly different analysis of *-ki* and *naki* analysis, under the framework of split CP. As there is no obvious evidence for the unifying account of *naki*, I will follow Mukherjee (2008) and treat the two *naki*s as different lexical items. In what follows, I will discuss $naki_{\text{IFR}}$ which occurs only in the sentence-final position.

I further argue that the Force head in Bangla carries an EPP feature. Based on the previous discussion and the functions of *naki* and *-ki*, I further propose that the focus sensitive Q-particle *-ki* is base-generated in the Int head and the inferential evidential marker *naki* is base-generated at Force head.

With the positions of *-ki* and *naki*, we can explain why *naki* and sentence-medial *-ki* can co-occur.[9] The presence of *-ki* triggers an overt focus movement: the focused expression *ram* moves from its base position to the Spec-IntP to check the [+foc] feature. On the other hand, in order to satisfy the EEP feature of *naki* in a C head (i.e. Force), the whole IntP moves to the Spec-ForceP. *Naki* cannot extract a component from IntP to satisfy

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[9]There is also a problem with the current proposal. The proposal predicts the co-occurrence of sentence-final *-ki* and *naki* which is in fact ungrammatical, as we saw in (62c). I have no solution to this problem right now.

EPP either because IntP forms an island[10] or because *naki* only takes question type in the Spec-ForceP (see §5.6 for a semantic explanation). As sentence-medial *-ki* and *naki* occupy different positions, each movement does not pose a threat to the other movement. A possible syntactic tree for (63) is shown below.

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[10]The phenomenon is similar to the V2 and V1 word orders of different sentence types in German. In German, V2 word order can be found in declaratives and WH-Qs but never in Y/N-Qs. All Y/N-Qs have V1 word order.

1. Bücher kaufte David. (Declarative)
   books   bought David

   'David bought books.'

2. Was kaufte David? (WH-Q)
   what bought David

   'What did David buy?'

3. Kaufte David Bücher? (Y/N-Q)
   bought David books?

   'Did David buy books?'

4. * David Kaufte Bücher? (Y/N-Q)
      David bought books

   (Intended) 'Did David buy books?'

As we can see from the examples, DPs (as well as AdvPs and PPs) can move to the left of the finite verbs in declaratives and WH-Qs but not in Y/N-Qs. It seems that a Y/N-Q forms a kind of island that prevents the constituents in it from moving out of it.
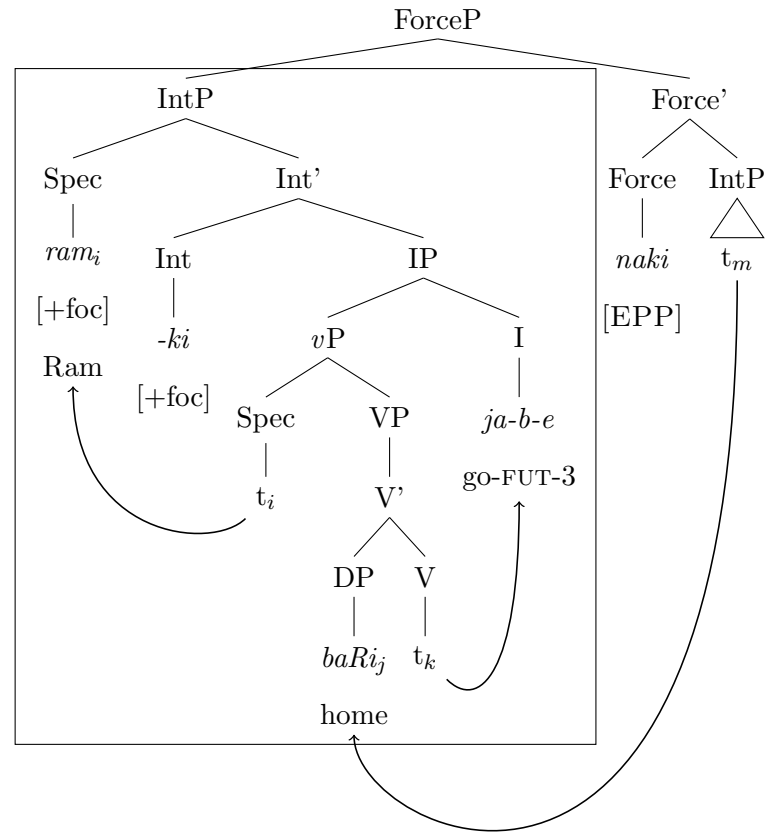
For a general syntactic configuration of *p-naki?* questions, we can posit the following.
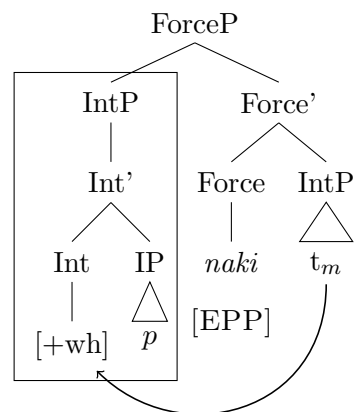
5.6   A compositional semantics of *naki*-Qs

In the previous sections, especially §5.1-5.3, we learned that a *p-naki?* expresses two not-at-issue content, namely the inferential evidential meaning which identifies the source of information and the type of the source and the subjective epistemic bias meaning on the part of the speaker. To summarize, the meaning of *p-naki?* can be paraphrased as follows.

(69) $naki_{\text{IFR}}$ takes the denotation of the IntP, namely $\langle p, \neg p \rangle$ as its argument. It conveys a not-at-issue meaning that the speaker has inferential evidence for p as well as another not-at-issue meaning that the speaker believes that p is more likely than $\neg p$, given the inferential evidence.

Let's start with the inferential evidential meaning of *naki*. There are several proposals in the literature regarding the semantics of evidentials. Faller (2002, 2003, 2014) treats the evidential meaning at the level of Sincerity conditions of the illocutionary force.

(70)   **-mi**: $\begin{array}{l} \text{ASSERT}(p) \\ \text{SINC}=Bel(s,\ p) \end{array} \longmapsto \begin{array}{l} \text{ASSERT}(p) \text{ (Faller 2002: 167)} \\ \text{SINC}=\{Bel(s,p), Bpg(s, Bel(s,p))\} \end{array}$

(71)   **-si**: $\begin{array}{l} \text{ASSERT}(p) \\ \text{SINC}=Bel(s,\ p) \end{array} \longmapsto \begin{array}{l} \text{PRESENT}(p) \text{ (ibid.:200)} \\ \text{SINC}=\{\exists s_2[Assert(s_2,p) \wedge s_2 \notin \{h,s\}]\} \end{array}$

Faller (2002, 2003, 2014) treat all evidentials as illocutionary modifiers. She specifically modifies the speech events (e.g. ASSERT, PRESENT) and their corresponding Sincerity conditions. For example, the direct evidential marker *-mi* in Cuzco Quechua modifies only the Sincerity conditions by adding that the speaker has the best possible ground to believe p. On the other hand, the reportative evidential marker *-si* is different. It changes the speech event of assertion to a new type of primitive speech event of presenting. These changes allow the speaker not to commit himself to the prejecent of the evidential sentence. Accordingly the Sincerity condition of assertion has been completely abandoned and changed into revealing the source of the information (i.e. s_2 other than the speaker or the hearer) and type of it (s_2 asserts p). The merits of this proposal are that the proposal complies with the syntactic and semantic properties described as illocutionary modifiers (cf. Faller 2002, 2014). However, there are some problems with this proposal. First, it is unclear how the illocutionary forces can be modified by evidentials in a compositional way. Secondly,

as noted by many scholars (e.g. Murray (2011)), each evidential seems to introduce a new unique illocutionary force, which is not ideal in terms of economy. Last but not the least, it is unclear how the proposal can be extended to illocutionary forces other than declaratives, such as interrogatives.

Another approach to the semantics of evidentials relies on the assumption that evidentials mainly contribute modal meanings with presuppositions stating the source of information and the types of the sources (e.g. Matthewson et al. 2007). The problem for this account is that not all evidentials have modal meanings. Moreover, as we have discussed previously, at least in Bangla, the information (evidential and bias) conveyed via the inferential evidential *naki* is new. In this case, a presuppositional account of the evidential meaning is not applicable (see §3.3.4 for new information vs. presupposition).

I will adopt Murray's (2011, 2014) proposals for evidential meanings. In view of the pitfalls found in the above proposal, Murray recommends a proposal that separately updates the at-issue content and the not-at-issue content. In her 2011 paper, she uses a Hamblin semantics for evidentials for such a purpose, while in her recent 2014 paper, she shifts to the framework of Update-with-Centering system (cf. Bittner 2014). Although the frameworks are different, the ideas are identical. Basically, at-issue content and not-at-issue content operate at different levels. Not-at-issue content will not be proposed to be updated into context sets, rather they will directly be updated into the common ground. In this way, it is similar to the presuppositional account of evidentials as in both, the evidential information is a part of the common ground. The difference is that Murray's accounts consider the evidential information as new information which is modeled as an update of CG rather than being backgrounded in CG. Thus, following Murray's proposals, I would like to define the inferential evidential meaning of *naki* as the CCP in CG update.

(72)   The evidential meaning: $[\![p-naki?]\!](cg_i) = cg_o = cg_i \cup \{\text{IFR}(s,p)\}$

What (72) says is that the evidential meaning restricts the common ground by adding the information that the speaker has inferential evidence for p. As a result, the new common ground will only include worlds where there is an inferential evidence for p.

Apart from the evidential meaning component, $naki_{\text{IFR}}$-Qs also present the epistemic bias as new information. This means that before hearing the biased question, the addressee

does not have to know that the speaker has a bias towards the positive polar answer. When he hears the biased question, he immediately understands the speaker's epistemic attitude towards the positive polar answer. In this, *naki*.IFR resembles *nandao* and *etwa* which indicate that the speaker's private belief has become a public one. To put it in simple terms, by using *p-naki?* the speaker publicly commits to the information that p is more likely than $\neg p$. This meaning is best modeled as an update of the speaker's Discourse Commitment (DC_s). One more thing worth paying attention to is the source of this bias. As discussed in §5.3, the bias comes from the speaker's epistemic evaluation of the inferential evidence. As the evidential meaning updates the common ground, the epistemic modal base of the speaker also changes accordingly. When the evidential information is updated into CG, it becomes a fact in all the accessible worlds. In effect, the CG update restricts the range of accessible worlds of w. Meanwhile, the speaker has based his epistemic judgment regarding p or $\neg p$ on the inferential evidence for p. Given this inferential evidential, the speaker is inclined to believe p but does not fully believe. In other words, when considering p or $\neg p$ it is ideal to have worlds that have the inferential evidence for p. Thus, the evidential information for p updates both the modal base and the ordering source of the epistemic modal that compares p with $\neg p$.

In order to model the epistemic bias meaning of $naki_{\text{IFR}}$, I would like to give a new definition of Comparative Possibility with update from the information of inferential evidential.

(73) ϕ is more possible than ψ given the update of MB and OS with $\text{IFR}(s, \chi)$ (written as $\phi \succ^{s\,\text{IFR}(s,\chi)}_{g'(w)} \psi$) iff $\phi \succeq^{s\,\text{IFR}(s,\chi)}_{g(w)} \psi$ and $\psi \not\succeq^{s\,\text{IFR}(s,\chi)}_{g'(w)} \phi$, given $\succeq^{s\,\text{IFR}(s,\chi)}_{g'(w)} := \{(\phi, \psi)|\ \forall u \in \psi \exists v : v \preceq_{g'(w)} u \wedge v \in \phi\}$, where $u, v \in \bigcap(f(w) \cup \{\text{IFR}(s, \chi)\})$ and $g'(w) = g(w) \cup \{\text{IFR}(s, \chi)\}$.

(73) can be paraphrased as the following,

(74) ϕ is more possible than ψ in a world w iff within all the accessible worlds of w restricted by the proposition $\text{IFR}(s, \chi)$, for all the ψ-worlds there is always a ϕ-world that is better than them with respect to the updated ordering source $g(w) \cup \{\text{IFR}(s, \chi)\}$.

With (73), we can now model the basic meaning of *p-naki?* as $p \succ^{s\,\text{IFR}(s,p)}_{g'(w)} \neg p$.

Like *nandao* and *etwa*, I regard that the CCP of the $naki_\text{IFR}$-Qs is to update the speaker's DC set, i.e. to make the speaker's biased attitude towards possible answers publicly known.

(75)   The bias meaning: $[\![p - naki?]\!](DC_{s,i}) = DC_{s,o} = DC_{s,i} \cup \{ p \succ^{s\ \text{IFR}(s,p)}_{g'(w)} \neg p \}$

In terms of illocutionary force modified by *p-naki?*, as $naki_\text{IFR}$ occupies the Force head, I regard *naki* and the QUEST force as being incorporated together to make a new Force head.[11] As both evidential meaning and bias meaning are new information, I propose that both meanings are pieces of information added to the sincerity conditions of the new force [*naki*-QUEST].

(76)   **Illocutionary conditions for the question act of *p-naki?***

    a. *propositional content conditions*: any proposition p.

    b. *preparatory conditions*:

        i) S does not know the answer.

        ii)   It is not obvious to both S and H that H will provide the information at that time without being asked.

    c. *sincerity conditions*:

        i) S wants this information.

        ii) S infers from some body of indirect evidence through his own reasoning that p.

        iii) S publicly commits to p being more likely than $\neg p$ considering the inferential evidence for p.

    d. *essential conditions*: counts as an attempt to elicit this information from H.

Like *nandao* and *etwa*, $naki_\text{IFR}$ is only compatible with Y/N-Qs. Following the analyses in Chapter 3 and 4, I use the idea of *highlighting* and the structural question semantics from Chapter 2 to solve the intersentential compatibility problems:

(77) $\lambda Q : \exists_1 p [p \in \bigcup \bigcap Q \wedge (W \setminus p) \in \bigcup \bigcup Q] . \iota q \in \bigcup \bigcap Q \succ^{s\ \text{IFR}(s,\iota q \in \bigcup \bigcap Q)}_{g'(w)} W \setminus \iota q \in \bigcup \bigcap Q$

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[11]The nature of the functional incorporation is still unclear. I leave this for future research.

The underlined part in (77) is a presupposition that aims to check the types of clauses that *naki* takes as one of the arguments. Basically, it says the argument needs to have a unique highlighted alternative and the complement alternative must be included in the denotation of the argument too. As in the case of *nandao* and *etwa*, only Y/N-Qs can satisfy the lexical presupposition of $naki_{\text{IFR}}$.
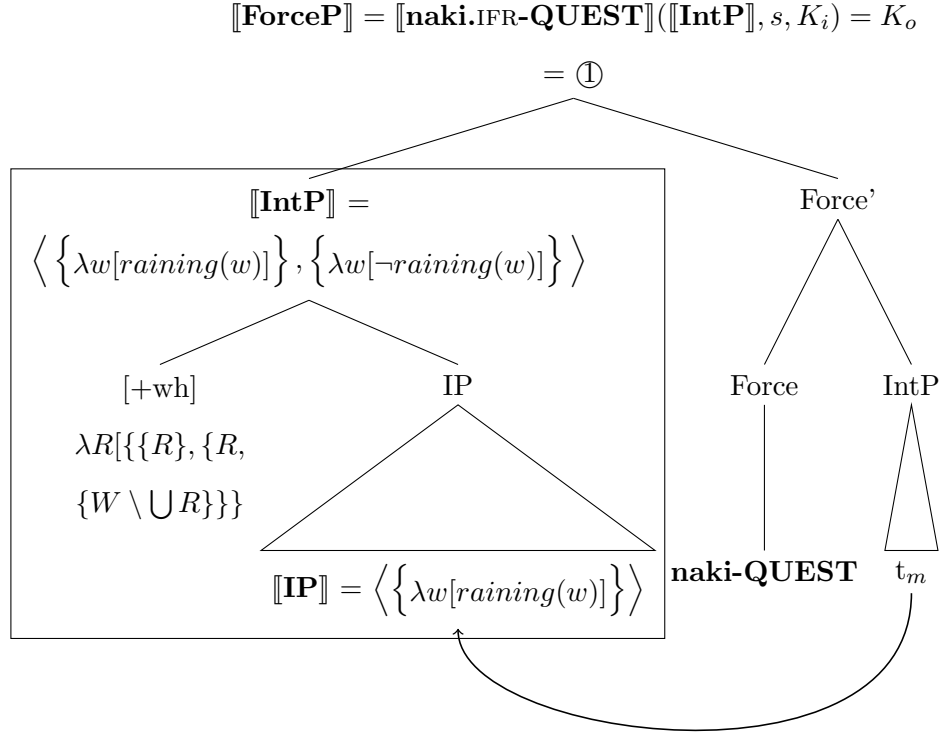
   With all these components at hand, now we can present the semantics of $naki_{\text{IFR}}$-Qs under the revised framework based on Farkas & Bruce's (2010) illocutionary update semantics.

(78) $[\![\textbf{ForceP}]\!] = [\![\textbf{naki.}\text{IFR-}\textbf{QUEST}]\!](Q, s, K_i) = K_o$ such that

   (i) $DC_{s,o} = DC_{s,i} \cup \Big\{ \exists_1 p[p \in \bigcup \bigcap Q \wedge (W \setminus p) \in \bigcup \bigcup Q] \ .$
$$\iota q \in \bigcup \bigcap Q \overset{\text{IFR}(s, \iota q \in \bigcup \bigcap Q)}{\succ_{g'(w)}^{s}} W \setminus \iota q \in \bigcup \bigcap Q \Big\}$$

   (ii) $T_o = push(Q, T_i)$

   (iii) $ps_o = ps_i \cup \bigcup \bigcup Q$

   (iv) $cg_o = cg_i \cup \{\text{IFR}(s, \iota q \in \bigcup \bigcap Q)\}$

For a compositional analysis of a simple like (79), we can have the following calculation.

(79)   brishti por-che   naki?
       rain   fall-PROG naki.IFR

       '(I infer) It is raining, right?'

$$\llbracket\textbf{ForceP}\rrbracket = \llbracket\textbf{naki.}\text{\small IFR}\textbf{-QUEST}\rrbracket(\llbracket\textbf{IntP}\rrbracket, s, K_i) = K_o$$

$$= ①$$

(80) $① = K_o = \llbracket\textbf{naki}.\text{\small IFR}-\textbf{QUEST}\rrbracket(\llbracket\textbf{IntP}\rrbracket, s, K_i)$ s.t.

(i) $DC_{s,o} = DC_{s,i} \cup \left\{ \exists_1 p[p \in \bigcup\bigcap Q \wedge (W \setminus p) \in \bigcup\bigcup Q] \right.$

$$\left. \iota q \in \bigcup\bigcap Q \overset{\text{\tiny IFR}(s,\iota q\in\bigcup\bigcap Q)}{\succ^s_{g'(w)}} W \setminus \iota q \in \bigcup\bigcap Q \right\}$$

$$= \left\{ \lambda w[raining(w)] \overset{\text{\tiny IFR}(s,\lambda w[raining(w)]}{\succ^s_{g'(w)}} \lambda w[\neg raining(w)] \right\},$$

where $g'(w) = g(w) \cup \{\text{\small IFR}(s, \lambda w[raining(w)])\}$

(ii) $T_o = push\left(\left\langle \left\{\lambda w[raining(w)]\right\}, \left\{\lambda w[\neg raining(w)]\right\} \right\rangle, T_i\right)$

(iii) $ps_o = ps_i \cup \left\{ \lambda w[raining(w)], \lambda w[\neg raining(w)] \right\}$

(iv) $cg_o = cg_i \cup \left\{\text{IFR}(s, \lambda w[raining(w)])\right\}$

To conclude the discussion of BQWs, I have given a comprehensive syntactic and semantic analysis of all three BQWs, i.e. *nandao* in Mandarin, *etwa* in German, and *naki* in Bangla. Although they all express bias meanings in questions, they have distinct semantics and syntax. The sentence-final *naki* is an inferential evidential expressing that the information presented is based on the speaker's inference. While the evidential meaning influences the speaker's doxastic domain (i.e. what the speaker inferred becomes what he believes),

a bias meaning arises. In terms of syntax, unlike *nandao* and *etwa* which have multiple possible positions in questions, $naki_{\text{IFR}}$ is strictly sentence-final. I claim that this is a result of *naki* being in the Force head having an EPP feature. In this case, the whole question constituent moves to the Spec-ForceP position to satisfy the EPP feature. Of course, the three BQWs have many things in common. They all update the speaker's DC set with the bias meanings. They are all illocutionary modifiers. And they have the same selectional problems of sentence types, i.e. they can only appear in Y/N-Qs.

The next chapter will conclude the dissertation by addressing how bias in BQW-Qs relate to biased questions more generally.

Chapter 6

Conclusion

In this dissertation, we have analyzed three different kinds of words that necessarily bring into the context the speaker's biased attitudes towards possible answers. The bias can be geared towards the positive answer (e.g. $naki_{\text{INF}}$ in Bangla) or the negative one (e.g. *nandao* in Mandarin and *etwa* in German). From Chapter 3 to 5, we came to know how the different kinds of bias are expressed in three different languages and how syntax, semantics and pragmatics interact with each other to make it happen. Yet, with all of the phenomena and analyses of bias in linguistics, we haven't addressed the fundamental questions concerning bias in its linguistic senses: What is bias? Why do we find bias only in questions?

In Chapter 1, I gave a preliminary version of question bias: "in a biased question, a particular answer is expected while the others are not". As we discussed in §1.2, there are several ways for the speaker to prefer a particular answer to all the others. One way is to rule out certain answers by means of CG knowledge or ungrammatical status of those answers (cf. §1.2.1 and §1.2.2) so that the remaining answer will be the only active answer intended by the speaker. There are also ways involving unbalanced partition of discourse participant's certainty and availability of contextual evidence (cf. §1.2.3 and §1.2.4). Under the "meta-conversational" principle, only unbalanced partitions are compatible with non-neutral contexts (i.e. epistemically biased contexts). So, any prior belief of the speaker against the For-Sure-CG_x p will be the bias, i.e $\neg p$. In this way, a preference among all possible answers is made possible. The function of contextual evidence is to directly provide a preference among all possible answers, i.e. a contextual evidence for p will indicate question bias to be p, while a contextual evidence against p will indicate the bias to be $\neg p$. Another way is to give a preference by asserting a specific answer out of all the possible answers via complex speech acts (cf. §1.2.5). As assertion commits the speaker to the proposition expressed via the assertion Gunlogson (2001, 2002, 2008), in a complex speech

act containing interrogation and assertion, the speaker actually expresses a preference for the asserted answer over all other possible answers in terms of the speaker's commitments.

As for BQW-Qs analyzed in detail in the current dissertation, the expectation of a certain answer on the part of the speaker is achieved the lexically-encoded epistemic preference (i.e. preorder) among all possible answers.

From the above discussion, we may deduce two essential elements for introducing a bias.

(1)   **Conditions on introducing bias** (Draft):

    a. A preference ranking of alternatives;

    b. Selection of a particular alternative as privileged.

However, there are cases in languages that satisfy (1) but still do not express bias. For example, declaratives with focused items in them.

(2)   John only introduces $[\text{Bill}]_F$ to Sue.

According to Rooth, Rooth's (1985, 1992) focus alternative semantics, focus introduces a set of contextually determined alternatives to the utterance. Krifka (2006) uses a non-singleton set $\text{ALT}(\llbracket \alpha \rrbracket)$ to represents the set of the alternative meanings of the focused expression α_F (contra "C" or $\llbracket \alpha \rrbracket^F$ in Rooth's terms). For example, in (2), the alternative set of $[\text{Bill}]_F$ would be ALT(BILL) including, for instance, *Mike*, *Mark*, *Sam* and etc. Krifka (2006) gives a focus alternative semantics meaning to (2) as follows.

(3) $\llbracket(2)\rrbracket = \text{INTROD(SUE)(BILL)(JOHN)} \land \forall Y \in \{\text{INTROD(SUE)}(y)|$

        $y \in \text{ALT(BILL)}\}[\text{Y(JOHN)} \to Y = \text{INTROD(SUE)(BILL)}]$ (Krifka 2006: 109)

What (3) tells us is that among all the alternatives to Bill, John introduces Bill to Sue but no others to Sue. As we can see here, there is a preference of factuality here that in terms of factuality *John introduces Bill to Sue* is on the end of being the fact while *John introduces Mike to Sue*, *John introduces Mark to Sue*, *John introduces Sam to Sue*,... are on the other end. And, the proposition *John introduces Mike to Sue* has been selected as privileged as can be seen from the surface syntax of (2) as well as the semantics in (3). Although every condition of (1) has been satisfied, we do **not** regard (2) as a biased statement.

A similar phenomenon can be found in the meanings of emotive doxastic verbs like *hope* or *fear*.

(4)   John hopes that it is raining. (Anand & Hacquard 2013: 33)

Anand & Hacquard argue that *hope* encodes a preference component that "[r]ain is more desirable to John than no rain" (ibidi.). Similar to the discussion about (2), *it is raining* has been selected on the surface syntax. But, still we do not sense a bias here.

Comparing (2)/(4) with all the biased sentences we have come across in this dissertation, we see that the differences between them lie in whether the alternative introduces into the sentences are part of Question Under Discussion (QUD) (Roberts 1996). That is to say, the bias concerns only the alternatives that are at issue and have not been resolved. Under the update semantics of Farkas & Bruce (2010), those alternatives update the input table T_i. To put it on another word, the alternatives that a bias reading requires are those on the Table.

(5)   **Conditions on introducing bias** (Version 1):

   a. A preference ranking of alternatives;

   b. Selection of a particular alternative as privileged.

   c. The alternatives must update the input table T_i.

(5c) makes sense, as a bias can be regarded as the speaker's guide to solve the issue of how to resolve the alternatives in (5a). If a cooperative addressee has no other resources to solve the issues, or the speaker's opinion is very strong (e.g. full commitment or strong commitment), or he simply regards the speaker's opinion (i.e. (5b)) as a more reliable resource, then the addressee would follow the speaker's guide and accept the biased alternative into his DC set. Hence the biased alternative would be added to CG as a final resolution. This shows how and why biased questions have the flavor of *convincing, coaxing,* or even *coercing.* Such a process cannot be carried out if the newly added issue on the table is a singleton set, because the singleton set has already indicated the resolution and the only resolution, in which case (5a-5b) are unnecessary. In the sense of bias providing the speaker's guide to make a resolution to the items on the table, (5c) can be rewritten as,

(6) **Conditions on introducing bias** (Version 2):

    a. A preference ranking of alternatives;

    b. Selection of a particular alternative as privileged.

    c. The alternatives must update the projected set *ps*.

Because, according to Farkas & Bruce (2010), a projected set *ps* represents the speaker's proposal to add the item on the Table to CG.

With the final version of Conditions on introducing bias, we can now explain the opening statement of this dissertation: "Bias is a linguistic phenomenon that is primarily found in questions". Given (6c), questions can update the projected set with a set alternatives, while declaratives update the projected set with only a singleton set, which does not satisfy (6c).

Within the question types, a bare WH-Q[1] can satisfy (6c) but not (6a-6b), as the WH-Q structurally cannot select a particular alternative and has no preference ranking over all possible answers. Hence, a bare WH-Q do not have any bias reading. Alt-Qs are similar. Taking an A-not-A-Q in Mandarin as an example, it can update the projected set with $\{p, \neg p\}$, which satisfies (6c). But it also fails (6a-6b). This explains why Yuan & Hara (2013) regards A-not-A-Q in Mandarin "can only be used in neutral contexts, i.e., cannot be used in biased contexts" (266). The Conditions on introducing bias can even explain why Yuan & Hara (2015) take Alt-Qs and WH-Qs as "anti-bias questions". Polar questions, on the other hand, satisfies (6c) with updating $\{p, \neg p\}$ into the projected set. They can satisfy (6a-6b), if discourse participants take the highlighted proposition as a fulfillment of (6b) and the structural preference (whether highlighting or not) as the satisfaction of (6a), then we can have a biased polar questions. If not, then they are supposed to be neutral questions. This analysis is in accordance with Yuan & Hara's (2015) analysis of MAQs (questions with *-ma*) in Mandarin.

WH-Qs and Alt-Qs cannot express bias because they structurally cannot satisfy (6a-6b). If there are ways to make them satisfy the two conditions, they would be supposed to express bias. Han's (2002) analysis of WH-Rhetorical Questions (WH-RQs) is an instance of such a case. In her analysis, she creates a preference ranking over all possible answers

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[1]For a bare WH-Q, I regard it as a WH-Q uttered without any contextual information, e.g. a conversation-opening WH-Q.

by using the algebraic structures for WH-words like *who*, which satisfies (6a). She further argues that the WH-word in a rhetorical question (RQ) can only denote the bottom element in its denotational domain (i.e. the algebraic structure of the WH-word) due to Post-LF derivation. In the case of *who*, it denotes the empty set meaning *nobody*. Thus, (6b) is fulfilled as well. With WH-RQs meeting all the conditions of (6), WH-RQs necessarily express bias. Another instance of WH-Qs being biased questions can be found in Rohde (2006) and Caponigro & Sprouse (2007). They take a WH-Q to be an RQ when one of the answers is redundant or contained in CG. In this case, the answer that is redundant or contained in CG will be the one to satisfy (6b). The contextual unequal status (whether being redundant or not, whether being contained in CG or not) actually creates a preference of discourse saliency. In this case, as all three conditions have been met (structurally for (6c) but contextually for (6a-6b), WH-Qs automatically express biases.

In terms of BQW-Qs, BQWs lexically satisfy all three conditions: they selects the unique highlighted answer as an anchor to the privileged proposition, which satisfies (6b); they lexically encode a modal ordering via comparative modality, which fulfills (6a); the questions themselves automatically satisfy (6c). In view of these, no wonder BQW-Qs necessarily express bias. The analysis in the current dissertation presents another source of bias, i.e. a modal approach to bias.

After all, what is bias? To conclude the dissertation, I define it as the following.

(7)   **Bias** in language is an attitude of the speaker towards a set of alternatives that has been newly added to QUD. It is a conversational strategy on the part of the speaker to propose a resolution to the set of alternatives by suggesting the biased alternative be added into the common ground.

Bibliography

Abraham, Werner (1991). The grammaticization 0f the german modal particles. TRAU-GOTT, ELIZABETH CLOSS & BERND HEINE (eds.), *Approaches to Grammaticalization: Volume II. Types of grammatical markers*, John Benjamins Publishing, vol. 19 of *Typologicalstudiesinlanguage*, 331–380.

Aikhenvald, Alexandra (2003). *Evidentiality in typological perspective*, John Benjamins Publishing, vol. 54 of *Typological Studies in Language (TSL)*, chap. 1, 1–32.

Aikhenvald, Alexandra (2004). *Evidentiality*. Oxford University Press.

de Almeida, Claudio (2001). What Moore's Paradox is about. *Philosophy and Phenomenological Research* 62:1, 33–58, URL http://www.jstor.org/stable/2653588.

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

Anand, Pranav & Valentine Hacquard (2013). Epistemics and attitudes. *Semantics and Pragmatics* 6:8, 1–59.

Anderbois, Scott (2012). Focus and uninformativity in yucatec maya questions. *Natural Language Semantics* 20, 349–390.

Asher, Nicholas & Brian Reese (2007). Intonation and discourse: biased questions. *Interdisciplinary Studies on Information Structure* 8, 1–38.

Baker, C. L. (1970). Double negatives. *Linguistic Inquiry* 1:2, 169–186, URL http://www.jstor.org/stable/4177551.

Bayer, Josef (1991). German particles in a modular grammar: Neurolinguistic evidence. *Discourse Particles: Descriptive and Theoretical Investigations on the Logical, Syntactic and Pragmatic Properties of Discourse Particles in German*, John Benjamins Publishing, vol. 12, 253–302.

Bayer, Josef (1996). *Directionality and Logical Form: On the Scope of Focusing Particles and Wh-in-situ*, vol. 34 of *Studies in natural language and linguistic theory*. Springer Science & Business Media.

Bayer, Josef (2012). From modal particle to interrogative marker: A study of German *denn*. Brugè, Laura, Anna Cardinaletti, Giuliana Giusti, Nicola Munaro & Cecilia Poletto (eds.), *Functional Heads: The Cartography of Syntactic Structures*, Oxford University Press, vol. 7 of *Oxford studies in comparative syntax*, 13–28.

Bayer, Josef & Hans-Georg Obenauer (2011). Discourse particles, clause structure, and question types. *The Linguistic Review* 28, 449–491.

Bayer, Josef, Probal Dasgupta, Sibansu Mukhopadhyay & Rajat Ghosh (2014). Functional structure and the Bangla discourse particle *to*. 30th South Asian Languages Analysis Roundtable (SALA 30), University of Hyderabad, 6-8 February 2014.

Beaver, David I. (2001). *Presupposition and Assertion in Dynamic Semantics*. CSLI Publications.

Beck, Sigrid (2006). Intervention effects follow from focus interpretation. *Natural Language Semantics* 14, 1–56.

Bhadra, Diti (2013). Bangla 'Naki': Evidentiality and bias. Ms., Rutgers University.

Bhadra, Diti (forthcoming). *Evidentiality and Epistemic Modality at the Interfaces: A View from Bangla*. Ph.D. thesis, Rutgers University-New Brunswick.

Biezma, María & Kyle Rawlins (2012). Responding to alternative and polar questions. *Linguistics and Philosophy* 35, 361–406.

Bittner, Maria (2014). *Temporality: Universals and variation.* John Wiley & Sons.

Bolinger, Dwight (1978). Yes—no questions are not alternative questions. Hiż, Henry (ed.), *Questions*, Springer, vol. 1 of *Synthese language library*, 87–105.

Borkin, Ann (1971). Polarity items in questions. *Chicago Linguistic Society*, vol. 7.

Bross, Fabian (2012). German modal particles and the common ground. *Helikon. A Multidisciplinary Online Journal* 2, 182–209.

Büring, Daniel & Christine Gunlogson (2000). Aren't positive and negative polar questions the same? MS., UCSC.

Bybee, Joan L. (1985). *Morphology.* John Benjamins Publishing, URL `http://www.jbe-platform.com/content/books/9789027283917`.

Caponigro, I. & J. Sprouse (2007). Rhetorical questions as questions. PuigWaldmüller, E. (ed.), *Proceedings of Sinn und Bedeutung 11*, Universitat Pompeu Fabra, Barcelona, 121–133.

Cardinaletti, Anna (2011). German and italian modal particles and clause structure. *The Linguistic Review* 28:4, 493–531.

Chomsky, Noam (1986). *Barriers.* MIT Press, Cambridge, MA.

Chomsky, Noam (2001). Derivation by phase. Kenstowicz, Michael (ed.), *Ken Hale: A life in language*, Cambridge, MA: MIT Press, 1–52.

Chung, Kyung-Sook (2012). *Space in tense: The interaction of tense, aspect, evidentiality and speech acts in Korean*, vol. 189 of *Linguistik Aktuel/Linguistics Today.* John Benjamins Publishing.

Ciardelli, Ivano, Jeroen Groenendijk & Floris Roelofsen (2012). Inquisitive semantics. NASSLI 2012 lecture notes.

Ciardelli, Ivano, Jeroen Groenendijk & Floris Roelofsen (2015). Inquisitive semantics, URL `http://semanticsarchive.net/Archive/DkxNDY5Z/lecture-notes.pdf`. ESSLLI 2015 Lecture note.

Cohen, Ariel (2007). Incredulity questions. Artstein, Ron & Laure Vieu (eds.), *Decalog 2007: Proceedings of the 11th Workshop on the Semantics and Pragmatics of Dialogue*, 133–140.

Coniglio, Marco (2006). German modal particles in the functional structure of IP. *University of Venice Working Papers in Linguistics* 16, p. 57.

Constant, Noah (2014). *Constrastive Topic: Meanings and Realizations.* Ph.D. thesis, University of Massachusetts, Amherst.

Crespo-Sendra, Verònica, Maria del Mar Vanrell & Pilar Prieto (2010). Information-seeking questions and incredulity questions: gradient or categorical contrast? *Proceedings of Speech Prosody.*

Dasgupta, Probal (1984). Bangla emphasizers and anchors. *Indian Linguistics* 45, 102–117.

Dasgupta, Probal (2007). The ubiquitous complementizer. *Linguistic theory and South Asian languages. Essays in honour of KA Jayaseelan* 163–173.

Diewald, Gabriele (2013). "same same but different"–modal particles, discourse markers and the art (and purpose) of categorization. Degand, Liesbeth, Bert Cornillie & Paola Pietrandrea (eds.), *Discourse Markers and Modal Particles: categorization and description*, John Benjamins Publishing, Amsterdam, vol. 234 of *Pragmatics & Beyond New Series*, 19–48.

Domaneschi, Filippo, Maribel Romero & Bettina Braun (2017). Bias in polar questions: Evidence from English and German production experiments. *Glossa: a journal of general linguistics* 2:1, 1–28.

Drubig, Hans Bernhard (2001). On the syntactic form of epistemic modality. Ms., University of Tübingen.

Faller, Martina (2002). *Semantics and Pragmatics of Evidentials in Cuzco Quechua.* Ph.D. thesis, Stanford University.

Faller, Martina (2003). Propositional- and illocutionary-level evidentiality in Cuzco Quechua. *Proceedings of SULA*, vol. 2, 19–33.

Faller, Martina (2014). Reportativity, (not-)at-issueness, and assertion. *Proceedings of the Annual Meeting of Berkeley Linguistics Society (BLS) 40*, BLS, 62–84.

Farkas, Donka & Kim Bruce (2010). On reacting to assertions and polar questions. *Journal of Semantics* 27:1, 81–118.

Farkas, Donka & Floris Roelofsen (2014). Polar initiatives and polarity particle responses in an inquisitive discourse model. MS.,.

von Fintel, Kai (2003). Epistemic modals and conditionals revisited. Talk for UMass Linguistics Colloquium, UMass.

von Fintel, Kai (2004). Would you believe it? The King of France is back! (Presuppositions and truth-value intuitions). Bezuidenhout, Anne & Marga Reimer (eds.), *Descriptions and beyond: An interdisciplinary collection of essays on definite and indefinite descriptions and other related phenomena*, Oxford University Press, Oxford, 315–341.

von Fintel, Kai & Anthony S. Gillies (2010). Must . . . stay . . . strong! *Natural Language Semantics* 18:4, 351–383, URL `http://dx.doi.org/10.1007/s11050-010-9058-2`.

Fitzpatrick, Justin (2005). The whys and how comes of presupposition and NPI licensing in questions. *Proceedings of the 24th West Coast Conference on Formal Linguistics (WCCFL)*, Somerville, MA: Cascadilla Press, vol. 24, 138–145.

Floyd, Rick (1999). *The structure of evidential categories in Wanka Quechua*. Summer Institute of Linguistics Dallas, TX.

Franck, Dorothea (1980). *Gammatik und Konversation*. No. 46 in MOnographien Linguistik und Kommunikationswissenschaft, Scriptor.

Frey, Werner (2004). The grammar-pragmatics interface and the German prefield. *Sprache und Pragmatik* 52, 1–39.

Gast, Volker (2008). Modal particles and context updating - the functions of German *ja, doch, wohl* and *etwa*. Ms.

Gieselman, Simone & Ivano Caponigro (2010). Two sides of the same pragmatic move: The german discourse particles *etwa* and *nicht*. Ms., UCSD.

Gong, Jiazhen (1995). "nandao" de duoyixing yu "nandao"ju de qiyixing (on polysemy of "nandao" and ambiguity of "nandao"-sentences). *Cishu Yanjiu (Lexicographical Studies)* :2, 125–129.

Groenendijk, Jeroen & Martin Stokhof (1982). Semantic analysis of WH-complements. *Linguistics and Philosophy* 5, 175–233.

Groenendijk, Jeroen & Martin Stokhof (1984). *Studies on the Semantics of Questions and the Pragmatics of Answers*. Ph.D. thesis, University of Amsterdam.

Grosz, Patrick (2006). German discourse particles are weak sentence adverbs. Picchi, Maria Cecilia & Alan Pona (eds.), *Proceedings of the 'XXXII Incontro di Grammatica Generativa'*, 79–91.

Grosz, Patrick G (2015). Information structure and discourse particles. Féry, Caroline & Shinichiro Ishihara (eds.), *The Oxford Handbook of Information Structure*, Oxford University Press.

Grunow-Harsta, Karen (2007). Evidentiality and mirativity in magar. *Linguistics of the Tibeto-Burman area* 30:2, 151–194.

Guerzoni, Elena (2003). *Why Even Ask: On the Pragmatics of Questions and the Semantics of Answers*. Ph.D. thesis, MIT.

Guerzoni, Elena (2004). Even-NPIs in yes/no questions. *Natural Language Semantics* 12, 319–343.

Gunlogson, C. (2001). *True to Form: Rising and Falling Declaratives as Questions in English*. Ph.D. thesis, UCSC.

Gunlogson, Christine (2002). Declarative questions. *Semantics and Linguistic Theory* 12, 124–143, URL `http://journals.linguisticsociety.org/proceedings/index.php/SALT/article/view/2860`.

Gunlogson, Christine (2008). A question of commitment. *Belgian Journal of Linguistics* 22:1, 101–136.

Gutknecht, Christoph & Lutz J. Rölle (1996). *Translating by Factors*. SUNY Press.

Gutzmann, Daniel (2015). *Use-Conditional Meaning*. No. 6 in Oxford Studies in Semantics and Pragmatics, Oxford University Press.

Hacquard, Valentine (2011). Modality. Heusinger, Klaus von, Claudia Maienborn & Paul Portner (eds.), *Semantics: An International Handbook of Natural Language Meaning*, Mouton de Gruyter, Berlin, vol. 2, 1484–1515.

Haida, Andreas (2011). On the semantics and pragmatics of yes/no-questions, yes/no-question disjunctions, and alternative questions. Evidence from Chadic, URL `http://amor.cms.hu-berlin.de/~haidaand/download/Haida2010_DisjunctiveQuestions.pdf`. Humboldt University, Berlin.

Hamblin, Charles L. (1973). Questions in Montague English. *Foundations of Language* 10, 41–53.

Han, Chung-Hye (2002). Interpreting interrogatives as rhetorical questions. *Lingua* 112, 201–229.

Heim, Irene (1984). A note on negative polarity and downward entailingness. Jones, C. & P. Sells (eds.), *NELS 14*, 98–107.

Helbig, Gerhard (1994). *Lexikon deutscher Partikeln*. Peter Lang, Berlin, 2nd edn.

Hengeveld, Kees (1987). Clause structure and modality in Functional Grammar. van der Auwera, Johan & Louis Goossens (eds.), *Ins and Outs of the Predication*, Foris Pulications, Dordrecht, 53–66.

Hengeveld, Kees (1988). Illocution, mood and modality in a functional grammar of spanish. *Journal of Semantics* 6, 227–269.

Höhle, Tilman N. (1992). Über verum-fokus im deutschen. Jacobs, Joachim (ed.), *Informationsstruktur und Grammatik*, VS Verlag für Sozialwissenschaften, Wiesbaden, 112–141, URL `http://dx.doi.org/10.1007/978-3-663-12176-3_5`.

Holmberg, Angers (2013). The syntax of answers to polar questions in english and swedish. *Lingua* 128, 31–50.

Homer, Vincent (2008). Disruption of npi licensing: the case of presuppositions. *Semantics and Linguistic Theory*, vol. 18, 429–446, URL `http://journals.linguisticsociety.org/proceedings/index.php/SALT/article/view/2483`.

Huang, James, Audrey Li & Yafei Li (2009). *The Syntax of Chinese*. Cambridge Syntax Guides, Cambridge University Press.

Jacobs, Joachim (1991). On the semantics of modal particle. Abraham, W. (ed.), *Discourse particles: Descriptive and theoretical investigations on the logical, syntactic and pragmatic properties of discourse particles in German*, Benjamins, Amsterdam, 141–162.

Jung, Linus (2002). Spice up your German! teaching modal particles. Gewehr, Wolf (ed.), *Aspects of modern language teaching in Europe*, Routledge, 148–156.

Karttunen, Lauri (1971). Some observations on factivity. *Paper in Linguistics* 4:1, 55–69, URL `http://dx.doi.org/10.1080/08351817109370248`.

Karttunen, Lauri (1973). Presuppositions of compound sentences. *Linguistic Inquiry* 4:2, 169–193, URL `http://www.jstor.org/stable/4177763`.

Keenan, Edward L. (1971). Two kinds of presupposition in natural language. Fillmore, Charles J. & D. Terence Langndoen (eds.), *Studies in Linguistic Semantics*, Irvington, 45–54.

Kőnig, E. & S. Requardt (1991). A relevance-theoretic approach to the analysis of modal particles in german. *Multilingua* 10-12, 63–77, URL `http://dl.acm.org/citation.cfm?id=117987.117991`.

Klima, Edward (1964). Negation in English. Fodor, Jerry A. & Jerrold J. Katz (eds.), *The structure of language*, Englewood Cliffs, NJ: Prentice-Hall, 246–323.

Koev, Todor K (2013). *Apposition and the Structure of Discourse*. Ph.D. thesis, Rutgers, The State University of New Jersey.

Kramer, Ruth & Kyle Rawlins (2011). Polarity particles: an ellipsis account. Suzi Lima, Kevin Mullin & Brian Smith (eds.), *North-Eastern Linguistic Society (NELS) 39*.

Kratzer, Angelika (1977). What 'must' and 'can' must and can mean. *Linguistics and Philosophy* 1:3, 337–355, URL http://www.jstor.org/stable/25000968.

Kratzer, Angelika (1981). The notional category of modality. Eikmeyer, H.-J. & H. Rieser (eds.), *Words, Worlds, and Contexts: New Approaches in Word Semantics*, Walter de Gruyter, Berlin, 38–74.

Kratzer, Angelika (1991). Modality. von Stechow, A. & D. Wunderlich (eds.), *Semantik/Semantics: An International Handabook of Contemporary Research*, de Gruyter, Berlin, 639–650.

Kratzer, Angelika (1999). Beyond ouch and oops. how descriptive and expressive meaning interact. Ms., UMass.

Kratzer, Angelika (2012). *Modals and Conditionals*. Oxford University Press, New York.

Kratzer, Angelika & Junko Shimoyama (2002). Inderterminate pronouns: The view from Japanese. Otsu, Yukio (ed.), *Proceedings of the Tokyo conference on psycholinguistics*, Hituzi Syobo, Tokyo, vol. 3, 1–25.

Krifka, Manfred (1992). A compositional semantics for multiple focus. Jacobs, Joachim (ed.), *Informationsstruktur und Grammatik*, Westdeutcher Verlag, URL http://amor.cms.hu-berlin.de/~h2816i3x/Publications/Krifka%201992% 20Multiple%20Focus%20Constructions.PDF.

Krifka, Manfred (2001a). For a structured meaning account of questions and answers. Fery, C. & W. Sternefeld (eds.), *Audiatur Vox Sapientia. A Festschrift for Arnim von Stechow*, no. 52 in Studia grammatica, Walter de Gruyter, 1–30, URL http://amor.cms. hu-berlin.de/~h2816i3x/Publications/StructuredQuestions.pdf.

Krifka, Manfred (2001b). Quantifying into question acts. *Natural Language Semantics* 9, 1–40.

Krifka, Manfred (2006). Association with focus phrases. Molnár, Valéria & Susanne Winkler (eds.), *The Architecture of Focus*, Walter de Gruyter, vol. 82, 105–136.

Krifka, Manfred (2011). Questions. Heusinger, Klaus von, Claudia Maienborn & Paul Portner (eds.), *Semantics. An international handbook of Natural Language Meaning*, Mouton de Gruyter, vol. 2, 1742–1785.

Krifka, Manfred (2013). Response particles as propositional anaphors. *Semantics and Linguistic Theory (SALT) 23*, 23, 1–18.

Krifka, Manfred (2014). Embedding illocutionary acts. Roeper, Tom & Margaret Speas (eds.), *Recursion: Complexity in Cognition*, Springer International Publishing, 59–87, URL http://dx.doi.org/10.1007/978-3-319-05086-7_4.

Kuratowski, Kazimierz & Andrzej Mostowski (1976). *Set Theory: With An Introduction To Descriptive Set Theory*. No. 86 in Studies In Logic And The Foundations Of Mathematics, North-Holland, 2nd edn.

Kwon, Min-Jae (2005). *Modalpartikeln und Satzmodus Untersuchungen zur Syntax, Semantik und Pragmatik der deutschen Modalpartikeln*. Ph.D. thesis, der Ludwig-Maximilans-Universität.

Ladd, Robert D (1981). A first look at the sematnics and pragmatics of negative questions and tag questions. *Chicago Linguistic Society*, CLS, vol. 17, 164–171.

LaPolla, Randy J & Chenglong Huang (2003). *A grammar of Qiang: with annotated texts and glossary*, vol. 31. Walter de Gruyter.

Laskowski, Marek (2011). Deutsche modalpartikeln auch and etwa in fragesätzen und ihre polnischen pendants. *Colloquia Germanica Stetinensia*, 19, Wydawnictwo Naukowe Uniwersytetu Szczecińskiego.

Lassiter, Daniel (2010). Gradable epistemic modals, probability, and scale structure. *Semantics and Linguistic Theory (SALT) 20*, 197–215.

Lassiter, Daniel (2011). Measurement and modality: The scalar basis of modal semantics. *New York: New York University dissertation* .

Lewis, David (1979). Scorekeeping in a language game. *Journal of Philosophical Logic* 8:1, 339–359.

Li, Charles N. & Sandra A. Thompson (1981). *Mandarin Chinese: A Functional Reference Grammar*. University of California Press, Berkeley.

Li, Haoze & Hoi-Ki Jess Law (2014). Focus intervention effects and quantificational domains of focus-sensitive operators, URL `http://www.glow37.org/wp-content/uploads/2014/07/day1/Talk7-Li_Law.pdf`. GLOW 37 slides.

Li, Haoze & Jess H.-K. Law (2016). Alternatives in different dimensions: a case study of focus intervention. *Linguistics and Philosophy* 39:3, 201–245, URL `http://dx.doi.org/10.1007/s10988-016-9189-0`.

Liao, Hsiu-Chen (2011). *Alternatives and Exhaustification: Non-Interrogative Uses of Chinese Wh-words*. Ph.D. thesis, Harvard University.

Lin, Shih-Yueh (2015). An Inquisitive Semantics analysis for the Chinese polar question particle *Ma*. Brochhagen, Thomas, Floris Roelofsen & Nadine Theiler (eds.), *Proceedings of the 20th Amsterdam Colloquium*, 237–245.

Link, Godehard (1983). The logical analysis of plurals and mass terms: A lattice-theoretical approach. Portner, P. & B. H. Partee (eds.), *Formal Semantics: The Essential Readings*, Blackwell.

Littell, Patrick, Lisa Matthewson & Tyler Peterson (2010). On the semantics of conjectural questions. *Evidence from evidentials* 28, 89–104.

Liu, Yuehua (1988). Yudiao shifei wenju (intonational yes/no-questions). *Yuyan Jiaoxue Yu Yanjiu (Language Teaching and Linguistic Studies)* :2, 25–34.

Lyons, J. (1977). *Semantics*, vol. 2. Cambridge University Press.

Maslova, Elena (2003). *Evidentiality in Yukaghir*, John Benjamins Publishing, vol. 54 of *Typological Studies in Language (TSL)*, chap. 5, 219–236.

Matthewson, Lisa, Henry Davis & Hotze Rullmann (2007). Evidentials as epistemic modals: Evidence from st'át'imcets. *Linguistic variation yearbook* 7:1, 201–254.

McLendon, Sally (2003). *Evidentials in Eastern Pomo with a comparative survey of the category in other Pomoan languages*, John Benjamins Publishing, vol. 54 of *Typological Studies in Language (TSL)*, chap. 5, 101–130.

Möllering, Martina (2004). *The Acquisition of German modal particles: A corpus-based approach*, vol. 10. Peter Lang.

Mukherjee, Aparna (2008). *Evidentiality: The Case of Bangla 'NAKI'*. Ma thesis, Jawaharlal Nehru University, New Delhi.

Murray, Sarah E. (2010). Evidentials and questions in Cheyenne. Lima, Suzi (ed.), *Proceedings of SULA 5: Semantics of Under-Represented Languages in the Americas*, GLSA publications, Amherst, MA, 139–155, URL `http://semanticsarchive.net/Archive/DRiZTUyN/Murray_Evidentials-and-Questions-in-Cheyenne.pdf`.

Murray, Sarah E. (2011). A Hamblin semantics for evidentials. Cormany, Ed, Satoshi Ito & David Lutz (eds.), *Proceedings of Semantics and Linguistic Theory (SALT) 19*, eLanguage, 324–341, URL `http://journals.linguisticsociety.org/proceedings/index.php/SALT/article/view/2543/2291`.

Murray, Sarah E. (2014). Varieties of update. *Semantics and Pragmatics* 7:2, 1–53.

Nehls, Dietrich (1989). German modal particles rendered by english auxiliary verbs. Weydt, Harald (ed.), *Sprechen mit Partikeln*, Walter de Gruyter, 282–292.

Nishigauchi, Taisuke (1990). *Quantification in the Theory of Grammar*, vol. 37 of *Studies in Linguistics and Philosophy*. Kluwer Acadamic Publishers, Dordrecht.

Nuyts, Jan (2000). Tensions between discourse and structure and conceptual semantics: The syntax of epistemic modal expressions. *Studies in Language* 24, 103–135.

Nuyts, Jan (2001). Subjectivity as an evidential dimension in epistemic modal expressions. *Journal of Pragmatics* 33:3, 383 – 400, URL `http://www.sciencedirect.com/science/article/pii/S0378216600000096`.

Portner, Paul (2009). *Modality*. Oxford University Press, New York.

Potts, Christopher (2003). *The Logic of Convertional Implicatures*. Ph.D. thesis, UCSC, URL `http://web.stanford.edu/~cgpotts/dissertation/potts-dissertation-1up.pdf`.

Potts, Christopher (2007). The expressive dimension. *Theoretical linguistics* 33:2, 165–198.

Qi, Huyang & Chanchan Ding (2006). Fanjielei yuqi fuci de fouding gongneng fenxi (a study on negative function of interrogative modal adverbs). *Hanyu Xuexi (Chinese Language Learning)* :5, 3–13.

Quirk, R., S. Greenbaum, G. Leech & J. Svartvik (1985). *A Comprehensive Grammar of the English Language*. Longman.

Reese, Brian Jon (2007). *Bias in Questions*. Ph.D. thesis, The University of Texas at Austin.

Rett, Jessica (2016). The semantics of attitude markers and other illocutionary content, URL `http://www.linguistics.ucla.edu/people/Rett/Rett%202016%20attitude%20markers.pdf`. UCLA, 2016 Aug. version.

Rett, Jessica & Sarah Murray (2013). A semantic account of mirative evidentials. *Semantics and Linguistic Theory*, vol. 23, 453–472.

Rieser, Lukas (2013). *Function and Meaning of German Modal Particles by their Japanese Correspondents*. mathesis, Uni Wien.

Rizzi, Luigi (1997). The fine structure of the left periphery. Haegeman, Liliane (ed.), *Elements of Grammar*, Kluwer, 281–337, URL `http://www.ling.uni-potsdam.de/~thiersch/ShortMvt/L_Rizzi_Fine_Structure_of_Left_Periphery.pdf`.

Rizzi, L. (2001). On the position INT(ERROGATIVE) in the left periphery of the clause. Cinque, G. & G. Salvi (eds.), *Current Studies in Italian Syntax*, Elsevier, Amsterdam, 287–296.

Rizzi, L. (2002). Locality and left periphery. Belletti, A. (ed.), *Structures and Beyond - The Cartography of Syntactic Structures*, Oxford University Press, vol. 3, 223–251.

Rizzi, L. (2006). On the form of chains: Criterial positions and ECP Effects. Cheng, L. & N. Corver (eds.), *Wh Movement: Moving on*, MIT Press, Cambridge, Mass., 97–134.

Roberts, Craige (1996). Information structure in discourse: Towards an integrated formal theory of pragmatics. *OSU Working Papers in Linguistics* 49, 91–136.

Roberts, Craige (2006). *Only*, presupposition and implicature. Ms., Ohio State University.

Roelofsen, Floris & Sam van Gool (2010). Disjunctive questions, intonation, and highlighting. et al., M. Aloni (ed.), *Logic, language and meaning*, Springer Berlin Heidelberg, 384–394.

Rohde, H. (2006). Rhetorical questions as redundant iterrogatives. *San Diego Linguistic Papers* 2, 134–168.

Romero, M. (2006). Biased yes/no questions: The role of verum. *Sprache und Datenverarbeitung* 30:1, 9–24.

Romero, M. & Chung-Hye Han (2002). Verum focus in negative Yes/No questions and Ladd's $p/\neg p$ ambiguity. Jackson, Brenda (ed.), *Proceedings of Semantics and Linguistics Theory (SALT) 12*, 204–224.

Romero, M. & Chung-Hye Han (2004). On negative yes/no questions. *Linguistics and Philosophy* 27:5, 609–658.

Rooth, Mats (1985). *Association with focus*. Phd thesis, Cornell.

Rooth, Mats (1992). A theory of focus interpretation. *Natural language semantics* 1:1, 75–116.

Roque, Lila San, Simeon Floyd & Elisabeth Norcliffe (2017). Evidentiality and interrogativity. *Lingua* 186–187, 120 – 143, URL `http://www.sciencedirect.com/science/article/pii/S0024384114002630`. Essays on evidentiality.

Russell, Bertrand (1905). On denoting. *Mind* 14:56, 479–493.

Sadock, J. M (1971). Queclaratives. et al, Douglas Adams (ed.), *Seventh Regional Meeting of the Chicago Linguistic Society (CLS)*, CLS, Chicago, IL, 223–232.

Sadock, Jerrold M. (1974). *Toward a Linguistic Theory of Speech Acts*. Academic Press.

van der Sandt, ROB A. (1992). Presupposition projection as anaphora resolution. *Journal of Semantics* 9:4, 333–377, URL `http://jos.oxfordjournals.org/content/9/4/333.abstract`.

Scheffler, Tatjana (2008). *Semantic operators in different dimensions*. Ph.D. thesis, University of Pennsylvania.

Schwarzschild, Roger (1999). GIVENness, Avoid F and other constraints on the placement of focus. *Natural Language Semantics* 7, 1441–177.

Searle, John R (1969). *Speech acts: An essay in the philosophy of language*, vol. 626. Cambridge university press.

Searle, John R. & Daniel Vanderveken (1985). *Foundations of Illocutionary Logic*. Cambridge University Press, New York.

Shanon, Benny (1976). On the two kinds of presuppositions in natural language. *Foundations of Language* 14:2, 247–249, URL `http://www.jstor.org/stable/25170057`.

Shi, Dingxu (2000). Topic and topic-comment constructions in mandarin chinese. *Language* 76:2, 383–408.

Speas, Margaret & Carol Tenny (2003). Configurational properties of point of view roles. *Asymmetry in grammar* 1, 315–345.

Stalnaker, Robert (1974). Pragmatic presupposition. Munitz, Milton & Peter Unger (eds.), *Semantics and Philosophy*, New York University Press, New York, 197–213.

Stalnaker, Robert (1978). Assertion. *Syntax and Semantics* 9, 315–332. Reprinted in *Context and Content*. Oxford: Oxford University Press, 1999. 78-95.

Stede, Manfred & Birte Schmitz (2000). Discourse particles and discourse functions. *Machine translation* 15:1-2, 125–147.

Steinbach, Markus (2002). *Middle Voice*. John Benjamins Publishing, URL `http://www.jbe-platform.com/content/books/9789027297556`.

Strawson, P. F. (1950). On referring. *Mind* 59:235, 320–344.

Strawson, P. F. (1952). *Introduction to Logical Theory*. New York: Wiley.

Struckmeier, Volker (2014). Ja doch wohl C? Modal Particles in German as C-related elements. *Studia Linguistica* 68:1, 16–48.

Su, Yingxia (2000). "Nandao" ju doushi fanwenju ma? (Are "nandao"-sentences all rhetorical questions?). *Yuwen Yanjiu (Linguistic Research)* 74, 56–60.

Sudo, Yasutada (2013). Biased polar questions in English and Japanese. Gutzmann, Daniel & Hans-Martin Gaertner (eds.), *Beyond Expressives: Explorations in Use-Conditional Meaning*, no. 28 in Current Research in the Semantics/Pragmatics Interface (CRiSPI), Brill, Leiden, 275–296.

Sun, Jüfang (2007). Fuci "nandao" de xingcheng (the formation of "nandao"). *Yuyan Jiaoxue Yu Yanjiu (Language Teaching and Linguistic Studies)* :4, 48–53.

Syrett, Kristen & Todor Koev (2014). Experimental evidence for the truth conditional contribution and shifting information status of appositives. *Journal of Semantics* 32:3, 525–577, URL `https://doi.org/10.1093/jos/ffu007`.

Tenny, Carol & Peggy Speas (2004). The interaction of clausal syntax, discourse roles, and information structure in questions. *Proceedings of the Workshop on Syntax, Semantics and Pragmatics of Questions*, ESSLLI 16, Nancy, France, 70–73.

Tenny, Carol L (2006). Evidentiality, experiencers, and the syntax of sentience in japanese. *Journal of East Asian Linguistics* 15:3, 245–288.

Thiesen, Wesley & David Weber (2012). *A grammar of Bora: with Special Attention to Tone*, vol. 148 of *SIL International® Publications in Linguistics*. SIL International.

Thomason, R. H. (1992). Accommodation, meaning, and implicature: interdisciplinary foundations for pragmatics. P.R. Cohen, et al (ed.), *Intentions in Communication*, MIT Press, Cambridge, 325–363.

Thompson, Hanne-Ruth (2006). Negation patterns in bengali. *Bulletin of the School of Oriental and African Studies, University of London* 69:2, 243–265, URL `http://www.jstor.org/stable/20182038`.

Thompson, Hanne-Ruth (2012). *Bengali*, vol. 18 of *London Oriental and African Language Library*. John Benjamins Publishing.

Thurmair, Maria (1989). *Modalpartikeln und ihre Kombinationen*, vol. 223 of *Linguistische Arbeiten*. Niemeyer, Tübingen.

Tomioka, Satoshi (2010). Contrastive topics operate on speech acts. Zimmermann, Malte & Caroline Féry (eds.), *Information Structure: Theoretical, Typological, and Experimental Perspectives*, Oxford University Press, 115–138.

Tonhauser, Judith (2012). Diagnosing (not-)at-issue content. *Proceedings of Semantics of Under-represented Languages of the Americas (SULA) 6*, 239–254.

Tsao, Feng-fu (1977). *A Functional Study of Topic in Chinese: The Frist Step Toward Discourse Analysis*. Ph.D. thesis, USC.

Wagner, Michael (2005). NPI-licensing and focus movement. Georgala, E. & J. Howell (eds.), *Semantics and Linguistic Theory (SALT) XV*, Cornell University, Ithaca, NY, 276–293.

Wagner, Michael (2006). Association by movement: evidence from npi-licensing. *Natural Language Semantics* 14:4, 297–324, URL `http://dx.doi.org/10.1007/s11050-007-9005-z`.

Waltereit, Richard (2001). Modal particles and their functional equivalents: A speech-act-theoretic approach. *Journal of Pragmatics* 33, 1391–1417.

Wang, Yu-Fang Flora (1993). The Chinese NPI *renhe* in contexts with negative values. *Proceedings of PACFoCoL I (1993): Pacific Asia conference on formal and computational linguistics*, The Computational Linguistics Society of ROC Taipei, Taiwan, 265–281.

Willett, Thomas (1988). A cross-linguistic survey of the grammaticization of evidentiality. *Studies in Language. International Journal sponsored by the Foundation "Foundations of Language"* 12:1, 51–97, URL `http://www.jbe-platform.com/content/journals/10.1075/sl.12.1.04wil`.

Xu, Beibei (2012). *Nandao*-Question as a special kind of Rhetorical Question. Chereches, Anca (ed.), *Semantics and Linguistic Theory (SALT) 22*, 508–526.

Xu, Beibei (2013). An experimental study on *nandao*-Questions in Mandarin. Ms., Rutgers (presented at the joint conference of 22nd IACL and NACCL-26).

Yin, Shulin (2006). *Xiandai hanyu fanwenju yanjiu ('A study of Rhetorical Questions of Modern Chinese')*. Ph.D. thesis, Fujian Normal Unversity.

Yu, Genyuan (1984). Fanwenju de xingzhi he zuoyong (the nature and function of rhetorical questions. *Zhongguo Yuwen (Studies of The Chinese Language)* 6, 1–7.

Yu, Tianyu (2006). Xiandai hanyu fanwenju de fanjiedu (intensity of the rhetorical question about modern chinese). *Neimenggu Minzu Daxue Xuebao (Shehui kexue ban) (Journal of Inner Mongolia University for Nationalities (Social Sciences))* 32:4, 102–104.

Yuan, Mengxi & Yurie Hara (2013). Questioning and asserting at the same time: the L% tone in A-not-A questions. Aloni, M., M. Franke & F. Roelofsen (eds.), *Proceedings of the 19th Amsterdam Colloquium*, 265–272.

Yuan, Mengxi & Yurie Hara (2015). Two ways to deploy hamblin alternatives: Mandarin questions and unconditionals. Ms.

Zimmermann, M. (2008). Discourse particles in left periphery. Cook, P., W. Frey, C. Maienborn & B. Shaer (eds.), *Dislocated Elements in Discourse: Syntactic, Semantic, and Pragmatic Perspectives*, Routledge, Oxford, 200–231. Ms., Humboldt University.

Zimmermann, Malte (2011). Discourse particles. *Semantics: An international handbook of natural language meaning*, De Gruyter, vol. 2, 2011–2038.