

# Dedicated Bias Word: A Case Study of Mandarin *Nandao-Qs*

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April 29, 2017

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In Mandarin, questions containing the adverb *nandao* (*Nandao-Qs*) have been shown to have rhetorical (Yu 1984, Qi & Ding 2006, Yu 2006, Xu 2012) as well as information-seeking bias uses (Gong 1995, Su 2000, Sun 2007, Xu 2013). Both uses **necessarily** express a bias.

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## Example (*Nandao-p?* in neutral context: rhetorical question)

- (1) (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?*

*nandao you be I mom Y/N-Q*

'What are you, my mom or something?'

= 'You are not my mom!'

## Example (*Nandao-p?* with evidence against *p*: rhetorical question)

- (2) (A and B are in a sound-proof office with a closed curtained window. They are discussing what the weather is like outside. A insists it is sunny outside. 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!'

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You look nandao outside PROG rain Y/N-Q  
'Look! It is not raining outside!'

## Example (*Nandao-p?* with evidence for *p*: info-seeking biased Q)

- (3) (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?  
nandao he fly.go-ASP Y/N-Q  
'He hasn't escaped, right?' ≠ 'He hasn't escaped.'

## Example (*Nandao*-Qs in a context with only evidential bias)

- (4) (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?'

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'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?'

# The bias conveyed by *nandao*-Qs is a negative one

In a *nandao-p?*, the question is always biased towards *not-p*.



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## Example

- (5) # 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?'

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(Intended) 'The sun didn't rise from the east, right?'
- (6) Nandao taiyang da xibian chulai-le ma?  
nandao sun from west exit-ASP Y/N-Q  
'The sun didn't rise from the west, right?'

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In a *nandao-p*?, the question is always biased towards *not-p*.

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

The negative epistemic bias is brought by *nandao*: without *nandao*, *p*? doesn't necessarily express a bias.

## A summary of *nandao-p?* uses

<i>Nandao-p?</i>	Speaker's bias towards $p$	Neutral	Speaker's bias against $p$
Evidence for $p$	×	×	✓(IQ)
Neutral	×	×	✓(RQ)
Evidence against $p$	×	×	✓(RQ)

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## Example (\* *Nandao* + declarative)

- (7) \* *Nandao* Lisi hui lai.  
nandao Lisi will come  
(Intended) 'Lisi will not come.'

# Intersentential distribution

*Nandao* is sensitive to sentence types.

## Example (\* *Nandao* + declarative)

- (7) \* *Nandao* Lisi hui lai.  
nandao Lisi will come  
(Intended) 'Lisi will not come.'

## Example (\* *Nandao* + Alt-Q)

- (8) \* *Nandao* Lisi xihuan he cha haishi kafei?  
nandao Lisi like drink tea or coffee  
(Intended) 'Does Lisi like to drink tea or coffee?'

## Example (\* *Nandao* + A-not-A-Q)

- (9) \* *Nandao* Lisi xi-bu-xihuan he cha?  
nandao Lisi like-not-like drink tea  
(Intended) 'Does Lisi like to drink tea or not?'



## Example (\* *Nandao* + A-not-A-Q)

- (9) \* *Nandao* Lisi xi-bu-xihuan he cha?  
nandao Lisi like-not-like drink tea  
(Intended) 'Does Lisi like to drink tea or not?'

## Example (\* *Nandao* + WH-Q)

- (10) \* *Nandao* shui bang-guo ni ne?  
Nandao who help-EXP you WH-Q  
(Intended) 'Who helped you?'

*Nandao* is only compatible with Y/N-Qs.

## Example (✓ *Nandao* + Y/N-Q)

- (11) *Nandao* *Zhangsan* *chi-le* *fan* (ma)?  
*Nandao* *Zhangsan* eat-ASP rice Y/N-Q  
'Zhangsan didn't have a meal, right?'

Generally, *nandao* can surface freely in a sentence before the predicate.

## Example

- (12) (Nandao) Zhangsan (nandao) bu (\*nandao) renshi Lisi  
nandao Zhangsan nandao not nandao know Lisi  
(\*nandao) ma?  
nandao Y/N-Q  
'Zhangsan knows Lisi, right?'

But, this free pattern cannot be found when *nandao* meets a focus DP (cf. Huang et al. 2009).

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## Example (*Nandao* > Foc)

- (13) (Nandao) Zhiyou (\*nandao) [Zhangsan]<sub>F</sub> (\*nandao) bu renshi  
nandao only nandao Zhangsan nandao not know  
Lisi ma?  
Lisi Y/N-Q

'It is not the case that only [Zhangsan]<sub>F</sub> doesn't know Lisi, right?'

Occasionally, *nandao* can appear sentence-finally in colloquial Mandarin.

## Example (*Nandao* > Y/N-Q)

- (14) Zhangsan bu renshi Lisi ma(,) nandao?  
Zhangsan not know Lisi Y/N-Q nandao  
'Zhangsan knows Lisi, right?'

## Semantic properties of *nandao*

*Nandao* takes **global scope**, i.e. it scopes over negation and all other operators.

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### Example (*Nandao* > $\neg$ )

(15) 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'.

*nandao* >  $\neg$

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

\*  $\neg$  > *nandao*



## Semantic properties of *nandao*

### Example (*Nandao* > $\forall$ )

(16) Nandao meige ren dou yao qu?  
nandao each.CL person DOU need go

'It is not the case that everyone needs to go, right?' *nandao* >  $\forall$   
(Intended) 'For every person  $x$ , *nandao* does  $x$  need to go?'  
\*  $\forall$  > *nandao*

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### Example (*Nandao* > $\diamond$ )

- (17) 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* >  $\diamond$   
(Intended) Bias = 'It is possible that A believes that it is more likely that *Zhangsan goes to America*.'  
\*  $\diamond$  > *nandao*

## Discourse properties of *nandao*

The bias conveyed by *nandao*-Qs can be **new information**.

### Example

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

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## Example

(19) (A and B are talking about the war in Afghanistan. A thinks the US should retreat, while B disagrees.)

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  
Nandao US.troop should continue at Afghanistan  
zhujun?  
station.troop

'The US troops shouldn't continue to stay in Afghanistan, right?'

The bias conveyed by *nandao* is speaker-oriented.

## Example

(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  $\neq$  '(Generally/In fact), It is more likely that Zhangsan likes fruits.'

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

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- 8 *Nandao* can convey old information
- 9 The bias conveyed by *nandao* is speaker-oriented



# What is *nandao*?

The bias meaning contributed by *nandao* in many ways resembles presupposition, conventional implicature (CI), and illocutionary modifier (IM). All of them can pass **“Hey, wait a minute” test** (Shanon 1976, von Stechow 2004, Amaral et al. 2007, Koev 2013, Faller 2014) but fail **Question Formation Test** (Amaral et al. 2007, Tonhauser 2012, Koev 2013). All of them exhibit global scope. With these, I conclude that *nandao* is also a **not-at-issue content encoder**.

## Example (“Hey, wait a minute” test)

(21) 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

hey wait.wait You believe Zhangsan no like eat

shuiguo de ba!

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.’

## Example (Question Formation Test)

(22) A: Nandao Yuehan shi ge yisheng?  
nandao John be CL doctor  
'John is not a doctor, right?'

B<sub>1</sub>: # 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<sub>2</sub>: # Bu, ni juede ta shi ge yisheng.  
no you think he be CL doctor  
(Intended) 'No, you think that he is a doctor.'

# What is not *nandao*?

## Example (Backgrounding effect of Presupposition)

- (23) John has children and *his children* are bald. (van der Sandt 1992: 334)
- (24) Lance Armstrong survived cancer. And most riders know that Lance Armstrong is a cancer survivor. (adapted from Potts 2003: 42)

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## Example (Presupposition is not speaker-oriented)

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

# *Nandao* is not a presupposition trigger

## Comparison between Presupposition and the bias conveyed by *nandao*

- Presupposition: old, back-grounded information, and not speaker-oriented
- The epistemic bias conveyed by *nandao*: new information and speaker-oriented

## Nandao is not a CI encoder

Conventional Implicature shows *anti-backgrounding effect*: “in cases where the content of a supplement is part of the initial context, the result is infelicity due to redundancy” (Potts 2003: 41).

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### Example (Anti-backgrounding effect)

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



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## Example (Anti-backgrounding effect)

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

## Comparison between CI and the bias conveyed by *nandao*

- CI: shows anti-backgrounding effect
- The epistemic bias conveyed by *nandao*: doesn't show anti-backgrounding effect

## *Nandao* is not a negation

In Mandarin, negation like *bu* and *mei* can change answer patterns when they appear in Y/N-Qs.

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In Mandarin, negation like *bu* and *mei* can change answer patterns when they appear in Y/N-Qs.

### Example (*p?*)

(27) A: Zhangsan xinhuan Xiaoqing ma?

Zhangsan like Xiaoqing Q

'Does Zhangsan like Xiaoqing?'

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

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

## Example (*Not-p?*)

(28) A: Zhangsan bu xinhuan Xiaoqing ma?  
Zhangsan not like Xiaoqing Q

'Does Zhangsan not like Xiaoqing?'

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

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

## Example (*Nandao-p?*)

(29) A: Nandao Zhangsan xihuan Xiaoqing ma?  
nandao Zhangsan like Xiaoqing Q

'Zhangsan doesn't like Xiaoqing, right?'

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

## Example (✓ VERUM + declarative)

(30) 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: (4))

## Example (✓ VERUM + WH-Q)

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

≈ 'It is true that Karl has not lied.'

(adapted from Höhle 1992: (11))

## Example (✓ VERUM + Y/N-Q)

(32) (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: (8))



## *Nandao* is not a VERUM focus

### Example (✓ VERUM + Y/N-Q)

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A: **hat** er den Hund denn getrenten?

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### Comparison between VERUM and *nandao*

- VERUM: compatible with declaratives, Y/N-Q, and WH-Q
- *Nandao*: only in Y/N-Q

## Example (\* Backgrounding effect)

(33) Alas, it is raining. (Faller 2014: 72)

(34) Context: the speaker describes the reactions of people when the train first came to their region.

a. tren tren imayna=**chá**

train train how=CONJ

'The train, the train, how might it be?'

b. kuru hina=**s** suchu-n

bug like=REP crawl-3

'It crawls like a bug (they say).'

c. yana animal=**si**

black animal=REP

'It's a black animal.' (qtd. in *ibid.*)

## Example (\* Anti-backgrounding effect)

- (35) chaymanta-pas willay-man-chis [...] qaynuchay  
then-ADD tell-1O-PL yesterday  
p'unchay-taq=**sis** huk wayna arma-ntin=**sis**  
day-CONTR=REP one young.man weapon-INCL=REP  
ka-n-man ka-ra-n hinaspa  
be-3-COND be-3-PST then  
wañu-ra-chi-pu-sqa enamorada-n-ta.  
die-CAUS-BEN-NX.PST girlfriend-3-ACC

'We are also told (the following). Yesterday there was a young man with a weapon, he then killed his girlfriend.' (Faller 2014: 72)

# Nandao is an Illocutionary Modifier

## Comparison among not-at-issue content encoders

	P	CI	IM	nandao
<b>Convey new information</b>	×	✓	✓	✓
<b>Backgrounding effect</b>	✓	×	×	×
<b>Anti-backgrounding effect</b>	×	✓	×	×
<b>Participant-oriented</b>	×	✓	✓	✓

(P=Presupposition; CI=Conventional Implicature; IM=Illocutionary Modifier)

## *Nandao* is a subjective epistemic modal adverb

The syntactic position of *nandao* (> FocP, Y/N-Q), the discourse status as Illocutionary Modifier, and its nature of expressing speaker's epistemic bias resemble what Lyons (1977) categorizes as subjective epistemic modals.

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### Definition (Subjective epistemic modal)

In principle, two kinds of epistemic modality can be distinguished: objective\* and subjective\*... 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. (Lyons 1977: 797-800)

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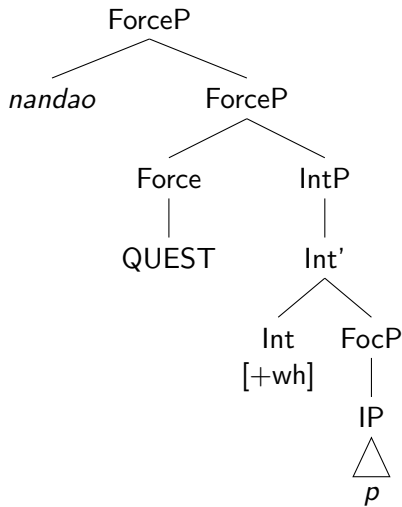
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### Definition (Subjective epistemic modal)

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Thus, I propose that *nandao* is a subjective epistemic modal adverb with the following syntax for *nandao-p?* (cf. Lyons 1977, Rizzi 2002)

# The syntax of *nandao-p*?





# The basic meaning of *nandao*

## The meaning of *nandao* in *nandao-p*?

*nandao* takes the question denotation of  $\{p, \neg p\}$  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  $p$ .

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- how to select a specific answer out of the question denotation
- how to model the epistemic preorder
- how to hook the epistemic preorder to the speaker.

# The selectional problem

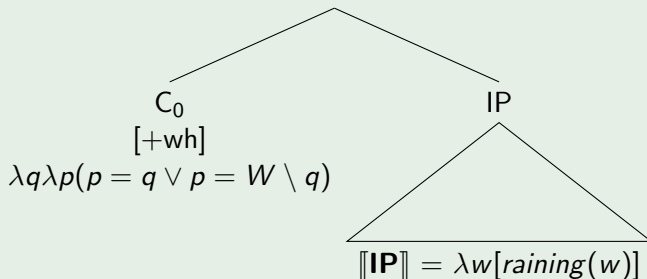
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## Example (Is it raining?)

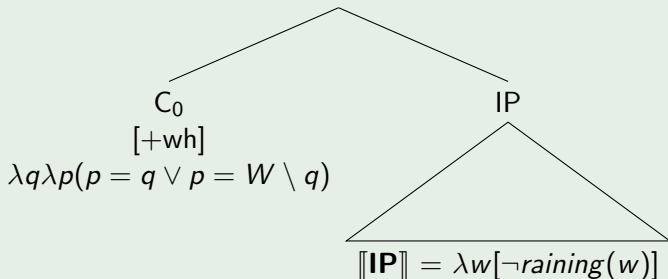
$\llbracket \text{is it the case that [it is raining]} \rrbracket =$   
 $\{\lambda w[\text{raining}(w)], \lambda w[\neg \text{raining}(w)]\}$



# The selectional problem

## Example (Is it not raining?)

$$\llbracket \text{is it the case that [it is not raining]} \rrbracket = \{ \lambda w [\text{raining}(w)], \lambda w [\neg \text{raining}(w)] \}$$





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**Highlighting** can help: The idea of highlighting from Roelofsen & van Gool (2010) can differentiate answers to a question.

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(36)  $[[Q]]_H := [[p]]_H$  ( $p$  is the question nucleus of  $Q$ ). If  $p$  is an atomic proposition,  $[[p]]_H = \{p\}$ ; if  $p$  is composed of a disjunction of  $a$  or  $b$ ,  $[[p]]_H = \{a, b\}$ . (adapted from Roelofsen & van Gool 2010)

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- $\llbracket p \text{ or } q? \rrbracket_H = \llbracket p \text{ or } q \rrbracket_H = \{p, q\}$
- $\llbracket P(x)? \rrbracket_H = \emptyset$  (Ciardelli et al. 2012, Farkas & Roelofsen 2014)

# The epistemic bias in Kratzerian Modality Theory

The core meaning of *nandao* in *nandao-p?* is the epistemic bias, i.e. the speaker believes that the correct answer is more likely to be  $\neg p$  than  $p$ . Such an epistemic modal meaning can be represented in Kratzerian framework for modality using the notation of **Comparative Possibility** Kratzer (1981).

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## Definition (Comparative Possibility)

- (37)  $\phi$  is more possible than  $\psi$  (written as  $\phi \succ_{g(w)}^s \psi$ ) iff  $\phi \succeq_{g(w)}^s \psi$  and  $\psi \not\prec_{g(w)}^s \phi$ , given  $\succeq_{g(w)}^s := \{(\phi, \psi) \mid \forall u \in \psi \exists v : v \preceq_{g(w)} u \wedge v \in \phi\}$ , where  $u, v \in \bigcap f(w)$ . (adapted from Lassiter 2011: 21-22)



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

## *Nandao*-Q as Discourse Commitment update

Whenever the addressee hears *nandao-p?*, he becomes aware of the speaker's **private** attitude toward all possible answers, i.e. the speaker's bias.

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### Definition (CCP of *nandao-p?*)

$$(38) \quad \llbracket \textit{nandao} - p? \rrbracket (DC_{s,i}) = DC_{s,o} = DC_{s,i} \cup \{ \neg p \succ_{g(w)}^s p \}$$

(*i* = input, *o* = output)

## Definition (Context $K =$ )

<b>A</b>	<b>Table</b>	<b>B</b>
$DC_A$	$S$	$DC_B$
<b>Common Ground</b> $cg$		<b>Projected Set</b> $ps$

(**A**: speaker; **B**: addressee; **DC**: A set of A's or B's public beliefs; **S**: the syntactic form of the sentence; **T**: a stack of ordered pairs containing unresolved at-issue contents; **ps**: projected set of possible at-issue contents to update CG)

## Definition (Update semantics of **A**ssertion)

$\mathbf{A}(S[D], a, K_i) = K_o$  such that

- (i)  $DC_{a,o} = DC_{a,i} \cup \{p\}$
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# A revised update semantics of **Question** based on the structural question semantics with *Highlighting*

## Definition (Revised)

(39) **QUEST**( $Q, s, K_i$ ) =  $K_o$  such that

(i)  $DC_{s,o} = DC_{s,i}$

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(40)  $\llbracket \mathbf{ForceP} \rrbracket = \mathbf{QUEST}(Q, s, K_i) = K_o$

# Uniqueness presupposition as a way to selectional problem

Comparing with other discourse particles which are sensitive to different types of sentences (e.g. *daodi* in Mandarin can appear in non-Y/N questions; *ja* in German can only appear in declaratives, *denn* only questions, *wohl* in non-imperatives), I treat the sentence-type sensitivity as a lexical property encoded in *nandao*.

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## Definition (The bias meaning of *nandao*)

$$\lambda \langle \llbracket Q \rrbracket_H, \llbracket Q \rrbracket \rangle : \underline{\exists_1 p [p \in \llbracket Q \rrbracket_H \wedge (W \setminus p) \in \llbracket Q \rrbracket]} . W \setminus \iota q \in \llbracket Q \rrbracket_H \succ_{g(w)}^s$$
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## A compositional analysis of *nandao*-Qs

Extending Farkas & Bruce's (2010) update semantics of speech acts, I define *nandao*, an Illocutionary Modifier, as a function that takes the output context state ( $K_o$ ) of ForceP as an argument and outputs an updated context state ( $K'_o$ ).

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- \* *Nandao* + WH-Q: WH-Q does not have highlighted answers Ciardelli et al. (2012), Farkas & Roelofsen (2014); WH-Q does not have both positive and negative forms of an answer in its denotation

# Rhetorical reading vs. Information-seeking biased reading

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An extreme case of  $\neg p \succ_{g(w)}^s p$ :  $\neg p$  is a **mutual belief**

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- Both RQ and IQ uses are within the spectrum of the semantics of nandao-Q
- RQ/IQ readings depend on how the context affects the speaker's epistemic states

Thank you!

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