

## Considering an issue: The doubt-suspect ambiguity of Mandarin *huaiyi*\*

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### 1. Introduction

The Mandarin attitude verb *huaiyi* exhibits ambiguity between ‘doubt’ and ‘suspect’ in different contexts, as documented in previous studies (Li 1987, Yuan 2014, Lu 2016; among others). For instance, in a scenario where a painting has been stolen, and the speaker is asked to speculate on who could have stolen it, as in (1), *huaiyi* is interpreted as ‘suspect’. In this context, *huaiyi* gets the positive belief reading.

(1) Q: *Who do you think is capable of stealing this painting?*

A: Wo *huaiyi* [Lisi]<sub>F</sub> you zhe ge nengli. (Positive belief reading)  
I HUAIYI Lisi have this CLF ability  
‘I **suspect** that [Lisi]<sub>F</sub> could have such an ability.’

By contrast, when the speaker wants to argue against the common belief that Lisi is the thief, as in (2), *huaiyi* is interpreted as ‘doubt’. In this context, *huaiyi* receives the negative belief reading. Note that the sentences in (1) and (2) are identical except for their focus stress. In (1), a constituent in the embedded clause (e.g., *Lisi*) is focused, whereas in (2), the matrix verb *huaiyi* is focused.

(2) *People are saying that Lisi is the one who stole the painting, but ...*

Wo [*huaiyi*]<sub>F</sub> Lisi you zhe ge nengli. (Negative belief reading)  
I HUAIYI Lisi have this CLF ability  
‘I [**doubt**]<sub>F</sub> that Lisi has such an ability.’

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Aside from full CP complements, the common belief in (2) can be expressed by NP complements, such as *zhe zhong shuofa* ‘this claim’. In this case, *huaiyi* also gets the negative belief reading, as shown in (3).

- (3) *People are saying that Lisi is the one who stole the painting, but ...*  
 Wo [huaiyi]<sub>F</sub> zhe zhong shuofa. (Negative belief reading)  
 I HUAIYI this CLF claim  
 ‘I [**doubt**]<sub>F</sub> this claim.’

While previous research has focused on the declarative-embedding cases of *huaiyi*, this study offers a new observation that in addition to declarative complements, *huaiyi* can also select biased interrogatives as its complement. To account for the doubt-suspect ambiguity and selectional restrictions, we provide a unified semantics for *huaiyi*: It asserts that the agent believes the denotation of its complement is **an issue on the Table** (Farkas and Bruce 2010), and presupposes that the agent holds **a biased belief** about this issue. Based on this semantic core, the ‘doubt’ and ‘suspect’ interpretations can be derived via pragmatic reasoning. The basic idea is that if the agent considers what has been accepted as true (‘given information’) to be an unresolved issue, she believes that it could be false (i.e., the ‘doubt’ reading). Conversely, if the agent considers a new possible answer to the Question Under Discussion to be an unresolved issue (‘new information’), she believes that it could be true (i.e., the ‘suspect’ reading).

The paper is structured as follows. Section 2 presents selectional restrictions of *huaiyi* on embedded questions. Section 3 provides a lexical entry for *huaiyi* and examines its bias presupposition. Section 4 delves into the pragmatic reasoning about the issue on the Table. Section 5 summarises the paper.

## 2. Selectional restrictions on embedded questions

Li’s (1987) seminal work notes that *huaiyi* can embed interrogatives as well as declaratives. In this section, we aim to show that when embedding interrogatives, *huaiyi* selects only biased A-not-A questions and biased alternative questions, and its interpretation seems to align with the bias of its complement. Specifically, we provide three observations:

First, *huaiyi* rejects neutral A-not-A questions (4) and neutral alternative questions (5), while allowing biased questions, as illustrated in (6)–(11).<sup>1</sup>

- (4) \*Wo huaiyi ta xihuan-bu-xihuan jufa. (Neutral AnAQ)  
 I HUAIYI he like-not-like syntax  
 Intended: ‘I **doubt/suspect** that he likes syntax.’
- (5) \*Wo huaiyi ta xiang he cha haishi kafei. (Neutral AltQ)  
 I HUAIYI he want.to drink tea or coffee  
 Intended: ‘I **doubt/suspect** that he wants to drink tea or coffee.’

<sup>1</sup>The data in this section is collected from the Center for Chinese Linguistics (CCL) Corpus.

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Second, when embedding biased A-not-A questions, the interpretation of *huaiyi* seems to align with the bias of its complement. According to Ye's (2021) observation, there are two types of biased A-not-A questions. A-not-A questions formed with the focus marker *shi* are positively biased, carrying an epistemic bias towards the positive answer. Correspondingly, *huaiyi* is interpreted as 'suspect' when embedding *shi-bu-shi* questions, as shown in (6) and (7).

- (6) Context: The man is thinking about his behaviours in front of his son.  
Ta huaiyi ziji shi-bu-shi [you-shi jianjian]<sub>F</sub>. (Positively biased AnAQ)  
he HUAIYI self FOC-not-FOC have-lack discretion  
'He **suspects** that he may have [behaved indiscreetly]<sub>F</sub>.'
- (7) Context: The man's watch reads 8 o'clock, but the actual time is already 9 o'clock.  
Ta huaiyi shoubiao shi-bu-shi [ting-le]<sub>F</sub>. (Positively biased AnAQ)  
he HUAIYI watch FOC-not-FOC stop-PFV  
'He **suspects** that the watch may have [stopped]<sub>F</sub>.'

In contrast, A-not-A questions with the first 'A' stressed, indicating contrastive polarity focus (i.e., verum focus, Höhle 1992, Romero and Han 2004, Bill and Koev 2021), are typically negatively biased. Correspondingly, *huaiyi* is interpreted as 'doubt' when embedding stressed A-not-A questions, as shown in (8) and (9).

- (8) Context: It was said that ancient humans lived here, but no fossils had been found.  
Ta huaiyi zheli (daodi) YOU-mei-you gu renlei. (Negatively biased AnAQ)  
he HUAIYI here at.all have-not-have ancient human  
'He **doubted** whether there were ancient humans here.'
- (9) Context: The speaker thinks his roommate, who is the same age, is very childish.  
Wo huaiyi ta (daodi) SHI-bu-shi gen wo tongnian. (Negatively biased AnAQ)  
I HUAIYI he at.all FOC-not-FOC as I same.year  
'I **doubt** whether he is the same age as me.'

Third, when embedding biased alternative questions (cf. Biezma and Rawlins 2017), *huaiyi* is interpreted as doubting one alternative and suspecting the other, as illustrated by (10) and (11). Although the embedded alternative questions in (10) and (11) seem rhetorical, they still have the denotation of alternative questions instead of declaratives, as they can be used as information-seeking questions in neutral contexts. This dual interpretation challenges the view that *huaiyi* has the same semantics as *doubt* or *suspect* in English (cf. Uegaki 2023), as the interpretation of *huaiyi* varies between the two disjuncts. Rather, such cases suggest that *huaiyi* has a unique semantic core, with its 'doubt' and 'suspect' interpretations arising from different contexts.

- (10) Context: There are so many people in the garden that one cannot see the view.  
 Wo huaiyi renmen shi zai guan jing haishi guan ren. (Biased AltQ)  
 I HUIYI people FOC PROG watch scenery or watch people  
 ‘I **doubt** that people are watching the scenery and **suspect** that they are watching the crowd.’
- (11) Context: The professor is criticising the PhD student for being idle.  
 Wo zhen huaiyi ni shi lai dubo haishi lai dujia. (Biased AltQ)  
 I really HUIYI you FOC come pursue.PhD or come vacation  
 ‘I really **doubt** that you are pursuing your PhD and **suspect** that you are taking a vacation.’

### 3. Semantics of *huaiyi*

To account for the doubt-suspect ambiguity and selectional restrictions, we propose (12) as a lexical entry for *huaiyi*, where *huaiyi* takes a set of propositions  $\varphi$  as its complement and an entity  $x$  as its agent.

- (12)  $[[huaiyi]] = \lambda \varphi . \lambda x . \lambda w : \forall p \in \varphi [p \neq ALT(p) \rightarrow CRED_x^w(p) \neq CRED_x^w(ALT(p))].$   
 $DOX_x^w \subseteq [\varphi \in Table]$   
 where  $CRED_x^w(p) := \mathcal{P}(p \cap DOX_x^w) / \mathcal{P}(DOX_x^w)$

To wit, the lexical meaning of *huaiyi* consists of two parts: (i) *huaiyi* presupposes that the agent  $x$  assigns different subjective probabilities  $CRED_x^w(p)$  (Jeffrey 2004, Davis et al. 2007, McCready and Ogata 2007; a.o.) to the proposition  $p$  in  $\varphi$  and its focus alternatives  $ALT(p)$ . In other words, the agent’s epistemic state is partitioned in an unbalanced way. (ii) *huaiyi* asserts that the agent  $x$  believes that  $\varphi$  is an issue on the Table (Farkas and Bruce 2010), i.e., the agent has an unresolved issue in mind. The assertion part in fact conforms to the literal meaning of *huaiyi*: The first morpheme *huai* means ‘to have ... in mind’ and the second morpheme *yi* refers to ‘issue; question’; thus, *huaiyi* literally means ‘to have issues in mind’.

The selectional restrictions of *huaiyi* follow directly from its bias presupposition. The agent assigns different subjective probabilities to different focus alternatives, ending up with a unique focus alternative that receives the highest subjective probability. In other words, the agent is biased towards one of the focus alternatives.

For declarative complements, they denote a singleton set (Farkas and Bruce 2010, Farkas and Roelofsen 2017), as in (13a). In this case, the bias presupposition requires that the agent is biased towards either the complement  $p$  or one of its focus alternatives. Given that focus alternatives are mutually exclusive (Kamali and Krifka 2020), it follows that the agent believes that either  $p$  is possible or that  $\neg p$  is possible.

As for interrogative complements, they denote a set of possible answers, as in (13b). The bias presupposition requires that the agent is relatively biased towards one of these

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possible answers. This explains why *huaiyi* rejects neutral questions but is compatible with biased A-not-A questions and biased alternative questions.<sup>2</sup>

- (13) a. Declaratives:  $\{p\}$   
b. A-not-A questions:  $\{p, \neg p\}$   
Alternative questions with two disjuncts:  $\{p, q\}$

Note that the bias presupposition in (12) essentially requires a total order of possible answers for interrogative complements. This is easily satisfied by biased A-not-A questions (i.e.,  $\text{CRED}_x^w(p) > \text{CRED}_x^w(\neg p)$ , or  $\text{CRED}_x^w(p) < \text{CRED}_x^w(\neg p)$ ) and biased alternative questions with two disjuncts ( $\text{CRED}_x^w(p) > \text{CRED}_x^w(q)$ ). However, when there are more than two possible answers, achieving this total order becomes difficult with non-neutral alternative questions and *wh*-questions. Consequently, the bias presupposition in (12) predicts that *huaiyi* cannot embed *wh*-questions or alternative questions with more than two disjuncts. This prediction is indeed borne out, as demonstrated by (14) and (15).

- (14) \*Wo zhen huaiyi ta qing-le shei.  
I really HUIYI he invite-PFV who  
Intended: ‘I really **doubt** who he invited.’
- (15) \*Wo zhen huaiyi ni shi lai dubo, zhuixing, haishi dujia.  
I really HUIYI you FOC come pursue.PhD be.a.fan or vacation  
Intended: ‘I really **doubt** that you are pursuing your PhD, **suspect** that you are just being a fan, and **suspect** that you are taking a vacation.’

Our semantics of *huaiyi* is further supported by its negation. As exemplified by (16),  $\lceil x \text{ not } huaiyi \varphi \rceil$  asserts that the agent *x* does not believe that  $\varphi$  is an unresolved issue. The sentence in (16) can be followed by either ‘I know you have been to Beijing’ or ‘I know you haven’t been to Beijing’. The bias presupposition holds in both cases. That is, only the assertion part is negated; the bias presupposition is preserved under negation.

- (16) Wo bu shi huaiyi ni qu-mei-qu-guo Beijing.  
I not FOC HUIYI you go-not-go-EXP Beijing  
‘I don’t consider whether you have been to Beijing to be an issue.’

Regarding declarative complements,  $\lceil x \text{ not } huaiyi \varphi \rceil$  asserts that the agent *x* does not believe that the proposition *p* is an unresolved issue, which can be strengthened to ‘*x* believes that the proposition *p* is resolved and not an issue’. In some contexts, it can be interpreted as ‘*x* believes *p*’, as shown by (17). In other contexts, it can be interpreted as ‘*x* does not believe *p*’, as illustrated by (18). The next section will show that the interpretation of *huaiyi* indeed depends on the discourse status of its complement.

<sup>2</sup>In contrast with the ignorant attitude expression *xiang zhidao* (‘want to know, wonder’), the agent of *huaiyi* must be opinionated about the denotation of its complement. This opinionatedness is captured by the bias presupposition.

- (17) *Although I couldn't speak Chinese, ...*  
 Wo meiyou huaiyi ziji shi Zhongguoren.  
 I not.have HUIYI self be Chinese  
 'I don't **doubt** that I'm Chinese. ( $\approx$  I believe that I'm Chinese.)'
- (18) Context: People are curious about John's job.  
 Wo meiyou huaiyi ta shi jiandie.  
 I not.have HUIYI he be spy  
 'I don't **suspect** that he could be a spy. ( $\approx$  I don't believe that he is a spy.)'

#### 4. Reasoning about the Table

According to the lexical entry in (12), *huaiyi* asserts that the agent believes that the denotation of its complement is an issue on the Table. In essence, *huaiyi* expresses the agent's attitude about the discourse status of its complement.<sup>3</sup> To model this meaning, we adopt the Table model proposed by Farkas and Bruce (2010), especially utilising three context components (modified from Bhadra 2020), and further establish the connection between discourse status and epistemic state.

- (19) a. Table: an ordered stack of issues to be resolved, including the Question Under Discussion (QUD, Roberts 1996/2012).  
 If the agent believes  $\{p\} \in \text{Table}$ , the agent may believe  $p$  is true, believe  $p$  is not true, or be uncertain about  $p$ .
- b. Common Ground (CG): the intersection of the discourse commitments of all participants (cf. Stalnaker 1978).  
 If the agent believes  $p \in \text{CG}$ , the agent believes  $p$  is true.
- c. Projected Common Ground (CG\*): a set of potential CGs with possible answer(s) to the current QUD.  
 If the agent believes  $\{p\} \in \text{CG}^*$ , the agent believes it is possible that  $p$  is true.

The interpretation of *huaiyi* hinges on the discourse status of its complement. Specifically, we propose two types of pragmatic reasoning: (i) questioning as doubting, and (ii) proposing as suspecting. In the following sections, we will discuss these two types of reasoning and account for the doubt-suspect ambiguity of *huaiyi* in detail.

##### 4.1 Questioning as doubting

The first type of reasoning concerns the proposition that has been accepted as true ('given information'). If the agent considers what has been accepted as true to be an unresolved

<sup>3</sup>To the best of our knowledge, another intensional operator related to discourse status is the VERUM operator by Romero and Han (2004). They propose that VERUM asserts that the speaker is certain that  $p$  should be added to the Common Ground, rather than that the speaker is certain about the truth of  $p$ .

issue, she believes that this proposition could be false.<sup>4</sup> This reasoning can be framed within the Table model as follows:

(20) **Questioning-as-doubting reasoning**

- a. When  $p \in \text{CG}$  or  $\{p\} \in \text{CG}^*$ ,  $p$  is expected to be in the CG in the next stage of conversation.
- b.  $\lceil x \text{ huaiyi } \varphi \rceil$ :  $x$  believes  $\{p\} \in \text{Table}$  or  $\{p, \neg p\} \in \text{Table}$ . That is,  $x$  believes  $p \notin \text{CG}$ .
- c. If  $p$  is expected to be in the CG, but  $x$  believes  $p \notin \text{CG}$ , then  $x$  believes  $p$  is not necessarily true ( $\neg \Box_x p$ ).

The questioning-as-doubting reasoning accounts for the negative belief reading of *huaiyi*. In (2), ‘Lisi has such an ability’ is a commitment held by others and is expected to be added to the CG. However, the agent considers it an unresolved issue because she believes it is not necessarily true. This is the ‘doubt’ reading of *huaiyi*.

(21) Context of example (2), where  $p =$  ‘Lisi has such an ability’

	Previously	$\lceil x \text{ huaiyi } \{p\} \rceil$
Table	$\langle \rangle$	$\langle \{p\} \rangle$
CG	$\{\}$	$\{\}$
CG*	$\{\{p\}\}$	$\{\{p\}, \{\neg p\}\}$

For the negated *huaiyi* in (17), ‘I’m Chinese’ is already in the CG. (17) asserts that the agent does not believe it is an unresolved issue on the Table. Consequently, the agent believes ‘I’m Chinese’ remains in the CG, thereby believing it to be true.

The same mechanism applies to the interrogative-embedding cases. In (9), ‘he is the same age as me’ was previously in the CG. However, it conflicts with the contextual evidence ‘he behaves childishly’. Hence, the agent believes the proposition ‘he is the same age as me’ to be part of the Table rather than the CG. In other words, the agent does not believe the original CG information is necessarily true and thus holds a negative belief.

(22) Context of example (9), where  $p =$  ‘he is the same age as me’

	Previously	$\lceil x \text{ huaiyi } \{p, \neg p\} \rceil$
Table	$\langle \rangle$	$\langle \{p, \neg p\} \rangle$
CG	$\{p\}$	$\{\}$
CG*	$\{\{\}\}$	$\{\{p\}, \{\neg p\}\}$

This reasoning can also account for the negative belief readings of *question* and *questionable* in (23). Essentially, the attitude holder treats what is commonly accepted as true ( $p \in \text{CG}$  or  $\{p\} \in \text{CG}^*$ ) as an unresolved issue, thereby holding a negative belief.

<sup>4</sup>Uegaki (2023) observes that dubitative predicates require their interrogative complements to have a specific answer mentioned in the previous context. The ‘doubt’ reading of *huaiyi* fits this observation.

- (23) a. *I seriously question whether we ought to continue.*  
 b. *It is questionable whether this is the right decision.*

#### 4.2 Proposing as suspecting

The second type of reasoning is about a new possible answer to the QUD (‘new information’). If the agent believes a new possible answer is on the Table, i.e., proposing a possible answer in her mind, she believes it could be true. This reasoning is detailed as follows:

- (24) **Proposing-as-suspecting reasoning**
- a. When  $p \in \text{QUD}$  and  $\text{QUD} \in \text{Table}$ ,  $p$  is a possible answer to the QUD.  
 b.  $\lceil x \text{ huaiyi } \varphi \rceil$ :  $x$  believes  $\{p\} \in \text{Table}$  or  $\{p, \neg p\} \in \text{Table}$ . That is,  $x$  believes whether the possible answer  $p$  is true should be resolved.  
 c. If  $p$  is a possible answer and  $x$  intends to close the QUD with  $\{p\}$  or  $\{p, \neg p\}$ , then  $x$  should check the possible answer that she considers most likely to be true.<sup>5</sup> Therefore,  $x$  believes  $p$  is likely to be true ( $\diamond_x p$ ).

The proposing-as-suspecting reasoning accounts for the positive belief reading of *huaiyi*. In (1), the QUD is ‘who has the ability to steal the painting?’, and the agent believes the possible answer ‘Lisi has such an ability’ should be discussed. Since the agent intends to close the *wh*-QUD, she should check the possible answer that she believes could be true. This is the ‘suspect’ reading of *huaiyi*.

- (25) Context of example (1), where  $p =$  ‘Lisi has such an ability’

	Previously	$\lceil x \text{ huaiyi } \{p\} \rceil$
Table	$\langle \{p, q, r\} \rangle$	$\langle \{p, q, r\}, \{p\} \rangle$
CG	$\{\}$	$\{\}$
CG*	$\{\{\}\}$	$\{\{p\}\}$

For the negation case in (18), the QUD is ‘what is John’s job?’, and the complement ‘he is a spy’ could be a possible answer. (18) asserts that the agent does not believe ‘he is a spy’ is on the Table, implying that the agent believes ‘he is a spy’ cannot resolve the QUD. In other words, the agent believes John’s job is not a spy.

The same holds for A-not-A questions formed with the focus marker *shi*, which are used to check the possible complete answers to the QUD (see Ye 2021 for details). In (6), the agent checks in mind the truth of a possible complete answer ‘he behaved indiscreetly’ to the QUD ‘how did he behave?’, and thus expects it to be true.

- (26) Context of example (6), where  $p =$  ‘he behaved indiscreetly’

<sup>5</sup>For details, see Ye’s (2021) completeness-to-likelihood reasoning. Simply put, the most efficient strategy to close the QUD is to check the most likely answer. This is typically how we propose a possible answer.



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	Previously	$\lceil x \text{ huaiyi } \{p, \neg p\} \rceil$
Table	$\langle \{p, q, r\} \rangle$	$\langle \{p, q, r\}, \{p, \neg p\} \rangle$
CG	$\{\}$	$\{\}$
CG*	$\{\{\}\}$	$\{\{p\}\}$

For the dual interpretation of *huaiyi* in (10), the QUD is ‘what are people watching in the garden?’, and the default answer ‘people are watching the scenery’ was previously in the CG. The agent questions this default answer and proposes a new possible answer ‘people are watching the crowd’. According to the two types of pragmatic reasoning, the agent holds a negative belief about the former and a positive belief about the latter.

- (27) Context of example (10), where  $p$  = ‘people are watching the scenery’,  $q$  = ‘people are watching the crowd’

	Previously	$\lceil x \text{ huaiyi } \{p, q\} \rceil$
Table	$\langle \rangle$	$\langle \{p, q, r\}, \{p, q\} \rangle$
CG	$\{p\}$	$\{\}$
CG*	$\{\{\}\}$	$\{\{p, q\}\}$

## 5. Conclusion

This study provides a unified semantics for the Mandarin attitude verb *huaiyi*. It carries a bias presupposition and thus select biased A-not-A questions and biased alternative questions. Essentially, *huaiyi* means the agent believes the denotation of its complement is an issue on the Table. Given this semantic core, *huaiyi* can embed various types of interrogatives and cannot license negative polarity items, unlike *doubt* and *suspect* in English.

On the other hand, the interpretation of *huaiyi* relies on the discourse status of its complement. We propose two types of pragmatic reasoning to derive the ‘doubt’ and ‘suspect’ readings of *huaiyi*. The ‘doubt’ reading concerns the proposition that has been accepted as true, while the ‘suspect’ reading involves a new possible answer to the QUD. It would be intriguing to investigate this correlation across languages. We leave this for future research.

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