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Intervention effects in answerhood [i]

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Abstract

An intervention effect is originally a linguistic phenomenon where a scope related element cannot appear between a question operator and its trace. This effect is observed in *wh*-questions, alternative questions and *yes/no* questions across languages. In this paper, I focus on the denotation of two types of *yes/no* questions in Mandarin Chinese and show that scope-related elements expand the denotation of questions to include a VERUM operator, which induces the various intervention effects. In order to define the denotation of questions, I distinguish two ways to answer *yes/no* questions in Mandarin Chinese and show that each type of answer represents different interpretations of a *yes/no* question. On the basis of this distinction, I propose that the denotation of a question containing a focus-sensitive operator is not a partition of possible worlds but rather a relation between the proposition and the common ground.

1. Introduction

Intervention effects have been extensively discussed in the literature on linguistics. It is a linguistic phenomenon that a scope-related element such as focus-sensitive operators, negative morpheme, quantifiers, and certain adverbs cannot intervene between a question operator and its trace. In this paper, I focus on the two types of *yes/no* questions in Mandarin Chinese and show that the intervention effects should be explained from the viewpoint of semantics, not syntax.

The two types of *yes/no* questions are as follows: one is constructed by the co-ordination of affirmative and negative forms of the main verb, as in (1a), whereas the other is constructed by attaching an interrogative particle to the end of the sentence, as in (1b). For the purposes of this research, the type of question shown in (1a) is referred to as an A-not-A question and that shown in (1b) is a particle question, which follows the terminology used in Chinese linguistics. These questions show different behavior when they co-occur with a scope related element, as shown in the contrast between (1a-b).

(1) a. *Zhangsan zhi chi-bu-chi sushi?
Zhangsan only eat-NEG-eat vegetarian-food
"Does Zhangsan only eat vegetarian food?"

b. Zhangsan zhi chi sushi ma?
Zhangsan only eat vegetarian-food Q
"Does Zhangsan only eat vegetarian food?"

This contrast in intervention effects poses the following question:

(i) Why do the scope related elements cause intervention effects in A-not-A questions and not in particle questions?

This question has already been answered by the preceding syntactic analyses. In the literature of Chinese linguistics, it has been assumed that these constructions contain different question operators in different positions: A-not-A questions are formed by a question operator ([+A-not-A]) which base-generates in the VP and moves to the CP (Huang 1991), while particle questions are formed by the interrogative particle *ma* which is located in the CP. Hence, only A-not-A questions show intervention effects because [+A-not-A] operator binds its trace across the scope related element, while particle questions do not.

(2) a. *[... [+A-not-A]$_i$ ... [...scope related element ... [... t_i ...]]]
b. [... *ma* ... [...scope related element ...]]

This syntactic account, however, cannot explain the answer differences caused by the focus sensitive operator.

(3) a. Zhangsan chi-bu-chi sushi? --- *Dui. /*Shi-de. / Chi.
Zhangsan eat-NEG-eat vegetarian-food --- right / be-DE / eat
"Does Zhangsan eat vegetarian food? --- Yes, he does."
b. Ni chi sushi ma? --- *Dui. /*Shi-de. / Chi.
you eat vegetarian food Q --- right / be-DE / eat
"Do you eat vegetarian food? --- Yes, I do."
c. Ni zhi chi sushi ma? --- Dui. / Shi-de./?Chi.
you only eat vegetarian food Q --- right / be-de / eat
"Do you only eat vegetarian food? --- Yes, I do."

(3a) is an A-not-A question and (3b) is a particle question without a focus-sensitive operator. Both of them are answered by the repetition of the verb.[ii] Once the question contains a focus-sensitive operator, it is answered by response particles, *dui* (right) or *shi-de* (be-DE),[iii] as shown in the dialogue (3c). In a nutshell, the focus operator *zhi* (only) influences the interpretation of the particle question. Hence, the following question arises concerning the examples in (3).

(ii) Why do the scope related elements change the answerhood of particle questions?

The goal of this paper is to show that particle questions without the scope related elements share the same property as A-not-A questions but the ones with these elements are given the different denotations and propose a unified account for the two questions (i)-(ii).

The structure of this paper is as follows: Section 2 offers previous analyses of the intervention effects in A-not-A questions and particle questions; Section 3 shows the pragmatic difference between them, especially focusing on answerhood; Section 4 redefines the semantics for questions on the basis of the different answerhood; and Section 5 is the conclusion.

This paper only examines positive responses and excludes negative responses because the negative response particle *bu* (no) is ambiguous between the repetition of the predicate with the verb deleted and a pure response particle.

2. Intervention effects in questions

This section focuses on the contrast between A-not-A questions and particle questions with respect to intervention effects and show preceding analyses on this contrast. The elements which cause intervention effects include various adverbs, such as adverbs of relative time, manner adverbs, modal adverbs, or focus sensitive operators. Although some of these adverbs are not assumed to be scope-related in traditional syntax, they tend to be contrastive foci of a sentence and trigger alternative sets of propositions. These adverbs are different from adverbs which tend to be a topic of a sentence, such as adverbs of time or location.

2.1. Pragmatic account

Since Li & Thompson (1979) first pointed out that A-not-A questions are not compatible with manner adverbs whereas particle questions are compatible, the difference between the two constructions has been widely discussed. The following shows the contrast between A-not-A questions and particle questions co-occurring with manner adverbs (4), adverbs of relative time and modal adverbs (5), and focus-sensitive operators (6).

(4) a. *Ta jingjing-de tiao-bu-tiao wu?
he quiet-ly dance-NEG-dance dance
"Does he dance quietly?"

b. Ta jingjing -de tiao wu ma?
he quiet-ly dance dance Q
"Does he dance quietly?"

(5) a. *Ta gang/yiding qu-bu-bu?
he just-now/surely go-NEG-go
"Has he just/surely left?"

b. Ta gang/yiding qu ma?
he just-now/surely go Q
"Has he just/surely left?"

(6) a. *Ni zhi ai-bu-ai yi-ge-ren?
you only love-NEG-love one-CL-person
"Do you only love one person?"

b. Ni zhi ai yi-ge-ren ma?
you only love one-CL-person Q
"Do you only love one person?"

Li & Thompson (1979) and Mochizuki (1987) explained these phenomena using the double foci

constraint: more than one focus cannot appear in one sentence. They argued that the predicate in an A-not-A question is focused; therefore, A-not-A questions do not allow any other focused constituents. This account is simple and attractive but there are several problems in this analysis. First, the elements that trigger the intervention effect vary widely and whether they convey the same type of focus is still unclear. Second, multiple *wh*-questions and focus pair-reading allow multiple foci in one sentence. Hence, the double foci constraint is not appropriate to account for these phenomena.

2.2. Syntactic account

Tang (1988) argued against the pragmatic account and proposed an explanation based on scope relations. He pointed out that the predicate in an A-not-A question cannot be focused by the focus marker *shi* (be), unlike *wh*-questions.

(7) a. Shei gaosu ni? b. Shi shei gaosu ni de?
who tell you *FOC who tell you DE*
"Who told you?" "WHO told you?"

(8) a. Ta ke-bu-keneng hui-lai? b. *Ta shi ke-bu-keneng hui-lai de?
he can-NEG-can come-back *he FOC can-NEG-can come-back DE*
"Can he come back?" "CAN he come back?" (Tang 1988:333)

(7a-b) are *wh*-questions, whereas (8a-b) are A-not-A questions. In (7b), the *wh*-phrase is associated with the focus marker, whereas in (8b), the A-not-A part cannot be preceded by the focus marker. The fact that A-not-A questions with focused predicates are ill-formed indicates that the predicate is not focused from the first.

Tang (1988) also pointed out that manner adverbs can appear in A-not-A questions if the reduplicated predicate precedes the manner adverb, as shown in (9).

(9) Ta ken-bu-ken jingjing-de tiao wu?
he willing-NEG-willing quiet-ly *dance dance*
"Is he willing to dance quietly?" (Tang 1988:335)

On the basis of this observation, he concluded that certain adverbs cannot take a wider scope than an A-not-A question.

A similar but more formal analysis was proposed by Ernst (1999). Following Huang (1982), he assumed that a scope relation at Surface Structure also held at LF. Combined with Huang's (1991) proposal that the question operator ([+A-not-A]) moves to CP at LF, scope-related adverbs also move to CP at LF in order to retain the scope relation with [+A-not-A]. The intervention effect arises because these adverbs cannot take interrogatives as their argument. In contrast, the adverb in a particle question does not need to move as the interrogative particle (Q) base-generates at CP. Hence, the LF-representation in (10b) is ill-formed, whereas the LF-representation in (11b) is well-formed.

(10) a. *Ta jingjing-de tiao-bu-tiao wu? (=4a)
b. LF: *[$_{CP}$ quietly$_i$ [[+A-not-A]$_j$ [$_{IP}$ he t_i t_j dances]]]

Ta jingjing-de tiao wu ma? (=4b)

b. LF: [$_{CP}$ Q [$_{IP}$ he quietly dances]]

Ernst's (1999) analysis was modified in the framework of Binding theory by Law (2006). He discussed intervention effects in A-not-A questions from the viewpoint of binding, not movement. Following the Minimal Binding Principle (MBR) proposed by Aoun & Li (1993:19),[iv] he argued that [+A-not-A] cannot bind its trace across these adverbs.

Schaffar & Chen (2001) discussed the same phenomenon in the framework of the syntactic theory of focus. They assumed a split CP that is equipped with two positions for focus-sensitive operators, one for narrow-scope focus and the other for wide-scope focus.[v] They suggest that [+A-not-A] as well as focus-sensitive operators represent narrow-scope focus, hence they are incompatible. In contrast, the interrogative particle *ma* occupies the highest position in the sentence; therefore, it is irrelevant for any focus-related phenomena.

These syntactic analyses account for the intervention effects in A-not-A questions successfully. Basically, the analyses argue that certain adverbs intervene in the movement/binding of [+A-not-A]. However, few refer to the function of the interrogative particle *ma*. In addition, syntactic research so far has never discussed how a focus-sensitive operator influences the interpretation of a particle question.

2.3. Semantic account

Ishii & Ito (2016) propose a semantic analysis for intervention effects in A-not-A questions on the basis of the analysis proposed by Beck (2006) and Beck & Kim (2006). Beck (2006) explains the effects of *wh*-intervention by defining the denotation of *wh*-phrases as "undefined." First, she proposes that focus semantic values ([[...]]^{f}), as well as ordinary semantic values ([[...]]^{o}), are necessary to interpret the sentence containing a focus.

(12) a. [[John$_F$]]^o = John

b. [[John$_F$]]^f = D = {John, Bill, Mary, Susan, ... }

(13) a. [[John$_F$ left]]^o = λ w. John left in w

b. [[John$_F$ left]]^f = {p: p= λ w. x left in w | x $\in$ D}

= {John left, Bill left, Mary left, ... }

The ordinary semantic value of "John" with a focus accent (described as "…$_F$") is the specific individual named "John," whereas its focus semantic value is a set of individuals including "John," as in (12a-b). Accordingly, the ordinary semantic value of "John left" is a proposition, whereas its focus semantic value is a set of propositions, as in (13a-b). These two values are processed in the interpretation of focus-sensitive operators. A sentence with a focus-sensitive operator is interpreted as follows:

(14) a. Only John left.

b. [ONLY ~C [John$_F$ left]]

c. $\forall$ p[p $\in$ {John left, Bill left, Mary left, ... }$\Rightarrow$ p=John left]

The focus-sensitive operator "only" is construed as an operator which takes focus semantic

value (=the alternative set given by ~C) and asserts that *John left*. Hence, the meaning of (14a) is described as (14c).

Second, she assumes that a *wh*-phrase introduces a set of alternatives but does not give any ordinary semantic value. Therefore, the focus-sensitive operator cannot interpret the *wh*-phrase, leading to an ill-formed sentence.

(15) a. $[[\text{Who left}]]^{o}$ = undefined

b. $[[\text{Who left}]]^{f}$ = {John left, Bill left, Mary left, ... }

(16) a. Only who left?

b. [ONLY ~C [who left]]

c. $\forall$ p[p $\in$ {John left, Bill left, Mary left, $\cdots$ }$\Rightarrow$ p=undefined]

This analysis is extended to account for intervention effects in alternative questions. Beck & Kim (2006) assume that a disjunction provides a proposition as an ordinary semantic value and a set of propositions as a focus semantic value. For example, the ordinary semantic value of (17) is a disjunctive proposition, as in (18a), whereas its focus semantic value is a set of propositions that each disjunct denotes, as in (18b).

(17) Did [$_{\text{DisjP}}$ the program execute or the computer crash]?

(18) a. $[[\text{DisjP}]]^{o}$ = [the program executed or the computer crashed]

b. $[[\text{DisjP}]]^{f}$ = {the program executed, the computer crashed}

They further assume that the semantics of the question operator does not allow a singleton set as its argument, following Hamblin's (1973) and Karttunen's (1977) framework. The reason why intervention effects occur in alternative questions is that the focus-sensitive operator produces a single proposition, whereas the question operator cannot take it as an argument.

Based on their analysis, Ishii & Ito (2016) suggest that A-not-A questions are analyzed as alternative questions. (19a) is interpreted as an alternative question between affirmative and negative propositions, as shown in (19b)

(19) a. Zhangsan chi-bu-chi sushi?

Zhangsan eat-NEG-eat vegetarian-food

"Does Zhangsan eat vegetarian food?"

b. {Zhangsan eats vegetarian food, ~Zhangsan eats vegetarian food}

This analysis seems to account for the intervention effect in A-not-A questions. However, these analyses crucially rely on the structural relation between a focus-sensitive operator and a question operator. If we follow Hamblin/Karttunen style semantics, questions are uniformly defined as a set of propositions: A-not-A questions and particle questions are not distinguished. The only reason particle questions do not show intervention effects is that the interrogative particle locates a higher position than alternatives in the structure. In this sense, these semantic analyses are similar to syntactic approaches and, as such, have the same problems.

2.4. Account based on "bias"

Takahashi (1992) and Yamaguchi (1996) account for intervention effects from the viewpoint of

"bias." They point out that a particle question tends to presuppose either affirmative or negative propositions, whereas an A-not-A question does not. Combined with the assumption that a focus-sensitive operator should modify a proposition, they argue that the operator modifies the presupposed proposition in a particle question, whereas the operator has nothing to modify in A-not-A questions. Therefore, focus-sensitive operators only appear in particle questions.

Their analysis is in line with the long debate on the "credibility" of particle questions in traditional Chinese linguistics. The following sections show the debate in detail and argue that particle questions with scope related adverbs are biased questions, while A-not-A questions and particle questions without scope related adverbs are unbiased questions. Following the semantic definition of questions and the recent proposal on biased questions, unbiased questions are defined as the partition of the possible worlds, while biased questions are defined as the conversational move to ask whether the proposition can be added to the common ground or not. Accordingly, the answers to the question (i)-(ii) above will be as follows:

Answer to (i): an A-not-A questions is a partition of the possible worlds. It cannot be divided further. Hence the interpretation of the scope related elements is not allowed. In contrast, particle questions may or may not be a partition of the possible worlds.

Answer to (ii): as the scope related elements divide the possible worlds, the ordinary semantics for questions is not available. Instead, the questions are interpreted as a move to check the validity of adding the propositions.

3. "Bias" of *yes/no* questions in Mandarin Chinese

"Bias" refers to what the addresser expects when s/he utters a question: if a *yes/no* question is biased, the addresser expects that the proposition is either true or false; if it is not biased, the addresser has no idea whether it is true or not. "Bias" is different from a presupposition in a declarative sentence. It is not included in the common ground (CG) of the conversation, but only included in the epistemic worlds of the addresser.

The distinction between biased and non-biased questions is hardly grammaticalized across languages. For example, echo questions are always biased but few languages have a specific morpheme for them. In English, they are described as a rise-fall-rise intonation or *wh*-phrase in situ, both of which are borrowed from ordinary questions. Besides echo questions, negative questions tend to be biased. This also varies among languages and contexts. According to Romero & Han (2004), English negative questions with an ordinary word order are not biased, whereas questions with preposed negation are biased.

(20) a. Does John not drink?
b. Doesn't John drink? (Romero & Han 2004:609)

When the addresser utters (20a), s/he has no expectations as to whether John drinks or not. In contrast, (20b) is uttered when the addresser believes or expects that John drinks. They argue that the former only has a question operator, whereas the latter also has a VERUM operator. A

VERUM operator is a conversational epistemic operator that asserts that a proposition should be in the common ground with respect to all the epistemic alternatives and all the conversational goals of the speaker.

(21) $[[\text{VERUM}_i]]^{g[x/i]}$

$= \lambda\, p_{<s,t>}\, \lambda\, w.\, \forall w' \in \text{Epi}_x(w)[\forall w'' \in \text{Conv}_x(w')[p \in \text{CG}_{w''}]]$

$\text{Epi}_x(w)$: the set of epistemic alternatives of x at w

$\text{Conv}_x(w')$: the set of worlds where all the conversational goals of x in w' are fulfilled.

(Romero & Han 2004:627)

Biased questions contain this operator in the scope of the question operator. Hence, these questions are about the truth value of the proposition, not about the entire proposition.

Particle questions in Mandarin Chinese are ambiguous between biased and unbiased questions. Several factors distinguish between them, the most prominent being context; if the context offers evidence that the proposition is true or false, the question is biased; otherwise, it is not biased. In contrast, A-not-A questions are never biased. The next section shows the ambiguity of particle questions and compares them with A-not-A questions.

3.1. The ambiguity of particle questions

According to Liu (1987), Chinese particle questions are divided into three types depending on the aims of uttering the question: i) the addresser has no idea whether the proposition is true or not, so s/he asks the question to get an answer; ii) the addresser expects that the proposition is either true or not, so s/he utters the question to confirm her/his expectation; and iii) the addresser has other aims than seeking the true answer. Type (i) may be referred to as an unbiased question, type (ii) a biased question, and type (iii) a rhetorical question. The following examples show an instance of each type of question, respectively.

(22) Ta shangci shuo yao qu Beijing chuchai, ta hai qu ma? --- ?Shi-de. / Qu.
he previously say want go Beijing make-business-trips he still go Q --- be-DE / go
"He previously said he was going to make a business trip to Beijing, is he really going? --- Yes, he is."

(23) Ta yijing qu Beijing le ma? --- Shi-de. / ?Qu le.
he already go Beijing perf Q --- be-DE / go PERF
"Did he already go to Beijing? --- Yes, he did."

(24) Nandao ni bu qu kan dianying ma? --- Qu, wo deng yihuir zai zou. / Dui, wo bu qu le.
really you neg go see movie Q --- go I wait a-minute again leave / right I NEG go LE
"Don't you really go to see the movie?" "I leave in a minute. / I don't go anymore."

(22) is an unbiased question and is answered by the repetition of the main verb. (23) is a biased question and is answered by response particles, such as *dui* (right) or *shi-de* (be-de). (24) is a rhetorical question. Rhetorical questions are not usually answered but they can be answered both ways. This paper discusses type (i) and type (ii), with type (iii) left for future research.

3.2. A-not-A questions vs. particle questions

As mentioned in Section 2.2, Schaffar & Chen (2001) accounted for intervention effects in A-not-A questions on the basis of the syntactic theory of focus. The main evidence they relied on is the parallel behavior between A-not-A questions and particle questions without any stressed constituent. These questions are interchangeable in the following context, which they call "out-of-the-blue" context:

〈Context 1〉 : I want to spend an evening together with a friend. After cinema, we are hungry. On our way home we pass by the Tabula Rasa. I ask him,

(25) Ni lai-mei-lai guo Tabula Rasa? --- *Shi. / Lai-guo.
you come-NEG-come EXP Tabula Rasa *be / come EXP*
"Have you ever been to Tabula Rasa? --- Yes, I have."

(26) Ni lai-guo Tabula Rasa ma? --- *Shi. / Lai-guo.
you come-EXP Tabula Rasa Q *be / come EXP*
"Have you ever been to Tabula Rasa? --- Yes, I have."

(Schaffar & Chen 2001:840)

A-not-A questions and particle questions without any stress accent are uttered in the context in which the addresser does not expect a specific answer. They are unbiased questions and are answered by the repetition of the main verb. Schaffar & Chen (2001) regard these questions as questions about the entire proposition.

In contrast, particle questions with stress on the main verb behave differently. They are uttered in the context where the addresser expects or believes that the content of the question is either true or false. In the following context, s/he believes the addressee has been to Tabula Rasa.

〈Context 2〉 : I invite a friend to a restaurant called "Tabula Rasa" in Cologne, which I have recently discovered. When we enter the restaurant, the waiter smiles at him. I ask my friend,

(27) Ni LAI-guo Tabula Rasa ma? --- Shi. / Lai-guo.
you come-EXP Tabula Rasa Q *be / come EXP*
"Have you ever been to Tabula Rasa? --- Yes, I have."

(Schaffar & Chen 2001:839)

This type of particle question is not about the entire proposition but about the truth value of the proposition. It is a biased question in the same way as the English preposed negation question (20b).

The similar phenomena has been reported by linguists in mainland China. Yuan (1993) and Zhang (1997) point out that if a particle question contains a focus-sensitive operator, it is answered by response particles. Guo (2000) further points out that focus is relevant to the answering pattern. For example, if a particle question contains a focused constituent, it can be answered by the response particles.

(28) Shei lai le? Xiao WANG lai le ma? -- Dui. /?lai le.
who come PERF Mr. Wang come PERF Q *right / come PERF*

"Who came? Did Mr. WANG come? --- Yes, HE did."

(29) Ta shi MINGTIAN qu Shanghai ma? --- Dui. /?Qu.
he FOC tomorrow go Shanghai Q right / go
"Is it tomorrow that he goes to Shanghai? --- Yes, it is."

In (28), the subject noun is stressed because the preceding question asks who came. In (29), *mingtian* (tomorrow) is focused by the focus marker *shi*. According to Guo (2000), both questions are answered by response particles.

What is interesting is that temporal adverbs usually do not require response particles as answers, as shown in (30). They require response particles only when they are focused.

(30) Ta mingtian qu Shanghai ma? --- Dui. / Qu.
he tomorrow go Shanghai Q right /go
"Is he going to Shanghai tomorrow? --- Yes, he is."

The group of adverbs which require response particle as answers is consistent with the group of adverbs which trigger intervention effects in A-not-A questions. (31) is an example of a temporal adverb appearing in an A-not-A question, whereas (32a-b) are examples of an adverb of relative time.

(31) Ta mingtian qu-bu-qu Shanghai?
he tomorrow go-NEG-go Shanghai
"Is he going to Shanghai tomorrow?"

(32) a. Ta gang qu tushuguan ma? --- Dui. /?Qu.
he just-now go library Q right / go
"Has he just been to the library? --- Yes, he has."

b. *Ta gang qu-bu-qu tushuguan ma?
he just-now go-NEG-go library Q
"Has he just been to the library?"

Other adverbs which trigger intervention effects, such as focus-sensitive operators, modal adverbs, and manner adverbs, also require answers by response particles.

(33) *Ta zhi/yiding/manman-de chi-bu-chi sushi?
he only/for-sure/slowly eat-NEG-eat vegetarian food
"Does he only/surely/slowly eat vegetarian food?"

(34) Ta zhi/yiding/manman-de chi sushi ma? --- Dui. /?Qu.
he only/for-sure/slowly eat vegetarian food Q right / go
"Does he only/surely/slowly eat vegetarian food? --- Yes, he does."

The fact that particle questions with these adverbs must be answered by response particles indicates that these adverbs influence the interpretation of particle questions. Particle question with these adverbs are always biased questions, whereas particle questions without them can be either biased or unbiased, depending on whether they contain focused constituents or not.

4. The denotation of a question and answerhood

Since Hamblin (1973) and Karttunen (1977) proposed that a denotation of questions is a set of possible answers, most research in formal semantics defines questions by answerhood. Groenendijk & Stokhof (1984) define a question as the partition of possible worlds in which the proposition is either true or false. Accordingly, different answers may mean different denotations. I argue that the repetition of the verb shows which partition of the worlds is true, whereas the response particles such as *dui* (right) or *shi-de* (be-DE) answer the truth value of the propositions. Hence, particle questions and A-not-A questions have different denotations.[vi]

The denotation of an A-not-A question is a traditional semantics for questions: a partition of worlds.

(35) a. Ni chi-bu-chi sushi? --- *Dui. / *Shi-de./ Chi.
you eat-NEG-eat vegetarian-food right / be-DE / eat
"Do you eat vegetarian food? --- Yes, I do."
b. {λw: you eat v-food in w, λw: ~you eat v-food in w}

If we add a scope related element into this semantics, we obtain a four-divided world: on the one hand, the possible worlds are divided into the worlds in which the addressee eats vegetarian food and other worlds, and on the other hand, scope related adverbs need the partition of the worlds between a set of worlds in which the proposition is true and a set of worlds in which the alternative propositions are true. These divisions are conducted with respect to the different standard, one is affirmative vs. negative, the other is assertive vs. alternative, which results in ungrammatical questions. The generalization is stated in (36).

(36) We cannot divide the possible worlds with different standards.

In contrast, particle questions are ambiguous. It is reported in the literature that the interrogative particle *ma* originates from the negative particle (Yuan 1993, among others). Particle questions are biased etymologically, but may be unbiased if they do not violate the generalization (36). Once they contain a scope related element, the denotation of *yes/no* questions cannot be applied. Instead, they are interpreted as VERUM questions. As the VERUM operator operates on the conversational level, it does not matter whether the possible worlds are already divided or not.

(37) a. Ni zhi chi sushi ma? --- Dui. / Shi-de./?Chi.
you only eat vegetarian food Q right / be-DE / eat
"Do you only eat vegetarian food? --- Yes, I do."
b. {λw: you only eat v-food in w$\subseteq CG_w$, λw: you only eat v-food in w$\not\subseteq CG_w$}

To conclude, A-not-A questions and unbiased particle questions are analyzed in the traditional semantics for questions, whereas biased particle questions are interpreted as a relation between the addresser's epistemic worlds and the common ground.

This semantic analysis answers both question (i) and (ii) mentioned in section 1: A-not-A questions always show intervention effects since their denotation is immobilized, whereas particle questions do

not show intervention effects since their denotation is flexible; the scope related elements change the answerhood of particle questions as they force the questions to operate on the conversational level.

5. Conclusion

This paper showed that the previous analyses on intervention effects in A-not-A questions cannot account for the intervention effects in answerhood of particle questions. It also showed the ambiguity of particle questions and distinguished biased particle questions from unbiased particle questions, the latter of which has the same denotation as A-not-A questions. Finally, on the basis of the answer differences, the semantics for particle questions with scope related elements were redefined.

〈Abbreviations〉

ACC: accusative *CL*: classifier *DE*: genitive or nominalizer *EXP*: experiential aspectce *FOC*: focus marker *LE*: sentence final particle *NEG*: negation *PAST*: past tense marker *PERF*: perfective marker *Q*: question particle *TOP*: topic marker

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〈Endnotes〉

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ii (3b) can be answered with response particles if the context offers evidence that the addressee eats/is going to eat vegetarian food. We discuss this answering pattern in detail in section 3.

iii There are response particles other than *dui* (right) and *shi-de* (be-de) in Mandarin Chinese. *Shi* (be) is preferred in teaching Chinese as a second language, but native speakers use this particle less in daily conversations because they think it is too formal. This paper includes *dui* (right) and *shi-de* (be-DE) in the research but excludes *shi* (be) as it is unnatural in casual conversations. Guo (2000) also suggests that *shi* (be) might be invented as a neutral response particle recently under the influence of European languages.

iv The Minimal Binding Requirement (MBR): Variables must be bound by the most local potential antecedent (A-bar binder).

v In their terminology, Polarity 1 Phrase and Polarity 2 Phrase.

vi Wu (1998) proposes that an A-not-A question is analyzed as a binary partition of the possible worlds. However he does not refer to how a particle question is analyzed.