

ARTICLE

Verb doubling in Mandarin and association with contrastive topic

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Abstract

Verb doubling constructions in Mandarin such as *CHI, wo (shi) chi le* ‘As for eating, I (did) eat’, where the first verb is stressed, are perceived as incomplete if not followed by a continuing clause, but only when the copula *shi* is present do these constructions require a contrastive continuation marked by the coordinator *keshi* or *buguo* ‘but’. This article addresses these two puzzles by (i) analyzing verb doubling constructions as contrastive topic constructions where the initial stressed verb is a contrastive topic triggering a set of polar questions, and (ii) taking the copula *shi* to be a marker associated with contrastive topic. In particular, *shi* in a verb doubling construction presupposes that (a) there is at least one polar question Q which is an alternative of the current question under discussion, CQ, and entails CQ, and (b) Q has a negative answer. It is shown how the proposal accounts for the puzzles, and how it can be extended to VP doubling and object preposing constructions, both of which demonstrate similar incompleteness effects.

Keywords: contrastive topic; incompleteness effect; object preposing; question under discussion; verb doubling

Résumé

Dans les constructions à doublement du verbe en Mandarin, comme *CHI, wo (shi) chi le* ‘Quant à manger, j’ai mangé’, le premier verbe est stressé. De plus, quand le copule *shi* est présent, on demande une continuation contrastive marquée par le coordinateur *keshi* ou *buguo* ‘mais’ suivant la construction, sinon la construction est perçue comme incomplète. Cet article se focalise sur ces deux questions par (i) l’analyse de la construction à doublement du verbe comme construction du topic dans laquelle le premier verbe stressé est un topique contrastif qui implique un ensemble de questions polaires, et par (ii) l’analyse du copule *shi* comme le marqueur associé au topique contrastif. En particulier, *shi* dans la construction à doublement du verbe implique les deux présuppositions suivantes : (a) il y a au moins une question polaire Q qui est une alternative pour la question en discussion CQ et qui entraîne CQ; et (b) Q implique une réponse négative. L’article démontre comment cette analyse résout les deux questions, et comment elle peut être appliquée à la construction

à doublement du VP et à la construction à l'objet préposé où l'on observe aussi l'effet de l'incomplétude.

Mots-clés: doublement du verbe; topique contrastif; question en discussion; effet de l'incomplétude; objet préposé

1. Introduction

Mandarin has a particular verb doubling phenomenon, as exemplified in (1), which is typically a response to a polar question and perceived as “incomplete” or “unresolved” (indicated by #) if not followed by a continuing clause.¹ Without an explicit continuation, the hearer of (1) would be naturally prompted to ask ‘And then what?’ or ‘But what?’.

- (1) (Did Yijun eat?)
 # CHI, Yijun shi chi le.
 eat Yijun COP eat ASP
 #‘As for eating, Yijun did eat.’ (incomplete as a standalone utterance)

Examples like (1) have been called *predicate doubling constructions* (Shyu 2007), *Contrastive Predicate Topic clauses* (Lee 2003) and *verb doubling clefts* (Cheng and Vicente 2013). They involve a main verb with two copies, one in the main predicate position following the copula *shi* ‘be’, the other in a topic-like initial position carrying stress, indicated by capital letters throughout this article. This type of construction triggers an *adversative implicature* (Cheng and Vicente 2013), which can be lexicalized by *keshi* or *buguo*, both meaning ‘but’, in a continuing clause to form a complete utterance. Notice, however, that the construction under discussion remains incomplete or unresolved by itself even when *shi* is dropped (Zhong 2016).

- (2) (Did Yijun eat?)
 # CHI, Yijun chi le.
 eat Yijun eat ASP
 #‘As for eating, Yijun ate.’ (incomplete as a standalone utterance)

The aim of this article is to provide a formal semantic analysis that can explain the incompleteness of both (1) and (2), as well as one interesting difference in the nature of the continuing clause with which they co-occur. As shown by the pair in (3), when *shi* is present, the doubling construction requires an adversative ‘but’-continuation; without the latter, (3b) still sounds incomplete. On the other hand, when *shi* is absent, the continuing clause does not need to be adversative; both (4a) and (4b) are felicitous and complete. That is, while the existence of *shi* does not affect incompleteness, it does change the meaning of the construction in some way.

¹ Abbreviations: 1/2/3: first/second/third persons; ASP: aspect; CL: classifier; COP: copula; CT: contrastive topic; F: focus; INF: infinitive; NEG: negation; PL: plural; PRT: particle; SG: singular.

(3) (Did Yijun eat?)

- a. CHI, Yijun shi chi le, keshi mei chi hen-duo.
eat Yijun COP eat ASP but NEG eat very-much
'As for eating, Yijun did eat, but didn't eat much.'
- b. # CHI, Yijun shi chi le, erqie chi-le hen-duo.
eat Yijun COP eat ASP and eat-ASP very-much
'As for eating, Yijun did eat, and ate a lot.' (incomplete)

(4) (Did Yijun eat?)

- a. CHI, Yijun chi le, keshi mei chi henduo.
eat Yijun eat ASP but NEG eat much
'As for eating, Yijun ate, but didn't eat much.'
- b. CHI, Yijun chi le, erqie chi-le henduo.
eat Yijun eat ASP and eat-ASP much
'As for eating, Yijun ate, and ate a lot.'

I will call the examples in (3)–(4) *verb doubling constructions* (VDCs) and use the abbreviations “*shi*-VDC” and “*shi*_{VDC}” to label a VDC that contains *shi* and *shi* in a VDC, respectively. The requirement of a continuing clause will be called the *incompleteness effect* of VDCs. Note that in a VDC the initial verb copy may also appear in a post-subject position if the copula is present, as shown in (5), where the incompleteness effect is observed as well.²

- (5) Yijun CHI shi chi le ...
Yijun eat COP eat ASP
'As for eating, Yijun did eat ...'

Throughout this article, I will only discuss VDCs where the initial, stressed verb copy precedes the subject, as in (1) and (3)–(4).

Some of the literature on VDCs or related constructions crosslinguistically has concentrated on their syntax and the mechanism of verb movement/copying (Shyu 2007 and Cheng and Vicente 2013 on Mandarin; Landau 2006 on Hebrew; Vicente 2007, 2009 on Spanish; Aoyagi 2006 on Korean; Tran 2011 on Vietnamese); other studies investigate their semantics and pragmatics (Muñoz Pérez and Verdecchia 2022 on Spanish and Verbuk 2006 on Russian). This article attempts to explain the following two puzzles about Mandarin VDCs:

- How does the incompleteness effect of VDCs emerge?
- How does the copula *shi* affect the meaning of a VDC and the type of the continuing clause?

²As with previous examples, (5) conveys a contrast on the verb, implying that Yijun did something other than eating. As a reviewer notes, this suggests that the subject and first verb copy encode different types of information structures (e.g., TopP and an “outer” FocP; Tsai 2015). However, the trigger of the contrastive interpretation is not specific to the post-subject position, and since *shi* is obligatory in (5), presumably for independent reasons, such cases will not be considered here. But see section 4.2 for the treatment of Mandarin SOV sentences as CT constructions.

Following the early lead of Lee (2000, 2003), I will claim that VDCs in Mandarin are a variant of *contrastive topic* (CT) constructions where the CT is a doubled verb. The main proposal is a formal semantic account that explains how the incompleteness effect of VDCs arises, why the copula leads to the difference between (3) and (4), and eventually how this analysis sheds light on the grammar of Mandarin CT constructions more generally.

The remainder of this article is organized as follows. Section 2 proposes a semantic analysis for VDCs without *shi*, where such VDCs are shown to pattern together with CT constructions and be subject to a licensing discourse condition. Section 3 turns to *shi*-VDCs and discusses how a treatment of *shi* as a marker carrying a question-based maximality presupposition explains the obligatory adversative continuation. Section 4 extends the core proposal to VP doubling and object preposing constructions. Finally, section 5 concludes.

2. Verb doubling constructions without *shi*

2.1 The incompleteness effect

As mentioned above, VDCs in Mandarin are themselves incomplete unless supplemented by a continuing proposition, regardless of whether or not the copula *shi* is present. For example, in (6a) the ‘but’-continuation presents a contrast between the initial verb copy (‘eat’) and a negative VP ‘not eating until full’; in (6b), the contrast is a more indirect one between ‘eat’ and a complex proposition ‘he thought (it) wasn’t tasty’; finally, (6c) shows that the continuation need not involve negation.

(6) (Did Yijun eat?)

- a. CHI, Yijun (shi) chi le, keshi mei chi-bao.
eat Yijun COP eat ASP but NEG eat-full
‘As for eating, Yijun (did) eat, but didn’t eat until full.’
- b. CHI, Yijun (shi) chi le, keshi ta juede bu hao-chi.
eat Yijun COP eat ASP but 3SG think NEG good-eat
‘As for eating, Yijun (did) eat, but she thought (it) wasn’t tasty.’
- c. CHI, Yijun (shi) chi le, keshi ta hai neng zai chi.
eat Yijun COP eat ASP but 3SG still can again eat
‘As for eating, Yijun (did) eat, but she could still eat more.’

The incompleteness effect and the requirement of a contrastive continuation of Mandarin *shi*-VDCs has been well documented (Chao 1968, Lee 2003, Shyu 2007, Cheng and Vicente 2013, Zhong 2016) but has not been systematically and formally analyzed. Vicente (2007) and Cheng and Vicente (2013) dub the contrastive continuation as an adversative implicature of VDCs in Spanish and Mandarin, respectively (see also Bastos 2001 on similar “*but*-effects” in Brazilian Portuguese). With respect to the status of the contrastive continuation as an implicature, Vicente (2007) observes that predicate doubling in Spanish, which normally gives rise to an adversative implicature as shown in (7a), may have the implicature cancelled under certain conditions, for example, when something other than the verb is focused, as in (7b). This suggests the

inference that follows from (7a) is indeed an implicature, in particular a conversational implicature due to the Maxim of Manner.

- (7) a. Leer, Juan ha leído un libro (pero...)
 read.INF J has read a book but
 ‘As for reading, Juan has read a book (but still...).’
 b. Leer, Juan ha leído AKIRA
 read.INF J has read A
 ‘As for reading, Juan has read AKIRA.’ (Vicente 2007: 66)

At first glance, the incompleteness inference of a Mandarin VDC without *shi* also seems cancellable. For instance, (8) alone can be a felicitous response to the question ‘Did Yijun eat noodles?’, where focal stress falls on the object *fan* ‘rice’.

- (8) (Did Yijun eat noodles?)
 Chi, ta chi-le FAN.
 eat 3SG eat-ASP rice
 ‘As for eating, she ate RICE.’

Another example is (9b), provided by a reviewer who once again observes that (9b) is complete as a response to (9a), thus raising the question of whether the incompleteness effect is obligatory for VDCs without *shi* or merely a cancellable implicature.

- (9) a. Huanggua ni dou mei qie, xi le ma?
 cucumber you even NEG cut wash ASP PRT
 ‘You didn’t even cut the cucumber. Did you wash it?’
 b. Xi, wo xi le.
 wash 1SG wash ASP
 ‘As for washing, I washed it.’

Notice, however, that the initial verbs in these VDCs are necessarily unstressed, and the focal stress falls on something in the main clause (e.g., the object in (8), and second verb copy in (9b)). Such an intonation pattern results in a different interpretation of these doubling constructions, according to which the initial verb is a *topic* in Li and Thompson’s (1981) sense, in other words, what the main clause is about. This topical interpretation requires the initial verb to be anaphoric to a previously mentioned expression – which is satisfied in both (8) and (9b) – but does not require the initial verb to contrast with an alternative. If the initial verbs in these examples are stressed, the incompleteness effect becomes mandatory and not cancellable, just like the data in (1)–(6). The VDCs in Mandarin with which we will be concerned only include those with a stressed initial verb.

On the other hand, a potential counterexample to the generalization that a VDC with the first verb stressed is incomplete is (10), a felicitous response in the same context containing two conjoined VDCs with both initial verbs stressed and without *shi*. But like (9b), the second VDC in (10) is “complete” in appearing without continuation.

- (10) (Same context as in (9a))
 QIE, wo mei qie, dan XI, wo xi le.
 cut 1SG NEG cut but wash 1SG wash ASP
 'As for cutting (it), I didn't; as for washing (it), I did.'

I will return to (10) as well as (9b) in [section 2.3](#), where it will be argued that the incompleteness effect of a VDC correlates with a licensing condition: Incompleteness would not be mandatory if all subquestions can be answered within the same discourse strategy, as is the case in (10).

2.2 Büring's (2003) theory of contrastive topics

Contrastive topic (CT) constructions in English are encoded with a fall-rise contour (Jackendoff 1972, Büring 2003, among many others). In (11a) below, the subject *Fred* is a CT (indicated by the subscript 'CT') that is accompanied by a focus ('F'), *beans*. In (11b), the pattern is reversed. The different CT+F markings have semantic consequences: While (11a) can answer the question *What did Fred eat?* in a context where the topic of different individuals eating different things is under discussion, (11b) cannot. The latter is only felicitous as a response to the question *Who ate the beans?* in the same context.

- (11) a. FRED_{CT} ate the BEANS_F.
 b. FRED_F ate the BEANS_{CT}.

Büring (2003) develops a non-compositional pragmatic theory in which English CTs have a *CT-value* (in parallel to F-marked expressions having a focus semantic value; Rooth 1992) that is generated based on the following *CT-value formation* rule:

- (12) CT-value formation (Büring 2003: 519)
 a. Step 1: Replace the focus with a *wh*-word and front the latter; if focus marks the finite verb or negation, front the finite verb instead.
 b. Step 2: Form a set of questions from the result of step 1 by replacing the contrastive topic with some alternative to it.

Taking (11a) as example, step 1 turns it into the question 'What did Fred eat?', and step 2 forms the set of questions in (13) out of step 1, which is the CT-value evoked in (11a).

- (13) $\llbracket (11a) \rrbracket^{ct} = \{ \text{'What did Fred eat?', 'What did Mary eat?', ...} \}$
 $= \{ \{ x \text{ ate } y \mid y \in D_e \} \mid x \in D_e \}$

The (sub)questions in (13) are all connected to the more general, overarching question *Who ate what?* in a hierarchical discourse structure, and the relation between a (sub)question and the overarching question is understood as a strategy of inquiry (Roberts 2012). Since the CT-value formation rule generates a different CT-value when CT-marking falls on a different phrase, it follows that (11a) and (11b) have distinct meanings.

From here, Büring (2003) addresses another semantic property of CT-marking, namely that it conveys additional discourse-related meaning. For instance, (11a) infers

that other people ate other things (than beans). Büring suggests that such inferences arise as a conversational implicature: Given that the CT-marking on *Fred* indicates the existence of a complex discourse structure containing questions of the form *What did x eat?*, and that the speaker of (11a) only mentions Fred rather than providing a more informative answer, we can conclude that while she is aware of other people having eaten, she is not aware whether they ate beans or not.³

In addition, Büring (2003: 533) uses the following dialogue to illustrate cases where step 1 in (12) involves focus marking on a finite verb/auxiliary. According to him, both A1 and A2 in (14) have the CT-value in (15), and the focus on *did* can signal verum focus.

(14) Q: How many (of the 74) abstracts got accepted?

SQ1: Did any abstracts get accepted?

A1: (Yes,) SOME_{CT} abstracts DID_F get accepted.

SQ2: Did most abstracts get accepted?

A2: (Yes,) MOST_{CT} abstracts DID_F get accepted.

(15) $\llbracket(14A1)\rrbracket^{ct} = \llbracket(14A2)\rrbracket^{ct} = \{\{Q \text{ abstracts got accepted}\} \mid Q \in D_{et,t}\}$
 $\approx$ ‘Did *X* abstracts get accepted?’

The derivation of the CT-value (15) utilizes the assumption (Büring 2003: 532) that polar questions denote singleton sets of propositions. Thus, when the focus of the sentence *S* falls on a verb/auxiliary, CT-marking in *S* yields a set of polar questions, rather than a set of *wh*-questions.

2.3 Deriving the incompleteness effect

I propose that Mandarin VDCs are essentially a kind of CT construction, where the initial stressed verb is a CT. Concentrating on the VDCs without *shi* for the moment, the key idea regarding the incompleteness effect of VDCs is the following: They obligatorily trigger a set of *implicit subquestions* by virtue of CT-marking while only addressing one subquestion, and the fact that there is at least one other subquestion raised but unresolved results in the perceived incompleteness. For instance, the CT-marking in (16), realized through word-level stress on the initial verb, triggers the set of subquestions in (17) but only answers the first (‘Did Yijun eat?’), leading to the perception that (16) itself is not complete.

(16) CHI_{CT}, Yijun chi le ...
 eat Yijun eat ASP
 ‘As for eating, Yijun ate ...’

(17) $\{\text{‘Did Yijun eat?’}, \text{‘Did Yijun eat until full?’}, \dots\}$
 = ‘For every relevant action *P*, did Yijun do *P*?’ (CT-value of (16))

³This discourse-level meaning of CT is defined as “List Interpretation” by Benincà and Poletto (2004) with respect to examples such as *La frutta la regaliamo, la verdura la vendiamo* ‘We give fruit for free, while we sell the vegetables’ in Italian, where “two elements belonging to the same list of already known items are contrasted” (Benincà and Poletto 2004: 67).

More concretely, I propose (18) for Mandarin VDCs, following Büring (2003). Here I will only illustrate simple VDCs containing a one-place verb; other types of verbs can be analyzed similarly.

(18) CT-value formation of Mandarin VDCs

- a. Step 1: Form a polar question from a VDC excluding the initial stressed verb copy.
Formally: $\{P(a)\}$, where P is the denotation of V of a VDC and a the subject
- b. Step 2: Form a set of polar questions from the result of Step 1 by replacing the copied verb with some alternative to it.
Formally: $\{\{P'(a)\} \mid P' \in D_{et}\}$, where P' is a variable ranging over the denotations of alternative verbs

It is obvious that (18) is parallel to (12) except that the VDC data under discussion do not involve focus (cf. “sole-CT” sentences in Büring 2003). We can use (16) to illustrate how (18) works. Step 1 generates the singleton set of propositions in (19a), which amounts to the polar question *Did she eat?*, following Büring (2003) and also Biezma and Rawlins’s (2012) proposal that polar questions denote singleton sets of propositions.⁴ In step 2, let us first assume for simplicity that there is only one alternative to *chi* ‘eat’, namely the resultative compound *chi-bao* ‘eat until full’. Replacing *chi* in (19a) with this alternative yields the set of polar questions in (19b), which is the CT-value assigned to (16). In other words, step 2 builds a non-singleton set of polar questions out of a singleton set of polar questions.

(19) Deriving the CT-value of (16)

- a. $\{\text{‘Yijun ate’}\} = \text{‘Did Yijun eat?’}$ (step 1)
- b. $\{\{\text{‘Yijun ate’}\}, \{\text{‘Yijun ate until full’}\}\}$
 $= \{\text{‘Did Yijun eat?’}, \text{‘Did Yijun eat until full?’}\}$
 $= \text{‘For every action } P \text{ in the set \{‘eat’, ‘eat until full’\}, did Yijun do } P\text{?’}$ (step 2)

This, I argue, is the source of the incompleteness of VDCs: By uttering (16), the speaker S indicates she acknowledges the relevance of the complex discourse containing the two polar subquestions in (19b), and yet S only asserts (16) to respond to one of them. This leads to the observed incompleteness: At least one evoked subquestion is not answered by the VDC alone. In the present analysis, the incompleteness of VDCs amounts to the lack of a complete set of answers that can resolve all the subquestions triggered by the initial verb copy (i.e., the CT).

Notice that this account makes no prediction with regard to how a VDC should be made complete; all that is required is that there be at least one implicit subquestion in

⁴To generate the singleton-set denotation of a polar question compositionally, we can make use of Constant’s (2014: 94–95) CT-operator, defined to generate a singleton set containing a function from entities to sets of alternatives. The singleton set further combines with the set of alternatives denoted by the relevant CT via pointwise functional application to yield a set of singleton sets of propositions, namely a set of polar questions. This corresponds to the result of step 2 in (18b).

the CT-value that needs to be addressed. The felicity of the examples in (4), repeated below in (20), is expected because either the continuation in (20a) or that in (20b) can respond to the polar subquestion in the CT-value ('Did Yijun eat much?') that is not addressed by the first clause.

- (20) a. CHI, Yijun chi le, keshi mei chi hen-duo.
eat Yijun eat ASP but NEG eat very-much
'As for eating, Yijun ate, but didn't eat much.'
- b. CHI, Yijun chi le, erqie chi-le hen-duo.
eat Yijun eat ASP and eat-ASP very-much
'As for eating, Yijun ate, and ate a lot.'

Following Büring (2003) and Muñoz Pérez and Verdecchia (2022), I take the activation of the CT-value to be part of the conventional meaning of the CT-marking in a VDC, whereas the content of alternative subquestions is a matter of conversational implicature.

Note furthermore that the CT-value formation rule (18) does not guarantee that there must be a subquestion that is unresolved by the VDC or any previous utterance. While CT-marking generates at least two subquestions, something more needs to be said about the subquestions to ensure at least one of them remains unresolved after the VDC is uttered (hence the incompleteness effect). This is crucial, since otherwise cases like (9b) could be felicitous and *complete* when the initial verb is stressed, because the evoked subquestions {'Did you cut the cucumber?'; 'Did you wash the cucumber?'} can both be resolved by (9b) together with the preceding question (9a). Recall also that (10), reproduced below as (21), is fine. How does adding the first clause ('as for cutting (it), I didn't'), which is already given in (9a), "cancel" the incompleteness effect of the second VDC?

- (21) (Same context as in (9a))
QIE, wo mei qie, dan XI, wo xi le.
cut 1SG NEG cut but wash 1SG wash ASP
'As for cutting (it), I didn't; as for washing (it), I did.'

I submit that what governs the infelicity of (9b) and the felicity of (21) is the following condition in (22):

- (22) A VDC (where the initial verb is stressed) is licensed only if the subquestions that it evokes can all be resolved *within* the strategy of inquiry in which the VDC is an answer to one subquestion.

This condition underlies the incompleteness of typical VDCs discussed earlier, including (9b) if the initial verb is stressed: They are incomplete because at least one subquestion has not been answered yet within the same strategy. Crucially, even if the subquestion 'Did you cut the cucumber?' is already answered by (9a), the latter is uttered by a different speaker and thus is *not* within the same discourse strategy as (9b). Thus, (9b) does not satisfy (22). On the other hand, (21) constitutes a "complete"

strategy in which the subquestions activated by the two VDCs can all be resolved by the latter *within* the same strategy. Specifically, the first VDC in (21) activates the subquestions in (23a), and the second VDC those in (23b). These four subquestions are each part of the strategy to resolve a larger QUD (e.g., ‘What did you do?’), and the two VDCs in (21) altogether provide the complete answers to the four subquestions, thereby also resolving the larger QUD.

- (23) a. {‘Did you not cut the cucumber?’, ‘Did you not wash the cucumber?’}
 b. {‘Did you cut the cucumber?’, ‘Did you wash the cucumber?’}

In short, a VDC can appear without a continuation, or in a strategy-final position, if the condition (22) is satisfied; whenever it is not, incompleteness arises. The incompleteness effect of a VDC therefore is an inference that can be “cancelled” by certain discourse conditions.

2.4 Further arguments for VDCs as CT constructions

The idea that VDCs resemble CT constructions aligns well with the observation by previous studies that VDCs are context-sensitive: The verb copies are contextually anaphoric to a related current question under discussion (QUD; Roberts 2012). Thus, (24) is felicitous but (25) is not under respective QUDs.

- (24) (Did Yijun eat?) (modeled on Zhong 2016: 149–150)
 CHI, Yijun chi le, buguo ...
 eat Yijun eat ASP but
 ‘As for eating, Yijun ate, but ...’
- (25) (I watched a movie yesterday.)
 # CHI, Yijun chi le, buguo ...
 eat Yijun eat ASP but
 #‘As for eating, Yijun ate, but ...’

The example (26) shows a *wh*-question can also serve as a QUD for a VDC:⁵

- (26) (What did Yijun read?) (modeled on Zhong 2016: 150)
 KAN, ta kan-le zhe-ben shu, buguo ...
 read 3SG read-ASP this-CL book but
 ‘As for reading, she read this book, but ...’

On the other hand, while the topic-hood of the initial copy of a VDC is widely acknowledged (Lee 2000, 2003; Liu 2004; Shyu 2007; Cheng and Vicente 2013; Zhong 2016; Yang and Wu 2017), the initial verb does not always (just) mark a topical element in the current discourse, and therefore should not be considered a discourse/aboutness topic. For instance, the QUD in (27) makes the verbal expression ‘drink’ a salient

⁵ However, a *shi*-VDC cannot address a current *wh*-question. See section 3.3.

topic, but the VDC can be a felicitous response with ‘eat’ as the initial verb copy. The QUD in (28) does not even explicitly include any topical verbal expression, and yet the responding VDC is also fine.

- (27) (Did Yijun drink?)
 CHI, Yijun chi le, buguo mei he.
 eat Yijun eat ASP but NEG drink
 ‘As for eating, Yijun ate, but didn’t drink.’
- (28) (What did Yijun do at the party?)
 CHI, Yijun chi-le yidian, buguo mei he dongxi.
 eat Yijun eat-ASP some but NEG drink thing
 ‘As for eating, Yijun ate a little, but didn’t drink anything.’

Importantly, these properties of verb doubling are also characteristic of CTs. The following examples in (29), all from Büring (2016), show that a CT can function as a partial topic, a shifting topic, and a purely implicational topic, respectively. One can see that (28) is analogous to (29a) (both introducing a partial answer to a wider QUD) and (27) to (29b) (both introducing a partial answer that does not directly address the QUD). Lastly, (29c) is a complete answer to the indicated QUD but additionally implies a question about other individuals in other places.

- (29) a. (Which guest brought what?) Fred_{CT} brought the beans_F.
 b. (Will Bo come to school today?) Yesterday_{CT} he was sick_F.
 c. (Where was the gardener at the time of the murder?) The gardener_{CT} was in the house_F. (Büring 2016: 68–70)

The implicational property of (29c) is precisely what we have seen in many VDC examples discussed so far: A VDC implies an implicit, unresolved question inquiring about some verbal alternative (or “does not deliver all the information that is expected” (Krifka 2008: 268)), thus rendering itself an incomplete utterance. For the same reason, even though the initial verb of a VDC evokes alternatives, it should not be treated as a focus because a sentence with focus can completely resolve a *wh*-question but a VDC cannot do so without a continuing clause.

More generally, VDCs exhibit what Krifka (2008) calls *delimitation* in that they do not wholly satisfy the current informational needs of the common ground (CG), which would be satisfied by an additional expression, for example, a continuing clause specifying an alternative of the doubled verb. This is a semantic feature also shared by frame setters such as the adverbial *healthwise* in (30b).

- (30) a. How is John?
 b. {Healthwise/As for his health}, he is FINE_{focus}. (Krifka 2008: 269)

In terms of CG management, Krifka (2008) argues that whereas a CT diverges from the expectation that information about a more comprehensive or distinct entity is given, a frame setter indicates that the information provided is restricted to a particular dimension of what is expected. Discourse/aboutness topics do not structure CG management in such manners.

Finally, recall that Cheng and Vicente (2013) suggest Mandarin VDCs carry an adversative implicature that can be also observed for Spanish predicate doubling, and that Vicente (2007) further proposes that in Spanish the implicature is conversational due to its cancellability. However, Muñoz Pérez and Verdecchia (2022) take a different standpoint by arguing that predicate doubling in Spanish represents CT constructions in which the first predicate is a CT exactly in Buring's (2003) sense. They use the term "continuation effect", which corresponds to "incompleteness effect" in this article, to refer to the indication by the initial predicate that there is at least one alternative partial question which should be addressed to resolve a bigger question. For Muñoz Pérez and Verdecchia (2022), evoking alternative questions is a conventional implicature of CTs, and therefore of Spanish predicate doubling, which does not go away even if something other than the verbal predicate is focused, as (31b) shows (cf. (7b)).

- (31) a. ¿Qué leyó Jorge? ¿El libro o el artículo?
 what read.3SG Jorge the book or the article
 'What did Jorge read? The book or the article?'
 b. [Leer]_{CT}, leyó [el artículo]_F, (el libro solo lo ojeó).
 to.read read.3SG the article the book only it had.a.look.at.3SG
 'As for reading, he read the article, (the book, he had a look at it).'

(Muñoz Pérez and Verdecchia 2022: 1176)

If this characterization and analysis are on the right track, the relation between Mandarin VDCs and Spanish predicate doubling is stronger than what Vicente (2007) implies. I hold that studies such as Muñoz Pérez and Verdecchia (2022) support the more general picture in which predicate doubling is associated with CT-based strategies of inquiry (see Jasinskaja 2016 and references therein for similar CT-like doubling phenomena in Slavic languages). Mandarin VDCs are yet another manifestation of this crosslinguistic pattern.

Overall, given the above considerations, the proposal that Mandarin VDCs are CT constructions seems plausible. An utterance involving a CT or VDC is embedded under a larger discourse structure in which the utterance represents a partial answer that addresses a subquestion, leaving some other subquestion(s) triggered but unaddressed.

3. Verb doubling constructions with *shi*

Recall that the presence of the copula *shi* in a VDC has the additional effect that its continuation must be an adversative one marked by 'but', as in (3a) vs. (3b). This requirement of contrast does not follow from the CT-based treatment as proposed above. I submit that the required contrastive continuation of a *shi*-VDC can be traced to the semantics of *shi*_{VDC}. This analysis will be established on two arguments: (i) *shi*_{VDC} is not a verum focus marker (contra Cheng and Vicente 2013), and (ii) it is a pre-suppositional marker indicating a weak maximality and association with contrastive topic.

3.1 Cheng and Vicente (2013) on VDCs

On the surface, VDCs resemble cleft constructions in Mandarin as the latter also contain the copula *shi* (Chao 1968, Huang 1988), as (32) shows.

- (32) Ta shi zuotian likai (de).
 3SG COP yesterday leave PRT
 'It was yesterday when she left.'

Cheng and Vicente (2013) propose a cleft analysis for VDCs, according to which the initial verb is related to the second via overt head movement, as shown in (33) below. This structure follows Cheng's (2008) general theory of Mandarin clefts in taking the complement of the copula *shi* to be a Small Clause (SC); in VDCs, the subject of the SC is a vP, which is followed by a null *pro* predicate that moves to the left of *shi* (i.e., predicate inversion). Support for the movement analysis includes locality effects and lexical identity effects.

- (33) [CP V_i [XP *pro*_{PRED} *shi* [SC [vP ... V_i ...] t_{PRED}]]]

(Cheng and Vicente 2013: 8)

Moreover, Cheng and Vicente maintain that *shi* is interpreted as verum focus (Höhle 1992), which affirms the truth of the proposition in its scope. By focalizing the event argument introduced by the lower verb, a VDC asserts that the event under discussion did take place. According to this view, the VDC in each of (6a)–(6c) would assert that an 'eating' event did occur, and contrast such a proposition not with alternatives of the verb ('drink', 'walk', etc.) but with the polar alternative 'not eating' (Cheng and Vicente 2013: 6).

Unfortunately, it is unclear how the presence of verum focus and the syntactic structure based on (33) should deliver the incompleteness or contrastive effect: Verum focus per se does not render a proposition incomplete, and V-movement is a purely syntactic operation. In addition, in none of the examples in (6a)–(6c) is the semantic contrast between the first clause and the second one between positive polarity and negative polarity. This seems to cast doubt on Cheng and Vicente's (2013) characterization of the verum focus function of *shi*. The full meaning of VDCs therefore has remained unexplained under their syntactic account, and indeed under all other accounts of VDCs I am aware of (e.g., Zhong 2016, Yang and Wu 2017). In what follows, I will first discuss and reject the treatment of *shi* in VDCs as a verum marker, and then suggest a different account.

3.2 Is *shi* in VDCs a marker of verum focus?

To determine whether *shi* marks verum focus, we can take a closer look at the contexts, namely QUDs, that license *shi*-VDCs. If they overlap those licensing verum, there is good chance that *shi* is a marker of verum. However, this does not seem to be the case.

The literature on verum has shown that it is not licensed under just any polar question. The observations by Gutzmann et al. (2020) illustrated below exemplify this point: (34B), but not (34B'), is a felicitous answer to the neutral polar question (34A). But if the question is biased, as in (35A), using verum is possible. This means that verum does more than address a simple polar QUD.

- (34) A: Did Chris submit her paper yesterday?
 B: Yes, she submitted her paper.
 B': #Yes, she DID submit her paper.
- (35) A: Did Chris really submit her paper yesterday?
 B: Yes, she DID submit her paper. (Gutzmann et al. 2020: 12)

Another way to license verum is to make both alternatives salient in the QUD, as in (36A). The verum sentence (36B) would be infelicitous if (36A) is just *Is it raining?*.

- (36) A: Is it raining or is it not raining?
 B: It IS raining.

Along with other observations, Gutzmann et al. (2020) propose the interpretation in (37) for verum, which they regard as a semantic operator, rather than a focus marker. This interpretation is based on the conclusion that a verum is licensed when the context involves either an open conflict between salient alternatives in the QUD or a final settlement of the QUD.⁶

- (37) $\llbracket \text{VERUM} \rrbracket^{u,c}(p) = \checkmark$
 if the speaker c_s wants to prevent that $\text{QUD}(c)$ is downdated with $\neg p$.

(Gutzmann et al. 2020: 39)

If a QUD *downdated* with $\neg p$, then it is *settled* toward $\neg p$. The term *downdate* is from Engdahl (2006); see also Gutzmann and Castroviejo (2011). The superscript u stands for use-conditional (Gutzmann 2015) and c for context.

Crucially, as the first examples of this paper have established, *shi*-VDCs are perfectly fine as responses to neutral polar questions; their QUDs can, but need not, include both alternatives or be biased. More concretely, (1) can answer (38a) (which is neutral without any speaker bias), (38b) (an alternative question), as well as (38c) (which is biased toward a positive answer).

- (38) a. Yijun chi le ma?
 Yijun eat ASP PRT
 'Did Yijun eat?' (neutral polar question)
- b. Yijun chi le haishi mei chi?
 Yijun eat ASP or NEG eat
 'Did Yijun eat or did she not eat?' (alternative question)
- c. Yijun shi-bu-shi chi_F le?
 Yijun COP-NEG-COP eat ASP
 'Is it the case that Yijun ate_F?' (biased polar question)

If *shi* marks verum in the Mandarin VDC, it is unclear why the latter isn't subject to the same licensing conditions as verum in other languages. One might attempt to

⁶See Matthewson (2021) for a finer-grained classification of discourse contexts that may and may not license verum in Gitksan.

say that *shi* is a special marker for the kind of verum which is “relative to” a CT sentence. But since the function of verum when applied to *p* is to prevent a QUD from being downdated with $\neg p$, one should expect *shi* to perform the same function in a VDC if it marks verum; in other words, a *shi*-VDC should be licensed only when the QUD meets the “open conflict” or “final settlement” requirement, a requirement that is independent of whether the *shi*-VDC additionally evokes another subquestion to be answered. However, this is not the case: a *shi*-VDC is always possible when it is a direct response to a neutral polar question. Thus, despite the popular view that CT constructions, or the predicate doubling phenomena that are semantically parallel to CT constructions, involve a CT plus verum/polarity focus (Vicente 2007, Gyuris 2009, Jasinskaja 2016, Kamali and Krifka 2020, Muñoz Pérez and Verdecchia 2022), I hesitate to extend this view to Mandarin *shi*-VDCs.

This does not mean the copula *shi* can never be used to express verum. Ye (2020) observes that when *shi* itself is stressed (indicated by capital letters), its preadjacent sentence receives a verum-like reading, as in (39a). Also, when stress falls on the verb *xihuan* ‘like’ in the absence of *shi*, as in (39b), the verum interpretation results. By contrast, if only the object phrase is stressed, as in (39c), *shi* is interpreted as a focus marker conveying the exhaustivity that Lisi likes pragmatics only, thus rendering the second clause ‘He also likes syntax’ infelicitous.

- (39) a. Lisi SHI xihuan yuyongxue. Ta ye xihuan jufaxue.
 Lisi COP like pragmatics 3SG also like syntax
 ‘Lisi DOES like pragmatics. He also likes syntax.’
 b. Lisi XIHUAN yuyongxue. Ta ye xihuan jufaxue.
 Lisi like pragmatics 3SG also like syntax
 ‘Lisi LIKES pragmatics. He also likes syntax.’
 c. Lisi shi xihuan YUYONGXUE. (# Ta ye xihuan jufaxue.)
 Lisi COP like pragmatics 3SG also like syntax
 ‘It is pragmatics that Lisi likes. (#He also likes syntax)’

(Ye 2020: 359–361)

In other words, verum in Mandarin is expressed through word-level stress, either on verbs or on a copula. In a *shi*-VDC, however, it is the initial verb copy that is stressed, rather than *shi*_{VDC}. Even though this study does not experimentally investigate the prosody of VDCs, it is expected that the initial verb should display higher pitch range and longer duration than a discourse topic, along the lines of Hao et al.’s (2024) findings on nominal CTs in Mandarin.⁷ Given the above empirical considerations, we can conclude that *shi*_{VDC} does not indicate verum.

Still, one may wonder why *shi*_{VDC} is generally taken to correspond to auxiliaries such as *do* or the adverb *indeed* in English (e.g., in Cheng and Vicente 2013), both contributing emphasis. At the very least, however, the auxiliary *do* does not always convey verum focus. Wilder (2013) has observed that while *does* is the only accented

⁷See also Pan (2015) for remarks on the relationship between word-stress and (nominal) CTs. In particular, he shows that adding stress to a topic (extracted or in-situ) makes the CT interpretation salient.

word in (40b), both *patients* and *does* are phonologically prominent in (41b) (see also Grimshaw 2010). In addition, *patients* in (41b) has the fall-rise contour that is typical of English CT constructions.

- (40) a. They said he didn't have a lot of patients, but...
 b. he DOES have a lot of patients. (Wilder 2013: 145)
- (41) a. A: Is he a good doctor?
 b. B: Well, he DOES have a lot of PATIENTS. (Wilder 2013: 146)

The two instances of *does* are also semantically distinct: Only (40b) expresses focus on the positive polarity of the sentence and contrasts it with the negation of the sentence. In Wilder's (2013) terms, only the auxiliary in (40b) instantiates verum focus, whereas that in (41b) does not and is even optional to the CT sentence. Even though Wilder (2013) does not propose an analysis for the "emphatic *do*" in cases like (41b), it is clear that English "emphatic *do*" does not always indicate verum focus. This supports the conclusion that while *shi*_{VDC} appears to be translatable to emphatic *do*/indeed, *shi*_{VDC} is not necessarily a marker of verum focus. In the next section, a new approach to *shi*_{VDC} will be given, which takes it to be not a focus marker but an element that exhibits association with contrastive topic.

3.3 *Shi*_{VDC} and association with contrastive topic

In section 3.1, it was mentioned that the unstressed copula *shi* in examples like (39c) is a focus marker that conveys exhaustivity. This naturally raises the possibility that *shi*_{VDC} is the same element. This section will briefly present Ye's (2020) account on *shi* as a focus marker, discuss why it is not suitable for *shi*_{VDC}, and then argue for an alternative analysis.

Ye (2020) argues that the exhaustivity of *shi* originates from the maximality presupposition that its prejacent is a possible complete answer to a current QUD. Specifically, *shi* has the semantics in (42a): It simply asserts its prejacent but contributes a maximality component as defined in (41b) (roughly following Velleman et al. 2012) in the presupposition. In prose, $\text{MAX}_S(p)$ returns a proposition which is strictly stronger than all alternative propositions in the current QUD of the context S , CQ_S (i.e., CQ_S is the most immediate question under discussion of the "QUD stack" in S in Roberts 2012).

- (42) a. $\llbracket shi \rrbracket^S = \lambda p. \lambda w : \text{MAX}_S(p)(w). p(w)$
 b. $\text{MAX}_S(p) = \lambda w. \forall q \in \text{CQ}_S [(q >_S p) \rightarrow \neg q(w)]$ (Ye 2020: 362)

Suppose three branches of linguistics are under discussion in S , syntax, semantics, and pragmatics. The set of propositions in the CQ of (39c) is (43), where alternatives stronger than *like*(*prag*) are excluded (indicated by strikethrough) by the maximality presupposition of *shi*.

- (43) $\text{CQ}_S \text{ of } (38c) = \{ \textit{like}(\textit{prag}), \textit{like}(\textit{sem}), \textit{like}(\textit{syn}), \textit{like}(\textit{prag} \oplus \textit{syn}), \textit{like}(\textit{prag} \oplus \textit{sem}), \textit{like}(\textit{sem} \oplus \textit{syn}), \textit{like}(\textit{prag} \oplus \textit{sem} \oplus \textit{syn}) \}$

As a result, (39c) is necessarily exhaustive because the assertion and maximality presupposition together exclude all alternatives of *like*(*prag*): If *like*(*prag*) is true and

all stronger alternatives are (presupposed to be) false, then *like(sem)* and *like(syn)* must both be false.

Applying (42) to *shi*_{VDC} would be problematic, however, as noted by a reviewer: If *shi*_{VDC} is such a focus marker, *shi*-VDCs would have the copied verb associated with a maximality presupposition and CT at the same time. Such a pattern is predicted to be impossible, because a proposition cannot be a complete answer and also a partial answer to the same CQ.⁸ This is borne out by (44), where the CT is *Lisi* and the focus marker *shi* is associated with the pronoun *ta*.

- (44) * *Lisi ne, shi TA xihuan yuyongxue.*
Lisi CT COP 3SG like pragmatics
 Intended: ‘As for *Lisi*_{CT}, it is *he_F* that likes pragmatics.’ (Ye 2020: 366)

I now argue that a new account of *shi*_{VDC}, which is partially modeled on Ye’s (2020) maximality-encoding *shi* but differs from it in a number of important aspects, allows for a straightforward explanation of the obligatory adversative continuation of *shi*-VDCs. The basic idea is that *shi*_{VDC} evokes an alternative question Q to the CQ which could have been asked but was not, and the semantics of *shi*_{VDC} requires that Q have a negative answer. The negative answer to Q then leads to the obligatory ‘but’-continuation. Since *shi*_{VDC} relates to a competing alternative of the CQ, it can be said to associate with CT in this new analysis.

Before detailing the analysis, let us note that the *shi*-VDC (1) can be an (incomplete) response to the neutral polar question in (45a) or the A-not-A question formed with the focus marker *shi* in (45b), which expresses the speaker’s bias toward a positive answer (Ye 2020). However, the same *shi*-VDC cannot take the *wh*-question in (46) as its CQ; compare the VDC without *shi* in (26).

- (45) Appropriate CQ for (1) (*CHI, Yijun shi*_{VDC} *chi le...*):
- a. *Yijun chi le ma?*
Yijun eat ASP PRT
 ‘Did Yijun eat?’
 - b. *Yijun shi-bu-shi chi_F le?*
Yijun COP-NEG-COP eat ASP
 ‘Is it the case that Yijun ate_F?’
- (46) Inappropriate CQ for (1) (*CHI, Yijun shi*_{VDC} *chi le...*):
- Yijun zuo-le shenme/naxie (shi)?*
Yijun do-ASP what/which thing
 ‘What/Which (thing/things) did Yijun do?’

The contrast above indicates that *shi*_{VDC}, unlike the focus marker *shi*, is not anaphoric to a current *wh*-question. Rather, the CQ of a *shi*-VDC is restricted to a polar question. Put differently, the presence of *shi*_{VDC} imposes the constraint on the context that the latter must contain a polar question.

⁸Kamali and Krifka (2020) capture this distinction between focus and CT by taking focus to create a disjunctive question over alternatives, whereas the question alternatives contributed by CT are interpreted conjunctively, in the framework of Commitment Space Semantics.

My proposal is as follows. A *shi*-VDC is a CT construction identical to a VDC without *shi*, both containing a CT-marked verb copy that triggers a CT-value and providing an answer to one of the subquestions in the CT-value, except that *shi*_{VDC} contributes the presupposition that some alternative question to the CQ (the question immediately preceding the *shi*-VDC), which entails the CQ, has a negative answer. The entailment relation between questions is defined in (47) (following Groenendijk and Stokhof 2011, Roberts 2012).

- (47) For any two questions q_1 and q_2 , q_1 entails q_2 if and only if every complete answer to q_1 is also a complete answer to q_2 .⁹

For instance, the question ‘Did Yijun eat and play?’ entails the question ‘Did Yijun eat?’ because every complete answer to the former, as listed in (48), also completely resolves the latter.

- (48) Ans₁: Yijun ate and played.
 Ans₂: Yijun ate but didn’t play.
 Ans₃: Yijun didn’t eat but played.
 Ans₄: Yijun didn’t eat or play.

The denotation of *shi*_{VDC} is given in (49a), where S is the context and Q_{MAX_S} stands for the *question-based maximality operator* with the semantics in (49b). In prose, *shi*_{VDC} asserts its prejacent p and presupposes that some question in the set of alternative current questions (henceforth AltCQ) which entails ($\models$) the CQ has a negative answer. The last part of (49b) ($\forall q \in Q[\neg q(w)]$) says every proposition inside Q is negated; since Q here is a polar question, formally a singleton set of propositions, the $\forall$ -quantification is trivially satisfied. Finally, the denotation of AltCQ in context S is informally characterized as in (49c), where the notion of *pertinence* is taken from Buring (2016): A question is pertinent to S if it is relevant to the current discussion in S and not resolved.

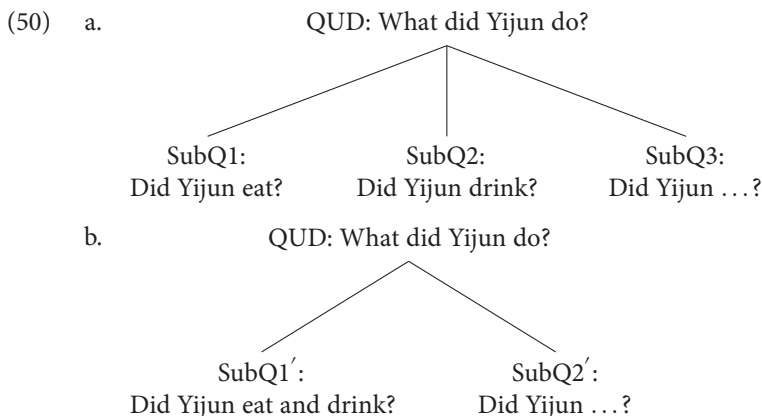
- (49) a. $\llbracket shi_{VDC} \rrbracket^S = \lambda p. \lambda w : Q_{MAX_S}(p)(w). p(w)$
 b. $Q_{MAX_S}(p) = \lambda w. \exists Q_{(st,t)} \in ALT_{CQ_S}[Q \models CQ_S \wedge \forall q \in Q[\neg q(w)]]$, where CQ_S is the current question under discussion of p in the context S
 c. $ALT_{CQ_S} = \{Q_S \mid Q_S \text{ is an alternative to } CQ_S \text{ and pertinent to current discussion in the context } S\}$

Two remarks are in order. First, I am assuming that an alternative of the CQ is obtained by replacing the verb in the CQ with an alternative verbal expression, similarly to how focus alternatives are obtained from a focused sentence in Rooth’s (1992) system. Since the members in the AltCQ set must take the form of polar questions, as explained below, the CQ itself must also be a polar question – in other words replacing the verb in a member of AltCQ with a different verb results in another polar question. This explains the observation that a *shi*-VDC always responds to a polar question.

⁹In terms of Groenendijk and Stokhof’s (2011) partition semantics, q_1 entails q_2 iff every block in the partition made by q_1 is included in some block in the partition made by q_2 .

Here is why the members in the AltCQ set must be polar questions. Suppose, first, that the relevant AltCQ of the *shi*-VDC *Chi, Yijun shi chi le...* ‘As for eating, Yijun ate...’ can be the *wh*-question ‘What did Yijun do?’. Such an AltCQ entails ‘Did Yijun eat?’ per (47), but negating all propositions in its denotation – in other words {‘Yijun ate’, ‘Yijun ate until full’, ...} contradicts the assertion that Yijun ate. Hence, a *shi*-VDC cannot have a *wh*-question as a relevant AltCQ. Next, suppose a neutral polar question ?*p* denotes the set of propositions {*p*, ¬*p*}, rather than the singleton {*p*}. Negating both *p* and ¬*p* clearly also leads to contradiction, because *p* and ¬*p* cannot both be true. It follows that the proposed semantics of *shi*_{VDC} in (49) guarantees that members of the AltCQ of a *shi*-VDC must be polar questions. The idea that a neutral polar question denotes a singleton (Büring 2003, Biezma and Rawlins 2012) is crucial to the present analysis.

The second remark is that members in AltCQ represent alternative questions that could have been asked in place of the CQ, and are therefore *not* the subquestions which address the same larger QUD together with the CQ. In terms of Büring’s (2003) model of d(iscourse)-trees, this means AltCQ may consist of SubQ1 in (50a) and SubQ1’ in (50b) (as opposed to SubQ1 and SubQ2 in (50a), both dominated by the same node), which are different ways to resolve the same QUD using the same CT-based strategy. The alternatives in AltCQ are not the members in the CT-value triggered by the initial verb copy and therefore may not be logically independent of one another.



Formulated this way, *shi*_{VDC} is similar to Ye’s (2020) focus marker *shi* in that both require something to be false: For the latter, alternative propositions stronger than *shi*’s prejacent are false, whereas for the former it is the answer to an alternative question entailing the CQ that is false. The two kinds of *shi* therefore also diverge in two aspects. First, *shi*_{VDC} is associated with CT, not focus, in the sense that its domain of quantification consists of alternative questions to the CQ rather than the propositions in the denotation of a *wh*-QUD. Second, *shi*_{VDC} has a weaker maximality presupposition, which involves existential rather than universal quantification. In other words, it merely requires there be one alternative question to be negatively answered.

To illustrate with an example, consider (51) again, where the CQ is ‘Did Yijun eat?’:

- (51) (Did Yijun eat?)
 [Chi]_{CT}, Yijun shi chi le ...
 eat Yijun COP eat ASP
 ‘As for eating, Yijun did eat ...’

Since the QMAX operator demands that there be an alternative polar question Q that entails the CQ, let us assume Q is ‘Did Yijun eat and play?’, which differs from the CQ only in the verbal expression and is pertinent to the current discussion about what Yijun did. Moreover, since QMAX also demands that every proposition in Q’s denotation be false, (51) implies $\neg[\text{eat}(\text{Yijun}) \wedge \text{play}(\text{Yijun})]$ as part of the presupposition of *shi*_{VDC}, which is tantamount to saying that ‘Yijun ate’ is the only true proposition and that ‘Yijun played’ is false. Ye’s (2020) semantics of the focus marker *shi* would derive the same result for this case, but we have done so by analyzing *shi*_{VDC} with association with CT, in particular with the alternative questions of the CQ, the latter being a member in the CT-value triggered by a CT.

The proposal that a *shi*-VDC is a CT construction and that *shi*_{VDC} operates on alternative questions has immediate consequences. Since (51) evokes a CT-value, its incompleteness effect is derived in the same way as VDCs without *shi*, as discussed in section 2. Moreover, it explains why (51) cannot be continued by *play*(Yijun), because this proposition contradicts *shi*_{VDC}’s presupposition. On the other hand, the continuation of (51) can be the negation of *play*(Yijun), because $\text{eat}(\text{Yijun}) \wedge \neg\text{play}(\text{Yijun})$ is consistent with the presupposition of *shi*_{VDC}. The proposal also accounts for the fact that a *shi*-VDC is felicitous as a response to a polar question but not a *wh*-question, because (a) the QMAX operator requires that every proposition in the denotation of some question Q (in AltCQ) be false, and this is only possible if Q is a polar question, and (b) Q and the CQ of a *shi*-VDC are alternatives to each other that differ only in the verbal expression. Relatedly, the proposal that *shi*-VDCs are anaphoric not to a *wh*-QUD but to polar questions avoids the theoretical issue surrounding (44) above.

As for the continuing clause of the *shi*-VDC, note that it does not have to involve negation at the matrix level; recall the two examples (6b) and (6c), repeated below in (52).

- (52) a. CHI, Yijun (shi) chi le, keshi ta jue de bu hao-chi.
 eat Yijun COP eat ASP but 3SG think NEG good-eat
 ‘As for eating, Yijun (did) eat, but she thought (it) wasn’t tasty.’
 b. CHI, Yijun (shi) chi le, keshi ta hai neng zai chi.
 eat Yijun COP eat ASP but 3SG still can again eat
 ‘As for eating, Yijun (did) eat, but she could still eat more.’

Under my analysis, (52a) and (52b) can evoke the alternative current questions in (53a) and (53b), respectively. The negative answer to (53a), together with the assertion of the *shi*-VDC in (52a), derives the result that Yijun didn’t think it was tasty; similarly, the

shi-VDC in (52b) implies that Yijun can eat more by presupposing the negative answer to (53b).

- (53) a. 'Did Yijun eat and think it was tasty?'
 b. 'Did Yijun eat and (if so) can she not eat more?'

I assume something like the reverse of negative raising might be at work for (52a), allowing the matrix-level negation on 'Yijun thought it was tasty' to be realized by the continuation of (52a) instead, with negation occurring in the embedded clause.¹⁰

Taking stock, just like the VDC without *shi*, the CT-value of the *shi*-VDC is triggered by CT-marking on the initial verb copy and derived through the two-step formation in (18). Crucially, *shi*_{VDC} interacts with alternatives of the CQ compositionally, such that some alternative question of the CQ which entails the CQ is answered negatively. In the next section, I address some observations and questions raised by reviewers.¹¹

3.4 Further discussion

The following two questions arise thanks to a reviewer. First, a *shi*-VDC does not always require other alternatives to be false, as evidenced by the example (54) where the continuation is additive.

- (54) CHI, *shi chi le*. Women *zai qu he dianr ba*.
 eat COP eat ASP 1PL more go drink a.bit PRT
 'As for eating, I did eat. Let's go for a drink.'

Second, *shi*_{VDC} could be analyzed as verum focus in cases like (55b) and (56b). In each example, the *shi*-VDC answers a polar QUD and the adversative continuation cannot be taken as an answer to the same QUD or as an alternative to the *shi*-VDC.

- (55) a. Ta *chi le ma*?
 3SG eat ASP PRT
 'Did he eat?'
 b. CHI, ta *kending shi chi le, zhishi ni mei kanjian*.
 eat 3SG definitely COP eat ASP just 2SG NEG see
 'As for eating, he definitely did eat, it's just that you didn't see it.'
- (56) a. Ta *mei chi ba*?
 3SG not eat PRT
 'He didn't eat?'
 b. CHI, ta *queshi shi chi le, zhishi ni bu zhidao*.
 eat 3SG indeed COP eat ASP just 2SG NEG know
 'As for eating, he indeed did eat, it's just that you don't know.'

Regarding (54), notice that even though no adversative clause is present, the second clause still implies that 'drinking' has not been done. The current analysis that *shi*_{VDC}

¹⁰That is, "[Yijun thought it was tasty]" is realized as "Yijun thought [¬[it was tasty]]" in (51a).

¹¹These questions from the reviewers were raised against a previous version of the paper where *shi*_{VDC} was analyzed with Ye's (2020) MAX operator, but the same concerns and observations are relevant to the present account.

requires an alternative question to be negatively answered is still applicable if we take ‘Did I eat and drink?’ to be the alternative of ‘Did I eat?’. In this case, the negative answer is implicit but can be inferred by the second clause in (54). On the other hand, an utterance such as ‘Let’s go home!’ or ‘See you tomorrow!’, which does not imply anything else to be done, does sound odd as a continuation of the *shi*-VDC.¹²

As for the data in (55) and (56), they actually present two separate issues: (i) whether *shi*_{VDC} does express verum focus and (ii) whether the continuing clause in (55b) and (56b) can be considered an alternative of the respective *shi*-VDC. First, adverbs such as *kending* ‘definitely’ or *queshi* ‘indeed’ do intuitively express an emphasis on the truth of a sentence, and I agree that these adverbs may signal verum in a sentence, possibly in a way similar to *really* (Romero and Han 2004). Nonetheless, even if such adverbs introduce verum, it does not follow that *shi*_{VDC} in (55b) and (56b) is also verum; it is consistent with my proposal to say that *shi*_{VDC} has the semantics in (49) while a *shi*-VDC can be made a verum sentence by an additional adverb.

Second, notice that (55a) and (56a) may actually not be entirely neutral polar questions, because the continuations ‘you didn’t see’ and ‘you didn’t know’ in the b-sentences signal rejection of the bias expressed by the a-sentences that ‘he ate’ is likely false. As shown in (57), the same continuation would be infelicitous if it is part of the response to someone who simply wonders whether it is raining.

(57) (Is it raining?)

Xia shi xia le, zhishi ni bu zhidao.

fall COP fall ASP just 2SG NEG know

#‘As for raining, it is raining, it’s just that you don’t know.’

It seems reasonable, therefore, to interpret (55a) and (56a) not as simple polar questions, but as implicit embedded questions such as (58a) to which the biased question (58b) is an alternative (per pertinence and the form of a polar question), and (55b) and (56b) as a response to (58a).

(58) a. ‘(Can you confirm) whether he ate?’

b. ‘Can you confirm my suspicion that he didn’t eat and can you confirm whether he ate?’

The rest is computed as before: Since *shi*_{VDC} requires (58b) be answered negatively, speaker-b conveys that speaker-a’s suspicion is not confirmed, and the continuation ‘you didn’t see/know (it)’ is just one way to imply this negative answer (i.e., speaker-a’s suspicion was wrong because she didn’t see/know it). On this approach, the CQ and its alternatives are allowed to differ not just in the verbal constituent because the CT-marked verb is interpreted inside an embedding structure. The discussion above is admittedly just a sketch of the path toward a better solution, but I will leave the details for future research.

¹²Modal adverbs such as *queshi* ‘indeed’ and *kending* ‘definitely’ can easily attract stress due to their emphatic nature and become the most phonologically prominent expressions in a sentence, in which case the initial (unstressed) verbs in (55b) and (56b) would just be discourse topics, not CTs.

Next, as observed by a reviewer, (59) shows that a sequence of VDCs is possible in which *shi*_{VDC} appears in the first.

- (59) CHI, Lisi shi chi le, HE, ta ye he le, danshi...
 eat Lisi COP eat ASP drink 3SG also drink ASP but
 ‘As for eating, Lisi did eat, and he also drank, but...’

Suppose the CQ here is ‘Did Lisi eat?’, and eating, drinking, and playing are the only three things Lisi may have done. According to the current analysis, the presence of *shi*_{VDC} indicates at least one alternative that entails the CQ has a negative answer. If we take the polar question ‘Did Lisi eat, drink, and play?’ to be such an alternative, we correctly predict (59) to be felicitous because the negative answer to the alternative, i.e., $\neg[\text{eat}(\text{Lisi}) \wedge \text{drink}(\text{Lisi}) \wedge \text{play}(\text{Lisi})]$, is compatible with $\text{eat}(\text{Lisi}) \wedge \text{drink}(\text{Lisi})$. Note that this is another argument against applying Ye’s (2020) maximality semantics to *shi*_{VDC}, because it would wrongly rule out the second VDC in (59).

Another of this reviewer’s observations is (60), which indicates that a *shi*-VDC seems unable to appear in a strategy-final position (marking the answer to the final subquestion within a strategy; Constant 2014). This is surprising given my analysis, since the requirement of the second CT (that there be at least one subquestion with the form ‘Did Lisi do x?’ that is not addressed by the second *shi*-VDC) and the weak maximality presupposition of the second *shi*_{VDC} (that some alternative question entailing ‘Did Lisi eat?’, such as ‘Did Lisi eat and drink?’, has a negative answer) seem both satisfied.

- (60) CHI, Lisi (shi) chi le, HE, ta (*shi) mei he.
 eat Lisi COP eat ASP drink 3SG COP NEG drink
 Intended: ‘As for eating, Lisi did eat, but he didn’t drink.’

A possible explanation is to say that the QMAX operator must apply non-vacuously. For (60), the subquestions introduced by the first CT ‘eat’ are {‘Did Lisi eat?’, ‘Did Lisi drink?’}, and those introduced by the second CT ‘drink’ are ‘Did Lisi not eat?’, ‘Did Lisi not drink?’. The first VDC resolves ‘Did Lisi eat?’ and ‘Did Lisi not eat?’, while the second *shi*-VDC resolves ‘Did Lisi drink?’ and ‘Did Lisi not drink?’. Adding *shi*_{VDC} to the first VDC would enforce the presupposition that some question entailing ‘Did Lisi eat?’ (e.g., ‘Did Lisi eat and drink?’) has a negative answer, and this weak maximality effect is not vacuous because the first VDC could be otherwise continued by ‘... and he also drank’ if *shi*_{VDC} is absent. Now, adding *shi*_{VDC} to the second VDC in (60) would require either one of (61a) and (61b) to have a negative answer (assuming no other events are relevant). The negative answer to (61a) is (62a), and that to (61b) is (62b). Crucially, (62a) contradicts the assertive content of (60), and therefore cannot be the presupposition of *shi*_{VDC}, while (61b) is already entailed by the first VDC in (59).

- (61) a. ‘Did Lisi eat and not drink?’
 b. ‘Did Lisi not eat and not drink?’
- (62) a. $\neg[\text{Lisi ate} \wedge \text{Lisi didn't drink}] = \neg[\text{Lisi ate}] \vee \text{Lisi drank}$
 b. $\neg[\text{Lisi didn't eat} \wedge \text{Lisi didn't drink}] = \text{Lisi ate} \vee \text{Lisi drank}$

Overall, we see that adding *shi*_{VDC} to the second VDC in (60) does not produce any effect because the presupposition it contributes is either contradictory or already entailed. Hence, although the weak maximality presupposition of *shi*_{VDC} is compatible with both VDCs in (60), it may well be the ban on vacuous application that causes the ungrammaticality.¹³ In fact, this view predicts that *shi*_{VDC} can never appear in a strategy-final position, because its presupposition would always come out vacuous. This prediction is borne out by (63):

- (63) CHI, Lisi (shi) mei chi, HE, ta (*shi) he le.
eat Lisi COP NEG eat drink 3SG COP drink ASP
Intended: 'As for eating, Lisi didn't eat, but he did drink.'

3.5 The adversative coordinator 'but'

One issue that has not been dealt with is the use of *keshi* 'but' or *buguo* 'but' in the continuation clause of a *shi*-VDC. I submit that the instance of 'but' here is a *counterexpectational* coordinator, which serves to signal certain relations between the propositions it conjoins on the one hand and the propositions in the relevant QUD on the other hand, in the sense of Toosarvandani (2014).

In his QUD-based treatment across three uses of *but* (counterexpectational, corrective, and semantic opposition), Toosarvandani (2014) proposes (64) as the unifying lexical entry, where " ϕ but ψ " entails the conjunction of ϕ and ψ and presupposes that there is one proposition in the relevant QUD set that is implied by ϕ (through a weak implicational relation " $\Rightarrow$ "), and that there is also one proposition in the QUD whose negation is implied by ψ .

- (64) Lexical entry of *but*
 $\llbracket \phi \text{ but } \psi \rrbracket =$
 At-issue: $\llbracket \phi \rrbracket \wedge \llbracket \psi \rrbracket$
 Presupposition: $\exists p : p \in \text{QUD}(\llbracket \phi \rrbracket \Rightarrow p) \wedge$
 $\exists p : p \in \text{QUD}(\llbracket \psi \rrbracket \Rightarrow \neg p)$ (Toosarvandani 2014: 25)

Relevant to the present discussion is the counterexpectational use of *but*, where both conjuncts ϕ and ψ are associated with the same proposition of opposite polarity from the QUD set. Consider the discourse in (65), where (65b) takes (65a) as the relevant QUD, which contains at least the proposition *clumsy(the-player)*. The presupposition of *but*, according to (64), requires there be a proposition p in the QUD such that *tall(the-player)* implies p but *agile(the-player)* implies $\neg p$; see (66). For this use of *but*, p is *clumsy(the-player)* in both implicational relations. Under the

¹³ The ban on vacuous application of the weak maximality component of *shi*_{VDC} could be analogous to that of English *only* in the following b-examples.

- (i) a. Did John see every student, or did he see no student(s)?
 b. #He only saw [every student]_F. (Alxatib 2013: 17)
- (ii) a. Which of John and Mary will you invite?
 b. #Only [both]_F. (Xiang 2016: 181)

Such examples are infelicitous because at least some part of *only*'s presupposition is vacuous.

assumption that a tall player may indeed be expected to be clumsy and an agile player is certainly not clumsy, the required implicational relations are satisfied, hence the counterexpectational meaning of *but*.

(65) A: What is the player like? Is she clumsy?

B: The player is tall, but agile.

(66) a. $\llbracket (64A) \rrbracket = \{\text{clumsy}(\text{the-player})\}$

b. $\llbracket (64B) \rrbracket = \text{At-issue: } \text{tall}(\text{the-player}) \wedge \text{agile}(\text{the-player})$

Presupposition:

$\exists p : p \in \text{QUD}(\text{tall}(\text{the-player}) \Rightarrow p) \wedge$

$\exists p : p \in \text{QUD}(\text{agile}(\text{the-player}) \Rightarrow \neg p)$

(Toosarvandani 2014: 27)

The situation of a *shi*-VDC conjoined with an adversative clause is similar, except that the VDC is associated with alternative questions to its CQ, instead of alternative propositions in a QUD set. Taking (67) as an example, whose AltCQ is given in (68a), one can see that the conjunctive proposition $\text{eat}(\text{Yijun}) \wedge \text{drink}(\text{Yijun})$ can be implied by $\text{eat}(\text{Yijun})$, and the negation of it can be implied by $\neg \text{drink}(\text{Yijun})$. That is, ‘Yijun ate’ (weakly) implies ‘Yijun ate and drank’, and ‘Yijun didn’t drink’ also implies (entails, in fact) ‘Yijun didn’t (both) eat and drink’. This does seem intuitively correct: Upon hearing (67), it is possible for one to infer that (the speaker believes) if Yijun ate, she should have drunk as well, based on whatever considerations are relevant. Since the denotation of AltCQ is a set of polar questions, not a set of propositions, I will borrow the special membership relation ‘ $\in^*$ ’ in (68c) from Constant (2014) to ensure that the existential quantification in the presupposition of ‘but’ can “access” relevant propositions in AltCQ.

(67) [CHI]_{CT}, Yijun shi chi le ...

eat Yijun COP eat ASP

‘As for eating, Yijun did eat ...’

(68) a. $\{\{\text{eat}(\text{Yijun})\}, \{\text{drink}(\text{Yijun})\}, \{\text{eat}(\text{Yijun}) \wedge \text{drink}(\text{Yijun})\}\}$

b. $\llbracket \text{‘Yijun ate, but didn’t drink’} \rrbracket =$

At-issue: $\text{eat}(\text{Yijun}) \wedge \neg \text{drink}(\text{Yijun})$

Presupposition: $\exists p : p^* \in \text{ALT CQ}(\text{eat}(\text{Yijun}) \Rightarrow p) \wedge$

$\exists p : p^* \in \text{ALT CQ}(\neg \text{drink}(\text{Yijun}) \Rightarrow \neg p)$

c. $q^* \in C$ iff q occurs somewhere within C (Constant 2014: 93)

More importantly, ‘but’ is typically (though not universally) used to mark the continuing clause of a *shi*-VDC because the negative answer to an alternative question that entails the CQ of the *shi*-VDC is simply the negation of a proposition that entails the *shi*-VDC. From here, it follows that there is necessarily such a proposition somewhere in AltCQ that is implied by the continuing clause. In another word, for a *shi*-VDC, an implicational relation from $\neg p_2$ to $\neg[p_1 \wedge p_2]$ is always satisfied, where p_1 is the assertion of the *shi*-VDC and p_2 is the propositional content of the CQ’s alternative that is not addressed by the *shi*-VDC itself (‘Yijun drank’ in this example). This explains why ‘but’ is a natural marker for the adversative continuing clause.

To summarize, I have shown that the present account can explain the obligatory adversative continuation of *shi*-VDCs by utilizing the semantics of *shi*_{VDC} as a marker presupposing a weak, higher-order maximality on alternatives to a CQ, and that the use of 'but' in the continuation can also be captured by adopting Toosarvandani's (2014) analysis. The requirement of an adversative continuation is thus accounted for without analyzing *shi*_{VDC} as a marker for verum focus.

4. Towards a theory of contrastive topics in Mandarin

4.1 VP doubling constructions

Although we have so far only dealt with the (*shi*-)VDCs in which doubled expressions are bare verbs, more than a V can be copied in this doubling construction. Example (69a) shows a case where a VP constituent including a V and an object can be copied altogether; in (69b) the resultative verbal compound *chi-bao* 'eat until full' is copied; and in (69c) the Neg-V sequence is copied. As with VDCs, the initial predicate copy must be stressed.

- (69) a. MAI HUA, Yijun shi mai hua le ...
buy flower Yijun COP buy flower ASP
'As for buying flowers, Yijun did buy flowers ...'
b. CHI-BAO, Yijun shi chi-bao le ...
eat-full Yijun COP eat-full ASP
'As for eating to full, Yijun did eat until full ...'
c. MEI QU, Yijun shi mei qu ...
NEG go Yijun COP NEG go
'As for not going, Yijun indeed didn't go ...'

Following the QMAX-based analysis of *shi*_{VDC}, we may take (69a) to immediately follow the CQ 'Did Yijun buy flowers?' and *shi*_{VDC} to activate the alternative to the CQ in (70), a pertinent polar question that contains two different VP expressions. Example (69a) further requires an adversative continuation as usual, as (70) entails the CQ and is presupposed by *shi*_{VDC} to be answered negatively.

- (70) 'Did Yijun buy flowers and go jogging?' (alt. question of the CQ of (69a))

Consequently, the continuation must be something like 'Yijun didn't go jogging'. VP doubling constructions can therefore be analyzed in a parallel manner to VDCs.

Sometimes the CT-marked phrase is not identical to the main predicate, as in (71).

- (71) MAI HUA, Yijun shi mai le ...
buy flower Yijun be buy ASP
'As for buying flowers, Yijun did buy (them) ...'

Given the semantic equivalence between (71) and (69a), I assume (71) is an elliptical form of (72) instead, where the main predicate contains an elided object phrase.

- (72) MAI HUA, Yijun shi mai ~~hua~~ le ...
buy flower Yijun COP buy flower ASP
'As for buying flowers, Yijun did buy flowers ...'

Notice, however, that there are independent rules governing when a subconstituent in a Mandarin VP can be elided and when not. Example (69b), repeated below as (73a), cannot take the form of (73b). That is, the verb-resultative compound disallows the deletion of the resultative morpheme, even though the CT-marked VP *chi-bao* ‘eat until full’ can in principle provide the antecedent for the anaphoric deletion of *bao* ‘full’.

- (73) a. CHI-BAO, Yijun shi chi-bao le ...
eat-full Yijun COP eat-full ASP
‘As for eating until full, Yijun did eat until full ...’
b. *CHI-BAO, Yijun shi chi-~~ba~~o le ...
eat-full Yijun COP eat-full ASP
Intended: Same as (73a)

What governs the deletion as seen above seems to also be what governs ellipsis in topic configurations in Mandarin more generally. For instance, in a ‘speaking-of’ topic construction such as (74a), the object phrase in either the topic or the comment clause can be elided, but the resultative morpheme in the comment cannot, as in (75b). If we take the initial and second VP-copies of (72) to correspond (at least structurally) to the topic and comment in (74a), respectively, then the grammaticality of (72) is no surprise. Similarly, *bao* ‘full’ in the main predicate of (73b) cannot be dropped just as *bao* in the comment clause of (75b) cannot.

- (74) a. Shuodao mai hua, Yijun shi mai ~~hua~~ le ...
speaking.of buy flower Yijun COP buy flower ASP
‘Speaking of buying flowers, Yijun did buy (flowers) ...’
b. Shuodao mai ~~hua~~, Yijun shi mai hua le ...
speaking.of buy flower Yijun COP buy flower ASP
‘Speaking of buying, Yijun did buy (flowers) ...’
(75) a. Shuodao chi-~~ba~~o, Yijun shi chi-bao le ...
speaking.of eat-full Yijun COP eat-full ASP
‘Speaking of eating, Yijun did eat until full ...’
b. *Shuodao chi-bao, Yijun shi chi-~~ba~~o le ...
speaking.of eat-full Yijun COP eat-full ASP
Intended: same as (75a)

It should therefore be safe to assume that VP doubling cases like (73b) are ruled out not on semantic grounds, but on the grounds of more general anaphoric deletion rules of topic constructions in Mandarin, which will not be investigated further in this article.

Yet another type of doubling constructions which does not straightforwardly follow from the current proposal is shown in (76), where the main predicate contains more elements than a bare verb but only the verb head is copied.

- (76) a. (Do you want to eat?)
 CHI, wo shi xiang chi ...
 eat 1SG COP want eat
 'As for eating, I do want to eat.'
- b. (Will you certainly eat?)
 CHI, wo shi yiding hui chi ...
 eat 1SG COP certainly will eat
 'As for eating, I will certainly eat ...' (Cheng and Vicente 2013: 6)

Once again, we may assume the surface forms of such examples are derived through ellipsis of partial material in the initial VP copy, as in (77):

- (77) a. (Do you want to eat?)
 XIANG CHI, wo shi xiang chi ...
 want eat 1SG COP want eat
 'As for wanting to eat, I do want to eat...'
- b. (Will you certainly eat?)
 HUI CHI, wo shi yiding hui chi ...
 will eat 1SG COP certainly will eat
 'As for going to eat, I am certainly going to eat...'

Nonetheless, at least in some cases, the initial verb copy *is* a bare V. Suppose Yijun and I walk past a candy shop and she says (78a) to me. In this scenario, I could felicitously respond with (76a) above, but (78b) would be odd for me to say. The intuition is that (78b) is infelicitous because the question 'Do you want to eat candies?' is not available from this context, or, in Buring's (2016) terms, is not identifiable. A felicitous response to (78a) would be the counterpart of (78b) without the initial *xiang* 'want', namely (76a), which does not require the QUD 'Do you want to eat candies?'

- (78) a. Ni mai yixie tang lai chi ba!
 2SG buy some candy come eat PRT
 'Buy some candies to eat!'
- b. # XIANG CHI, wo shi xiang chi, keshi mei qian (mai lai chi).
 want eat 1SG COP want eat but NEG money buy come eat
 #'As for wanting to eat, I do want to eat, but I have no money to buy some (to eat).'

The puzzle, therefore, is how to generate the right CT-value for (76a) in a context in which the copied constituent is just the V head of a larger VP, but not the VP with deletion.

My tentative analysis is the revised CT-value formation rule in (79). In particular, step 2 is relaxed to allow an alternative subquestion to differ from the one formed in step 1 in more material than the copied verb, if the alternative subquestion contains the copied verb.

- (79) Revised CT-value formation of Mandarin VDCs (cf. (18))
- a. Step 1: Form a polar question from a VDC excluding the initial verb copy.
Formally: $\{P(a)\}$, where P is the VP-denotation of a VDC and a the subject
 - b. Step 2: Form a set of polar questions from the result of step 1 by replacing a subconstituent of the latter with some alternative to it which contains the copied verb.
Formally: $\{\{P'(a)\} \mid P' \in D_{et}\}$, where P' is a variable ranging over denotations of alternative VPs which contain the V head

This revision does not affect anything established so far, but can solve the problem currently under discussion. Given (79), the CT-value ‘Do you want to eat candies?’, ‘Will you eat candies?’, ‘Do you have money to buy candies to eat?’ can be generated for (76a) because all the subquestions contain the copied V ‘eat’.¹⁴ This flexibility allows (76a) to be a felicitous (partial) answer to a wide range of QUDs, and can moreover account for the adversative continuation ‘but I have no money’, because the subquestion ‘Do you have money to buy candies to eat?’ can also be derived through (79) (of course, the adversative continuation has to be interpreted as ‘but I have no money to buy candies to eat’). I conclude that (79) is the more inclusive CT-value formation rule that can capture all the VDCs presented up to this point, although (18) suffices to account for the VDCs in which the initial copy is identical to the lower copy (putting aside aspectual marking).

4.2 Object preposing constructions

In Mandarin, the incompleteness effect and adversative inference typical of VDCs are also observed for constructions where an object phrase is preposed, either to a sentence-initial position, as in (80), or to a lower periphery position between the subject and VP, as in (81).

- (80) Zhei-ge xuesheng, wo xihuan, nei-ge, wo bu xihuan.
this-CL student 1SG like that-CL 1SG NEG like
‘This student I like, that one I don’t.’ (Paul 2002: 700)
- (81) a. Wo zhe-pian lunwen xihuan, *(na-pian lunwen bu xihuan).
1SG this-CL paper like that-CL paper NEG like
‘This paper, I like, but that paper, I don’t.’ (Tsai 1994: 138)
- b. Wo cai chi le, fan hai mei chi.
1SG vegetables eat ASP rice yet NEG eat
‘I have already eaten the vegetables, but not the rice.’ (Paul 2002: 700)

¹⁴Note that in (77b), the goal-oriented complex predicate *mai lai chi* ‘to buy (some) to eat’ can be dropped, in which case I assume this predicate is still present syntactically but has undergone ellipsis. Thus, step 2 in (78b) still applies.

In particular, it is noted by many (Tsai 1994, Ernst and Wang 1995, Paul 2002, Badan 2007) that the SOV sentences in (81) require a contrastive or “list” reading of some sort, which can be manifested by a continuing conjunct. This is precisely the signature property of VDCs. In addition, SOV sentences need not be followed by an adversative ‘but’-clause: (81a) can be continued by ‘... and that paper, I also like’, and (81b) by ‘... and I also ate rice’. This pattern clearly resembles that of (4b). By contrast, the “list” reading is not obligatory to (80), in which the preposed object can function as a discourse topic; however, if the object is stressed (Pan 2015) or pronounced with a higher pitch range and longer duration than a discourse topic (Hao et al. 2024), the “list” reading becomes salient.

Based on a series of syntactic tests, Badan (2007) identifies the preposed objects in Mandarin SOV sentences as CTs, which I believe is correct. What remains to be accounted for is the source of the contrastive component. I argue that in an object preposing construction, the preposed object is interpreted as a CT, following Badan (2007), and moreover that the meaning of the construction can be derived through the three-step formation rule in (82), which is modeled on (18).¹⁵

(82) CT-value formation of Mandarin object preposing constructions

- a. Step 1: Reconstruct the preposed object back to the base position.
Formally: $P(b)$, where P is an unsaturated proposition excluding the preposed object and b the preposed object
- b. Step 2: Form a polar question from the object preposing construction.
Formally: $\{P(b)\}$
- c. Step 3: Form a set of polar questions from the result of step 2 by replacing the CT-marked object with some alternative to it.
Formally: $\{\{P(x)\} \mid x \in D_e\}$, where x is a variable ranging over alternative entities

The meaning of (81a) can now be obtained as follows. First, reconstructing the object to its base position yields the proposition in (83a). Second, a polar question can be formed out of this proposition by turning it into a singleton set, as in (83b). Finally, replacing the object phrase with one or more alternatives leads to a set of polar questions, as in (83c), namely the CT-value of (81a).

(83) Deriving the CT-value of (82a)

- a. ‘I like this paper.’ (Step 1)
- b. $\{\text{‘I like this paper’}\} = \text{‘Do I like this paper?’}$ (Step 2)
- c. $\{\{\text{‘I like this paper’}\}, \{\text{‘I like that paper’}\}\}$
 $= \{\text{‘Do I like this paper?’}, \text{‘Do I like that paper?’}\}$
 $= \text{‘For every entity } x \text{ in \{‘this paper’, ‘that paper’\}, do I like } x\text{?’}$ (Step 3)

¹⁵Constant (2014) provides a slightly different theory for CT in which CTs undergo (covert) movement in a parallel manner to QR. This theory is particularly appealing in light of the object preposing data discussed here, but since it only examines Mandarin data with the CT-marker *ne* and the motivations for this (e.g., CT-marking in questions) are not directly relevant to this article, I have chosen to adopt Büring’s (2003) framework only insofar as it suffices for the purposes of this work.

Under this analysis, an object preposing construction in Mandarin has a contrastive reading and requires a conjunct clause to be complete because the object is CT-marked and triggers a set of subquestions. Since the construction itself only responds to one of the subquestions, the former would not be complete without another clause.

As for object preposing constructions in which the object appears in the initial position, CT-marking on the object is optional and can be triggered if the preposed object is given stress or if the current QUD introduces at least one alternative to the object referent, as shown in (84), due to a reviewer.

(84) (What did you give to whom?)

Gei gege, wo gei-le yi-ben shu. Gei jiejie, wo gei-le
to elder.brother 1SG give-ASP one-CL book to elder.sister 1SG give-ASP
yi-liang zixingche.
one-CL bike

‘To the elder brother, I gave one book. To the elder sister, I gave one bike.’

Otherwise, as two reviewers remark, an OSV sentence does not require a continuing clause and the preposed object can be interpreted as a discourse topic, as with (86a) below, unlike the SOV version of the same sentence. Example (85), provided by a reviewer, further shows that the OSV order is compatible with a simple topic-comment construction; compare (9).

(85) a. Li ni bu xihuan, pingguo ne?

pear 2SG NEG like apple PRT

‘As for pears, you don’t like them. How about apples?’

b. Pingguo wo xihuan.

apples 1SG like

‘As for apples, I like them.’

However, if (part of) the initial object is stressed, as in (86a), incompleteness emerges; if the copula *shi* is also inserted, as in (86b), an adversative continuation is expected.

(86) (What do you think about these students? Do you like Yijun?)

a. ZHEI-ge xuesheng, wo xihuan ...

this-CL student 1SG like

‘This student, I like ...’

b. ZHEI-ge xuesheng, wo shi xihuan ...

this-CL student 1SG COP like

‘This student, I do like ...’

This can be explained if *shi* in (86b) is just *shi*_{VDC}, which presupposes that an alternative question to the CQ, such as ‘Do you like Yijun and have you taught her?’, has a negative answer.

5. Conclusion

This article begins with the following two questions regarding VDCs in Mandarin: (a) What is the source of the incompleteness effect? and (b) What is the contribution of the copula *shi* such that *shi*-VDCs must co-occur with an adversative conjunct that is typically marked by 'but'? Buring's (2003) theory provides an answer to the first question: A VDC is a CT construction where the initial verb copy is CT-marked and triggers a set of polar subquestions, and the incompleteness effect arises if at least one subquestion is not yet answered within the same strategy, according to the proposed discourse condition for VDCs in (22). As for the status of *shi*_{VDC}, I have argued that it does not express verum focus but is a marker in association with CT and carries a weak, question-based maximality presupposition. Consequently, at least one alternative of the current QUD of the VDC has a negative answer.

I have also discussed how the CT-formation rule in (18) can be suitably revised and extended to cover other Mandarin CT constructions, including VP doubling and object preposing constructions. The larger picture is that syntactic movement (of a V, a VP, or an object phrase) in a Mandarin sentence S can, and sometimes must, induce a CT interpretation, signaling a discourse structure embodying S and at least two subquestions, and that the CT interpretation can interact compositionally with certain elements in S, for example, *shi*_{VDC}, to produce further semantic effects, such as an obligatory adversative continuation which negates some alternative of S.

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