

Mandarin overt wh-fronting as focus movement

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Abstract. This study reexamines the syntactic encoding of information structure embodied by Mandarin overt wh-fronting questions. The sentence patterns that this paper is concerned with are wh-questions containing one or more fronted wh-phrases surfacing in (i) a clause-initial position (in root or non-root contexts) or (ii) a position immediately following a topicalized subject (also in root or non-root contexts). Departing from previous literature that obscures the exhaustifying effect exerted by a clause-initial *shi* ‘be’, I propose a more fine-grained classification of the focus interpretations of this type of question: a bare wh-fronting question coerces a plain (non-exhaustive) contrastive focus or a mirative focus reading (when the wh-phrase is prosodically marked) of the wh-variable, and *shi*-marked wh-fronting questions are shown to enforce an exhaustive focus in the answer. These three types of focus-associated interpretations are treated as conventional implicatures following Bianchi et al. (2015).

Keywords. wh-fronting; focus; contrast; mirativity; exhaustivity; Mandarin Chinese

1. Introduction. Mandarin overt wh-fronting questions have received a fair amount of attention (Hoh and Chiang 1990; Tsai 1994; Wu 1999; Cheung 2008; Pan 2014) despite the fact that this language has long been classified as a wh-in-situ language (Huang 1982; Cheng 1991; Bošković 2002; Watanabe 2003; Kotek 2014). In Mandarin, the default way of forming an information-seeking question is to spell out a wh-phrase in the in-situ position where its non-interrogative counterpart is externally merged; consider (1).

- (1) a. Zhangsan chi-le shenme?¹
 Zhangsan eat-PFV what
 ‘What did Zhangsan eat?’
 b. Zhangsan chi-le pingguo.
 Zhangsan eat-PFV apple
 ‘Zhangsan ate an apple.’

Preposing the wh-phrase has been argued to serve the discourse function of focalizing the wh-variable (Hoh & Chiang 1990, Cheung 2008, Pan 2014) or topicalizing it (Xu & Langendoen 1985; Wu 1999; Yuan & Dugarova 2012). Cheung (2008) argues that such questions pattern with English clefted questions, regardless of the presence or absence of a clause-initial *shi* ‘be’. Further, Pan (2014) claims that the presence of copula *shi* ‘be’ to the immediate left of the fronted wh-phrase is obligatory for a wh-fronting question to receive a

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¹ Non-Leipzig abbreviations: EXP experiential; EXH exhaustifier; PROG progressive; SUB subordinator; CL clitic.

cleft focus interpretation, while those unmarked by *shi* are treated as wh-topicalizations. This contrast is shown in (2).

- (2) a. Wh-topic
 [TopP Na-yi-bu dianying]_i Zhangsan zui bu xihuan kan ti?
 which-one-CLF film Zhangsan most NEG like see
 ‘Which movie, Zhangsan does not like (it) at all?’
- b. Wh-focus
 Shi [FocP na-yi-bu dianying]_i Zhangsan zui bu xihuan kan ti?
 COP which-one-CLF film Zhangsan most NEG like see
 ‘Which movie is it that Zhangsan does not like at all?’
- (adapted from Pan (2014))

However, since (2b) is a clefted question that encodes an exhaustive focus, as indicated by the gloss, it remains unclear whether *shi* is a focus marker or an exhaustifying operator (Klinedinst & Rothschild 2011) like the English *only* that marks a specific type of focus. Presupposition failure, a characteristic teasing apart Mandarin wh-in-situ questions and wh-fronting questions in terms of their discourse requirements, has been mentioned by Wu (1999) and Cheung (2008).

- (3) a. In-situ wh-question
 Q: Zhangsan chi le shenme?
 Zhangsan eat PFV what
 ‘What did Zhangsan eat?’
 A1: Zhangsan chi le pingguo.
 Zhangsan eat PFV apple
 ‘Zhangsan ate an apple.’
 A2: Zhangsan shenme ye mei chi.
 Zhangsan what also NEG eat
 ‘Zhangsan ate nothing.’
- b. Wh-fronting question
 Q: [Shenme]_i Zhangsan chi le ti?
 what Zhangsan eat PFV
 ‘What (among the presupposed alternatives) did Zhangsan eat?’/
 ‘WHAT did Zhangsan eat?!’²
 A1: Zhangsan chi le pingguo.
 Zhangsan eat PFV apple
 ‘Zhangsan ate an apple.’

² A bare wh-fronting question can be construed as involving a plain (non-exhaustive) contrastive focus (as indicated in the first possible reading) or a mirative focus (as indicated in the second reading where the capital letters are adopted to show the speaker’s surprise) depending on the context or the intonation of the wh-phrase. If the speaker places a strong emphasis on the fronted wh-phrase and speaks in a rising intonation, the question is most likely to be associated with a mirative import; when the wh-phrase is not prosodically marked, the question tends to be interpreted as containing a plain contrastive focus. Since a wh-fronting question, like what we see in (3b), is raised without any contextual assumptions, I provide both of the possible readings here.

A2: #Zhangsan shenme ye mei chi.
 Zhangsan what also NEG eat
 ‘Zhangsan ate nothing.’

For a *wh*-fronting question to be felicitous, three conditions must be met, as (3b) shows: *Zhangsan* must have eaten something; there must exist a pre-established set of alternatives that *Zhangsan* has potentially eaten in the context known to each interlocutor; and there must be at least one alternative in the set that was not eaten by *Zhangsan*. A2 is excluded in (3b) simply because the denial of the presupposition runs counter to the first condition. In contrast, since (3aQ), a default in-situ *wh*-question, can be asked out of the blue and does not presuppose the existence of the event expressed by the main predicate or a particular set of alternatives, A2 is absolutely congruent to address (3aQ).

The topicalization and focus approaches to Mandarin overt *wh*-fronting attempt to reveal the interpretive distinction between this construction and an in-situ counterpart. However, they tacitly reach a consensus on the view that forming a question with a fronted *wh*-phrase presupposes a pre-established closed set, of which one of its members is taken to supply a value to the *wh*-variable. These two analyses both relate the discourse-given set of alternatives quantified over by a fronted *wh*-phrase to the notion of ‘D-linking’ (Pesetsky 1987), but they vary in terms of their treatments of this notion. According to Wu (1999), the restricted set corresponds to some ‘old information’ introduced prior to the utterance of the question, though it is not clear why the answer to the question is already known by the speaker, but they are still requesting it. The displacement of the *wh*-phrase is hence to check the topic feature of the Top head in the left periphery (LP). Cheung (2008), on the other hand, adopts Kiss’s (1997) definition of contrastive focus³ and demonstrates that Mandarin overt *wh*-fronting encodes a contrastive focus, the domain of which also ranges over a closed set of discourse-given alternatives.

In what follows, I will vindicate the focus approach to Mandarin overt *wh*-fronting with three diagnostics for focus: contrast, mirativity, and exhaustivity (van der Wal 2016), proposing that this syntactic reordering is specifically for marking these three types of focus as opposed to the new information focus (NIF)⁴ expressed by a *wh*-in-situ question. Before doing this, in section 2, I will first introduce the two designated positions where the displaced *wh*-phrases could surface. In section 3, I will demonstrate the syntactic nature of Mandarin overt *wh*-fronting by examining its behavior regarding locality. In section 4, a taxonomy of the focus interpretations of overt *wh*-fronting questions will be proposed. Section 5 will conclude this paper.

2. Two target positions for Mandarin overt *wh*-fronting.

2.1. EX-SITU SENTENCE-INITIAL POSITION. Mandarin overt *wh*-fronting prototypically targets

³ What Cheung (2008) refers to as a ‘contrastive focus’ corresponds to Kiss’s (1997) ‘identificational focus’, which is alternatively termed ‘exhaustive focus’. However, a contrastive focus does not necessarily encode an exhaustive identification. It has been made clear by van der Wal (2016) that a focus with weak exclusion is an ‘exclusive focus’ (cf. contrastive focus) specified as [+exclusive] and [-exhaustive]. A focus with strong exclusion and characterized by [+exclusive] and [+exhaustive] is an exhaustive focus. Hence, I argue that Mandarin bare *wh*-fronting questions encode a plain contrastive (non-exhaustive) focus, while those marked by *shi* encode an exhaustive focus. See section 4.2 for detailed illustrations.

⁴ A new information focus is a focused constituent that introduces new information, which normally appears in an answer to a *wh*-question.

the matrix LP. Questions formed in this way can be subcategorized into bare wh-initial questions, *shi*-marked ‘wh-initial’ questions, multiple questions with one wh-fronting, and multiple questions with multiple wh-frontings, as is shown in (4a-d).

- (4) a. Bare wh-fronting question
 [CP[Shei]_i [IP Zhangsan zuotian yu-dao le t_i]]?
 who Zhangsan yesterday meet-arrive PFV
 One possible translation⁵: ‘WHO did Zhangsan meet yesterday?!’
- b. *Shi*-marked ‘wh-initial’ question
 [CP Shi [shei]_i [IP Zhangsan zuotian yu-dao le t_i]]?
 COP who Zhangsan yesterday meet-arrive PFV
 ‘Who was it that Zhangsan met yesterday?’
- c. Multiple question with one wh-fronting
 [CP [Shenme-huati]_i [IP ta conglai meiyou he shei taolun guo t_i]]?
 what-topic 3SG at-all-times NEG with who discuss EXP
 One possible translation: ‘Which of the topics has he never discussed with whom?’
- d. Multiple question with multiple wh-frontings
 [CP [Shenme-huati]_i, [he shei]_j [IP ta conglai meiyhou t_j taolun guo t_i]]?
 what-topic with who 3SG at-all-times NEG discuss EXP
 One possible translation: ‘Which of the topics and with whom has he never discussed?’

Mandarin overt wh-fronting is also able to target the LP of the embedded domain (see (5a)). This type of movement is referred to as ‘partial movement’ by Abels (2012) where the wh-phrase lands in an intermediate interrogative Spec-CP, as opposed to the cases of ‘full movement’ where the wh-phrase passes through all the intermediate landing sites and terminates at the matrix LP as in (5b).

- (5) a. [IP Zhangsan xiang-zhidao [CP [na-suo xuexiao]_i [IP Lisi kao-shang le t_i]]].
 Zhangsan wonder which-CLF school Lisi test-on PFV
 One possible translation: ‘Zhangsan wonders about Lisi which of the schools he got into.’
- b. [CP [na-suo xuexiao]_i [IP Zhangsan xiang-zhidao [CP t_i [IP Lisi kao-shang le t_i]]]]?
 which-CLF school Zhangsan wonder Lisi test-on
 PFV
 One possible translation: ‘Which of the schools makes Zhangsan wonder whether Lisi got into it?’

2.2. PSEUDO EX-SITU CLAUSE-MEDIAL POSITION. Where a fronted wh-phrase can alternate with a topicalized subject in the sentence-initial position, I refer to ‘pseudo’ ex-situ clause-medial wh-structures. As such, when a subject immediately precedes a fronted wh-phrase landing in Spec-FocP, it has actually undergone topicalization to Spec-TopP, which is hierarchically

⁵ I will henceforth only offer one possible reading for each of the contextless wh-fronting questions due to the space limit.

higher than the fronted wh-phrase. This also applies equally to root or non-root domains (see (6)).

(6) a. Root environment

- i. [CP [TopP Ta]_j [FocP na-shu hua]_i [IP t_j mai le t_i]]?
 3SG which-bunch flower buy PFV

One possible translation: ‘Which bunch of flowers did he buy?’

- ii. [CP [FocP Na-shu hua]_i [IP ta mai le t_i]]?
 which-bunch flower 3SG buy PFV

One possible translation: ‘Which bunch of flowers did he buy?’

b. Non-root environment

- i. Zhangsan xiang-zhidao [CP [TopP Lisi]_j [FocP na-suo xuexiao]_i [IP t_j kao-shang le t_i]]?
 Zhangsan wonder Lisi which-CLF school test-on
 PFV

One possible translation: ‘Zhangsan wonders about Lisi which of the schools he got into.’

- ii. Zhangsan xiang-zhidao [CP [FocP na-suo xuexiao]_i [IP Lisi kao-shang le t_i]]?
 Zhangsan wonder which-CLF school Lisi test-on PFV

One possible translation: ‘Zhangsan wonders about Lisi which of the schools he got into.’

The topicality of the subject is verified by the failure of substituting it with anti-topic items (ATI, cf. Tomioka 2007) such as NPIs, quantificational NPs, or disjunctive NPs; consider (7a-c). The ungrammaticality of (7d) corroborates that the subject preceding the displaced wh-phrase in an embedded clause is also a topic.

- (7) a. *[TopP Meiyou-renheren]_j [FocP shenme-dongxi]_i t_j mai t_i le? (NPI)
 NEG-anyone what-thing buy PFV

Intended: ‘WHAT does nobody buy?!’

- b. *[TopP Suoyou-ren]_j [FocP shenme-dongxi]_i [IP t_j dou mai le t_i]? (Quantificational NP)
 everyone what-thing all buy PFV

Intended: ‘WHAT did everyone buy?!’

- c. *[TopP Zhangsan huo Lisi]_j [FocP shenme-dongxi]_i [IP t_j mai le t_i]? (Disjunctive NP)
 Zhangsan or Lisi what-thing buy PFV

Intended: ‘WHAT did Zhangsan or Lisi buy?!’

- d. *Zhangsan xiang-zhidao [CP [TopP meiyou-renheren]_j [FocP na-suo xuexiao]_i [IP t_j kao-shang le t_i]]?
 Zhangsan wonder NEG-anyone which-CLF school
 test-on PFV (NPI)

Intended: ‘Zhangsan wonders which of the schools nobody got into.’

3. Locality. In this section, I investigate the syntactic behavior of Mandarin overt wh-fronting regarding island constraints⁶, binding connectivity, and the Superiority effects. I argue that for

⁶ The island effects are observable not only in single wh-fronting questions but also in multiple questions with one wh-fronting. I will not demonstrate the details of the latter type of questions here due to space limits.

wh_{arg}-fronting questions, island sensitivity mainly correlates with two factors: 1) the presence or absence of a resumptive pronoun taking up the gap; 2) whether the predicate that the wh-phrase is moved from is episodic or non-episodic⁷. Wh-adjuncts are generally banned from extracting out of strong islands. In terms of the binding relations, the fronted wh-phrase reconstructs to its original position in short-distance questions for binding or to somewhere on the movement path above the embedded domain in long-distance questions. Multiple wh-fronting questions are shown to exhibit no Superiority effects.

3.1. ISLAND EFFECTS. It appears that Mandarin offers evidence for island effects from both overt and covert (or so-called wh-in-situ) wh-fronting questions. Specifically, we can observe similar argument-adjunct asymmetries in overt wh-fronting questions to those which Huang (1982) observed in wh-in-situ questions where the wh-phrase is treated as being covertly displaced to Spec-CP in order to obtain the quantificational force. Overtly extracting wh-arguments out of islands is allowed under specific conditions, while overt wh_{adjunct}-fronting is generally degraded. To illustrate, island effects are obviated in overt wh_{arg}-fronting questions as long as the wh-phrase is resumed by a pronoun when the predicate in the island encodes an episodic eventuality; when the predicate is non-episodic (such as psych verbs), the construction is always immune to island effects. This is exemplified by (8).

(8) Complex NP Constraint (CNPC)

- a. Fronting a wh-argument from an episodic predicate

[Shei]_i [_{IP} laoshi zai piping [_{DP} yi-ge [_{CP} qifu le {ta_i/*__}]]de tongxue]]?
 who teacher PROG criticize one-CLF bully PFV 3SG SUB student
 One possible translation: ‘The teacher is criticizing a student who bullied WHOM?!’

- b. Fronting a wh-argument from a non-episodic predicate

[Na-dao-cai]_i [_{IP} ta shuo ni yiding zhao-bu-dao [_{DP} yi-ge [_{CP} xihuan
 which-CLF-dish 3SG say 2SG certainly find-NEG-arrive one-CLF like
 {ta_i/__}]]de ren]]?
 3SG SUB person
 One possible translation: ‘Which of the dishes did he say that you will never find someone who likes it?’

Overtly extracting a wh-adjunct out of islands is banned regardless of the episodicality of the predicate. Crucially, the locality constraint on wh_{adjunct}-fronting does not give rise to the ungrammaticality of the sentence in narrow syntax but renders a failure for the extracted wh-adjunct to receive an embedded scope reading (see also Cheung (2008)).

(9) Subject island

- a. Fronting a wh-adjunct from an episodic predicate

[Shenme-shihou]_i [_{IP} [_{DP} [_{CP} ta *t_i mai de] na-ben shu] t_i diu le] ?
 what-time 3SG buy SUB that-CLF book lose PFV
 One possible translation: ‘WHEN was the book that he bought lost?!’

⁷ This episodic-non-episodic asymmetry regarding island effects has been observed in Mandarin non-interrogative cleft-focus structures by Pan (2019).

b. Fronting a wh-adjunct from a non-episodic predicate

[Shenme-shihou]_i [IP [DP [CP ni *t_i xihuan guo de] na-ge nvhai] t_i jiehun le ?
 what-time 2SG like EXP SUB that-CLF girl marry PFV

One possible translation: ‘WHEN did the girl that you had a crush on get married?!’

3.2. RECONSTRUCTION FOR BINDING. We also find that the overtly displaced wh-phrase behaves as though it has reconstructed (to its canonical in-situ position) for the purpose of binding in a short-distance question like (10a). The interpretation of the reflexive pronoun *ziji* ‘self’ within the displaced phrase is referentially determined by *Zhangsan*, which is situated in a position that c-commands the unpronounced copy of *ziji* ‘self’ embedded in the unpronounced copy of the whole wh-phrase. In a long-distance question like (10b), however, the interpretation of the reflexive within the displaced wh-phrase cannot be determined either by referring to a backgrounded person that is not mentioned in the question at all or by reconstructing to its canonical position and referring to *Lisi*, which c-commands the gap. Instead, since the reflexive is most naturally construed as co-referring with *laoshi* ‘teacher’, the only possibility would be that it has reconstructed to a position along the displacement path lower than the subject of the main clause but higher than the embedded clause.

(10) a. Short-distance wh-question

[CP [Ziji_j de na-ben shu]_i [IP Zhangsan_j jingchang kan t_i]]?
 self SUB which-CLF book Zhangsan always read

One possible translation: ‘Which of his books does Zhangsan always read?’

b. Long-distance wh-question

[CP [Ziji_j de na-ben shu]_i [IP laoshi_j xiang-zhidao [CP Lisi du le t_i]]] ?
 self SUB which-CLF book teacher wonder Lisi read PFV

One possible translation: ‘Which book of the teacher himself made the teacher wonder that Lisi had read it?’

3.3. SUPERIORITY. Since in Mandarin, more than one wh-phrase can be overtly fronted, we are interested in the question of whether the Superiority effects (Chomsky 1973) observed in questions derived by multiple wh-movements arise in Mandarin wh-questions featuring multiple wh-frontings. It turns out that Mandarin allows for superiority-obeying and superiority-violating multiple wh-frontings in both short-distance and long-distance questions, as this syntactic displacement is not clause-bounded (see (11a-b)).

(11) a. Short-distance wh-question

i. Superiority-violating

[Shenme-huati]_i [IP ta conglai meiyou he shei taolun guo t_i]?
 what-topic 3SG ever NEG with whom discuss EXP

One possible translation: ‘Which of the topics has he never discussed with whom?’

ii. Superiority-obeying

[He shei]_i [IP ta conglai meiyou t_i taolun guo shenme-huati]?
 with whom 3SG ever NEG discuss EXP what-topic

One possible translation: ‘With WHOM has he never discussed which topic?!’

b. Long-distance wh-question

i. Superiority-violating

[Shenme-hua]_i [_{IP} ni bu zhidao [_{CP} dui shei [_{IP} shuo t_i]]]?
what-words 2SG NEG know to whom say

One possible translation: ‘WHAT don’t you know to tell whom?!’

ii. Superiority-obeying

[Dui shei]_i [_{IP} ni bu zhidao [_{CP} t_i [_{IP} shuo sheme-hua]]]?
to whom 2SG NEG know say what-words

One possible translation: ‘What don’t you know to tell WHOM?!’

It can be concluded from the above observations that Mandarin overt wh-fronting questions involve syntactic displacement, and that syntactic reordering appears to entail a series of filler-gap dependencies: it is island-sensitive, and the wh-phrase reconstructs for binding purposes. Noticeably, the overt wh-fronting in Mandarin bears a close resemblance to the focus movement in Serbo-Croatian and Bulgarian multiple wh-questions proposed by Bošković (2002). This focus movement analysis solves the problem of the selective Superiority effects as it can be seen that only wh-phrases undergoing wh-movement are sensitive to Superiority while those undergoing focus movement are not.

4. Overt wh-fronting as focus movement. In this section, I adopt the focus approach to Mandarin overt wh-fronting (Cheung 2008, among others) and propose a more fine-grained classification of the various focus interpretations of wh-fronting: mirative focus, plain (non-exhaustive) contrastive focus, and (*shi*-marked) exhaustive focus. The three types of focus vary in terms of the degree of contrast between the focused constituent and other discourse-dependent alternatives. The more prominent or exact the alternatives are in a given context, the higher the degree of contrast. The degree of contrast, therefore, lowers from mirative focus to plain contrastive focus to exhaustive focus (Molnár 2002; Cruschina 2021). Further, I argue that these three focus interpretations are conventional implicatures associated with the wh-focus (see also Bianchi et al 2015 and Cruschina 2021); thus, they are encoded by the fronting strategy and cannot be canceled by the speaker per se.

4.1. MIRATIVITY. A mirative focus appears in contexts where the focused part of the utterance is taken to exceed the speaker’s expectations. It also refers to information that is beyond the speaker’s knowledge (DeLancey 1997; Skopeteas & Fanselow 2011). Aikhenvald (2012) extends the notion of mirativity to a set of values associated with the interlocutors or people involved in the conversation, such as ‘sudden discovery, revelation or realization of information’, ‘surprise’, ‘unprepared mind’, ‘counter-expectation’, and ‘the newsworthiness of information’. In Rooth’s (1992) alternative semantics terms, the mirative import can be paraphrased as ‘there is at least one alternative in the context which is more likely than the uttered focus to make the presupposition true’. On the other hand, mirativity can also be expressed out of the blue, namely purely based on the interlocutors’ background knowledge. In this case, the unexpectedness comes from ‘contrast against expectation’ (Cruschina 2011:119) instead of contrast against context-salient alternatives.

Mirativity is firstly singled out as a linguistic notion by DeLancey (1997), based on Slobin & Aksu’s (1983) discovery of a Turkish verb suffix *-miş* applicable in various contexts denoting that the speaker is not a ‘direct or fully conscious participant’ of an event. This verbal suffix can either mark indirect evidentiality as (12a-b) appears to illustrate, or direct evidentiality conveying mirative construals as in (12c).

(12) Turkish (Slobin & Aksu 1983)

Kemal gel -miş.

Kemal come -mir

'Kemal came'

- (a) Inference: The speaker sees Kemal's coat hanging on the front wall but has not yet seen Kemal.
- (b) Hearsay: The speaker has been told that Kemal has arrived but has not yet seen. Kemal.
- (c) Surprise: The speaker hears someone approach, opens the door, and sees Kemal, a totally unexpected visitor.

Analogously, the contexts which license Mandarin wh-fronting constructions encompass the three situations where a Turkish mirative marker is adopted. If (13) is a question that *Lisi* asked *Zhangsan*, for example, the overt wh-fronting can be used to show the unexpectedness, from the speaker's perspective, of *Wangwu*'s presence, even though this attitude is evoked by some inferential evidence, as (13a) makes clear. It can also be used to express that the speaker is not fully convinced by the hearsay, as (13b) shows. Aside from these cases exemplifying indirect evidentiality, the marked construction is also able to show the speaker's surprise at *Wangwu*'s presence through direct observation, as (13c) explicates. A wh-fronting question raised in contexts like (13b-c) parallels with an echo question: it is a question that a speaker would raise without expecting an answer but instead to express their surprise at something previously known to them. Importantly, as has been mentioned previously, native speakers tend to put stress on the displaced wh-phrase in wh-fronting questions with a mirative import.

(13) Mandarin

[Shei]_i ni ganggang yu-dao le t_i?/Ni [shei]_i ganggang yu-dao le t_i?
who 2SG just-now meet-arrive PFV 2SG who just-now meet-arrive PFV
'WHO did you meet just now?'

- (a) Inference: The speaker saw *Zhangsan* coming back from a lecture with *Wangwu*'s coat in his hands, but the speaker did not see *Zhangsan* meeting *Wangwu* in the lecture.
- (b) Hearsay: The speaker was told that *Zhangsan* met *Wangwu* in the lecture, but this fact was beyond the speaker's expectations.
- (c) Direct evidence: The speaker saw that *Zhangsan* met *Wangwu* in the lecture, whereas *Wangwu* was supposed to be staying in the hospital at that time as he had suffered a fractured arm in a football game. Therefore, to express the unexpectedness of *Wangwu*'s presence, the speaker double-checks by producing a wh-fronting question.

At this point, we are interested in the question of whether the mirative construal derived from the overt wh-fronting is encoded by this specific syntactic strategy. As proposed by Peterson (2017), two tests are relevant: the negation test and the cancellation test. The hypothesis of the negation test is that if mirativity is implicated by the Mandarin wh-fronting construction, then it is not part of the propositional content of the sentence. Thus, the negation of the main predicate will not affect the mirative meaning of the construction. Compare (14a) and (14b). The mirative import coerced by the wh-fronting strategy in (14a) is evidently maintained in (14b) irrespective of the negated main predicate. Since the implication of (14b) is "I am surprised that you did not want to buy that car" rather than "I am not surprised that you wanted to buy that car", it suggests that the Mandarin overt wh-fronting strategy indeed

encodes mirativity.

- (14) a. Context: *Zhangsan* and *Lisi* were attending a car exhibition. They glanced over a multitude of brands of cars. When they looked at Tesla's most expensive car, *Zhangsan* said he wanted to buy it. *Lisi* raised the question just to show his unprepared mind upon hearing what *Zhangsan* said.
- Q: [Na-liang-che]_i ni xiang mai t_i?
Which-CLF-car 2SG want buy
'WHICH CAR did you want to buy?!'
- b. Context: *Zhangsan* and *Lisi* were attending a car exhibition. *Zhangsan* found a car produced by his favorite brand and *Lisi* knew that it had been *Zhangsan*'s dream to own it. Coincidentally, the car dealer was offering an exceptional discount for that car. *Lisi* believed that *Zhangsan* would buy it, whereas *Zhangsan* decided not to buy it. So *Lisi* raised the question to show his surprise at *Zhangsan*'s decision.
- Q: [Na-liang-che]_i ni bu xiang mai t_i le?
which-CLF-car 2SG NEG want buy PFV
'WHICH CAR didn't you want to buy?!'

Surprise, an attitude of the speaker, cannot be canceled by the speaker themselves. Thus, we hypothesize if we cannot cancel the surprise implication by adding a continuation like "but I am not surprised at all/I was actually expecting that..." after the question, then mirativity is conventionalized by the structure rather than a conversational implicature (Potts 2005: 28). As a result, (15b) bears out that cancellation of surprise is not possible with Mandarin wh-fronting constructions when the wh-phrase is stressed; thus mirativity is conventionalized by this sentence pattern.

- (15) a. Wh-fronting question:
[Na-bu-dianying]_i Zhangsan zui xihuan kan t_i?
which-CLF-movie Zhangsan most like watch
'WHICH MOVIE did Zhangsan like to watch most?!'
- b. Wh-fronting question with a cancellation of surprise
[Na-bu-dianying]_i Zhangsan zui xihuan kan t_i?
which-CLF-movie Zhangsan most like watch
#Qishi wo yidian ye bu yiwai.
actually 1SG at-all also NEG surprise
'WHICH MOVIE did Zhangsan like to watch most?! #While actually, I am not surprised at all.'

4.2. CONTRAST AND EXHAUSTIVITY. In order for a focus to bear a plain contrastive construal, there must be at least one alternative in the presupposed set, distinct from the focused element, for which the predicate does not hold. Notably, a NIF lacks such a negative statement of alternatives as it merely represents non-presupposed information (Neeleman & Vermeulen 2012). Following this line of analysis, an exhaustive focus is identified as the sole member or the only subset of members of a presupposed set, to the exclusion of all the other alternatives for which the predicate potentially holds (Kiss 1998). The degree of contrast encoded by an exhaustive focus is lower than that of a plain contrastive focus because the identities of the alternatives that an exhaustive focus contrasts with are less specific or

prominent. The most famous exhaustifying operator in English is *only*. *Only* forces an exhaustive listing of the constituent that it attaches to, be it a DP, a VP, or a PP, meanwhile negating all the other context-defined alternatives for which the predicate holds. Crucially, the identified referent does not have to be unique, namely the cardinality of the exhaustive subset ranges from one to many, as long as the subset represents an exhaustive identification of the referents in the context that fits the presupposition (Horn 1981; Kiss 1998). Consider example (16). The exhaustive semantics of the sentence comprises two components: an identification (see (16a)) of an entity (here, a T-shirt) among a set of alternatives presupposed in the context making the proposition ‘John bought x in the market’ true, and a denial (see (16b)) to the truth of ‘John bought any alternatives other than a T-shirt in the market’.

- (16) John bought only a T-shirt in the market.
- a. $\langle \lambda x[\text{John bought } x \text{ in the market}], \text{ a T-shirt, } \{ \text{a T-shirt, a bag, an apple ...} \} \rangle$
 - b. $\forall y[y \in \{ \text{a T-shirt, a bag, an apple ...} \} \ \& \ y \neq \text{a T-shirt} \ \& \ \neg[\text{John bought } y \text{ in the market}]]]$.

In probing the question of whether Mandarin bare *wh*-fronting questions encode a plain (non-exhaustive) contrastive focus or enable an exhaustive listing of the alternatives, Brunetti’s (2004: 68) ‘*even/also* test’ offers a clue. She claims that if a focused constituent in a displaced position can be modified by *even* or *also*, the fronting operation does not automatically give rise to an exhaustive focus reading. As the Italian examples in (17a-b) show, the fronted DPs are compatible with *even* and *also*, evidencing that the fronted constituents are ‘exclusively’ identified without exhaustion.

- (17) Italian (Brunetti 2004)
- a. Anche UN CAPPELLO gli ha comprato Maria.
 also a hat to.him.CL has bought Maria
 ‘It is also a hat that Maria bought him.’
 - b. Persino UN CAPPELLO gli ha comprato Maria
 even a hat to.him.CL has bought Maria
 ‘It was even a hat that Maria bought him.’

This test renders similar results in Mandarin *wh*-fronting interrogatives. The fronted *wh*-phrases are compatible with *haiyou* ‘also’ or *jurán* ‘even’ (see (18)), indicating this syntactic displacement strategy does not automatically encode an exhaustive focus interpretation of the *wh*-variable.

- (18) Mandarin
- a. Haiyou [shei]_i Zhangsan zuotian ye yu-dao le t_i?
 also-have who Zhangsan yesterday also meet-arrive PFV
 One possible translation: ‘WHO did Zhangsan also meet yesterday?!’
 - b. [Shei]_i Zhangsan zuotian jurán yu-dao le t_i?
 who Zhangsan yesterday even meet-arrive PFV
 One possible translation: ‘WHO did Zhangsan even meet yesterday?!’

In view of the discourse requirements of a plain contrastive focus and an exhaustive focus, this study devises question-answer pairs that fit specific contexts where the identity of the focus being questioned is explicit to both interlocutors. An example is shown in (19).

(19) Context: *Zhangsan* planned to buy a pen, a notebook, and a highlighter. He asked his friends *Lisi* and *Wangwu* to go shopping with him, and they agreed. When the day came, *Wangwu* did not make it, so *Zhangsan* went shopping with *Lisi*. When they got there, they bought a pen and a notebook, but did not find any highlighter. When they came back, *Wangwu* met *Lisi* and the following dialogue took place.

a. Wh-in-situ question

Wangwu: Zhangsan mai le shenme-dongxi?
 Zhangsan buy PFV what-thing
 ‘What did Zhangsan buy?’

Lisi: A1: Ta mai le gangbi/bijiben.
 3SG buy PFV pen/notebook
 ‘He bought a pen/He bought a notebook.’

A2: Ta mai le gangbi he bijiben.
 3SG buy PFV pen and notebook
 ‘He bought a pen and a notebook.’

A3: #[Gangbi/bijiben], ta mai le t_i.
 pen/notebook 3SG buy PFV
 ‘A pen, he bought/A notebook, he bought.’

A4: #Shi [gangbi he bijiben] ta mai le t_i.
 EXH pen and notebook 3SG buy PFV
 ‘It was a pen and a notebook that he bought.’

b. Bare wh-fronting question

Wangwu: [Shenme-dongxi]_i Zhangsan mai le t_i?
 what-thing Zhangsan buy PFV
 ‘What (among the presupposed alternatives) did Zhangsan buy?’

Lisi: A1: Ta mai le gangbi/bijiben.
 3SG buy PFV pen/notebook
 ‘He bought a pen/He bought a notebook.’

A2: Ta mai le gangbi he bijiben.
 3SG buy PFV pen and notebook
 ‘He bought a pen and a notebook.’

A3: [Gangbi/bijiben]_i, ta mai le t_i.
 pen/notebook 3SG buy PFV
 ‘A pen, he bought/A notebook, he bought.’

A4: #Shi [gangbi he bijiben]_i ta mai le t_i.
 EXH pen and notebook 3SG buy PFV
 ‘It was a pen and a notebook that he bought.’

c. Wh-fronting question with shi

Wangwu: Shi [shenme-dongxi]_i Zhangsan mai le t_i?
 EXH what-thing Zhangsan buy PFV
 ‘What was it that Zhangsan bought?’

Lisi: A1: #Ta mai le gangbi/bijiben.
 3SG buy PFV pen/notebook
 ‘He bought a pen/He bought a notebook.’

- A2: Ta mai le gangbi he bijiben.
 3SG buy PFV pen and notebook
 ‘He bought a pen and a notebook.’
- A3: #[Gangbi/bijiben]_i, ta mai le t_i.
 pen/notebook 3SG buy PFV
 ‘A pen, he bought/A notebook, he bought.’
- A4: Shi [gangbi he bijiben]_i ta mai le t_i.
 EXH pen and notebook 3SG buy PFV
 ‘It was a pen and a notebook that he bought.’

Before uttering the question, what is made salient to the interlocutors provided in (19) is a set of entities for which the predicate potentially holds: {a pen, a notebook, a highlighter}, while since *Zhangsan* failed to find a highlighter in the store, only two candidates make the proposition ‘*Zhangsan* bought *x*’ true – a pen and a notebook. For an information-seeking wh-in-situ question given in (19a), by either providing a partial/non-exhaustive answer like A1, or providing a complete/exhaustive answer like A2, the addressee is offering a true answer to the question. This is because the addressee is free to include as much information as they can or they want when answering a question (Groenendijk & Stokhof 1984). A1 and A2, with a mention of either or both of the entities that *Zhangsan* bought, also suffice to address a bare wh-fronting question, which is meant to be asked in order to mark the contrast between the focused element and other presupposed alternatives, as (19b) shows.

Besides, A3 is a congruent answer to question (19b) rather than (19a), as the information-structurally prominent object appearing in a derived position fulfills the discourse requirement imposed by a bare wh_{arg}-fronting question rather than that of a non-contrastive wh-in-situ question. The sentence-initial *shi* pattern given in A4 enforces an exhaustive interpretation of the focused element. This explains why it is only suitable to address a question in (19c) but not those in (19a-b), as the exclusion of all the other alternatives in the semantics of a *shi*-marked exhaustive focus is beyond what a simple wh-in-situ question or a bare wh-fronting question requires.

In answering a *shi*-marked wh-fronting question like (19c), the addressee must exhaust what they know. Therefore, partial answers in A1 and A3 are infelicitous due to the lack of information irrespective of the sentence patterns they take. Both A2 and A4, however, congruently respond to the question albeit in distinct ways, as they contain the only two members within the set that make the proposition ‘*Zhangsan* bought *x*’ true.

So far, we can conclude with the following generalizations:

- (20) a. A Mandarin wh-in-situ question licenses a new information focus in the answer.
 b. A Mandarin bare wh-fronting question licenses a plain (non-exhaustive) contrastive focus or a mirative focus (when the wh-phrase is prosodically marked).
 c. A Mandarin wh-fronting question marked by *shi* enforces an exhaustive focus in the answer.

5. Concluding remarks. To recapitulate, we have established that Mandarin overt wh-fronting parallels with A’-movement in the sense that it is sensitive to islands and the displaced wh-phrase reconstructs for binding. It is also borne out to be an instantiation of focus movement as it coerces three types of focus interpretations and does not exhibit the

Superiority effects. The construal of the wh-variable as generalizing over a set containing the element valuing the wh-variable along with context-salient alternatives is invariably activated via the marked syntactic position of the wh-phrase, i.e. an ex-situ preverbal position in the LP. The position where *shi* is externally merged awaits further study as it is interrelated to Mandarin clefts that contain *de*.

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