# Wh-fronting and the left periphery in Mandarin

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**Abstract** This article explores the semantic and syntactic properties of whfronting constructions as well as the fine structure of the left periphery in Mandarin along the lines of the cartographic approach. It is discovered that wh-fronting constructions exhibit two salient properties associated with Identificational Focus (IdentF), namely, (i) exhaustive identification and (ii) the ability to occupy a scopal position, suggesting that wh-fronting is best analyzed as a strategy for licensing IdentF. It is proposed that two derivational mechanisms are in principle available to wh-fronting constructions: the wh-phrase is either derived by movement to Spec-FocP, or it may resort to a base-generation strategy when the wh-phrase is linked to an empty pronoun or a resumptive pronoun inside an island. It is argued that previous analyses that treat wh-fronting constructions as a type of topic structure cannot account for their different morphological and semantic properties. This view is further corroborated by an investigation of the topography of Topics and Foci in the left periphery, which shows that IdentF occupies a dedicated syntactic position distinct from that of the types of Topics available in Mandarin. The investigation also reveals that Focus constitutes an independent field that is situated below the Topic field.

**Keywords** Wh-fronting · Identificational Focus · Topic · Focus · Left periphery · Mandarin

I dedicate this paper to the memory of Jean-Roger Vergnaud.

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### 1 Introduction

While Mandarin is generally taken to be a *wh*-in-situ language, it has been observed that a *wh*-phrase can be fronted to the pre-subject position (Xu and Langendoen 1985; Hoh and Chiang 1990; Tsai 1994b; Li 1996; Shyu 1998; Wu 1999; Kuong 2006; Pan 2006, 2011; Cheung 2008, 2012 inter alia). In such a case, as (1) shows, the *wh*-phrase is optionally preceded by *shi* (see Hoh and Chiang 1990; Shyu 1998; Cheung 2008, 2012). For ease of exposition, I refer to sentences like (1) as "*wh-fronting constructions*." <sup>1,2</sup>

(1) (Shi) **shei**<sub>i</sub>, Mali zui xihuan t<sub>i</sub> ne? SHI who Mary most like Q 'Who is it that Mary likes most?'

The majority of previous studies of the wh-fronting construction in Mandarin treat it as a type of topic structure with the fronted wh-phrase being derived by topicalization (Li 1996; Wu 1999; Pan 2006, 2011) while other researchers argue that it involves focalization (Hoh and Chiang 1990; Cheung 2008, 2012). The two lines of approach share the view that the wh-fronting construction is derived by movement. In line with these studies, I advocate a movement approach to the whfronting construction but depart from them by positing a base-generation approach when the wh-phrase is linked to an empty pronoun (pro) or a resumptive pronoun inside an island. In another departure, I adopt the cartographic approach (Rizzi 1997, 2004; Cinque 1999), making it possible to achieve two goals. First, since the cartographic approach holds that Focus and Topic occupy two distinct functional projections, a detailed comparison of the properties of wh-fronting constructions and topic structures can help resolve the long-standing debate concerning whether whfronting should be analyzed as an instance of focalization or topicalization. More specifically, I argue against the analysis that equates wh-fronting with topicalization, whose landing site is Spec-TopP, proposing instead that wh-fronting is best analyzed as a strategy for licensing Identificational Focus (IdentF) (É. Kiss 1998), whose landing site is Spec-FocP. Second, building on Del Gobbo and Badan's (2007) and Badan and Del Gobbo's (2011) studies showing that different types of Topics and Foci occupy distinct and dedicated syntactic positions in the left periphery of Mandarin, along the lines of Benincà and Poletto (2004), this paper contributes to the recent inquiry into the left periphery of Mandarin by exploring the syntactic position of IdentF. While Del Gobbo and Badan (2007) and Badan and Del Gobbo (2011) have convincingly argued that Topic can be analyzed as a field, our investigation shows that Focus can also be construed as a field in Mandarin. It

<sup>&</sup>lt;sup>2</sup> In (1) and throughout, fronted *wh*-words (to be analyzed as IdentF) in *wh*-fronting constructions in Mandarin are set in boldface for clarity, as are instances of IdentF in other languages.



<sup>&</sup>lt;sup>1</sup> The abbreviations used in this paper are glossed as follows: Acc: Accusative Case; AT: Aboutness Topic; Cl: classifier; Exp: experiential aspect; Fin: Finiteness head; Foc: Focus; FP: Functional projection; GCR: Generalized Control Rule; HT: Hanging Topic; IdentF: Identificational Focus; InfoF: Information Focus; IP: Inflectional Phrase; Mod: modifier; LD: Left-dislocated Topic; *lian*-F: *lian* 'even'-Focus; Perf: perfective aspect; PG: Parasitic Gap; Q: question particle; RC: relative clause; SFP: sentence final particle; TM: topic marker; Top: Topic.

further reveals that the Topic field is located above the Focus field in the left periphery of Mandarin.

This paper is organized as follows. I begin by unraveling the properties of wh-fronting constructions in Mandarin and show that wh-fronting should not be regarded as optional movement; rather, it is a strategy for licensing IdentF (Sect. 2). In Sect. 3, I examine the key differences between wh-fronting constructions and topic structures in Mandarin and argue that wh-fronting constructions cannot be treated on a par with topic structures. In Sect. 4, I offer syntactic analyses of wh-fronting constructions in Mandarin. In Sect. 5, I present the fine structure of the left periphery in Mandarin by examining the ordering restrictions among different types of Topics and Foci. Section 6 concludes the paper.

# 2 Unraveling the properties of wh-fronting constructions in Mandarin

As Mandarin is well-known for being a wh-in-situ language, a question that naturally arises is whether wh-fronting should be regarded as optional movement with no effect on interpretation. While Hoh and Chiang (1990) regard the fronted wh-phrase in wh-fronting constructions as Focus, they provide no diagnostics to support this view. Using the diagnostics for IdentF put forth by É. Kiss (1998) and Zubizarreta and Vergnaud (2006), among others, I argue in this section that wh-fronting serves to license IdentF in Mandarin. In addition, following É. Kiss's proposal that IdentF is realized as the clefted constituent in English, I show that wh-fronting constructions in Mandarin share many striking similarities with clefted questions in English, which tease them apart from simple wh-questions in English and in-situ wh-questions in Mandarin.

### 2.1 Exhaustivity

According to É. Kiss (1998), an IdentF not only conveys new, non-presupposed information but also expresses *exhaustive identification*; that is, it specifies an exhaustive set among the contextually relevant entities for which a given proposition holds true and excludes other possibilities (see also Szabolcsi 1994; Zubizarreta and Vergnaud 2006 inter alia). In English, IdentF may be manifested as a *wh*-phrase in clefted questions like (2a) or as a clefted DP in cleft sentences like (2b), as witnessed by the following paraphrases ((2b) is adapted from É. Kiss 1999, p. 219):

- (2) a. Who is it that Mary does not like?
  - $\approx$  Of a set of relevant persons, who is x such that it is true of x and no one else that Mary does not like x?
  - b. It is John that Mary does not like.
    - $\approx$  Of a set of relevant persons, it is true of John and no one else that Mary does not like him.

Note that the clefted questions come with a presupposed set, as evidenced by the paraphrase of (2a), which shows that it is among a set of relevant persons in the



discourse under which the identity of *who* is questioned. This is consistent with the semantics of *wh*-fronting constructions discussed by Wu (1999:83–85): Wu observes that *wh*-fronting constructions can be used felicitously only if there is a presupposed set that has been established in the previous discourse, and it is from this set that the value assigned to the *wh*-word is taken. In light of Wu's observation, the *wh*-fronting constructions in Mandarin can be paraphrased in a similar fashion as clefted questions in English:

Apart from bearing a presupposed set, an IdentF expresses exhaustive identification, which is evident from the fact that the identity of *who* under question in (2a) must be exhaustive; that is, the value assigned to *who* must be the exhaustive set for which the proposition holds true, excluding all other possibilities. To verify that IdentF expresses exhaustive identification, Zubizarreta and Vergnaud (2006) devise a conjunction test as a diagnostic for exhaustivity. More specifically, they note that clefted questions in French such as (4a) unambiguously give rise to exhaustivity, which requires "uniqueness of description." This requirement is violated in (4b), which contains IdentFs in two separate conjoined clauses.

- (4) a. Q: C'est qui qui a écrit un livre sur les rats? (French) 'It is who that wrote a book about rats?'
  - b. A: \*C'est le chat qui a écrit un livre sur les rats, et c'est aussi la chauve-souris.

'It is the cat that wrote a book about rats, and also the bat.'
(Zubizarreta and Vergnaud 2006, (9))

Similar observations hold in English clefted questions. Consider the following question-answer pairs (judgments from Stephen Matthews, p.c.):

- (5) a. Q: What was it that you bought?
  - b. A1: It was a hat.
  - c. A2: \*It was a hat. It was a coat, too.
- (5b) is a felicitous and natural answer to (5a) as it expresses exhaustive identification. Concretely, what (5b) means is that it was a hat and nothing else that I bought, as *a hat*, being a clefted constituent, functions as an IdentF. In contrast, (5c) is ill-formed due to the violation of exhaustivity. More precisely, since the first clause in (5c) expresses exhaustivity, meaning that it was a hat and nothing else that I bought, the addition of the second clause, i.e., *It's a coat, too* will violate exhaustivity, as it means that it was a coat and nothing else that I bought, which contradicts with the exhaustive identification expressed by the first clause. Put differently, that (5c) violates exhaustivity can be attributed to the presence of two IdentFs, i.e., *a hat* and *a coat*, on a par with the French example in (4b).



Turning to Mandarin wh-fronting constructions, similar observations hold. The wh-fronting construction, as in (6a), can be felicitously answered by a single IdentF introduced by shi, as in (6b). In contrast, when there are two IdentFs introduced by shi, as in (6c), the answer is severely deviant: (6c) violates exhaustive identification since maozi 'hat' is interpreted as an IdentF through the presence of shi in the first clause, that is, the first clause means that it was a hat and nothing else that I bought. The introduction of the second clause violates exhaustivity, as the second clause means that it was a coat and nothing else that I bought, which contradicts the exhaustive identification expressed by the first clause. In other words, (6c) violates exhaustivity on a par with (5c).<sup>3</sup>

(i) Q: (Shi) shenme dongxi, Mali yiding hui mai? SHI what thing Mary definitely will buy 'What thing is it that Mary will definitely buy?'

A1: Maozi yiding hui mai. yiding ta waitao ta hui mai, qita hat she definitely will buy coat she definitely will buy wo jiu bu queding le. I then not sure LE

'She will definitely buy a hat, she will definitely buy a coat; other things I am not sure about.'

A2: \*Shi maozi. yiding hui mai. shi waitao. yiding hui ta ta SHi hat she definitely will buy SHI coat she definitely will mai.

Intended: 'It's a hat that she will definitely buy, and it's a coat that she will definitely buy.'

While I agree that (iA1) is a felicitous answer, it need not be counter-evidence to my proposal that an IdentF expresses exhaustivity since, for one thing, maozi 'a hat' and waitao 'a coat' in (iA1) should be treated as Information Foci (InfoFs) rather than IdentFs, as it is evident from (iA1) that maozi and waitao merely express new, non-presupposed information and are not exhaustive in nature, all of which are characteristic properties of InfoFs (see É. Kiss 1998; Xu 2004). This view is further corroborated by the contrast between (iA1) and (iA2). More precisely, comparing (iA1) with (iA2), it is clear that once shi is present, maozi and waitao can only be construed as IdentFs and thus (iA2) is ruled out due to the violation of exhaustivity similar to (6c). For another, even though the speaker who utters (iQ) expects the hearer to give an exhaustive answer, contrary to the speaker's expectation, the hearer may choose to give a non-exhaustive answer containing InfoFs, as in (iA1). In fact, the same observation holds for English clefted questions. For instance, the clefted question in (iiQ) can be felicitously answered by a non-exhaustive answer containing InfoFs such as a hat and a coat, as in (iiA).

(ii) Q: What was it that Mary bought?

A: She definitely bought a hat, and she definitely bought a coat, but I am not sure about other things.



<sup>&</sup>lt;sup>3</sup> As pointed out by an anonymous reviewer, the *wh*-fronting construction in (iQ) can be felicitously answered by a sentence containing more than one focus while explicitly stating that s/he is not sure about other things Mary will definitely buy, as shown in (iA1). At first glance, this might seem to be a piece of counter-evidence to my proposal that an IdentF, including the fronted *wh*-phrase, expresses exhaustivity (see (6)).

- (6) a. Q: (Shi) **shenme dongxi**<sub>i</sub>, ni mai-le t<sub>i</sub>?

  SHI what thing you buy-Perf

  'What thing was it that you bought?'
  - b. A1: Shi **maozi**.
    - 'It was a hat.'
  - c. A2: \*Shi **maozi**, haiyou shi **waitao**. SHI hat also SHI coat 'It was a hat and it was a coat, too.'

Let us turn to the in-situ counterpart of (6a) in (7a). It can be answered by sentence (7b) containing two separate conjoined clauses, each of which has an Information Focus (InfoF) in the clause-final position (see Xu 2004), namely, *maozi* 'hat' and *waitao* 'coat', suggesting that InfoFs in Mandarin do not express exhaustivity. This result is not surprising since, according to É. Kiss (1998), InfoFs merely express new, non-presupposed information and are not exhaustive in nature. In contrast, sentence (7c) containing an IdentF, *maozi* 'hat', cannot be a felicitous answer to (7a). (Here and throughout, "#" indicates infelicity.) The fact that an insitu *wh*-question can be felicitously answered by a sentence like (7b) containing multiple InfoFs in separate conjoined clauses, whereas the *wh*-fronting construction can only be answered by a sentence like (6b) containing a single IdentF, provides important support for the view that *wh*-fronting constructions are exhaustive in nature whereas in-situ *wh*-questions are not.

- (7) a. Q: Ni mai-le shenme dongxi? you buy-Perf what thing 'What thing did you buy?'
  - b. A1: Wo mai-le MAOZI, ye mai-le WAITAO.

    I buy-Perf hat also buy-Perf coat

    'I bought a hat and also a coat.'
  - c. A2: #Shi **maozi**. SHI hat 'It was a hat.'

# 2.2 Scope

According to É. Kiss (1998), another characteristic of IdentF is that it occupies a scope position. More precisely, an IdentF takes the part of the sentence it

<sup>&</sup>lt;sup>5</sup> Other terms used in the literature besides *Information Focus (InfoF)* versus *Identificational Focus (IdentF)* include *Presentational Focus* versus *Contrastive Focus* and *Wide Focus* versus *Narrow Focus* (see, e.g., Rochemont 1986). However, as É. Kiss (1998) notes, the interpretations of these terms vary from one author to another. To avoid confusion, I adopt É. Kiss's definitions of InfoF and IdentF throughout this paper.



<sup>&</sup>lt;sup>4</sup> In (7b) and throughout, an InfoF is set in small capitals, whereas an IdentF is set in boldface (see footnote 2) for clarity. Note that the small capitals are not meant to indicate the location of pitch accents.

c-commands as the scope of exhaustive identification. This becomes more transparent when an IdentF enters into a scope relation with other operators, such as the universal quantifier, as exemplified below:

- (8) a. Minden fiú **Marival** akart táncolni. (Hungarian) every boy Mary.with wanted to.dance 'For every boy, it was Mary [of the relevant persons] that he wanted to dance with.' (every > Mary; \*Mary > every) (É. Kiss 1998, (22a))
  - b. **Marival** akart táncolni minden fiú.

    Mary.with wanted to.dance every boy

    'It was Mary [of the relevant persons] that every boy wanted to
    dance with.' (Mary > every; \*every > Mary) (É. Kiss 1998, (22b))

In (8a), the universal quantifier takes scope over the IdentF; hence, (8a) is only compatible with a situation in which every boy wanted to dance with one of all the girls present and did not want to dance with anyone else. In contrast, in (8b), the IdentF takes scope over the universal quantifier; hence, (8b) is compatible with a situation in which Mary was the only one of all the girls that every boy wanted to dance with, and, at the same time, the other girls may have been asked for a dance by a smaller subset of all the boys present.

If IdentF can occupy a scope position, we expect that the clefted *wh*-phrase in English clefted questions should behave the same way. This expectation is fulfilled, as the following contrast shows: the clefted question in (9) lacks the pair-list reading, whereas the simple *wh*-question in (10) has both the pair-list and the individual readings.

- (9) What was it that everyone bought for Sue?
  - a. \*For every x, for which y, x bought y for Sue?
  - b. For which y, for every x, x bought y for Sue?
- (10) What did everyone buy for Sue?
  - a. For every x, for which y, x bought y for Sue?
  - b. For which y, for every x, x bought y for Sue?

Similarly, the *wh*-word licensed by *wh*-fronting occupies a scope position in Mandarin: as Wu (1999, pp. 87–88) observes, whereas a pair-list interpretation is absent with the *wh*-fronting construction, as in (11), both pair-list and individual interpretations are available with an in-situ *wh*-question (Aoun and Li 1993a), as in (12) (see also Cheung 2012).

- (11) (Shi) **shenme dongxi**<sub>i</sub>, meigeren dou hui mai  $t_i$ ? SHI what thing everyone DOU will buy
  - a. \*'For every x, for what thing y, x will buy y?'
  - b. 'For what thing y, for every x, x will buy?'
- (12) Meigeren dou hui mai shenme dongxi? everyone DOU will buy what thing
  - a. 'For every x, for what thing y, x will buy y?'
  - b. 'For what thing y, for every x, x buy y?'



The fact that the fronted *wh*-phrase can occupy a scope position thus provides further support for the view that it should be analyzed as an IdentF. Moreover, the fact that *wh*-fronting constructions in Mandarin pattern with clefted questions in English but with neither simple *wh*-questions in English nor in-situ *wh*-questions in Mandarin indicates that *wh*-fronting constructions cannot be derived in the same way as simple *wh*-questions in English nor be treated on a par with in-situ *wh*-questions in Mandarin.

# 2.3 Similarities between clefted questions and wh-fronting constructions

### 2.3.1 Restrictions

Unlike simple *wh*-questions, not all types of *wh*-phrases can serve as the clefted constituent in clefted questions in English. In particular, while *wh*-arguments and the majority of *wh*-adjuncts can serve as the clefted constituent in clefted questions in English and be interpreted in the trace position (13)–(14), the use of *how* in clefted questions always results in severe deviance when it is intended to yield an instrumental reading (15a) or a manner reading (16b). The use of *how come* is also banned in clefted questions, as shown in (17) (judgments from Richard Larson, Stephen Matthews, and Barry Schein, p.c.).

- (13) Wh-arguments
  - a. Who; is it that John likes t;?
  - b. **To whom**<sub>i</sub> was it that John spoke t<sub>i</sub>?
- (14) Wh-adjuncts
  - a. When; was it that John left t;?
  - b. Where; was it that John saw Mary t;?
  - c. Why, was it that John went to Peking ti?
- (15) a. Q: \*How<sub>i</sub> was it that John went to Peking t<sub>i</sub>? [Instrumental]
  - b. A: By train.

- (i) **How**<sub>i</sub> was t<sub>i</sub> it that John went to Peking?
- (ii) Howi was ti it that John criticized you?

Furthermore, as Richard Larson (p.c.) points out, (i) and (ii) are interpreted as why-questions, especially if an element within the relative clause is focalized. For instance, if John is focalized in (i) and (ii), (i) can be paraphrased as How did it happen/did it turn out that JOHN went to Peking?, and (ii) as How did it happen/did it turn out that JOHN criticized you?. However, Stephen Matthews (p.c.) points out that how can be interpreted as instrumental in (15), but it cannot yield a manner reading, as in (16). I am not sure if the different judgments have to do with whether the informants are native speakers of American English or British English. I leave this question open for future study, along with the question of why how can be interpreted as a modifier of the copular clause but not as a modifier in the relative clause.



<sup>&</sup>lt;sup>6</sup> As Marcel den Dikken (p.c.) points out, *how* can serve as the clefted constituent in English clefted questions as long as it is interpreted as a modifier of the copular clause rather than a modifier in the relative clause, as the well-formedness of (i)–(ii) shows (judgments from Richard Larson and Barry Schein, p.c.).

- (16) a. Q: \*How<sub>i</sub> was it that John criticized you t<sub>i</sub>? [Manner]b. A: Severely.
- (17) O: \*How come was it that John burst into tears?

Similarly, in Mandarin, although in-situ *wh*-questions allow all types of *wh*-phrases, *wh*-fronting constructions can involve *wh*-arguments (18) and *wh*-adjuncts (19) but not *zenme*(-yang) 'how(-manner)' (20) (see Wang and Wu 2006), contrary to Hoh and Chiang's (1990:47) claim that "for every question with *wh*-in-situ, there is an equivalent move-*wh* counterpart." According to Tsai (2008), *zenme*(-yang) can yield an instrumental reading when it follows a control verb, such as *dasuan* 'intend' or *jihua* 'plan', as in (20a'). It can also yield a manner reading, as in (20b'). In addition, Tsai notes that *zenme*, but not *zenmeyang*, can yield a causal reading comparable to *how come* in English when it precedes a control verb, as shown in (20c') (see Tsai 1992, 1997, 1999, 2008, 2011 for more detailed discussions of *zenme*(-yang)). However, when *zenme*(-yang) is fronted, it always results in ungrammaticality, as evidenced by the stark contrast between examples (20a–c) involving *wh*-fronting and their in-situ counterparts in (20a'–c') (see Cheung 2012).<sup>7</sup>

# (18) Wh-arguments

(Shi) **shei**<sub>i</sub>/**shenme dongxi**<sub>i</sub>/**na-ge ren**<sub>i</sub>, Mali zui xihuan t<sub>i</sub> ne? SHI who/what thing/which-Cl person Mary most like Q 'Who/What thing/Which person is it that Mary likes most?'

# (19) Wh-adjuncts

- a. (Shi) **shenme shihou**<sub>i</sub>, Zhangsan yinggai t<sub>i</sub> zou ne? SHI what time Zhangsan should leave Q 'When is it that Zhangsan should leave?'
- b. (Shi) **zai nali**<sub>i</sub>, Zhangsan t<sub>i</sub> kandao Mali ne? SHI at where Zhangsan see Mary Q 'Where was it that Zhangsan saw Mary?'
- c. (Shi)  $\mathbf{wei}(\text{-le})$   $\mathbf{shenme}_i$ , Zhangsan  $t_i$  yiding yao qu SHI for(-Perf) what Zhangsan definitely need go Beijing?

Peking

'For what purpose is it that Zhangsan will definitely need to go to Peking?'

d. (Shi) **weishenme**<sub>i</sub>, ni t<sub>i</sub> yao zheme dui wo?<sup>8</sup> SHI why you want thus toward me 'Why is it that you treat me like this?'

<sup>&</sup>lt;sup>8</sup> I thank the anonymous reviewer for pointing out that *weishenme* 'why' is permitted in *wh*-fronting constructions in Mandarin.



 $<sup>^7</sup>$  The scope of "\*" in (20a) should be understood as over the whole sentence. That is, (20a) should be understood as indicating that the sentence is severely deviant, whether *shi* is present or not. *Shi* is enclosed in parentheses throughout to indicate that it is optional. In other words, "\*" should *not* be understood with narrow scope so that (20a) is taken to indicate that the sentence is acceptable only if *shi* is present. The same applies to (20b) and all other examples involving parenthesized sentence-initial *shi*.

(20) The how family

a. \* (Shi)  $\mathbf{zenme(-yang)_i}$ , Akiu dasuan/jihua  $\mathbf{t_i}$  qu SHI how(-manner) Akiu intend/plan go Taibei? [Instrumental]

'By what means does Akiu intend/plan to go to Taipei?'

a'. Akiu dasuan/jihua zenme(-yang) qu Taibei? [Instrumental] Akiu intend/plan how(-manner) go Taipei 'By what means does Akiu intend/plan to go to Taipei?'

(Tsai 2008, (43b))

b. \* (Shi) **zenme(-yang)**<sub>i</sub>, Zhangsan t<sub>i</sub> ma ni? [Manner] SHI how(-manner) Zhangsan scold you 'In what manner did Zhangsan scold vou?'

b'. Zhangsan zenme(-yang) ma ni? [Manner] Zhangsan how(-manner) scold you 'In what manner did Zhangsan scold you?'

c. \* (Shi) **zenme**<sub>i</sub>, Akiu t<sub>i</sub> dasuan/jihua qu Taibei?

SHI how Akiu intend/plan go Taipei

Intended: 'How come is it that Akiu intends/plans to go to Taipei?'

c'. Akiu zenme(\*-yang) dasuan/jihua qu Taibei? [Causal] Akiu how(-manner) intend/plan go Taipei 'How come Akiu intends/plans to go to Taipei?' (Tsai 2008, (43a))

The fact that similar restrictions are observed in clefted questions in English and wh-fronting constructions in Mandarin teases them apart from simple wh-questions in English and in-situ wh-questions in Mandarin.<sup>9</sup>

# 2.3.2 Presupposition failure

Recall from the discussion in Sect. 2.1 that English clefted questions are partitioned into IdentF and presupposition. Further support for the existence of presupposition encoded in the semantics of clefted questions comes from presupposition failure. This is evidenced by the fact that denying the content of the presupposition results in presupposition failure; witness the infelicity of (21b) as an answer to (21a). In contrast, presupposition failure is not observed with simple *wh*-questions: (22b) can be used as a felicitous answer to (22a).

(21) a. Q: **What** was it that John bought?

b. A: #Nothing.

<sup>&</sup>lt;sup>9</sup> Note that while the restrictions on English clefted questions and Mandarin *wh*-fronting constructions are fairly similar, there are some differences between the two constructions, which I leave open for future study. For instance, unlike *how* in English clefted questions, which is acceptable as long as it is construed as a modifier of the copular clause (see footnote 6), causal-how *zenme* 'how come' and *zenmeyang* 'how' in Mandarin *wh*-fronting constructions always result in severe deviance.



- (22) a. Q: What did John buy?
  - b. A: Nothing.

The same observation holds in Mandarin (Wu 1999, p. 84, fn. 49). Presupposition failure is observed with wh-questions involving wh-fronting: (23b) is infelicitous as an answer to (23a) whereas (24b) is a felicitous answer to the in-situ wh-question in (24a).

- - b. A: #Ta mei mai renhe dongxi.
    she not buy any thing
    'She didn't buy anything.'
- (24) a. Q: Mali mai-le shenme dongxi?

  Mary buy-Perf what thing

  'What thing was it that Mary bought?'
  - b. A: Ta mei mai renhe dongxi. she not buy any thing 'She didn't buy anything.'

In sum, I have shown that the fronted *wh*-phrase in *wh*-fronting constructions in Mandarin exhibits two properties typically associated with IdentFs: exhaustive identification and the ability to occupy a scope position. Neither of these properties is observed with in-situ *wh*-questions in Mandarin, suggesting that the fronted *wh*-phrase should be analyzed as an IdentF and that *wh*-fronting constructions must be distinguished from in-situ *wh*-questions. <sup>10</sup> Furthermore, I have demonstrated that *wh*-fronting constructions share two striking similarities with clefted questions in English (i.e., the unacceptability of 'how' when it is construed as instrumental or manner and presupposition failure), indicating that *wh*-fronting constructions should

a. Speaker A: Mali zuotian kandao XX.

Mary yesterday see
'Mary saw XX yesterday.'
b. Speaker B: Mali kandao shei? W

o. Speaker B: Mali kandao shei? Wo ting-bu-dao. Mary see who I hear-not-arrive

'Mary saw who? I can't hear it.'

c. Speaker B: #(Shi) shei, Mali kandao? Wo ting-bu-dao.

SHI who Mary see I hear-not-arrive

'Who was it that Mary saw? I can't hear it.'



 $<sup>^{10}</sup>$  One may wonder in what ways wh-fronting constructions are similar to or different from echo questions in Mandarin. While previous studies (Shyu 1998; Cheung 2008) claim that wh-fronting constructions can be used as echo questions, I find the use of wh-fronting constructions as echo questions less felicitous than in-situ wh-questions, as evidenced by the contrast in felicity between (ib) and (ic).

Context: Suppose speaker A and speaker B are having a conversation in a very noisy restaurant, and speaker B cannot hear who Mary saw yesterday.

be analyzed on a par with clefted questions as IdentF constructions. The fact that neither simple wh-questions in English nor in-situ wh-questions in Mandarin exhibit these two properties corroborates that wh-fronting constructions can neither be derived in the same way as simple wh-questions in English nor be treated on a par with in-situ wh-questions in Mandarin. All these findings point to the conclusion that wh-fronting in Mandarin can be analyzed neither as wh-movement to Spec-CP, like simple wh-questions in English, nor as optional movement. Rather, it should be analyzed as focalization, with the fronted wh-phrase serving as an IdentF.

# 3 Against the analysis of wh-fronting constructions as topic structures

Previous studies predominantly analyze wh-fronting constructions as a type of topic structure (Xu and Langendoen 1985; Li 1996; Wu 1999; Pan 2006, 2011 inter alia), with some explicitly postulating that the fronted wh-phrase undergoes topicalization to Spec-CP (Li 1996) or Spec-TopP (Wu 1999; Pan 2006, 2011). Most of these analyses share the view that movement of the fronted wh-phrase is triggered by a [+Topic] feature in C (Li 1996) or Top (Wu 1999; Pan 2006). These analyses predict that topic structures and wh-fronting constructions have exactly the same properties since both constructions are assumed to be derived in the same way. In this section, I will adduce two pieces of evidence that wh-fronting constructions should be distinguished from topic structures.

# 3.1 Compatibility with topic markers

A characteristic property of Topics in Mandarin is that they can be followed by topic markers, such as *a*, *me*, *ne*, *ba* (Li and Thompson 1981, Chap. 4), as in (25a–b). If the *wh*-word licensed by *wh*-fronting serves as a Topic, we expect that it can be followed by a topic marker. This expectation is not fulfilled, as the ill-formedness of (26) shows (Cheung 2012).

#### Footnote 10 continued

The contrast in felicity is more conspicuous when a *wh*-adjunct is involved: witness the contrast between (iib) and (iic) below.

(ii) Context: Suppose speaker A and speaker B are having a conversation in a very noisy restaurant, and speaker B cannot hear where Mary saw Lisi yesterday.

```
a. Speaker A: Mali zuotian XX kandao Lisi.

Mary yesterday see Lisi
'Mary saw Zhangsan XX yesterday.'
```

b. Speaker B: Mali zai nali kandao Lisi? Wo ting-bu-dao. Mary at where see Lisi I hear-not-arrive 'Mary saw Lisi where? I can't hear it.'

c. Speaker B: #(Shi) zai nali, Mali kandao Lisi? Wo ting-bu-dao.

SHI at where Mary see Lisi I hear-not-arrive

'Where was it that Mary saw Lisi? I can't hear it.'

From these examples, I conclude that wh-fronting constructions are not comparable to echo questions in Mandarin.



few.times

'This student, I have seen several times.'

'Zhangsan, for example, has not been to the hospital.'

'Who/What person/Which person is it that you have seen several times?'

The stark contrast between (25a-b) and (26) supports the view that wh-fronting constructions cannot be analyzed on a par with topic structures.

Data like (27) might appear to challenge this view since a and ne seem to be compatible with the wh-word shei 'who' optionally preceded by shi. I propose that a and ne serve as question markers rather than topic markers in (27). On this view, (27) should be analyzed as two separate questions rather than as a wh-fronting construction.

(27) (Shi) shei a/ne? Ni jian-guo hao jici? SHI who Q/Q you see-Exp good few.times 'Who is it? You have seen several times?'

The proposal that a and ne can serve as question markers is supported by the fact that they can be used in wh-questions, as in (28), while genuine topic markers such as ba and me cannot, as in (29).

The fact that topic structures, but not wh-fronting constructions, are compatible with the topic marker lends additional support to the view that they cannot be treated on a par.



 $<sup>^{11}</sup>$  I thank Dylan Tsai (p.c.) for suggesting this analysis to me. The incompatibility of the fronted *wh*-phrase with a topic marker is also supported by Paul (2005, p. 128), who notes that *shei* 'who' is incompatible with the topic marker *ne*.

<sup>&</sup>lt;sup>12</sup> The incompatibility of topic markers with the *wh*-word licensed by *wh*-fronting is also supported by data from Cantonese, a topic-prominent language, which features both *wh*-fronting constructions (i) and topic structures (ii) (see Matthews and Yip 1994, Chap. 4, 2011, Chap. 4 for a general discussion of topic structures in Cantonese). Similar to *wh*-fronting constructions in Mandarin, *wh*-fronting constructions in Cantonese prohibit the appearance of the topic marker *aa* (i), whether *hai* (the Cantonese counterpart of Mandarin *shi*) is present or not. This contrasts with topic structures, whose Topic can be optionally marked by a topic marker, as in (ii) (see Cheung 2010 for more detailed discussion of other differences between *wh*-fronting constructions and topic structures in Cantonese).

<sup>(</sup>i) (Hai) bingo (\*aa), nei gin-gwo hou geici aa?HAI who TM you see-Exp good few.times Q'Who is it that you have seen several times?'

<sup>(</sup>ii) Ni-go hoksaang aa, ngo gin-gwo hou geici laa. this-Cl student TM I see-Exp good few.times SFP 'This student, I have seen several times.'

In sum, *wh*-fronting constructions, unlike topic structures, are incompatible with topic markers, indicating that the two cannot be analyzed on a par.

# 3.2 Resumption

Another property characteristic of topic structures is that a Topic can be linked to a gap, a pronoun, or an epithet (Del Gobbo and Badan 2007; Badan and Del Gobbo 2011; see also Huang et al. 2009). Consider (30).

(30) Zhangsan<sub>i</sub> a, Mali bu xihuan t<sub>i</sub>/ta<sub>i</sub>/zhe-ge shazi<sub>i</sub>. Zhangsan TM Mary not like him/this-Cl idiot 'Zhangsan<sub>i</sub>, Mary does not like t<sub>i</sub>/him<sub>i</sub>/this idiot<sub>i</sub>.'

If the fronted wh-phrase serves as a Topic in wh-fronting constructions, it should be able to link to a gap, a pronoun, or an epithet. In contrast, if the fronted wh-phrase is an IdentF (i.e., an operator, according to É. Kiss 1998), it should only be able to link to a gap, which hosts the variable bound by the IdentF.

(31)	a.	(Shi)	shei <sub>i</sub> /shenme	ren <sub>i</sub> /na-ge	$ren_i$ ,	Mali	bu	
		SHI	who/what	person/which-Cl	person	Mary	not	
		xihuan t <sub>i</sub> ?						
		like						
		'Who/What	'Who/What person/Which person is it that Mary does not like?'					
	b.	* (Shi)	shei <sub>i</sub> /shenme	ren <sub>i</sub> /na-ge	ren <sub>i</sub> ,	Mali	bu	
		SHI	who/what	person/which-Cl	person	Mary	not	
		xihuan	ta <sub>i</sub> /zhe-ge	shazi <sub>i</sub> ?				
		like	him <sub>i</sub> /this-Cl	idiot				
		'Who <sub>i</sub> /Wha	'Who <sub>i</sub> /What person <sub>i</sub> /Which person <sub>i</sub> is it that Mary does not like					
		him <sub>i</sub> /this idiot <sub>i</sub> ?'						

The contrast between (31a) and (31b) shows that the fronted *wh*-word behaves like an IdentF but not a Topic, as it can only be linked to a gap. It follows that *wh*-fronting constructions should be analyzed as IdentF constructions, which are distinct from topic structures.

In sum, we have seen that wh-fronting constructions crucially differ from topic structures in terms of compatibility with topic markers and availability of resumption. These differences not only call for distinguishing between wh-fronting constructions and topic structures but also provide important evidence against



equating wh-fronting with topicalization (which involves movement of the wh-phrase to Spec-CP or Spec-TopP) as previous analyses have done.

### 4 The syntax of wh-fronting constructions

This section offers syntactic analyses of wh-fronting constructions in Mandarin. In light of the striking similarities between wh-fronting constructions in Mandarin and clefted questions in English, wh-fronting constructions are best analyzed on a par with clefted questions as a type of IdentF construction (see Sect. 2.3). In Sect. 4.1, I review two major approaches to IdentF constructions advanced by É. Kiss (1998): the biclausal and monoclausal approaches. In Sect. 4.2, I present evidence for the movement analysis of wh-fronting constructions. In Sect. 4.3, I turn to wh-fronting constructions linked to a pro or a resumptive pronoun in island contexts, and I argue that these are base-generated. In Sect. 4.4, I investigate the syntactic status of shi in wh-fronting constructions, arguing that shi is best analyzed as a focus marker. In Sect. 4.5, I offer detailed syntactic analyses of wh-fronting constructions, showing that those in island-free contexts are derived by movement, and those in island contexts are derived by base-generation.

### 4.1 Previous analyses of IdentF constructions

On the basis of a detailed cross-linguistic investigation of the syntax and semantics of IdentF constructions, É. Kiss (1998) proposes two different approaches to these constructions: a biclausal analysis of English it-clefts<sup>13</sup> and a monoclausal analysis of Hungarian IdentF constructions.

Before discussing É. Kiss's analyses, I would like to mention two major reasons for reviewing her analyses of *it*-clefts rather than other analyses available in the literature. First, to my knowledge, É. Kiss's paper is the most comprehensive study of the syntactic and semantic properties of IdentF, and her proposal that the clefted constituent of *it*-clefts serves as an IdentF and occupies Spec-FocP is well-motivated on theoretical and empirical grounds. Second, unlike many previous works on English *it*-clefts, which posit that *it*-clefts are derived from pseudoclefts (see Akmajian 1970; Emonds 1976; Meinunger 1998 inter alia), É. Kiss's study assumes that the two are *not* derivationally related; this is more in line with the Mandarin data. According to Huang (1988, p. 45), pseudoclefts in Mandarin are composed of a relative clause whose head can be null; this relative clause can be linked to a *wh*-argument via the copula *shi* 'be', whose presence is obligatory (see (32)). In contrast, Cheng (2008, p. 249) proposes that the relative clause does not have a null head and is akin to free relatives in English.

<sup>&</sup>lt;sup>13</sup> Most early analyses of *it*-clefts were in fact biclausal. See Akmajian (1970) and Chomsky (1977), among many others. For a more recent biclausal analysis of *it*-clefts, see Authier and Reed (1999, 2001) and Frascarelli and Ramaglia (2009).



(32) [RC Mali zui xihuan de] \*(shi) shei ne?

Mary most like DE be who Q

'The person that Mary likes most is who?'

Regardless of the precise syntactic analysis of the relative clause, the fact that a *wh*-argument, irrespective of the availability of *shi*, cannot be followed by the relative clause (see (33)) clearly indicates that *wh*-fronting constructions like (34) cannot be derived from constructions like (32). In other words, pseudoclefts and *wh*-fronting constructions in Mandarin are not derivationally related.

- (33) a. \*Shi shei<sub>i</sub>, [RC Mali zui xihuan ti ne? del SHI who Mary most like DE Q b. \*Shei<sub>i</sub>, [RC Mali zui xihuan ti del ne? DE O who Mary most like
- (34) (Shi) **shei**<sub>i</sub>, Mali zui xihuan t<sub>i</sub> ne? SHI who Mary most like Q 'Who is it that Mary likes most?'

Moreover, as shown in (35), *wh*-adjuncts are not allowed in pseudoclefts in Mandarin. This is additional evidence that *wh*-fronting constructions like (36) cannot be derived from pseudoclefts.

- (35) a. \*[RC Tamen jian-mian de] shi zai nali ne? they see-face DE be at where Q 'The place where they met was where?'
  - b. \*[RC Tamen jian-mian de] shi shenme shihou ne? they see-face DE be what time Q 'The time that they met was when?'
- (36) a. (Shi) zai  $\textbf{nali}_i$ , tamen  $t_i$  jian-guo mian? SHI at where they see-Exp face 'Where was it that they met?'
  - b. (Shi) **shenme shihou**<sub>i</sub>, tamen t<sub>i</sub> jian-guo mian? SHI what time they see-Exp face 'When was it that they met?'

For these two reasons, I contend that É. Kiss's analyses of IdentF constructions shed light on the analysis of *wh*-fronting constructions in Mandarin.

# 4.1.1 Biclausal approach

É. Kiss (1998) proposes that it-clefts in English have a biclausal structure (see also É. Kiss 1999). More specifically, adopting Brody's (1990, 1995) focus theory, which requires the head of FocP to be lexicalized in order to check the [+Focus] feature, É. Kiss postulates that the copula originates in a Foc whose Spec is filled by



the clefted constituent—that is, an IdentF that also contains a [+Focus] feature. In this way, the head of FocP and Spec-FocP can undergo Spec-head agreement, in consonance with the cartographic approach. The head of FocP subcategorizes for a CP in English. After the head of FocP is lexicalized, the copula is raised to the head of IP to undergo Spec-head agreement with the expletive *it* in Spec-IP. The clefted constituent itself is dominated by a higher CP, as schematized in (37).

(37) 
$$\begin{bmatrix} CP \end{bmatrix}_{P} \text{ It } \begin{bmatrix} is \\ FocP \end{bmatrix}_{P} \text{ IdentF } \begin{bmatrix} CP \\ Foc' \end{bmatrix}_{P} \text{ who/that } \begin{bmatrix} CP \\ FocP \end{bmatrix}_{P} \text{ who/that } \begin{bmatrix} CP \\$$

Furthermore, as I will discuss in the next two subsections, É. Kiss proposes that the clefted constituent can be either base-generated in Spec-FocP or moved to Spec-FocP.

4.1.1.1 Base-generation analysis Under the base-generation analysis, the clefted constituent, being an IdentF, is base-generated in Spec-FocP; it is licensed by establishing a predication relation with a corresponding *wh*-operator (Op) in the lower Spec-CP, which is moved from within the lower IP. An example is an *it*-cleft whose clefted constituent is the subject, as in (38).

According to É. Kiss, since movement of the subject to Spec-FocP violates the Empty Category Principle (ECP), the base-generation strategy must be employed. In (38), the clefted subject *me* is licensed by establishing a predication relation with the corresponding *wh*-operator in the lower Spec-CP, which is moved from the subject position within the lower IP.

4.1.1.2 Movement analysis If the clefted constituent is a PP, É. Kiss proposes that it is derived by movement as it cannot be coindexed with an appropriate whoperator. <sup>14</sup> Furthermore, É. Kiss posits that the PP undergoes successive-cyclic movement to Spec-CP before landing in Spec-FocP, as in (39).



That PPs lack an appropriate wh-operator is shown by the deviance of the following example:

<sup>(</sup>i) \* I spoke to a person that Mary spoke.

# 4.1.2 Monoclausal approach

É. Kiss (1998) proposes a monoclausal analysis of Hungarian IdentF constructions. Specifically, É. Kiss posits that, unlike the head of FocP in English *it*-clefts, which subcategorizes for a CP, the head of FocP, whose Spec houses IdentF in Hungarian, subcategorizes for a VP. The FocP is in turn subcategorized by Top, whose Spec is filled by a Topic. In line with Brody's focus theory, the head of FocP is lexicalized by the verb as a result of V-to-Foc movement, as schematized below:

$$(40) \quad [_{TopP} Mari_{j} [_{FocP} \textbf{P\'eterre}_{i} [_{Foc'} szavazott_{k} [_{VP} t_{k} t_{i} t_{j}]]]]$$

'(As for) Mary, it was Peter that she voted on.'

### **4.1.3** *Summary*

In brief, there are two major approaches to IdentF constructions: biclausal and monoclausal. The former can be divided into base-generation and movement analyses; the latter essentially involves a movement analysis. In the next section, I turn to evidence supporting the movement analysis of *wh*-fronting constructions.

### 4.2 Evidence for the movement analysis

Three main sources of evidence support the movement analysis of *wh*-fronting constructions in Mandarin: connectivity effects, locality conditions, and the parasitic gap construction. None of these are discussed by Hoh and Chiang (1990) even though they postulate a movement analysis of *wh*-fronting constructions.

### 4.2.1 Connectivity effects

Wh-fronting constructions exhibit connectivity effects. This is shown by the fact that a wh-phrase containing a wh-argument (41) or a wh-adjunct (42) can undergo reconstruction in compliance with Principle A; hence, the reflexive taziji 'himself' can be bound by the proper name Lisi in these examples.

- (41) (Shi) [na-zhang taziji<sub>i/\*j</sub> de zhaopian]<sub>k</sub>, Lisi<sub>i</sub> kandao-le t<sub>k</sub>? SHI which-Cl himself DE photo Lisi see-Perf 'Which photo of himself<sub>i/\*i</sub> was it that Lisi<sub>i</sub> saw?'
- (42) (Shi) [zai nali pai de taziji $_{i/*j}$  de zhaopian] $_k$ , Lisi $_i$  SHI at where take DE himself DE photo Lisi kandao-le  $t_k$ ? see-Perf 'Which place x such that the photo that himself $_{i/*i}$  took at x was it that

'Which place x such that the photo that himself<sub>i/\*j</sub> took at x was it that Lisi<sub>i</sub> saw?'



Similarly, (43) and (44) show that a *wh*-phrase containing a *wh*-argument or a *wh*-adjunct must undergo reconstruction in accordance with Principle C. This explains why neither the proper name within the *wh*-phrase containing a *wh*-argument in (43) nor the proper name within the *wh*-phrase containing a *wh*-adjunct in (44) can be coindexed with the pronoun.

- (43) (Shi) [na-zhang Lisi<sub>i</sub> de zhaopian]<sub>k</sub>,  $ta*_{i/j}$  kandao-le  $t_k$ ? SHI which-Cl Lisi DE photo he see-Perf 'Which photo of Lisi<sub>i</sub> was it that  $he*_{i/j}$  saw?'
- (44) (Shi) [**zai nali pai de Lisi de zhaopian**]<sub>k</sub>,  $ta_{*i/j}$  kandao-le  $t_k$ ? SHI at where take DE Lisi DE photo he see-Perf 'Which place x such that the photo that Lisi took at x was it that  $he_{*i/i}$  saw?'

Further support for the view that *wh*-fronting constructions exhibit connectivity effects comes from idiom chunks. (45a–b) demonstrate that the idiomatic reading is still available after *wh*-fronting takes place.

(45) a. (Shi) sheide  $t_i$ ? doufui. Lisi bu chi gan SHI Lisi whose tofu dare not 'Who is it that Lisi does not dare to make a pass at?' b. (Shi) sheide dao:. Lisi bu gan kai t<sub>i</sub>? SHI whose Lisi knife not dare open 'Whose operation was it that Lisi did not dare to perform?'

# 4.2.2 Locality conditions

Another important source of evidence supporting the movement analysis is locality conditions. *Wh*-fronting constructions are subject to island constraints as (46) and (47) show that *wh*-fronting constructions are subject to the Complex NP Constraint (see Lin 2005), regardless of whether the fronted *wh*-phrase is a *wh*-argument (46) or a *wh*-adjunct (47).

- (46) \* (Shi) shei<sub>i</sub>/shenme ren<sub>i</sub>/na-ge reni, Lisi conglai SHI who/what person/which-Cl person Lisi never hu kan [piping de wenzhang]? read criticize DE article not 'Who/What person/Which person is it that Lisi has never read the articles that criticize?'
- (Shi) zai nali;/shenme Lisi tingdao [tamen t<sub>i</sub> (47) \*shihoui, jian-guo SHI at where/what time Lisi hear they see-Exp mian de xiaoxi]? face DE news 'Where/When was it that Lisi heard the news that they had met?'



Additional support for the movement analysis comes from adjunct islands. (48) and (49) show that neither *wh*-arguments nor *wh*-adjuncts can be extracted from an adjunct island.

(48)*	(Shi)	shei <sub>i</sub> /shenme	ren <sub>i</sub> /na-ge	ren <sub>i</sub> ,	Lisi		
	SHI	who/what	person/which-Cl	person	Lisi		
	xiangxin	[yinwei laoban	kaichu-le t <sub>i</sub> ],	meige	yuangong dou		
	believe	because boss	fire-Perf	every	employee DOU		
	hen	shengqi?					
	very angry						
	'Who/What person/Which person was it that Lisi believed that every employee was angry because the boss had fired?'						

(49)\* (Shi) nali<sub>i</sub>/shenme shihou<sub>i</sub>, [yinwei Xiaoming t<sub>i</sub> zai SHI where/what time because Xiaoming at danxin? shizong-le], meigeren dou hen disappear-Perf everyone DOU very worried 'Where/When was it that everyone was worried because Xiaoming had disappeared?'

# 4.2.3 Parasitic gaps

The last source of evidence supporting the movement analysis comes from the parasitic gap (PG) construction. As convincingly argued by Ting and Huang (2008), a PG can only be licensed by overt syntactic movement at narrow syntax but not at LF as evidenced by the fact that, in English, a *wh*-phrase must undergo overt *wh*-movement to license a PG, and an in-situ *wh*-phrase cannot (see Engdahl 1983).

- (50) a. Which article<sub>i</sub> did John file  $t_i$  without reading  $pg_i$ ?
  - b. \*John filed which article; without reading pg<sub>i</sub>. (Engdahl 1983, (33))

Based on Lin's (2005) observations that wh-fronting constructions are subject to island constraints (see, for instance, (46)–(49)) and that a wh-phrase can license a PG when it undergoes wh-fronting but an in-situ wh-phrase cannot, as witnessed by the contrast between (51a)/(52a) and (51b)/(52b) below, Ting and Huang propose that PGs in Mandarin are licensed by overt syntactic movement.

(51) a. (Shi) **shei**, Laowang zai huijian  $pg_i$  zhiqian jiu kaichu-le  $t_i$ ? SHI who Laowang at meet before JIU fire-Perf 'Who was it that Laowang fired before meeting?'

(modified from Lin 2005, (5a))

b.\* Laowang zai huijian  $pg_i$  zhiqian jiu kaichu-le shei;? Laowang at meet before JIU fire-Perf who 'Who did Laowang fire before meeting?' (Lin 2005, (2a))



(52) a. (Shi) shenme wenjian<sub>i</sub>, Laowang zai du-guo  $pg_i$ SHI read-Exp what document Laowang at zhihou iiu diudiao-le t:? after Ш throw.away-Perf 'What document was it that Laowang threw away after reading?' (modified from Lin 2005, (5b)) pg<sub>i</sub> zhihou jiu b. \*Laowang zai du-guo Laowang read-Exp after Ш at diudiao-le shenme wenjian<sub>i</sub>? throw.awav-Perf what document 'What document did Laowang throw away after reading?' (Lin 2005, (2b))

Following Ting and Huang's view that overt syntactic movement at narrow syntax is a prerequisite for licensing PGs in Mandarin, the contrast between (51a)–(52a) and (51b)–(52b) strongly favors the movement analysis over the base-generation analysis of *wh*-fronting constructions.

# 4.3 Evidence for the base-generation analysis

Recall that locality conditions are one important source of evidence supporting the movement analysis of *wh*-fronting constructions (see Sect. 4.2.2). An immediate question that arises is whether a base-generation strategy is available to *wh*-fronting constructions to salvage island violations, especially in light of Huang's (1982a, b, 1984, 1989) proposal that Mandarin crucially differs from English in that an empty pronoun (pro or PRO) is available and pro can appear in all argument positions in Mandarin. According to Huang, the distribution of a pro or a PRO is governed by the Generalized Control Rule (GCR), as stated in (53) below.

(53) Generalized Control Rule (GCR)
Coindex an empty pronominal with the closest nominal element.
(Huang 1984, (61))

Indeed, as noted by the anonymous reviewers, there are many examples which suggest that *wh*-fronting constructions seem to be able to violate island constraints. For instance, *wh*-fronting constructions seem to be able to violate sentential subject island (54a), left branch condition (54b), complex NP island (54c), and adjunct island (54d).

(54) a. (Shi) **na-ge xuesheng**<sub>i</sub>, [e<sub>i</sub> canjia zhe-ge SHI which-Cl student participate this-Cl bisai] zui heshi?

competition most appropriate

'Which student is it that it is most appropriate for (him) to participate in this competition?



```
b. (Shi)
           na-ge
                      nanhai,
                                   [ei
                                            baba] hen
                                                                yougian?
   SHI
           which-Cl boy
                                            father very
                                                                rich
   'Which boy is it that (his) father is very rich?'
c. (Shi)
           na-ge
                      xuesheng<sub>i</sub>, [e<sub>i</sub>
                                            chang ge
                                                                de
   SHI
           which-Cl student
                                            sing
                                                                DE
                                                    song
                       haoting?
   shengyin]
              hen
   voice
                very
                       good
   'Which student is it that the voice with which (he) sings is very good?'
d. (Shi)
           na-ge
                      laoshi:.
                                   [vinwei ei
                                                    piping-le
                                                                   Lisil.
   SHI
           which-Cl teacher
                                   because
                                                    criticize-Perf Lisi
   meige xuesheng dou
                                   hen
                                         shengqi?
```

very

'Which teacher was it that every student was angry because

angry

student

(he) had criticized Lisi?'

everv

DOU

Adopting Huang's proposal that pro can occur in all argument positions and that pro is governed by the GCR, I propose that the above examples do not involve genuine island violations. Instead, the *wh*-phrases in the above examples are derived by base-generation and are coindexed with pro in accordance with the GCR. It follows that the empty category (indicated by "e" above) should be treated as a pro. Since the GCR only requires a pro be coindexed with the closest antecedent, i.e., the base-generated *wh*-phrases in the above examples, it can naturally explain why no island violations are observed.

Further evidence for the proposal that a *wh*-phrase can be base-generated and coindexed with a pro governed by the GCR comes from the fact that *wh*-fronting constructions show "subject-object" asymmetry (Huang 1984). In particular, following Huang's formulation of the GCR, which requires a pro be coindexed with the closest antecedent, it correctly predicts that a base-generated *wh*-phrase can be properly coindexed with a pro when the pro is within a subject island but not when it is within an object island, as evidenced by the contrast between (55a) and (55b). Furthermore, it correctly predicts that when an object island containing a pro has undergone object preposing to a position adjacent to a base-generated *wh*-phrase, the pro can be properly coindexed with the *wh*-phrase, as shown in (55c).

- (55) a. (Shi) **na-ge zuozhe**<sub>i</sub>, [pro<sub>i</sub> xie de shu] hen SHI which-Cl author write DE book very changxiao? sell.well
  - 'Which author is it that the book that (he) wrote sells very well?'
  - b.\* (Shi) **na-ge zuozhe**<sub>i</sub>, Lisi tebie xihuan [pro<sub>i</sub> xie SHI which-Cl author Lisi especially like write de shu]?

    DE book

'Which author is it that Lisi especially likes the book that (he) wrote?'



Lisi tebie c. (Shi) na-ge zuozhei. xie de shu]; [pro<sub>i</sub> Lisi especially SHI which-Cl author write DE book xihuan t<sub>i</sub>? like

'Which author is it that the book that (he) wrote Lisi especially likes?'

Apart from coindexing with pro, a *wh*-phrase can employ a base-generation strategy when it is coindexed with a resumptive pronoun inside an island, as evidenced by the fact that complex NP islands (56) as well as adjunct islands (57) are ameliorated by the presence of a resumptive pronoun linked to the *wh*-phrase in *wh*-fronting constructions. <sup>15</sup>

- (56) (Shi) shei<sub>i</sub>/na-ge [piping ren<sub>i</sub>, Lisi conglai kan tai SHI who/which-Cl person Lisi never read criticize him not de wenzhang]? DE. article
  - 'Who<sub>i</sub>/Which person<sub>i</sub> is it that Lisi has never read the articles that criticize him<sub>i</sub>?'
- (57) (Shi) shei,/na-ge Lisi xiangxin [yinwei laoban kaichu-le ren<sub>i</sub>, SHI who/which-Cl person Lisi believe because boss fire-Perf ta:1. meige yuangong dou hen shengai? him every employee DOU very 'Who<sub>i</sub>/Which person<sub>i</sub> was it that Lisi believed that every employee was angry because the boss had fired him;?'

Note that the above examples crucially involve a resumptive pronoun in the object position that is either inside a complex NP island in the object position (56) or an adjunct island (57). Recall that pro is governed by the GCR. If the resumptive pronoun were replaced by pro, the sentences would become ill-formed, as pro would be wrongly coindexed with the closest antecedent, i.e., *Lisi* rather than the *wh*-phrase.

To briefly summarize, a *wh*-phrase in the *wh*-fronting construction can employ a base-generation strategy when it is coindexed with a pro inside an island in accordance with the GCR or when it is linked to a resumptive pronoun inside an

The fact that (56) allows resumption while (i) doesn't can be captured by the relative ranking of island constraints and the constraint on overt inanimate resumptive pronouns, a point that is alluded to in Huang (1999). Specifically, Huang explains the contrast in OT-terms, with the prohibition against an overt inanimate resumptive pronoun ranked above island constraints. Since (i) crucially differs from (56) in that an inanimate resumptive pronoun is used, the prohibition against an overt inanimate resumptive pronoun that is ranked above island constraints correctly predicts that (i) is well-formed without an inanimate resumptive pronoun.



 $<sup>^{15}</sup>$  As pointed out by an anonymous reviewer, examples similar to (56) are acceptable if the *wh*-phrase is replaced by an inanimate *wh*-phrase such as *na-lei huati* 'which topic' and there is no resumptive pronoun inside an island, as shown in (i) below.

<sup>(</sup>i) (Shi) na-lei huati, Lisi conglai bu kan [taolun (\*ta<sub>i</sub>) de wenzhang]? SHI which-kind topic Lisi never not read discuss it DE article 'Which kind of topic is it that Lisi never reads the articles that discuss?'

island. Following our proposal that the wh-phrase in the wh-fronting construction functions as an IdentF (see Sect. 2) and É. Kiss's analysis of IdentF as situated in Spec-FocP (see Sect. 4.1), a base-generated wh-phrase coindexed with a pro inside an island can be visualized in (58a), where the GCR functions to govern the coindexation of pro with the wh-phrase. In contrast, a base-generated wh-phrase linked to a resumptive pronoun inside an island is schematized in (58b).

b. ...[FocPwh-phrase<sub>i</sub> ...[Island ... resumptive pronoun<sub>i</sub> ...]]

### 4.4 Shi as a focus marker

Having established that the fronted wh-phrase in wh-fronting constructions can be derived by movement or base-generation when it is linked to a pro or a resumptive pronoun inside an island, I now turn to the status of shi in wh-fronting constructions. Specifically, building on Huang's (1982a, b) analysis of shi as a focus marker, I argue that shi is best analyzed as a focus marker in wh-fronting constructions.

# 4.4.1 Interpretive properties

The first piece of evidence that *shi* is a focus marker comes from its interpretive properties. As the examples in (59a–e) show, the constituent following *shi* can always be interpreted as an IdentF. Furthermore, as Huang (1988) notes, *shi* can occur in any preverbal position (59a–e), but it cannot appear postverbally (59f) (see also Teng 1979). When *shi* appears preverbally, the IdentF licensed by *shi* can be a subject (59a), a temporal adverb (59b), a locative PP (59c), a verb (59d), or an object (59e).

- (59) a. Shi ta zuotian zai xuexiao da-le Lisi. SHI he yesterday at school hit-Perf Lisi 'It was him that hit Lisi at school yesterday.'
  - b. Ta shi **zuotian** zai xuexiao da-le Lisi. he SHI yesterday at school hit-Perf Lisi 'It was yesterday that he hit Lisi at school.'
  - c. Ta zuotian shi **zai xuexiao** da-le Lisi. he yesterday SHI at school hit-Perf Lisi 'It was at school that he hit Lisi yesterday.'
  - d. Ta zuotian zai xuexiao shi **da-le** Lisi. he yesterday at school SHI hit-Perf Lisi 'It was hitting Lisi that he did at school yesterday.'
  - e. Ta zuotian zai xuexiao shi da-le **Lisi**. he yesterday at school SHI hit-Perf Lisi 'It was Lisi that he hit at school yesterday.'



f. \* Ta zuotian zai xuexiao da-le shi **Lisi**. he yesterday at school hit-Perf SHI Lisi 'It was Lisi that he hit at school yesterday.'

Recall that the fronted wh-phrase can be optionally preceded by shi in wh-fronting constructions and that it is always interpreted as an IdentF (see Sect. 2). Suppose that shi is responsible for licensing IdentF in Mandarin; then it is plausible to posit that shi is selected in the numeration in the formation of wh-fronting constructions and later deleted at PF (see Sect. 4.5.1 below for a more detailed discussion). This hypothesis squares with native-speaker judgments. Apart from acknowledging that there is no interpretive difference between wh-fronting constructions with and without shi (i.e., the fronted wh-phrase is always interpreted as an IdentF based on the diagnostics for IdentFs used in Sect. 2), the native speakers I have consulted unanimously point out that shi is more commonly deleted in fast speech than in normal-rate speech. If this is true, it seems reasonable to postulate that the deletion of shi in wh-fronting constructions is purely a PF phenomenon triggered by the need to match the flow of the conversation.

### 4.4.2 Island constraints

Another piece of evidence for treating *shi* as a focus marker comes from its sensitivity to island constraints. As proposed by Huang (1982b), the focus marker *shi* and its associated IdentF must undergo covert movement; this is supported by the fact that *shi* and its associated IdentF cannot appear within an island, such as a complex NP island (60a–b).

(60) a. \*Wo xiang kan [Zhangsan shi **zuotian** mai de nei-ben I want read Zhangsan SHI yesterday buy DE that-Cl shu].

'I want to read the book that it was yesterday that Zhangsan bought.'

b. \*Wo xiang kan [shi **Zhangsan** zuotian mai de nei-ben I want read SHI Zhangsan yesterday buy DE that-Cl shu].

book

'I want to read the book that it was Zhangsan that bought yesterday.'

Furthermore, neither a *wh*-adjunct nor a *wh*-argument licensed by *shi* can appear in an island, suggesting that *shi* and its associated IdentF must undergo covert movement à la Huang.

(61) a. \*Ni xiang kan [Zhangsan shi **shenme shihou** xie de you want read Zhangsan SHI what time write DE nei-ben shu]?
that-Cl book

'When was x such that you want to read the book that it was at x that Zhangsan wrote?'



b. \*Ni xiang kan [shi shei zuotian mai de nei-ben you want read SHI who yesterday buy DE that-Cl shu]?

book

'Who was x such that you want to read the book that it was x that bought yesterday?'

In addition, recall that wh-fronting constructions with and without shi are subject to island constraints (see Sect. 4.2.2). The fact that in-situ IdentFs licensed by shi are also subject to island constraints provides an additional rationale for treating shi as a focus marker.

In brief, given the similarities between *shi* in non-*wh*-fronting constructions and *shi* in *wh*-fronting constructions in terms of interpretation and sensitivity to island constraints, we can conclude that *shi* should be analyzed as a focus marker in *wh*-fronting constructions in Mandarin.

# 4.5 Syntactic analyses of wh-fronting constructions

### 4.5.1 A movement analysis

Having established that *wh*-fronting constructions in island-free contexts should be accounted for under a movement analysis, in this section I offer a syntactic analysis of this type of *wh*-fronting construction.

Recall the two variants of the movement approach to IdentF constructions reviewed in Sect. 4.1: É. Kiss's (1998) biclausal and monoclausal approaches. An immediate question arises: should *wh*-fronting constructions be analyzed as biclausal or monoclausal? I propose that *wh*-fronting constructions with and without *shi* have a monoclausal structure similar to Hungarian IdentF constructions. One piece of evidence for the monoclausal analysis comes from the fact that Mandarin, similar to Hungarian, only allows a Topic to precede the fronted *wh*-phrase (see the detailed discussion of the fine structure of the left periphery in Mandarin in Sect. 5), as shown below:

- - 'Lisi<sub>i</sub>, where was it that you ran into him<sub>i</sub>/this idiot<sub>i</sub> many times?'
  - b. \* (Shi) **zai nali**<sub>j</sub>, Lisi<sub>i</sub>, ni t<sub>j</sub> pengjian-guo ta<sub>i</sub>/zhe-ge shazi<sub>i</sub>
    SHI at where Lisi you run.into-Exp him/this-Cl idiot henduo ci?
    many time
    - 'Where was it, Lisi, you ran into him,/this idiot, many times?'

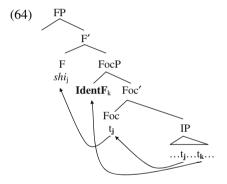


Note that the fact that a Topic must precede a fronted *wh*-phrase is unexpected under a biclausal analysis. This is because, following the fine structure of the left periphery in Mandarin proposed by Del Gobbo and Badan (2007) and Badan and Del Gobbo (2011), the Topic field consisting of a set of contiguous Topic projections is located above the Focus field in the CP domain. If *wh*-fronting constructions have a biclausal structure, one expects that the fronted *wh*-phrase, being an IdentF, can be preceded by the Topics in the Topic field in the higher CP domain and followed by the Topics in the Topic field in the lower CP domain, as shown below:

# (63) [CPTopic field IdentF [CPTopic field ]]

As I shall discuss in Sect. 5, that *wh*-fronting constructions have a monoclausal structure is further corroborated by the investigation of the fine structure of the left periphery, which shows that the fronted *wh*-phrase belongs to the Focus field in the CP domain that is situated above an IP.

Adopting the monoclausal analysis of *wh*-fronting constructions, I propose that *wh*-fronting constructions with *shi* have the following structure:



Specifically, *shi* originates within the same IP as the *wh*-phrase, following Hoh and Chiang (1990). *Shi* is raised to Foc in order to be licensed as a focus marker. This movement thus fulfills the lexicalization requirement of Foc, an assumption consonant with Brody's focus theory and the cartographic approach. Once Foc is filled by *shi*, it triggers movement of the *wh*-phrase to Spec-FocP in order to allow the *wh*-phrase to be licensed as an IdentF in a Spec-head configuration. The movement analysis is supported by the fact that *wh*-fronting constructions are

<sup>&</sup>lt;sup>16</sup> One may ask whether there is any empirical evidence supporting the lexicalization of the head of FocP in Mandarin. While it is difficult to find such evidence for *shi*, given that *shi* always precedes the IdentF (see, e.g., (18)–(19)), Shyu (1995) and Tsai (2004) propose that *dou* in the *lian...dou* construction is realized as the head of FocP, suggesting that lexicalization of Foc could be required in other types of Foci in Mandarin. Another piece of evidence comes from topic structures in Mandarin, as topic markers are located in the head of TopP, according to Paul (2005). A theoretical advantage is that FocP and TopP can be uniformly viewed as requiring Spec-head agreement in Mandarin, which is in line with the cartographic approach (Rizzi 1997, 2004; Cinque 1999; Cinque and Rizzi 2008).



subject to connectivity effects and locality conditions and can license PGs, as shown in Sect. 4.2. In addition, following Tsai (1994a), I assume that the *wh*-phrase is subject to unselective binding and need not undergo further movement. After Spechead agreement, *shi* is raised to the head of a higher FP, which I assume is triggered by the requirement of *shi* to c-command its associated IdentF.<sup>17</sup>

That a focus particle can only be associated with a focused element within its c-command domain was originally observed by Aoun and Li (1993b). In particular, they observed that the focus particle *zhi* 'only' can be associated with the object when it stays in situ but not when the object is topicalized, as illustrated by the contrast below:

(65)	a.	Ta	zhi	xihuan	Mali.	
		he	only	like	Mary	
		'He only likes I	Mary.' (Aoun	and Li 1993b, (	(25b))	
	b. *	Mali <sub>i</sub> ,	ta	zhi	xihuan	t <sub>i</sub> .
		Mary	he	only	like	
		Intended:	'Mary, he on	ly likes.' (Aoun	and Li 1993b.	, (26b))

Similarly, *shi* can only be associated with a *wh*-phrase within its c-command domain, as witnessed by the fact that *shi* can be associated with the *wh*-phrase when it stays in situ but not when it is fronted, as shown by the contrast between (66a–b). In order to allow the fronted *wh*-phrase to be associated with *shi*, *shi* must be fronted, as in (66c).

(66) a. Ta shi xihuan shei?
he SHI like who
'Who does he like?'
b.\* Shei, ta shi xihuan ti?
who he SHI like
Intended: 'Who does he like?'

(i) Shei<sub>i</sub>, ta shi xihuan t<sub>i</sub>, dan bu ai? who he SHI like but not love 'Who does he like but not love?'

The acceptability of (i) is tangential to our discussion, as *shi* is associated with the verb *xihuan* rather than the *wh*-phrase. The same holds for *zhi* 'only', which is well-formed under a contrastive reading, as noted by Aoun and Li (1993b):

(ii) Mali, ta zhi xihuan ti, dan bu ai. Mary he only like but not love 'Mary, he only likes but doesn't love.'



<sup>&</sup>lt;sup>17</sup> I leave open the categorial status of FP for future study.

 $<sup>^{18}</sup>$  Note that one might find (66b) more acceptable under a contrastive reading, where *xihuan* 'like' is contrasted with ai 'love':

c. Shi<sub>j</sub> **shei**<sub>i</sub>, ta t<sub>j</sub> xihuan t<sub>i</sub>? SHI who he like 'Who is it that he likes?'

Given the proposed structure for wh-fronting constructions with shi in (64), one might wonder how wh-fronting constructions without shi are derived. As shown earlier, wh-fronting constructions without shi have the same interpretive and syntactic properties as those with shi (see Sects. 2 and 4.2). In light of these facts, I propose that wh-fronting constructions without shi also have the monoclausal structure schematized in (64). Specifically, like wh-fronting constructions with shi, wh-fronting constructions without shi start with shi being selected in the numeration and base-generated within IP. Shi is then raised to the head of FocP; this movement in turn triggers raising of the wh-phrase to Spec-FocP. After Spec-head agreement, shi is raised to the head of FP in narrow syntax. At PF, shi is deleted, resulting in a wh-fronting construction without shi.

One might wonder why *shi* is subject to PF deletion. One possibility, as suggested by Hoh and Chiang (1990), is that optional deletion of *shi* does not violate the Principle of Recoverability of Deletion (Chomsky 1965). This view is corroborated by the fact that *wh*-fronting constructions with and without *shi* share the same semantic (see Sect. 2) and syntactic properties (see Sects. 4.2–4.3); hence, deletion of *shi* at PF will not violate the Principle of Recoverability of Deletion. <sup>19</sup> The same line of reasoning can be extended to account for the optionality of topic markers in Mandarin (see, e.g., Li and Thompson 1981, Chap. 4). The optionality of the topic marker suggests that a Topic is unambiguously interpreted as such whether a topic marker is present or not; hence, deletion of topic markers at PF does not violate the Principle of Recoverability of Deletion.

### 4.5.2 A base-generation analysis

Besides being accommodated by the movement analysis, recall from Sect. 4.3 that a *wh*-phrase linked to a pro or a resumptive pronoun inside an island is derived by base-generation. Specifically, the base-generated *wh*-phrase linked to a pro is governed by the GCR, which requires the pro be coindexed with the closest antecedent, i.e., the *wh*-phrase, as illustrated below:

(67) a. (Shi) na-ge xuesheng<sub>i</sub>, [pro<sub>i</sub> canjia zhe-ge bisai]

SHI which-Cl student participate this-Cl competition

zui heshi?

most appropriate

'Which student is it that it is most appropriate for (him) to participate in this competition?

<sup>&</sup>lt;sup>19</sup> Note that the optionality of the focus marker is not idiosyncratic to Mandarin; rather, it is attested in a wide range of languages of different genetic affiliations. See, for instance, Cheung (2010) on Cantonese, Zerbian (2007) on Northern Sotho (Bantu), Hartmann and Zimmermann (2007) on Hausa (Chadic), Van der Wal (2009) on Makhuwa (Bantu), and Fiedler et al. (2010) on a range of West African languages from different families (Kwa, Gur, Chadic).

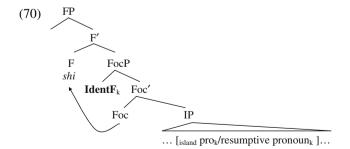


- b. (Shi) **na-ge nanhai**<sub>i</sub>, [pro<sub>i</sub> baba] hen youqian? SHI which-Cl boy father very rich 'Which boy is it that (his) father is very rich?'
- c. (Shi) **na-ge xuesheng**<sub>i</sub>, [pro<sub>i</sub> chang ge de shengyin]
  SHI which-Cl student sing song DE voice
  hen haoting?
  very good
  - 'Which student is it that the voice with which (he) sings is very good?'
- d. (Shi) na-ge laoshi, [vinwei pro; piping-le Lisi], SHI which-Cl teacher because criticize-Perf Lisi meige xuesheng dou hen shengai? every student DOU very angry 'Which teacher was it that every student was angry because (he) had criticized Lisi?'

In addition, a base-generated *wh*-phrase can be linked to a resumptive pronoun inside the island, as shown in (56) and (57) (repeated here as (68) and (69)).

- (68) (Shi) **shei**<sub>i</sub>/**na-ge ren**<sub>i</sub>, Lisi conglai bu kan [piping ta<sub>i</sub> de SHI who/which-Cl person Lisi never not read criticize him DE wenzhang]? article 'Who<sub>i</sub>/Which person<sub>i</sub> is it that Lisi has never read the articles that criticize
  - 'Who<sub>i</sub>/Which person<sub>i</sub> is it that Lisi has never read the articles that criticize him<sub>i</sub>?'
- (69) (Shi) shei/na-ge Lisi xiangxin [yinwei laoban kaichu-le reni. who/which-Cl SHI person Lisi believe because boss fire-Perf tail. meige yuangong dou hen shengqi? him every employee DOU very angry 'Who<sub>i</sub>/Which person<sub>i</sub> was it that Lisi believed that every employee was angry because the boss had fired him;?'

In light of our proposal for *wh*-fronting constructions in (64), I propose that *wh*-fronting constructions derived by base-generation have the following structure:





Crucially, unlike wh-fronting constructions derived by movement (see (64)), shi is assumed to be base-generated in the head of FocP in (70). This is because the occurrence of shi within an island is forbidden, as evidenced by the ill-formedness of (60) and (61) (see Sect. 4.4.2). Furthermore, the wh-phrase is base-generated in Spec-FocP, undergoing Spec-head agreement with shi in the head of FocP. After Spec-head agreement, shi is raised to the head of FP. As mentioned earlier, if the base-generated wh-phrase is linked to a pro inside an island, it is governed by the GCR. Alternatively, it can be linked to a resumptive pronoun inside an island.

As for *wh*-fronting constructions without *shi* that are linked to a pro or a resumptive pronoun inside an island, I propose that they have the same structure in (70), assuming that *shi* is subject to deletion at PF after being raised to the head of FP in narrow syntax.  $^{20}$ 

### 5 The topography of Topics and Foci in Mandarin

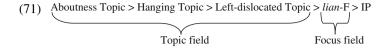
In this section, I turn to investigate the fine structure of the left periphery in Mandarin, aiming to provide further evidence for the monoclausal analysis by showing that the fronted *wh*-phrase, being an IdentF, is located in the CP domain above an IP. The investigation will also shed new light on the Focus field and have significant implications for the two lines of research on the distribution of Topics and Foci (i.e., Rizzi 1997, 2004 vs. Benincà and Poletto 2004).

### 5.1 Previous studies of the left periphery of Mandarin

Previous studies of the left periphery of Mandarin reveal that Topics and Foci are ordered hierarchically (Del Gobbo and Badan 2007; Badan and Del Gobbo 2011; see also Paul 2005; Badan 2007). In particular, based on a detailed investigation of the syntactic properties and ordering restrictions among different types of Topics and Foci along the lines of Benincà and Poletto (2004) (see also Benincà 2001), Del Gobbo and Badan (2007) and Badan and Del Gobbo (2011) propose (71) as the fine structure of the left periphery in Mandarin.

<sup>&</sup>lt;sup>20</sup> Given that Hoh and Chiang's (1990) study was the first to analyze *wh*-fronting constructions in Mandarin as involving focalization, one might wonder in what ways their analysis differs from the one advanced here. First, as mentioned in Sect. 1, I adopt the cartographic approach here, while Hoh and Chiang couch their analysis in the Government-Binding framework. In terms of the syntactic analysis, while the two analyses share the view that *wh*-fronting constructions can be derived by movement, the landing sites are different. Specifically, Hoh and Chiang propose that the fronted *wh*-phrase is adjoined to IP whereas I propose that the landing site of the fronted *wh*-phrase is Spec-FocP, along the lines of the cartographic approach. In addition, unlike Hoh and Chiang, who take movement as the *only* derivational strategy available to *wh*-fronting constructions, I have shown that *wh*-fronting constructions linked to a pro or a resumptive pronoun in island contexts can be derived by base-generation.





As (71) shows, the topography of Topics and Foci in Mandarin has two salient features. First, the CP domain above the IP can be split into two *fields*, with the Topic field located above the Focus field. Second, the inventory of Topics is richer than that of Foci: the Topic field hosts three types of Topics—Aboutness Topic (AT), Hanging Topic (HT), and Left-dislocated Topic (LD)—whereas the Focus field hosts only *lian* 'even'-Focus (*lian*-F). Examples of each type of Topic and Focus are given in (72)–(75), based on examples in Del Gobbo and Badan (2007) and Badan and Del Gobbo (2011).

- (72) a. Hua (a), wo zui xihuan meiguihua. (AT) flower TM I most like rose '(Among) flowers, I like roses most.'
  - b. Nei-ke shu, yezi da.
    that-Cl tree leaf big
    'That tree, the leaves are large.' (Badan and Del Gobbo 2011, (51))
- (73) [DP Lisi]i, Mali bu xihuan tai/zhe-ge shazii. (HT)
  Lisi Mary not like him/this-Cl idiot
  'Lisii, Mary does not like himi/this idioti.'
- (74) a. [DP Lisi]i, Mali bu xihuan ti. (LD)
  Lisi Mary not like
  'Lisi, Mary does not like.'
  - b. [PP Cong zhe-jia yinhang]i, women ti keyi ti ta jiedao from this-Cl bank we can for him borrow henduo qian.

    much money

    'From this bank, we can borrow a lot of money for him.'
- (75) a. Lian zhe-ben shu<sub>i</sub>, Zhangsan dou/ye mai-le t<sub>i</sub>. (*lian-F*) even this-Cl book Zhangsan DOU/also buy-Perf 'Even this book, Zhangsan also bought.'
  - b. Lian Zhangsan<sub>i</sub>, Mali dou bu xihuan ta<sub>i</sub>.

    even Zhangsan Mary DOU not like him
    'Even Zhangsan<sub>i</sub>, Mary doesn't like him<sub>i</sub>.'

As (72a–b) show, an AT differs from an HT and an LD in that it is not syntactically related to the rest of the sentence through linking to a gap, a pronoun, or an epithet. Furthermore, an AT may show a part-whole (72a) or possessive (72b) relation, according to Badan and Del Gobbo (2011). As for HTs and LDs, whereas the former can only be manifested as a DP and must be linked to a resumptive pronoun or an epithet (see (73)), the latter can be manifested as a DP or a PP and can be linked to a gap only (see (74)). As for *lian*-F, it can be linked to a gap (75a) or a resumptive pronoun (75b).



# 5.2 The syntactic position of IdentF and the fine structure of the left periphery

Following the proposal that *wh*-fronting constructions have a monoclausal structure (64), one expects that the fronted *wh*-phrase, being an IdentF, can co-occur with the different types of Topics and *lian* 'even'-Focus in the CP domain. Furthermore, following Del Gobbo and Badan (2007) and Badan and Del Gobbo's (2011) proposal that different types of Topics and Foci are subject to ordering restrictions and that the Topic field is located above the Focus field in the left periphery (71), we expect that the fronted *wh*-phrase, being an IdentF, is subject to ordering restrictions and should be located in the Focus field. These expectations are fulfilled. As shown below, an AT, an HT, and an LD must precede the fronted *wh*-phrase, suggesting that it must be located below the Topic field:

# (76) AT > IdentF

- a. Hua, (shi) **na-zhong hua**<sub>i</sub>, Mali zui xihuan t<sub>i</sub>? flower SHI which-kind flower Mary most like '(As for) flowers, which kind of flower is it that Mary likes most?'
- b. \* (Shi) **na-zhong hua**i, hua, Mali zui xihuan t<sub>i</sub>? SHI which-kind flower flower Mary most like 'Which kind of flower, (as for) flowers, Mary likes most?'

### (77) HT > IdentF

- nali<sub>i</sub>, [DP Lisi]i, (shi) a. zai ni  $t_i$ Lisi SHI where you at pengjian-guo ta;/zhe-ge henduo ci? shazi<sub>i</sub>. run.into-Exp him/this-Cl idiot Many time 'Lisi;, where was it that you ran into him;/this idiot; many times?'
- b. \* (Shi) zai nali<sub>i</sub>,  $[_{DP} Lisi]_i$ ni  $t_i$ SHI at where Lisi you ta<sub>i</sub>/zhe-ge henduo ci? pengjian-guo shazi<sub>i</sub>. run.into-Exp him/this-Cl idiot many time 'Where was it, Lisi, you ran into him<sub>i</sub>/this idiot<sub>i</sub> many times?'

### (78) LD>IdentF

- - 'At school, which class is it that Lisi doesn't want to teach?'
- b.\* (Shi) [PP zai xuexiao-li]i, na vi ban<sub>i</sub>, SHI which one class at school-in Lisi ti bu xiang jiao t<sub>i</sub>? Lisi want teach not

'Which class is it, at school, Lisi doesn't want to teach?'

As for the Focus field, IdentF must precede *lian*-F, as the contrast between (79a) and (79b) shows (data from Dylan Tsai, p.c.).

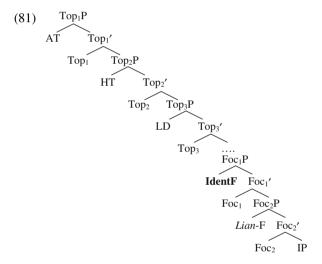


### (79) IdentF > lian-F

- a. (Shi)  $shei_j$ , lian [zhe-ben shu]<sub>i</sub> Lisi  $t_i$  dou bu ken gei  $t_j$ ? SHI who even this-Cl book Lisi DOU not willing give 'Who is it that even this book, Lisi is not willing to give?'
- b.\* Lian [zhe-ben shu]<sub>i</sub>, (shi) **shei**<sub>j</sub>, Lisi t<sub>i</sub> dou bu ken gei t<sub>j</sub>? even this-Cl book SHI who Lisi DOU not willing give 'Even this book, who is it that Lisi is not willing to give?'
- (80) summarizes the linear ordering of different types of Topics and Foci available in the CP domain in Mandarin.

(80) 
$$AT > HT > LD > IdentF > lian-F > IP$$

Given (80), I propose (81) as the fine structure of the left periphery in Mandarin. Since we have already seen that Topics and Foci are subject to ordering restrictions, I add the subscripts to the TopPs and FocPs in (81) in order to differentiate different types of Topics and Foci.



The topography of Topics and Foci schematized in (81) has three implications. First, given that the fronted *wh*-phrase occupies a position distinct from an AT, an HT, and an LD, (81) provides additional support for my proposal that the fronted *wh*-phrase, being an IdentF, must be distinguished from all types of Topics in Mandarin. Second, the fact that the fronted *wh*-phrase is located in the CP domain above an IP corroborates the monoclausal analysis of *wh*-fronting constructions. Third, the topography has significant implications for two prominent lines of research aiming to determine the positions of Topics and Foci in the left periphery. The first line of research is initiated by Rizzi (1997, 2004), who proposes that Topic constitutes a set of recursive projections that can occur above and below a single Focus projection, as shown in (82) (adapted from Rizzi 2004:242; recursion is indicated by "\*").



# (82) Force Top\* Foc Mod\* Top\* Fin IP

The second line of research is championed by Benincà and Poletto (2004), who argue that recursion of TopPs as proposed by Rizzi is not an option, by showing that there is a one-to-one mapping between syntactic positions and pragmatic functions for different types of Topics and Foci. Having examined the syntactic properties and ordering restrictions among different types of Topics and Foci in standard and nonstandard varieties of Italian, Benincà and Poletto propose that Topic and Focus are best analyzed as two *separate* fields, each comprising a finite set of distinct Topics and Foci, respectively, as shown in (83) (see also Benincà 2001).

In line with the previous studies on the left periphery of Mandarin (see, in particular, Del Gobbo and Badan 2007 and Badan and Del Gobbo 2011), the topography of Topics and Foci in (81) provides additional support for Benincà and Poletto's proposal that different types of Topics and Foci occupy distinct syntactic positions, contrary to Rizzi's view that Topic should be taken as a set of recursive projections. Furthermore, by considering the *wh*-phrase in *wh*-fronting constructions as an IdentF (a claim for which independent evidence was provided in Sect. 2), we now have a more solid basis for postulating a Focus field that should host more than one type of Focus (i.e., IdentF and *lian*-F) à la Benincà and Poletto, contrary to Rizzi's proposal that only one FocP is available in the left periphery. Significantly, our findings further corroborate Benincà and Poletto's proposal that Topic and Focus constitute two separate fields, with the Topic field located above the Focus field, as visualized below:

(84) 
$$AT > HT > LD > IdentF > lian-F > IP$$
Topic field Focus field

### 6 Conclusions

This study has investigated in depth the semantic and syntactic properties of wh-fronting constructions in Mandarin. Adopting the cartographic approach, which holds that Topic and Focus occupy two separate functional projections, the study has resolved the long-standing debate over the syntactic status of wh-fronting constructions by showing that they are best analyzed as a type of IdentF construction rather than as a type of topic structure as most previous studies have claimed. Drawing on evidence from connectivity effects, locality conditions, ability to license PGs, and the distributional pattern of the focus marker shi, I have argued



that wh-fronting constructions in island-free contexts essentially have a monoclausal structure in which the wh-phrase is derived by movement to Spec-FocP. Wh-fronting constructions in island contexts, I have proposed, are best analyzed in terms of base-generation, where the wh-phrase can be linked to a pro governed by the GCR or a resumptive pronoun.

Finally, an investigation of the fine structure of the left periphery in Mandarin has further corroborated my proposal that the fronted *wh*-phrase, being an IdentF, must be differentiated from other types of Topics and Foci available in Mandarin. This investigation has also shed new light on the two lines of research on the distribution of Topics and Foci. Crucially, building on Del Gobbo and Badan (2007) and Badan and Del Gobbo (2011), our findings provide a solid basis for construing Focus as a field à la Benincà and Poletto (2004), which consists of IdentF and *lian*-Focus. This challenges Rizzi's (1997, 2004) view that there is only one FocP available in the left periphery. Furthermore, our investigation has revealed that the CP domains in Mandarin and Italian essentially share the same structure—that is, they can be split into two parts with the Topic field located above the Focus field.

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### References

Akmajian, Adrian. 1970. On deriving cleft sentences from pseudo-cleft sentences. *Linguistic Inquiry* 1: 149–168.

Aoun, Joseph, and Y.-H. Audrey Li. 1993a. Syntax of scope. Cambridge, MA: MIT Press.

Aoun, Joseph, and Y.-H. Audrey Li. 1993b. Wh-elements in situ: Syntax or LF. Linguistic Inquiry 24: 199–238.

Authier, J. Marc, and Lisa Reed. 1999. On some syntactic conditions on presuppositions. In *Proceedings* of the 27th western conference on linguistics, vol.10, ed. Elly van Gelderen and Vida Samiian, 27–40. Fresno: California State University

Authier, J. Marc, and Lisa Reed. 2001. Syntactically-triggered presuppositions. *Linguistic Analysis* 30: 1–23.



- Badan, Linda. 2007. High and low periphery: A comparison between Italian and Chinese. Ph.D. dissertation, Università di Padova.
- Badan, Linda, and Francesca Del Gobbo. 2011. On the syntax of topic and focus in Chinese. In *Mapping the left periphery*, ed. Paola Benincà, and Nicola Munaro, 63–90. Oxford: Oxford University Press.
- Benincà, Paola. 2001. The position of Topic and Focus in the left periphery. In *Current studies in Italian syntax: Essays offered to Lorenzo Renzi*, ed. Guglielmo Cinque, and Giampaolo Salvi, 39–64. Amsterdam: Elsevier-North Holland.
- Benincà, Paola, and Cecilia Poletto. 2004. Topic, Focus and V2: Defining the CP sublayers. In *The structure of CP and IP: The cartography of syntactic structures*, vol. 2, ed. Luigi Rizzi, 52–75. Oxford: Oxford University Press.
- Brody, Michael. 1990. Some remarks on the focus field in Hungarian. In *UCL working papers in linguistics*, vol. 2, 201–225. London: University College London.
- Brody, Michael. 1995. Focus and checking theory. In *Approaches to Hungarian: Levels and structures*, vol. 5, ed. István Kenesei, 29–44. Szeged: JATE.
- Cheng, Lisa L.-L. 2008. Deconstructing the *shi* ... *de* construction. *The Linguistic Review* 25: 235–266. Cheung, C.-H. Candice. 2008. *wh*-fronting in Chinese. Ph.D. dissertation, University of Southern California.
- Cheung, C.-H. Candice. 2010. On the fine structure of left periphery: the positions of topic and focus in Cantonese. Paper presented at the 18th Annual Meeting of the International Association of Chinese Linguistics(IACL-18) and the 22nd North American Conference on Chinese Linguistics (NACCL-22), Harvard University, MA.
- Cheung, C.-H. Candice. 2012. The focus nature of wh-fronting constructions in Mandarin. Hanyu Xuebao [Chinese Linguistics] 38(2): 25–34.
- Chomsky, Noam. 1965. Aspects of the theory of syntax. Cambridge, MA: MIT Press.
- Chomsky, Noam. 1977. On wh-movement. In Formal syntax, ed. Peter W. Culicover, Thomas Wasow, and Adrian Akmajian, 71–132. New York: Academic Press.
- Cinque, Guglielmo. 1999. Adverbs and functional heads: A cross-linguistic perspective. Oxford: Oxford University Press.
- Cinque, Guglielmo, and Luigi Rizzi. 2008. The cartography of syntactic structures. In *Studies in linguistics: CISCL working papers on language and cognition*, vol. 2, ed. Vincenzo Moscati, 43–59. Siena: Università Degli Studi Di Siena.
- Del Gobbo, Francesca, and Linda Badan. 2007. On the left periphery of Chinese. Paper presented at the 15th annual meeting of the International Association of Chinese Linguistics (IACL-15) and 19th annual North American conference on Chinese linguistics (NACCL-19), Columbia University, New York.
- É. Kiss, Katalin. 1998. Identificational focus versus information focus. Language 74: 245–273.
- É. Kiss, Katalin. 1999. The English cleft construction as a Focus Phrase. In *Boundaries of morphology* and syntax, ed. Lunella Mereu, 217–229. Amsterdam: John Benjamins.
- Emonds, Joseph. 1976. A transformational approach to English syntax. New York: Academic Press.
- Engdahl, Elisabet. 1983. Parasitic gaps. Linguistics and Philosophy 6: 5-34.
- Fiedler, Ines, Katharina Hartmann, Brigitte Reineke, Anne Schwarz, and Malte Zimmermann. 2010. Subject focus in West African languages. In *Information structure: Theoretical, typological, and experimental perspectives*, ed. Malte Zimmermann, and Caroline Féry, 234–257. Oxford: Oxford University Press.
- Frascarelli, Mara, and Francesca Ramaglia. 2009. (Pseudo)cleft constructions at the interfaces. Lingbuzz. http://ling.auf.net/lingBuzz/000841. Accessed 28 June 2010.
- Hartmann, Katharina, and Malte Zimmermann. 2007. In place—out of place? Focus in Hausa. In On information structure, meaning and form, ed. Kerstin Schwabe, and Susanne Winkler, 365–403. Amsterdam: John Benjamins.
- Hoh, Pau-San, and Wen-Yu Chiang. 1990. A focus account of moved *wh*-phrases at S-structure in Chinese. *Lingua* 81: 47–73.
- Huang, C.-T. James. 1982a. Logical relations in Chinese and the theory of grammar. Ph.D. dissertation, MIT.
- Huang, C.-T. James. 1982b. Move *wh* in a language without *wh* movement. *The Linguistic Review* 1: 369–416.
- Huang, C.-T. James. 1984. On the distribution and reference on empty pronouns. *Linguistic Inquiry* 15: 531–574.



- Huang, C.-T. James. 1988. Shuo shi he you [On 'be' and 'have' in Chinese]. The Bulletin of the Institute of History and Philology 59: 43–64.
- Huang, C.-T. James. 1989. Pro drop in Chinese: A generalized control approach. In *The null subject parameter*, ed. Osvaldo Jaeggli, and Kenneth J. Safir, 185–214. Dordrecht: D. Reidel.
- Huang, C.-T. James. 1999. Chinese passives in comparative perspective. Tsing Hua Journal of Chinese Studies 29: 423–509.
- Huang, C.-T. James, Y.-H. Audrey Li, and Yafei Li. 2009. *The syntax of Chinese*. Cambridge: Cambridge University Press.
- Kuong, Io-Kei. 2006. Clausal peripheries and resumptives: A cross-linguistic study of topic-comment structures. Ph.D. dissertation, Georgetown University.
- Li, Charles N., and Sandra A. Thompson. 1981. *Mandarin Chinese: A functional reference grammar*. Berkeley: University of California Press.
- Li, J.-I. Jelina. 1996. Preverbal NP positions in Mandarin Chinese. Ph.D. dissertation, University of Arizona.
- Lin, Jonah. 2005. Does wh-in-situ license parasitic gaps? Linguistic Inquiry 36: 298–302.
- Matthews, Stephen, and Virginia Yip. 1994. *Cantonese: A comprehensive grammar*. London: Routledge. Matthews, Stephen, and Virginia Yip. 2011. *Cantonese: A comprehensive grammar*, 2nd ed. London: Routledge.
- Meinunger, André. 1998. A monoclausal structure for (pseudo-)cleft sentences. In *Proceedings of the North East Linguistic Society* 28, vol. 1, ed. Pius N. Tamanji, and Kiyomi Kusumoto, 283–298. Amherst: University of Massachusetts.
- Pan, J.-N. Victor. 2006. Wh-topicalization and wh-in-situ in Mandarin Chinese. Paper presented at the 20th Paris meeting on East Asian Linguistics, CRLAO, École des Hautes Études en Sciences Sociales, Paris.
- Pan, J.-N. Victor. 2011. ATB-topicalization in Mandarin Chinese: An intersective operator analysis. Linguistic Analysis 37: 231–272.
- Paul, Waltraud. 2005. Low IP and left periphery in Mandarin Chinese. *Recherches Linguistiques de Vincennes* 33: 111–134.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar: A handbook of generative syntax*, ed. Liliane Haegeman, 281–337. Dordrecht: Kluwer.
- Rizzi, Luigi. 2004. Locality and the left periphery. In *Structures and beyond: The cartography of syntactic structures*, vol. 3, ed. Adriana Belletti, 223–251. Oxford: Oxford University Press.
- Rochemont, Michael. 1986. Focus in generative grammar. Amsterdam: John Benjamins.
- Shyu, Shu-Ing. 1998. Syntactic wh-movement in Mandarin Chinese? In *Proceedings of the 10th North American Conference on Chinese Linguistics (NACCL-10)*, vol. 1, 239–256. Los Angeles: University of Southern California.
- Szabolcsi, Anna. 1994. All quantifiers are not equal: The case of focus. *Acta Linguistica Hungarica* 42: 171–187.
- Teng, Shou-Hsin. 1979. Remarks on cleft sentences in Chinese. *Journal of Chinese Linguistics* 7: 101–113.
- Ting, Jen, and Yu-Chi Huang. 2008. Some remarks on parasitic gaps in Chinese. *Concentric: Studies in Linguistics* 34: 27–52.
- Tsai, W.-T. Dylan. 1992. A note on *zenmeyang* [how] family. In *Proceedings of the third international symposium on Chinese languages and linguistics*, ed. Samuel Wang, and Feng-fu Tsao, 150–161. Taiwan: National Tsing Hua University.
- Tsai, W.-T. Dylan. 1994a. On economizing the theory of A-bar dependency. Ph.D. dissertation, MIT.
- Tsai, W.-T. Dylan. 1994b. On nominal islands and LF extraction in Chinese. *Natural Language and Linguistic Theory* 12: 121–175.
- Tsai, W.-T. Dylan. 1997. A note on wh-adjunct asymmetries. In Chinese languages and linguistics: Morphology and lexicon, vol. 3, ed. Feng-fu Tsao, and Samuel Wang, 469–493. Taipei: Academia Sinica.
- Tsai, W.-T. Dylan. 1999. The hows of *why* and the whys of *how*. In *UCI working papers in linguistics*, vol. 5, ed. Francesca Del Gobbo, and Hidehito Hoshi, 155–184. Irvine: University of California.
- Tsai, W.-T. Dylan. 2004. Tan *zhi* yu *lian* de xingshi yuyi [On the formal semantics of *only* and *even* in Chinese]. *Zhongguo Yuwen* [Chinese Language] 2: 99–111.
- Tsai, W.-T. Dylan. 2008. Left periphery and *how-why* alternations. *Journal of East Asian Linguistics* 17: 83–115.



- Tsai, W.-T. Dylan. 2011. Cong 'zhe hua cong he shuo qi?' shuo qi [On atypical wh-expressions in Chinese]. In *Yuyanxue Luncong*, vol. 43, 194–208. Beijing: Commercial Press.
- Van der Wal, Jenneke. 2009. Word order and information structure in Makhuwa-Enahara. Ph.D. dissertation, Leiden University.
- Wang, C.-A. Arthur, and H.-H. Iris Wu. 2006. Sluicing and focus movement in *wh*-in situ languages. In *Penn working papers in linguistics*, vol. 12.1, ed. Aviad Eilam, Tatjana Scheffler, and Joshua Tauberer, 375–387. Philadelphia: University of Pennsylvania.
- Wu, Jianxin. 1999. Syntax and semantics of quantification in Chinese. Ph.D. dissertation, University of Maryland, College Park.
- Xu, Liejiong. 2004. Manifestation of informational focus. Lingua 114: 277–299.
- Xu, Liejiong, and D. Terence Langendoen. 1985. Topic structures in Chinese. Language 61: 1-27.
- Zerbian, Sabine. 2007. Subject/object-asymmetry in northern Sotho. In *On information structure, meaning and form*, ed. Kerstin Schwabe, and Susanne Winkler, 323–343. Amsterdam: John Benjamins.
- Zubizarreta, M. Luisa, and Jean-Roger Vergnaud. 2006. Phrasal stress and syntax. In *The Blackwell companion to syntax*, vol. 3, ed. Martin Everaert, and Henk van Riemsdijk, 522–568. Oxford: Blackwell.

