

EVALUATIVE ADVERBS IN MANDARIN WH-QUESTIONS

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1. Introduction

Evaluative adverbs (EAs), such as *haozai* 'luckily', *xingkui* 'fortunately' and *jingran* 'unexpectedly' in Mandarin Chinese (henceforth Mandarin) are defined to express speaker's judgments on the proposition or the fact (Palmer 1986; Hoyer 1997; Cinque 1999; Tang 2000). EAs in Mandarin could be listed as following, regarding to the morphological suffix *-de*.¹

(1)

(a) with identical suffix	(b) without identical suffix
<i>xingyunde</i> 'luckily'	<i>xingkui</i> 'fortunately'
<i>buxingde</i> 'unfortunately'	<i>xinghao</i> 'fortunately'
<i>churenylaode</i> 'unexpectedly'	<i>fanzheng</i> 'at least'
<i>lingrenyiwaide</i> 'unexpectedly'	<i>haozai</i> 'luckily'
<i>momingqimiaode</i> 'inexplicable'	<i>juran</i> 'unexpectedly'
.....	<i>jingran</i> 'unexpectedly'
	<i>kexi</i> 'it's pity that...'
	<i>haihao</i> 'not-bad'
	<i>pianpian</i> 'contrarily'

Starting from the distributions of EAs, I am going to clarify why EAs are so differential from other kinds of adverbs, such as *daodi* 'the hell':

- (2) a. Weisheme Zhangsan canjia-le huiyi ?
 why Zhangsan attend-LE meeting
 'Why did Zhangsan attend the meeting?'

¹ In Mandarin, the adverbial suffix *-地* can be pronounced either as *-de* or *-di*, when it attaches to adverbs. Regardless of the dialectal disputes, I consistently mark with *-de* in this paper.

- b. **Daodi** weisheme Zhangsan canjia-le huiyi ?
 the hell why Zhangsan attend-LE meeting
 'Why the hell did Zhangsan attend the meeting?'
- c. ***Haozai** weisheme Zhangsan canjia-le huiyi ?
 luckily why Zhangsan attend-LE meeting
- (3) a. Lisi ai-shang-le shei?
 Lisi loved who
 'Who did Lisi fall in love with?'
- b. **Daodi** Lisi ai-shang-le shei?
 the hell Lisi loved who
 'Who the hell did Lisi fall in love with?'
- c. **Kanlai** Lisi ai-shang-le shei.
 seemingly Lisi loved who
 'Lisi seems to have fallen in love with somebody.' (Xu 1990:358)
- d. ***Xingkui** Lisi ai-shang-le shei ?/.
 fortunately Lisi loved who?

When *daodi* 'the hell' occurs at the beginning in (2b) and (3b), the sentence are grammatical, expressing questions with strong emphasis on the answers. Following Kuo (1997), *daodi* should be interpreted as "the hell", preceding wh-phrases in wh-questions, and as 'after all' in non-wh-questions. As to *kanlai* 'seemingly' in (3c), Xu (1990) considers it as a modal, and the whole sentence should be interpreted with indefinite reading. However, these situations would be totally different when EAs occur. Once *haozai* 'luckily' and *xingkui* 'fortunately' occur in the sentences, both (2c) and (3d) become ungrammatical.

However, these effects do not take place when wh-questions are initialized with another type of EAs in (1):

- (4) **Lingrenyiwaide**, weisheme Zhangsan qu-le Riben ? unexpectedly why
 Zhangsan went Japan
 'Why did Zhangsan unexpectedly went to Japan?'
- (5) **Xingyude**, ta ai-shang-le shei?
 luckily he loved who
 'Who did he luckily fall in love with?'

Focusing on the interaction between EAs and wh-phrases in questions found in Mandarin, I propose two main issues composed of four questions dealing with these phenomena:

- (6) The properties of EAs and their relations with other elements in Mandarin
 What kinds of influences would they make on wh-phrases?
 Why can they determine the grammaticality of the whole sentence?
- (7) Sub-classification of EAs in Mandarin
 Are they all derived from corresponding adjectives? Does any difference occur among them?
 How do the differences affect their interactions with wh-phrases?

At the beginning, we need to consider the specific semantic property of EAs, which results in the contrasts in (2) and (3) above. The syntactic distributions of EAs would then be discussed, based on Cinque's (1999) universal hierarchy of adverbs, as well as on Rizzi's (2004) split CP structure. Relativized Minimality, adjusted by Rizzi (2004) can properly predicate the behaviors of adverbs in Mandarin. With slightly different from Rizzi's predictions, some EAs in Mandarin contain different features, which results in the ungrammaticality displayed in (2c) and (3c).

2. Characteristic properties of EAs

2.1 Semantic properties of EAs

In general, adverb is just a syntactic category, while adverbials refer to expressions that modify verbs or “sentential” objects (Ernst 2002). Following Jackendoff (1972) and Ernst (2002), EAs should be regarded as speaker-oriented adverbs, belonging to the same group with speech-act adverbs ‘*frankly*’ and epistemic adverbs ‘*obviously*’:²

- (8) **predicational**—composed of an adverb and its argument.
 speaker-oriented: *frankly, maybe, luckily, obviously*
 subject-oriented: *deliberately, stupidly*
 exocomparative: *similarly*
 event-internal: *tightly, partially*

(Ernst 2002:9)

According to (8) above, EAs are classified as predicational adverbials, since EAs are sensitive to the following propositions, and presuppose the truth of that propositions or events:

- (9) a. Tingshuo Lisi canjia-le huiyi. (epistemic adverb)
 allegedly Lisi participated meeting
 ‘Allegedly, Lisi participated the meeting.’

² In Bellert’s (1977) classification, EAs, domain adverbs, pragmatic adverbs, modal adverbs and *perhaps* are grouped as predicational adverbs.

- b. Xingkui Lisi canjia-le huiyi. (evaluative adverb)
 fortunately Lisi participated meeting
 ‘It is fortunate that, Lisi has participated the meeting.’
- c. Wo houhui canjia-le huiyi. (factive verb)
 I regret participated meeting
 ‘I regretted participating the meeting.’

As the addressees of (9a), we are not exactly sure whether Lisi did or did not participate in the meeting. But the event in (9b) that Lisi has taken part in a meeting could definitely be interpreted as nothing but true. The truth of the event is presupposed by the existence of EAs. Moreover, this phenomenon is similar to those sentences created by factive predicates. Factive predicates, such as *houhui* ‘regret’ in (9c), also presuppose the realization of the event as well as the truth of that event. No one would feel regretful if nothing has happened. Identically, no speaker could judge any event if it has not occurred yet.

2.2. Syntactic distribution

Generally, sentential adverbs have relatively free distributions, with regard to the distributions of Subject and Auxiliary (Ernst 2002:114):³

- (10) a. **Pianpian** xiaozhang ye xiang qu.
 contrarily principal also want go
- b. Xiaozhang **pianpian** ye xiang qu.
 principal contrarily also want go

‘It is contrary that the principle also wanted to go.’ (Zhang 2000b: 63)

These alternative distributions on sentential adverbs have gotten much attention and elaborate assumptions from various perspectives. For instance, *xingkui* ‘fortunately’ in Mandarin has been analyzed either as a raising verb (Tsao 1996), or as a sentential adverb (Zhang 2000ab, Cinque 1999, and among others). Conveying speaker’s judgment of fortunateness on the fact, Tsao (1996) treats *xingkui* ‘fortunately’ in Mandarin as a kind of modal verbs, which can clearly separate the sentence topics (elements with double-underline in (11)) and clausal topics (elements with single-underline in (11)). With relatively free ordering among these topics, various alternations are allowed:

³ *Pianpian* 偏偏 in Mandarin implies a situation in which the speaker slightly blames the Agent for his/ her stubborn persistence in his/ her opinions, which are contrary to that of speaker. In this thesis, I translate it as ‘contrarily’, though these two words are not perfectly correspondent.

- (11) a. Ta A-hua qunian xingkui meiyou qu.
 he A-hua last year fortunately not-have marry
 b. Ta A-hua xingkui qunian meiyou qu.
 c. Qunian ta A-hua xingkui meiyou qu.
 'It is fortunate that he did not marry A-hua last year.' (Tsao 1996:178)

However, Tsao's assumptions would encounter some challenges on the distinction between verbs and adverbs. First of all, verbs can be negated by *bu* 'not' or *meiyou* 'not-have', or construct an A-not-A form in yes/no questions. For example, *bu-qu* 'not go', *qu-bu-qu* 'go or not' and *bu-keneng* 'can not', *ke-bu-keneng* 'can or can not'. But it is not the case for *xingkui* and *haozai*.⁴ Moreover, unlike normal verbs in Mandarin, *xingkui* does not have any verbal inflections, such as tense or aspectual markers. This criterion may not be precise for raising verbs in English, but it reliable for raising verbs in Mandarin.

Due to these doubts on the verb perspective, I alternatively treat EAs as adverbs through this paper, and adopted Cinque's universal hierarchy among adverbs.

2.3. Frameworks

2.3.1 Cinque's universal hierarchy

In Cinque (1999), adverbs are base-generated in the specifier of related functional heads. And the projection of each functional head is ranked with relatively strict hierarchical ordering. Crosslinguistically, EAs in Cinque's hierarchy occupy the specifier of the head named evaluative mood, surrounded by speech-act mood and evidential mood:

- (12) [Mood_{speech act} [Mood_{evaluative} [Mood_{evidential} [Mod_{epistemic} [T(Past)[T (future)...]]]]]]
 (Cinque 1999:106)

This universal hierarchy exhibits a strict ordering among adverbs without exchanges, based on the observations on the distributions of adverbs. And this rigorous ordering in adverbs can be attributed to the same inherited feature shared by adverbs. In Rizzi (2004), this shared feature is presumed as **modifier feature**, which is the key concept to build minimal configurations, according to Relativized Minimality.

2.3.2 Relativized Minimality

Relativized Minimality (RM), in Rizzi's (1990, 1997, 2001, 2004) definition, is a kind of locality principles, and emerges its significance in accounting for the issues of syntactic movements, which challenged previous principles, such as Subjacency Condition and Empty Category Principle (ECP) without satisfied results.

⁴ Some EAs, such as *xingyunde* 'luckily' and *yiwaide* 'unexpectedly', can be negated by *bu* 'not', but it is another story that we will discuss in section 4.

First of all, RM contributes in defining syntactic constructions for the properties of creativity and recursion of languages.

"A fundamental discovery of modern formal linguistics is that if the length and depth of syntactic representations is unbounded, core structural relations are local."

(Rizzi 2004:1)

RM provides a smallest environment, in which relations between elements must be locally satisfied. In other words, RM sets up the boundaries for a core syntactic structure, and forbids elements connecting or building relations across these minimal configurations. These delimitations, however, are variable depending on the properties of the components. For labeling these boundaries of different relations, Rizzi defines a minimal configuration as follows:

- (13) a. X...Z...Y
 Y is in a Minimal Configuration (Mandarin) with X
 iff there is no Z such as that
 Z is of the same structural type as X, and
 Z intervenes between X and Y

(Rizzi 2001:(4), 2004:(4))

As to the connection between the displaced element and its trace, the concept of chain is mentioned. In Rizzi's assumption, chain relation, including Head chain, A chain and A' chain, must be represented through RM at LF.

2.3.3 Adverbs under RM

As locality constraints, these chain distinctions also account for the argument/ adjunct asymmetries (Rizzi revised of 1991NELS), as well as the hierarchical ordering among adverbs in Dutch (Koster 1978) and Italian (Rizzi 2004). For preposed adverbs in Italian, Rizzi observed that they behave like topics, but in distribution, they may not naturally precede the wh-phrases, while topics can (Rizzi 2004:15-16). From this phenomenon, the preposed adverbs are proved to occur lower than topics. Meanwhile, due to different interactions with wh-phrases, topics are claimed to determine the island effect on A' movement, while preposed adverbs do not.

For precisely indicating the position of these preposed adverbs, Rizzi created a phrasal slot between Force and Fin in the structure of CP system, named Mod(ifier):

- (14) Force Top* Int Top* Focus **Mod*** Top* Fin IP

(Rizzi 2004:18)

Following Rizzi's assumptions, adverbs that move to Mod occupy the Spec position and

“licensed by the substantive featural content of their heads” (Rizzi 2004:19). According to these substantive features, Rizzi predicts the typology of specifiers:

- (15) a. Argumental: person, number, gender, case
 b. Quantificational : Wh, **Neg**, **measure**, focus...
 c. Modifier: evaluative, epistemic, **Neg**, frequentative, celerative, **measure**, manner...
 d. Topic (Rizzi 2004:19)

In (15), only the specifiers that belong to the same classification in (15) are stated to interact with each other in sentences. Take adverbs in Dutch as examples, *waarschijnlijk* ‘probably’ is not allowed to move across *helaas* ‘unfortunately’, as long as they co-occur:

- (16) a. Het is zo dat hij helaas waarschijnlijk ziek is
 ‘It is so that he unfortunately probably sick is’
 b. *Het is zo dat hij waarschijnlijk helaas ziek is
 ‘It is so that he probably unfortunately sick is’
- (17) a. Helaas is hij ___ waarschijnlijk ziek
 ‘Unfortunately is he probably sick’
 b. *Waarschijnlijk is hij helaas ___ ziek
 ‘Probably is he unfortunately sick’
 c. Waarschijnlijk is hij ___ ziek
 ‘Probably is he sick’ (Koster 1978 in Rizzi 2004:10-11)

This blocking situation can also be predicted in English and in Mandarin:

- (18) a. Fortunately, he had evidently had his own opinion of the matter.
 b. Evidently he had fortunately had his own opinion of the matter.
 (Cinque 1999:33)
- (19) a. Henbuxingde, tamen keneng dui ni you pianjian.
 unfortunately they probably to you have prejudice
 ‘It is unfortunate that they might have prejudice in you.’
 b. *Keneng, henbuxingde tamen dui ni you pianjian.
 probably unfortunately they to you have prejudice
 (inspired from Cinque 1999)

EAs in Mandarin, however, represent more complicated situations when they co-occur with wh-phrases:

- (20) a. Weisheme haozai Zhangsan canjia-le huiyi ?
 why luckily Zhangsan attend-LE meeting
 'Why is it lucky that Zhangsan attend the meeting?'
- b. *Haozai weisheme Zhangsan canjia-le huiyi ?
 luckily why Zhangsan attend-LE meeting
- (21) a. **Kanlai** ta ai-shang-le shei.
 seemingly he full-in-love-LE who
 'He seems to have fallen in love with somebody.'
- b. ***Pianpian** ta ai-shang-le shei ?/.
 fortunately ta loved who

If EAs in Mandarin only affect the adverbs in the same subclass, that is, they only have Modifier feature, how could we explain the interaction between EAs and wh-phrases in (20) and (21)? It seems that EAs and wh-phrases also share the same feature, which results in the crash of (20b) and (21b). RM, however, could not exactly account for these situations. These observations lead us to the first issue:

- (6) The properties of EAs and their relations with other elements in Mandarin
- i. What kinds of influences would they make on other elements in sentences?
 - ii. Why can they determine the grammaticality of the whole sentence?

3. Interaction between EAs and wh-phrases

Beyond Rizzi's predictions, the blocking effects caused by EAs in Mandarin are more complicated: not only leaving effects on other adverbs for ordering, but they also interact with wh-phrases, including wh-adverbs and wh-nominals.⁵ Observing these interactions, I further assume that an EA should be considered as an intervener in wh-questions.

3.1 Interveners and intervention effect

In Beck's (1996) hypothesis, certain quantifiers interrupting in a sentence would construct a structure as barriers for intervening LF movements. This structure can be illustrated as following:

- (22) * [...X_i...[Q...[...t_i^{LF}...]]] (Beck 1996:1)

The Q in (22) represents the position of those specific quantifiers in Beck's definition, and interrupts into the path between X and its trace at LF. With further observations, Pesetsky (2000) further notices a phenomenon that the intervention effect occurs, as long as wh-feature movement is restricted under the structure of (22). He then claims that once intervention

⁵ Only Adv-EAs, the adverbs without uniform suffix *-de*, are discovered to interact with wh-phrase, while Adj-EAs are not. The differences would be discussed in section 4.

effect takes place, LF feature movement could be detected.

Following Pesetsky's prediction on intervention effect, Soh (2005) presumes that the existence of intervention effect on adverbial wh-phrases exactly implies the involvement of covert feature movement. Nominal wh-phrases, on the other hand, take a covert phrasal movement, which would not be affected by blocking of interveners. Furthermore, Soh claims that the interveners in Mandarin, such as *zhi* 'only', *bu* 'not', *meiyouren* 'nobody', *henshao ren* 'few people', *zuiduo liang-ge ren* 'at most two persons', *chang* 'often' and *ye* 'also', block the covert feature movement of *weisheme* 'why' at LF:

- (23) a. Ni weisheme shuo meiyouren cizhi?
you why say nobody resign

'What is the reason *x* such that for *x* you said nobody resigned?'

- b. *Meiyouren weisheme shuo ni cizhi?

Dealing with the relations between quantifiers and in-situ wh-phrases in interrogatives, as well as yes/no questions in Mandarin, Soh discovers that quantifiers are forbidden to precede the in-situ wh-phrase. According to Beck's assumption and Pesetsky's prediction, these intervention effects could be schematized as following:

- (24) *[Op...intervener...wh-adverb]

3.1.1 EAs and *weisheme* 'why'

In Mandarin, *weisheme* 'why', as a wh-adverb that can not move out from island constructions, are discovered to make an interrogative sentence in two positions— preceding or following the subject:

- (25) a. Weisheme Xiaozhang hui canjia huiyi?
why Xiaozhang will attend meeting

- b. Xiaozhang weisheme hui canjia huiyi?
Xiaozhang why will attend meeting

'What did Xiaozhang attend the meeting for?'

In Tsai (2000), *weisheme* 'why' in Mandarin, occurring between auxiliary and verb, should be interpreted with interrogative questioning on purpose. Alternatively, when *weisheme* precedes Auxiliary, the interpretation of asking reason would appear. And these two different distributions represent different results, when EAs occur:

- (26) a. Xiaozhang weisheme neng canjia wuhui ?
Xiaozhang why can join party
'Why can Xiaozhang join the party?'
- b. *Xinghao Xiaozhang weisheme neng canjia wuhui ?
fortunately Xiaozhang why can join party
- c. *Xiaozhang xinghao weisheme neng canjia wuhui ?
Xiaozhang fortunately why can join party
- (27) a. Weisheme Xiaozhang neng canjia wuhui ?
why Xiaozhang can join party
'Why can Xiaozhang join the party?'
- b. ?Weisheme Xiaozhang xinghao neng canjia wuhui ?
why Xiaozhang fortunately can join party
'Why it is fortunate that Xiaozhang can join the party?'
- c. ?Weisheme xinghao Xiaozhang neng canjia wuhui ?
why fortunately Xiaozhang can join party
'Why it is fortunate that Xiaozhang can join the party?'

For all the LF movement examples in (26), sentences fail to compose interrogatives, because of the interruption of *xinghao* 'fortunately'. As to those examples of covert movement in (27), wh-adverbs successfully attach to the Spec of CP, regardless of any interruption. Identical situations on *weisheme* are also discovered by Tsai (2000). He assumes that *weisheme* should take an abstract movement to the Spec of CP to construct an interrogative. "It would violate the relativized minimality, if this abstract movement takes place in the scope of auxiliary, frequency adverbs, temporal adverbials, modal adverbs and negations" (2000: 55). These blocking effects on LF movement can be schematized as following:

- (28) *_{[CP weisheme_i.....[EA/ zhi/Aux/ Freq/ Temp/ Modal/ Neg.....t_i..]]}^{LF}

3.2 Interaction between EAs and wh-nominals in Mandarin

Although great distinctions had discussed between wh-adverbs and wh-nominals, similar results would be discovered when EAs co-occur with wh-nominals, such as *sheme* 'what' and *shei* 'who' in Mandarin. With indefinite reading on wh-nominals, sentences could be interpreted as either interrogatives or declaratives. EAs, however, would fail both readings.

3.2.1 The indefinite interpretation of wh-nominals

Wh-nominals *shei* 'who' and *sheme* 'what' in Mandarin can be interpreted with either interrogative or non-interrogative reading (Huang 1982; Li 1992; Aoun & Li 1993). Tsai

(1999ab) assumes that there should be a null operator base-generated in the Spec of CP. If it contains a [+Q] feature, a wh-question would be constructed through the application of unselective binding for languages like Mandarin and Japanese. On the other hand, a topic-command or a relative construction would be constructed due to the [-Q] null operator. A wh-nominal, in general, tends to require a quantificational force for not only clarifying its scope, but also labeling out its interpretation.

Specifically, Li (1992) investigates the distribution of indefinite wh-nominal and concludes that the in-situ wh-nominal must be linked by the preceding operator with [+Q] feature for interpreting the interrogative reading, while the indefinite reading is comprehended with the linking to a [-Q] operator. Based on a minimality requirement, Li (1992) presumes a binder-variable relation between wh-nominals and the c-commanding operators. That is, “the wh-nominals must be linked to the closest licenser” (Aoun & Li 1993: 214). Under Huang’s and Li’s assumptions, the scope of wh-nominals depends on the location of their preceding or binding operator, as well as its alternation of interrogative or an indefinite interpretation. In Li (1992) and Aoun & Li (1993), indefinite wh-nominals are limited to occur with negation in (29) and other question markers in (30), or in conditionals in (31) and in embedded clause of non-factive verbs in (32):

(29) Ta bu wei sheme ren zuo shi.
he not for what man do thing
‘He does not work for anyone.’ (Aoun & Li 1993:213)

(30) Ta xihuan sheme ma?
he like what Q-marker
‘Does he like something(anything)?’ (Li 1992:128)

(31) Yaoshi ta xiangqi sheme, qing mashang tongzhi wo.
If he recall what please immediately inform I
‘If he recalled something, please inform me immediately.’

(32) Wo {yiwei/ renwei/ cai/ xiwang } ni xihuan sheme (dongxi).
I think think guess hope you like what thing
‘I think/ guess/ hope that you like something.’ (Li 1992:129)

Similar effects could also be discovered when wh-nominals interact with certain adverbs, which make linguistic context become tentative or uncertain:

(33) Ta {dagai/ keneng/ haoxiang/ sihu/ yexu} xihuan sheme.
he probably probably seem seem perhaps like what
‘He probably/ probably/ seems to / seems to/ may like something.’ (Li 1992:131)

Indefinite wh-nominals, in Li's observations, tend to co-occur with those expressions that denoting uncertainty or tentativeness. In the uncertain context, the truth-value is not fixed, and semantically the truth of the proposition is not asserted. According to Li (1992), this binder-variable relation between the preceding operator and the c-commanded wh-nominals could be illustrated as following:

(34) [+/- QOP.....wh-nominal]

If the licensing operator is an overt Q-marker, such as Wh-particle *ma* in (30), a +QOP (Question Operator) appears, licenses the wh-nominal with indefinite reading, and construct an A-not-A question. On the other hand, a -QOP represents those elements that also license the indefinite wh-nominal, but in a declarative sentence. Adopting Li's accounting for the relation between those operators and indefinite wh-nominals, I extend these two structures to figure out the interaction between EAs and the indefinite wh-nominal.

3.2.2 EAs and wh-nominals

EAs in Mandarin, however, could hardly create an environment for the indefinite reading:

- (35) a. Shei ba hua zhai-le?
 who BA flower take-off
 'Who took off the flower?'
- b. Kanali shei ba hua zhai-le.
 Apparently who BA flower take-off
 'Apparently, someone took off the flower.'
- c. */??Pianpian shei ba hua zhai-le ?/.
 contrarily who BA flower take-off
- (36) a. Ta ai-shang-le shei?
 he loved who
 'Whom did he love?'
- b. Keneng ta ai-shang-le shei.
 probably he loved who
 'Maybe he fell in love with someone.'
- c. */??Xingkui ta ai-shang-le shei ?/.
 fortunately he loved what

- (37) a. Sheme-ren mingtian hui lai?
 what-person tomorrow will come
 ‘Who will come tomorrow?’
- b. Yexu sheme-ren mingtian hui lai.
 perhaps what-person tomorrow will come
 ‘Perhaps someone will come tomorrow.’
- c. */?Xinghao sheme-ren mingtian hui lai ?/.
 luckily what-person tomorrow will come
- (38) a. Xiaoli zuotian mai-le sheme?
 Xiaoli yesterday buy-LE what
 ‘What did Xiaoli bought yesterday?’
- b. Dagai Xiaoli zuotian mai-le sheme.
 Probably Xiaoli yesterday buy-LE what
 ‘Probably, Xiaoli bought something yesterday.’
- c. */?Haozai Xiaoli zuotian mai-le sheme ?/.
 luckily Xiaoli yesterday buy-LE what

Shei ‘who’ in (35a) and (36a) and *sheme* ‘what’ in (37a) and (38a) are regarded as interrogatives, while they are interpreted with indefinite readings in (35b), (36b), (37b) and (38b). Once EAs occur, however, all the sentences failed without any reading on wh-nominals. Obviously, EAs could neither grammatically co-occur with wh-nominals in interrogatives, nor properly create an environment for the indefinite reading of wh-nominals. For these phenomena, we can have some plausible explanations from syntactic and semantic perspectives.

Syntactically, wh-nominals in Mandarin require a nearest licenser to clarify the scope of the wh-nominals. According to RM, once the link is broken, there must be an element inserted carrying “the same feature”. EAs that interrupt into the link between the licenser and wh-nominals would be considered as a qualified element with quantificational feature. And the LF representation would be displayed as following:

- (39) *[/+/- QOP..... EA.....wh-nominal...]

Semantically, as mentioned above, Li (1992) concludes that the indefinite wh-nominals occur in the linguistic contexts where the true value of the proposition is “negated, non-fixed, asserted with uncertainty or inferred tentatively” (Li 1992:146). This uncertainty, in Li’s assumption, may results from the non-referential inheritance in wh-phrases. Furthermore, Lin (2004) marks this indefinite wh-phrases as existential polarity wh-phrase (EPW) (Ladusaw

1980, Linebarger 1981, Huang 1982, Li 1992, Cheng 1994, Lin 1996, 1998), and he also claims that they are one kind of polarity idem which may not exist in affirmative context. As mentioned in section two, EAs presuppose the truth of the following proposition, and make it becomes a happened fact. These are affirmative sentences. In other words, EAs create environments of certainty. Quite the contrary, the indefinite reading of the wh-nominal, i.e., EPW, would never survive in the circumstance under EAs. From semantic perspectives, Lin's assumptions on EPW precisely predict the interactions between EAs and wh-nominals in Mandarin.

4. Asymmetry on EAs

In previous discussions, EAs are concluded as interveners blocking either the LF movement of wh-adverb, or the licensing of wh-nominals. Nevertheless, this assumption should be restricted into certain members of EAs in Mandarin. For example,

- (40) Lingrenyiwaide, weisheme Daiyu jiang -le na ju hua ne?
 astonishingly why Daiyu speak-LE that CL Sentence Particle

'It is astonishing that, why did Daiyu mentioned that sentence?'

- (41) Shifen jiaoxingde, Zhangsan shi zenmeyang
 very accidentally Zhangsan SHI how
 tao -guo diren de zhuisha?
 escape-GUO enemy DE chase-kill

'How did Zhang accidentally escaped from enemy's chase?'

- (42) Lingrenbukesi yide, Zhangsan zuotian jiang-le sheme,
 strangely Zhangsan yesterday say -LE what
 jintian jiu jin -le jianlao?
 today then enter-LE jail

'It is strange that, what did Zhangsan say yesterday, which causes him to be sent into the jail today?'

- (43) Feichang xingyunde, shei zhong-le letou?
 very luckily who win -LE lotto

'It is lucky that, who won the lotto?'

For those EAs in these sentences, they block neither the LF movement of wh-adverbs, nor the licensing of wh-nominals, but the sentences are all acceptable. These observations lead us to the second issue:

(7) Sub-classification of EAs in Mandarin

- i. Are they all derived from corresponding adjectives? Does any difference occur among them?
- ii. How do the differences affect their interactions with other elements?

4.1 Two types of EAs

EAs in (40)-(43) are morphologically different from those we have discussed in the previous sections. Being capable of delivering speaker's attitude in Mandarin, EAs can be separated in terms of morphological suffix *-de*:

(44)

(a) with identical suffix		(b) without identical suffix	
<i>xingyunde</i>	'luckily'	<i>xingkui</i>	'fortunately'
<i>buxingde</i>	'unfortunately'	<i>xinghao</i>	'fortunately'
<i>churenyilaode</i>	'unexpectedly'	<i>fanzheng</i>	'at least'
<i>lingrenyiwaide</i>	'unexpectedly'	<i>haozai</i>	'luckily'
<i>momingqimiaode</i>	'inexplicable'	<i>juran</i>	'unexpectedly'
.....		<i>jingran</i>	'unexpectedly'
		<i>kexi</i>	'it's pity that...'
		<i>haihao</i>	'not-bad'
		<i>pianpian</i>	'contrarily'

Focusing on the morphological affixes, Tang (2000) insists that EAs, as one type of modal adverbs, should be defined as adverbs that are not converted from adjectives. In Mandarin, therefore, adverbs in (44a) are classified as EAs following Ernst's semantic interpretation, while only adverbs in (44b) are included as EAs, based on Tang's morphological definition.

In English, EAs are morphologically derived from the corresponding adjectives with the derivational affix *-ly*, such as *fortunately* from *fortunate*, and *unfortunately* from *unfortunate*. Parallel to those in English, EAs in Mandarin in (44a) can be regarded as the result of deriving from adjectives with suffix *-de*, such as *xingyunde* 'luckily' from *xingyunde* 'lucky'.⁶ The members in this sub-type, in addition, are not limited in number, since adjectives in Mandarin are known as an open class. On the other hand, members of the sub-type in (44b), do not have any affix in common, because they are not derived from adjectives, as well as lacking of the corresponding adjectives. The amount of number in this sub-type, of course, is limited. Comparing with adjectives in Mandarin, the suffix *-de* could be also regarded as a kind of modifier markers. In this case, EAs in (44b) that lack of this modifier marker could not be considered as modifiers. For distinguishing these two types in Mandarin, EAs in (44b) are labeled in this paper as **Adv-EAs**, while those derived from adjectives as **Adj-EAs**. The

⁶ With the same phonological form *-DE*, the affix of adjective are distinctive from that of adverb in written form. For example, *-的* is the affix for adjectives, while *-地* is the affix for adverbs.

morphological distinctions between Adj-EAs and Adv-EAs are listed as following:

(45)

	English	Mandarin	
	EAs	Adj-EAs	Adv-EAs
positive form	fortunately normally	<i>xingyunde</i> ‘luckily’ <i>zhengchangde</i> ‘normally’	<i>xinghao</i> ‘fortunately’ <i>xingkui</i> ‘fortunately’ <i>juran</i> ‘unexpectedly’
negative form	unfortunately abnormally	<i>buxingyunde</i> ‘unluckily’ <i>feizhengchangde</i> ‘abnormally’	* <i>buxinghao</i> , * <i>feixinghao</i> , * <i>buxingkui</i> , * <i>feixingkui</i> , * <i>bujuran</i> , * <i>feijuran</i>
correspondent adjectives	fortunate/ unfortunate normal/ abnormal	<i>xingyunde</i> ‘lucky’ <i>buxingyunde</i> , ‘unlucky’ <i>zhengchangde</i> ‘normal’ <i>feizhengchangde</i> ‘abnormal’	/

The asymmetry between Adv-EAs and Adj-EAs could be discovered not only in the morphological formation, but also in the syntactic distribution.

4.2 Relative positions for Adv-EAs and Adj-EAs

According to Zhang's (2000ab) observations on adverbs in Mandarin, higher adverbs, such as EAs or epistemic adverbs, occur in higher layers, preceding the non-sentential adverbs. He also claims that freely interchangeability takes place only when two adverbs belong to the same layers. But it is not the case for Adv-EAs and Adj-EAs:

(46) a. Haihao, xingyunde, Zhangsan taochu bangfei de qiujin.
not-bad luckily Zhangsan escape kidnapper DE prison
‘Fortunately, Zhangsan luckily escaped from captivity.’

b. *Xingyunde, haihao, Zhangsan taochu bangfei de qiujin.

(47) a. ?Pianpian, buxingde, Xiaoli bei pian-le yibaiwan.
contrarily unluckily Xiaoli BEI cheat-LE one-million-dollar
‘Contrarily, it is unlucky for Xiaoli to be cheated for one million.’

b. *Buxingde, pianpian, Xiaoli bei pian-le yibaiwan.

However, the interchangeability is allowed between two Adj-EAs:

(48) a. Lingrenyiwaide, Xiaoli hen xingyunde tao-guo yi jie.
unexpectedly Xiaoli very luckily escape-GUO one calamity

b. Hen xingyunde, Xiaoli lingrenyiwaide tao-guo yi jie.
very luckily Xiaoli unexpectedly escape-GUO one calamity
‘Unexpectedly, Xiaoli luckily escape from this calamity.’

As the empirical evidence arguing for the asymmetry, Adv-EAs and Adj-EAs are allowed to be able to occur simultaneously, only if Adv-EAs precede Adj-EAs. Adopting Rizzi's split CP structure mentioned in (14), two types of EAs would be clearly distinguished in distributions:

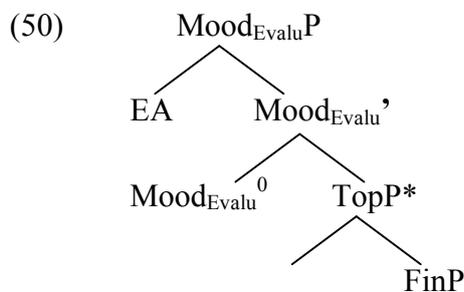
(49) ForceP > Top* > Int > FocP > **Adv-EA** > **Adj-EA** > TopP* > FinP > IP

4.3 Syntactic derivations of Adv-EAs and Adj-EAs

Following Cinque's (1999) assumptions on adverbs cross-linguistically, as well as Rizzi's (2004) explanations on the hierarchical ordering among adverbs in Italian, two types of EAs are proposed to be derived through two steps: Merge and Move.

First step—base generated in Spec

According to Cinque's assumption, EAs "are generated in the specifier position of an evaluative mood head" (Cinque 1999:85). And in the universal hierarchy of functional heads, this evaluative mood head projects to a maximal projection, **Mood_{Evalu}P**, located above TP (IP). EAs are assumed to merge in the specifier position of the evaluative mood head. Based on the ordering mentioned in (49), **Mood_{Evalu}P** should occur higher than lower Top* and FinP:



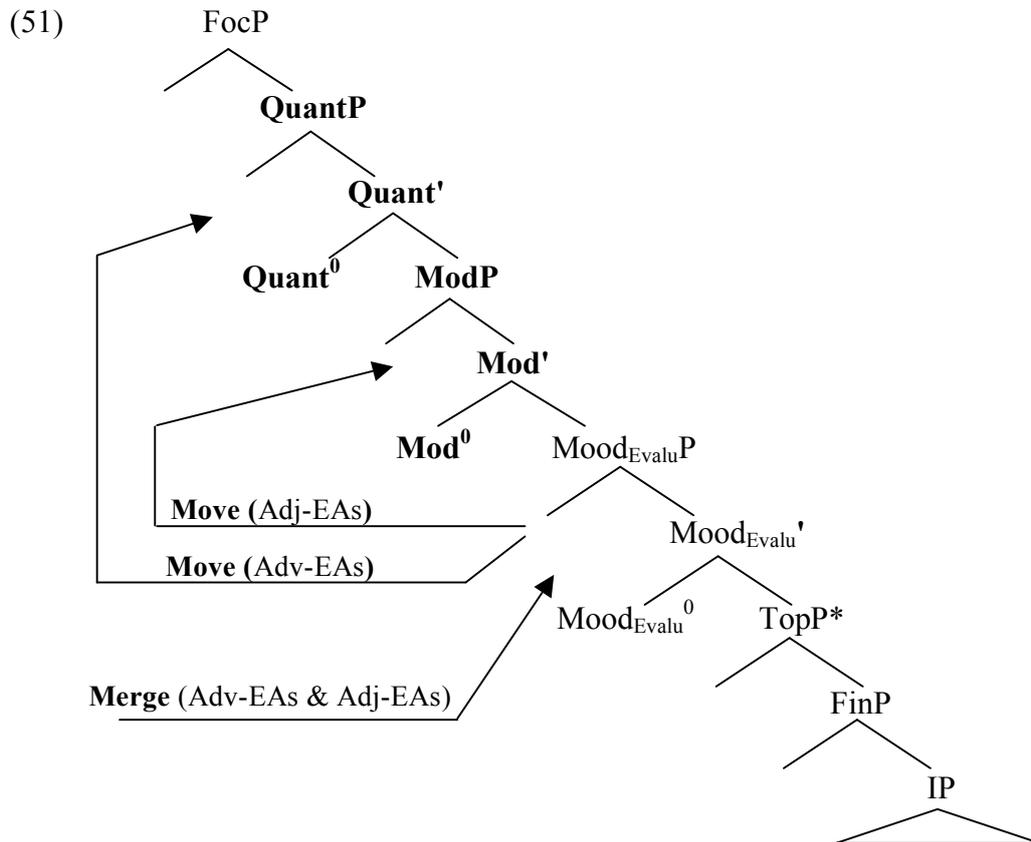
Launching from the Spec of **Mood_{Evalu}P**, Adv-EAs and Adj-EAs would then be assumed to take a movement, respectively to different positions, due to the features inherited in these two types of EAs.

Second step—another projection is required

Parallel to similar blocking effect caused by negation and some quantificational adverbs in French (Obenauer 1983, Rizzi 2004:8), Adv-EAs and Adj-EAs leaving effects on wh-phrases and some non-sentential adverbs, respectively, are suggested to move to another position, named **Modifier**, which is syntactically located higher than **Mood_{Evalu}P** in Rizzi's split CP structure. Adopting Rizzi's assumptions that adverbs move to the Spec position of Mod, Adj-EAs are postulated to move to the Spec of **ModP**, motivated by the modifier feature.

As to the situations in Adv-EAs, it is plausible to treat Adv-EAs as A' specifiers with quantificational feature, since they indeed interact with wh-phrases. Motivated by

quantificational feature, Adv-EAs are then postulated to move to another position, named **QuantP**, where Adv-EAs become "visible" for wh-phrases. Since Adv-EAs are observed to precede Adj-EAs, the landing site of Adv-EAs should be higher than that of Adj-EAs. The derivations of Adv-EAs and Adj-EAs would be illustrated as follows:



First of all, both Adv-EAs and Adj-EAs are assumed to be base-generated in Spec of $Mood_{Evalu}P$. Then EAs move differently, motivated by the distinct features. Adj-EAs move to Spec of $ModP$, due to modifier feature, while Adv-EAs take a different movement to the Spec of $QuantP$, triggered by quantificational feature. With separated and precise positions, we can clearly discuss the blocking effects caused by these two types of EAs.

But this hypothesis encounters two further problems: if EAs do have quantificational feature, (i) how and where could they be licensed, and (ii) how to distinguish Adv-EAs from Adj-EAs?

Movement of Adv-EAs seems to be a proper solution for these problems. For the first problem, EAs that can interact with wh-phrases are claimed to move to another functional head, where the intervention on the LF movement of wh-adverbs takes place, as well as blocking the licensing of wh-nominals. According to Rizzi's split CP structure in (52), the position of $QuantP$ should be located between Wh operator, **Int**, and the wh-phrases, for the sake of constructing intervention effect and blocking.

(52) Force Top* **Int** Top* Focus **Mod*** Top* Fin IP

(Rizzi 2004:18)

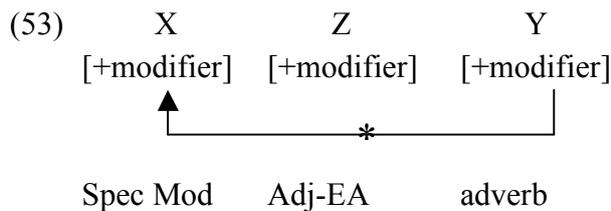
As long as quantificational feature of the moved adverbs is licensed in the Spec position of QuantP, the second issue would then be solved immediately. With the assumption of movement, EAs are clearly separated into two groups: EAs with quantificational features and those with modifier features. At the same time, this division can also point out the difference between Adv-EAs and Adj-EAs.

4.4 Blocking effect caused by Adv-EAs and Adj-EAs

As mentioned above, Adj-EAs block other adverbs, which cause the failure of the sentence. Take a look at the sentence mentioned in (19):

- (19) a. Henbuxingde, tamen keneng dui ni you pianjian.
 unfortunately they probably to you have prejudice
 'It is unfortunate that they obviously have prejudice in you.'
 b. *Keneng, henbuxingde tamen dui ni you pianjian.
 probably unfortunately they to you have prejudice

Adj-EA, *henbuxingde* 'unfortunately', and *keneng* 'probably' in (19) are classified into the same subclass with the same modifier feature, which allows them to interact with each other. And the ungrammaticality caused by the forward movement of *keneng* 'probably' is predicted through RM:



An Adj-EA with modifier feature stands as an interrupter, blocking the movement of the c-commanded adverbs. And these elements could be regarded as "of the same structural type", since they carry the same feature.

Without modifier feature, Adv-EAs would not block the movement of adverbs,

theoretically. However, Adv-EAs occur always preceding Adj-EAs in (46) and (47), as well as manner adverb in (54):

- (46) a. Haihao, xingyunde, Zhangsan taochu bangfei de qiujin.
 not-bad luckily Zhangsan escape kidnapper DE prison
 ‘Fortunately, Zhangsan luckily escaped from captivity.’
- b. *Xingyunde, haihao, Zhangsan taochu bangfei de qiujin.
- (54) a. Zhangsan **xingkui zixide** hedui-gou shangpin de shulang,
 Zhangsan fortunately carefully check-GUO goods DE amount
 buran ta jiu dei peichang sunshi le.
 otherwise he then must compensate damage
 ‘It is fortunate that Zhangsan has carefully checked up the amount of goods.
 Otherwise he must compensate the lost.’
- b. *Zhangsan **zixide xingkui** hedui-gou shangpin de shulang,
 Zhangsan carefully fortunately check-GUO goods DE amount
 buran ta jiu dei peichang sunshi le.
 otherwise he then must compensate damage

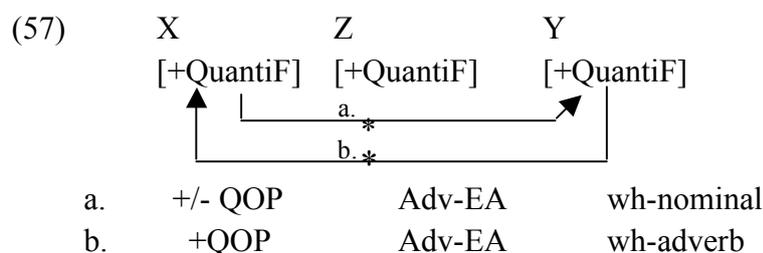
These wrong orderings result from the rigorous hierarchical ordering among adverbs. According to the tree structure in (51), the landing site of Adv-EAs is presumed to be higher than that of Adj-EAs and manner adverbs.

As to the intervention effect caused by Adv-EAs, the movement of Adv-EAs under RM can also properly accounts for the phenomena mentioned at the beginning. The relevant examples are listed again as follows ((55)=(36), (56)=(26)):

- (55) a. Ta ai-shang-le shei?
 he loved who
 ‘Whom did he love?’
- b. Keneng ta ai-shang-le shei.
 probably he loved who
 ‘Maybe he fell in love with someone.’
- c. */??Xingkui ta ai-shang-le shei,
 fortunately he loved what
- (56) a. Xiaozhang weisheme neng canjia wuhui ?
 Xiaozhang why can join party
 ‘Why can Xiaozhang join the party?’

- b. *Xinghao Xiaozhang weisheme neng canjia wuhui ?
 fortunately Xiaozhang why can join party
- c. *Xiaozhang xinghao weisheme neng canjia wuhui ?
 Xiaozhang fortunately why can join party

Once Adv-EAs are proposed to inherit a quantificational feature, they are predicted to interact with wh-adverbs—*weisheme* 'why' and wh-nominal—*sheme* 'what' and *shei* 'who'. Therefore, the intervention effect between Adv-EAs and wh-phrases can also be schematized as follows:



The sentence in (55c) and (56c) are ungrammatical, because wh-nominal *shei* 'who' can not be successfully licensed by the initial operator as in (57a), and wh-adverb *weisheme* 'why', can not take a LF movement as in (57b).

In short, we can summarize this section with following table:

(58)

EAs	in English	in Mandarin	
		Adj-EAs	Adv-EAs
inherent feature	modifier feature		quantificational feature
base- generated in	Spec of Mood _{Evalu} P		
Landing site	Spec of ModP		Spec of QuantP
interact with	other adverbs		wh-phrases

5. Conclusion

Through the observations on the interactions with wh-phrases, EAs in Mandarin can be divided into two groups. Adv-EAs inherited quantificational feature, cause intervention effects on c-commanded wh-adverb, while Adj-EAs carrying modifier feature are allowed to precede other adverbs.

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